

NANOGEN INC
Form S-4/A
October 26, 2004
Table of Contents

As filed with the Securities and Exchange Commission on October 26, 2004.

Registration No. 333-119558

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

AMENDMENT NO. 1
TO
FORM S-4
REGISTRATION STATEMENT

UNDER THE SECURITIES ACT OF 1933

NANOGEN, INC.

(Exact name of Registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

3826
(Primary Standard Industrial
Classification Number)

33-0489621
(I.R.S. Employer
Identification No.)

10398 Pacific Center Court

San Diego, CA 92121

(858) 410-4600

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Edgar Filing: NANOGEN INC - Form S-4/A

David G. Ludvigson

President and Chief Operating Officer

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

(858) 410-4600

(Name, address, including zip code, and telephone number, including area code, of agent for service)

COPIES TO:

Scott D. Karchmer, Esq.

Lawrence B. Cohn, Esq.

Angela C. Hilt, Esq.

Michael H. Mulroy, Esq.

Morgan, Lewis & Bockius LLP

Stradling Yocca Carlson & Rauth

One Market Street, Spear Street Tower

660 Newport Center Drive, Suite 1600

San Francisco, California 94105

Newport Beach, CA 92660

Telephone: (415) 442-1000

Telephone: (949) 725-4000

Fax: (415) 442-1001

Fax: (949) 725-4100

Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective and the effective time of the merger of a wholly-owned subsidiary of the registrant with and into Epoch Biosciences, Inc., as described in the Agreement and Plan of Merger and Reorganization, dated as of September 7, 2004, included as Annex A to the joint proxy statement/prospectus forming a part of this registration statement.

If the securities being registered on this Form are being offered in connection with the formation of a holding company and there is compliance with General Instruction G, check the following box. "

If this Form is filed to register additional securities for an offering pursuant to Rule 462(a) under the Securities Act of 1933, as amended (the "Securities Act"), check the following box and list the Securities Act Registration Statement number of the earlier effective Registration Statement for the same offering. "

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective Registration Statement for the same offering. "

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

Table of Contents

MERGER PROPOSAL YOUR VOTE IS VERY IMPORTANT!

Nanogen, Inc. and Epoch Biosciences, Inc. have agreed to a combination of the two companies under the terms of a merger agreement. Nanogen and Epoch are proposing the merger because they believe that the merger will provide substantial strategic and financial benefits to the stockholders of both companies.

Upon completion of the merger, Epoch stockholders will receive, in exchange for each share of Epoch common stock, a number of shares of Nanogen common stock equal to \$2.00 divided by the average closing price of Nanogen common stock during a period prior to closing, so long as the average closing price of Nanogen common stock during the period is within the range of \$3.16 to \$4.28. If the average closing price of Nanogen common stock is above the range, each share of Epoch common stock will be converted into the right to receive a fixed number of shares of Nanogen common stock equal to 0.4673 per share of Epoch common stock. If the average closing price of Nanogen common stock is below the range, each share of Epoch common stock will be converted into the right to receive a fixed number of shares of Nanogen common stock equal to 0.6329 per share of Epoch common stock. The period for determining the average closing price of Nanogen common stock will be the 20 consecutive trading days ending on and including the third trading day prior to the merger. Nanogen common stock is traded on the Nasdaq National Market under the trading symbol NGEN. On October 26, 2004, the last sale price of Nanogen's common stock was \$3.97 per share, as reported on the Nasdaq National Market.

Nanogen and Epoch cannot complete the merger without the following stockholder approvals. We are asking Nanogen stockholders to approve the issuance of shares of Nanogen common stock pursuant to the merger agreement, including the issuance of shares of Nanogen common stock: (i) to Epoch stockholders upon consummation of the merger, (ii) pursuant to the exercise of Epoch stock options and warrants assumed by Nanogen and (iii) pursuant to the unallocated reserve of the Epoch 2003 Stock Incentive Plan and the automatic annual share increase feature of such plan, each to be assumed by Nanogen in the merger. We are also asking Nanogen stockholders to approve an amendment to Nanogen's certificate of incorporation to increase the number of authorized shares of Nanogen common stock. We are asking Epoch stockholders to adopt the merger agreement and approve the merger. The obligations of Nanogen and Epoch to complete the merger are also subject to the satisfaction or waiver of several additional conditions. More information about Nanogen, Epoch and the merger is contained in this joint proxy statement/prospectus. **We encourage you to read this joint proxy statement/prospectus, including the section entitled Risk Factors beginning on page 19, before voting.**

Nanogen's board of directors unanimously approved the merger agreement, the issuance of Nanogen common stock pursuant to the merger agreement and the amendment to Nanogen's certificate of incorporation. Nanogen's board of directors unanimously recommends that Nanogen stockholders vote **FOR** the proposal to issue shares of Nanogen common stock pursuant to the merger agreement and the proposal to amend Nanogen's certificate of incorporation.

Epoch's board of directors unanimously approved the merger agreement and the merger. Epoch's board of directors unanimously recommends that Epoch stockholders vote **FOR** the proposal to adopt the merger agreement and approve the merger.

The merger proposals will be voted on at special meetings of Nanogen stockholders and Epoch stockholders. The date, times and places of the meetings are as follows:

Edgar Filing: NANOGEN INC - Form S-4/A

For Nanogen Stockholders:

Wednesday, December 8, 2004 at 10:00 a.m., local time

Hilton La Jolla Torrey Pines

10950 N. Torrey Pines Road

La Jolla, California 92037

For Epoch Stockholders:

Wednesday, December 8, 2004 at 10:00 a.m., local time

21720 23rd Drive SE, Suite 150

Bothell, Washington 98021

Table of Contents

In addition to voting on the merger proposals, Nanogen stockholders and Epoch stockholders will be asked to approve the adjournment of their respective meetings, if necessary, to solicit additional proxies in favor of the merger proposals.

Your vote is very important, regardless of the number of shares you own. Whether or not you plan to attend the special meeting of Nanogen stockholders or the special meeting of Epoch stockholders, please take the time to vote by completing and mailing the enclosed proxy card or voting instruction card and returning it in the pre-addressed envelope provided as soon as possible. Returning the proxy card does not deprive you of your right to attend the special meeting of Nanogen or the special meeting of Epoch and to vote your shares in person.

Since the merger cannot be consummated without holders of a majority of the outstanding shares of Nanogen common stock approving the amendment to Nanogen's certificate of incorporation and holders of a majority of the outstanding shares of Epoch common stock adopting the merger agreement and approving the merger, if you do not vote or if you hold shares in a brokerage account but do not instruct your broker how to vote your shares it will have the effect of a vote against the transaction.

We enthusiastically support this combination of two great companies and join with all other members of our respective boards of directors in recommending that you vote **FOR** the merger proposals.

Sincerely,

Howard C. Birndorf

Chairman of the Board and Chief Executive Officer

Nanogen, Inc.

Sincerely,

William G. Gerber, M.D.

President, Chief Executive Officer, and Director

Epoch Biosciences, Inc.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of the securities to be issued under this joint proxy statement/prospectus or determined whether this joint proxy statement/prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This joint proxy statement/prospectus is dated October 26, 2004,

and is first being mailed to stockholders on or about November 1, 2004.

Table of Contents

NANOGEN, INC.

10398 Pacific Center Court

San Diego, CA 92121

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TO BE HELD ON WEDNESDAY, DECEMBER 8, 2004

TO THE STOCKHOLDERS OF NANOGEN, INC.:

Notice is hereby given that a special meeting of the stockholders of Nanogen, Inc. will be held on Wednesday, December 8, 2004, beginning at 10:00 a.m., local time, at the Hilton La Jolla Torrey Pines located at 10950 N. Torrey Pines Road, La Jolla, California 92037, for the following purposes:

1. To consider and vote on a proposal to approve the issuance of shares of Nanogen common stock pursuant to the Agreement and Plan of Merger and Reorganization, dated as of September 7, 2004, by and among Nanogen, Empire Acquisition Corp., a wholly owned subsidiary of Nanogen, and Epoch Biosciences, Inc.;
2. To consider and vote on a proposal to amend Nanogen's certificate of incorporation to increase the authorized shares of Nanogen common stock from 50,000,000 to 135,000,000;
3. To consider and vote on any proposal to adjourn the Nanogen special meeting to another time or place, if necessary in the judgment of the proxy holders, for the purpose of soliciting additional proxies in favor of the foregoing proposals; and
4. To transact any other business that properly comes before the Nanogen special meeting.

Stockholders of record at the close of business on October 26, 2004, are entitled to notice of, and to vote at, the Nanogen special meeting and any adjournment or postponement. For ten days prior to the Nanogen special meeting, a complete list of stockholders entitled to vote at the meeting will be available for examination by any stockholder, for any purpose relating to the meeting, during ordinary business hours at Nanogen's principal offices located at 10398 Pacific Center Court, San Diego, CA 92121. Only holders of Nanogen common stock at the close of business on the record date are entitled to vote at the Nanogen special meeting. Stockholders attending the Nanogen special meeting whose shares are held in the name of a broker or other nominee should bring with them a proxy or letter from that firm confirming their ownership of shares.

Edgar Filing: NANOGEN INC - Form S-4/A

We cannot complete the merger unless a quorum is present at the Nanogen special meeting and the proposal to approve the issuance of shares of Nanogen common stock pursuant to the merger agreement is approved by a majority of the votes cast at the Nanogen special meeting by the holders of shares of Nanogen common stock entitled to vote thereon and the proposal to amend Nanogen's certificate of incorporation is approved by holders of a majority of the outstanding shares of Nanogen common stock.

By order of the Board of Directors,

San Diego, California
November 1, 2004

William L. Respass
Secretary

IMPORTANT:

You are cordially invited to attend the Nanogen special meeting. However, whether or not you plan to attend the Nanogen special meeting in person, please complete, date, and sign the accompanying proxy and mail it promptly in the return envelope to assure that your shares are represented at the Nanogen special meeting. If you attend the Nanogen special meeting, you may choose to vote in person even if you have previously sent in your proxy card.

Table of Contents

EPOCH BIOSCIENCES, INC.

21720 23rd Drive SE

Bothell, WA 98021

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TO BE HELD ON WEDNESDAY, DECEMBER 8, 2004

TO THE STOCKHOLDERS OF EPOCH BIOSCIENCES, INC.:

Notice is hereby given that a special meeting of stockholders of Epoch Biosciences, Inc., a Delaware corporation, will be held on Wednesday, December 8, 2004, at 10:00 a.m., local time, at 21720 23rd Drive SE, Suite 150, Bothell, Washington 98021, for the following purposes:

1. To consider and vote on a proposal to adopt the Agreement and Plan of Merger and Reorganization, dated as of September 7, 2004, by and among Nanogen, Inc., Empire Acquisition Corp., a wholly owned subsidiary of Nanogen, and Epoch and to approve the merger contemplated thereby, pursuant to which each share of Epoch common stock outstanding at the effective time of the merger will be converted into the right to receive a fraction of a share of Nanogen common stock and Epoch will become a wholly owned subsidiary of Nanogen;
2. To consider and vote on any proposal to adjourn the Epoch special meeting to another time or place, if necessary in the judgment of the proxy holders, for the purpose of soliciting additional proxies in favor of the foregoing proposal; and
3. To transact any other business as may properly come before the Epoch special meeting or any adjournments or postponements thereof.

Stockholders of record at the close of business on October 26, 2004, are entitled to notice of, and to vote at, the Epoch special meeting and any adjournment or postponement. For ten days prior to the Epoch special meeting, a complete list of stockholders entitled to vote at the Epoch special meeting will be available for examination by any stockholder, for any purpose relating to the Epoch special meeting, during ordinary business hours at Epoch's principal offices located at 21720 23rd Drive SE, Suite 150, Bothell, WA 98021. Only holders of Epoch common stock at the close of business on the record date are entitled to vote at the Epoch special meeting. Stockholders attending the Epoch special meeting whose shares are held in the name of a broker or other nominee should bring with them a proxy or letter from that firm confirming their ownership of shares.

We cannot complete the merger unless a quorum is present at the Epoch special meeting and the proposal to adopt the merger agreement and approve the merger receives approval by a majority of shares of Epoch common stock outstanding as of the record date for the Epoch special meeting.

Edgar Filing: NANOGEN INC - Form S-4/A

By order of the Board of Directors,

Bothell, Washington
November 1, 2004

Bert W. Hogue
Secretary

IMPORTANT:

You are cordially invited to attend the Epoch special meeting. However, whether or not you plan to attend the Epoch special meeting in person, please complete, date, and sign the accompanying proxy and mail it promptly in the return envelope to assure that your shares are represented at the Epoch special meeting. If you attend the Epoch special meeting, you may choose to vote in person even if you have previously sent in your proxy card.

Table of Contents

ADDITIONAL INFORMATION

This document incorporates important business and financial information about Nanogen and Epoch from documents that Nanogen and Epoch have filed with the Securities and Exchange Commission and that have not been included in or delivered with this document. Please see "Where You Can Find More Information" on page 98 of this joint proxy statement/prospectus. Copies of Epoch's Form 10-K for its fiscal year ended December 31, 2003, Form 10-Q for its quarterly period ended June 30, 2004 and Proxy Statement for its Annual Meeting held on May 17, 2004 have been included with this document as separate enclosures for your convenience.

Nanogen, Inc.

Nanogen, Inc., which we refer to with its subsidiaries as Nanogen, will provide you with copies of documents relating to Nanogen that are incorporated by reference in this joint proxy statement/prospectus, without charge, upon written or oral request to:

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

Attention: Investor Relations

Telephone No.: (858) 410-4600

Some of the incorporated information also is available to investors via Nanogen's website, www.nanogen.com. Information included in Nanogen's website is not incorporated by reference in this joint proxy statement/prospectus.

Epoch Biosciences, Inc.

Epoch Biosciences, Inc., which we refer to as Epoch, will provide you with copies of documents relating to Epoch that are incorporated by reference in this joint proxy statement/prospectus, without charge, upon written or oral request to:

Epoch Biosciences, Inc.

21720 23rd Drive SE

Suite 150

Bothell, WA 98021

Edgar Filing: NANOGEN INC - Form S-4/A

Attention: Investor Relations

Telephone No.: (425) 482-5555

Some of the incorporated information also is available to investors via Epoch's website, *www.epochbio.com*. Information included in Epoch's website is not incorporated by reference in this joint proxy statement/prospectus.

In order for you to receive timely delivery of the documents in advance of the Nanogen special meeting and the Epoch special meeting, we must receive your request for additional information no later than December 2, 2004.

Table of Contents

TABLE OF CONTENTS

	Page
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	1
<u>QUESTIONS & ANSWERS ABOUT THE MERGER</u>	2
<u>SUMMARY OF THE JOINT PROXY STATEMENT/PROSPECTUS</u>	7
<u>The Companies</u>	7
<u>Empire Acquisition Corp.</u>	8
<u>Summary of the Merger</u>	8
<u>Exchange Ratio and Conversion of Epoch Capital Stock</u>	8
<u>Treatment of Epoch Stock Option Plans and Outstanding Epoch Stock Options and Warrants</u>	9
<u>Recommendation of the Nanogen Board of Directors to Nanogen Stockholders</u>	9
<u>Recommendation of the Epoch Board of Directors to Epoch Stockholders</u>	9
<u>Opinions of Financial Advisors</u>	10
<u>Special Meeting of Nanogen Stockholders</u>	10
<u>Special Meeting of Epoch Stockholders</u>	10
<u>Required Stockholder Approvals for the Merger</u>	11
<u>Overview of the Merger Agreement and Ancillary Agreements</u>	11
<u>Interests of Epoch Directors and Executive Officers in the Merger</u>	12
<u>Risk Factors</u>	12
<u>Restrictions on the Ability to Sell Nanogen Stock</u>	12
<u>Regulatory Approvals</u>	13
<u>Appraisal Rights</u>	13
<u>Material United States Federal Income Tax Consequences</u>	13
<u>Summary Selected Historical Financial Data for Nanogen</u>	14
<u>Summary Selected Historical Financial Data for Epoch</u>	15
<u>Summary Selected Unaudited Pro Forma Condensed Combined Consolidated Financial Data</u>	16
<u>Comparative Per Share Information</u>	17
<u>Comparative Per Share Market Price and Dividend Information</u>	18
<u>RISK FACTORS</u>	19
<u>Risks Relating to the Merger</u>	19
<u>Risks Relating to the Combined Company After the Merger</u>	22
<u>Risks Related to Nanogen's Business</u>	24
<u>Risks Related to Epoch's Business</u>	24
<u>SPECIAL MEETING OF NANOGEN STOCKHOLDERS</u>	25
<u>Date, Time and Place of Meeting</u>	25
<u>Record Date; Shares Entitled to Vote; Outstanding Shares</u>	25
<u>Voting by Nanogen Directors and Executive Officers; Voting Agreements</u>	25
<u>Purpose of the Nanogen Special Meeting</u>	25
<u>Quorum; Abstentions; Broker Non-Votes</u>	26
<u>Votes Required</u>	26
<u>Solicitation of Proxies</u>	26
<u>Voting of Proxies</u>	27
<u>Revocability of Proxies</u>	27
<u>Recommendation of Nanogen's Board of Directors</u>	27
<u>SPECIAL MEETING OF EPOCH STOCKHOLDERS</u>	28
<u>Date, Time and Place of Meeting</u>	28
<u>Record Date; Shares Entitled to Vote; Outstanding Shares</u>	28
<u>Voting by Epoch Directors and Executive Officers; Voting Agreements</u>	28
<u>Purpose of the Epoch Special Meeting</u>	28
<u>Quorum; Abstentions; Broker Non-Votes</u>	29
<u>Votes Required</u>	29

<u>Solicitation of Proxies</u>	29
<u>Voting of Proxies</u>	29

Table of Contents

	<u>Page</u>
<u>Revocability of Proxies</u>	30
<u>Recommendation of Epoch's Board of Directors</u>	30
<u>THE MERGER AND RELATED TRANSACTIONS</u>	31
<u>Background of the Merger</u>	31
<u>Nanogen's Reasons for the Merger</u>	35
<u>Recommendations of Nanogen's Board of Directors</u>	36
<u>Opinion of Nanogen's Financial Advisor</u>	36
<u>Epoch's Reasons for the Merger</u>	42
<u>Recommendations of Epoch's Board of Directors</u>	44
<u>Opinion of Epoch's Financial Advisor</u>	44
<u>Interests of Epoch Executive Officers and Directors in the Merger</u>	52
<u>Appraisal Rights</u>	54
<u>Material U.S. Federal Income Tax Consequences of the Merger</u>	56
<u>Accounting Treatment of the Merger</u>	59
<u>Restrictions on Sales of Shares by Affiliates</u>	60
<u>Nasdaq National Market Quotation</u>	60
<u>Delisting and Deregistration of Epoch Common Stock After the Merger</u>	60
<u>THE MERGER AGREEMENT</u>	61
<u>The Merger</u>	61
<u>Completion and Effectiveness of the Merger</u>	61
<u>Exchange Ratio and Conversion of Epoch Capital Stock</u>	61
<u>Treatment of Epoch Stock Option Plans and Outstanding Epoch Stock Options and Warrants</u>	62
<u>Fractional Shares</u>	65
<u>Exchange of Epoch Stock Certificates for Nanogen Stock Certificates</u>	65
<u>Representations and Warranties</u>	66
<u>Conduct of Business Before Completion of the Merger</u>	67
<u>Limitation on Epoch's Ability to Consider Other Acquisition Proposals</u>	69
<u>Indemnification and Insurance for Epoch Directors and Officers</u>	70
<u>Conditions to Completion of the Merger</u>	71
<u>Termination of the Merger Agreement</u>	72
<u>Termination Fee; Expenses</u>	74
<u>Amendment and Waiver</u>	74
<u>AGREEMENTS RELATED TO THE MERGER</u>	75
<u>Voting Agreements</u>	75
<u>Nanogen Voting Agreements</u>	76
<u>Epoch Voting Agreements</u>	76
<u>Resales of Nanogen Common Stock by Epoch Affiliates</u>	77
<u>UNAUDITED PRO FORMA CONDENSED COMBINED CONSOLIDATED FINANCIAL STATEMENTS</u>	78
<u>NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED CONSOLIDATED FINANCIAL STATEMENTS</u>	83
<u>COMPARISON OF RIGHTS OF NANOGEN STOCKHOLDERS AND EPOCH STOCKHOLDERS</u>	86
<u>NANOGEN PRINCIPAL STOCKHOLDERS</u>	94
<u>EPOCH PRINCIPAL STOCKHOLDERS</u>	95
<u>EXPERTS</u>	97
<u>LEGAL MATTERS</u>	97

Table of Contents

	<u>Page</u>
<u>DEADLINE FOR STOCKHOLDER PROPOSALS TO BE PRESENTED AT NEXT ANNUAL MEETING</u>	97
<u>WHERE YOU CAN FIND MORE INFORMATION</u>	98
<u>INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE</u>	98
<u>ANNEX A Agreement and Plan of Merger and Reorganization</u>	
<u>ANNEX B Form of Company Voting Agreement</u>	
<u>ANNEX C Form of Parent Voting Agreement</u>	
<u>ANNEX D Opinion of Seven Hills Partners LLC, Nanogen's Financial Advisor</u>	
<u>ANNEX E Opinion of Molecular Securities, Inc., Epoch's Financial Advisor</u>	
<u>ANNEX F Section 262 of the Delaware General Corporation Law</u>	

Table of Contents

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

In this joint proxy statement/prospectus (and in documents that are incorporated by reference), we have made forward-looking statements made in reliance upon the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These statements are based on our estimates and assumptions and are subject to a number of risks and uncertainties. Forward-looking statements include statements about the consummation of the pending merger of Nanogen and Epoch, future financial and operating results of each of our companies and the combined company, and the anticipated benefits of the pending merger (see the following captions: Summary of the Merger, The Merger Nanogen's Reasons for the Merger, The Merger Epoch's Reasons for the Merger, The Merger Opinion of Nanogen's Financial Advisor and The Merger Opinion of Epoch's Financial Advisor). Forward-looking statements also include those preceded or followed by the words anticipates, believes, estimates, expects, hopes, targets or similar expressions. For each of these forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

Forward-looking statements are not guarantees of performance. The future results of the combined company could be affected by subsequent events and could differ materially from those expressed in the forward-looking statements. If future events and actual performance differ from our assumptions, our actual results could vary significantly from the performance projected in the forward-looking statements. Except for ongoing obligations to disclose material information under the federal securities laws, Nanogen and Epoch undertake no obligation to disclose any revisions to any forward-looking statements or to report events or circumstances after the date of this joint proxy statement/prospectus.

You should understand that the following factors, along with the risk factors discussed elsewhere in this joint proxy statement/prospectus, and in the documents that we incorporate by reference, could affect the future results of Nanogen, Epoch or the combined company, and could cause those results to differ materially from those expressed in the forward-looking statements:

Nanogen's ability to successfully integrate and market the Epoch products to provide expected revenue growth and enable it to expand its business in both the genetic and proteomic testing markets;

the combined company's use of cash in operations and its ability to raise additional capital;

whether patents owned and licensed by Nanogen and Epoch will be developed into products;

Nanogen's continued ability to further commercialize its NanoChip® System and whether other products under development by Nanogen and Epoch can be successfully developed and commercialized;

developments in technology by Nanogen, Epoch and their competitors;

demand and acceptance of Nanogen's and Epoch's products and services by clinical labs and research customers;

the success of the combined company in implementing cost-saving programs and initiatives;

the ability of Nanogen and Epoch to obtain regulatory approvals for their products; and

Edgar Filing: NANOGEN INC - Form S-4/A

other factors noted in this joint proxy statement/prospectus.

Before making your decision regarding the merger, you should be aware that the occurrence of the events described above, described under Risk Factors beginning on page 19 of this joint proxy statement/prospectus and elsewhere in this joint proxy statement/prospectus could adversely affect the business, operating results or financial condition contemplated by such forward looking statements.

Table of Contents

QUESTIONS & ANSWERS ABOUT THE MERGER

Q: Why am I receiving this joint proxy statement/prospectus?

A: Nanogen and Epoch have agreed to combine under the terms of a merger agreement that is described in this joint proxy statement/prospectus. A copy of the merger agreement is attached to this joint proxy statement/prospectus as Annex A.

In order for the merger to be completed, Nanogen stockholders must vote to approve the issuance of shares of Nanogen common stock in connection with the merger and approve an amendment to Nanogen's certificate of incorporation to increase its authorized shares of common stock. Epoch stockholders must vote to adopt the merger agreement and approve the merger.

Nanogen and Epoch will hold separate meetings of their respective stockholders to seek these approvals. This joint proxy statement/prospectus contains important information about the merger and the special meetings of Nanogen stockholders and Epoch stockholders. You should read it carefully. The enclosed voting materials allow you to vote your shares of Nanogen common stock or Epoch common stock without attending your stockholder meeting.

Your vote is important. We encourage you to vote as soon as possible.

For specific information regarding the merger agreement, see "The Merger Agreement" beginning on page 19 of this joint proxy statement/prospectus.

Q: Why are Epoch and Nanogen proposing the merger?

A: Nanogen and Epoch believe that the merger will provide substantial strategic and financial benefits to the stockholders of both companies. Nanogen is seeking to grow its business in both the genetic and proteomic testing markets. Consistent with that objective, Nanogen has been focused on acquiring products and technologies that can have an immediate impact on revenues. While Epoch has an established market presence in genomic testing, Epoch's Board of Directors believes that growth of Epoch's business will accelerate with access to Nanogen's established marketing and sales infrastructure and access to Nanogen's greater capital resources. The merger complements both companies' product focus. Epoch provides immediate revenue growth to Nanogen and Nanogen provides an existing sales force, a customer support unit and a cash and short-term investments position of approximately \$60 million as of June 30, 2004.

Q: What will happen in the merger?

A: The businesses of Nanogen and Epoch will be combined in a stock-for-stock transaction. At the closing, Empire Acquisition Corp., a newly formed and wholly owned subsidiary of Nanogen, will merge with and into Epoch, with Epoch surviving the merger as a wholly owned

Edgar Filing: NANOGEN INC - Form S-4/A

subsidiary of Nanogen. In exchange for their shares of Epoch common stock, the former stockholders of Epoch will receive shares of Nanogen common stock.

Q: What will a stockholder receive if the merger occurs?

A: Nanogen stockholders:

After the merger, Nanogen stockholders will continue to hold the shares of Nanogen common stock that they own immediately before the merger. However, those shares will represent a smaller proportion of the total outstanding shares of Nanogen. As a result of the merger, depending on the exchange ratio, the Nanogen stockholders prior to the merger will own between 71.3% and 64.7% of the common stock of the combined company following the merger, computed on a fully-diluted basis, taking into account all outstanding Nanogen and Epoch common stock, options and warrants.

Table of Contents

A: Epoch stockholders:

Under terms of the merger, Epoch stockholders will receive, in exchange for each share of Epoch common stock, a number of shares of Nanogen common stock equal to \$2.00 divided by the average closing price of Nanogen common stock during a period prior to closing, so long as the average closing price of Nanogen common stock during the period is within the range of \$3.16 to \$4.28. If the average closing price of Nanogen common stock is above the range, each share of Epoch common stock will be converted into the right to receive a fixed number of shares of Nanogen common stock equal to 0.4673 per share of Epoch common stock. If the average closing price of Nanogen common stock is below the range, each share of Epoch common stock will be converted into the right to receive a fixed number of shares of Nanogen common stock equal to 0.6329 per share of Epoch common stock. The period for determining the average closing price of Nanogen common stock will be the 20 consecutive trading days ending on and including the third trading day prior to the merger.

Q: How was the merger consideration determined?

A: The exchange ratio was determined in negotiations by the two companies and reflects the relative recent market prices of the two companies common stock, the number of shares outstanding and other factors that the boards of directors considered relevant.

Q: How many shares of Nanogen common stock will be issued under the terms of the merger agreement?

A: The actual number of shares of Nanogen common stock to be issued to the Epoch stockholders in consummation of the merger will depend on the exchange ratio at which each share of Epoch common stock is converted into a fraction of a share of Nanogen common stock. The exchange ratio could be as low as 0.4673 of a share of Nanogen common stock for each share of Epoch common stock or as high as 0.6329 of a share of Nanogen common stock for each share of Epoch common stock, depending on the average closing price of Nanogen common stock during the twenty consecutive trading days ending on and including the third trading day prior to the merger. Accordingly, based on Epoch's capitalization as of the record date, as many as 18,182,347 shares of Nanogen common stock could be issued to the Epoch stockholders in consummation of the merger, or as few as 13,424,886 shares of Nanogen common stock could be issued. In addition, Nanogen will, pursuant to the merger agreement, assume the outstanding Epoch stock options and warrants which will thereby be converted into options and warrants to acquire shares of Nanogen common stock based on the exchange ratio. The total number of shares of Nanogen common stock issuable under those assumed options and warrants could range from a high of 2,235,558 shares to a low of 1,650,617 shares based on the exchange ratio. Nanogen will also assume the remaining unallocated share reserve under the Epoch 2003 Stock Incentive Plan, including the automatic annual share increase to that reserve which is to occur at the start of each calendar year through and including the 2012 calendar year. The total number of Nanogen shares which may become issuable pursuant to that remaining share reserve (excluding the automatic annual increase to that reserve) may range from a high of 751,877 shares to a low of 555,146 shares based on the exchange ratio. An additional number of shares of Nanogen common stock ranging from 350,475 to 474,675 shares may become issuable under the Plan each year pursuant to automatic annual increases to the share reserve on the first day of each calendar year beginning with the 2005 calendar year and continuing through and including the 2012 calendar year, depending on the actual exchange ratio.

Q: When and where will the stockholder meetings be held?

A: *Nanogen special meeting:*

Edgar Filing: NANOGEN INC - Form S-4/A

The Nanogen special meeting will take place at the Hilton La Jolla Torrey Pines located at 10950 N. Torrey Pines Road, La Jolla, California 92037 at 10:00 a.m., local time, on Wednesday, December 8, 2004.

A: Epoch special meeting:

The Epoch special meeting will take place at 21720 23rd Drive SE, Suite 150, Bothell, Washington 98021 at 10:00 a.m., local time, on Wednesday, December 8, 2004.

Table of Contents

Q: What vote of Nanogen stockholders is required to approve the issuance of shares of Nanogen common stock pursuant to the merger agreement? What vote of the Nanogen stockholders is required to approve the amendment to Nanogen's certificate of incorporation?

A: In order for the Nanogen stockholders to take any action at the Nanogen special meeting, holders of a majority of the shares of Nanogen common stock outstanding as of the record date for the Nanogen stockholder meeting must be present in person or represented by proxy. Approval of the proposal to issue shares of Nanogen common stock pursuant to the merger agreement requires the affirmative vote of a majority of the shares present or represented by proxy and entitled to vote on the proposal. Approval of the amendment to Nanogen's certificate of incorporation to increase the number of shares of common stock available for issuance requires the affirmative vote of holders of a majority of the outstanding shares of Nanogen common stock entitled to vote on the proposal. Directors and executive officers of Nanogen, holding approximately 2.7% of the shares of Nanogen common stock outstanding as of the record date, have agreed to vote their shares in favor of the proposal to issue shares of Nanogen common stock under the merger agreement and the proposal to amend Nanogen's certificate of incorporation.

Q: What vote of Epoch stockholders is required to adopt the merger agreement and approve the merger?

A: In order for the Epoch stockholders to take any action at the Epoch special meeting, holders of a majority of the shares of Epoch common stock outstanding as of the record date for the Epoch stockholder meeting must be present in person or represented by proxy. Approval of the proposal to adopt the merger agreement and approve the merger requires the affirmative vote of the holders of a majority of the outstanding shares of Epoch common stock entitled to vote on the proposal. Directors and executive officers of Epoch and their affiliates, holding approximately 6.2% of the shares of Epoch common stock outstanding as of the record date have agreed to vote their shares in favor of the proposal to adopt the merger agreement and approve the merger.

Q: How does the board of directors of Nanogen and the board of directors of Epoch recommend that I vote?

A: Nanogen Stockholders:

Nanogen's board of directors unanimously recommends that Nanogen stockholders vote **FOR** the proposal to approve the issuance of shares of Nanogen common stock under the merger agreement and **FOR** the proposal to approve the amendment to Nanogen's certificate of incorporation. For a more complete description of the recommendation of Nanogen's board of directors, see **The Merger Recommendations of Nanogen's Board of Directors** beginning on page 36.

A: Epoch Stockholders:

Epoch's board of directors unanimously recommends that Epoch stockholders vote **FOR** the proposal to adopt the merger agreement and approve the merger. For a more complete description of the recommendation of Epoch's board of directors, see **The Merger Recommendations of Epoch's Board of Directors** beginning on page 44.

Q: What do I need to do now?

A: You should carefully read and consider the information contained in this joint proxy statement/ prospectus, including the annexes, and decide how you wish to vote your shares.

Q: How do I cast my vote?

A: There are several ways your shares can be represented at your stockholder meeting. You can attend your stockholder meeting in person or you can indicate on the enclosed proxy card how you want to vote and return it in the accompanying pre-addressed postage paid envelope. It is important that you sign, date and return each

Table of Contents

proxy card and voting instruction card you receive as soon as possible. You may choose to vote in person even if you have previously sent in your proxy card. If you are a holder of record, you may vote in person at your stockholder meeting or by granting a proxy for your stockholder meeting. You can grant your proxy by completing, signing, dating and returning the enclosed proxy card in the accompanying pre-addressed postage paid envelope.

Q: If my broker holds my shares in street name, will my broker vote my shares?

A: If you hold shares in a stock brokerage account or if your shares are held by a bank or nominee (in street name), you must provide the record holder of your shares with instructions on how to vote your shares. You should follow the directions provided by your broker or nominee regarding how to instruct your broker to vote your shares.

If you hold Nanogen common stock and do not instruct your broker how to vote your shares, your shares will not be voted at the Nanogen stockholder meeting and, assuming a quorum is present, your failure to vote will have no effect on the outcome to approve the share issuance by Nanogen but will be equivalent to voting *against* the proposal to amend Nanogen's certificate of incorporation. If you hold Epoch common stock and do not instruct your broker how to vote your shares, it will be equivalent to voting *against* the proposal being made at your stockholder meeting.

Q: What if I do not vote?

A: If you are a Nanogen stockholder and you do not submit a proxy or vote at your special meeting, your shares will not be counted as present for the purpose of determining a quorum and will have no effect on the outcome of the share issuance proposal or the Nanogen adjournment proposal but will have the same effect as a vote *against* the proposal to amend Nanogen's certificate of incorporation. If you submit a proxy and affirmatively elect to abstain from voting, your proxy will be counted as present for the purposes of determining the presence of a quorum but will not be voted at the special meeting. As a result, your abstention will have the same effect as a vote *against* the share issuance proposal, the proposal to amend Nanogen's certificate of incorporation and the Nanogen adjournment proposal.

If you are an Epoch stockholder and you do not submit a proxy or attend your special meeting, it will have the same effect as a vote *against* adoption of the merger agreement and no effect on the outcome of the Epoch adjournment proposal, and your shares will not be counted as present for purposes of determining a quorum. If you are an Epoch stockholder and you submit a proxy and affirmatively elect to abstain from voting, your proxy will be counted as present for the purposes of determining the presence of a quorum, but will not be voted at the special meeting. As a result, your abstention will have the same effect as a vote *against* adoption of the merger agreement proposal and the Epoch adjournment proposal.

Q: Can I change my vote after I have delivered my proxy?

A: Yes. You can change your vote at any time before your proxy is voted at your stockholder meeting. You can do this one of three ways:

Edgar Filing: NANOGEN INC - Form S-4/A

you can send a written notice of revocation;

you can grant a new, valid proxy; or

if you are a holder of record, you can attend your stockholder meeting and vote in person; however, your attendance alone will not revoke your proxy.

If you choose either of the first two methods, you must submit your notice of revocation or your new proxy to the corporate secretary of Nanogen or Epoch, as appropriate, before the applicable stockholder meeting. However, if your shares are held in a street name at a brokerage firm or bank, you should contact your brokerage firm or bank to change your vote.

Table of Contents

Q: What if I do not indicate how to vote on my proxy card?

A: If you sign, date and mail your proxy card without indicating how you want to vote, your proxy will be counted as a vote **FOR** the proposals.

Q: Should I send in my stock certificates now?

A: No. After the merger is completed, if you are an Epoch stockholder, you will receive written instructions from the exchange agent on how to exchange your Epoch stock certificates for certificates representing shares of Nanogen common stock. *Please do not send in your stock certificates with your proxy.* If you are a Nanogen stockholder, you will continue to own your shares and will not need to exchange your stock certificates.

Q: Are Epoch stockholders entitled to appraisal rights in the merger?

A: Yes. If you are a holder of Epoch common stock and you comply with the applicable requirements of the Delaware General Corporation Law, you are entitled to appraisal rights under the Delaware General Corporation Law in connection with the merger. If you are a Nanogen stockholder, you will not be relinquishing any of your shares in the merger and thus will not be entitled to any appraisal rights. Please see **The Merger Appraisal Rights** beginning on page 54.

Q: What are the tax effects in the merger?

A: Nanogen and Epoch intend that the merger qualify as a reorganization under Section 368(a) of the Internal Revenue Code. Assuming the merger so qualifies, then, in general, an Epoch stockholder will not recognize gain or loss for federal income tax purposes when the stockholder exchanges Epoch common stock for Nanogen common stock in the merger, except that an Epoch stockholder will recognize gain or loss with respect to any cash received in lieu of a fractional share of Nanogen common stock in the merger or any cash received as a result exercising appraisal rights; and no gain or loss will be recognized by Nanogen, Empire Acquisition Corp., or Epoch as a result of the merger. Please see **The Merger Material U.S. Federal Income Tax Consequences** beginning on page 56.

Q: When do you expect the merger to be completed?

A: We are working towards completing the merger as quickly as practicable after the companies' respective special meetings and currently expect to complete the merger by the end of 2004. However, we cannot predict the exact timing of the completion of the merger.

Q: Who can help answer my questions?

Edgar Filing: NANOGEN INC - Form S-4/A

A: If you have additional questions about the matters described in this joint proxy statement/prospectus or how to submit your proxy, or if you need additional copies of this joint proxy statement/prospectus, you should contact:

For Nanogen stockholders:

Georgeson Shareholder Communications

(800) 459-3121

For Epoch Stockholders:

MacKenzie Partners, Inc.

(800) 322-2885

You may also obtain additional information about Nanogen and Epoch from documents filed with the Securities and Exchange Commission by following the instructions in the section entitled **Where You Can Find More Information** on page 98 of this joint proxy statement/prospectus.

Table of Contents

SUMMARY OF THE JOINT PROXY STATEMENT/PROSPECTUS

*This summary highlights selected information from this joint proxy statement/prospectus and may not contain all of the information that is important to you. Nanogen and Epoch encourage you to read carefully the remainder of this joint proxy statement/prospectus, including the attached annexes and the other documents to which we have referred you, because this section does not provide all the information that might be important to you with respect to the merger and the other matters being considered at your stockholder meeting. See also *Where You Can Find More Information* on page 98 of this joint proxy statement/prospectus. We have included references to other portions of this joint proxy statement/prospectus to direct you to a more complete description of the topics presented in this summary.*

The Companies

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

Nanogen was founded on the vision of integrating multiple scientific disciplines to develop diagnostic products. Through advances in genomic and pharmaceutical research, Nanogen believed that diagnostics and therapeutics would become closely linked. Further, Nanogen believed that by using electronics, Nanogen could develop a highly accurate and flexible set of products that would facilitate the analysis of complex genetic relationships and the correlation to disease and therapies. This vision in turn led to the definition of Nanogen's mission: to become a leading provider of high quality innovative advanced diagnostic products and services to patients, providers and pharmaceutical companies.

Nanogen currently develops and commercializes molecular diagnostics products and tests for the gene-based testing market for sale primarily in the United States, Europe and the Pacific Rim. By integrating microelectronics and molecular biology into a core proprietary technology platform, Nanogen seeks to establish the unique, open-architecture design of its primary products, the NanoChip[®] Molecular Biology Workstation and the NanoChip[®] Cartridge (collectively, the NanoChip[®] System), as a standard platform for molecular identification and analysis. In furtherance of its mission to become a leading supplier of advanced diagnostics testing products, Nanogen is developing a broad menu of Analyte Specific Reagents (ASRs) and other commercial applications for the NanoChip[®] System. Nanogen continually conducts research and development by itself and with third parties, to improve the NanoChip[®] System and to extend its technology to other applications such as biodefense, forensics, drug discovery and pharmacogenomics. Nanogen has several ASRs and other applications of its proprietary technology under development and is developing a pipeline of point-of-care tests, including tests for congestive heart failure, stroke and traumatic brain injury.

Nanogen was originally incorporated in California and reincorporated in Delaware in 1997. As of June 30, 2004, Nanogen employed more than 160 people. References herein to "Nanogen" refer to Nanogen, Inc. and its subsidiaries. Nanogen's headquarters are located at 10398 Pacific Center Court, San Diego, CA 92121, and Nanogen's telephone number is (858) 410-4600. Additional information about Nanogen is available on Nanogen's website at www.nanogen.com, which does not constitute a part of this joint proxy statement/prospectus.

Epoch Biosciences, Inc.

21720 23rd Drive SE

Suite 150

Bothell, WA 98021

Epoch is a biotechnology company developing technologies and products to help scientists, clinicians, and physicians around the world perform genetic research to improve our lives and our environment. Genetic analysis has become a pervasive activity in academic, biopharmaceutical, clinical, agricultural, veterinary and forensic

Table of Contents

laboratories. Epoch's technologies facilitate rapid, accurate and cost-effective genetic analysis at the scale necessary to generate the massive amounts of genetic information being studied today.

Epoch's technologies are useful in genetic research, drug development, prenatal testing, clinical diagnostics, including infectious disease, oncology, genetic disease and population screening to assess our risk of disease or to predict our response to drugs. Epoch's products also have application in forensics, food testing, and environmental testing, including bio-warfare and bioterrorism. In 2003, through its efforts to apply its MGB Eclipse Probe Systems to the clinical diagnostics market, Epoch identified several analyte specific reagents (ASRs) that have high value for routine clinical use in the clinical reference laboratory and related hospital based laboratory market. Epoch began implementing FDA compliant manufacturing processes for these new products in the fourth quarter of 2003, and launched its initial clinical diagnostic products in July 2004.

Epoch Biosciences, Inc. was incorporated in Delaware on August 15, 1985. As of June 30, 2004, Epoch employed more than 40 people. References in this document to "Epoch" refer to Epoch Biosciences, Inc. Epoch's headquarters are located at 21720 23rd Drive SE, Suite 150, Bothell, WA 98021 and Epoch's telephone number is (425) 482-5555. Additional information about Epoch is available on Epoch's website at www.epochbio.com, which does not constitute a part of this joint proxy statement/prospectus.

Empire Acquisition Corp.

Empire Acquisition Corp. is a Delaware corporation and a wholly owned subsidiary of Nanogen. Empire Acquisition Corp. was organized solely for the purpose of entering into the merger agreement with Epoch and completing the merger. It has not conducted any business operations and will not do so prior to the completion of the merger. If the merger is completed, Empire Acquisition Corp. will cease to exist following its merger with and into Epoch.

Summary of the Merger (see page 61)

Nanogen and Epoch have agreed to the combination of Nanogen and Epoch under the terms of the merger agreement described in this joint proxy statement/prospectus. We have attached the merger agreement as Annex A to this joint proxy statement/prospectus. We encourage you to read the merger agreement carefully because it is the legal document that governs the merger and related matters.

Under the terms of the merger agreement, Empire Acquisition Corp., a newly formed and wholly owned subsidiary of Nanogen, will merge with and into Epoch and the separate corporate existence of Empire Acquisition Corp. will cease. Epoch will be the surviving corporation in the merger and will continue as a wholly owned subsidiary of Nanogen. Stockholders of Nanogen will continue to own their existing shares of Nanogen common stock.

The merger is subject to, among other things, the approval by the Nanogen stockholders of the issuance of Nanogen common stock pursuant to the merger agreement and the approval of an amendment to Nanogen's certificate of incorporation to increase the number of shares of Nanogen common stock available for issuance, as well as the adoption by the Epoch stockholders of the merger agreement and approval of the merger. The merger is also subject to other customary closing conditions described in this joint proxy statement/proposals. We expect the merger to be completed by the end of 2004.

Exchange Ratio and Conversion of Epoch Capital Stock (see page 61)

Upon completion of the merger, the capital stock and other securities of Epoch will be treated as follows:

Epoch stockholders will receive, in exchange for each share of Epoch common stock, a number of shares of Nanogen common stock equal to \$2.00 divided by the average closing price of Nanogen

Table of Contents

common stock during a period prior to closing, so long as the average closing price of Nanogen common stock during the period is within the range of \$3.16 to \$4.28. If the average closing price of Nanogen common stock is above the range, each share of Epoch common stock will be converted into the right to receive a fixed number of shares of Nanogen common stock equal to 0.4673 per share of Epoch common stock. If the average closing price of Nanogen common stock is below the range, each share of Epoch common stock will be converted into the right to receive a fixed number of shares of Nanogen common stock equal to 0.6329 per share of Epoch common stock. The period for determining the average closing price of Nanogen common stock will be the 20 consecutive trading days ending on and including the third trading day prior to the merger.

Instead of fractional shares, Epoch stockholders will receive cash.

Treatment of Epoch Stock Option Plans and Outstanding Epoch Stock Options and Warrants (see page 62)

Each outstanding option to purchase shares of Epoch common stock and each outstanding warrant to purchase shares of Epoch common stock will be assumed by Nanogen and will convert into an option or warrant to purchase shares of Nanogen common stock. Nanogen will adjust the number of shares issuable upon exercise and the exercise prices to reflect the exchange ratio. Certain Epoch stock options contain provisions that provide for the accelerated vesting of such options and for an extended period in which such options are to remain outstanding, in both cases in the event the optionee is terminated under certain circumstances following the merger.

Nanogen will assume Epoch's 1991 and 1993 Incentive Stock Option, Nonqualified Stock Option and Restricted Stock Plans and the 2003 Stock Incentive Plan including the options thereunder and including the remaining unallocated balance of Epoch common stock available for issuance under the 2003 Plan. That unallocated balance will include, to the extent permissible under applicable law and the rules of the Nasdaq Stock Market, Inc., each of the automatic annual increases to the share reserve under the 2003 Plan which are to occur pursuant to the express provisions of that plan.

Recommendations of Nanogen's Board of Directors (see page 36)

Nanogen's board of directors believes that the merger agreement and the merger are advisable and in the best interests of Nanogen and its stockholders and that the issuance of the Nanogen common stock in the merger is fair to Nanogen and the Nanogen stockholders. Nanogen's board of directors unanimously recommends that Nanogen stockholders vote **FOR** the proposal to issue shares of Nanogen common stock under the merger agreement. Nanogen's board of directors also unanimously recommends that Nanogen stockholders vote **FOR** the proposal to amend Nanogen's certificate of incorporation to increase the number of shares of Nanogen common stock authorized for issuance from 50,000,000 to 135,000,000.

For the factors considered by Nanogen's board of directors in reaching its decision to approve the merger and issuance of its common stock in connection with the merger and recommend to its stockholders to approve the stock issuance and amendment to the certificate of incorporation, see *The Merger* Nanogen's Reasons for the Merger beginning on page 35 and *The Merger* Recommendations of Nanogen's Board of Directors beginning on page 36 of this joint proxy statement/prospectus.

Recommendations of Epoch's Board of Directors (see page 44)

Edgar Filing: NANOGEN INC - Form S-4/A

Epoch's board of directors has determined that the merger agreement, the merger and the other transactions contemplated by the merger agreement are advisable and it is in the best interests of Epoch and its stockholders that Epoch enter into the merger agreement and consummate the merger, and the merger agreement is fair to Epoch and its stockholders. Epoch's board of directors unanimously recommends that Epoch stockholders vote FOR the proposal to adopt the merger agreement and approve the merger.

Table of Contents

For the factors considered by Epoch's board of directors in reaching its decision to approve and adopt the merger agreement and the merger, see "The Merger" Epoch's Reasons for the Merger beginning on page 42 and "The Merger" Recommendations of Epoch's Board of Directors beginning on page 44 of this joint proxy statement/prospectus.

Opinions of Financial Advisors (see pages 36 and 44)

Opinion of Nanogen's Financial Advisor

Seven Hills Partners LLC, which is sometimes referred to in this joint proxy statement/prospectus as "Seven Hills," rendered its oral opinion, which was subsequently confirmed in writing, to the board of directors of Nanogen that, as of the date of the written fairness opinion, the exchange ratio pursuant to the merger agreement was fair from a financial point of view to Nanogen. The full text of the written opinion of Seven Hills, dated September 7, 2004, which sets forth the assumptions made, procedures followed and matters considered in connection with the opinion, is attached as Annex D hereto. **Seven Hills provided its opinion for the information and assistance of Nanogen's board of directors. The opinion does not constitute a recommendation to any stockholder as to how any holder of shares of Nanogen common stock should vote with respect to the merger or any other matter.**

Opinion of Epoch's Financial Advisor

Molecular Securities, Inc., which is sometimes referred to in this joint proxy statement/prospectus as "Molecular Securities," rendered its oral opinion, which was subsequently confirmed in writing, to the board of directors of Epoch that, as of the date of the written fairness opinion, the merger consideration to be received by holders of Epoch common stock pursuant to the merger agreement was fair from a financial point of view to such holders. The full text of the written opinion of Molecular Securities, dated September 7, 2004, which sets forth the assumptions made, procedures followed, matters considered and limitations on the review undertaken in connection with the opinion, is attached as Annex E to, and is incorporated by reference in, this joint proxy statement/prospectus. **The opinion of Molecular Securities does not constitute a recommendation as to how the stockholders of Epoch should vote at the Epoch special meeting in connection with the merger agreement or any other matter related thereto. You should carefully read the opinion in its entirety.**

Special Meeting of Nanogen Stockholders (see page 25)

The special meeting of Nanogen stockholders, which is referred to as the Nanogen special meeting, will be held at the Hilton La Jolla Torrey Pines located at 10950 N. Torrey Pines Road, La Jolla, California 92037 at 10:00 a.m., local time, on Wednesday, December 8, 2004. At the Nanogen special meeting, Nanogen stockholders will be asked to vote on the proposal to approve the issuance of Nanogen common stock in connection with the merger and the proposal to amend Nanogen's certificate of incorporation and to approve an adjournment of the special meeting, if necessary, to solicit additional proxies if there are not sufficient votes to approve the proposals.

Special Meeting of Epoch Stockholders (see page 28)

Edgar Filing: NANOGEN INC - Form S-4/A

The special meeting of the Epoch stockholders, which is referred to as the Epoch special meeting, will be held at 21720 23rd Drive S.E., Suite 150, Bothell, Washington 98021 at 10:00 a.m., local time, on Wednesday, December 8, 2004. At the Epoch special meeting, Epoch stockholders will be asked to vote on a proposal to adopt the merger agreement and approve the merger and to approve an adjournment of the special meeting, if necessary, to solicit additional proxies if there are not sufficient votes to approve the merger proposal.

Table of Contents

Required Stockholder Approvals for the Merger (see pages 26 and 29)

For Nanogen Stockholders:

The affirmative vote of the holders of at least a majority of the shares cast at the Nanogen special meeting, where a quorum is present, is required to approve the issuance of Nanogen common stock pursuant to the merger agreement. Such vote will also constitute in effect a vote in favor of the issuance of shares of Nanogen common stock pursuant to the assumed Epoch 2003 Stock Incentive Plan including the issuance of shares of Nanogen common stock added to the plan pursuant to its automatic annual increase feature. The affirmative vote of the holders of at least a majority of the outstanding shares of Nanogen common stock entitled to vote at the Nanogen special meeting is required to approve the amendment to the certificate of incorporation. Directors and executive officers of Nanogen, holding approximately 2.7% of the shares of Nanogen common stock outstanding as of the record date, have agreed to vote their shares in favor of the proposal to issue shares of Nanogen common stock under the merger agreement and the proposal to amend Nanogen's certificate of incorporation. **The merger will not be completed unless Nanogen stockholders approve the share issuance and the amendment to Nanogen's certificate of incorporation.**

For Epoch Stockholders:

Adoption of the merger agreement and approval of the merger require the affirmative vote of the holders of at least a majority of the outstanding shares of Epoch common stock entitled to vote at the Epoch special meeting. Directors and executive officers of Epoch and their affiliates, holding approximately 6.2% of the shares of Epoch common stock outstanding as of the record date, have agreed to vote their shares in favor of the proposal to adopt the merger agreement and approve the merger. **The merger will not be completed unless Epoch stockholders adopt the merger agreement and approve the merger.**

Overview of the Merger Agreement (see page 61)

Conditions to Completion of the Merger (see page 71)

Completion of the merger depends upon the satisfaction or waiver, where permitted by the merger agreement, of a number of conditions, including the following (some of which are conditions to the closing obligations of both parties, and others of which are conditions to the closing obligations of only one party):

the SEC declaring effective the registration statement filed on Form S-4, of which this joint proxy statement/prospectus is a part;

adoption of the merger agreement and approval of the merger by Epoch stockholders;

approval by Nanogen stockholders of the issuance of shares of Nanogen common stock in connection with the merger;

Edgar Filing: NANOGEN INC - Form S-4/A

absence of any order, statute or regulation prohibiting the merger;

authorization by Nasdaq of the listing on the Nasdaq National Market of the shares of Nanogen common stock to be issued in the merger;

receipt of opinions of counsel to Epoch and Nanogen that the merger will qualify as a tax-free reorganization;

the representations and warranties in the merger agreement made by each party being true and correct (without regard to the terms material or material adverse effect) as of the closing date of the merger such that, in aggregate, the effect of any inaccuracies in such representation and warranties would not have a material adverse effect on that party (except that any representations or warranties expressly made as of a specific date, would be measured as of such date);

Table of Contents

each party having complied with all of its covenants and obligations under the merger agreement in all material respects; and

neither party having suffered a material adverse effect since the date of the merger agreement.

For the definition of "material adverse effect" see "The Merger Agreement-Conditions to Completion of the Merger" on page 72.

Restrictions on Competing Transactions (see page 69)

The merger agreement contains restrictions on the ability of Epoch to solicit or engage in discussions or negotiations with a third party with respect to a proposal to acquire a significant interest in Epoch, with certain exceptions.

Termination of the Merger Agreement (see page 72)

Nanogen and Epoch can mutually agree to terminate the merger agreement without completing the merger. In addition, Nanogen and Epoch can each terminate the merger agreement under the circumstances set forth in the merger agreement and described below in this joint proxy statement/prospectus.

Termination Fee and Expenses (see page 74)

The merger agreement provides that, under specified circumstances, Epoch may be required to pay Nanogen a termination fee equal to \$1,750,000 and, under specified circumstances, Nanogen may be required to pay Epoch a termination fee of \$1,750,000.

Interests of Epoch Executive Officers and Directors in the Merger (see page 52)

The executive officers and directors of Epoch have interests in the merger that are different from, or in addition to, the interests of stockholders generally. Several executive officers of Epoch, including an officer who is also a director, have employment agreements that may entitle them to severance payments, the accelerated vesting of outstanding stock options and other benefits upon the officer's termination under certain circumstances following the completion of the merger. The Epoch non-employee directors hold stock options that will become fully vested upon consummation of the merger. The boards of directors of Nanogen and Epoch were aware of and discussed and considered these interests when they approved the merger.

Risk Factors (see page 19)

Edgar Filing: NANOGEN INC - Form S-4/A

You should consider carefully the factors discussed in the section entitled "Risk Factors" in this joint proxy statement/prospectus in evaluating whether to adopt the merger agreement and the transactions it contemplates. These risk factors should be considered along with any additional risk factors in documents incorporated by reference in this joint proxy statement/prospectus and any other information included or incorporated by reference herein.

Restrictions on Sales of Shares by Affiliates (see page 60)

All shares of Nanogen common stock received by Epoch stockholders in connection with the merger will be freely transferable unless the holder is considered an affiliate of Epoch under the Securities Act of 1933 (the "Securities Act"). Shares of Nanogen common stock received by affiliates may only be sold pursuant to Rule 145 of the Securities Act or pursuant to a registration statement or an exemption from the requirements of the Securities Act.

Table of Contents

Regulatory Approvals

We are not aware of any material governmental or regulatory approval required for completion of the merger, other than the effectiveness of the registration statement of which this joint proxy/prospectus is a part and compliance with applicable provisions of Delaware law.

Appraisal Rights (see page 54)

Nanogen stockholders are not entitled to dissenters' or appraisal rights in connection with the merger.

Holders of Epoch common stock who comply with the applicable requirements of the Delaware General Corporation Law are entitled to exercise appraisal rights under the Delaware General Corporation Law in connection with the merger.

Material United States Federal Income Tax Consequences (see page 56)

Nanogen and Epoch intend that the merger will qualify as a reorganization under Section 368(a) of the Internal Revenue Code (the "Code"). If the merger qualifies as a reorganization, Epoch stockholders will generally not recognize gain or loss for United States federal income tax purposes upon the receipt of Nanogen common stock in the merger; except that an Epoch stockholder will recognize gain or loss with respect to any cash received in lieu of a fractional share of Nanogen common stock in the merger or any cash received as a result of exercising appraisal rights. Nanogen stockholders will not exchange their Nanogen common stock in the merger and accordingly will not recognize any taxable gain or loss as a result of the merger. It is a condition to completion of the merger that Nanogen and Epoch each receive a legal opinion from their respective counsel that the merger will constitute a reorganization within the meaning of the Code. In the event that such counsel does not render this opinion, this condition shall be deemed to be satisfied if the other party's counsel delivers the opinion to both Nanogen and Epoch.

Tax matters are very complicated and the tax consequences of the merger to you, if you are an Epoch stockholder, will depend upon the facts of your situation. You should consult your own tax advisors for a full understanding of the tax consequences of the merger to you.

Table of Contents**Summary Selected Historical Financial Data for Nanogen**

The following table sets forth selected historical financial data for Nanogen. The following data at and for the years ended December 31, 2003, 2002, 2001, 2000 and 1999, have been derived from Nanogen's audited consolidated financial statements. Nanogen's selected unaudited interim financial data included in this joint proxy statement/prospectus were derived from its books and records and, in the opinion of management, contains all adjustments, consisting only of normal recurring adjustments (except for a charge of \$1.5 million for excess and obsolete inventory, and purchase accounting adjustments related to Nanogen's acquisition of SynX Pharma Inc., including a \$3.8 million charge to in-process research and development), necessary for a fair presentation of Nanogen's results of operations for such periods. The results of operations for any interim period are not necessarily indicative of the results of operations to be expected for the full year.

You should read the following information together with Nanogen's consolidated financial statements, the notes related thereto and the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" contained in Nanogen's annual reports and other financial information included in Nanogen's filings with the SEC, which are incorporated by reference in this joint proxy statement/prospectus. See "Where You Can Find More Information" beginning on page 98 and "Incorporation of Certain Documents by Reference" beginning on page 98.

CONSOLIDATED STATEMENTS OF OPERATIONS**(In thousands, except per share amounts)**

	Six Months Ended		Year Ended December 31,				
	June 30,	June 30,					
	2004	2003	2003	2002	2001	2000	1999
REVENUES:							
Product sales	\$ 1,609	\$ 890	\$ 2,762	\$ 3,384	\$ 2,245	\$ 919	\$
License fees	190		84	10,844			
Sponsored research	500	750	1,500	1,355	7,457	8,457	5,688
Contracts and grants	978	1,254	2,367	1,596	1,467	1,856	2,431
Total revenues	3,277	2,894	6,713	17,179	11,169	11,232	8,119
COSTS AND EXPENSES:							
Cost of product sales	2,854	798	3,176	2,466	1,606	599	
Research and development	8,388	9,193	19,038	21,020	18,597	18,905	25,284
Selling, general and administrative	7,809	8,196	15,114	20,540	22,032	15,267	9,097
Litigation and settlement of patent matter			205	(165)	6,900		
Charge for acquired in-process research and development	3,758						
Total costs and expenses	22,809	18,187	37,533	43,861	49,135	34,771	34,381
Loss from operations	(19,532)	(15,293)	(30,820)	(26,682)	(37,966)	(23,539)	(26,262)
Interest income, net	231	308	489	2,119	4,390	5,257	2,059
Other income (loss)	(167)	27	(157)	(36)	52		(996)
Gain (loss) on sale of investments and fixed assets		(3,721)	(1,925)	197	116		
Gain (loss) on foreign currency translation	1,204						
Minority interest in loss of consolidated subsidiary		1,106	1,817	2,156	907		

Edgar Filing: NANOGEN INC - Form S-4/A

Net loss	\$ (18,264)	\$ (17,573)	\$ (30,596)	\$ (22,246)	\$ (32,501)	\$ (18,282)	\$ (25,199)
Net loss per share basic and diluted	\$ (0.61)	\$ (0.82)	\$ (1.38)	\$ (1.02)	\$ (1.54)	\$ (0.92)	\$ (1.39)
Number of shares used in computing net loss per share basic and diluted	29,870	21,492	22,244	21,722	21,091	19,944	18,069

HISTORICAL BALANCE SHEET DATA:

(In thousands)

	June 30,	December 31,				
	2004	2003	2002	2001	2000	1999
Cash, cash equivalents, short-term investments, and current portion of restricted cash	\$ 60,320	\$ 29,114	\$ 52,729	\$ 67,524	\$ 95,089	\$ 41,021
Working capital	60,474	30,872	53,050	71,516	92,700	33,508
Total assets	87,925	43,849	71,360	90,091	111,168	50,785
Long-term liabilities, less current portion	5,996	5,005	4,219	3,430	2,065	2,831
Accumulated deficit	(194,517)	(176,254)	(145,659)	(123,413)	(90,912)	(72,630)
Total stockholders' equity	75,844	32,823	57,393	74,929	101,414	38,121

Table of Contents**Summary Selected Historical Financial Data for Epoch**

The following table sets forth selected historical financial data for Epoch. The following data at and for the years ended December 31, 2003, 2002, 2001, 2000 and 1999, have been derived from Epoch's audited financial statements. Epoch's selected unaudited interim financial data included in this joint proxy statement/prospectus were derived from its books and records and, in the opinion of management, contains all adjustments, consisting only of normal recurring adjustments, necessary for the fair presentation of its financial position and results of operations at and for such periods. The results of operations for any interim period are not necessarily indicative of the results of operations to be expected for the full year.

You should read the following information together with Epoch's financial statements, the notes related thereto and the section entitled Management's Discussion and Analysis of Financial Condition and Results of Operations contained in Epoch's annual reports on Form 10-K and other financial information included in Nanogen's filings with the SEC, which is incorporated by reference in this joint proxy statement/prospectus. See Where You Can Find More Information beginning on page 98 and Incorporation of Certain Documents by Reference beginning on page 98.

STATEMENTS OF OPERATIONS**(In thousands, except per share amounts)**

	Six Months Ended		Year Ended December 31,				
	June 30,	June 30,					
	2004	2003	2003	2002	2001	2000	1999
	(unaudited)	(unaudited)					
REVENUES:							
Product sales	\$ 1,055	\$ 1,437	\$ 2,745	\$ 6,662	\$ 4,461	\$ 923	\$
License fees and royalty income	2,815	2,690	5,214	2,694	936	74	72
Contract research revenue		741	942	1,870	2,124	370	109
Total revenues	3,870	4,868	8,901	11,226	7,521	1,367	181
OPERATING EXPENSES:							
Cost of product sales	739	1,383	2,198	4,144	3,092	317	
Research and development	1,910	2,343	4,121	4,677	4,834	3,468	2,858
Selling, general and administrative	2,590	2,282	4,065	5,723	4,601	3,390	1,102
Termination of license rights			425				
Loss on sale of San Diego operations		2,805	2,805				
Total operating expenses	5,239	8,813	13,614	14,544	12,527	7,175	3,960
Operating loss	(1,369)	(3,945)	(4,713)	(3,318)	(5,006)	(5,808)	(3,779)
Interest income (expense), net	34	11	21	102	430	913	(991)
Warrant valuation adjustment	940						
Discontinued operation - gain on disposal of the then existing diagnostics division							70

Edgar Filing: NANOGEN INC - Form S-4/A

Net loss	\$ (395)	\$ (3,934)	\$ (4,692)	\$ (3,216)	\$ (4,576)	\$ (4,895)	\$ (4,700)
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Net loss per share basic and diluted	\$ (0.01)	\$ (0.15)	\$ (0.18)	\$ (0.13)	\$ (0.18)	\$ (0.20)	\$ (0.30)
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Weighted average number of common shares outstanding basic and diluted	27,888	25,840	25,982	25,663	25,589	24,037	15,608
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

HISTORICAL BALANCE SHEET DATA:

(In thousands)

	June 30,	December 31,				
	2004	2003	2002	2001	2000	1999
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
	(unaudited)					
Cash, cash equivalents, short-term investments, and current portion of restricted cash	\$ 9,251	\$ 4,415	\$ 3,508	\$ 7,588	12,122	1,772
Working capital	7,473	3,643	3,156	6,246	9,923	1,052
Total assets	14,893	10,173	15,056	17,306	20,935	2,266
Long-term liabilities, less current portion	3,354	3,202	3,082	3,174	2,059	1,316
Accumulated deficit	(79,307)	(78,912)	(74,220)	(71,004)	(66,428)	(61,533)
Total stockholders' equity	8,054	4,542	8,781	11,940	16,060	175

Table of Contents**Summary Selected Unaudited Pro Forma Condensed Combined Consolidated Financial Data**

The following selected unaudited pro forma condensed combined consolidated financial data was prepared using the purchase method of accounting. The unaudited pro forma condensed combined consolidated statements of operations data combines the historical consolidated statements of operations data for Nanogen and Epoch for the year ended December 31, 2003 and the six months ended June 30, 2004, giving effect to the proposed merger as if it had occurred January 1, 2003. The unaudited pro forma condensed combined consolidated balance sheet data combines the historical consolidated balance sheets of Nanogen and Epoch as of June 30, 2004, giving effect to the merger as if it had occurred as of June 30, 2004.

The selected unaudited pro forma condensed combined consolidated financial data is based on estimates and assumptions that are preliminary. The data is presented for informational purposes only and is not intended to represent or be indicative of the consolidated results of operations or financial condition of Nanogen that would have been reported had the merger been completed as of the dates presented, and should not be taken as representative of future consolidated results of operations or financial condition of Nanogen. Please also read the section in this joint proxy statement/prospectus entitled *Special Note Regarding Forward-Looking Statements* beginning on page 1 for more information on the statements made in this section.

This selected unaudited pro forma condensed combined consolidated financial data should be read in conjunction with the summary selected historical consolidated financial data and the unaudited pro forma condensed combined consolidated financial statements and accompanying notes contained elsewhere in this joint proxy statement/prospectus and the separate historical consolidated financial statements and accompanying notes of Nanogen and Epoch incorporated by reference into this joint proxy statement/prospectus. See the section entitled *Where You Can Find More Information* and *Incorporation of Certain Documents by Reference* beginning on page 98 of this joint proxy statement/prospectus.

**Pro Forma
Condensed Combined Consolidated
Statements of Operations**

Six months ended

	June 30, 2004	Year ended December 31, 2003
	(in thousands, except per share data)	
Revenues	\$ 7,395	\$ 20,041
Loss from operations	\$ (24,652)	\$ (42,525)
Net loss	\$ (22,431)	\$ (42,373)
Basic and diluted net loss per share maximum equity (1)	\$ (0.47)	\$ (1.01)
Shares used to compute basic and diluted loss per share maximum equity (1)	47,994	42,006
Basic and diluted net loss per share minimum equity (2)	(0.52)	(1.14)
Shares used to compute basic and diluted loss per share minimum equity (2)	43,251	37,263

**Pro Forma Condensed
Combined Consolidated
Balance Sheet**

As of

June 30, 2004

(in thousands)

Balance Sheet Data:

Cash, cash equivalents and short-term investments, and current portion
of restricted cash

\$ 64,979

Working capital

\$ 63,818

Total assets

\$ 153,802

Long-term liabilities

\$ 6,733

Total stockholders' equity

\$ 137,870

- (1) Assumes an exchange ratio of 0.6329 of a share of Nanogen common stock for every share of Epoch common stock. This represents the maximum number of shares to be issued.
- (2) Assumes an exchange ratio of 0.4763 of a share of Nanogen common stock for every share of Epoch common stock. This represents the minimum number of shares to be issued.

Table of Contents**Comparative Per Share Information**

The following table presents comparative historical per share data regarding the net loss and book value of each of Nanogen and Epoch and unaudited combined pro forma per share data after giving effect to the merger as a purchase of Epoch by Nanogen assuming the merger had been completed at the beginning of the earliest period presented. The following data assumes a maximum of 0.6329 and a minimum of 0.4673 of a share of Nanogen common stock will be issued in exchange for each share of Epoch common stock in connection with the merger. The actual exchange rate will be adjusted immediately prior to closing based on a formula described elsewhere herein. The data has been derived from and should be read in conjunction with the summary selected historical consolidated financial data and unaudited pro forma condensed combined consolidated financial statements contained elsewhere in this joint proxy statement/prospectus, and the separate historical consolidated financial statements of Nanogen and Epoch and the accompanying notes incorporated by reference into this joint proxy statement/prospectus. The unaudited pro forma per share data is presented for informational purposes only and is not intended to represent or be indicative of the consolidated results of operations or financial condition of Nanogen that would have been reported had the merger been completed as of the date presented, and should not be taken as representative of future consolidated results of operations or financial condition of Nanogen.

Nanogen Per Share Data		
	Six months ended	Year ended
	June 30, 2004	December 31, 2003
Historical per common share data:		
Basic and diluted loss per share	\$ (0.61)	\$ (1.38)
Book value per share (1)	\$ 2.24	\$ 1.32

Nanogen Pro Forma Combined Per Share Data		
	Six months ended	Year ended
	June 30, 2004	December 31, 2003
Pro forma combined per common share data maximum equity:		
Basic and diluted loss per share	\$ (0.47)	\$ (1.01)
Pro forma combined book value per share (1)	\$ 2.65	
Pro forma combined per common share data minimum equity:		
Basic and diluted loss per share	\$ (0.52)	\$ (1.14)
Pro forma combined book value per share	\$ 2.92	

Epoch Per Share Data		
	Six months ended	Year ended
	June 30, 2004	December 31, 2003
Historical per common share data:		
Basic and diluted loss per share	\$ (0.01)	\$ (0.18)
Book value per share (1)	\$ 0.28	\$ 0.17
Pro forma equivalent per common share data maximum equity (2):		

Edgar Filing: NANOGEN INC - Form S-4/A

Basic and diluted loss per share	\$ (0.30)
Book value per share	\$ 1.68
Pro forma equivalent per share data minimum equity (3):	
Basic and diluted loss per share	\$ (0.24)
Book value per share	\$ 1.36

-
- (1) The historical book value per share of Nanogen common stock and Epoch common stock is computed by dividing stockholders' equity by the number of shares of common stock outstanding at the end of each

Table of Contents

- period presented. The pro forma combined book value per share is computed by dividing the pro forma common stockholders' equity by the pro forma number of shares of common stock outstanding at June 30, 2004, assuming the merger had been completed on that date.
- (2) Pro forma equivalent per common share data is calculated by multiplying the Nanogen pro forma per share amounts by the maximum exchange ratio of 0.6329.
- (3) Pro forma equivalent per common share data is calculated by multiplying the Nanogen pro forma per share amounts by the minimum exchange ratio of 0.4673.

Comparative Per Share Market Price and Dividend Information

	Nanogen Common Stock		Epoch Common Stock	
	Close Price		Close Price	
	High	Low	High	Low
2001				
First Quarter	\$ 13.44	\$ 5.13	\$ 6.75	\$ 3.00
Second Quarter	\$ 10.60	\$ 5.40	\$ 5.70	\$ 2.05
Third Quarter	\$ 7.50	\$ 3.00	\$ 4.50	\$ 1.50
Fourth Quarter	\$ 10.13	\$ 4.54	\$ 2.80	\$ 1.14
2002				
First Quarter	\$ 6.34	\$ 3.95	\$ 2.72	\$ 1.60
Second Quarter	\$ 4.74	\$ 2.49	\$ 2.05	\$ 1.51
Third Quarter	\$ 3.67	\$ 1.50	\$ 1.85	\$ 0.74
Fourth Quarter	\$ 2.23	\$ 1.22	\$ 1.78	\$ 0.70
2003				
First Quarter	\$ 1.76	\$ 1.01	\$ 1.75	\$ 1.11
Second Quarter	\$ 4.30	\$ 1.20	\$ 2.98	\$ 1.32
Third Quarter	\$ 4.79	\$ 2.78	\$ 3.56	\$ 2.04
Fourth Quarter	\$ 9.27	\$ 3.10	\$ 2.79	\$ 1.98
2004				
First Quarter	\$ 13.32	\$ 6.60	\$ 3.34	\$ 1.95
Second Quarter	\$ 9.54	\$ 5.39	\$ 2.15	\$ 1.79
Third Quarter	\$ 7.25	\$ 3.18	\$ 1.98	\$ 1.33
Fourth Quarter (through October 26, 2004)	\$ 4.51	\$ 3.97	\$ 2.17	\$ 1.97

The following table sets forth the last sale price per share of Nanogen common stock and of Epoch common stock, in each case as reported on the Nasdaq National Market on September 7, 2004, the last full trading day prior to the announcement of the signing of the merger agreement, and October 26, 2004, the most recent practicable date prior to the mailing of this joint proxy statement/prospectus to Nanogen and Epoch stockholders.

Date	Nanogen Common Stock	Epoch Common Stock
September 7, 2004	\$ 4.57	\$ 1.78
October 26, 2004	\$ 3.97	\$ 2.01

Edgar Filing: NANOGEN INC - Form S-4/A

The market price of Nanogen and Epoch common stock fluctuates. We encourage you to obtain current market price information for Nanogen common stock and Epoch common stock.

Neither Nanogen nor Epoch has ever paid any cash dividends on their shares of common stock and have no plans to do so in the future. Under the merger agreement, each of Nanogen and Epoch has agreed not to pay dividends pending the completion of the merger without the written consent of the other.

Table of Contents

RISK FACTORS

By voting in favor of approving the merger agreement, Epoch stockholders will be choosing to invest in Nanogen common stock. An investment in Nanogen common stock involves a high degree of risk, which risk may be in addition to or different from the risks of investment in Epoch. You should carefully consider the risks described below relating to the merger to see how the merger may affect you before deciding how to vote your shares.

In addition to the risks related to the merger and facing the combined company after the merger described below, there are risks that affect Nanogen's and Epoch's respective businesses before, and continuing after, the proposed merger. You should carefully consider the risks described in Nanogen's most recent quarterly report on Form 10-Q and Epoch's most recent quarterly report on Form 10-Q, relating to each company as an independent business, which are incorporated by reference into this joint proxy statement/prospectus.

You should also consider the other information contained in, or incorporated by reference into, this joint proxy statement/prospectus (including the matters addressed in "Special Note Regarding Forward-Looking Statements" above). Please refer to the section of this joint proxy statement/prospectus entitled "Where You Can Find More Information" beginning on page 98. Although we believe that the risks described below and incorporated by reference into this document represent all material risks currently applicable to the companies, additional risks and uncertainties not presently known to Nanogen and Epoch or that currently are not believed to be important to Nanogen and Epoch also may affect adversely the merger and the combined company following the merger.

References in this section to "us," "we" and "our" refer to the statements of Nanogen and Epoch jointly and of the combined company.

Risks Relating to the Merger

The number of shares and value of the Nanogen common stock that Epoch stockholders will receive in the merger will fluctuate.

The number of shares and precise value of the merger consideration to be received by Epoch stockholders at the effective time of the merger cannot presently be determined. The exchange ratio, which determines the number of shares of Nanogen common stock that Epoch stockholders will receive in the merger, will not be determined until the closing of the merger. Upon completion of the merger, each share of Epoch common stock will be converted into the right to receive a fraction of a share of Nanogen common stock equal to the exchange ratio. Under the terms of the merger agreement, the exchange ratio is subject to a collar and will range from 0.4673 and 0.6329 of one share of Nanogen common stock. The exact exchange ratio will depend on the average closing price of Nanogen common stock for the 20 trading days ending on and including the third trading day prior to the closing of the merger. Accordingly, at the time of the special meeting, stockholders will not know the exact value of the consideration to be received under the merger agreement.

The prices of Epoch common stock and Nanogen common stock at the closing of the merger may vary from their respective prices on the date the merger agreement was executed, on the date of this joint proxy statement/prospectus and on the dates of the special meetings. Stock price changes may result from a variety of factors beyond the control of Nanogen and Epoch, including general market and economic conditions. In addition, there will be a time between the completion of the merger and the time at which former Epoch stockholders actually receive stock certificates evidencing the Nanogen common stock. Until stock certificates are received, former Epoch stockholders may not be able to sell their Nanogen shares in the open market, and, therefore, would not be able to avoid losses resulting from any decrease in the trading price of Nanogen

common stock during this period.

Table of Contents

Nanogen may be unable to integrate successfully the businesses of Epoch with its own business.

After the merger, Nanogen and Epoch, each of which had previously operated independently, will have to integrate their operations. The integration will require significant efforts from each company, including the coordination of their product development, sales and marketing efforts and administrative operations. Nanogen may find it difficult to integrate the operations of Epoch. The combined company will have employees widely dispersed across its operations in San Diego, California, Bothell, Washington and Ontario, Canada, and other domestic and foreign locations, which will increase the difficulty of integrating operations. Epoch personnel may leave Epoch or the combined company because of the merger. Epoch customers, distributors or suppliers may terminate their arrangements with Epoch or the combined company, or demand amended terms to these arrangements. The challenges involved in this integration include, but are not limited to, the following:

retaining existing customers and strategic partners of each company;

retaining and integrating management and other key employees of the combined company;

coordinating research and development activities to enhance introduction of new products and technologies, especially in light of rapidly evolving markets for those products and technologies;

preserving the value of various research and development, collaboration, distribution, manufacturing and other important relationships of the combined company;

effectively managing the diversion of management attention from business matters to integration issues;

combining product offerings and incorporating acquired technology and rights into the product offerings of the combined company effectively and quickly;

integrating sales efforts so that customers can do business easily with the combined company;

persuading employees that the business cultures of each of Nanogen and Epoch are compatible;

effectively offering products of Nanogen and Epoch to each other's customers;

anticipating the market needs and achieving market acceptance of Nanogen and Epoch products;

bringing together the companies' marketing efforts so that the industry receives useful information about the merger and customers perceive value in the combined company's products; and

developing and maintaining uniform standards, controls, procedures, and policies.

The merger may fail to achieve beneficial synergies.

Edgar Filing: NANOGEN INC - Form S-4/A

Nanogen and Epoch have entered into the merger agreement with the expectation that the merger will result in beneficial synergies, such as cost reductions and a broader suite of solutions to offer to its current and targeted customers. Achieving these anticipated synergies and the potential benefits underlying the two companies' reasons for entering into the merger will depend on the success of integrating Nanogen's and Epoch's businesses. It is not certain that Nanogen and Epoch can be successfully integrated in a timely manner or at all, or that any of the anticipated benefits will be realized. Risks from an unsuccessful integration of the companies include:

the potential disruption of the combined company's ongoing business and distraction of its management;

the risk that it may be more difficult to retain key management, marketing, and technical personnel after the merger;

the risk that costs and expenditures for retaining personnel, eliminating unnecessary resources and integrating the businesses are greater than anticipated;

the risk that the combined company cannot increase sales of its products; and

the risk that integrating and changing our businesses will impair our relationships with our customers and business partners.

Table of Contents

Even if the two companies are able to integrate operations, there can be no assurance that the anticipated synergies will be achieved. The failure to achieve such synergies could adversely affect the combined company's business, financial condition and results of operations, including use of cash in operations.

Nanogen and Epoch expect to incur significant costs associated with the merger.

Nanogen estimates that it will incur direct transaction costs of approximately \$2.5 million associated with the merger, including direct costs of the acquisition as well as liabilities to be accrued in connection with the acquisition, including severance and related costs. In addition, Epoch estimates that it will incur direct transaction costs of approximately \$2.0 million. Nanogen and Epoch believe the combined entity may incur charges to operations, which are not currently reasonably estimable, in the quarter in which the merger is completed or the following quarters, to reflect costs associated with integrating the two companies. There is no assurance that the combined company will not incur additional material charges in subsequent quarters to reflect additional costs associated with the merger. If the benefits of the merger do not exceed the costs of integrating the businesses of Nanogen and Epoch, our combined company's financial results may be adversely affected.

Some officers and directors of Epoch have certain conflicts of interest that may have influenced them to support or recommend the merger.

Some of the executive officers and directors of Epoch have interests in the merger that are different from, or in addition to, the interests of stockholders generally. Several executive officers of Epoch, including an officer who is also a director, have employment agreements that may entitle them to severance payments, the accelerated vesting of outstanding stock options and other benefits upon the officer's termination under certain circumstances following the completion of the merger. The Epoch non-employee directors hold stock options that will become fully vested upon consummation of the merger and will remain outstanding for an extended period following the termination of the director's board service. In addition, certain stock options, including stock options held by Epoch's officers, contain provisions that provide for the accelerated vesting of such options and for an extended period in which such options are to remain outstanding, in both cases in the event the optionee is terminated under certain circumstances following the merger.

Nanogen will indemnify current and former Epoch officers and directors against liabilities arising out of each such person's service as an officer and/or director, and Nanogen has agreed to maintain directors' and officers' liability insurance covering those persons currently covered by Epoch's directors' and officers' liability insurance policy, subject to certain limitations.

For these reasons, the directors and officers of Epoch may have been more likely to support the terms of the merger agreement and the merger than if they did not have these interests. Epoch stockholders should consider whether these interests may have influenced these directors and officers to support or recommend the merger.

The holders of Epoch common stock will have less control over corporate actions proposed to be taken by Nanogen than those holders had over corporate actions proposed to be taken by Epoch.

Following the merger, holders of Epoch common stock outstanding immediately prior to the merger will become holders of Nanogen common stock. Those holders will hold between approximately 28.7% and 35.3% of outstanding common stock of the combined company after the merger depending on the actual exchange ratio, as opposed to 100% of the outstanding Epoch common stock. There are differences between the

Edgar Filing: NANOGEN INC - Form S-4/A

rights of Nanogen stockholders under Nanogen's certificate of incorporation and bylaws and the rights of Epoch stockholders under Epoch's certificate of incorporation and bylaws. As a result of these differences, the holders of Epoch common stock may have less control over corporate actions proposed to be taken by Nanogen than those holders had over corporate actions proposed to be taken by Epoch. You should read more about these differences under the section of this joint proxy statement/prospectus entitled "Comparison of Rights of Nanogen Stockholders and Epoch Stockholders" on page 86.

Table of Contents

Satisfying closing conditions may delay completion of the merger.

There are many conditions to Nanogen's and Epoch's obligations to complete the merger. Many of these conditions are beyond Nanogen's and Epoch's control. These conditions include obtaining requisite approvals from Nanogen and Epoch stockholders, and Nanogen and Epoch may be unable to obtain these approvals on a timely basis, if at all.

In response to the announcement of the merger, customers or suppliers of Nanogen and Epoch may delay or defer product purchase or other decisions. Any delay or deferral in product purchase or other decisions by customers or suppliers could adversely affect the business of the combined company, regardless of whether the merger is ultimately completed. Similarly, current and prospective Nanogen and/or Epoch employees may experience uncertainty about their future roles with Nanogen or Epoch until the merger is completed and until Nanogen's strategies with regard to the integration of operations of Nanogen and Epoch are announced or executed. This may adversely affect Nanogen's and/or Epoch's ability to attract and retain key management, sales and technical personnel.

Risks Relating to the Combined Company After the Merger

Both Nanogen and Epoch have historically incurred net losses and we expect the combined company to continue to incur net losses. Depending on its use of cash in operations, the combined company may need to raise capital in the future.

Nanogen has incurred net losses since inception, and had a cumulative net loss as of June 30, 2004 of \$194.5 million. Epoch also has a history of incurring net losses, and had a cumulative net loss as of June 30, 2004 of \$79.3 million. Nanogen expects that the combined company will continue to incur net losses and it is possible that the combined company may never generate sufficient product revenue to become profitable or it may not sustain profitability if it does become profitable.

Depending on the combined company's use of cash in operations, it may need to raise capital to continue the research and development necessary to further develop its current products, to bring new products to market and to further its manufacturing and marketing capabilities. The combined company may seek additional funds through public and private stock offerings, arrangements with corporate partners, credit facilities or other sources. If these efforts were unsuccessful, the combined company would have to reduce capital expenditures, scale back its development of new products, reduce its workforce and seek to license to others products or technologies that it otherwise would seek to commercialize itself. Additional capital may not be available on acceptable terms, or at all. Any additional equity financing would likely be dilutive to stockholders, and debt financing, if available, may include restrictive covenants and require significant collateral.

The uncertainty of patent and proprietary technology protection may adversely affect us.

The combined company's success will depend in part on obtaining and maintaining meaningful patent protection on its inventions, technologies and discoveries. Our ability to compete effectively will depend on our ability to develop and maintain proprietary aspects of our technology, and to operate without infringing the proprietary rights of others, or to obtain rights from third parties, if necessary. Our pending patent applications may not result in the issuance of patents. Our patent applications may not have priority over others' applications, and even if issued, our patents may not offer protection against competitors with similar technologies. Any patents issued to us may be challenged, invalidated or circumvented, and the rights created thereunder may not afford us a competitive advantage.

We also rely upon trade secrets, technical know-how and continuing inventions to develop and maintain our competitive position. Others may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets or disclose our technology and we may not be able to

Table of Contents

meaningfully protect our trade secrets, or be capable of protecting our rights to our trade secrets. We seek to protect our technology and patents, in part, by confidentiality agreements with our employees and contractors. Our employees may breach their Proprietary Information, Inventions, and Dispute Resolution Agreements and these agreements may not protect our intellectual property. This could have a material adverse effect on us.

If the combined company is unable to develop new and enhanced products that achieve widespread market acceptance, it may be unable to recoup product development costs, and its earnings and revenue may decline.

The combined company's future success depends on its ability to develop and introduce new molecular diagnostics offerings and grow its business in both the genetic and proteomic testing markets. The combined company expects to commit substantial resources to developing new diagnostic products. If the markets for these new products do not develop as anticipated, or demand for the combined company's offerings in these markets does not materialize or occurs more slowly than the combined company expects, the combined company will have expended substantial resources and capital without realizing sufficient revenue, and the combined company's business and operating results could be adversely affected.

The combined company will operate in a very competitive environment.

The combined company expects to encounter intense competition from a number of companies that offer products in our targeted application areas. We anticipate that our competitors in these areas will include:

health care and other companies that manufacture laboratory-based tests and analyzers;

diagnostic and pharmaceutical companies;

companies developing drug discovery technologies;

companies developing molecular diagnostic tests; and

companies developing point-of-care diagnostic tests.

If the combined company is successful in developing products in these areas, it will face competition from established companies and numerous development-stage companies that continually enter these markets. In many instances, competitors have substantially greater financial, technical, research and other resources and larger, more established marketing, sales, distribution and service organizations than the combined company. Moreover, these competitors may offer broader product lines and have greater name recognition than us and may offer discounts as a competitive tactic.

In addition, several development-stage companies are currently making or developing products that compete with or will compete with our potential products. Competitors may succeed in developing, obtaining approval from the U.S. Food and Drug Administration or marketing technologies or products that are more effective or commercially attractive than the combined company's current or potential products or that

Edgar Filing: NANOGEN INC - Form S-4/A

render the combined company's technologies and current or potential products obsolete. Competitors may also develop proprietary positions that may prevent the combined company from successfully commercializing products.

Because a significant portion of Nanogen's total assets will be represented by goodwill and other intangible assets that are subject to mandatory annual impairment evaluations, Nanogen could be required to write off some or all of this goodwill and other intangibles, which may adversely affect the combined company's financial condition and results of operations.

Nanogen will account for the acquisition of Epoch using the purchase method of accounting. A portion of the purchase price for this business will be allocated to identifiable tangible and intangible assets and assumed liabilities based on estimated fair values at the date of consummation of the merger. Any excess purchase price, which is likely to constitute a significant portion of the purchase price, will be allocated to goodwill and other

Table of Contents

intangibles. If the proposed merger is completed, approximately 45% of the combined company's total assets will be goodwill and other intangibles, of which approximately \$52 million will be goodwill. In accordance with the Financial Accounting Standards Board's Statement No. 142, *Goodwill and Other Intangible Assets*, goodwill is not amortized but is reviewed annually, or more frequently if impairment indicators arise, for impairment, and other intangibles are also reviewed at least annually or more frequently, if certain conditions exist, and may be amortized. Nanogen has estimated that the goodwill to be recorded in connection with this acquisition will total approximately \$41 million. When the combined company performs future impairment tests, it is possible that the carrying value of goodwill or other intangible assets could exceed their implied fair value and therefore would require adjustment. Such adjustment would result in a charge to operating income in that period. Once adjusted, there can be no assurance that there will not be further adjustments for impairment in future periods.

The combined company may not be able to successfully integrate companies that it acquires in the future.

The combined company may from time to time pursue acquisitions of businesses that complement or expand its existing business, including acquisitions that could be material in size and scope.

Any future acquisitions involve various risks, including:

difficulties in integrating the operations, technologies and products of the acquired company;

the risk of diverting management's attention from normal daily operations of the business;

potential difficulties in completing projects associated with in-process research and development;

risks of entering markets in which the combined company has no or limited direct prior experience and where competitors in such markets have stronger market positions;

initial dependence on unfamiliar supply chains or relatively small supply partners;

insufficient revenues to offset increased expenses associated with the acquisition; and

the potential loss of key employees of the acquired company.

Risks Related to Nanogen's Business

For risks related to Nanogen's business, please see "Factors That May Affect Our Future Results or the Market Price of Our Stock" contained in Nanogen's Quarterly Report on Form 10-Q for the quarter ended June 30, 2004 and incorporated by reference into this joint proxy statement/prospectus.

Risks Related to Epoch's Business

For risks related to Epoch's business, please see "Certain Factors That May Affect Our Business and Future Results" contained in Epoch's Quarterly Report on Form 10-Q for the quarter ended June 30, 2004 and incorporated by reference into this proxy statement/prospectus.

Table of Contents

SPECIAL MEETING OF NANOGEN STOCKHOLDERS

Date, Time and Place of Meeting

The accompanying proxy is solicited by the board of directors of Nanogen for use at the special meeting of stockholders to be held on Wednesday, December 8, 2004 at 10:00 a.m., local time, or any adjournments or postponements thereof. The meeting will be held at the Hilton La Jolla Torrey Pines located at 10950 N. Torrey Pines Road, La Jolla, California 92037. Nanogen's telephone number is (858) 410-4600.

These proxy solicitation materials were mailed on or about November 1, 2004 to all stockholders entitled to vote at the meeting.

Record Date; Shares Entitled to Vote; Outstanding Shares

The Nanogen Board of directors has fixed the close of business on October 26, 2004 as the record date for determination of the stockholders of Nanogen entitled to notice of, and to vote at, the Nanogen special meeting or any adjournment or postponement thereof. Only Nanogen stockholders of record at the close of business on the record date will be entitled to notice of, and to vote at, the Nanogen special meeting or any adjournments or postponements thereof. Nanogen stockholders will have one vote for each share of Nanogen common stock that they owned on the Nanogen record date, exercisable in person or by a properly executed and delivered proxy with respect to the Nanogen special meeting.

At the close of business on the Nanogen record date, there were approximately 33,382,793 million shares of Nanogen common stock issued and outstanding and entitled to vote at the Nanogen special meeting.

Voting by Nanogen Directors and Executive Officers; Voting Agreements

On October 26, 2004, the record date for the Nanogen special meeting, directors and executive officers of Nanogen and their affiliates held 885,213 outstanding shares of Nanogen common stock, or approximately 2.7% of the shares of Nanogen common stock outstanding on that date. A more detailed description of the ownership of Nanogen common stock by certain beneficial owners and Nanogen's directors and executive officers is set forth on page 94 of this joint proxy statement/prospectus.

Each of these directors and executive officers has entered into a voting agreement with Epoch that commits them not to sell any of their shares of Nanogen common stock prior to the earlier of the consummation of the merger or the termination of the merger agreement, and to vote all of their shares of Nanogen common stock in favor of approval of the issuance of shares of Nanogen common stock in the merger and in favor of the amendment to Nanogen's certificate of incorporation and against certain other actions. The form of voting agreement entered into by Nanogen's officers and directors is included as Annex C to this joint proxy statement/prospectus. For a summary of material provisions of the voting agreements, see Agreements Related to the Merger the Voting Agreements.

Purpose of the Nanogen Special Meeting

At the Nanogen special meeting, Nanogen stockholders will be asked to:

consider and vote on a proposal to approve the issuance of shares of Nanogen common stock under the terms of the Agreement and Plan of Merger and Reorganization, dated as of September 7, 2004, by and among Nanogen, Empire Acquisition Corp., a wholly owned subsidiary of Nanogen, and Epoch;

consider and vote on a proposal to amend Nanogen's certificate of incorporation to increase the number of shares of common stock authorized for issuance from 50,000,000 to 135,000,000;

Table of Contents

consider and vote on any proposal to adjourn the meeting to another time or place, if necessary in the judgment of the proxy holders, for the purpose of soliciting additional proxies in favor of the foregoing proposal; and

conduct any other business that properly comes before the meeting or any adjournments or postponements thereof.

Quorum; Abstentions; Broker Non-Votes

There must be a quorum for the Nanogen special meeting to be held. The holders of a majority of the issued and outstanding Nanogen common stock entitled to vote, present in person or represented by a properly executed and delivered proxy, will constitute a quorum for the purpose of transacting business at the Nanogen special meeting. Only Nanogen stockholders of record on the record date will be entitled to vote at the Nanogen special meeting. All shares of Nanogen common stock represented at the Nanogen special meeting, but not voting, including broker non-votes (i.e., shares held by brokers or nominees which are represented at the meeting, but with respect to which such broker or nominee is not empowered to vote on a particular purpose) and abstentions, will be counted as present for determining the presence or absence of a quorum.

Votes Required

Required Vote for Approval of the Issuance of Nanogen Common Stock in Connection with the Merger (Proposal 1)

Approval of Proposal 1 for issuance of Nanogen common stock in connection with the merger requires the affirmative vote of a majority of the shares present or represented by proxy and entitled to vote on Proposal 1. A vote in favor of such share issuance will also constitute in effect a vote in favor of the issuance of shares of Nanogen common stock pursuant to the assumed Epoch 2003 Stock Incentive Plan including the issuance of shares of Nanogen common stock added to the plan pursuant to its automatic annual increase feature. An abstention from voting on Proposal 1 will have the effect of a vote against it and a broker non-vote on Proposal 1 will have no effect on the vote.

Required Vote for Proposal to Amend Nanogen's Certificate of Incorporation (Proposal 2)

Approval of Proposal 2 to amend Nanogen's certificate of incorporation to increase the number of shares of common stock authorized for issuance from 50,000,000 to 135,000,000 requires the affirmative vote of a majority of the outstanding shares of Nanogen common stock entitled to vote on Proposal 2. An abstention from voting or a broker non-vote on Proposal 2 will have the effect of a vote against Proposal 2.

THE MERGER WILL NOT BE COMPLETED UNLESS NANOGEN STOCKHOLDERS APPROVE PROPOSAL 1 AND PROPOSAL 2.

Required Vote for Any Proposal to Adjourn the Special Meeting (Proposal 3)

Edgar Filing: NANOGEN INC - Form S-4/A

If necessary, the affirmative vote of a majority of the shares present or represented by proxy and entitled to vote on any adjournment proposal is required to adjourn the special meeting for the purpose of soliciting additional proxies. An abstention from voting on the adjournment proposal will have the effect of a vote against it and a broker non-vote on any adjournment proposal will have no effect on the vote.

Solicitation of Proxies

This solicitation is made on behalf of Nanogen's board of directors, and Nanogen will pay the costs of soliciting and obtaining the proxies, including the cost of reimbursing banks, brokers and other custodians, nominees and fiduciaries, for forwarding proxy materials to their principals. Proxies may be solicited, without extra compensation, by Nanogen's officers, directors and employees by mail, telephone, fax, personal interviews or other methods of communication. Nanogen has engaged Georgeson Shareholder to assist it in the distribution and solicitation of proxies, respectively. Nanogen estimates that it will pay Georgeson Shareholder a fixed fee of \$12,500 for its services and will reimburse Georgeson Shareholder for reasonable out-of-pocket expenses.

Table of Contents

Voting of Proxies

The proxy card accompanying this joint proxy statement/prospectus is solicited on behalf of Nanogen's board of directors for use at the special meeting. Nanogen requests that you complete, date and sign the accompanying proxy and return it promptly in the enclosed postage-paid envelope or otherwise mail it to Nanogen or its solicitor. All properly signed proxies that Nanogen receives prior to the vote at the meeting and that are not revoked will be voted at the Nanogen special meeting in accordance with the instructions indicated on the proxies.

If a proxy is returned to Nanogen without an indication as to how the shares of Nanogen common stock represented are to be voted, the Nanogen common stock represented by the proxy will be voted **FOR** each of the proposals. Unless you check the box on your proxy withholding discretionary authority, the proxy holders may use their discretion to vote on other matters relating to the Nanogen special meeting. Nanogen currently does not contemplate that any matters, other than Proposal 1, Proposal 2 and, potentially, Proposal 3, will be considered at the Nanogen special stockholder meeting. If any other matters are properly brought before the meeting, the persons named in the proxies will have discretion to vote on such matters in accordance with their best judgment.

Stockholders of record may vote by completing and returning the enclosed proxy card prior to the Nanogen special meeting, voting in person at the Nanogen special meeting or submitting a signed proxy card at the Nanogen special meeting.

Revocability of Proxies

You have the power to revoke your proxy at any time before your proxy is voted at the Nanogen special meeting. Your proxy can be revoked in one of three ways: (1) you can send a signed notice of revocation; (2) you can grant a new, valid proxy bearing a later date; or (3) if you are a holder of record, you can attend the Nanogen special meeting and vote in person, which will automatically cancel any proxy previously given, or you may revoke your proxy in person, but your attendance alone will not revoke any proxy that you have previously given. If you choose either of the first two methods, you must submit your notice of revocation or your new proxy to the corporate secretary of Nanogen no later than the beginning of the Nanogen special meeting.

Please note, however, that if your shares are held of record by a broker, bank, or other nominee and you wish to vote at the meeting, you must bring to the Nanogen special meeting a letter from the broker, bank or other nominee confirming your beneficial ownership of the shares.

Recommendation of Nanogen's Board of Directors

Nanogen's board of directors has determined that the merger and the transactions contemplated by the merger agreement are advisable and in the best interests of Nanogen and its stockholders and the issuance of Nanogen common stock in the merger is fair for Nanogen and its stockholders. Nanogen's board of directors unanimously recommends that Nanogen stockholders vote **FOR** the proposal to approve the issuance of shares of Nanogen common stock pursuant to the merger agreement, **FOR** the proposal to amend Nanogen's certificate of incorporation to authorize additional shares of Nanogen common stock, and, if necessary, **FOR** any proposal to adjourn the Nanogen special meeting for the solicitation of additional proxies. For a more complete description of the recommendation of Nanogen's board of directors, see **The Merger Recommendation of Nanogen's Board of Directors** beginning on page 36 of this joint proxy statement/prospectus.

Edgar Filing: NANOGEN INC - Form S-4/A

Your vote is important. Accordingly, please sign, date and return the enclosed proxy card whether or not you plan to attend the Nanogen special meeting in person.

Table of Contents

SPECIAL MEETING OF EPOCH STOCKHOLDERS

Date, Time and Place of Meeting

The accompanying proxy is solicited by the board of directors of Epoch for use at the special meeting of stockholders to be held on Wednesday, December 8, 2004 at 10:00 a.m., local time, or any adjournments or postponements thereof. The meeting will be held at 21720 23rd Drive SE, Suite 150, Bothell, Washington 98021. Epoch's telephone number is (425) 482-5555.

These proxy solicitation materials were mailed on or about November 1, 2004 to all stockholders entitled to vote at the meeting.

Record Date; Shares Entitled to Vote; Outstanding Shares

Epoch's board of directors has fixed the close of business on October 26, 2004 as the record date for determination of the stockholders of Epoch entitled to notice of, and to vote at, the Epoch special meeting or any adjournment or postponement thereof. Only Epoch stockholders of record at the close of business on the record date will be entitled to notice of, and to vote at, the Epoch special meeting or any adjournments or postponements thereof. Epoch stockholders will have one vote for each share of Epoch common stock that they owned on the Epoch record date, exercisable in person or by a properly executed and delivered proxy with respect to the Epoch special meeting.

At the close of business on the Epoch record date, there were approximately 28,728,626 shares of Epoch common stock issued and outstanding and entitled to vote at the Epoch special meeting.

Voting by Epoch Directors and Executive Officers; Voting Agreements

On October 26, 2004, the record date for the Epoch special meeting, directors and executive officers of Epoch and their affiliates held 1,787,011 outstanding shares of Epoch common stock, or approximately 6.2% of the shares of Epoch common stock outstanding on that date. A more detailed description of the ownership of Epoch common stock by certain beneficial owners and Epoch's directors and executive officers is set forth on page 95 of this joint proxy statement/prospectus.

Each of these Epoch directors and executive officers and their affiliates has entered into a voting agreement with Nanogen that commits them not to sell any of their shares of Epoch common stock prior to the earlier of the consummation of the merger or the termination of the merger agreement, and to vote all of their shares of Epoch common stock in favor of the adoption of the merger agreement and the transactions contemplated by the merger agreement and against certain other actions. The form of voting agreement entered into by Epoch's officers and directors and their affiliates is included as Annex B to this proxy statement/prospectus. For a summary of material provisions of the voting agreements, see "Agreements Related to the Merger" the Voting Agreements.

Purpose of the Epoch Special Meeting

At the Epoch special meeting, stockholders will be asked to:

consider and vote on a proposal to adopt the Agreement and Plan of Merger and Reorganization, dated as of September 7, 2004, by and among Nanogen, Empire Acquisition Corp., a wholly owned subsidiary of Nanogen, and Epoch, and approve the merger;

consider and vote on any proposal to adjourn the meeting to another time or place, if necessary in the judgment of the proxy holders, for the purpose of soliciting additional proxies in favor of the foregoing proposal; and

conduct any other business that properly comes before the meeting or any adjournments or postponements thereof.

Table of Contents

Quorum; Abstentions; Broker Non-Votes

There must be a quorum for the Epoch special meeting to be held. The holders of a majority of the issued outstanding shares of Epoch common stock entitled to vote, present in person or represented by a properly executed and delivered proxy, will constitute a quorum for the purpose of transacting business at the Epoch special meeting. Only Epoch stockholders of record on the record date will be entitled to vote at the Epoch special meeting. All shares of Epoch common stock represented at the Epoch special meeting, but not voting, including broker non-votes (i.e., shares held by brokers or nominees which are represented at the meeting, but with respect to which such broker or nominee is not empowered to vote on a particular purpose) and abstentions, will be counted as present for determining the presence or absence of a quorum but will not be counted as having been voted on any proposal.

Votes Required

Required Vote for Adoption of the Merger Agreement and Approval of the Merger (Proposal 1)

Approval of Proposal 1 for adoption of the merger agreement and approval of the merger requires the affirmative vote of a majority of the outstanding shares of Epoch entitled to vote on Proposal 1. An abstention from voting or a broker non-vote on Proposal 1 will have the effect of a vote against Proposal 1.

THE MERGER WILL NOT BE COMPLETED UNLESS EPOCH STOCKHOLDERS APPROVE PROPOSAL 1.

Required Vote for Approval of Adjournment of Special Meeting (Proposal 2)

If necessary, the affirmative vote of a majority of the shares present or represented by proxy and entitled to vote on any adjournment proposal is required to adjourn the special meeting for the purpose of soliciting additional proxies. An abstention from voting on any adjournment proposal will have the effect of a vote against it and a broker non-vote on any adjournment proposal will have no effect on the vote.

Solicitation of Proxies

This solicitation is made on behalf of the Epoch board of directors, and Epoch will pay the costs of soliciting and obtaining the proxies, including the cost of reimbursing banks, brokers and other custodians, nominees and fiduciaries, for forwarding proxy materials to their principals. Proxies may be solicited, without extra compensation, by Epoch's officers, directors and employees by mail, telephone, fax, personal interviews or other methods of communication. Epoch has engaged MacKenzie Partners, Inc. to assist it in the distribution and solicitation of proxies, respectively. Epoch estimates that it will pay MacKenzie Partners approximately \$7,500 for its services and will reimburse MacKenzie Partners for reasonable out-of-pocket expenses.

Voting of Proxies

The proxy card accompanying this joint proxy statement/prospectus is solicited on behalf of the Epoch board of directors for use at the special meeting. Epoch requests that you complete, date and sign the accompanying proxy and return it promptly in the enclosed postage-paid envelope or otherwise mail it to Epoch or its solicitor. All properly signed proxies that Epoch receives prior to the vote at the meeting and that are not revoked will be voted at the Epoch special meeting in accordance with the instructions indicated on the proxies.

If a proxy is returned to Epoch without an indication as to how the shares of Epoch common stock represented are to be voted, the Epoch common stock represented by the proxy will be voted **FOR** each of the proposals. Unless you check the box on your proxy withholding discretionary authority, the proxy holders may use their discretion to vote on other matters relating to the Epoch special meeting. Epoch currently does not contemplate that any matters, other than Proposal 1 and, potentially, Proposal 2, will be considered at the Epoch special stockholders meeting. If any other matters are properly brought before the meeting, the persons named in the proxies will have discretion to vote on such matters in accordance with their best judgment.

Table of Contents

Stockholders of record may vote by completing and returning the enclosed proxy card prior to the Epoch special meeting, voting in person at the Epoch special meeting or submitting a signed proxy card at the Epoch special meeting.

Revocability of Proxies

You have the power to revoke your proxy at any time before your proxy is voted at the Epoch special meeting. Your proxy can be revoked in one of three ways: (1) you can send a signed notice of revocation; (2) you can grant a new, valid proxy bearing a later date; or (3) if you are a holder of record, you can attend the Epoch special meeting and vote in person, which will automatically cancel any proxy previously given, or you may revoke your proxy in person, but your attendance alone will not revoke any proxy that you have previously given. If you choose either of the first two methods, you must submit your notice of revocation or your new proxy to the corporate secretary of Epoch no later than the beginning of the Epoch special meeting.

Please note, however, that if your shares are held of record by a broker, bank, or other nominee and you wish to vote at the meeting, you must bring to the meeting a letter from the broker, bank or other nominee confirming your beneficial ownership of the shares.

Recommendations of Epoch's Board of Directors

Epoch's board of directors has determined that the merger agreement, the merger and the other transactions contemplated by the merger agreement are advisable, it is advisable and in the best interests of Epoch and its stockholders that Epoch enter into the merger agreement and consummate the merger, and the merger agreement is fair to Epoch and its stockholders. Epoch's board of directors unanimously recommends that Epoch stockholders vote **FOR** the proposals to adopt the merger agreement and approve the merger and to approve the adjournment of the special meeting to a later date, if necessary, to solicit additional proxies if there are not sufficient votes at the special meeting to approve the merger proposal. For a more complete description of the recommendation of Epoch's board of directors, see **The Merger Recommendation of Epoch's Board of Directors** on page 44 of this joint proxy statement/prospectus.

Your vote is important. Accordingly, please sign, date and return the enclosed proxy card whether or not you plan to attend the Epoch special meeting in person.

Table of Contents

THE MERGER AND RELATED TRANSACTIONS

This section of this joint proxy statement/prospectus describes the principal aspects of the proposed merger. While Nanogen and Epoch believe that this description covers the material terms of the merger and the related transactions, this summary may not contain all of the information that is important to Nanogen stockholders and to Epoch stockholders. You can obtain a more complete understanding of the merger by reading the merger agreement, a copy of which is attached to this joint proxy statement/prospectus as Annex A. You are encouraged to read the merger agreement and the other annexes to this joint proxy statement/prospectus carefully and in their entirety.

Background of the Merger

Nanogen's goal is to build a company that is the leading provider of high quality innovative advanced diagnostics products and services to patients, providers and pharmaceutical companies. Nanogen has explored a range of strategies to achieve this goal and to enhance stockholder value. Nanogen's management and board of directors have routinely discussed various potential acquisitions and business combinations and as a part of Nanogen's long-term strategy has sought to add complementary products and services through acquisitions and combinations.

Over the years, Epoch has explored a range of strategies to enhance stockholder value. In late 2003, Epoch began exploring strategic alternatives to add additional products and technologies to Epoch's offerings. During this process, Epoch's board evaluated several product lines and technologies as potential acquisitions by Epoch. In December 2003, Epoch engaged Molecular Securities as its financial advisor to identify strategic partners with greater resources than Epoch. Molecular Securities contacted a number of potential strategic partners that it believed, after consultation with Epoch, were likely candidates to effectuate a transaction with Epoch. Those contacts resulted in only one indication of interest relating to the acquisition of Epoch, other than Nanogen, which ultimately did not result in a formal offer for Epoch.

From time to time in 2003, Dr. Gerber and other representatives of Epoch and Mr. Birndorf and other representatives of Nanogen engaged in informal discussions regarding potential collaboration, marketing and distribution arrangements between the companies as well as a potential business combination. None of these discussions proceeded beyond preliminary stages.

In the first half of 2004, representatives of Nanogen and Epoch engaged in discussions regarding a potential research collaboration to place Epoch's proprietary chemistry on Nanogen's Molecular Biology Workstation. These discussions resulted in a term sheet dated July 15, 2004, for a collaborative research project and the synthesis of small amounts of test material by Epoch for Nanogen's use.

On May 18, 2004, Mr. Ludvigson spoke with Dr. Gerber by telephone to assess Epoch's level of interest in further discussions about a potential business combination.

On June 8, 2004, Dr. Gerber and representatives of Molecular Securities and Mr. Ludvigson and representatives of Seven Hills met in San Francisco. At this meeting, Nanogen and Epoch each presented non-confidential information regarding the business and research and development activities of Nanogen and Epoch. Several days later representatives of Seven Hills and Molecular Securities had a conference call to discuss each party's level of interest in pursuing a potential business combination and the terms of a business combination.

Edgar Filing: NANOGEN INC - Form S-4/A

At a special telephonic meeting of Nanogen's board of directors on June 29, 2004, Nanogen's board of directors discussed with management and representatives of Seven Hills a potential business combination with Epoch and authorized Nanogen's management to indicate in writing to Epoch Nanogen's interest in pursuing a business combination.

Table of Contents

On June 30, 2004, Mr. Birndorf and Mr. Ludvigson called Dr. Gerber to propose a business combination, structured as a stock-for-stock transaction at a traditional control premium, with a price collar. On the same day, Mr. Birndorf sent Dr. Gerber a written non-binding indication of interest with the same information as well as a request for Epoch to agree to negotiate exclusively with Nanogen for a limited period.

On July 2, 2004, Epoch's board of directors had a telephonic meeting with representatives of Molecular Securities and Stradling Yocca Carlson & Rauth, Epoch's legal counsel, present. Dr. Gerber described the general terms of the proposed business combination with Nanogen. Epoch's board of directors authorized management to proceed with negotiating a non-binding term sheet and to enter into a limited exclusivity arrangement with Nanogen.

During the first two weeks of July 2004, representatives of Nanogen and Epoch continued discussing terms of the proposed business combination, a mutual confidentiality agreement and an exclusive negotiation period. On July 12, 2004, Mr. Birndorf sent Dr. Gerber a revised written non-binding indication of interest, which provided for Epoch stockholders to receive consideration representing a thirty percent premium over the trading price of the Epoch common stock, subject to a price collar, and a form of mutual confidentiality agreement. On the same date, Nanogen and Epoch entered into a mutual confidentiality agreement, which included a covenant of Epoch to negotiate exclusively with Nanogen until the earlier of entering into a definitive agreement or August 13, 2004, subject to certain specified exceptions.

On July 15, 2004, Mr. Birndorf, other members of Nanogen's management and representatives of Seven Hills met with Dr. Gerber, other members of Epoch's management, representatives of Molecular Securities and representatives of Stradling Yocca Carlson & Rauth in Kirkland, Washington. At this meeting, Epoch's management made a presentation regarding business, financial and technical aspects of Epoch. Representatives of Nanogen and Seven Hills also conducted due diligence meetings with their Epoch counterparts and reviewed documents provided by Epoch. Some representatives of Nanogen visited Epoch's facilities in Bothell, Washington.

On July 20, 2004, Dr. Gerber, other members of Epoch's management, representatives of Molecular Securities and representatives of Stradling Yocca Carlson & Rauth met with Mr. Birndorf, other members of Nanogen's management and representatives of Seven Hills in San Diego, California. Nanogen's management made a presentation to Epoch regarding business, financial and technical aspects of Nanogen and the strategic rationale for the business combination. Representatives of Epoch, Molecular Securities and Stradling Yocca Carlson & Rauth also conducted due diligence meetings with their Nanogen counterparts and reviewed documents provided by Nanogen. Epoch's management and legal advisors visited Nanogen's facilities in San Diego, California.

At special telephonic meeting of Epoch's board of directors on July 21, 2004, Dr. Gerber, representatives of Epoch's legal and financial advisors and other members of management updated Epoch's board of directors on the discussions with Nanogen and the due diligence process. Epoch's board of directors authorized management to continue discussions with and due diligence of Nanogen.

At a regular meeting of Nanogen's board of directors on July 29, 2004, members of management and representatives of Seven Hills reviewed with Nanogen's board of directors the status of discussions with Epoch and of Nanogen's due diligence of Epoch. Nanogen's board of directors authorized management to continue discussions with and due diligence of Epoch.

On July 30, 2004, Mr. Birndorf sent to Dr. Gerber a letter indicating Nanogen's continued interest in moving forward with the proposed transaction. The letter was accompanied by a non-binding summary of proposed terms for the business combination, which contemplated acquisition of all of the outstanding stock of Epoch in a stock-for-stock transaction, with a thirty percent premium over the trading price of the Epoch common stock, subject to a collar arrangement. As a condition to further negotiations with Epoch, Mr. Birndorf also requested that the exclusivity period be extended for an additional twenty business days.

Table of Contents

On August 2, 2004, Mr. Birndorf and Mr. Ludvigson met for lunch in San Francisco with Dr. Fred Craves, Chairman of the Board of Directors of Epoch, Dr. Gerber and a representative of Bay City Capital, a stockholder of Epoch, to discuss the business prospects for the combined company.

At a special telephonic meeting on August 4, 2004, Epoch's board of directors received reports of management, financial and legal advisors with respect to the transaction and the due diligence review of Nanogen. Epoch's board of directors authorized management to continue negotiations and invited Nanogen's senior management to make a presentation directly to it regarding the strategic rationale for the proposed business combination and the prospects for the combined company.

On August 5, 2004, representatives of Nanogen, Epoch, Seven Hills and Molecular Securities had a telephone conference to discuss the business prospects of Nanogen and Epoch. On August 6, 2004, Epoch and Nanogen entered into an exclusivity agreement which extended Epoch's obligations to negotiate exclusively with Nanogen through September 3, 2004. The parties also exchanged a revised non-binding summary of proposed terms of the business combination for further discussion and negotiation.

During the second, third and fourth weeks of August 2004, the parties and their legal and financial advisors continued conducting due diligence and negotiating terms and conditions of the proposed business combination. On August 17, 2004, Morgan, Lewis & Bockius LLP circulated an initial draft of a merger agreement to Epoch, to which Stradling Yocca Carlson & Rauth provided initial comments on August 23, 2004.

On August 18, 2004, Mr. Birndorf and Mr. Ludvigson met with Epoch's board of directors in San Francisco and presented Nanogen's view of the strategic rationale for the proposed business combination of Nanogen and Epoch. On August 19, 2004, Epoch's board of directors met in San Francisco to discuss and further consider the proposed business combination. At the meeting Dr. Gerber reviewed the status of the discussions with Nanogen, a representative of Stradling Yocca Carlson & Rauth reviewed with Epoch's board of directors its fiduciary duties under Delaware law in connection with its consideration of the proposed business combination and Molecular Securities presented an analysis of the proposed transaction from a financial point of view. Epoch's board, with management and its advisors, conducted a lengthy discussion and analysis of the benefits and risks of the proposed business combination. At this meeting, Epoch's board of directors authorized management to continue negotiations with Nanogen.

On August 27, 2004, Nanogen's board of directors held a special telephonic meeting to receive an update from management and representatives of Seven Hills regarding the negotiations of the merger agreement and to discuss the terms. At this meeting, Nanogen's board of directors directed management to continue negotiations.

At a special telephonic meeting on August 30, 2004, Epoch's board of directors received reports from management, financial advisors and counsel on the status of the negotiation of the merger agreement and financial due diligence issues.

From August 23, 2004 through September 7, 2004, the parties and their legal and financial advisors engaged in extensive negotiations regarding the terms and conditions of the merger agreement relating to the proposed business combination. On September 2, 2004, Dr. Gerber and Mr. Ludvigson and the companies' respective legal counsels met in San Francisco to discuss certain open terms and conditions of the merger agreement. The negotiations regarding open terms and conditions continued by telephone through September 7, 2004.

Edgar Filing: NANOGEN INC - Form S-4/A

On September 3, 2004, Epoch's board of directors held a special telephonic meeting. Management, financial and legal advisors summarized the status of the draft agreement with Nanogen. The board and its advisors had a lengthy discussion of certain issues, in particular the financial structure of the transaction and the fiduciary duties of the board in the context of a sale of the Company. Molecular Securities reviewed financial projections of the companies on a stand alone basis, and on a pro forma combined basis. The board discussed with Molecular Securities and management the implications of these various projections. Management and counsel updated the board on financial, legal, and intellectual property due diligence findings.

On September 3, 2004, Epoch and Nanogen agreed to extend the exclusive negotiating period until September 8, 2004.

Table of Contents

On September 6, 2004, Nanogen's board of directors held a special meeting to consider the adoption of the draft merger agreement and approval of the transactions contemplated thereby, including approval of the issuance of shares of Nanogen common stock under the merger agreement and the amendment to Nanogen's certificate of incorporation. Prior to the meeting, Nanogen's board of directors was provided with materials, including a draft of the merger agreement, a summary of the transaction and a financial analysis of the transaction prepared by Seven Hills. At this meeting, Nanogen's management provided an update of discussions with Epoch, reviewed open issues and gave a summary review of ongoing diligence of Epoch. Morgan, Lewis & Bockius LLP presented information to Nanogen's board of directors regarding the material terms and conditions of the merger agreement and the related voting agreements and advised the board of directors regarding legal considerations relating to the proposed business combination, including a review of the fiduciary obligations of the members of Nanogen's board of directors. Also at this meeting, Seven Hills reviewed with Nanogen's board of directors its financial analysis of the exchange ratio. Following these presentations, the board of directors asked questions of and discussed with management and its financial and legal advisors the merits and risks and legal issues relating to the proposed business combination. Nanogen's board of directors then authorized Nanogen's management to complete negotiation of the merger agreement for further consideration by it.

On September 7, 2004, Epoch's board of directors met with members of Epoch's management and representatives of Stradling Yocca Carlson & Rauth and Molecular Securities. Prior to the meeting, Epoch's board of directors was provided with materials, including a draft of the merger agreement, a summary of the transaction and a financial analysis of the transaction prepared by Molecular Securities. At this meeting, representatives of Molecular Securities presented a financial analysis of the proposed transaction. Following this discussion, Molecular Securities delivered to Epoch's board of directors its oral opinion that, as of that date and subject to the assumptions and considerations to be set forth in its confirmatory written opinion (which was subsequently delivered to Epoch, a copy of which is provided as Annex E to this joint proxy statement/prospectus), the merger consideration to be received by the holders of shares of Epoch common stock in the transaction was fair from a financial point of view to such holders. Following these discussions, Epoch's board of directors determined that the transaction was fair to, and in the best interests of, Epoch and its stockholders. Epoch's board of directors then unanimously adopted and approved the merger agreement, the merger, and the related agreements. Epoch's board of directors also unanimously resolved to recommend that Epoch's stockholders vote in the favor of the merger. The Epoch board of directors then directed that the merger agreement be finalized and executed.

On September, 7, 2004, Nanogen's board of directors held a special telephonic meeting to consider the adoption of the draft merger agreement and approval of the transactions contemplated thereby, including approval of the issuance of shares of Nanogen common stock under the merger agreement and the amendment to Nanogen's certificate of incorporation. At this meeting, a representative of Morgan, Lewis & Bockius LLP provided an update of the negotiation of the terms and conditions of the merger agreement. Seven Hills then delivered to Nanogen's board of directors an oral opinion to the effect that, as of such date and based on and subject to the matters described in the opinion, the exchange ratio pursuant to the merger agreement was fair, from a financial point of view, to Nanogen. This opinion was confirmed in a letter, dated September 7, 2004, a copy of which is attached to this joint proxy statement/prospectus as Annex D. After discussion and consideration, Nanogen's board of directors determined that the merger, the merger agreement and the other transactions contemplated by the merger agreement were advisable and fair to, and in the best interests of, Nanogen and its stockholders, unanimously approved the merger and the merger agreement, the issuance of Nanogen common stock pursuant to the merger agreement and the amendment to Nanogen's certificate of incorporation and determined to recommend that the stockholders of Nanogen vote in favor of the issuance of Nanogen common stock pursuant to the merger agreement and in favor of the amendment to Nanogen's certificate of incorporation. The Nanogen board of directors then directed that the merger agreement be finalized and executed.

Following approvals of the merger and related transactions by the respective boards of directors of Nanogen and Epoch, representatives of Nanogen and Epoch finalized and executed the definitive merger agreement in the

Table of Contents

afternoon of September 7, 2004 and then issued a press release announcing the execution of the merger agreement after the close of the stock markets on September 7, 2004.

In late September 2004, representatives of Nanogen and Epoch commenced discussions regarding a potential sales agency agreement in the United States for Epoch's ASRs. Nanogen and Epoch have not reached agreement on the principal terms of such arrangement.

Nanogen's Reasons for the Merger

In reaching its decision to approve the merger agreement and proceed with the business combination with Epoch, Nanogen's board of directors consulted with Nanogen's management, financial and legal advisors regarding the strategic, operational and financial aspects of the merger. In the course of reaching its decision to approve the merger agreement, the board considered a variety of factors, including the following:

Its analysis of the business, operations, financial performance and condition, prospects and products of each of Nanogen and Epoch as separate entities and on a combined basis.

The strategic nature of the business combination, the complementary nature of Nanogen's and Epoch's products and product pipelines, research and development capabilities of Epoch, and the conviction that the combined company will be a stronger company with an increased presence in the genetic and proteomic testing markets, with increased opportunity for growth.

The belief that the combined company will benefit from synergies that result from the combination. Among other things, Nanogen expects that the aggregate amount of general and administrative expenses will be reduced on a combined company basis through the elimination of redundant functions. Furthermore, Nanogen expects that its sales and marketing groups will be able to promote and sell Epoch's products and technologies without significant additional costs. Given the expected synergies, Nanogen does not expect a material impact on Nanogen's current cash use in operations as a result of the merger.

The current industry, economic and market conditions and trends, including the likelihood of continuing consolidation and increasing competition in the biotechnology industry.

The strategic alternatives reasonably available to Nanogen to enhance stockholder value, including remaining a stand-alone entity and pursuing a strategic business combination with another third party.

The opportunity for Nanogen stockholders to participate in a company with a broader product line, and to benefit from future growth of the combined company.

The results of Nanogen's due diligence review of Epoch.

The oral opinion of Seven Hills, subsequently confirmed by a written opinion dated September 7, 2004, that, as of September 7, 2004, and based upon and subject to the factors and assumptions set forth in the opinion and based upon such other matters as Seven Hills considered relevant, the exchange ratio pursuant to the merger agreement was fair from a financial point of view to Nanogen.

Edgar Filing: NANOGEN INC - Form S-4/A

The terms of the merger agreement relating to third-party offers, including:

The restrictions on the ability of Epoch to solicit offers for alternative business transactions.

The ability of a party to terminate the merger agreement if the other party alters its recommendation in favor of the merger or fails to confirm its recommendation in favor of the merger.

The requirement that each of Nanogen and Epoch must pay the other a termination fee of \$1,750,000 million in the event that the merger agreement is terminated under certain circumstances specified in the merger agreement.

Other terms of the merger agreement, including:

The representations and warranties of Epoch.

The covenants of Nanogen and Epoch and the effect of such covenants on the operations of each company prior to completion of the merger.

Table of Contents

The ability to consummate the merger, including the conditions to the merger requiring receipt of necessary regulatory approvals.

In its review of the proposed merger, Nanogen's board of directors considered the potential adverse impact of other factors, including:

The risks described under the section of this joint proxy statement/prospectus entitled "Risks Relating to the Merger," including the challenges of combining the operations of the two companies.

The limitations imposed on the conduct of Nanogen regarding its business including restrictions on alternative business transactions prior to the completion of the proposed merger.

The challenges of combining the businesses of two corporations with diverse geographical operations and the risks associated with the diversion of management resources and the impact of the merger on employees, collaboration partners and customers.

Nanogen's board of directors did not find it constructive to and did not quantify, rank or otherwise assign relative weights to the factors considered in reaching its decision. Nanogen's board of directors considered all of the factors outlined above, both positive and negative, in reaching its decision; however, individual members of Nanogen's board of directors may have placed different weight on different factors.

This summary of the reasoning of Nanogen's board of directors, as well as certain information presented in this section, is forward-looking in nature. This information should be read in light of the factors discussed under the section entitled "Special Note Regarding Forward-Looking Statements" on page 1.

Recommendations of Nanogen's Board of Directors

Nanogen's board of directors unanimously approved the merger agreement, the merger and the other transactions contemplated thereby and believes that the terms of the merger are advisable, fair to and in the best interests of Nanogen and its stockholders. Nanogen's board of directors unanimously recommends that Nanogen stockholders vote "FOR" the proposals relating to approval of the issuance of shares of Nanogen common stock pursuant to the merger agreement, approval of the amendment of Nanogen's certificate of incorporation, and approval of the adjournment of the special meeting to a later date, if necessary, to solicit additional proxies if there are not sufficient votes at the special meeting to approve the merger-related proposals.

Opinion of Nanogen's Financial Advisor

The board of directors of Nanogen engaged Seven Hills to act as Nanogen's financial advisor and to render a fairness opinion in connection with the proposed merger of Nanogen and Epoch. On September 7, 2004, Seven Hills delivered its opinion to the Nanogen board of directors, which was subsequently confirmed in writing, that based upon and subject to the factors and assumptions set forth therein, the exchange ratio pursuant to the merger agreement was fair from a financial point of view to Nanogen.

The full text of Seven Hills' written opinion, which sets forth, among other things, the assumptions made, procedures followed and matters considered in connection with its opinion, is included as Annex D to this joint proxy statement/prospectus. Nanogen stockholders should read the opinion carefully and in its entirety. The following description of Seven Hills' opinion is only a summary of the written opinion and is qualified in its entirety by the written opinion.

Seven Hills provided its opinion for the information and assistance of the Nanogen board of directors. Nanogen did not impose any limitations on Seven Hills with respect to the investigations made or procedures followed in rendering its opinion.

The opinion does not constitute a recommendation as to how any holder of shares of Nanogen stock should vote with respect to the merger or any other matter. The opinion addresses only the fairness, from

Table of Contents

a financial point of view, to Nanogen of the exchange ratio in the merger. It does not address the relative merits of the merger as compared to any alternative business transaction that might be available to Nanogen. Further, it does not address the underlying decision by Nanogen to engage in the merger.

In connection with its opinion, Seven Hills, among other things:

reviewed certain publicly available financial statements and other information of Nanogen and Epoch, respectively;

reviewed certain internal financial statements and other financial and operating data concerning Nanogen and Epoch, prepared by the managements of Nanogen and Epoch, respectively;

reviewed certain financial projections prepared by the managements of Nanogen and Epoch;

reviewed certain projections of the anticipated financial benefits and synergies of the merger, including cost savings and costs anticipated prior to and resulting from the merger, prepared by the managements of Nanogen and Epoch;

reviewed the pro forma impact of the merger on certain financial and operating metrics, including the impact on cash balances, for the combined company;

discussed with senior executives of Nanogen and Epoch the past and current operations and financial condition and the prospects of Nanogen and Epoch, including financial projections prepared by the managements of Nanogen and Epoch, and information relating to certain strategic, financial and operational benefits anticipated from the merger;

reviewed and compared the reported prices and trading activity for Nanogen common stock and Epoch common stock;

reviewed and compared certain financial and stock market information for Nanogen and Epoch with similar information for certain other companies the securities of which are publicly traded;

reviewed and compared the financial terms, to the extent publicly available, of certain transactions;

reviewed and discussed with the senior managements of Nanogen and Epoch their strategic and financial rationales for the merger;

participated in discussions and negotiations among representatives of Nanogen, Epoch and their respective advisors;

reviewed the draft dated September 7, 2004 of the merger agreement and certain related documents; and

reviewed such other financial studies and analyses and took into account such other matters as Seven Hills deemed necessary, including its assessment of general economic, market and other conditions.

Edgar Filing: NANOGEN INC - Form S-4/A

Seven Hills relied upon the accuracy and completeness of all of the financial, accounting and other information discussed with or reviewed by it. Seven Hills assumed the accuracy and completeness of such information for purposes of rendering its opinion and did not undertake any independent verification thereof. Seven Hills relied upon the assurances of management of Nanogen that it is not aware of any facts that would make such information inaccurate or misleading. With respect to projections and information relating to the strategic, financial and operational costs and benefits anticipated prior to and resulting from the merger, Seven Hills assumed that they were reasonably prepared on bases reflecting the best currently available estimates and judgments of the future financial performance of Nanogen and Epoch, in each case on a standalone and combined basis. Seven Hills did not obtain or make, or assume responsibility for obtaining or making, any independent evaluation or appraisal of the properties or assets or liabilities (contingent or otherwise) of Nanogen or Epoch, nor was Seven Hills furnished with any such evaluations or appraisals. Seven Hills did not evaluate the solvency or fair value of Nanogen or Epoch under any state or federal laws relating to bankruptcy, insolvency or similar matters.

Seven Hills assumed that all material governmental, regulatory or other consents and approvals necessary for the consummation of the transaction contemplated by the merger agreement will be obtained without any

Table of Contents

adverse effect on Nanogen or Epoch or on the benefits of the transaction as contemplated by the merger agreement. Seven Hills also assumed the merger will qualify as a tax-free reorganization for U.S. federal income tax purposes. Seven Hills further assumed that the merger will be consummated in accordance with the terms described in the merger agreement, without any further amendments thereto, and without waiver by Nanogen of any of the conditions to its obligations thereunder. Seven Hills noted that it is not a legal, tax or regulatory expert and relied upon, without assuming any responsibility for independent verification or liability therefor, the assessment of Nanogen's legal, tax and regulatory advisors with respect to the legal, tax and regulatory matters related to the merger. Seven Hills also assumed that the definitive merger agreement and other related documents will not differ in any material respects from the drafts furnished to Seven Hills.

The following represents a brief summary of the material financial analyses performed by Seven Hills in connection with providing its opinion to the Nanogen board of directors. This summary, however, does not purport to be a complete description of the financial analyses performed by Seven Hills, nor does the order of analyses described represent the relative importance or weight given to those analyses by Seven Hills. Some of the summaries of financial analyses performed by Seven Hills include information presented in tabular format. In order to fully understand the financial analyses performed by Seven Hills, you should read the tables together with the text of each summary. The tables alone do not constitute a complete description of the financial analyses. Considering the data set forth in the tables without considering the full narrative description of the financial analyses, including the methodologies and assumptions underlying the analyses, could create a misleading or incomplete view of the financial analyses performed by Seven Hills.

Public Company Analysis. Based on public information, Seven Hills calculated multiples of enterprise value, which Seven Hills defined as market capitalization plus debt and minority interest less cash and cash equivalents, to the last twelve months (LTM) revenues, calendar year 2004 estimated revenues, and calendar year 2005 estimated revenues for 12 tools, instrument and diagnostic companies identified below, in each case with enterprise values less than \$500 million, based on closing prices on September 1, 2004. Seven Hills applied a range of multiples derived from this analysis to Epoch's LTM revenues, calendar year 2004 estimated revenues, and calendar year 2005 estimated revenues to generate an enterprise value range for Epoch. Seven Hills then subtracted net cash to generate an equity value range for Epoch and, based on 28.9 million Epoch fully-diluted shares outstanding, derived a range of implied equity value per share for Epoch, from which Seven Hills generated a range of implied exchange ratios based on the closing price of Nanogen common stock on September 1, 2004. In each case, Seven Hills used estimates based on public filings, published Wall Street research analysts' reports and forecasts and other publicly available third party sources.

Tools, Instrument and Diagnostic Public Companies

Caliper Life Sciences, Inc.

Cepheid

Ciphergen Biosystems, Inc.

Digene Corporation

Harvard Bioscience, Inc.

Illumina, Inc.

Edgar Filing: NANOGEN INC - Form S-4/A

IVAX Diagnostics, Inc.

Luminex Corporation

Meridian Bioscience, Inc.

Stratagene Corporation

Third Wave Technologies, Inc.

Transgenomic, Inc.

Table of Contents

The following table sets forth the range of implied exchange ratios indicated by this analysis based on Nanogen's common stock price of \$4.33 as of September 1, 2004:

	Range of Implied Exchange Ratios			
	Low	Median	Mean	High
LTM Revenues	0.1464	0.2614	0.3259	0.6469
CY04E Revenues	0.1850	0.2869	0.3010	0.4665
CY05E Revenues	0.2344	0.3246	0.3479	0.5194

Seven Hills believes that the 12 companies listed above in the tools, instrument and diagnostic industry have operations similar to some of the operations of Nanogen and Epoch, but noted that none of these companies have the same management, composition, size or combination of businesses as Nanogen or Epoch, and Seven Hills did not include every company that could be deemed to be a participant in this industry or in any specific sectors of this industry.

Precedent Transactions Analysis. Based on public information, Seven Hills calculated the implied exchange ratio based on multiples of enterprise value to the last twelve months revenues in the following nine transactions identified below, including transactions with enterprise values between \$20 million and \$350 million involving companies in the tools, instrument and diagnostic industry that have been announced since January 1, 2002. Seven Hills applied a range of multiples derived from this analysis to Epoch's LTM revenues to generate an enterprise value range for Epoch. Seven Hills then subtracted net cash to generate an equity value range for Epoch and, based on 28.9 million Epoch's fully-diluted shares outstanding, derived a range of implied equity values per share for Epoch, from which Seven Hills generated a range of implied exchange ratios based on the closing price of Nanogen common stock on September 1, 2004. In each case, Seven Hills used estimates based on public filings, published Wall Street research analysts' reports and forecasts and other publicly available third party sources.

Tools, Instrument and Diagnostic Transactions

Announcement Date	Name of Acquiror	Name of Target
March 21, 2004	Molecular Devices Corporation	Axon Instruments, Inc.
February 11, 2004	Fisher Scientific International Inc.	Dharmacon, Inc.
December 19, 2003	Genaissance Pharmaceuticals, Inc.	Lark Technologies, Inc.
July 23, 2003	Stratagene Corporation	Hycor Biomedical Inc.
July 2, 2003	Invitrogen Corporation	Molecular Probes, Inc.
June 9, 2003	Caliper Life Sciences, Inc.	Zymark Corporation
February 11, 2003	Serologicals Corporation	Chemicon International
July 23, 2002	Bayer Diagnostics GmbH	Visible Genetics Inc.
January 8, 2002	deCode genetics Inc.	MediChem Life Sciences, Inc.

The following table sets forth the range of implied exchange ratios based on multiples indicated by this analysis based on Nanogen's common stock price of \$4.33 as of September 1, 2004:

Range of Implied Exchange Ratios

Edgar Filing: NANOGEN INC - Form S-4/A

	Low	Median	Mean	High
LTM Revenues	0.1571	0.2405	0.2695	0.4099

No company or transaction used in the public company or precedent transactions analyses is identical to Nanogen, Epoch or the merger. Accordingly, an analysis of the results of the foregoing is not mathematical; rather, it involves complex considerations and judgments concerning differences in financial and operating characteristics of the companies and other factors that could affect the public trading value of the companies to which Nanogen, Epoch and the merger are being compared.

Table of Contents

Premiums Paid Analysis. Based on public information, Seven Hills calculated the implied exchange ratio based on premiums paid in precedent transactions. Seven Hills reviewed the consideration paid in the following 12 stock-for-stock biotechnology transactions announced since January 1, 2002 with equity values between \$15 million and \$150 million.

Biotechnology Transactions

Announcement Date	Name of Acquiror	Name of Target
March 21, 2004	Molecular Devices Corporation	Axon Instruments, Inc.
December 19, 2003	Genaissance Pharmaceuticals, Inc.	Lark Technologies, Inc.
April 21, 2003	Dendrite International, Inc.	SYNAVANT Inc.
April 15, 2003	GenVec, Inc.	Diacrin Inc.
February 25, 2003	Dendreon Corporation	Corvas International, Inc.
February 10, 2003	OSI Pharmaceuticals, Inc.	Cell Pathways, Inc.
November 21, 2002	H Lundbeck A/S	Synaptic Pharmaceutical Corporation
November 11, 2002	Hyseq Pharmaceuticals Inc.	Variagenics Inc.
July 23, 2002	Bayer Diagnostics GmbH	Visible Genetics Inc.
July 18, 2002	Harvard Bioscience, Inc.	Genomic Solutions Inc.
May 14, 2002	Boston Scientific Corporation	BEI Medical Systems Co.
January 8, 2002	deCode genetics Inc.	MediChem Life Sciences, Inc.

Seven Hills calculated the premiums provided by each transaction based on the 12 companies' closing price per share for the one-day prior to announcement, closing price per share for the five-days prior to announcement, and closing price per share for the 20-days prior to announcement. Seven Hills then applied a range of premiums derived from this analysis to the closing price of Epoch common stock on September 1, 2004. Based on this analysis, Seven Hills determined a range of implied exchange ratios based on the closing price of Nanogen common stock on September 1, 2004.

The following table sets forth the range of implied exchange ratios indicated by this analysis:

	Range of Implied Exchange Ratios			
	Low	Median	Mean	High
1-Day Prior	0.4904	0.6143	0.6907	1.0173
5-Days Prior	0.6237	0.7655	0.7496	0.9450
20-Days Prior	0.5027	0.7103	0.7406	1.2981

Historical Exchange Ratio Analysis. Seven Hills reviewed the historical exchange ratios between Nanogen common stock and Epoch common stock. The exchange ratios used in this analysis were determined by dividing the closing price per share of Epoch common stock by the closing price per share of Nanogen common stock during the period from January 2, 2002 to September 1, 2004. Seven Hills also examined the averages of the historical exchange ratios over various periods, including the five-day period ended September 1, 2004, the twenty-day period ended September 1, 2004, the thirty-day period ended September 1, 2004, the sixty-day period ended September 1, 2004, and the ninety-day period ended September 1, 2004.

Edgar Filing: NANOGEN INC - Form S-4/A

The following table sets forth the average exchange ratios indicated by this analysis:

	<u>Average Exchange Ratio</u>
September 1, 2004	0.4088
5-Day	0.4057
20-Day	0.4180
30-Day	0.4086
60-Day	0.3606
90-Day	0.3476

Table of Contents

Contribution Analysis. Seven Hills performed a contribution analysis comparing the relative contributions of each of Nanogen and Epoch to the pro forma combined company. Using publicly available information for Nanogen and Epoch, as well as financial projections prepared by the managements of Nanogen and Epoch, Seven Hills reviewed each company's relative contribution to the combined company's pro forma revenues, gross profit, assets and liabilities for the calendar years ending December 31, 2003, 2004, 2005 and 2006. Using the relative contributions of Nanogen and Epoch, Seven Hills determined a range of implied exchange ratios based on the closing price of Nanogen common stock on September 1, 2004 and 28.9 million Epoch fully-diluted shares outstanding.

The following table sets forth the relative contributions of Nanogen and Epoch and the implied exchange ratios indicated by this analysis based on Nanogen's common stock price of \$4.33 as of September 1, 2004:

	Percent Contribution		Implied Exchange Ratios
	Nanogen	Epoch	
CY03A Revenues	43%	57%	1.5701
CY04E Revenues	43%	57%	1.5650
CY05E Revenues	58%	42%	0.8732
CY06E Revenues	75%	25%	0.3902
CY03A Gross Profit	35%	65%	2.2442
CY04E Gross Profit	22%	78%	4.1446
CY05E Gross Profit	48%	52%	1.2888
CY06E Gross Profit	68%	32%	0.5477

The preparation of a fairness opinion is a complex process and is not necessarily susceptible to partial analysis or summary description. Seven Hills believes that its analyses and the summary set forth above must be considered as a whole and that selecting portions of its analyses and of the factors considered, without considering all analyses and factors, would create an incomplete view of the process underlying Seven Hills opinion. In arriving at its fairness determination, Seven Hills considered the results of all of its analyses and did not attribute any particular weight to any factor or analysis considered by it. Rather, Seven Hills made its determination as to fairness on the basis of its experience and professional judgement after considering the results of all of its analysis.

These analyses were prepared by Seven Hills in connection with its consideration of the fairness of the exchange ratio pursuant to the merger agreement from a financial point of view to Nanogen, and were provided to Nanogen in connection with the delivery of Seven Hills' opinion. In performing its analyses, Seven Hills made numerous assumptions with respect to industry performance, general business and economic conditions and other matters, many of which are beyond the control of Nanogen and Epoch. The analyses performed by Seven Hills are not necessarily indicative of actual values or actual future results, which may be significantly more or less favorable than those suggested by these analyses. The analyses do not purport to be appraisals or to reflect the prices at which a company might actually be sold or the prices at which any securities may trade at any time in the future. Seven Hills' opinion is necessarily based on economic, market and other conditions in effect on, and the information made available to Seven Hills as of, the date of the opinion, and subsequent developments may affect Seven Hills opinion, although Seven Hills does not have any obligation to update, revise or reaffirm its opinion. In addition, the consideration to be paid by Nanogen in the merger is based upon an exchange ratio collar and, accordingly, the market value of the consideration may vary significantly from the transaction price on the date of Seven Hills' opinion.

As described above, Seven Hills' opinion was only one of the factors that the Nanogen board of directors took into consideration in making its determination to approve the merger agreement and the merger.

Edgar Filing: NANOGEN INC - Form S-4/A

Nanogen selected Seven Hills to act as its financial advisor in connection with the merger based on Seven Hills' experience, expertise and reputation, and its familiarity with Nanogen's business. Seven Hills has provided certain investment banking and financial advisory services to Nanogen from time to time, including having acted as:

placement agent in connection with an offering of common stock and warrants on September 19, 2003;

Table of Contents

placement agent in connection with an offering of common stock on March 5, 2004;

placement agent in connection with an offering of common stock on April 7, 2004; and

financial advisor in connection with its acquisition of SynX Pharma Inc. on April 21, 2004.

Seven Hills may provide investment banking and financial advisory services to Nanogen, Epoch and the combined company in the future, for which services Seven Hills may receive compensation.

Nanogen has agreed to pay Seven Hills a customary fee for its financial advisory services, including delivery of its opinion, a significant portion of which is contingent upon the consummation of the merger. In addition, in the event the merger is not consummated, Seven Hills will receive a portion of any termination or break-up fee. Further, Nanogen has agreed to reimburse Seven Hills for its out-of-pocket expenses (subject to a cap) and to indemnify Seven Hills, its affiliates and each of their respective partners, directors, officers, agents, consultants, employees and controlling persons against specific liabilities, including liabilities under the federal securities laws.

Epoch's Reasons for the Merger

In making its determination to approve and adopt the merger agreement and approve the merger and to recommend adoption of the merger agreement and approval of the merger by Epoch stockholders, Epoch's board of directors consulted with its management, as well as its financial and legal advisors. As discussed in greater detail below, these consultations included discussions regarding Epoch's strategic business plan, the costs and risks of executing that business plan as an independent company, the historical prices for Epoch common stock and Nanogen common stock, Epoch's past and current business operations and financial condition, Epoch's future prospects, the strategic rationale of the potential transaction with Nanogen, the terms and conditions of the merger agreement, and the analysis and fairness opinion provided by Epoch's financial advisor, Molecular Securities.

In approving the merger agreement and the merger, Epoch's board of directors considered a number of positive factors, including the following:

Complementary Nature of Business. Epoch's board of directors believes that there is a strategic fit between the business of the companies, and that greater value per share can be generated by combining with Nanogen to create a stronger company in genomic analysis and molecular diagnostics than that attainable by Epoch as an independent company.

Marketing, Sales and Distribution for Research Products. The board believes the growth of Epoch's research product sales will be enhanced by an integrated, in-house marketing, sales and distribution function. The board believes that reliance on third party distributors has inhibited the market growth of Epoch's research products, because Epoch has had less flexibility in responding to market forces and customers through third party distributors and those distributors have not always devoted the same level of resources to Epoch's products as Epoch would if it had its own sales and distribution functions. While Epoch has been building its own marketing and sales organization, the investment required and time it will take to complete the process are significant, and pose a significant risk for a company of Epoch's size and financial resources.

Analyte Specific Reagents. The board realizes that the marketing and sale of Epoch's analyte specific reagents to diagnostic laboratories requires a different strategy and a different marketing and sales force than that used for its research products. Epoch was therefore faced with a

Edgar Filing: NANOGEN INC - Form S-4/A

significant investment to grow the sales of its analyte specific reagents, and would have to bear that incremental financial burden while the initial sales of analyte specific reagents were relatively low.

Nanogen has a larger, established sales and marketing organization, experienced in sales to both the research market and to the diagnostic laboratory market. The board thus believes that the transaction has the potential to reduce the cost and mitigate the risk in growing Epoch's research product sales and in launching Epoch's analyte specific reagents for diagnostic use.

Table of Contents

Synergies. Epoch's board of directors believed that the transaction presented the opportunity to realize cost savings by consolidating certain sales and marketing and general and administrative functions and eliminating redundant expenses, including the expenses of maintaining separate public companies.

Enhanced Liquidity. Epoch's board of directors recognized that the relatively low trading volume of Epoch's shares impaired the ability of Epoch stockholders to liquidate their investment in Epoch. As stockholder of the combined companies, the Epoch stockholders will be part of a substantially larger stockholder base and, based on Nanogen's historic trading volumes, may have more liquidity in their shares.

Alternative Transactions. Over a period of approximately five months in 2004, Molecular Securities solicited interest from a number of potential purchasers or merger partners in a process designed to explore strategic alternatives. During such time, only one other non-binding indication of interest was received, which ultimately did not result in a formal offer for Epoch. In view of the prior efforts of Epoch and Molecular Securities to find potential purchasers or merger partners, Epoch's board of directors believed that it was unlikely that any other party would propose to enter into a transaction more favorable to Epoch and its stockholders. If, however, such a proposal were to be made, under certain circumstances and subject to the payment of a termination fee, Epoch's board of directors could enter into negotiations with a third party and terminate the merger agreement. In addition, during such period, the board explored potential acquisitions of complementary technologies, products and companies with a goal to increase Epoch's product offerings to support a more robust sales and marketing infrastructure. Each of such transactions posed a risk to Epoch given its limited cash position and constrained infrastructure.

Epoch's board of directors considered Molecular Securities' oral opinion, subsequently confirmed in writing, to the Epoch board of directors that as of September 7, 2004, and based upon and subject to the assumptions and considerations set forth in Molecular Securities' opinion, the merger consideration to be received by holders of Epoch common stock pursuant to the merger agreement was fair from a financial point of view to such holders. See the section entitled "Opinion of Epoch's Financial Advisor" beginning on page 44. **The full text of Molecular Securities' opinion, dated September 7, 2004, which sets forth, among other things, the assumptions made, procedures followed, matters considered and limitations on the review undertaken by Molecular Securities, is attached as Annex E to this joint proxy statement/prospectus. You are urged to, and should read, Molecular Securities' opinion carefully and in its entirety.**

Terms of the Merger Agreement. Epoch's board of directors reviewed the terms of the merger agreement, including the following:

that the proposed \$2.00 merger consideration per Epoch share represents a premium of 14% over the closing price per share of Epoch's common stock on The Nasdaq SmallCap Market of \$1.76 on September 3, 2004 (the last full trading day prior to the approval by the board), and a premium of 30% over the \$1.54 average closing price per share during the prior 20 trading days prior to September 1, 2004.

the exchange ratio collar which protects the value to be received by Epoch's stockholders so long as the price of the Nanogen stock received by the Epoch's stockholders at closing is not less than \$3.16, and also gives the Epoch stockholders the opportunity to realize additional value if the price of the Nanogen common stock received by Epoch's stockholders at closing is greater than \$4.28.

that the principal terms of the merger would be subject to the approval of Epoch stockholders who would be free to reject the transaction;

that if a competing offer were made to Epoch or its stockholders, then, subject to compliance with certain requirements, Epoch's board could negotiate with such competing bidder, and if such offer were superior to that in the merger agreement, Epoch's board could withdraw its recommendation to approve the merger, terminate the merger agreement and accept such superior offer; subject to payment of a \$1,750,000 termination fee;

Table of Contents

that Nanogen's board is unable to withdraw its recommendation to the Nanogen stockholders to approve the transaction, and that if it did so in violation of the merger agreement, that Nanogen would be obligated to pay to Epoch a \$1,750,000 termination fee, in addition to any other remedies available to Epoch under the merger agreement; and

the availability of appraisal rights for those stockholders who exercise these statutory rights.

In its review of the proposed transaction, the Epoch board of directors identified and considered a number of potentially negative factors or risks, including the following:

the risks described under the section entitled "Risk Factors" beginning on page 19;

that, while the transaction is expected to be completed, there can be no assurance that all conditions to the parties' obligations to complete the transaction will be met, and as a result, it is possible that the transaction may not be completed even if approved by Epoch stockholders (see "Conditions to the Completion of the Merger" on page 71);

the risk that if the market price of Nanogen common stock declines, as a result of the limits on adjustment of the exchange ratio, the value of the transaction consideration to be received by the Epoch stockholders at the time of the closing of the transaction could decline below \$2.00 per Epoch share;

that, if the transaction does not close, Epoch will have incurred significant expenses and its employees will have expended extensive efforts to attempt to complete the transaction and will have experienced significant distractions from their work during the pendency of the transaction, and as a result, Epoch may experience adverse effects on its operating results, its ability to attract or retain employees and its competitive position in its markets; and

the risk that the benefits anticipated in connection with the transaction might not be fully realized.

In addition to the factors considered that are described above, in coming to its determination, Epoch's board of directors was aware of the interests that some executive officers and directors of Epoch may have with respect to the transaction in addition to their interests as stockholders of Epoch generally. See "Interests of Epoch Executive Officers and Directors in the Merger" on page 52.

The above discussion of the material factors considered by Epoch's board of directors in making its decision is not intended to be exhaustive, but does set forth all the material factors considered by Epoch's board of directors. In view of the variety of factors considered in connection with its evaluation of the transaction and the complexity of these matters, Epoch's board of directors did not find it useful and did not attempt to quantify, rank or otherwise assign relative weights to these factors. Epoch's board of directors conducted an overall analysis of the factors described above, and on balance considered the factors to be favorable to and to support its determination. In considering the factors described above, individual members of Epoch's board of directors may have given different weight to different factors. However, Epoch's board of directors concluded that the potential benefits of the transaction outweighed the potential negative factors and that, overall, the proposed transaction had greater potential benefits for Epoch's stockholders than other strategic alternatives.

This summary of the reasoning of Epoch's board of directors, as well as certain information presented in this section, is forward-looking in nature. This information should be read in light of the factors discussed under the section entitled "Special Note Regarding Forward-Looking Statements" on page 1.

Recommendations of Epoch's Board of Directors

After careful consideration, Epoch's board of directors unanimously determined that the merger agreement and the merger are advisable and fair to and in the best interest of Epoch and its stockholders and has approved the merger agreement and merger. Epoch's board of directors recommends that Epoch stockholders vote FOR the adoption of the merger agreement and approval of the merger.

Opinion of Epoch's Financial Advisor

Epoch retained Molecular Securities to provide it with financial advisory services in connection with the merger and, if requested by Epoch's board of directors, to render a fairness opinion. Molecular Securities was

Table of Contents

selected by Epoch based on Molecular Securities' qualifications, expertise, and reputation and its knowledge of the business and affairs of Epoch. At the meeting of Epoch's board of directors on September 7, 2004, Molecular Securities rendered its oral opinion, subsequently confirmed in writing, that as of September 7, 2004, and based upon and subject to the assumptions and considerations set forth in its opinion, the merger consideration to be received by holders of Epoch common stock pursuant to the merger agreement was fair from a financial point of view to such holders.

The full text of Molecular Securities' opinion, dated September 7, 2004, which sets forth, among other things, the assumptions made, procedures followed, matters considered and limitations on the review undertaken by Molecular Securities, is attached as Annex E to this joint proxy statement/prospectus with the consent of Molecular Securities. We urge you to read Molecular Securities' opinion carefully and in its entirety. Molecular Securities' opinion is directed to Epoch's board of directors, addresses only the fairness from a financial point of view of the merger consideration to be received by the holders of shares of Epoch common stock pursuant to the merger agreement as of September 7, 2004, and does not address any other aspect of the merger or constitute a recommendation to any Epoch stockholder as to how to vote at the Epoch special meeting. This summary is qualified in its entirety by reference to the full text of the opinion.

In connection with rendering its opinion, Molecular Securities, among other things:

reviewed certain publicly available financial statements and other information of Nanogen and Epoch, respectively;

reviewed certain internal financial statements, financial forecasts and other information concerning Nanogen and Epoch, prepared by the managements of Nanogen and Epoch, respectively, and concerning the pro forma combined company (including synergies and other expected benefits of the merger, together with the associated expected costs), prepared by the managements of both Nanogen and Epoch;

discussed the past, current and forecasted financial position and results of operations and cash flows of Nanogen and Epoch, with senior executives of Nanogen and Epoch, respectively, and the current and forecasted financial position and results of operations and cash flows (including synergies and other expected benefits of the merger, together with the associated expected costs) of the pro forma combined company, with senior executives of both Nanogen and Epoch;

reviewed the reported prices and trading activity for Nanogen common stock and Epoch common stock, respectively;

compared the financial performance of Nanogen and Epoch and the prices and trading activity of Nanogen common stock and Epoch common stock, respectively, with that of certain other comparable publicly-traded companies and their securities;

reviewed the financial terms, to the extent publicly available, of certain comparable acquisition transactions;

participated in discussions and negotiations among representatives of Nanogen and Epoch, and certain other parties, and their financial and legal advisors;

reviewed the merger agreement and certain related documents; and

reviewed such other information, conducted such other discussions with management of Nanogen and Epoch (respectively), performed such other analyses and considered such other factors as Molecular Securities deemed appropriate.

Edgar Filing: NANOGEN INC - Form S-4/A

For the purposes of its opinion, Molecular Securities assumed and relied upon without independent verification the accuracy and completeness of all the financial and other information reviewed by, or discussed with, Molecular Securities and, with respect to the internal financial forecasts, Molecular Securities assumed that they were reasonably prepared on bases reflecting the best currently available estimates and judgments of the

Table of Contents

future financial performance of Nanogen, Epoch and the pro forma combined company, respectively, including management's respective estimates and judgments in relation to each company's technology, product and intellectual property position. Molecular Securities did not make any independent valuation or appraisal of the assets or liabilities of Nanogen or Epoch, nor was it furnished with any such appraisals.

Molecular Securities also assumed, for the purposes of its opinion, that the merger will be consummated in accordance with the terms set forth in the merger agreement, including, among other things, that the merger will be treated as a tax-free reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986 (as amended) and that, in connection with the receipt of all the necessary regulatory approvals for the proposed merger, no restrictions will be imposed or delays will result that would have a material adverse affect on the contemplated benefits expected to be derived in the proposed merger.

Molecular Securities' opinion was necessarily based on the information made available to it, and the financial, economic, market and other conditions as they existed and could reasonably be evaluated, on September 7, 2004. In arriving at its opinion, Molecular Securities also took into account that, in connection with its engagement, it had approached third parties to solicit indications of interest in a possible acquisition or other business combination involving Epoch and held preliminary discussions with certain of these parties prior to September 7, 2004. Molecular Securities' opinion, however, does not address the relative merits of the merger as compared to other business strategies or transactions that may be available to Epoch, nor does it address the underlying business decision of Epoch to engage in the merger. Furthermore, Molecular Securities' opinion does not in any manner address the prices at which the shares of Epoch common stock would trade following the announcement, nor the prices at which the pro forma combined company would trade following the consummation, of the merger.

The following is a brief summary of the material financial analyses performed by Molecular Securities in connection with its oral opinion and the preparation of its written opinion. Some of these summaries of financial analyses include information presented in tabular format. In order to fully understand the financial analyses used by Molecular Securities, the tables must be read together with the text of each summary. The tables alone do not constitute a complete description of the financial analyses.

Epoch

Share Price Performance. Molecular Securities reviewed ranges of closing prices of shares of Epoch common stock for various periods ending on September 3, 2004. Molecular Securities observed the following:

Period Ending September 3, 2004	Range of Closing Prices		
Last 20 Trading Days	\$	1.33	\$1.77
Last Twelve Months	\$	1.33	\$3.56

Molecular Securities noted that the \$2.00 merger consideration per share of Epoch common stock represented a 14% premium to the \$1.76 closing price per share of Epoch common stock as of September 3, 2004, and a 30% premium to the \$1.54 average price per share of Epoch common stock for the 20 trading days prior to September 1, 2004.

Comparable Company Trading Analysis. Molecular Securities compared certain financial information of Epoch with publicly available information for the following selected companies with businesses that share certain characteristics with the businesses of Epoch: Argonaut

Edgar Filing: NANOGEN INC - Form S-4/A

Technologies, Inc., Caliper Life Sciences, Inc., Cepheid, Ciphergen Biosystems, Inc., Illumina, Inc., Luminex Corporation, Sequenom, Inc., Third Wave Technologies, Inc., and Transgenomic, Inc.

For each such comparable company, Molecular Securities calculated the market capitalization as of the close of trading on September 3, 2004 and obtained (as available) consensus analyst estimates of revenues for

Table of Contents

each of the calendar years 2004, 2005 and 2006 to derive market trading revenue multiples for the comparable companies as follows:

Benchmark	Multiple Range
2004E Revenues	0.2x 5.6x
2005E Revenues	1.6x 4.1x
2006E Revenues	1.3x 2.9x

Molecular Securities then estimated the implied value per share of Epoch common stock as of September 3, 2004, by applying a selected range of multiples within the ranges set forth above to management's estimates of revenues as follows:

Benchmark	Amount	Multiple Range	Implied Share Price
2004E Revenues	\$8.8 million	3.0x 4.5x	\$1.21 \$1.66
2005E Revenues	\$13.9 million	2.5x 3.5x	\$1.49 \$1.97
2006E Revenues	\$17.9 million	2.0x 2.5x	\$1.53 \$1.83
		Range	\$1.21 \$1.97

Molecular Securities noted that the \$2.00 merger consideration per share of Epoch common stock implied a premium of 2% 65% to the implied share price range.

No company included by Molecular Securities in the comparable company analysis is identical to Epoch. In evaluating the comparable companies, Molecular Securities made judgments and assumptions with regard to industry performance, general business, economic, market and financial conditions and other matters, many of which are beyond the control of Epoch, such as the impact of competition on the business of Epoch and the industry in general, industry growth and the absence of any material adverse change in the financial condition and prospects of Epoch or the industry or in the financial markets in general.

Analysis of Selected Precedent Transactions. Molecular Securities compared certain financial information of Epoch with publicly available information for the following selected transactions (acquired company/acquiror) involving companies that share certain characteristics with the business of Epoch and transactions that share certain characteristics with the transaction involving Nanogen: (a) Aclara BioSciences, Inc./ViroLogic, Inc.; (b) BioReliance Corporation/Invitrogen Corporation; (c) Amersham PLC/General Electric Company; (d) Genomic Solutions Inc./Harvard Bioscience, Inc.; (e) Vysis, Inc./Abbott Laboratories; (f) Gemini Genomics PLC/Sequenom, Inc.; (g) Packard BioScience Company/PerkinElmer, Inc.; (h) Aurora Biosciences Corporation/Vertex Pharmaceuticals Incorporated; (i) Molecular Dynamics, Inc./Amersham Pharmacia Biotech Inc.; (j) PerSeptive Biosystems, Inc./The Perkin-Elmer Corporation; and (k) Applied Biosystems, Inc./The Perkin-Elmer Corporation.

For each such precedent transaction, Molecular Securities calculated, as of the announcement date of each transaction, (a) the premium represented by the merger consideration per share to the average closing price per share of the acquired company's common stock for the 20 trading days immediately preceding the announcement date; and (b) the multiple implied by the transaction value to the acquired company's 12 month revenue consensus analyst estimates (as available) for the period ending approximately (i) six months, and (ii) 18 months, after the announcement date, as follows:

Benchmark	Range
Control Premium	11% 63%
6 Month Forward Revenues	1.2x 12.6x
18 Month Forward Revenues	1.1x 9.1x

Table of Contents

In connection with the precedent transactions analysis, Molecular Securities noted that revenue estimates for periods ending more than 18 months after the respective announcement dates were much less reliable valuation benchmarks than revenue estimates for periods ending less than 18 months after the respective announcement dates and, therefore, revenue estimates for periods ending more than 18 months after the respective announcement dates were not included in the precedent transactions analysis.

Molecular Securities then estimated as of September 3, 2004 (a) the implied value per share of Epoch common stock by applying a selected range of control premiums within the range set forth above to, as the case may be, (i) the average closing price per share of Epoch common stock for the 20 trading days through September 1, 2004, and (ii) the implied value per share of Epoch common stock as of September 3, 2004 based on the range of values implied for Epoch common stock based on the comparable companies analysis described above; and (b) the implied value per share of Epoch common stock by applying a selected range of multiples within the ranges set forth above to Epoch's management's estimates of revenues, as follows:

Benchmark	Amount	Control Premium Range/Multiple Range	Implied Share Price
Control Premium			
Last 20 Trading Days	\$1.54	30% - 40%	\$2.00 - \$2.16
Comparable Companies Analysis	\$1.21 - \$1.97	30% - 40%	\$1.57 - \$2.76
		Range	\$1.57 - \$2.76
Revenues			
2004E Revenues	\$8.8 million	3.5x - 6.5x	\$1.36 - \$2.28
2005E Revenues	\$13.9 million	2.5x - 5.0x	\$1.49 - \$2.70
		Range	\$1.36 - \$2.70

Because revenue estimates for precedent transactions for periods ending more than 18 months after the respective announcement dates were not included in the precedent transactions analysis, Molecular Securities did not calculate multiple ranges for such periods and therefore did not calculate the range of the implied value per share of Epoch common stock based on 2006E revenues.

Molecular Securities noted that the \$2.00 merger consideration per share of Epoch common stock was within the implied share price ranges.

No company or transaction included by Molecular Securities in the analysis of selected precedent transactions is identical to Epoch or the transaction. In evaluating the precedent transactions, Molecular Securities made judgments and assumptions with regard to industry performance, general business, market and financial conditions and other matters, which are beyond the control of Epoch, such as the impact of competition on the business of Epoch or the industry generally, industry growth and the absence of any material adverse change in the financial condition or prospects of Epoch or the industry or in the financial markets in general, which could affect the public trading value of Epoch and the value of the transactions to which Epoch is being compared.

Discounted Cash Flow Analysis. Molecular Securities calculated a range of equity values per share of Epoch common stock based on a discounted cash flow analysis, which we refer to as a DCF analysis, of management's stand-alone company estimates for the calendar years 2004 through 2007. In arriving at the estimated equity values per share of Epoch common stock, Molecular Securities calculated a terminal value as of December 31, 2007, by applying a range of twelve month trailing revenue multiples ranging from 2.0x to 3.0x. The unlevered free cash flows from calendar year 2004 through 2007 and the terminal value were then discounted to present values using a range of discount rates of 11.5% to 13.5%.

Molecular Securities also calculated a range of equity values per share of Epoch common stock based on a discounted cash flow analysis of management's estimates of merger synergies for the calendar years 2005 and

Table of Contents

2006, and thereafter (assuming a 38% tax rate) based on perpetual growth rates ranging from 0% to 4% per annum. These cash flows were also discounted to present values using a range of discount rates of 11.5% to 13.5%.

The following table summarizes Molecular Securities' DCF analysis:

	<u>Discount Rate</u>	<u>Multiple Range</u>	<u>Implied Share Price</u>
Epoch Stand Alone	11.5% 13.5%	Last 12 Month Revenues 2.0x 3.0x	\$1.44 \$2.06
Merger Synergies	11.5% 13.5%	Perpetual Growth 0% 4%	\$0.41 \$0.68
Total			\$1.85 \$2.74

Molecular Securities noted that the \$2.00 merger consideration per share of Epoch common stock was within the implied share price range.

Nanogen

Share Price Performance. Molecular Securities reviewed ranges of closing prices per share of Nanogen common stock for various periods ending September 3, 2004. Molecular Securities observed the following:

<u>Period Ending September 3, 2004</u>	<u>Range of Closing Prices</u>
Last 20 Trading Days	\$ 3.18 \$ 4.47
Last Twelve Months	\$ 3.10 \$13.32

Molecular Securities noted that closing price per share of Nanogen common stock on September 3, 2004 was \$4.34, and the average closing price per share of Nanogen common stock for the 20 trading days prior to September 1, 2004 was \$3.72.

Comparable Company Trading Analysis. Molecular Securities compared certain financial information of Nanogen with publicly available information for the following selected companies with businesses that share certain characteristics with the businesses of Nanogen: Argonaut Technologies, Inc., Caliper Life Sciences, Inc., Cepheid, CIPHERGEN Biosystems, Inc., Illumina, Inc., Luminex Corporation, Sequenom, Inc., Third Wave Technologies, Inc., and Transgenomic, Inc.

For each such comparable company, Molecular Securities calculated the market capitalization as of the close of trading September 3, 2004 and obtained (as available) consensus analyst estimates of revenues for both of the calendar years 2005 and 2006 to derive market trading revenue multiples for the comparable companies as follows:

Edgar Filing: NANOGEN INC - Form S-4/A

Benchmark	Multiple Range
2005E Revenues	1.6x 4.1x
2006E Revenues	1.3x 2.9x

Table of Contents

Molecular Securities then estimated the implied value per share of Nanogen common stock as of September 3, 2004, by applying a selected range of multiples guided by the ranges set forth above to (a) Nanogen's management's estimates of revenues, adjusted on the basis of discussions with Epoch's management, and (b) a downside sensitivity case on the basis of discussions with Epoch's management, as follows:

				Implied	
Benchmark	Amount	Multiple Range		Share Price	
Management Case					
2005E Revenues	\$15.6 million	3.0x	4.0x	\$3.05	\$3.50
2006E Revenues	\$39.8 million	2.0x	3.0x	\$3.99	\$5.14
		Range		\$3.05	\$5.14
Downside Case					
2005E Revenues	\$13.0 million	2.5x	3.5x	\$2.64	\$3.01
2006E Revenues	\$28.6 million	1.7x	2.5x	\$3.10	\$3.76
		Range		\$2.64	\$3.76

Molecular Securities prepared the downside case on the basis of discussions with Epoch's management for the sole purpose of conducting a sensitivity analysis, and Nanogen's management did not review the revenue estimates (and their underlying assumptions) in the downside case.

Molecular Securities did not calculate the ranges of the implied value per share of Nanogen common stock based on 2004E revenues for Nanogen because the 2004E revenues for Nanogen would not reflect the expectations of Nanogen's management of the material long-term impact of recent acquisitions and the near-term launch of certain products.

Molecular Securities noted that the closing price per share of Nanogen common stock on September 3, 2004 was \$4.34, and the average closing price per share of Nanogen common stock for the 20 trading days prior to September 1, 2004 was \$3.72. Such prices were within the range of values implied by the management case analysis and, in the downside case analysis, the Nanogen September 3, 2004 share price of \$4.34 was above the range of values, and the Nanogen 20 trading days price of \$3.72 was within the range of values, implied by such downside case analysis.

No company included by Molecular Securities in the comparable company analysis is identical to Nanogen. In evaluating the comparable companies, Molecular Securities made judgments and assumptions with regard to industry performance, general business, economic, market and financial conditions and other matters, many of which are beyond the control of Nanogen, such as the impact of competition on the business of Nanogen and the industry in general, industry growth and the absence of any material adverse change in the financial condition or prospects of Nanogen or the industry or in the financial markets in general.

Discounted Cash Flow Analysis. Molecular Securities calculated a range of equity values per share for Nanogen based on a DCF analysis of (a) Nanogen's management's stand-alone company estimates, adjusted on the basis of discussions with Epoch's management, and (b) a downside sensitivity case on the basis of discussions with Epoch's management, in each case for the calendar years 2004 through 2006. In arriving at the estimated equity values per share of Nanogen common stock, Molecular Securities calculated a terminal value as of December 31, 2006, by applying a range of twelve month trailing revenue multiples ranging from 4.0x to 6.0x. The unlevered free cash flows from calendar year 2004 through 2006 and the terminal value were then discounted to present values using a range of discount rates of 11.5% to 15.5%.

Edgar Filing: NANOGEN INC - Form S-4/A

The following table summarizes Molecular Securities' DCF analysis:

	Discount Rate		Multiple Range		Implied Share Price	
Management Case	11.5%	15.5%	4.0x	6.0x	\$3.59	\$5.50
Downside Case	11.5%	15.5%	3.0x	5.0x	\$2.09	\$3.38

Table of Contents

Molecular Securities noted that closing price per share of Nanogen common stock on September 3, 2004 was \$4.34, and the average closing price per share of Nanogen common stock for the 20 trading days prior to September 1, 2004 was \$3.72. Such prices were within the range of values implied by the management case, and above the range of values implied by the downside case.

Exchange Ratio

Market Exchange Ratio. Molecular Securities reviewed ranges of exchange ratios based on closing prices per share of Epoch and Nanogen common stock, respectively, for various periods ending on September 3, 2004. Molecular Securities observed the following:

Period Ending September 3, 2004	Exchange Ratio Range
Last 20 Trading Days	0.3378 0.4727
Last Twelve Months	0.1637 0.9807

Molecular Securities noted that the merger exchange ratio collar of 0.4673 0.6329 represented a 15% 56% premium to the closing market exchange ratio as of September 3, 2004 of 0.4055, and a 12% 51% premium to the average closing market exchange ratio for the 20 trading days prior to September 1, 2004 of 0.4180.

Merger Exchange Ratio. Molecular Securities reviewed ranges of exchange ratios derived from the implied per share value of Epoch common stock based on the acquisition value of Epoch and the implied per share value of Nanogen common stock based on the trading value of Nanogen. The acquisition value of Epoch was based on the precedent transaction analysis and the DCF analysis (including estimated synergies) described in the Epoch section above. The trading value of Nanogen was based on the share price performance analysis and the comparable company trading analysis, including the management case (as adjusted after discussion with Epoch's management) and the downside case, described in the Nanogen section above. Molecular Securities observed the following:

	Exchange Ratio Range
Share Price Analysis	
Precedent Transactions	0.31x 0.74x
Discounted Cash Flow	0.43x 0.74x
Management Case Analysis	
Precedent Transactions	0.45x 0.51x
Discounted Cash Flow	0.50x 0.61x
Downside Case Analysis	
Precedent Transactions	0.65x 0.75x
Discounted Cash Flow	0.73x 0.89x

Molecular Securities noted that the merger exchange ratio collar of 0.4673 0.6329 was within the range of exchange ratios based on the share prices analysis and the management case analysis, and below the range based on the downside case analysis.

Other

In connection with the review of the transaction by Epoch's board of directors, Molecular Securities performed a variety of financial and comparative analyses for purposes of rendering its opinion. The preparation of a fairness opinion is a complex process and is not necessarily susceptible to a partial analysis or summary description. In arriving at its opinion, Molecular Securities considered the results of all of its analyses as a whole and did not attribute any particular weight to any analysis or factor it considered. Molecular Securities believes that selecting any portion of its analyses, without considering all analyses as a whole, would create an incomplete view of the process underlying its analyses and opinion. In addition, Molecular Securities may have given various analyses and factors more or less weight than other analyses and factors, and may have deemed various

Table of Contents

assumptions more or less probable than other assumptions. As a result, the ranges of valuations resulting from any particular analysis described above should not be taken to be Molecular Securities' view of the actual value of Epoch or Nanogen. In performing its analyses, Molecular Securities made numerous assumptions with respect to industry performance, general business and economic conditions and other matters. Many of these assumptions are beyond the control of Epoch or Nanogen. Any estimates contained in Molecular Securities' analyses are not necessarily indicative of future results or actual values, which may be significantly more or less favorable than those suggested by such estimates.

Molecular Securities conducted the analyses described above solely as part of its analysis of the fairness of the merger consideration pursuant to the merger agreement from a financial point of view to holders of shares of Epoch common stock and in connection with the delivery of its opinion dated September 7, 2004 to Epoch's board of directors. These analyses do not purport to be appraisals or to reflect the prices at which shares of common stock of Epoch, Nanogen or the pro forma combined company might actually trade.

The merger consideration to be received by holders of Epoch common stock pursuant to the merger agreement was determined through arm's length negotiations between Epoch and Nanogen and was approved by Epoch's board of directors. Molecular Securities assisted Epoch in these negotiations. Molecular Securities did not, however, recommend any specific merger consideration to Epoch or its board of directors or that any specific merger consideration constituted the only appropriate consideration for the transaction.

In addition, Molecular Securities' opinion and its presentation to Epoch's board of directors was one of many factors taken into consideration by Epoch's board of directors in deciding to approve the merger. Consequently, the analyses as described above should not be viewed as determinative of the opinion of Epoch's board of directors with respect to the merger consideration or of whether Epoch's board of directors would have been willing to agree to different merger consideration.

Molecular Securities is an investment bank which engages in the valuation of businesses and securities in connection with mergers and acquisitions. Pursuant to an engagement letter, Epoch formally engaged Molecular Securities to provide financial advisory services in connection with the merger and, if requested by Epoch's board of directors, to render a fairness opinion. Pursuant to the terms of the engagement letter, if the transaction is completed, Molecular Securities will receive a fee based on the transaction value at the closing date. Based on the transaction value on the date of announcement of the merger, the fee would be approximately \$1.2 million, \$80,000 of which was paid to Molecular Securities for the four month period ending April 30, 2004. Epoch has also agreed to reimburse Molecular Securities for its attorneys' fees, up to a maximum of \$20,000, incurred in connection with its engagement. Pursuant to an indemnity agreement, Epoch has agreed to indemnify Molecular Securities and its affiliates, their respective directors, officers, agents and employees and each other person, if any, controlling Molecular Securities or any of its affiliates against certain liabilities, including any liabilities under the federal securities laws relating to or arising out of its engagement and any related transactions, and to reimburse the parties covered by the indemnity agreement for certain expenses incurred in connection with claims of liability.

Interests of Epoch Executive Officers and Directors in the Merger

In considering the recommendation of the Epoch board of directors that Epoch stockholders vote to approve the merger agreement and the principal terms of the merger, Epoch stockholders should be aware that some Epoch executive officers and directors may have interests in the merger that are different from, or in addition to, their interests as stockholders of Epoch. Described below are the interests of Epoch's executive officers and certain members of Epoch's board of directors. The board of directors of Epoch took into account these interests in considering the fairness of the merger to the Epoch stockholders.

Employment and Change of Control Agreements

William G. Gerber, M.D., Walt Mahoney, Ph.D., Merl Hoekstra, Ph.D. and Bert W. Hogue, executive officers of Epoch, each have an employment agreement with Epoch pursuant to which the executive receives an annual base salary of \$300,000, \$267,500, \$221,000 and \$202,500, respectively, and target incentive

Table of Contents

compensation at the level of \$120,000, \$80,250, \$55,250 and \$50,625 per year, respectively. Employment with Epoch is at will, and either Epoch or the executive officer may terminate his employment with or without cause, and with or without notice. Should any such executive officer be terminated without cause, or voluntarily resign for good reason, within the 12-month period immediately following a change in control, then that individual will become entitled to the following severance benefits pursuant to his employment agreement:

A cash severance payment equal to the base salary that would otherwise have been payable to him during the 12-month period following his termination date, based upon the rate of base salary in effect for him prior to the merger, and

The immediate vesting of all stock options then held by such executive officer, as described in more detail below.

For purposes of such severance benefits, the merger will be a change in control and the executive officer will be deemed to have terminated his employment for good reason if his termination is the result of his resignation in connection with (i) his assignment to a position with Nanogen that is not equivalent to his position with Epoch (taking into account the relative size of the two companies) prior to the merger, (ii) a reduction in his base salary or (iii) a requirement that he work at a location more than 50 miles from Epoch's headquarters prior to the merger, provided that executive officer, if requested in writing by Epoch, continues working for Epoch at Epoch's existing headquarters under the terms of the executive officer's employment agreement for a period of up to six (6) months following the closing of the merger.

Accelerated Vesting of Stock Options and Extended Exercise Period

Options held by Drs. Gerber, Mahoney, and Hoekstra and Mr. Hogue will vest in full on an accelerated basis in the event the optionee's employment is terminated without cause, or the optionee resigns for good reason (as defined above), within 12 months following a change in control.

In addition, each of the outstanding options held by Drs. Gerber, Mahoney, and Hoekstra and Mr. Hogue has been amended in connection with the proposed merger with Nanogen so that in the event such individual's employment is terminated without cause, or he resigns for good reason, within 12 months following the closing of the merger, such options shall remain exercisable for the vested shares subject to that option, including the shares which vest upon an accelerated basis at the time of such cessation of service, until the earliest to occur of (i) the end of the twelve-month period following such cessation of service, (ii) the expiration of the option term or (iii) a merger or acquisition of Nanogen in which that option is not assumed or otherwise continued.

Each outstanding option under the 2003 Plan held by the Epoch non-employee Board members will vest in full on an accelerated basis upon consummation of the merger. In addition, each of the outstanding stock options held by the non-employee members of the Epoch Board has been amended in connection with the proposed merger with Nanogen so that upon the closing of the merger such options shall remain exercisable for the vested shares subject to that option, including the shares which vest upon an accelerated basis at the time of the merger, until the earliest to occur of (i) the end of the 12-month period following such cessation of board service, (ii) the expiration of the option term or (iii) a merger or acquisition of Nanogen in which that option is not assumed or otherwise continued.

Table of Contents

The following stock option table identifies, for the executive officers and directors of Epoch, the aggregate number of vested and unvested shares subject to outstanding Epoch stock options as of October 1, 2004 and the weighted average exercise prices per share in effect for the vested and the unvested shares subject to those options.

Name	Number of Vested Option Shares	Maximum Number of Option Shares that Could Vest on an Accelerated Basis Upon Termination of Employment or (for Board members) Upon the Closing of the Merger			Weighted Average Exercise Price of Outstanding Unvested Options	Weighted Average Exercise Price of Outstanding Vested Options
William Gerber, M.D.	425,000	50,000		\$ 3.08	\$ 3.34	
Merl Hoekstra, Ph.D.	112,083	142,917		\$ 2.95	\$ 4.00	
Walt Mahoney, Ph.D.	110,000	95,000		\$ 2.42	\$ 2.52	
Bert Hogue	114,166	140,834		\$ 2.93	\$ 4.06	
Frederick Craves, Ph.D.	5,000	10,000		\$ 2.24	\$ 1.75	
Richard Dunning	35,233	10,000		\$ 2.24	\$ 3.57	
Michael Lucero	9,167	10,000		\$ 2.24	\$ 1.82	
Herbert Heyneker, Ph.D.	20,479	10,000		\$ 2.24	\$ 5.14	
Janet Whitmore	5,190	1,730		\$ 2.38	\$ 2.38	
Sanford Zweifach	5,000	10,000		\$ 2.24	\$ 1.75	

Indemnification and Directors and Officers Liability Insurance

Nanogen will indemnify each current and former Epoch officer and director against liabilities arising out of that person's services as an officer or director, and Nanogen agreed to cause the surviving entity to maintain in effect directors' and officers' liability insurance covering those persons who are currently covered by Epoch's directors' and officers' liability insurance policy for six years after the completion of the merger on comparable terms to Epoch's policy by purchasing a tail policy. However, Nanogen is only obligated to maintain the insurance to the extent the aggregate premiums during such period do not exceed 250% of Epoch's current annual premium as of September 7, 2004.

Appraisal Rights

Nanogen stockholders are not entitled to dissenters' rights of appraisal for their shares under the Delaware General Corporation Law in connection with the merger.

Edgar Filing: NANOGEN INC - Form S-4/A

If the merger is completed, Epoch stockholders will be entitled to seek an appraisal of, and be paid in cash the fair value of, their shares instead of receiving the merger consideration that they would otherwise be entitled to under the merger agreement. These rights are commonly referred to as appraisal rights. Section 262 of the Delaware General Corporation Law sets forth the requirements that must be satisfied and the procedures that must be followed properly to exercise appraisal rights. Section 262 is reproduced in Annex F to this joint proxy statement/prospectus. Epoch stockholders should read Annex F in its entirety for a more complete description of their appraisal rights under Delaware law. The following discussion is not a complete statement of the law pertaining to appraisal rights under the Delaware General Corporation Law and is qualified in its entirety by the full terms of Section 262.

Stockholders who are entitled to appraisal rights must, in order to exercise such rights, demand and perfect such rights in accordance with Section 262. Failure to satisfy the requirements and follow the procedures set forth in Section 262 may result in a loss of appraisal rights. If you demand appraisal but it is determined that you are not entitled to such rights or otherwise lose such rights, you will be entitled to receive the merger consideration (without interest) that you would have been entitled to under the terms of the merger agreement if you had not sought to exercise appraisal rights.

Table of Contents

Appraisal rights are available only to record holders of shares of Epoch stock. If you are not a record holder and you wish to exercise appraisal rights in respect of shares in which you have a beneficial interest and which are held of record by or in the name of another person, such as a broker or nominee, you should act promptly to cause the record holder to follow the procedures set forth in Section 262 to perfect your appraisal rights.

Section 262 requires us to notify Epoch stockholders, at least 20 days before the special meeting, as to the availability of appraisal rights and to provide Epoch stockholders with a copy of Section 262. This joint proxy statement/prospectus, including Annex F, serves as the required notice.

To exercise your appraisal rights, you must:

deliver to Epoch before the vote on the merger agreement a written demand for an appraisal of your shares;

continuously hold your shares from the date you deliver a written demand for an appraisal through the effective date of the merger; and

not vote in favor of the merger agreement.

In addition, if neither any stockholder who has demanded appraisal rights nor Epoch has filed a petition in the Delaware Court of Chancery demanding a determination of the fair value of the shares seeking appraisal within 120 days after the effective date of the merger, then all stockholders' appraisal rights will be lost. Epoch has no obligation and does not intend to file such an appraisal petition. Accordingly, it is the obligation of the stockholders seeking appraisal to file an appropriate appraisal petition with the Court of Chancery within the 120-day time period prescribed by Section 262.

Any demand for an appraisal must be in writing, signed and mailed or delivered to:

Epoch Biosciences, Inc.

21720 23rd Drive SE, Suite 150

Bothell, WA 98021

Attn: Bert W. Hogue

A written demand must reasonably inform Epoch of the identity of the stockholder and of the stockholder's intent to demand appraisal of his, her or its shares of Epoch's stock. Voting against the merger or otherwise failing to vote for the merger will not by itself constitute a demand for an appraisal or sufficient notice of an election to exercise appraisal rights. If you sell or otherwise transfer or dispose of your Epoch shares before the effective time of the merger, you will lose your appraisal rights with respect to those shares.

Edgar Filing: NANOGEN INC - Form S-4/A

A demand for appraisal should be signed by or on behalf of the stockholder exactly as the stockholder's name appears on the stockholder's stock certificates. If the shares are owned of record in a fiduciary capacity, such as by a trustee, guardian or custodian, the demand should be executed in that capacity, and if the shares are owned of record by more than one person, as in a joint tenancy or tenancy in common, the demand should be executed by or on behalf of all joint owners. An authorized agent, including one or more joint owners, may execute a demand for appraisal on behalf of a record holder; however, in the demand the agent must identify the record owner or owners and expressly disclose that the agent is executing the demand as an agent for the record owner or owners. A record holder such as a broker who holds shares as nominee for several beneficial owners may exercise appraisal rights for the shares held for one or more beneficial owners and not exercise appraisal rights for the shares held for other beneficial owners. In this case, the written demand should state the number of shares for which appraisal rights are being sought. When no number of shares is stated, the demand will be presumed to cover all shares held of record by the broker or nominee.

If the merger is completed, Nanogen will send, within ten days after the effective date of the merger, notice of the effective date of the merger to each Epoch stockholder who has properly demanded appraisal rights under Section 262 and has not voted in favor of the merger agreement. If your shares are held in brokerage accounts or other nominee forms and you wish to exercise appraisal rights, you are urged to consult with your broker to

Table of Contents

determine the appropriate procedures for the making of a demand for appraisal by such nominee. If you have complied with the requirements for exercising appraisal rights, then, during the 120 days following the effective date of the merger, you may request from Nanogen a statement as to the aggregate number of shares not voted in favor of the merger agreement and with respect to which demands for appraisal have been timely received and the number of former holders of those shares. Upon receiving any such request, which must be made in writing, Nanogen will mail a statement of that information to you within ten days.

If a petition for an appraisal is filed within the 120-day period prescribed by Section 262 and a copy thereof is served upon Epoch, Nanogen will then be obligated within 20 days of service to file with the Delaware Register in Chancery a duly certified list containing the names and addresses of all stockholders who have demanded appraisal of their shares of Epoch common stock and with whom agreements as to the value of their shares have not been reached. After notice to such holders as required by the Delaware Court of Chancery, the Delaware Court of Chancery may hold a hearing on the petition to determine the stockholders who have complied with Section 262 and who have become entitled to appraisal rights thereunder. The Court of Chancery may require the former stockholders who demanded appraisal of their shares of Epoch common stock to submit their stock certificate to the Delaware Register in Chancery for notation thereon of the pendency of the appraisal proceeding. If any former stockholder fails to comply with such direction, the Court of Chancery may dismiss the proceedings as to such former stockholder. After determining the former stockholders entitled to appraisal, the Delaware Court of Chancery will appraise the fair value of their shares of Epoch common stock. The determination of fair value will not include any element of value arising from the accomplishment or expectation of the merger. The court will also determine a fair rate of interest, if any, to be paid upon the amount determined to be the fair value of the shares. The court may determine that the fair value of the shares is more than, the same as or less than the value of the consideration that you otherwise would have been entitled to receive under the merger agreement. The Delaware Supreme Court has stated that proof of value by any techniques or methods that are generally considered acceptable in the financial community and otherwise admissible in court should be considered in the appraisal proceedings. In addition, Delaware courts have decided that a stockholder's statutory appraisal remedy may or may not be a dissenter's exclusive remedy, depending on the factual circumstances.

The costs of the action may be determined by the Delaware Court of Chancery and taxed upon the parties, as the court deems equitable in the circumstances. Upon application of a stockholder, the court may order that all or a portion of the expenses incurred by any stockholder in an appraisal proceeding, including, without limitation, reasonable attorneys' fees and the fees and expenses of experts utilized in the appraisal proceeding, be charged pro rata against the value of all of the shares entitled to appraisal.

If you have duly demanded an appraisal of your shares in compliance with Section 262 and have not effectively withdrawn such demand for appraisal, you will not, after the effective date of the merger, be entitled to vote those shares for any purpose, nor will you be entitled to the payment of dividends or other distributions on those shares, except for dividends or other distributions payable to stockholders as of a record date before the effective date of the merger.

You may withdraw your demand for appraisal of your shares within 60 days after the effective date of the merger. Any attempt to withdraw your demand more than 60 days after the effective date of the merger will require our written approval. Once a petition for appraisal is filed with the Delaware Court of Chancery, the appraisal proceeding may not be dismissed without court approval. If your demand for appraisal rights has been effectively withdrawn, you will receive the consideration in the merger that you would otherwise be entitled to (without interest).

Material U.S. Federal Income Tax Consequences of the Merger

General

Edgar Filing: NANOGEN INC - Form S-4/A

The following general discussion summarizes the material United States federal income tax consequences of the merger to Nanogen, to Empire Acquisition Corp., to Epoch, and to holders of Epoch common stock who are United States persons, as defined for United States federal income tax purposes and who hold their Epoch

Table of Contents

common stock as a capital asset within the meaning of Section 1221 of the Code. For United States federal income tax purposes, a United States person is:

a United States citizen or resident alien as determined under the Code;

a corporation (as defined in the Code) that is organized under the laws of the United States, any state or the District of Columbia;

an estate, the income of which is subject to United States federal income taxation regardless of its source; or

a trust, if (i) a court within the United States is able to exercise primary supervision over its administration and at least one United States person is authorized to control all of its substantial decisions or (ii) it has a valid election in effect under applicable treasury regulations to be treated as a United States person.

The term non-United States person means a person or holder other than a United States person.

This section does not discuss all of the United States federal income tax considerations that may be relevant to a particular stockholder in light of his or her individual circumstances or to stockholders subject to special treatment under the federal income tax laws, including, without limitation:

brokers or dealers in securities or foreign currencies;

stockholders who are subject to the alternative minimum tax provisions of the Code;

tax-exempt organizations;

stockholders who are non-United States persons ;

expatriates;

stockholders that have a functional currency other than the United States dollar;

banks, financial institutions or insurance companies;

stockholders who acquired Epoch common stock in connection with stock option or stock purchase plans or in other compensatory transactions;

stockholders who hold Epoch common stock as part of an integrated investment, including a straddle, hedge, or other risk reduction strategy, or as part of a conversion transaction or constructive sale;

Edgar Filing: NANOGEN INC - Form S-4/A

stockholders who acquired their shares through Epoch's 401(k) plan, deferred compensation plan or other retirement plan; or

stockholders whose Epoch common stock is qualified small business stock for purposes of Section 1202 of the Code.

No ruling has been or will be sought from the Internal Revenue Service as to the United States federal income tax consequences of the merger, and the following summary is not binding on the Internal Revenue Service or the courts. This discussion is based upon the Code, laws, regulations, rulings and decisions in effect as of the date of this proxy statement/prospectus, all of which are subject to change, possibly with retroactive effect. This summary does not address the tax consequences of the merger under state, local and foreign laws or under United States federal tax law other than income tax law.

Epoch stockholders are strongly urged to consult their tax advisors as to the specific tax consequences to them of the merger, including any applicable federal, state, local and foreign tax consequences.

It is a condition to the obligation of Nanogen to consummate the merger that Nanogen receive an opinion from its counsel, Morgan, Lewis & Bockius LLP, and it is a condition to the obligation of Epoch to consummate the merger that Epoch receive an opinion from its counsel, Stradling Yocca Carlson & Rauth, in each case, to the effect that, based upon certain facts, representations and assumptions, the merger will constitute a reorganization within the meaning of Section 368(a) of the Code and such opinions shall not have been

Table of Contents

withdrawn; provided, however, that if the counsel to either Nanogen or Epoch does not render such opinion, this condition will be deemed to be satisfied if counsel to the other party renders the opinion to both parties that the merger will constitute a tax free reorganization within the meaning of Section 368(a) of the Code. The issuance of the opinions is conditioned on, among other things, the receipt by Morgan, Lewis & Bockius LLP and Stradling Yocca Carlson & Rauth LLP, of representation letters from each of Nanogen, Empire Acquisition Corp. and Epoch, in each case, in form and substance reasonably satisfactory to Morgan, Lewis & Bockius LLP and Stradling Yocca Carlson & Rauth. The issuance of the opinions is also based on certain assumptions, that if not true, could affect whether or not the transaction constitutes a tax-free reorganization. These assumptions relate to, among other things, (i) the treatment of Epoch debt for tax purposes, (ii) the number of dissenters and the amount and source of cash received by such dissenters, and (iii) the satisfaction of certain filing requirements by the parties. An opinion of counsel represents that counsel's best legal judgment and is not binding on the Internal Revenue Service or any court.

The following summary assumes that the merger will be completed as described in the merger agreement and this joint proxy statement/prospectus and that the merger will constitute a reorganization within the meaning of Section 368(a) of the Code.

Epoch stockholders will not recognize any gain or loss upon the receipt of Nanogen common stock in exchange for Epoch common stock in connection with the merger (except to the extent of cash received in lieu of a fractional share of Nanogen common stock, as discussed below);

cash payments received by an Epoch stockholder for a fractional share of Nanogen common stock will be treated as if such fractional share had been issued in connection with the merger and then redeemed by Nanogen for cash. Epoch stockholders will recognize capital gain or loss with respect to such cash payment, measured by the difference, if any, between the amount of cash received and the tax basis in such fractional share;

the aggregate tax basis of the Nanogen common stock received by an Epoch stockholder in connection with the merger will be the same as the aggregate tax basis of the Epoch common stock surrendered in exchange for Nanogen common stock, reduced by any amount allocable to a fractional share of Nanogen common stock for which cash is received;

the holding period of the Nanogen common stock received by an Epoch stockholder in connection with the merger will include the holding period of the Epoch common stock surrendered in connection with the merger;

a dissenting stockholder who perfects appraisal rights will generally recognize gain or loss with respect to his or her shares of the Epoch common stock equal to the difference between the amount of cash received and his or her basis in such shares. Such gain or loss will generally be long term capital gain or loss, provided the shares were held for more than one year prior to the disposition of the shares. Interest, if any, awarded in an appraisal proceeding by a court would be included in such stockholder's income as ordinary income; and

Nanogen, Empire Acquisition Corp., and Epoch will not recognize gain or loss as a result of the merger.

Backup Withholding

If you are a non-corporate holder of Epoch common stock you may be subject to information reporting and a 28% backup withholding on any cash payments received in lieu of a fractional share interest in Nanogen common stock or cash payments for perfecting appraisal rights. You will not be subject to backup withholding, however, if you:

Edgar Filing: NANOGEN INC - Form S-4/A

furnish a correct taxpayer identification number and certify that you are not subject to backup withholding on the substitute Form W-9 or successor form included in the letter of transmittal to be delivered to you following the completion of the merger (or the appropriate Form W 8, as applicable); or

are otherwise exempt from backup withholding.

Table of Contents

Any amounts withheld under the backup withholding rules will be allowed as a refund or credit against your United States federal income tax liability, provided you furnish the required information to the Internal Revenue Service.

Tax Return Reporting Requirements

If you receive Nanogen common stock as a result of the merger, you will be required to retain records pertaining to the merger, and you will be required to file with your United States federal income tax return for the year in which the merger takes place a statement setting forth certain facts relating to the merger as provided in Treasury Regulations Section 1.368-3(b).

The preceding discussion does not purport to be a complete analysis or discussion of all potential tax effects relevant to the merger. Epoch stockholders are urged to consult their own tax advisers as to the specific consequences of the merger to them, including tax return reporting requirements, the applicability and effect of federal, state, local, foreign and other tax laws and the effects of any proposed changes in the tax laws.

Taxable Acquisition

The failure of the merger to qualify as a reorganization within the meaning of 368(a) of the Code would result in a Epoch stockholder recognizing gain or loss with respect to the shares of Epoch common stock surrendered by such stockholder equal to the difference between the stockholder's basis in the shares and the fair market value, as of the effective time of the merger, of the Nanogen common stock received in exchange for the Epoch common stock (and the cash received in lieu of a fractional share of Epoch common stock). In such event, a stockholder's aggregate basis in the Nanogen common stock so received would equal its fair market value and such stockholder's holding period would begin the day after the merger. A dissenting stockholder who receives cash will be required to recognize gain or loss in the same manner as described above (see discussion of dissenters in a reorganization above).

Accounting Treatment of the Merger

Nanogen intends to account for the merger as a purchase of Epoch by Nanogen for financial reporting and accounting purposes, in accordance with accounting principles generally accepted in the United States. The purchase accounting transaction will result in a purchase price in excess of net tangible and intangible assets acquired. The purchase price is expected to be approximately \$64.6 million. Nanogen expects that the final purchase price will be determined after the completion of the merger. The allocation of the purchase price among net tangible assets acquired, goodwill and other intangibles will be determined with the assistance of independent appraisers. Amortizable intangible assets, currently estimated at \$15.1 million, will generally be amortized over the estimated useful lives with initial estimates ranging from 3.0 years to 11.3 years, resulting in an estimated accounting charge for amortization attributable to these items of approximately \$1.5 million on an annual basis for the first three years. Goodwill resulting from the business combination will not be amortized but instead will be tested for impairment at least annually (more frequently if certain indicators are present). The amount of the estimated purchase price allocated to goodwill, which is based on certain assumptions, is estimated to be approximately \$41.2 million.

If Nanogen management should change the assumptions used in the allocation of the purchase price or the remaining estimated lives of the intangible assets, amounts allocated to intangible assets with definite lives may increase significantly or estimated lives may decrease significantly, which could result in a material increase in amortization of intangible assets. In addition, if Nanogen management determines that

Edgar Filing: NANOGEN INC - Form S-4/A

the value of goodwill has become impaired, the combined company will incur an accounting charge for the amount of impairment during the fiscal quarter in which the determination is made. The amounts listed in the above paragraph are only preliminary estimates, however, actual amounts may differ from these estimates.

Table of Contents

Restrictions on Sales of Shares by Affiliates

The shares of Nanogen common stock to be issued in connection with the merger will be registered under the Securities Act and will be freely transferable under the Securities Act, except for shares of Nanogen common stock issued to any person who is deemed to be an affiliate of Epoch at the time of the Epoch special meeting. Persons who may be deemed to be affiliates include individuals or entities that control, are controlled by, or are under the common control of Epoch and may include Epoch executive officers and directors, as well as significant Epoch stockholders.

Epoch affiliates may not sell their shares of Nanogen common stock acquired in connection with the merger unless the sale, transfer or other disposition:

has been registered under the Securities Act;

is made in conformity with Rule 145 under the Securities Act; or

is made in conformity with some other exemption from the registration requirement under the Securities Act.

Nanogen's registration statement on Form S-4, of which this joint proxy statement/prospectus forms a part, does not cover the resale of shares of Nanogen common stock to be received by Epoch affiliates in the merger.

Nasdaq National Market Quotation

It is a condition to the closing of the merger that the shares of Nanogen common stock issued to Epoch stockholders in connection with the merger to be authorized for listing on The Nasdaq National Market before the completion of the merger, subject to official notice of issuance.

Delisting and Deregistration of Epoch Common Stock After the Merger

When the merger is completed, Epoch common stock will be delisted from the Nasdaq SmallCap Market and deregistered under the Exchange Act.

Table of Contents

THE MERGER AGREEMENT

The following summary describes the material provisions of the merger agreement. The provisions of the merger agreement are complicated and not easily summarized. This summary may not contain all of the information about the merger agreement that is important to you. The merger agreement is attached to this joint proxy statement/prospectus as Annex A and is incorporated by reference into this joint proxy statement/prospectus, and we encourage you to read it carefully in its entirety for a more complete understanding of the merger agreement.

The Merger

Generally

The merger agreement provides that at the closing of the merger, Empire Acquisition Corp., a wholly owned subsidiary of Nanogen, will be merged with and into Epoch. Upon completion of the merger, Epoch will continue as the surviving corporation and will be a wholly owned subsidiary of Nanogen. The merger is intended to qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code for federal income tax purposes.

Certificate of Incorporation and Bylaws of the Surviving Corporation

The certificate of incorporation and bylaws of the surviving corporation will be amended and restated upon the effective time of the merger to conform to the certificate of incorporation and bylaws of Empire Acquisition Corp. in effect immediately prior to the effective time of the merger, except that the name of the surviving corporation will be Epoch Biosciences, Inc.

Directors and Officers of the Surviving Corporation after the Merger

The directors and officers of the surviving corporation will be the directors and officers of Empire Acquisition Corp. immediately prior to the effective time of the merger.

Completion and Effectiveness of the Merger

We will complete the merger no later than three (3) business days after all of the conditions to completion of the merger contained in the merger agreement described in the section entitled Conditions to Completion of the Merger beginning on page 71 of this joint proxy statement/prospectus are satisfied or waived, including approval of the issuance of shares of Nanogen common stock and approval of the amendment to Nanogen's certificate of incorporation by the stockholders of Nanogen and the adoption of the merger agreement and approval of the merger by the stockholders of Epoch. The merger will become effective upon the filing of a certificate of merger with the Secretary of State of the State of Delaware, or such later time as set forth in the certificate of merger.

We are working to complete the merger as quickly as possible. We currently plan to complete the merger by the end of 2004. However, we cannot predict the exact timing because completion of the merger is subject to several customary closing conditions described in the section entitled "Conditions to Completion of the Merger."

Exchange Ratio and Conversion of Epoch Capital Stock

The merger agreement provides that, at the completion of the merger:

Each share of Epoch common stock issued and outstanding immediately prior to the merger (excluding shares for which appraisal rights have been exercised) will be automatically canceled and will cease to exist, and will automatically be converted into the right to receive a number of shares of Nanogen common stock equal to the exchange ratio. The exchange ratio will be calculated as follows:

if the average of the closing prices per share of Nanogen common stock as reported on the Nasdaq National Market for the twenty consecutive trading days ending on and including the third trading day preceding the closing of the merger (referred to as the Nanogen issue price) is less than or equal to \$3.16, then the Exchange Ratio will equal 0.6329;

Table of Contents

if the Nanogen issue price is greater than \$3.16, but less than \$4.28, then the exchange ratio will be calculated by dividing \$2.00 by the Nanogen issue price (calculated to the nearest one ten-thousandth share of Nanogen); or

if the Nanogen issue price is equal to or greater than \$4.28, then the exchange ratio will equal 0.4673.

Each share of Epoch common stock held in the treasury of Epoch or owned by Nanogen or its subsidiaries immediately prior to the merger will be automatically canceled and will cease to exist, and no payment or other consideration will be made with respect to those shares.

Each issued and outstanding share of common stock of Empire Acquisition Corp. will be converted into one fully paid and non-assessable share of the surviving corporation.

Treatment of Epoch Stock Option Plans and Outstanding Epoch Stock Options and Warrants

Assumption of Plans and Outstanding Options

At the effective time of the merger, Nanogen will assume Epoch's 1991 and 1993 Incentive Stock Option, Nonqualified Stock Option and Restricted Stock Plans (the 1991 Plan and 1993 Plan, respectively) and Epoch's 2003 Stock Incentive Plan (the 2003 Plan), including all outstanding options under those plans and the remaining unallocated balance of Epoch common stock available for issuance under the 2003 Plan. That unallocated balance will also include, to the extent permissible under applicable law and the rules of the Nasdaq Stock Market, Inc., each of the automatic annual increase to the share reserve under the 2003 Plan which is to occur pursuant to the express provisions of that plan.

Accordingly, at the effective time of the merger, each outstanding option to purchase shares of Epoch common stock issued under the 1991, 1993 or 2003 Plan will be assumed by Nanogen, whether that option is vested or unvested at that time. Each such stock option assumed by Nanogen will continue to have the same terms, and be subject to the same conditions, that were applicable to the option immediately prior to the effective time of the merger, except that:

the assumed option will be exercisable for shares of Nanogen common stock;

the number of shares of Nanogen common stock subject to the assumed option will be determined by multiplying the number of shares of Epoch common stock subject to that option immediately prior to the merger by the exchange ratio and rounding down to the nearest whole number of shares of Nanogen common stock; and

the per share exercise price in effect under the assumed option will be determined by dividing the exercise price per share in effect under that option immediately prior to the merger by the exchange ratio and rounding up to the nearest whole cent.

The reserve of Epoch common stock under each assumed plan will also be converted into shares of Nanogen common stock by multiplying that share reserve by the exchange ratio and rounding down to the nearest whole share of Nanogen common stock.

Edgar Filing: NANOGEN INC - Form S-4/A

As of October 1, 2004 options for 489,882, 1,239,733 and 921,920 shares of Epoch common stock were outstanding under the 1991 Plan, 1993 Plan, and 2003 Plan, respectively, no unallocated share reserve was available for issuance under the 1991 Plan and 1993 Plan, and 1,204,988 unallocated shares were available for issuance under the 2003 Plan. To the extent any options granted under the 2003 Plan expire or terminate unexercised, whether before the merger or after their assumption and conversion into options for Nanogen shares following the merger, the shares subject to those unexercised options will be available for reissuance under the 2003 Plan, as assumed by Nanogen. In addition, any shares of restricted stock issued under the 2003 Plan which are subsequently reacquired by Epoch or Nanogen at a price per share not more than the original purchase price paid per share, as adjusted for the exchange ratio, will also be available for reissue under the 2003 Plan.

Table of Contents

Automatic Annual Increase Feature

Pursuant to the terms of the 2003 Plan, as approved by the Epoch stockholders, the number of shares of common stock issuable under the 2003 Plan will automatically increase on the first day of each calendar year, beginning with the 2004 calendar year and continuing for the next eight calendar years, by a number of shares not to exceed the lesser of (i) 750,000 shares of Epoch common stock or (ii) 2.5% of Epoch's diluted shares outstanding on that date. However, the number of shares to be added to the 2003 Plan at the start of any calendar year pursuant to such automatic increase feature will be limited to the extent necessary to assure that such increase would not create a share reserve greater than the amount by which 18% of Epoch's diluted shares outstanding at that time exceeds the number of shares of Epoch common stock subject to then outstanding options under the 1991 and 1993 Plans. For purposes of the automatic annual increase feature, diluted shares outstanding on any calculation date means (i) the number of shares of Epoch common stock outstanding on that date, plus (ii) the additional number of shares of Epoch common stock issuable on such date, assuming the conversion of all outstanding Epoch preferred stock and convertible notes, plus (iii) the additional number of shares of Epoch common stock which would be outstanding if all of the then outstanding Epoch options and warrants were exercised, plus (iv) the remaining unallocated reserve under the 2003 Plan.

To the extent permissible under applicable law and the rules of the Nasdaq Stock Market, Inc., Nanogen intends to continue the automatic annual increase provision under the 2003 Plan following the assumption of that plan by Nanogen. Accordingly, the number of shares of Nanogen common stock issuable under the assumed 2003 Plan will automatically increase on the first day of each calendar year, each year, beginning as early as the 2005 calendar year and continuing through the 2012 calendar year. The number of shares by which the 2003 Plan will so increase each year will be fixed at the time of the merger and will be equal to the lesser of (i) 750,000 shares multiplied by the exchange ratio or (ii) a number of shares equal to 2.5% of Epoch's diluted shares outstanding measured immediately prior to the effective date of the merger, multiplied by the exchange ratio. In addition, the overall limitation on the number of shares which can be so added to the 2003 Plan will also be preserved so that the annual increase to the 2003 Plan will be limited to the extent necessary to assure that the number of shares unissued and available for issuance under the assumed 2003 Plan following such increase will not exceed that number of Nanogen shares determined by (i) first multiplying 18% of the Epoch's diluted shares as measured immediately prior to the closing of the merger by the exchange ratio and (ii) then reducing that product by the number of Epoch shares subject to outstanding options under the 1991 and 1993 Plans immediately prior to the closing of the merger multiplied by the exchange ratio. A vote in favor of the issuance of Nanogen common stock pursuant to the merger agreement will also constitute in effect a vote in favor of the issuance of shares of Nanogen common stock pursuant to the assumed 2003 Plan including the issuance of shares of Nanogen common stock added to the plan pursuant to its automatic annual increase feature following Nanogen's assumption of the plan.

The share reserve available under the 2003 Plan as assumed by Nanogen may not be used after the merger to effect option grants or stock issuances to individuals who are in the employ or service of Nanogen immediately prior to the merger. The share reserves under the 1991 and 1993 Plans will be available for use only for the exercise of options outstanding at the time of the merger and assumed by Nanogen.

Vesting Acceleration and Extended Exercise Periods

Stock options granted under the 2003 Plan provide for accelerated vesting of the unvested portion of each option if within 12 months following the merger the optionee is terminated for reasons other than misconduct or the optionee voluntarily resigns following (i) optionee's assignment to a position with Nanogen that is not equivalent to his position with Epoch (taking into account the relative size of the two companies) prior to the merger, (ii) a reduction in optionee's base salary by more than 10% or (iii) a requirement that optionee work at a location more than 30 miles from Epoch's headquarters prior to the merger. As of October 1, 2004, options for 921,920 Epoch shares were outstanding under the 2003 Plan, of which 746,855 shares were unvested.

Edgar Filing: NANOGEN INC - Form S-4/A

In addition, all options granted to Messrs. Gerber, Mahoney, Hoekstra and Hogue, whether under the 2003 Plan or the earlier 1991 or 1993 Plan, will vest in full in the event the optionee's employment terminates under

Table of Contents

certain circumstances within 12 months following the merger, as described more fully in *Interests of Epoch Officers and Directors in the Merger* on page 52.

The outstanding Epoch options, other than those held by Messrs. Gerber, Mahoney, Hoekstra and Hogue, have been amended so that each of those options will, in the event the optionee's employment is terminated without cause within 6 months following the closing of the merger, remain exercisable for the vested shares subject to that option, including any shares which vest upon an accelerated basis at the time of such cessation of service, until the earliest to occur of (i) the end of the 12-month period following such cessation of service, (ii) the expiration of the option term or (iii) a merger or acquisition of Nanogen in which that option is not assumed or otherwise continued.

The outstanding options held by Messrs. Gerber, Mahoney, Hoekstra and Hogue have been amended so that each of those options will, in the event such individual's employment is terminated without cause, or he resigns for good reason, within 12 months following the closing of the merger, remain exercisable for the vested shares subject to that option, including the shares which vest upon an accelerated basis at the time of such cessation of service, until the earliest to occur of (i) the end of the 12-month period following such cessation of service, (ii) the expiration of the option term or (iii) a merger or acquisition of Nanogen in which that option is not assumed or otherwise continued. See *Interests of Epoch Officers and Directors in the Merger* on page 52.

Nanogen has agreed to file a registration statement on Form S-8 covering shares of Nanogen common stock issuable upon the exercise of outstanding Epoch options granted to individuals for which a registration statement on Form S-8 is available.

Treatment of Warrants

Each outstanding warrant to purchase shares of Epoch common stock will be assumed by Nanogen. Each assumed warrant will continue to be governed by the same terms and conditions are in effect immediately before the effective time, except that:

the assumed warrant will be exercisable for shares of Nanogen common stock;

the number of shares of Nanogen common stock subject to the assumed warrant will be determined by multiplying the number of shares of Epoch common stock subject to the warrant immediately prior to the merger by the exchange ratio and rounding down to the nearest whole number of shares of Nanogen common stock; and

the per share exercise price in effect under the assumed warrant will be determined by dividing the exercise price per share in effect under that warrant immediately prior to the merger by the exchange ratio and rounding up to the nearest whole cent.

Aggregate Number of Shares of Nanogen Common Stock to be Issued Pursuant to the Merger Agreement

Based on the possible range of the exchange ratio of 0.4673 to 0.6329 and the number of shares of Epoch common stock outstanding and the number of shares of Epoch common stock subject to options and warrants to purchase Epoch common stock outstanding as of October 26, 2004, the record date for the Epoch special meeting, an aggregate number of shares of Nanogen common stock ranging from 13,424,886 to 18,182,347 will be issued in connection with the merger to the holders of Epoch common stock, and an aggregate number of shares of Nanogen common stock ranging from 1,650,617 to 2,235,558 will be reserved for issuance upon the exercise of the outstanding options and warrants to purchase

Edgar Filing: NANOGEN INC - Form S-4/A

Epoch common stock assumed by Nanogen in the merger in each case, depending on the actual exchange ratio. In addition, Nanogen will assume the unallocated balance of Epoch common stock available for issuance under the 2003 Plan, including, to the extent permissible under applicable law and the rules of the Nasdaq Stock Market, Inc. (Nasdaq), each of the automatic annual increases to the share reserve under the 2003 Plan which is to occur pursuant to the express provisions of that plan. Nanogen will reserve a number of shares of common stock ranging from 555,146 to 751,877 for issuance under the assumed 2003 plan (excluding shares to added pursuant to the automatic increase feature), depending

Table of Contents

on the actual exchange ratio. Assuming that Nasdaq approves the assumption of the automatic increases to the share reserve under the 2003 Plan and assuming Epoch's diluted shares as of immediately prior to the closing of the merger will be the same as of October 1, 2004, Nanogen will reserve on the first day of each calendar year, beginning with the 2005 calendar year and continuing through and including the 2012 calendar year, an additional number of shares of Nanogen common stock ranging from 350,475 to 474,675 for issuance under the assumed 2003 Plan, pursuant to the automatic increase feature of the Plan, depending on the actual exchange ratio. However, each such annual increase will be subject to reduction to the extent as described above. See "Treatment of Epoch Stock Option Plans and Outstanding Epoch Stock Options and Warrants Automatic Annual Increase Feature". The exchange ratio will not be determined until the closing of the merger. See "Risk Factors". The number of shares and value of the Nanogen common stock that Epoch stockholders will receive in the merger will fluctuate.

Fractional Shares

Nanogen will not issue certificates representing fractional shares of its common stock in the merger. Instead, each former Epoch stockholder who would otherwise be entitled to a fractional share of Nanogen common stock by virtue of the merger (after aggregating all fractional shares of Nanogen common stock that otherwise would be received by the stockholder) will receive cash (rounded to the nearest whole cent), without interest, equal to the product obtained by multiplying:

that fraction of a share of Nanogen common stock to which such stockholder is entitled by virtue of the merger (after aggregating all fractional shares of Nanogen common stock that otherwise would be received by such stockholder), by

the average closing price, as reported on The Nasdaq National Market, of one share of Nanogen common stock for the five trading days prior to the date of completion of the merger.

Exchange of Epoch Stock Certificates for Nanogen Stock Certificates

General

Promptly following completion of the merger, Equiserve, L.P., the exchange agent for the merger will mail to each record holder of Epoch common stock a letter of transmittal and instructions for surrendering the record holder's stock certificates in exchange for a certificate representing Nanogen common stock. Only those holders of Epoch common stock who properly surrender their Epoch stock certificates in accordance with the exchange agent's instructions will receive (i) a certificate representing Nanogen common stock and (ii) cash in lieu of any fractional share of Nanogen common stock. The surrendered certificates representing Epoch common stock will be canceled. After the effective time of the merger, each certificate representing shares of Epoch common stock that has not been surrendered will represent only the right to receive each of the items enumerated in the preceding sentence. Following the completion of the merger, Epoch will not register any transfers of Epoch common stock on its stock transfer books. **Holders of Epoch common stock should not send in their Epoch stock certificates until they receive a letter of transmittal from the exchange agent for the merger, with instructions for the surrender of Epoch stock certificates.**

Distributions with Respect to Unexchanged Shares

Edgar Filing: NANOGEN INC - Form S-4/A

Holders of Epoch common stock will not be entitled to receive any dividends or other distributions on Nanogen common stock until the merger is completed. After the merger is completed, holders of Epoch common stock certificates will be entitled to dividends and other distributions declared or made after completion of the merger with respect to the number of whole shares of Nanogen common stock which they are entitled to receive upon exchange of their Epoch stock certificates, but they will not be paid any dividends or other distributions on the Nanogen common stock until they surrender their Epoch stock certificates to the exchange agent in accordance with the exchange agent instructions.

Table of Contents

Transfers of Ownership

Nanogen will issue only (i) a stock certificate representing shares of Nanogen common stock and (ii) cash in lieu of a fractional share in a name other than the name in which a surrendered Epoch stock certificate is registered if the person requesting such exchange presents to the exchange agent all documents required to show and effect the unrecorded transfer of ownership and to show that such person paid any applicable stock transfer taxes.

Representations and Warranties

The merger agreement contains a number of customary representations and warranties made by Epoch relating to, among other things, the following matters:

organization and qualification;

corporate books and records;

capital structure;

corporate authority to enter into and perform obligations under the merger agreement;

the absence of conflicts with Epoch's certificate or incorporation or bylaws, applicable laws or any material agreement to which Epoch is a party, as a result of the entry into the merger agreement and performance of the obligations under the merger agreement;

compliance with applicable laws and possession of material permits;

compliance with SEC and Nasdaq filing requirements, accuracy of information contained in the SEC filings and financial statements and compliance with the Sarbanes-Oxley Act of 2002;

the absence of certain changes or events relating to Epoch's business since June 30, 2004;

benefit plans and labor matters;

the existence, validity and status of contracts;

the absence of undisclosed pending or known threatened litigation;

compliance with environmental laws and regulations;

intellectual property matters;

the filing of tax returns and other tax related matters;

insurance matters;

title to properties;

affiliates;

the receipt of an opinion from Molecular Securities Inc., Epoch's financial advisor;

the absence of brokers and finders fees relating to the merger;

the absence of certain business practices;

the absence of business activity restrictions; and

interested party transactions.

Table of Contents

In addition, the merger agreement also contains certain customary representations of Nanogen related to the following matters:

organization and qualification;

capital structure;

corporate authority to enter into and perform obligations under the merger agreement;

the absence of conflicts with Nanogen's certificate or incorporation or bylaws, applicable laws or any material agreement to which Nanogen is a party, as a result of the entry into the merger agreement and performance of the obligations under the merger agreement;

compliance with applicable laws and possession of material permits;

the absence of certain changes or events relating to Nanogen's business since June 30, 2004;

compliance with SEC and Nasdaq filing requirements, accuracy of information contained in the SEC filings and financial statements and compliance with the Sarbanes-Oxley Act of 2002;

the absence of undisclosed pending or known threatened litigation;

intellectual property matters;

the filing of tax returns and other tax related matters;

the absence of brokers and finders fees relating to the merger;

the absence of certain business practices;

the receipt of an opinion from Seven Hills, Nanogen's financial advisor;

interested party transactions; and

the operations of Empire Acquisition Corp.

The representations and warranties of Nanogen and Epoch contained in the merger agreement expire upon completion of the merger or termination of the merger agreement. The representations and warranties in the merger agreement are complicated, are not identical as between Epoch and Nanogen and are not easily summarized. You are urged to carefully read sections four and five of the merger agreement entitled Representations and Warranties of Company and Representations and Warranties of Parent and Merger Sub.

Conduct of Business Before Completion of the Merger

Restrictions on Epoch's Business Before Completion of the Merger

Under the merger agreement, Epoch has agreed that, until the earlier of the completion of the merger or termination of the merger agreement, or unless required by law or agreed to in writing by Nanogen, it will:

operate its business in the ordinary course consistent with past practice; and

use reasonable efforts to keep available the services of its current officers, significant employees and consultants and to preserve its current business relationships with its corporate partners, customers, suppliers and others with whom Epoch has significant business relations.

Epoch has also agreed that, except as set forth in the merger agreement, required by law or agreed to in writing by Nanogen, it will not:

amend or change its certificate of incorporation or bylaws;

issue or sell additional shares of or securities convertible into, or grant options or rights to acquire, any capital stock, except in certain specified cases;

Table of Contents

sell, lease, encumber or otherwise dispose of any of its assets, other than transactions pursuant to existing contracts and in the ordinary course of business consistent with past practice;

acquire any interest in any corporation, partnership or other business organization other than the purchase of assets in the ordinary course of business consistent with past practice;

incur any indebtedness or guarantee any indebtedness other than borrowings under any renewal or extension of previously existing credit arrangements not in excess of \$250,000 in the aggregate or make any material loans or advances;

make or authorize any capital expenditure other than capital expenditures in the ordinary course of business consistent with past practice and not in excess of \$250,000 in the aggregate;

adopt a plan of liquidation, dissolution, consolidation, restructuring or recapitalization of Epoch or permit its corporate existence to be suspended, lapsed or revoked;

enter into, modify, amend or terminate (i) any contract which if so entered into, modified, amended or terminated would (A) have a material adverse effect on Epoch or (B) impair in any material respect the ability of Epoch to perform its obligations under the merger agreement or (ii) any contract specified as a material contract in the merger agreement, except in the ordinary course of business consistent with past practice;

declare, set aside or pay any dividends on, or make any other distributions (whether in cash, stock or property) in respect of any of its capital stock;

reclassify, combine or split any of its capital stock or issue or authorize the issuance of any other securities in respect of, in lieu of, or in substitution for shares of its capital stock or any of its other securities;

accelerate, amend or change the period of exercisability or vesting schedule in effect with regard to any Epoch stock options;

amend the terms of, repurchase or otherwise acquire any shares of capital stock or any other securities of Epoch or its subsidiaries other than the repurchase of unvested shares of Epoch common stock, at the original price paid per share, from employees, consultants or directors upon the termination of their service relationship with Epoch or any subsidiary;

increase the compensation or benefits payable to its officers, directors, consultants or employees, grant any rights to severance or enter into any employment or severance agreement that provides for benefits upon a change in control payable to any current or former Epoch directors, officers, consultants or employees other than in the ordinary course of business consistent with past practice or enter into or amend a contract, agreement or arrangement between Epoch and its directors, officers, consultants or employees; provided that Epoch may make certain payments under its 2004 Bonus Plan;

pay, discharge or satisfy any claims, liabilities or obligations other than in the ordinary course of business consistent with past practice;

except as required by U.S. GAAP, make any material change with respect to Epoch's accounting policies, principles, methods or procedures;

Edgar Filing: NANOGEN INC - Form S-4/A

maintain insurance at less than current levels or otherwise in a manner inconsistent with past practice;

make or rescind any material election relating to taxes, settle or compromise any tax liability or fail to pay taxes when due; or

authorize any of, or commit, resolve or agree to take any of, the foregoing actions or take any action which would make any of Epoch's representations or warranties in the merger agreement untrue or incorrect or prevent Epoch from performing its covenants or result in any of the conditions to the merger not being satisfied.

Table of Contents

Restrictions on Nanogen's Business Before the Completion of the Merger

Under the merger agreement, Nanogen has agreed that, until the earlier of the completion of the merger or termination of the merger agreement, or unless required by law or agreed to in writing by Epoch, it will:

operate its business in the ordinary course consistent with past practice; and

use reasonable efforts to keep available the services of its current officers, significant employees and consultants and to preserve its current business relationships with its corporate partners, customers, suppliers and others with whom Nanogen has significant business relations.

Nanogen has also agreed that, except as set forth in the merger agreement, required by law or agreed to in writing by Epoch, it will not:

amend or change its certificate of incorporation or bylaws;

issue or sell additional shares of or securities convertible into, or options or rights to acquire, any capital stock, except in certain specified cases;

declare, set aside or pay any dividends on, or make any other distributions (whether in cash, stock or property) in respect of any of its capital stock;

reclassify, combine or split any of its capital stock or issue or authorize the issuance of any other securities in respect of, in lieu of, or in substitution for shares of its capital stock or any of its other securities;

adopt a plan of liquidation, dissolution, consolidation, restructuring or recapitalization of Nanogen or any subsidiary or permit the corporate existence of Nanogen or any subsidiary to be suspended, lapsed or revoked;

acquire or agree to acquire any business or any assets, other than acquisitions or agreement in the ordinary course of business consistent with past practice or in fields of molecular or proteomic diagnostic testing or related services with transaction values not in excess of \$3,000,000 in the aggregate;

except as specified, incur any indebtedness or guarantee any indebtedness in excess of \$100,000 in the aggregate or make any loans or advances material to the business, assets liabilities or results of operations of Nanogen or its subsidiaries taken as a whole or make any material loans or advances;

make or authorize any capital expenditure other than capital expenditures in the ordinary course of business consistent with past practice and not in excess of \$500,000 for Nanogen and its subsidiaries, taken as a whole;

except as required by U.S. GAAP, make any material change with respect to Nanogen's accounting policies, principles, methods or procedures;

authorize any of, or commit, resolve or agree to take any of, the foregoing actions or take any action which would make any of Nanogen's representations or warranties in the merger agreement untrue or incorrect or prevent Nanogen from performing its covenants or result in any of the conditions to the merger not being satisfied; or

withdraw, modify or change its recommendation of either the proposal to issue shares of Nanogen common stock pursuant to the merger agreement or the proposal to amend Nanogen's certificate of incorporation in a manner adverse to Epoch and its stockholders.

Limitation on Epoch's Ability to Consider Other Acquisition Proposals

Epoch has agreed that, except in certain circumstances, it will not, and will cause its officers, directors, employees, financial advisors, attorneys, accountants or other representatives not to take any of the following actions:

Solicit, initiate, facilitate or encourage any inquiries or the making of any proposal or offer that constitutes, or may reasonably be expected to lead to, a competing transaction (as defined below);

Table of Contents

Participate in any discussions or negotiations regarding a competing transaction; or

Agree to or endorse any competing transaction.

A competing transaction includes any of the following involving Epoch and a third party:

(i) a merger, consolidation, share exchange, business combination, recapitalization, liquidation, dissolution, joint venture or other similar transaction;

(ii) a sale, lease, exchange, transfer or other disposition of 20% or more of the assets of Epoch in a single transaction or series of transactions;

(iii) a tender offer or exchange offer for 20% or more of the outstanding voting securities of Epoch or the filing of a registration statement under the Securities Act in connection therewith;

(iv) an acquisition by any person or entity or any group (as such term is defined under Section 13(d) of the Exchange Act) having been formed which beneficially owns or has the right to acquire beneficial ownership of 20% or more of the outstanding voting securities of Epoch;

(v) any solicitation in opposition to the approval of the merger agreement by the stockholders of Epoch; or

(vi) any public announcement of a proposal, plan or intention to do any of the foregoing or any agreement to engage in any of the foregoing.

However, prior to receipt of approval of the merger agreement by Epoch's stockholders, in connection with an unsolicited, bona fide, written proposal for a competing transaction that Epoch's board of directors determines (x) constitutes or is reasonably likely to lead to a superior proposal (as defined below) and (y) the failure to take action would breach the fiduciary duties of the board, Epoch may provide information (subject to a confidentiality agreement) and negotiate with a third party if Epoch has given Nanogen prior notice of its intentions to take such action.

In response to the receipt of an unsolicited proposed competing transaction that is determined to be a superior proposal, Epoch shall, for a period of five days thereafter, if requested by Nanogen, engage in good faith negotiations with Nanogen to amend the merger agreement in such a manner that it is at least as favorable as the unsolicited proposed competing transaction.

A superior proposal means any unsolicited, bona fide written proposal made by a third party that:

(i) concerns a competing transaction;

(ii) is on terms that Epoch's board of directors has determined in the proper exercise of its fiduciary duties, based upon the advice of independent financial advisors and taking into account all of the terms and conditions of such proposal and the merger agreement (including any proposal by Nanogen to amend the terms of the merger agreement), to provide greater value to the stockholders of Epoch than the merger; and

(iii) if cash consideration is involved, is not subject to a financing contingency and Epoch's board of directors has determined that the acquiring party is capable of consummating the competing transaction on the terms proposed.

Indemnification and Insurance for Epoch Directors and Officers

Nanogen agreed to indemnify and hold harmless each current and former director and officer of Epoch against any liabilities arising out of that person's service as a director or officer.

Nanogen agreed to cause the surviving entity to maintain in effect directors' and officers' liability insurance covering those persons who are currently covered by Epoch's directors' and officers' liability insurance policy.

Table of Contents

for six years after the completion of the merger on comparable terms to Epoch's policy. However, Nanogen is only obligated to maintain the insurance to the extent the aggregate premiums during such period do not exceed 250% of Epoch's current annual premium as of September 7, 2004.

Conditions to Completion of the Merger

The respective obligations of Nanogen and Empire Acquisition Corp., on the one hand, and Epoch, on the other, to complete the merger and the other transactions contemplated by the merger agreement are subject to the satisfaction or waiver of each of the following conditions:

the SEC shall have declared the registration statement in which this joint proxy statement/prospectus is included effective, and no stop order suspending the effectiveness of the registration statement shall have been issued and no proceeding for that purpose shall have been initiated by the SEC and not concluded or withdrawn;

the merger agreement shall have been adopted by the holders of a majority of the outstanding shares of common stock of Epoch;

the issuance of the shares of Nanogen common stock pursuant to the merger shall have been approved by a majority of the outstanding shares of Nanogen common stock casting votes at the Nanogen special meeting;

no order, statute, rule, regulation, stay, decree, judgment or injunction shall have been enacted, entered or promulgated which prohibits or prevents the consummation of the merger;

all consents, approvals and authorizations legally required to be obtained to consummate the merger shall have been obtained; and

the shares of Nanogen common stock to be issued in connection with the merger have been authorized for listing on The Nasdaq National Market subject to official notice of issuance.

Epoch's obligation to complete the merger is also subject to the satisfaction or waiver of each of the following conditions:

the representations and warranties of Nanogen and Empire Acquisition Corp. in the merger agreement are true and correct as of the closing date of the merger (without regard to the terms "material" or "material adverse effect") such that, in aggregate, the effect of any inaccuracies in such representations and warranties would not have a "material adverse effect" on Nanogen (provided that those representations and warranties which address matters only as of a particular date shall be true and correct as of such date) and Epoch has received a certificate executed on behalf of Nanogen by its Chief Executive Officer and Chief Financial Officer certifying to that effect;

the obligations or covenants required to be performed by Nanogen and Empire Acquisition Corp. at or prior to the completion of the merger have been performed in all material respects, and Epoch has received a certificate executed on behalf of Nanogen and Empire Acquisition by the Chief Executive Officer and Chief Financial Officer of Nanogen and the President of Empire Acquisition Corp. certifying to that effect;

Edgar Filing: NANOGEN INC - Form S-4/A

there has not occurred any material adverse effect (as described below) on Nanogen since the date of the merger agreement; and

Epoch shall have received written opinion from Stradling Yocca Carlson & Rauth to the effect that the merger will constitute a reorganization within the meaning of Section 368(a) of the Code and the opinion shall not have been withdrawn; provided, however, that if such counsel does not render the opinion, this condition will be deemed to be satisfied if counsel to Nanogen renders the opinion in form and substance reasonably satisfactory to Epoch.

Table of Contents

Nanogen's and Empire Acquisition Corp.'s obligation to complete the merger is also subject to the satisfaction or waiver of each of the following conditions:

the representations and warranties of Epoch in the merger agreement are true and correct as of the closing date of the merger (without regard to the terms "material" or "material adverse effect") such that, in aggregate, the effect of any inaccuracies in such representations and warranties would not have a "material adverse effect" on Epoch (provided that those representations and warranties which address matters only as of a particular date shall be true and correct as of such date) and Nanogen has received a certificate executed on behalf of Epoch by its Chief Executive Officer and Chief Financial Officer certifying to that effect;

the covenants required to be performed by Epoch at or prior to the completion of the merger shall have been performed in all material respects, and Nanogen has been provided with a certificate executed on behalf of Epoch by its Chief Executive Officer and Chief Financial Officer certifying to that effect;

there shall not have occurred any material adverse effect (as described below) on Epoch since the date of the merger agreement; and

Nanogen shall have received written opinion from Morgan, Lewis & Bockius LLP to the effect that the merger will constitute a "reorganization" within the meaning of Section 368(a) of the Code and the opinions shall not have been withdrawn; provided, however, that if such counsel does not render the opinion, this condition will be deemed to be satisfied if counsel to Epoch renders the opinion in form and substance reasonably satisfactory to Nanogen.

Material Adverse Effect

Any reference to a "material adverse effect" on Nanogen or Epoch means any change, development, effect or occurrence that, individually or taken in the aggregate, is, or is reasonably likely to be, material and adverse to the (1) the business, assets, liability, condition (financial or otherwise) or results of operations of that party and its subsidiaries taken as a whole, or (2) could reasonably be expected to materially delay or prevent the consummation of the transactions contemplated by the merger agreement. However, a "material adverse effect" will not include any change, development, event, effect or occurrence resulting from any of the following, if they do not have a materially disproportionate effect (relative to other companies in the industry) on Epoch or Nanogen, as applicable:

economic conditions generally in the United States or foreign economic in location in which Epoch or Nanogen have material operations or sales; or

any conditions that generally affect the industries in which Epoch or Nanogen operate.

In addition, the following will not constitute a "material adverse effect":

with respect to Epoch or Nanogen, any changes or effects arising out of, or attributable to, the public announcement or pendency of the merger or the transactions contemplated by the merger agreement;

any changes resulting from compliance with the terms of, or the taking of any action required by, the merger agreement;

any change in Epoch's or Nanogen's stock price or trading volumes; and

any failure of Epoch or Nanogen to meet its financial projections or published analysts' forecasts.

Termination of the Merger Agreement

The merger agreement may be terminated and the merger may be abandoned prior to completion of the merger as follows:

by mutual written consent of Nanogen and Epoch;

Table of Contents

by Nanogen or Epoch if:

the merger is not completed by February 15, 2005; except that this right to terminate the merger agreement is not available to any party whose action or failure to fulfill any of its obligations under the merger agreement has been a principal reason for the failure of the merger to occur on or before that date;

any governmental order, writ, injunction or decree preventing the consummation of the merger shall have been entered by any court of competent jurisdiction and shall have become final and nonappealable;

the proposal to adopt the merger agreement and approve the merger fails to receive the requisite vote by Epoch stockholders at the Epoch special meeting; or

either the proposal to issue of shares of Nanogen common stock pursuant to the merger agreement or the proposal to amend Nanogen's certificate of incorporation fails to receive the requisite affirmative vote for approval by the Nanogen stockholders at the Nanogen special meeting;

by Nanogen if any of the following triggering events occur with respect to Epoch:

Epoch's board of directors fails to recommend that the Epoch stockholders adopt the merger agreement, or withdraws or modifies such recommendation in a manner adverse to Nanogen;

Epoch's board of directors approves or recommends to its stockholders any competing transaction;

a competing transaction has been announced or otherwise publicly known and Epoch's board of directors shall have (a) failed to recommend acceptance against the competing transaction by its stockholders, (b) failed to reconfirm its approval and recommendation of the merger agreement within ten business days of the announcement of the competing transaction, or (c) determined that the competing transaction was a superior proposal and entered into negotiations regarding a competing transaction;

Epoch has willfully breached the non-solicitation provisions of the merger agreement; or

Epoch's board of directors resolves, agrees or publicly proposes to take any of the actions described above.

by Epoch, if it receives a superior proposal and its board of directors determines in good faith that a failure to terminate the merger agreement and enter into an agreement to effect the superior proposal would constitute a breach of its fiduciary duties, provided that Epoch must have first complied with its obligations under the non-solicitation provisions of the merger agreement and five business days must have elapsed following delivery of notice to Nanogen during which period Epoch shall have negotiated in good faith with Nanogen and Nanogen shall not have submitted a binding offer at least as favorable as the superior proposal;

by Nanogen, 10 days after receipt by Epoch of a written notice from Nanogen of a breach of any representation, warranty, covenant or agreement in the merger agreement on the part of Epoch or if any representation or warranty of Epoch has become untrue so that the condition to the completion of the merger regarding Epoch's representations and warranties or covenants would not be met. However, if the breach or inaccuracy is cured by Epoch within 10 days, Nanogen may not exercise this termination right;

Edgar Filing: NANOGEN INC - Form S-4/A

by Epoch, 10 days after receipt by Nanogen of a written notice from Epoch of a breach of any representation, warranty, covenant or agreement in the merger agreement on the part of Nanogen, or if any representation or warranty of Nanogen has become untrue so that the condition to completion of the merger regarding Nanogen's representations and warranties or covenants would not be met. However, if the breach or inaccuracy is cured by Nanogen within 10 days, Epoch may not exercise this termination right.

Table of Contents

Termination Fee; Expenses

Under the terms of the merger agreement, all fees, costs and expenses incurred in connection with the merger, the merger agreement and the consummation of the transactions contemplated by the merger agreement, and not including specific termination fees described further below, shall be paid by the party incurring the fees, costs and expenses; provided that, both parties will share equally in the fees and expenses associated with the filing of this joint proxy statement/prospectus with the SEC.

In addition, Epoch has agreed to pay to Nanogen a cash termination fee of \$1,750,000 upon the termination of the merger agreement if the merger agreement is terminated:

by Nanogen due to the occurrence of a triggering event (as defined above);

by Epoch if

at such time there is a competing transaction which has been publicly announced, commenced or otherwise become publicly known, or any person has publicly announced an intention to make a competing transaction;

the merger agreement is terminated by Nanogen or Epoch due to the closing not have occurred by February 15, 2005 or due to the failure of the merger agreement to be approved by the Epoch stockholders at the Epoch stockholders meeting; and

such company transaction or a transaction that arises out of or relates to such transaction is entered into within twelve months following the termination of the merger agreement; or

by Epoch if it receives a superior proposal and its board determines in good faith, after considering applicable state law and the advice of outside legal counsel that the failure to enter into an agreement to effect the superior proposal would breach its fiduciary duties, and Epoch has waited until five days following delivery to Nanogen of its written notice of its determination and renegotiated in good faith with Nanogen during such period and Nanogen has not submitted a binding offer that is at least as favorable to Epoch's stockholders as the superior proposal.

In addition, Nanogen has agreed to pay to Epoch a cash termination fee of \$1,750,000 if Nanogen withdraws, modifies or changes its recommendation for the issuance of its shares of Nanogen common stock pursuant to the merger or for the amendment to its certificate of incorporation to increase the number of authorized shares and Epoch terminates the merger agreement.

Amendment and Waiver

Nanogen and Epoch may amend the merger agreement before completion of the merger by mutual written consent, except that after Epoch's stockholders adopt the merger agreement, no further amendment may be made that changes the amount or type of consideration into which Epoch common stock will be converted under the merger agreement.

Edgar Filing: NANOGEN INC - Form S-4/A

Either Nanogen or Epoch may, to the extent legally allowed, extend the other's time for the performance of any of the obligations or other acts under the merger agreement, waive any inaccuracies in the other's representations and warranties and, subject to the preceding paragraph, waive compliance by the other with any of the agreements or conditions contained in the merger agreement.

Table of Contents

AGREEMENTS RELATED TO THE MERGER

Voting Agreements

Effective on September 7, 2004, the following directors and executive officers of Nanogen entered into voting agreements with Epoch:

Howard C. Birndorf

David G. Ludvigson

Graham Lidgard, Ph.D.

William L. Respass

Val Buonaiuto

Robert Whalen

Stelios Papadopoulos

David Schreiber

As of the record date, directors and executive officers of Nanogen and their affiliates held 885,213 shares of Nanogen common stock, which represents approximately 2.7% of the outstanding shares of Nanogen common stock. Holders of a majority of the shares present or represented by proxy and entitled to vote on the proposal must vote in favor of the share issuance in order for it to be approved, and holders of a majority of the outstanding shares of Nanogen common stock must vote in favor of the amendment to Nanogen's certificate of incorporation in order for it to be approved.

Also effective on September 7, 2004, the following directors and executive officers of Epoch and their affiliates entered into voting agreements with Nanogen and Empire Acquisition Corp:

William G. Gerber, M.D.

Merl Hoekstra, Ph.D.

Bert W. Hogue

Walt Mahoney, Ph.D.

Bay City Capital Fund III, L.P.

Bay City Capital BD LLC

Fred Craves, Ph.D.

R. Janet Whitmore

Richard L. Dunning

Michael Lucero

Herbert Heyneker, Ph.D.

Sanford S. Zweifach

As of the record date, the directors and executive officers of Epoch and their affiliates held 1,787,011 shares of Epoch common stock, which represents approximately 6.2% of the outstanding shares of Epoch common stock. Holders of a majority of the outstanding shares of Epoch common stock must vote in favor of the merger agreement in order for it to be adopted and the merger in order for it to be approved.

Table of Contents

The following is a description of the material terms of these voting agreements. Complete forms of these voting agreements are attached as Annex B and Annex C, respectively, to this joint proxy statement/prospectus and are incorporated into this joint proxy statement/prospectus by reference. All Nanogen stockholders and Epoch stockholders are urged to read the forms of these voting agreements carefully and in their entirety.

Nanogen Voting Agreements

Under the Nanogen voting agreements, certain Nanogen stockholders agreed to vote, or cause the record holders of their Nanogen securities to vote, the Nanogen common stock beneficially owned by them as of September 7, 2004, and any other securities of Nanogen that become beneficially owned by them after September 7, 2004, in the following manner:

in favor of adoption of the amendment to Nanogen's certificate of incorporation and the issuance of the shares of Nanogen common stock in the merger;

against approval of any proposal made in opposition to, or competition with, the amendment to Nanogen's certificate of incorporation or the issuance of shares of Nanogen common stock to Epoch stockholders in the merger, the merger agreement or consummation of the merger;

against any other action that is intended, or could reasonably be expected, to impede, interfere with, delay, postpone, discourage or adversely affect the merger or any of the other transactions contemplated by the merger agreement;

against any proposal that is intended to, or is reasonably likely to, result in a breach by Nanogen of the merger agreement; and

against any dissolution, liquidation or winding up of Nanogen.

Under the Nanogen voting agreements, each Nanogen stockholder who is a party to a Nanogen voting agreement, delivered an irrevocable proxy to Epoch to vote the securities of Nanogen owned by the respective stockholder in accordance with the terms of the voting agreements.

Pursuant to the Nanogen voting agreements, subject to certain limited exceptions, each of the Nanogen stockholders has agreed not to transfer any of their shares and not to make any offer or agreement relating to their shares at any time prior to the expiration of the voting agreements. Subsequent to executing the voting agreements, a waiver was granted to Howard Birndorf to allow him to sell a limited number of shares under his Rule 10b5-1 trading plan.

The Nanogen voting agreements will terminate on the earlier to occur of the effective time of the merger or on the date the merger agreement is terminated.

Epoch Voting Agreements

Edgar Filing: NANOGEN INC - Form S-4/A

Under the Epoch voting agreements, each Epoch stockholder, who is a party to an Epoch voting agreement, has agreed to vote, or cause the record holders of their Epoch securities to vote, the common stock of Epoch beneficially owned by them as of September 7, 2004, and any other securities of Epoch that become beneficially owned by them after September 7, 2004, in the following manner:

in favor of adoption of the merger agreement and the transactions contemplated under the merger agreement;

Table of Contents

against approval of any proposal made in opposition to or competition with the merger agreement and completion of the merger;

against any competing transaction from any party other than Nanogen or an affiliate of Nanogen;

against any proposal that is intended to, or is reasonably likely to, result in the conditions of Nanogen or Empire Acquisition Corp.'s obligations under the merger agreement not being fulfilled;

against any action that is intended, or could reasonably be expected, to impede, interfere with, delay, postpone, discourage or adversely affect the merger or any of the other transactions contemplated by the merger agreement; and

against any dissolution, liquidation or winding up of Epoch.

Under the Epoch voting agreements, each Epoch stockholder who is a party to an Epoch voting agreement, delivered an irrevocable proxy to Nanogen to vote the securities of Epoch owned by such stockholder in accordance with the terms of the Epoch voting agreement.

Pursuant to the Epoch voting agreements, subject to certain limited exceptions, each of the Epoch stockholders has agreed not to transfer any of their shares and not to make any offer or agreement relating to their shares at any time prior to the expiration of the voting agreement.

The Epoch voting agreements will terminate on the earlier to occur of the effective time of the merger or on the date the merger agreement is terminated.

Resales of Nanogen Common Stock by Epoch Affiliates

Epoch stockholders may freely transfer the shares of Nanogen common stock they receive in the merger, unless they are individuals or entities who are deemed to be affiliates of Epoch before the transaction. Persons who may be deemed to be affiliates of Epoch include individuals or entities that control, are controlled by, or are under common control with, Epoch and may include executive officers and directors as well as principal stockholders. These affiliates or their brokers risk being characterized as underwriters when they sell shares of Nanogen common stock. The U.S. securities laws require registration of shares sold by underwriters. An affiliate and the affiliate's broker can avoid being characterized as an underwriter and, therefore, avoid the registration requirements of the Securities Act of 1933, as amended, by selling shares in compliance with applicable provisions of Rule 145 and Rule 144 under the Securities Act. These provisions limit the number of shares an affiliate can sell in a particular period of time. The merger agreement requires Epoch to use its commercially reasonable efforts to promptly obtain a written agreement to the effect that the affiliate will not offer or sell or otherwise dispose of Nanogen common stock issued to the affiliate in the merger in violation of the Securities Act or the related rules and regulations adopted by the SEC.

This joint proxy statement/prospectus does not cover resales of Nanogen common stock received by any person who may be deemed to be an affiliate of Epoch and/or Nanogen.

Table of Contents

UNAUDITED PRO FORMA

CONDENSED COMBINED CONSOLIDATED FINANCIAL STATEMENTS

On September 7, 2004, Nanogen, Inc. entered into a definitive agreement and plan of merger and reorganization to acquire Epoch Biosciences, Inc. (Epoch). Epoch develops and sells proprietary products with commercial applications in the genomics and molecular diagnostics fields. Under the terms of the merger agreement, Epoch stockholders will receive between 13.3 million and 18.2 million shares of Nanogen common stock for all outstanding shares of Epoch common stock and will own approximately 29% to 35% of the outstanding capital stock of the combined company. Actual number of shares, and corresponding percentage ownership, will vary based on the average of the closing prices per share of Nanogen common stock for the twenty consecutive trading days ending on and including the third trading day preceding the closing date. The variance of the actual exchange rate is limited by an exchange rate floor and ceiling, which will result in an exchange rate ranging between 0.4673 and 0.6329 share of Nanogen common stock for every share of Epoch common stock. Completion of the proposed merger, which is expected to close in the fourth quarter of 2004, or the first quarter of 2005, is subject to the approval of Nanogen and Epoch stockholders and other customary conditions. The purchase price was determined through an arms-length negotiation between the parties and will be allocated to the underlying tangible and intangible assets, based on management's estimate of fair values and remaining economic lives. The excess of the purchase price over the fair value of the assets will be recorded as goodwill.

The proposed merger has been accounted for in these unaudited pro forma condensed combined consolidated financial statements using the purchase method of accounting. The unaudited pro forma condensed combined consolidated balance sheet combines the historical consolidated balance sheets of Nanogen and Epoch as of June 30, 2004, giving effect to the proposed merger as if it had occurred on June 30, 2004. The unaudited pro forma condensed combined consolidated statements of operations combine the historical consolidated statements of operations for Epoch and Nanogen, and also gives effect to Nanogen's acquisition of SynX Pharma Inc. (SynX) on April 21, 2004, for the year ended December 31, 2003 and for the six months ended June 30, 2004, giving effect to the proposed merger as if it, and the acquisition of SynX, had occurred January 1, 2003. Independent valuation specialists are currently conducting a valuation report in order to assist Nanogen in determining the fair value of the underlying assets. The preliminary work performed by the independent valuation specialists has been considered in management's estimates of the fair values reflected in these pro forma condensed combined consolidated financial statements. A final determination of the fair values, which cannot be made prior to the completion of the proposed merger, will include management's consideration of a final valuation report prepared by the independent valuation specialists. The final valuation will be based on the actual net tangible and intangible assets of Epoch that exist as of the date of completion of the proposed merger.

The detailed assumptions used to prepare the unaudited pro forma condensed combined consolidated financial statements are contained in the notes to the unaudited pro forma condensed combined consolidated financial statements. The pro forma adjustments are based on preliminary estimates and information available at the time of the preparation of this joint proxy statement/prospectus and include certain assumptions. The unaudited pro forma condensed combined consolidated financial statements have been prepared by Nanogen for illustrative purposes only and are not necessarily indicative of the condensed combined consolidated financial position or results of operations in future periods, or the results that actually would have been realized had Nanogen, Epoch and SynX been a combined company during the specified periods. Further, the actual amounts recorded as of the completion of the proposed merger may differ materially from the information presented in these unaudited pro forma condensed combined consolidated financial statements. In addition to the receipt of the final valuation report, the timing of completion of the merger and other changes in Epoch's net tangible and intangible assets that occur prior to completion of the proposed merger could cause material differences in the information presented.

Table of Contents

The unaudited pro forma condensed combined consolidated financial statements also include adjustments for estimates related to Nanogen's and Epoch's direct costs associated with the proposed merger including investment banker fees, due diligence fees, legal and accounting costs, severance costs, filing fees and the special meetings of stockholders that will be held to approve the proposed merger. A final determination of the direct acquisition costs cannot be made until completion of the proposed merger and could differ significantly from the initial estimate used in the unaudited pro forma condensed combined consolidated financial statements.

The unaudited pro forma condensed combined consolidated financial statements, including the notes thereto, should be read in conjunction with the historical consolidated financial statements of Nanogen and Epoch included in their respective Annual Reports on Form 10-K for the fiscal year ended December 31, 2003, and Quarterly Reports on Form 10-Q for the quarter ended June 30, 2004, and the historical financial statements of SynX for the year ended December 31, 2003 and three months ended March 31, 2004 included in Nanogen's Form 8-K/A filing made on July 6, 2004, which are incorporated herein by reference.

Table of Contents**Nanogen, Inc.****UNAUDITED PRO FORMA CONDENSED COMBINED CONSOLIDATED BALANCE SHEET****June 30, 2004****(In thousands)**

	Historical Nanogen	Historical Epoch	Pro Forma Adjustments (Note 2)	Pro Forma Combined
ASSETS				
Current assets:				
Cash and cash equivalents	\$ 8,543	\$ 9,159	\$ (4,500)(A)	\$ 13,202
Short-term investments	51,777			51,777
Restricted cash		92		92
Accounts receivable, net	1,860	1,409		3,269
Inventories	2,706	92		2,798
Other current assets	1,673	206		1,879
Total current assets	66,559	10,958	(4,500)	73,017
Property and equipment, net	7,372	2,510		9,882
Intangibles, net	1,983	838	14,248(C)	17,069
Other assets, net	1,549	586		2,135
Goodwill	10,462		41,237(B)	51,699
Total assets	\$ 87,925	\$ 14,892	\$ 50,985	\$ 153,802
LIABILITIES AND STOCKHOLDERS' EQUITY				
Current liabilities:				
Accounts payable	\$ 1,889	\$ 402	\$	\$ 2,291
Accrued liabilities	3,240	1,318		4,558
Deferred revenue	404	371	(371)(E)	404
Current portion of capital lease and debt obligations	552	480		1,032
Common stock warrants		914		914
Total current liabilities	6,085	3,485	(371)	9,199
Capital lease and debt obligations, less current portion	545	369		914
Deferred revenue		2,616	(2,616)(E)	
Deferred rent	587	368		955
Other long-term liabilities	4,864			4,864
Total long-term liabilities	5,996	3,353	(2,616)	6,733
Stockholders' equity:				
Common stock	34	287	(272)(F)	49
Additional paid-in capital	271,645	87,074	(24,999)(F)	333,720
Accumulated other comprehensive loss	(226)			(226)
Deferred compensation	(170)		(64)(D)	(234)
Accumulated deficit	(194,517)	(79,307)	79,307(F)	(194,517)
Treasury stock	(922)			(922)

Edgar Filing: NANOGEN INC - Form S-4/A

Total stockholders' equity	75,844	8,054	53,972	137,870
Total liabilities and stockholders' equity	\$ 87,925	\$ 14,892	\$ 50,985	\$ 153,802

See notes to unaudited pro forma condensed combined consolidated financial statements

Table of Contents**Nanogen, Inc.****UNAUDITED PRO FORMA CONDENSED COMBINED CONSOLIDATED STATEMENTS OF OPERATIONS****For the Year Ended December 31, 2003****(In thousands, except per share data)**

	Historical Nanogen	SynX Acquired Business	Pro Forma Adjustments (Note 3)	Pro Forma Combined	Historical Epoch	Pro Forma Adjustments (Note 2)	Pro Forma Combined
Revenues:							
Product sales	\$ 2,762	\$ 457	\$	\$ 3,219	\$ 2,745	\$	\$ 5,964
License fees	84	2,198		2,282	5,214		7,496
Research services		1,772		1,772			1,772
Sponsored research	1,500			1,500			1,500
Contract and grant	2,367			2,367	942		3,309
Total revenues	6,713	4,427		11,140	8,901		20,041
Costs and expenses:							
Cost of product sales	3,176	220		3,396	2,198		5,594
Research and development	19,038	5,970		25,008	4,121	16(G)	29,145
Selling, general and administrative	15,319	3,669	40	19,028	4,065	11(G)	23,104
Amortization of acquired intangibles						1,493(C)	1,493
Termination of license rights					425		425
Loss on sale of San Diego operations					2,805		2,805
Total costs and expenses	37,533	9,859	40	47,432	13,614	1,520	62,566
Loss from operations	(30,820)	(5,432)	(40)	(36,292)	(4,713)	(1,520)	(42,525)
Interest income, net	489	60		549	21		570
Other expense	(157)	(153)		(310)			(310)
Loss on sale of investments	(1,925)			(1,925)			(1,925)
Minority interest in consolidated subsidiaries	1,817			1,817			1,817
Net loss	\$ (30,596)	\$ (5,525)	\$ (40)	\$ (36,161)	\$ (4,692)	\$ (1,520)	\$ (42,373)
Maximum Equity (H):							
Net loss per share basic and diluted	\$ (1.38)						\$ (1.01)
Basic and diluted shares outstanding	22,244		1,638			18,124(H)	42,006
Minimum Equity (H):							
Net loss per share basic and diluted	\$ (1.38)						\$ (1.14)
Basic and diluted shares outstanding	22,244		1,638			13,381(H)	37,263

See notes to unaudited pro forma condensed combined consolidated financial statements.

Table of Contents**Nanogen, Inc.****UNAUDITED PRO FORMA CONDENSED COMBINED CONSOLIDATED STATEMENTS OF OPERATIONS****For the Six Months Ended June 30, 2004****(In thousands, except per share data)**

	SynX Acquired Business						
	Historical Nanogen	(year-to-date ended April 21, 2004)	Pro Forma Adjustments (Note 3)	Pro Forma Combined	Historical Epoch	Pro Forma Adjustments (Note 2)	Pro Forma Combined
Revenues:							
Product sales	\$ 1,609	\$ 86	\$	\$ 1,695	\$ 1,055	\$	\$ 2,750
License fees	190			190	2,815		3,005
Sponsored research	500	162		662			662
Contract and grant	978			978			978
Total revenues	3,277	248		3,525	3,870		7,395
Costs and expenses:							
Cost of product sales	2,854	35		2,889	739		3,628
Research and development	8,388	1,267		9,655	1,910	8(G)	11,573
Selling, general and administrative	7,809	1,925	12	9,746	2,590	5(G)	12,341
Charge for acquired in-process R&D	3,758			3,758			3,758
Amortization of acquired intangibles						747(C)	747
Total costs and expenses	22,809	3,227	12	26,048	5,239	760	32,047
Loss from operations	(19,532)	(2,979)	(12)	(22,523)	(1,369)	(760)	(24,652)
Interest income, net	231	6		237	34		271
Other expense	(167)			(167)			(167)
Gain/(loss) on foreign currency translation	1,204	(27)		1,177			1,177
Warrant valuation adjustment					940		940
Net loss	\$ (18,264)	\$ (3,000)	\$ (12)	\$ (21,276)	\$ (395)	\$ (760)	\$ (22,431)
Maximum Equity (H):							
Net loss per share basic and diluted	\$ (0.61)						\$ (0.47)
Basic and diluted shares outstanding	29,870					18,124(H)	47,994
Minimum Equity (H):							
Net loss per share basic and diluted	\$ (0.61)						\$ (0.52)
Basic and diluted shares outstanding	29,870					13,381 (H)	43,251

Edgar Filing: NANOGEN INC - Form S-4/A

See notes to unaudited pro forma condensed combined consolidated financial statements

Table of Contents

Nanogen, Inc.

**NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED
CONSOLIDATED FINANCIAL STATEMENTS**

1. Basis of Presentation

The unaudited pro forma condensed combined consolidated financial statements of Nanogen have been prepared using the purchase method of accounting. The pro forma adjustments are preliminary and based on management's estimates of the fair value and useful lives of the assets acquired and liabilities assumed and have been prepared to illustrate the estimated effects of the acquisitions. The unaudited pro forma combined balance sheet as of June 30, 2004, gives effect to the Epoch merger as if it were completed on that date.

The unaudited pro forma combined statement of operations for the year ended December 31, 2003, and the six month period ended June 30, 2004 illustrate the effect of the merger of Epoch as if it had occurred on January 1, 2003, and includes the historical statement of operations for Epoch for the periods presented, combined with Nanogen's unaudited pro forma combined statement of operations for the periods presented, which give effect to the acquisition of SynX on April 21, 2004, as if the acquisition had been completed January 1, 2003.

Certain reclassifications have been made to the historical presentation of Epoch in order to conform the pro forma condensed combined consolidated presentation.

2. Pro Forma Adjustments and Assumptions for Epoch

The following explanations describe the assumptions used in determining the pro forma adjustments necessary to present an unaudited pro forma condensed combined consolidated balance sheet as of June 30, 2004 and the unaudited pro forma condensed combined consolidated statements of operations for the year ended December 31, 2003 and for the six months ended June 30, 2004.

(A) Adjustment to cash represents Nanogen's estimated direct transaction costs of \$2.5 million, and Epoch's estimated direct transaction costs of \$2.0 million. Transaction costs include financial advisory, severance, legal and other costs.

(B) Under the purchase method of accounting, the total estimated consideration as shown in the table below is allocated to Epoch's tangible and intangible assets and liabilities based on their estimated fair values as of the date of the completion of the transaction. The estimates below are subject to change and may differ materially upon finalization of the purchase price and purchase price allocation.

The preliminary purchase price is estimated as follows (in thousands):

Edgar Filing: NANOGEN INC - Form S-4/A

Nanogen, Inc. common stock (based on the estimated issuance of approximately 15.4 million common shares at \$3.72 per share)	\$ 57,271
Nanogen's direct transaction fees and expenses	2,500
Assumption of Epoch warrants	1,067
Assumption of Epoch stock options	3,752
Total estimated purchase price	\$ 64,590

Table of Contents**Nanogen, Inc.****NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED****CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The estimated purchase price has been preliminarily allocated as follows based on the estimated fair value of net tangible assets acquired and liabilities to be assumed:

Cash, net of Epoch's estimated transaction costs	\$ 7,159
Accounts receivable	1,409
Inventory	92
Prepaid and other current assets	206
Property and equipment	2,510
Restricted cash	673
Other assets	5
Accounts payable	(402)
Accrued liabilities	(1,318)
Long term obligations	(849)
Deferred rent	(368)
Common stock warrant liability	(914)
	8,203
Fair value of identifiable intangible assets acquired:	
Completed technology	12,136
Customer relationships	2,950
	15,086
Deferred compensation	64
Goodwill	41,237
Total estimated purchase price	\$ 64,590

(C) Adjustments to intangibles are as follows (in thousands):

Completed technology acquired	\$ 12,136
Customer relationships acquired	2,950
Value assigned to intangible assets	15,086
Less: historical net book value of intangibles	(838)
Net adjustment to intangibles	\$ 14,248

Acquired identifiable intangibles will be amortized over the estimated useful lives with initial estimates ranging from 3.0 to 11.3 years. The actual adjustments for intangibles are preliminary and are based on management's estimates and the preliminary work of independent appraisers. The actual amounts and estimated useful lives may differ materially and will be based on a final report from the independent appraisers.

(D) Amount represents the intrinsic value of unvested stock options of Epoch which are to be assumed by Nanogen. The value assigned is an estimate which will be updated upon closing. The actual amount may differ materially.

(E) Epoch's deferred revenue of approximately \$3.0 million has been eliminated as such deferred revenue does not represent a substantive legal performance obligation to be assumed by Nanogen for accounting purposes.

Table of Contents**Nanogen, Inc.****NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED****CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

(F) Represents adjustments to reflect: the elimination of the components of the historical equity of Epoch; the issuance of new Nanogen common stock related to the transaction; the estimated value of warrants assumed; and the estimated value of Epoch's stock options to be assumed by Nanogen. The value for the options and warrants was estimated using the Black-Scholes valuation model for option pricing with the following assumptions: Nanogen common stock price of \$3.72; a risk-free interest rate of 3.850%; a dividend yield of zero; a volatility factor of the expected market price of Nanogen's common stock of 95%; and a weighted average expected life of 5 years. The value assigned is an estimate which will be updated upon closing. The actual amount may differ materially.

Adjustments to common stock are as follows (in thousands):

Issuance of Nanogen common stock, par value	\$ 15
Elimination of Epoch common stock, par value	(287)
Net adjustment to common stock	\$ (272)

Adjustments to additional paid-in capital are as follows (in thousands):

Issuance of Nanogen common stock, less par value	\$ 57,256
Assumption of warrants	1,067
Assumption of options	3,752
Elimination of Epoch additional paid-in capital	(87,074)
Net adjustment to additional paid-in capital	\$ (24,999)

(G) Represents the estimated amortization of deferred compensation for each period presented based on a weighted average remaining vesting period of twenty-nine months.

(H) The pro forma basic and diluted weighted average number of shares are calculated by adding Nanogen's weighted average basic shares outstanding and 18,123,842 and 13,381,154 shares, representing the maximum and minimum estimated number of Nanogen common shares to be issued in conjunction with the transaction. The actual number of shares to be issued will vary based on final calculations as described in the merger agreement.

3. Pro Forma Adjustment and Assumptions for SynX

Edgar Filing: NANOGEN INC - Form S-4/A

On April 21, 2004, Nanogen completed its acquisition of SynX Pharma Inc., located in Toronto, Canada. Nanogen issued approximately 1.6 million shares of common stock in exchange for all outstanding shares of SynX. The statements of operations for the year ended December 31, 2003 and for the period from January 1, 2004 through April 21, 2004 (date of acquisition) were derived from SynX's historical financial statements, and have been adjusted to conform with accounting principles generally accepted in the United States, and amounts have been translated from Canadian dollars to United States dollars based on average exchange rates for each period. Beginning on April 21, 2004, the operations of SynX are included in Nanogen's historical financials.

Pro forma adjustments to SynX's historical selling, general and administrative expenses relate to amortization of deferred compensation.

Approximately \$3.8 million of the SynX purchase price was allocated to in-process research and development which was written-off upon closing.

Table of Contents

COMPARISON OF RIGHTS OF NANOGEN STOCKHOLDERS AND EPOCH STOCKHOLDERS

This section of the joint proxy statement/prospectus describes material differences between the rights of Nanogen common stockholders, on the one hand, and the rights of Epoch common stockholders on the other hand. The rights compared are those found in the respective companies charter documents, and corporate law provisions of Delaware, which is the state in which both companies are incorporated. While Nanogen and Epoch believe that the description covers the material differences between the two, this summary may not contain all of the information that is important to the stockholders of Nanogen and Epoch. This summary is not intended to be a complete discussion of the certificate of incorporation, bylaws and stockholders' rights plan of Nanogen and the certificate of incorporation and bylaws of Epoch and is qualified in its entirety by applicable Delaware law. Nanogen and Epoch stockholders should carefully read this entire document and the documents referred to in this summary for a more complete understanding of the differences between the rights of Nanogen common stockholders and the rights of Epoch common stockholders.

Nanogen and Epoch are both organized under the laws of the State of Delaware. Any differences, therefore, in the rights of holders of Nanogen capital stock and Epoch capital stock arise primarily from differences in their respective certificates of incorporation, bylaws and, with respect to holders of Nanogen capital stock, the Nanogen stockholders' rights plan. Upon completion of the merger, holders of Epoch capital stock will become holders of Nanogen capital stock and their rights will be governed by Delaware law, the certificate of incorporation of Nanogen and the bylaws of Nanogen. The following discussion summarizes material differences between the rights of Nanogen stockholders and Epoch stockholders under the certificate of incorporation and bylaws of Nanogen and of Epoch, and with respect to Nanogen capital stock, the Nanogen stockholders' rights plans.

Because this summary does not provide a complete description of these documents, all Nanogen stockholders and Epoch stockholders are urged to read carefully the relevant provisions of Delaware law, as well as the certificates of incorporation and bylaws of each of Nanogen and Epoch, and the Nanogen stockholders' rights plan. Copies of the certificate of incorporation and bylaws of Epoch will be sent to Epoch and Nanogen stockholders, upon request. Copies of the certificate of incorporation, bylaws and stockholders' rights plan of Nanogen will be sent to Epoch and Nanogen stockholders, upon request. See "Where You Can Find More Information" on page 98.

Classification; Number and Election of Directors

Nanogen

The Nanogen board is divided into three classes, with each class serving a staggered three-year term. Currently, Nanogen's board of directors has five members, including two Class I directors, two Class II directors and one Class III director. The Class I directors have a term expiring at the 2005 annual meeting of stockholders, the Class II directors have a term expiring at the 2006 annual meeting of stockholders, and the Class III director has a term expiring at the 2007 annual meeting of stockholders. The Nanogen bylaws provide that its board of directors will consist of a number of directors between five and nine, to be fixed from time to time by the board of directors.

In addition, the Nanogen certificate of designation adopted in connection with the stockholders' rights plan (described below) provides that, in certain circumstances relating to the failure of Nanogen to distribute dividends, all holders of Preferred Stock (including holders of the Series A Participating Preferred Stock), voting as a class, irrespective of series, shall have the right to elect two directors.

Epoch

Currently, the Epoch board of directors has seven members, each serving a one year term. The Epoch bylaws provide that its board of directors will consist of a number of directors between two and eleven, to be fixed from time to time by resolution of the board of directors or the stockholders.

Table of Contents

Capitalization

Nanogen

The authorized capital stock of Nanogen consists of:

50,000,000 shares of common stock, par value \$0.001 per share; and

5,000,000 shares of preferred stock, par value \$0.001 per share.

In connection with the merger, Nanogen will seek stockholder approval of an amendment to its certificate of incorporation increasing the number of authorized shares of Nanogen common stock from 50,000,000 to 135,000,000.

Epoch

The authorized capital stock of Epoch consists of:

50,000,000 shares of common stock, par value \$0.01 per share; and

10,000,000 shares of preferred stock, par value \$0.01 per share.

Vacancies on the Board of Directors and Removal of Directors

General

Delaware law provides that if, at the time of the filling of any vacancy or newly created directorship, the directors then in office constitute less than a majority of the authorized number of directors, the Delaware Court of Chancery may, upon application of any stockholder or stockholders holding at least 10% of the voting stock of the corporation then outstanding having the right to vote for such directors, order an election to be held to fill the vacancy or replace the directors selected by the directors then in office.

Nanogen

Edgar Filing: NANOGEN INC - Form S-4/A

Vacancies on the board of directors of Nanogen and newly created directorships resulting from any increase in the authorized number of directors may be filled by a majority of the directors then in office, though less than a quorum, or by a sole remaining director. If there are no directors in office, then an election of directors may be held in the manner provided by statute.

Nanogen's bylaws provide that a director may be removed, but only for cause, by the holders of a majority of the shares then entitled to vote at an election of directors, unless otherwise specified by law or Nanogen's certificate of incorporation.

Epoch

Any vacancy occurring on the board of directors of Epoch may be filled by the affirmative vote of a majority of the remaining directors though less than a quorum of the board. Any directorship to be filled by reason of an increase in the number of directors may be filled by the board.

Epoch's bylaws provide that one or more members of the board (including the entire board) may be removed at a meeting of stockholders called expressly for that purpose, with or without cause, by a vote of the holders of a majority of the shares then entitled to vote on the election of directors.

Committees of the Board of Directors

Nanogen

Nanogen's board may, by resolution passed by a majority of the whole board, designate one or more committees consisting of one or more directors, which will have and may exercise the powers of the board of

Table of Contents

directors in the management of the business and affairs of Nanogen as designated by resolution of the board; but no such committee shall have the power to amend the certificate of incorporation, adopt an agreement of merger or consolidation, recommend to the stockholders the sale, lease or exchange of all or substantially all of Nanogen's property and assets, recommend to the stockholders a dissolution of Nanogen or a revocation of a dissolution, or amend the bylaws; and, unless the resolution designating such committee or the certificate of incorporation expressly so provide, no such committee shall have the power or authority to declare a dividend or to authorize the issuance of stock. The board may designate one or more directors as alternate members of any committee who may replace any absent or disqualified member at any meeting of the committee.

Epoch

Epoch's board may, by resolution passed by a majority of the whole board, appoint standing or temporary committees consisting of one or more directors, and invest such committees with such powers as the board may see fit, subject to such conditions as may be prescribed by the board and by applicable law; but no such committee shall have the power to amend the certificate of incorporation, adopt a plan of merger or consolidation, recommend to the stockholders the sale, lease or exchange or other disposition of all or substantially all of the property and assets of Epoch other than in the usual and regular course of business, recommend to the stockholders a voluntary dissolution or a revocation thereof or amend the bylaws. The board may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the board to act at the meeting in the place of any such absent or disqualified member.

Amendments to the Certificate of Incorporation

General

Under Delaware law, an amendment to the certificate of incorporation of a corporation requires the approval of the corporation's board of directors and the approval of holders of a majority of the outstanding stock entitled to vote upon the proposed amendment, unless a higher vote is required by the corporation's certificate of incorporation.

Nanogen

Nanogen's certificate of incorporation provides that the certificate of incorporation may be amended in the manner prescribed by Delaware law. However, any amendment to or repeal of provisions with respect to the following Articles shall require the vote of the holders of at least 66²/3% of the then outstanding Nanogen common stock entitled to vote generally in the election of Nanogen's directors:

Article VI: regarding designation of classes of the board and election of directors;

Article VII: regarding the power of stockholders to act by written consent and the calling of special meetings of the stockholders;

Edgar Filing: NANOGEN INC - Form S-4/A

Article VIII: regarding amendment to the Nanogen bylaws;

Article XI: regarding limitations on director liability and indemnification; and

Article XIII: regarding the amendment process for Nanogen's certificate of incorporation.

In addition, the Nanogen certificate of designation provides that the certificate of incorporation shall not be further amended in any manner which would materially alter or change the powers, preferences or special rights of the Series A Participating Preferred Stock so as to affect them adversely without the affirmative vote of the holders of at least 66²/₃% of the outstanding shares of Series A Participating Preferred Stock voting separately as a class.

Table of Contents

Epoch

Epoch's certificate of incorporation provides that the affirmative vote of the holders of a majority of the shares entitled to vote is required in order to amend or repeal any of the provisions contained in the certificate.

Amendments to Bylaws

General

Under Delaware law, stockholders entitled to vote have the power to adopt, amend or repeal bylaws. In addition, a corporation may, in its certificate of incorporation, confer this power on the board of directors. The stockholders always have the power to adopt, amend or repeal the bylaws, even though the board of directors may also be delegated the power.

Nanogen

Nanogen's certificate of incorporation provides that the board of directors is expressly empowered to adopt, amend or repeal the bylaws; provided, however, that any such adoption, amendment or repeal shall require the approval of at least sixty-six and two-thirds percent ($66\frac{2}{3}\%$) of the total number of authorized directors (whether or not there exist any vacancies in previously authorized directorships at the time any resolution providing for adoption, amendment or repeal is presented to the board of directors). The stockholders shall also have the power to adopt, amend or repeal the bylaws, provided, however, that in addition to any vote of the holders of any class or series of stock required by law or by the certificate of incorporation, the affirmative vote of the holders of at least sixty-six and two-thirds percent ($66\frac{2}{3}\%$) of the voting power of all of the then outstanding shares of the stock entitled to vote generally in the election of directors, voting together as a single class, shall be required for such adoption, amendment or repeal by the stockholders of any provisions of the bylaws.

Epoch

Epoch's certificate of incorporation provides that the board of directors is expressly empowered to adopt, amend or repeal the bylaws, subject to the power of the stockholders to amend or repeal such bylaws. The stockholders also have the express power to adopt, amend or repeal the bylaws. Epoch's bylaws further clarify that all bylaws made by the board of directors may be amended or repealed by the stockholders.

Ability to Call Special Meetings

Nanogen

Edgar Filing: NANOGEN INC - Form S-4/A

Special meetings of the Nanogen stockholders may be called only at the request of the chairman of the board of directors, the chief executive officer or president or by a resolution duly adopted by the affirmative vote of a majority of the board of directors. In addition, Nanogen's certificate of designation provides that, during a period of default in which dividends owed to the holders of Preferred Stock have not been paid, unless the holders of Preferred Stock have previously exercised their right to elect directors, the board of directors may order, or any stockholder or stockholders owning in the aggregate not less than ten percent (10%) of the total number of shares of Preferred Stock outstanding, irrespective of series, may request, the calling of a special meeting of the holders of Preferred Stock, which meeting shall thereupon be called by the president, a vice president or the secretary.

Epoch

Special meetings of Epoch stockholders may be called by the chairman of the board, the president, the board, or the holders of not less than one-tenth of all the outstanding shares entitled to vote at the meeting.

Table of Contents

Notice of Stockholder Action

Nanogen

Under the Nanogen bylaws, in order for a stockholder to submit a proposal at any annual stockholder meeting, timely written notice must be given to the corporate secretary of Nanogen before the annual meeting. To be timely, notice of a stockholder proposal must be delivered personally or deposited in the United States mail, or delivered to a common carrier for transmission to the recipient or actually transmitted by the person giving the notice by electronic means to the recipient or sent by other means of written communication, postage or delivery charges prepaid in all such cases, and received at Nanogen's principal executive offices, addressed to the attention of the secretary, not less than fifty (50) days nor more than seventy-five (75) days prior to the scheduled date of the meeting (regardless of any postponements, deferrals or adjournments of that meeting to a later date); provided, however, that in the event that less than sixty-five (65) days' notice or prior public disclosure of the date of the scheduled meeting is given or made to stockholders, notice by the stockholder to be timely must be so received not later than the earlier of (a) the close of business on the 15th day following the day on which notice of the date of the scheduled annual meeting was mailed or public disclosure was made, whichever first occurs, and (b) two days prior to the date of the scheduled meeting.

A stockholder's notice to the secretary must set forth all of the following:

a brief description of the business desired to be brought before the annual meeting and the reasons for conducting such business at the annual meeting;

the name and record address of the stockholder proposing such business;

the class, series and number of shares that are owned beneficially by the stockholder; and

any material interest of the stockholder in such business.

With respect to stockholder nominations of directors for election, nominations may be made by any stockholder of record entitled to vote for the election of directors at the meeting who provides timely notice in writing to the secretary delivered in a manner similar to that of proposals for transacting business except that the secretary must receive such notice not less than one hundred twenty (120) days prior to the scheduled date of the meeting (regardless of any postponements, deferrals or adjournments of that meeting to a later date); provided, however, that, in the case of an annual meeting and in the event that less than one hundred (100) days' notice or prior public disclosure of the date of the scheduled meeting is given or made to stockholders, notice by the stockholder to be timely must be so received not later than the close of business on the 7th day following the day on which such notice of the date of the scheduled meeting was mailed or such public disclosure was made, whichever first occurs.

Stockholders nominating candidates for election to the Nanogen board of directors are required to provide the following information:

as to each person whom the stockholder proposes to nominate for election or reelection as a director:

Edgar Filing: NANOGEN INC - Form S-4/A

the name, age, business address and residence address of the person;

the principal occupation or employment of the person;

the class, series and number of shares of capital stock that are owned beneficially by the person;

a statement as to the person's citizenship; and

any other information relating to the person that is required to be disclosed in solicitations for proxies for election of directors pursuant to Section 14 of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

as to the stockholder giving the notice:

the name and record address of the stockholder; and

the class, series and number of shares of capital stock that are owned beneficially by the stockholder.

Table of Contents

Nanogen may require any proposed nominee to furnish such other information as may reasonably be required by Nanogen to determine the eligibility of such proposed nominee to serve as a director.

Epoch

Epoch has not adopted any provision in its bylaws relating to the process by which a stockholder could submit a proposal at any epoch meeting of stockholders. Accordingly, the rules governing such event would be based on Delaware law.

Indemnification of Directors and Officers

General

Under Delaware law, a corporation generally may indemnify directors and officers:

for actions taken in good faith and in a manner they reasonably believed to be in, or not opposed to, the best interests of the corporation; and

with respect to any criminal proceeding, if they had no reasonable cause to believe that their conduct was unlawful.

In addition, Delaware law provides that a corporation may advance to a director or officer expenses incurred in defending any action upon receipt of an undertaking by the director or officer to repay the amount advanced if it is ultimately determined that he or she is not entitled to indemnification.

Nanogen

The intent of the indemnification provisions in the Nanogen bylaws is to provide for indemnification to the fullest extent permitted by Section 145 of the Delaware General Corporation Law. The Nanogen bylaws provide that Nanogen will indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of Nanogen) by reason of the fact that such person is or was a director, officer, employee or agent of Nanogen, or is or was serving at the request of Nanogen as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the Nanogen, and, with respect to any criminal action or proceedings, had no reasonable cause to believe such person's conduct was unlawful. Nanogen will further indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of Nanogen to procure a judgment in its favor by reason of the fact that such person is or was a director, officer, employee or agent of Nanogen, or is or was serving at the request of Nanogen as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if

Edgar Filing: NANOGEN INC - Form S-4/A

such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of Nanogen and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable for negligence or misconduct in the performance of such person's duty to Nanogen unless and only to the extent that the Court of Chancery of the State of Delaware or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery of the State of Delaware or such other court shall deem proper. To the extent that indemnified person has been successful on the merits or otherwise in defense of any action, suit or proceeding, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith.

Table of Contents

Any indemnification under the Nanogen bylaws (unless ordered by a court) shall be made by Nanogen only as authorized in the specific case upon a determination that indemnification of any person described in the relevant bylaw sections is proper in the circumstances because such person has met the applicable standard of conduct described in the relevant bylaws. Such determination shall be made (1) by the board of directors by a majority vote of a quorum consisting of directors who were not parties to such action, suit or proceeding, or (2) if such a quorum is not obtainable, or even if obtainable a quorum of disinterested directors so directs, by independent legal counsel in a written opinion, or (3) by the stockholders.

The indemnification provided by the Nanogen bylaws are not be deemed exclusive of any other rights to which those indemnified may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office, and shall continue as to a person who has ceased to be director, officer, employee or agent of Nanogen and shall inure to the benefit of the heirs, executors and administrators of such a person.

Epoch

The Epoch bylaws provide that Epoch will indemnify each person who was or is made a party or is threatened to be made a party to or is involved (including, without limitation, as a witness) in any actual or threatened action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was a director or officer of Epoch or is or was serving at the request of Epoch as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans, whether the basis of such proceeding is alleged action in an official capacity as a director, officer, employee or agent or in any other capacity while serving as a director, officer, employee or agent, shall be indemnified and held harmless by Epoch to the full extent authorized by the Delaware General Corporation Law, or by other applicable law as then in effect, against all expense, liability and loss (including attorneys' fees, judgments, fines, ERISA excise taxes or penalties and amounts to be paid in settlement) actually and reasonably incurred or suffered by such person in connection therewith and such indemnification shall continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of his or her heirs, executors and administrators; provided, however, that Epoch shall indemnify any such person seeking indemnification in connection with a proceeding (or part thereof) initiated by such person only if such proceeding (or part thereof) was authorized by the board of directors.

The right to indemnification and the payment of expenses incurred in defending a proceeding in advance of its final disposition are not exclusive of any other right which any person may have or may acquire under any statute, provision of the certificate of incorporation, by-law, agreement, vote of stockholders or disinterested directors or otherwise.

Stockholders' Rights Plan

General

Delaware law permits a board of directors to adopt a stockholder rights plan at any time so long as the board's decision satisfies the applicable fiduciary duty tests under Delaware law. The existence of a rights plan may have a negative impact on the price of a company's common stock, may discourage third-party bidders from making a bid for a company or may reduce any premiums paid to stockholders for their common stock.

Nanogen

Edgar Filing: NANOGEN INC - Form S-4/A

Nanogen has a stockholders' rights plan that enables the Nanogen board to deter coercive or unfair takeover tactics and to prevent a person or a group from gaining control of Nanogen without offering a fair price to all stockholders. The plan provided for a dividend of one Preferred Stock Purchase Right for each share of common stock to stockholders of record on November 30, 1998. Each Right entitles such stockholders to buy one

Table of Contents

one-thousandth of a share of Series A Participating Preferred Stock of Nanogen at an exercise price of \$50.00, subject to antidilution adjustments. The Rights are exercisable only if a person or group becomes the beneficial owner of 15% or more of the common stock, or commences a tender or exchange offer which would result in the offeror beneficially owning 15% or more of common stock, which is not approved by Nanogen's board of directors. Nanogen's board and the rights agent have the authority to amend the plan. Thus, Nanogen's stockholders' rights plan compels any prospective acquiror of 15% or more of Nanogen's stock to negotiate with Nanogen's board before completing a proposed acquisition. On December 12, 2000, Nanogen's board of directors amended the rights plan to allow Citigroup Inc. to acquire the beneficial ownership of up to 25% of the outstanding Nanogen common stock without triggering the ability of Nanogen's stockholders to exercise the rights governed by the rights plan. The board of directors is entitled to redeem the rights at \$0.01 per Right at any time prior to the public announcement of the existence of a 15% holder. The rights expire on the earlier of (i) November 17, 2008, (ii) certain permitted merger transactions, or (iii) redemption or exchange as described in the rights plan. Until a right is exercised, the holder has no rights as a stockholder.

Epoch

Epoch has not adopted a stockholders' rights plan.

Table of Contents**NANOGEN PRINCIPAL STOCKHOLDERS**

The following table sets forth, as of October 1, 2004, certain information with respect to the beneficial ownership of the Nanogen common stock by (i) each stockholder known by Nanogen to be the beneficial owner of more than 5% of Nanogen common stock, (ii) each director, (iii) each named executive officer, and (iv) all of Nanogen's directors and executive officers as a group. Unless otherwise indicated, the principal address of each of the persons below is c/o Nanogen 10398 Pacific Center Court, San Diego, California 92121.

Name	Shares	Percentage
	Beneficially Owned (1)	Of Outstanding Shares
Citigroup, Inc.(2)	3,246,214	9.58%
Sage Capital Group(3)	1,875,000	5.53%
Howard C. Birndorf (4)	1,707,217	4.91%
Val Buonaiuto (5)	10,000	*
Graham Lidgard (6)	125,956	*
David Ludvigson (7)	334,567	*
Stelios Papadopoulos (8)	65,267	*
William Respass (9)	19,334	*
David Schreiber (10)	15,121	*
Robert Whalen (11)	26,412	*
All directors and executives officers as a group (8 persons) (12)	2,303,874	6.53%

* less than one percent

- (1) Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission and generally includes voting or investment power with respect to securities. Shares of common stock subject to options, warrants and convertible notes currently exercisable or convertible, or exercisable or convertible within 60 days of October 1, 2004 are deemed outstanding for computing the percentage of the person holding such options but are not deemed outstanding for computing the percentage of any other person. Except as indicated by footnote, and subject to community property laws where applicable, the persons named in the table have sole voting and investment power with respect to all shares of common stock shown as beneficially owned by them. 33,880,987 shares of Nanogen common stock were outstanding as of October 1, 2004.
- (2) Pursuant to a Schedule 13G/A filed on February 13, 2004 with the Securities and Exchange Commission, Citigroup Global Markets Inc. (CGM) and Citigroup Financial Products Inc. (CFP) each claimed it had shared voting power and shared dispositive power over 2,116,105 shares of common stock, Citigroup Global Markets Holdings Inc. (CGM Holdings) claimed it had shared voting power and shares dispositive power over 3,171,165 shares of common stock, and Citigroup Inc. (Citigroup) claimed it had shares voting power and shared dispositive power over 3,246,214 shares of common stock. CGM, CFP, CGM Holdings and Citigroup each reported that the respective shares listed for each respective entity includes shares for which each such reporting entity disclaims beneficial ownership. CFP is the sole stockholder of CGM, CGM Holdings is the sole stockholder of CFP. Citigroup is the sole stockholder of CGM Holdings. The address of the beneficial owner is 399 Park Avenue, New York, NY 10043.
- (3) Pursuant to a Schedule 13G filed on March 5, 2004 with the Securities and Exchange Commission, Sage Capital Growth, Inc. and Mainfield Enterprises, Inc. each claimed it had shared voting power and shared dispositive power over 1,875,000 shares of common stock. Pursuant to an investment management agreement between Sage Capital Growth and Mainfield Enterprises, Sage Capital Growth has the power to sell or vote on behalf of Mainfield Enterprises some of all of the 1,875,000 shares of Nanogen common stock. The address of the beneficial owner is 660 Madison Avenue, 18th Floor, New York, NY 10021.
- (4) Includes 891,665 shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (5) Includes 10,000 shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (6) Includes 123,956 shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (7) Includes 288,041 shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (8) Includes 55,000 shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (9) Includes no shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (10) Includes 8,854 shares issuable upon the exercise of options within 60 days of October 1, 2004.

Edgar Filing: NANOGEN INC - Form S-4/A

- (11) Includes 16,145 shares issuable upon the exercise of options within 60 days of October 1, 2004.
- (12) Includes directors and executive officers shares listed above, including shares issuable upon the exercise of options within 60 days of October 1, 2004.

Table of Contents**EPOCH PRINCIPAL STOCKHOLDERS**

The following table sets forth as of October 1, 2004 certain information with respect to beneficial ownership of Epoch common stock by (i) each stockholder known by Epoch to be the beneficial owner of more than five percent (5%) of the Epoch common stock, (ii) each director, (iii) each of the named executive officers, and (iv) all of Epoch's directors and executive officers as a group. Unless otherwise indicated, the principal address of each of the persons below is c/o Epoch Biosciences, Inc., 21720 23rd Drive, SE, Suite 150, Bothell, Washington 98021.

Name	Shares Beneficially Owned (1)	Percentage of Outstanding Shares
Bradford T. Whitmore ⁽²⁾	6,003,712	20.93%
Grace Brothers Ltd. ⁽³⁾	4,778,193	16.66%
Spurgeon Corporation ⁽³⁾	4,778,193	16.66%
MMCAP International Inc. SPC ⁽⁴⁾	1,990,119	6.94%
Perkins Capital Management Inc. ⁽⁵⁾	1,516,650	5.29%
Fred Craves, Ph.D. ⁽⁶⁾	1,443,448	5.02%
Richard L. Dunning ⁽⁷⁾	35,233	*
William G. Gerber, M.D. ⁽⁸⁾	449,286	1.54%
Herbert L. Heyneker, Ph.D. ⁽⁹⁾	21,081	*
Merl Hoekstra, Ph.D. ⁽¹⁰⁾	123,576	*
Bert W. Hogue ⁽¹¹⁾	123,192	*
Michael Y. Lucero ⁽¹²⁾	9,167	*
Walt Mahoney, Ph.D. ⁽¹³⁾	121,500	*
R. Janet Whitmore ⁽¹⁴⁾	247,029	*
Sanford S. Zweifach ⁽¹⁵⁾	883,260	3.07%
All executive officers and directors as a group (10 persons) ⁽¹⁶⁾	2,703,897	9.41%

* Less than one percent

- (1) Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission and generally includes voting or investment power with respect to securities. Shares of common stock subject to options, warrants and convertible notes currently exercisable or convertible, or exercisable or convertible within 60 days of October 1, 2004 are deemed outstanding for computing the percentage of the person holding such options but are not deemed outstanding for computing the percentage of any other person. Except as indicated by footnote, and subject to community property laws where applicable, the persons named in the table have sole voting and investment power with respect to all shares of common stock shown as beneficially owned by them. 28,686,337 shares of Epoch common stock were outstanding as of October 1, 2004.
- (2) Based on information set forth in a Schedule 13G/A filed with the Securities and Exchange Commission on January 20, 2004, and supplemental information provided to Epoch by Grace Brothers, Ltd., includes 4,778,193 shares of common stock held by Grace Brothers, Ltd. Mr. Whitmore is a general partner of Grace Brothers, Ltd. In such capacity, Mr. Whitmore shares voting and investment power with respect to the 4,778,193 shares of common stock held by Grace Brothers. He also has sole voting and investment power with respect to an additional 1,225,519 shares of common stock. Mr. Whitmore is the brother of R. Janet Whitmore, a current director of Epoch. Ms. Whitmore disclaims any beneficial interest in the shares owned by Mr. Whitmore, Grace Brothers and Spurgeon Corporation. The address of beneficial owner is 1560 Sherman Avenue, Suite 900, Evanston, Illinois 60201.
- (3) Based on information set forth in a Schedule 13G/A filed with the Securities and Exchange Commission on January 20, 2004, and supplemental information provided to Epoch by Grace Brothers, Ltd. Consists of 4,778,193 shares of common stock held by Grace Brothers, Ltd. Spurgeon Corporation is a general partner of Grace Brothers and shares voting and investment power with respect to the shares of common stock held by Grace Brothers. Mr. Whitmore is the brother of R. Janet Whitmore, a current director of Epoch.

Table of Contents

- Ms. Whitmore disclaims any beneficial interest in the shares owned by Mr. Whitmore, Grace Brothers and Spurgeon Corporation. The address of the beneficial owner is 290 South County Farm Road, Third Floor, Wheaton, Illinois 60187.
- (4) Based on information set forth in a Schedule 13G filed with the Securities and Exchange Commission on October 1, 2004. The address of beneficial owner is P.O. Box 32021 SMB, Anchorage Centre, 2nd Flr, Grand Cayman, Cayman Islands, British West Indies.
 - (5) Based on information set forth in a Schedule 13F-HR, filed with the Securities and Exchange Commission on August 10, 2004, by Perkins Capital Management, Inc. Perkins Capital Management is a registered investment advisor, holds all of such shares for the account of its clients or custodians thereof, and disclaims beneficial ownership thereof. Perkins Capital Management has sole dispositive power with regard to all of such shares and sole voting power over 610,400 of such shares. Address of stockholder is 730 East Lake Street, Wayzata, Minnesota 55391-1769.
 - (6) Includes 5,000 shares subject to options held by Dr. Craves exercisable within 60 days of October 1, 2004. Also includes 712,010 shares held by Bay City Capital Fund III, L.P., and 40,000 shares underlying a warrant held by Bay City Capital BD LLC exercisable within 60 days of October 1, 2004, which are beneficially owned by Bay City Capital, LLC, in which Dr. Craves owns a 17.8% membership interest. Dr. Craves disclaims beneficial ownership of the Bay City Capital shares except to the extent of his pecuniary interest therein.
 - (7) Consists of 35,233 shares subject to options held by Mr. Dunning exercisable within 60 days of October 1, 2004.
 - (8) Includes 439,286 shares subject to options held by Dr. Gerber exercisable within 60 days of October 1, 2004.
 - (9) Includes 20,479 shares subject to options held by Dr. Heyneker exercisable within 60 days of October 1, 2004.
 - (10) Includes 118,541 shares subject to options held by Dr. Hoekstra exercisable within 60 days of October 1, 2004.
 - (11) Includes 120,625 shares subject to options held by Mr. Hogue exercisable within 60 days of October 1, 2004.
 - (12) Consists of 9,167 shares subject to options held by Mr. Lucero exercisable within 60 days of October 1, 2004.
 - (13) Includes 117,500 shares subject to options held by Dr. Mahoney exercisable within 60 days of October 1, 2004.
 - (14) Includes of 6,920 shares subject to options held by Ms. Whitmore exercisable within 60 days of October 1, 2004. Ms. Whitmore is the sister of Bradford T. Whitmore (see footnote (3) above. Ms. Whitmore disclaims any beneficial interest in the shares owned by Mr. Whitmore, Grace Brothers and Spurgeon Corporation.
 - (15) Includes 5,000 shares subject to options held by Mr. Zweifach exercisable within 60 days of October 1, 2004. Also includes 712,010 shares held by Bay City Capital Fund III, L.P., and 40,000 shares underlying a warrant held by Bay City Capital BD LLC exercisable within 60 days of October 1, 2004, which are beneficially owned by Bay City Capital, LLC, in which Mr. Zweifach owns a 4.7% membership interest. Mr. Zweifach was the chief financial officer, managing director and a member of Bay City Capital, LLC, and a manager and member of Bay City Capital BD until January 2003. Mr. Zweifach does not have voting or investment power over any shares held by Bay City Capital, LLC. Mr. Zweifach disclaims beneficial ownership of the Bay City Capital shares except to the extent of his pecuniary interest therein.
 - (16) Includes directors and executive officers shares listed above, including shares subject to options exercisable within 60 days of October 1, 2004. Also includes the 712,010 shares held by Bay City Capital Fund III, L.P., and 40,000 shares underlying a warrant held by Bay City Capital BD LLC exercisable within 60 days of October 1, 2004, which are beneficially owned by Bay City Capital, LLC, in which Dr. Craves owns a 17.8% membership interest and Mr. Zweifach owns a 4.7% membership interest. See footnotes (6) and (15) above. Dr. Craves and Mr. Zweifach disclaim beneficial ownership of the Bay City Capital shares except to the extent of their pecuniary interest therein.

Table of Contents

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, have audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2003, as set forth in their report, which is incorporated by reference in this joint proxy statement/prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

The financial statements of Epoch Biosciences, Inc. as of December 31, 2003 and 2002, and for each of the years in the three-year period ended December 31, 2003, have been incorporated by reference herein in reliance upon the report of KPMG LLP, independent registered public accounting firm incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing. The audit report covering the December 31, 2003 financial statements refers to the adoption of SFAS No. 142, Goodwill and Other Intangible Assets, effective January 2002.

The consolidated financial statements of SynX Pharma Inc. as of December 31, 2003 and 2002, and for each of the years in the two-year period ended December 31, 2003, have been incorporated by reference herein in reliance upon the audit report and the comments for US readers of KPMG LLP, chartered accountants, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

LEGAL MATTERS

The validity of the shares of Nanogen common stock to be issued in the merger will be passed upon for Nanogen by Morgan, Lewis & Bockius, LLP, San Francisco, California. It is a condition to the completion of the merger that each of Nanogen and Epoch receive an opinion from Morgan, Lewis & Bockius, LLP, and Stradling Yocca Carlson & Rauth, respectively, concerning the tax treatment of the merger.

DEADLINE FOR STOCKHOLDER PROPOSALS TO BE PRESENTED

AT NEXT ANNUAL MEETING

Proposals of Nanogen stockholders submitted pursuant to Rule 14a-8 under the Securities and Exchange Act of 1934, as amended and intended to be presented for consideration at Nanogen's 2005 annual meeting of stockholders must be received by the secretary of Nanogen at Nanogen's principal executive offices at 10398 Pacific Center Court, San Diego, California 92121 not later than January 6, 2005 in order to be considered for inclusion in Nanogen's proxy materials for that meeting. Nanogen's bylaws also establish an advance notice procedure with respect to certain stockholder proposals and director nominations. If a stockholder wishes to have a stockholder proposal considered at Nanogen's 2005 annual meeting of stockholders, the stockholder must give timely notice of the proposal in writing to the secretary of Nanogen at Nanogen's principal executive offices at 10398 Pacific Center Court, San Diego, California 92121. To be timely, a stockholder's notice of the proposal must be delivered to, or mailed and received at the executive offices of Nanogen not less than 50 days nor more than 75 days prior to the proposed date of the annual meeting; provided, however, that if less than 65 days notice or prior public disclosure of the date of the annual meeting is given or made to stockholders, notice of the proposal to be timely must be received no later than the 15th day following the day on which such notice of the date of the annual meeting is mailed or public disclosure of the meeting date is given.

Edgar Filing: NANOGEN INC - Form S-4/A

Any Epoch stockholder desiring to submit a proposal for action at Epoch's 2005 annual meeting of stockholders (which will be held only if the merger is not consummated) and presentation in Epoch's proxy statement with respect to such meeting deliver such proposal to Epoch at its principal place of business no later than December 15, 2004, which is 120 calendar days prior to the anniversary of the 2004 mailing date, in order to be considered for possible inclusion in the proxy statement for that meeting. Matters pertaining to such proposals,

Table of Contents

including the number and length thereof, eligibility of persons entitled to have such proposals included and other aspects are regulated by the Securities Exchange Act of 1934, Rules and Regulations of the Securities and Exchange Commission and other laws and regulations to which interested persons should refer. SEC rules also establish a different deadline, the discretionary vote deadline, for submission of stockholder proposals that are not intended to be included in Epoch's proxy statement with respect to discretionary voting. The discretionary vote deadline for the year 2005 annual meeting is February 28, 2005 (45 calendar days prior to the anniversary of the mailing date of this proxy statement). If an Epoch stockholder gives notice of such a proposal after the discretionary vote deadline, Epoch's proxy holders will be allowed to use their discretionary voting authority to vote against the stockholder proposal when and if the proposal is raised at Epoch's year 2005 annual meeting.

WHERE YOU CAN FIND MORE INFORMATION

Nanogen and Epoch each file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy this information at the following locations of the SEC:

Public Reference Room
450 Fifth Street, N.W.
Room 1024
Washington, D.C. 20549

Pacific Regional Office
5670 Wilshire Boulevard
Suite 1100
Los Angeles, CA 90036-3648

You may obtain information on the operations of the Public Reference Room by calling the SEC at 1-800-SEC-0330. You can also obtain copies of this information by mail at prescribed rates from the Public Reference Section of the SEC, 450 Fifth Street, N.W., Washington, D.C. 20549.

The SEC also maintains a website that contains reports, proxy statements and other information regarding companies who file information electronically with the SEC, including Nanogen and Epoch. The address of the SEC website is <http://www.sec.gov>.

You also can inspect reports, proxy statements and other information about Nanogen and Epoch at the offices of the Nasdaq National Market, 1735 K Street, N.W., Washington, D.C.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

Nanogen has filed a registration statement on Form S-4 under the Securities Act to register with the SEC the Nanogen common stock to be issued to Epoch stockholders in the merger. This joint proxy statement/prospectus is part of that registration statement and constitutes a prospectus of Nanogen in addition to being a proxy statement of Nanogen for its special meeting and of Epoch for its special meeting. As allowed by SEC rules, this document does not contain all of the information you can find in the registration statement or the exhibits to the registration statement. You may inspect and copy the registration statement at any of the addresses listed above.

The SEC allows us to incorporate by reference information into this joint proxy statement/prospectus. This means we can disclose important information to you by referring you to another document separately filed with the SEC. The information incorporated by reference is considered a part of this joint proxy statement/prospectus, except for any information superseded by information in this joint proxy statement/prospectus. In addition, any later information that we file with the SEC will automatically update and supersede this information. This joint proxy

Edgar Filing: NANOGEN INC - Form S-4/A

statement/prospectus incorporates by reference the documents listed below that we have previously filed with the SEC. These documents contain important information about our companies and their finances.

All documents filed by Nanogen or Epoch pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the original registration statement/prospectus and before the date of each company's stockholder meeting are incorporated by reference into and are deemed to be a part of this joint proxy statement/prospectus from the date of filing of those documents.

Table of Contents

You should rely only on the information contained in this document or that to which we have referred you. We have not authorized anyone to provide you with any additional information. This joint proxy statement/prospectus is dated as of the date listed on the cover page. You should not assume that the information contained in this joint proxy statement/prospectus is accurate as of any date other than such date, and neither the mailing of this joint proxy statement/prospectus to stockholders nor the issuance of shares of Nanogen common stock in the merger shall create any implication to the contrary.

The following documents, which have been filed by Nanogen with the SEC (SEC file number 000-23541), are incorporated by reference into this joint proxy statement/prospectus:

Nanogen's annual report on Form 10-K for the fiscal year ended December 31, 2003;

Nanogen's proxy statement on Schedule 14A filed on April 24, 2004;

Nanogen's quarterly reports on Form 10-Q for the quarterly periods ended March 31, 2004 and June 30, 2004;

Nanogen's current reports on Form 8-K filed on February 10, 2004, March 4, 2004, March 9, 2004, May 6, 2004, June 3, 2004, July 6, 2004, and September 8, 2004; and

Nanogen's description of securities on Form 8-A filed on April 7, 1998.

The following documents, which have been filed by Epoch with the SEC (SEC file number 000-22170), are incorporated by reference into this joint proxy statement/prospectus:

Epoch's annual report on Form 10-K for the fiscal year ended December 31, 2003;

Epoch's proxy statement on Schedule 14A filed on April 9, 2004;

Epoch's quarterly reports on Form 10-Q for the quarterly periods ended March 31, 2004 and June 30, 2004;

Epoch's current reports on Form 8-K filed on February 24, 2004, February 25, 2004, and September 8, 2004;

Epoch's description of securities on Form 8-A filed on July 30, 1993.

If you are a stockholder of Nanogen or Epoch, you can obtain any of the documents incorporated by reference through Nanogen, Epoch or the SEC. Documents incorporated by reference are available from Nanogen or Epoch without charge, excluding all exhibits unless such exhibits have been specifically incorporated by reference in this joint proxy statement/prospectus. You may obtain documents incorporated by reference in this joint proxy statement/prospectus free of charge by requesting them in writing or by telephone from the appropriate company as follows:

Edgar Filing: NANOGEN INC - Form S-4/A

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

Attention: Investor Relations

Telephone No.: (858) 410-4600

Epoch Biosciences, Inc.

2170 23rd Drive, S.E., Suite 150

Bothell, WA 98021

Attention: Investor Relations

Telephone No.: (425) 482-5555

In order to ensure timely delivery of the documents, you should make your request no later than December 2, 2004.

Please also see [Where You Can Find More Information](#) on page 98.

Any statement contained in a document incorporated or deemed to be incorporated by reference into this joint proxy statement/prospectus will be deemed to be modified or superseded for purposes of this joint proxy

Table of Contents

statement/prospectus to the extent that a statement contained in this joint proxy statement/prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this joint proxy statement/prospectus modified or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this joint proxy statement/prospectus. Any statement concerning the contents of any contract or other document filed as an exhibit to the registration statement are not necessarily complete. With respect to each contract or other document filed as an exhibit to the registration statement, we refer you to that exhibit for a more complete description of the matter involved, and each such statement is qualified in its entirety by such reference.

Documents incorporated by reference in this joint proxy statement/prospectus by Nanogen can also be found at Nanogen's website, www.nanogen.com, and certain documents incorporated by reference in this joint proxy statement/prospectus by Epoch can also be found at Epoch's website, www.epochbio.com. Information included in Nanogen's and Epoch's website is not incorporated by reference in this joint proxy statement/prospectus.

Nanogen has supplied all information contained or incorporated by reference in this joint proxy statement/prospectus relating to Nanogen, and Epoch has supplied all information contained or incorporated by reference in this joint proxy statement/prospectus relating to Epoch.

Table of Contents

Annex A

AGREEMENT AND PLAN OF MERGER AND REORGANIZATION

among

NANOGEN, INC.

EMPIRE ACQUISITION CORP.

and

EPOCH BIOSCIENCES, INC.

Dated as of September 7, 2004

Table of Contents**TABLE OF CONTENTS**

	Page
ARTICLE I DEFINITIONS	A-1
Section 1.01 Certain Defined Terms	A-1
Section 1.02 Index of Defined Terms	A-7
ARTICLE II THE MERGER	A-9
Section 2.01 The Merger	A-9
Section 2.02 Closing	A-9
Section 2.03 Effective Time	A-9
Section 2.04 Effect of the Merger	A-9
Section 2.05 Certificate of Incorporation; Bylaws; Directors and Officers of Surviving Corporation	A-9
ARTICLE III CONVERSION OF SECURITIES; EXCHANGE OF CERTIFICATES	A-10
Section 3.01 Conversion of Shares	A-10
Section 3.02 Exchange of Shares Other than Appraisal Shares and Treasury Shares	A-11
Section 3.03 Stock Transfer Books	A-12
Section 3.04 No Fractional Share Certificates	A-12
Section 3.05 Company Options; Unvested Shares; Warrants	A-12
Section 3.06 Certain Adjustments	A-14
Section 3.07 Appraisal Rights	A-14
Section 3.08 Lost, Stolen or Destroyed Certificates	A-14
Section 3.09 Taking of Necessary Action; Further Action	A-14
ARTICLE IV REPRESENTATIONS AND WARRANTIES OF COMPANY	A-15
Section 4.01 Organization and Qualification; Subsidiaries	A-15
Section 4.02 Certificate of Incorporation and Bylaws; Corporate Books and Records	A-15
Section 4.03 Capitalization	A-15
Section 4.04 Authority Relative to This Agreement	A-16
Section 4.05 No Conflict; Required Filings and Consents	A-17
Section 4.06 Permits; Compliance with Laws	A-17
Section 4.07 SEC Filings; Financial Statements; Sarbanes-Oxley	A-19
Section 4.08 Absence of Certain Changes or Events	A-20
Section 4.09 Employee Benefit Plans; Labor Matters	A-21
Section 4.10 Certain Tax Matters	A-23

Table of Contents**TABLE OF CONTENTS**

(continued)

	Page
Section 4.11	A-23
Section 4.12	A-25
Section 4.13	A-25
Section 4.14	A-26
Section 4.15	A-28
Section 4.16	A-29
Section 4.17	A-29
Section 4.18	A-29
Section 4.19	A-29
Section 4.20	A-30
Section 4.21	A-30
Section 4.22	A-30
Section 4.23	A-30
ARTICLE V	A-30
Section 5.01	A-30
Section 5.02	A-30
Section 5.03	A-32
Section 5.04	A-32
Section 5.05	A-32
Section 5.06	A-33
Section 5.07	A-33
Section 5.08	A-35
Section 5.09	A-35
Section 5.10	A-36
Section 5.11	A-36
Section 5.12	A-36
Section 5.13	A-36
Section 5.14	A-37
Section 5.15	A-37
ARTICLE VI	A-37
Section 6.01	A-37

A-ii

Table of Contents**TABLE OF CONTENTS**

(continued)

		Page
Section 6.03	Notices of Certain Events	A-41
Section 6.04	Access to Information; Confidentiality	A-41
Section 6.05	No Solicitation of Transactions	A-41
Section 6.06	Control of Operations	A-42
Section 6.07	Further Action; Consents; Filings	A-42
Section 6.08	Additional Reports	A-42
ARTICLE VII	ADDITIONAL AGREEMENTS	A-43
Section 7.01	Registration Statement; Joint Proxy Statement	A-43
Section 7.02	Stockholders Meetings	A-44
Section 7.03	Affiliates	A-45
Section 7.04	Directors and Officers Indemnification and Insurance	A-45
Section 7.05	Public Announcements	A-45
Section 7.06	NNM Listing	A-46
Section 7.07	Blue Sky	A-46
Section 7.08	Company Options/Registration Statements on Form S-8	A-46
Section 7.09	Employee Matters	A-46
Section 7.10	Section 16 Dispositions	A-47
ARTICLE VIII	CONDITIONS TO THE MERGER	A-47
Section 8.01	Conditions to the Obligations of Each Party to Consummate the Merger	A-47
Section 8.02	Conditions to the Obligations of Company	A-48
Section 8.03	Conditions to the Obligations of Parent	A-48
ARTICLE IX	TERMINATION, AMENDMENT AND WAIVER	A-49
Section 9.01	Termination	A-49
Section 9.02	Effect of Termination	A-50
Section 9.03	Amendment	A-50
Section 9.04	Waiver	A-50
Section 9.05	Termination Fee; Expenses	A-50
ARTICLE X	GENERAL PROVISIONS	A-51
Section 10.01	Non-Survival of Representations and Warranties	A-51
Section 10.02	Notices	A-51
Section 10.03	Severability	A-52

Table of Contents

TABLE OF CONTENTS

(continued)

	Page
Section 10.05	Incorporation of Exhibits
Section 10.06	Governing Law
Section 10.07	Waiver of Jury Trial
Section 10.08	Consent to Jurisdiction
Section 10.09	Enforcement
Section 10.10	Headings; Interpretation
Section 10.11	Counterparts
Section 10.12	Entire Agreement

ANNEXES

ANNEX A	Company Voting Agreement
ANNEX B	Parent Voting Agreement

A-iv

Table of Contents

AGREEMENT AND PLAN OF MERGER AND REORGANIZATION

AGREEMENT AND PLAN OF MERGER AND REORGANIZATION, dated as of September 7, 2004 (as amended, supplemented or otherwise modified from time to time, this ***Agreement***), among NANOGEN, INC., a Delaware corporation (***Parent***), EPOCH BIOSCIENCES, INC., a Delaware corporation (***Company***), and EMPIRE ACQUISITION CORP., a Delaware corporation and a direct wholly owned Subsidiary of Parent (***Merger Sub***):

WITNESSETH:

WHEREAS, the boards of directors of Parent and Company have determined that it is advisable and in the best interests of their respective companies and stockholders to enter into a business combination by means of the merger of Merger Sub with and into Company (the ***Merger***) and have approved and adopted this Agreement, the Merger and the other transactions contemplated by this Agreement;

WHEREAS, concurrently with the execution of this Agreement and as an inducement to Parent to enter into this Agreement, each of the executive officers and directors and certain stockholders of Company have entered into a voting agreement substantially in the form attached hereto as **Annex A** (***Company Voting Agreement***); and

WHEREAS, concurrently with the execution of this Agreement and as an inducement to Company to enter into this Agreement, officers and directors of Parent have entered into a voting agreement substantially in the term attached hereto as **Annex B** (***Parent Voting Agreement***).

WHEREAS, for United States federal income tax purposes, it is intended that the Merger shall qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986, as amended (the ***Code***), and that this Agreement shall be, and is hereby, adopted as a plan of reorganization for purposes of Section 368(a) of the Code.

NOW, THEREFORE, in consideration of the foregoing and the representations, warranties, covenants and agreements set forth herein, and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, and intending to be legally bound hereby, the parties hereto hereby agree as follows:

ARTICLE I

DEFINITIONS

Section 1.01 *Certain Defined Terms*. Unless the context otherwise requires, the following terms, when used in this Agreement, shall have the respective meanings specified below (such meanings to be equally applicable to the singular and plural forms of the terms defined):

Edgar Filing: NANOGEN INC - Form S-4/A

Affiliate shall mean, with respect to any Person, any other Person that controls, is controlled by or is under common control with the first Person.

Blue Sky Laws shall mean state securities or blue sky laws.

Business Day shall mean any day on which the principal offices of the SEC in Washington, D.C. are open to accept filings, or, in the case of determining a date when any payment is due, any day on which banks are not required or authorized by law or executive order to close in the City of New York.

Company Competing Transaction shall mean any of the following involving Company (other than the Merger):

A-1

Table of Contents

(i) any merger, consolidation, share exchange, business combination, recapitalization, liquidation, dissolution, joint venture or other similar transaction;

(ii) any sale, lease, exchange, transfer or other disposition of 20% or more of the assets of such party and its subsidiaries, taken as a whole, in a single transaction or series of transactions;

(iii) any tender offer or exchange offer for 20% or more of the outstanding voting securities of such party or the filing of a registration statement under the Securities Act in connection therewith; or

(iv) any Person having acquired beneficial ownership or the right to acquire beneficial ownership of, or any group (as such term is defined under Section 13(d) of the Exchange Act) having been formed which beneficially owns or has the right to acquire beneficial ownership of, 20% or more of the outstanding voting securities of such party;

(v) any solicitation in opposition to the approval of this Agreement by the stockholders of such party; or

(vi) any public announcement of a proposal, plan or intention to do any of the foregoing or any agreement to engage in any of the foregoing.

Company Disclosure Schedule shall mean the written disclosure schedule delivered by Company to Parent prior to the execution of this Agreement, forming a part hereof and arranged in sections corresponding to the numbered and lettered Sections contained in Article IV (provided, however, that disclosure in any section shall be deemed to have been set forth in all other applicable sections where it is reasonably apparent that such disclosure is applicable to such other sections notwithstanding the omission of any cross-reference to such other section).

Company Material Adverse Effect shall mean any change, development, occurrence or effect that, individually or in the aggregate (taking into account all other such changes, developments, occurrences and effects), is, or is reasonably likely to be, materially adverse to the business, assets, liabilities, condition (financial or otherwise) or results of operations of Company, or could reasonably be expected to materially delay or prevent the consummation of the transactions contemplated hereby other than such changes, developments, occurrences or effects reasonably attributable to (a) economic conditions generally in the United States or foreign economies in any locations where Company has material operations or sales; (b) conditions generally affecting the industries in which Company participates; *provided*, with respect to clauses (a) and (b), the changes, effects or circumstances do not have a materially disproportionate effect (relative to other industry participants) on Company; provided, however, that (i) any changes or effects resulting from or attributable the public announcement or pendency of the transactions contemplated by this Agreement; (ii) any changes resulting from the compliance with the terms of, or taking of any action required by, this Agreement, (iii) any change in Company's stock price or trading volume; or (iv) any failure of Company to meet its financial projections (whether or not publicly disclosed) or published analysts' forecasts relating to it shall not constitute a Company Material Adverse Effect.

Company Option shall mean an option to purchase shares of Company Common Stock under the Company Stock Plans.

Edgar Filing: NANOGEN INC - Form S-4/A

Company Stock Plans shall mean the 2003 Stock Incentive Plan, the Incentive Stock Option, Nonqualified Stock Option and Restricted Stock Purchase Plan 1993 and the Incentive Stock Option, Nonqualified Stock Option and Restricted Stock Purchase Plan 1991.

Company Superior Proposal shall mean a bona fide written offer which is not solicited after the date hereof in violation of this Agreement made by a Person other than Parent or Merger Sub that (i) concerns a

A-2

Table of Contents

Company Competing Transaction, (ii) is on terms which Company's board of directors shall have determined (based upon the advice of Company's independent financial advisors and taking into account all of the terms and conditions of such proposal, the likelihood of completion of such Company Competing Transaction, applicable fees payable to Parent and the financial, regulatory, legal and other aspects of such proposal) in the proper exercise of its fiduciary duties to Company's stockholders that such Company Competing Transaction provides greater value to the stockholders of Company than the Merger (after taking into account any changes to the financial terms of the Merger proposed by Parent in response to such offer or otherwise), and (iii) if any cash consideration is involved, shall not be subject to any financing contingency, and with respect to which Company's board of directors shall have determined in the proper exercise of its fiduciary duties to Company's stockholders that the acquiring party is capable of consummating such Company Competing Transaction on the terms proposed.

Company Warrant shall mean the warrants to purchase 906,000 shares of Company Common Stock listed on Schedule 4.3 of the Company Disclosure Schedule.

Confidentiality Agreement shall mean the Confidentiality Agreement, dated July 12, 2004, between Parent and Company.

Contract means a loan or credit agreement, bond, debenture, note, mortgage, indenture, guarantee, lease or other contract, commitment, agreement, instrument, obligation, binding arrangement, binding understanding, binding undertaking, permit, franchise or license, whether oral or written, that has not been terminated and that contains any continuing obligation or liability of Company or third party.

Delaware Law shall mean the Delaware General Corporation Law.

\$ shall mean United States Dollars.

Encumbrances shall mean all claims, security interests, liens, pledges, charges, escrows, options, proxies, rights of first refusal, preemptive rights, mortgages, hypothecations, prior assignments, title retention agreements, indentures, security agreements or any other encumbrance of any kind; provided, however, that the term Encumbrance shall not include any lien, pledge or security interest held by Company on one or more shares of Company Common Stock or any repurchase right or option held by Company on any outstanding unvested shares of Company Common Stock.

Environmental Law shall mean any Law and any enforceable judicial or administrative interpretation thereof, including any judicial or administrative order, consent decree or judgment, relating to pollution or protection of the environment or natural resources, including, without limitation, those relating to the use, handling, transportation, treatment, storage, disposal, release or discharge of Hazardous Material.

Environmental Permit shall mean any permit, approval, identification number, license or other authorization required under or issued pursuant to any applicable Environmental Law.

ERISA shall mean the Employee Retirement Income Security Act of 1974, as amended.

Exchange Act shall mean the Securities Exchange Act of 1934, as amended, together with the rules and regulations promulgated thereunder.

Expenses shall mean, with respect to any party hereto, all reasonable out-of-pocket expenses (including, without limitation, all fees and expenses of counsel, accountants, investment bankers, experts and consultants to a party hereto and its affiliates) incurred by such party or on its behalf in connection with or related to the authorization, preparation, negotiation, execution and performance of its obligations pursuant to this Agreement and the consummation of the Merger, the preparation, printing, filing and mailing of the Registration Statement

Table of Contents

(as defined in Section 7.01) and the Joint Proxy Statement (as defined in Section 7.01), the solicitation of stockholder approvals, the filing of HSR Act notice, if any, and all other matters related to the transactions contemplated hereby and the closing of the Merger.

Final Average Closing Price shall mean the average closing price of Parent Common Stock on the NNM for the five (5) trading days prior to the Closing Date.

Governmental Entity shall mean any United States Federal, state or local or any foreign governmental, regulatory or administrative authority, agency or commission or any court, tribunal or arbitral body.

Governmental Order shall mean any order, writ, judgment, injunction, decree, stipulation, determination or award entered by or with any Governmental Entity.

Hazardous Material shall mean (i) any petroleum, petroleum products, by-products or breakdown products, radioactive materials, friable asbestos-containing materials or polychlorinated biphenyls; (ii) any chemical, material or substance defined or regulated as toxic or hazardous or as a pollutant or contaminant or waste under any applicable Environmental Law; (iii) any radioactive or radiological substances, elements or compounds; or (iv) any biological pathogens, viruses or other harmful biological substances.

Health and Safety Law shall mean any Law, and any enforceable judicial or administrative interpretation thereof, including any judicial or administrative order, consent decree or judgment relating to occupational health and safety and/or public health and safety including, without limitation, any guidelines adopted or published by the National Institutes of Health or the Centers for Disease Control.

Intellectual Property shall mean any or all of the following and all rights in, arising out of, or associated therewith (in each case in any domestic or foreign jurisdiction): (i) patents and applications therefor and all reissues, divisions, renewals, extensions, provisionals, continuations and continuations-in-part thereof; (ii) all inventions, materials, methods, discoveries and ideas (whether patentable or not); (iii) trade secrets, proprietary information, know how, confidential information, technology and technical data, formulations, and all documentation relating to any of the foregoing and rights to limit the use of disclosure thereof by any person; (iv) all copyrights, copyright registrations and applications therefor and all other rights corresponding thereto; (v) writings and other works, whether copyrightable or not; (vi) all trade names, trademarks, service marks brand names, certification marks, trade dress and other indications of origin, the goodwill associated with the foregoing and registrations of, and applications in any such jurisdiction to register, the foregoing, including any extension, modification or renewal of any such registration or application; (vii) all databases and data collections and all rights therein; (viii) all

computer software including all source code, object code, firmware, development tools, files, records and data, all media on which any of the foregoing is recorded; and (ix) all web addresses, sites and domain names.

HSR Act shall mean Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, together with the rules and regulations promulgated thereunder.

IRS shall mean the United States Internal Revenue Service.

Knowledge of Company shall mean actual knowledge, with respect to any specific matter, of any current executive officer, director, or any other officer of Company having primary responsibility for such matter.

Knowledge of Parent shall mean actual knowledge, with respect to any specific matter, of any current executive officer, director, or any other officer of Parent having primary responsibility for such matter.

Law shall mean any Federal, state, foreign or local statute, law, ordinance, regulation, rule, code, order, judgment, decree, other requirement or rule of law of the United States or any other jurisdiction, and any other similar act or law.

A-4

Table of Contents

NNM shall mean the Nasdaq National Market.

NSCM shall mean the Nasdaq Small Cap Market.

Parent Disclosure Schedule shall mean the written disclosure schedule delivered by Parent to Company prior to the execution of this Agreement, forming a part hereof and arranged in sections corresponding to the numbered and lettered Sections contained in Article V (provided, however, that disclosure in any section shall be deemed to have been set forth in all other applicable sections where it is reasonably apparent that such disclosure is applicable to such other sections notwithstanding the omission of any cross-reference to such other Section).

Parent Material Adverse Effect shall mean any change, development, occurrence or effect that, individually or in the aggregate (taking into account all other such changes, developments, occurrences and effects), is, or is reasonably likely to be, materially adverse to the business, assets, liabilities, condition (financial or otherwise) or results of operations of Parent and the Parent Subsidiaries, taken as a whole, or could reasonably be expected to materially delay or prevent the consummation of the transactions contemplated hereby other than such changes, developments, occurrences or effects reasonably attributable to (a) economic conditions generally in the United States or foreign economies in any locations where Parent has material operations or sales; (b) conditions generally affecting the industries in which Parent participates; *provided*, with respect to clauses (a) and (b), the changes, effects or circumstances do not have a materially disproportionate effect (relative to other industry participants) on Parent; provided, however, that (i) any changes or effects resulting from or attributable the public announcement or pendency of the transactions contemplated by this Agreement; (ii) any changes resulting from the compliance with the terms of, or taking of any action required by, this Agreement; (iii) any change in Parent's stock price or trading volume; or (iv) any failure of Parent to meet its financial projections (whether or not publicly disclosed) or published analysts' forecasts relating to it shall not constitute a Parent Material Adverse Effect.

Parent Stock Plans shall mean Parent's 2002 Stock Bonus Plan, 1997 Stock Incentive Plan, 1995 Stock Option/Stock Issuance Plan, 1993 Stock Option Plan and the SynX Pharma Inc. Stock Option Plan.

Parent Subsidiary shall mean a Subsidiary of Parent.

Permitted Encumbrances shall mean (i) liens for Taxes, assessments and other governmental charges not yet due and payable, (ii) immaterial unfiled mechanics', workmen's, repairmen's, warehousemen's, carriers' or other like liens arising or incurred in the ordinary course of business which are not yet due and payable and (iii) equipment leases with third parties entered into in the ordinary course of business.

Person shall mean an individual, corporation, partnership, limited partnership, limited liability company, syndicate, person (including, without limitation, a person as defined in Section 13(d)(3) of the Exchange Act), trust, association, entity or government or political subdivision, agency or instrumentality of a government.

SEC shall mean the United States Securities and Exchange Commission.

Edgar Filing: NANOGEN INC - Form S-4/A

Securities Act shall mean the Securities Act of 1933, as amended, together with the rules and regulations promulgated thereunder.

Software means any and all (A) computer programs, including any and all software implementations of algorithms, models and methodologies, whether in source code or object code, (B) databases and compilations, including any and all data and collections of data, whether machine readable or otherwise, (C) descriptions, schematics, flow-charts and other work product used to design, plan, organize and develop any of the foregoing and (D) all documentation, including user manuals and training materials, relating to any of the foregoing.

Subsidiary shall mean, with respect to any Person, any corporation, limited liability company, partnership, joint venture or other legal entity of which such Person (either alone or through or together with any

A-5

Table of Contents

other subsidiary of such Person) owns, directly or indirectly, a majority of the stock or other equity interests, the holders of which are generally entitled to vote for the election of the board of directors or other governing body of such corporation or other legal entity.

Tax shall mean (i) any and all taxes, fees, levies, duties, tariffs, imposts and other similar charges (together with any and all interest, penalties, additions to tax and additional amounts imposed with respect thereto) imposed by any Governmental Entity or other taxing authority (**Taxing Authority**), including, without limitation, taxes or other charges on or with respect to income, franchises, windfall or other profits, gross or net receipts, property, sales, use, capital stock, payroll, employment, social security, workers' compensation, unemployment compensation or net worth; taxes or other charges in the nature of excise, withholding, ad valorem, stamp, transfer, value-added or gains taxes; license, registration and documentation fees; and customers' duties, tariffs and similar charges; (ii) any liability for the payment of any amounts of the type described in (i) as a result of being a member of an affiliated, combined, consolidated or unitary group for any taxable period; and (iii) any liability for the payment of amounts of the type described in (i) or (ii) as a result of being a transferee of, or a successor in interest to, any Person or as a result of an express or implied obligation to indemnify any Person.

Tax Return shall mean any return, statement or form (including, without limitation, any estimated tax reports or return, withholding tax reports or return and information report or return) required to be filed with respect to any Taxes.

U.S. GAAP shall mean United States generally accepted accounting principles.

Table of Contents

Section 1.02 *Index of Defined Terms*. Solely for convenience purposes, the following is a list of terms that are defined in this Agreement and the Section numbers where such definition is contained:

<u>Term</u>	<u>Section</u>
\$	Section 1.01
Affiliate	Section 1.01
Appraisal Shares	Section 3.07
Blue Sky Laws	Section 1.01
Business Day	Section 1.01
Certificate of Merger	Section 2.03
CLIA	Section 4.06(b)
Closing	Section 2.02
COBRA	Section 4.09(h)
Company Benefit Plans	Section 4.09(a)
Company Board Approval	Section 4.04
Company Certificates	Section 3.02(c)
Company Common Stock	Section 3.01(a)
Company Competing Transaction	Section 1.01
Company Disclosure Schedule	Section 1.01
Company Employees	Section 7.09
Company ERISA Affiliate	Section 4.09(a)
Company Financial Advisor	Section 4.19
Company Insiders	Section 7.10
Company Material Adverse Effect	Section 1.01
Company Option	Section 1.01
Company Permits	Section 4.06(a)
Company Preferred Stock	Section 4.03(a)
Company Product	Section 4.11(xii)
Company Registered Intellectual Property	Section 4.14(a)
Company Reports	Section 4.07(a)
Company Software Programs	Section 4.14(k)
Company Stock Plans	Section 1.01
Company Stockholders Meeting	Section 7.01(a)
Company Superior Proposal	Section 1.01
Company Termination Fee	Section 9.05(b)
Company Warrant	Section 1.01
Confidentiality Agreement	Section 1.01
Contract	Section 1.01
Costs	Section 7.04(b)
Debt Obligations	Section 4.11(xi)
Delaware Law	Section 1.01
Effective Time	Section 2.03
Encumbrances	Section 1.01
Environmental Law	Section 1.01
Environmental Permit	Section 1.01
ERISA	Section 1.01
Exchange Act	Section 1.01
Exchange Agent	Section 3.02(a)
Exchange Ratio	Section 3.01(a)

Table of Contents

<u>Term</u>	<u>Section</u>
Expenses	Section 1.01
FDA	Section 4.06(b)
FDA Act	Section 4.06(b)
Final Average Closing Price	Section 1.01
Governmental Entity	Section 1.01
Governmental Order	Section 1.01
Hazardous Material	Section 1.01
Health and Safety Law	Section 1.01
HIPAA	Section 4.06(b)
HSR Act	Section 1.01
Indemnified Parties	Section 7.04(b)
Intellectual Property	Section 1.01
Intellectual Property Rights	Section 4.14(a)
IP Liens	Section 4.14(a)
IRB	Section 4.06(e)
IRS	Section 1.01
Joint Proxy Statement	Section 7.01(a)
June 30 Balance Sheet	Section 4.15(a)
Knowledge of Company	Section 1.01
Knowledge of Parent	Section 1.01
Law	Section 1.01
Material Contracts	Section 4.11
Merger Consideration	Section 3.01(a)
NNM	Section 1.01
NSCM	Section 1.01
Parent Benefit Plan	Section 7.09
Parent Certificates	Section 3.02(b)
Parent Common Stock	Section 3.01(a)
Parent Disclosure Schedule	Section 1.01
Parent ESPP	Section 5.02(a)
Parent Financial Advisor	Section 5.13
Parent Intellectual Property Rights	Section 5.09(a)
Parent IP Liens	Section 5.09(a)
Parent Issue Price	Section 3.01(a)(i)
Parent Material Adverse Effect	Section 1.01
Parent Permits	Section 5.02(a)
Parent Preferred Stock	Section 5.02(a)
Parent Registered Intellectual Property	Section 5.09(a)
Parent Reports	Section 5.07(a)
Parent Share Increase	Section 7.01(a)
Parent Stock Options	Section 5.02(a)
Parent Stock Plans	Section 1.01
Parent Stockholders Meeting	Section 7.01(a)
Parent Subsidiary	Section 1.01
Permitted Encumbrances	Section 1.01
Person	Section 1.01
Product	Section 4.06(d)
Proposed Authorized Share Number	Section 7.01(a)
Registration Statement	Section 7.01(a)
Representatives	Section 6.04(a)

Table of Contents

Term	Section
Repurchase Options	Section 3.05(a)(iii)
Sarbanes-Oxley Act	Section 4.07(e)
Sarbanes-Oxley Act	Section 5.07(e)
SEC	Section 1.01
Section 1301	Section 3.07
Section 262	Section 3.07
Securities Act	Section 1.01
Share Issuance	Section 7.01(a)
Software	Section 1.01
Subsidiary	Section 1.01
Surviving Corporation	Section 2.01
Tax	Section 1.01
Tax Return	Section 1.01
Terminating Company Breach	Section 9.01(h)
Terminating Parent Breach	Section 9.01(i)
U.S. GAAP	Section 1.01

ARTICLE II**THE MERGER**

Section 2.01 *The Merger*. Upon the terms and subject to the conditions set forth in this Agreement, and in accordance with Delaware Law, at the Effective Time (as defined in Section 2.03), Merger Sub shall be merged with and into Company. As a result of the Merger, the separate corporate existence of Merger Sub shall cease, and Company shall continue as the surviving corporation of the Merger as a wholly owned Subsidiary of Parent (the ***Surviving Corporation***).

Section 2.02 *Closing*. Unless this Agreement shall have been terminated and the Merger herein contemplated shall have been abandoned pursuant to Section 9.01 and subject to the satisfaction or waiver of the conditions set forth in Article VIII, the closing of the Merger shall take place as promptly as practicable (and in any event within three Business Days) after satisfaction or waiver of the conditions set forth in Article VIII, at a closing (the ***Closing***) to be held at the offices of Morgan, Lewis & Bockius LLP, One Market, Spear Street Tower, San Francisco, California 94105, unless another date, time or place is agreed to in writing by Parent and Company.

Section 2.03 *Effective Time*. At and after the time of the Closing, the parties shall cause the Merger to be consummated by filing a certificate of merger (the ***Certificate of Merger***) with the Secretary of State of the State of Delaware executed in accordance with the relevant provisions of Delaware Law (the date and time of such filing, or such later date and time as may be set forth therein, being the ***Effective Time***).

Section 2.04 *Effect of the Merger*. At the Effective Time, the effect of the Merger shall be as provided in the applicable provisions of Delaware Law. Without limiting the generality of the foregoing, and subject thereto, at the Effective Time, except as otherwise provided herein, all the property, rights, privileges, powers and franchises of Company and Merger Sub shall vest in Company as the Surviving Corporation, and all debts, liabilities and duties of Company and Merger Sub shall become the debts, liabilities and duties of Company as the Surviving Corporation.

Edgar Filing: NANOGEN INC - Form S-4/A

Section 2.05 *Certificate of Incorporation; Bylaws; Directors and Officers of Surviving Corporation.* At the Effective Time:

A-9

Table of Contents

(a) the Certificate of Incorporation and the Bylaws of Merger Sub as in effect immediately prior to the Effective Time shall be the Certificate of Incorporation and the Bylaws of the Surviving Corporation, until thereafter amended as provided by Law and such Certificate of Incorporation or Bylaws; *provided, however*, that the Bylaws of the Surviving Corporation shall be amended to reflect that the name of the Surviving Corporation shall be EPOCH BIOSCIENCES, INC. and Article I of the Certificate of Incorporation of the Surviving Corporation shall be amended to read as follows: The name of the corporation is EPOCH BIOSCIENCES, INC. ;

(b) the officers of Merger Sub immediately prior to the Effective Time shall serve in their respective offices of the Surviving Corporation from and after the Effective Time, in each case until their successors are elected or appointed and qualified or until their resignation or removal; and

(c) the directors of Merger Sub immediately prior to the Effective Time shall serve as the directors of the Surviving Corporation from and after the Effective Time, in each case until their successors are elected or appointed and qualified or until their resignation or removal.

ARTICLE III

CONVERSION OF SECURITIES; EXCHANGE OF CERTIFICATES

Section 3.01 *Conversion of Shares*. At the Effective Time, by virtue of the Merger, and without any action on the part of Parent, Merger Sub, Company or the holders of any of the following securities:

(a) Each share of Common Stock, \$0.01 par value, of Company (***Company Common Stock***) issued and outstanding immediately before the Effective Time (excluding (i) Appraisal Shares (as defined in Section 3.07 below), (ii) those owned by Parent, Merger Sub and any wholly-owned Subsidiary of Parent or Merger Sub, and (iii) those held in the treasury of Company and all rights in respect thereof, shall, forthwith cease to exist and be converted into and become exchangeable for the right to receive a number of shares of common stock, \$0.001 par value per share, of Parent (***Parent Common Stock***) equal to the Exchange Ratio (and cash in lieu of fractional shares pursuant to Section 3.04) (the ***Merger Consideration***). The ***Exchange Ratio*** shall be calculated as follows:

(i) if the average of the closing prices per share of Parent Common Stock as reported on the NNM for the twenty consecutive trading days ending on and including the third trading day preceding the Closing Date (the ***Parent Issue Price***) is less than or equal to \$3.16, then the Exchange Ratio shall equal 0.6329;

(ii) if the Parent Issue Price is greater than \$3.16, but less than \$4.28, then the Exchange Ratio shall be calculated by dividing \$2.00 by the Parent Issue Price, calculated to the nearest one ten-thousandth share of Parent; or

(iii) if the Parent Issue Price is equal to or greater than \$4.28, then the Exchange Ratio shall equal 0.4673.

Edgar Filing: NANOGEN INC - Form S-4/A

(b) Each share of Company Common Stock (i) held in the treasury of Company, or (ii) owned by Parent, Merger Sub, and any wholly-owned Subsidiary of Parent or Merger Sub, in each case immediately prior to the Effective Time shall be canceled and retired and no shares of stock or other securities of Parent, the Surviving Corporation or any other corporation shall be issuable, and no payment of other consideration shall be made, with respect thereto.

(c) Each issued and outstanding share of capital stock of Merger Sub shall be converted into and become one fully paid and nonassessable share of common stock of the Surviving Corporation. From and after the Effective Time, each outstanding certificate theretofore representing shares of Merger Sub common stock

A-10

Table of Contents

shall be deemed for all purposes to evidence ownership of and to represent the number of shares of Surviving Corporation common stock into which such shares of Merger Sub common stock shall have been converted. Promptly after the Effective Time, the Surviving Corporation shall issue to Parent a stock certificate representing 100 shares of Surviving Corporation common stock in exchange for the certificate that formerly represented shares of Merger Sub common stock, which shall be surrendered by Parent and canceled.

Section 3.02 Exchange of Shares Other than Appraisal Shares and Treasury Shares.

(a) *Exchange Agent.* As of the Effective Time, Parent shall enter into an agreement with a bank or trust company reasonably satisfactory to Company to act as exchange agent for the Merger (the ***Exchange Agent***).

(b) *Parent to Provide Common Stock.* At the Effective Time, Parent shall deposit with the Exchange Agent for the benefit of the holders of Company Common Stock Certificates of Parent Common Stock (***Parent Certificates***) representing the number of whole shares of Parent Common Stock issuable pursuant to Section 3.01(a) in exchange for shares of Company Common Stock outstanding immediately prior to the Effective Time. From time to time, Parent shall make available to the Exchange Agent sufficient cash to make all cash payments in lieu of fractional shares pursuant to Section 3.04.

(c) *Exchange Procedures.* The Exchange Agent shall mail to each holder of record of certificates of Company Common Stock (***Company Certificates***), whose shares were converted into the right to receive shares of Parent Common Stock (and cash in lieu of fractional shares pursuant to Section 3.04) promptly after the Effective Time: (i) a letter of transmittal in form and substance satisfactory to Company, such approval not to be unreasonably withheld (which shall specify that delivery shall be effected, and risk of loss and title to the Company Certificates shall pass, only upon receipt of the Company Certificates by the Exchange Agent, and shall be in such form and have such other provisions as Parent may reasonably specify); and (ii) instructions for use in effecting the surrender of the Company Certificates in exchange for the applicable Merger Consideration. Upon surrender of a Company Certificate for cancellation to the Exchange Agent or to such other agent or agents as may be appointed by Parent, together with such letter of transmittal, duly completed and validly executed, and such other documents as may be reasonably required by the Exchange Agent, the holder of such Company Certificate shall be entitled to receive in exchange therefor a Parent Certificate representing the number of whole shares of Parent Common Stock that such holder has the right to receive pursuant to this Article III (together with payment of cash in lieu of fractional shares which such holder has the right to receive pursuant to Section 3.04) and the Company Certificate so surrendered shall forthwith be canceled. Until so surrendered, each outstanding Company Certificate that, prior to the Effective Time, represented shares of Company Common Stock will be deemed from and after the Effective Time, for all purposes other than the payment of dividends and distributions, to evidence the ownership of the number of full shares of Parent Common Stock into which such shares of Company Common Stock, as the case may be, shall have been so converted (together with payment of cash in lieu of fractional shares which such holder has the right to receive pursuant to Section 3.04). Notwithstanding any other provision of this Agreement, no interest will be paid or will accrue on any cash payable to holders of Company Certificates pursuant to the provisions of this Article III.

(d) *Distributions With Respect to Unexchanged Shares.* No dividends or other distributions with respect to Parent Common Stock with a record date after the Effective Time will be paid to the holder of any unsurrendered Company Certificate with respect to the shares of Parent Common Stock represented thereby until such holder surrenders such Company Certificate. Subject to the effect of applicable escheat or similar laws, following surrender of any such Company Certificate, there shall be paid to the record holder of the Parent Certificates issued in exchange therefor, without interest, (i) at the time of such surrender, the amount of any such dividends or other distributions with a record date after the Effective Time theretofore payable (but for the provisions of this Section 3.02(d)) with respect to such shares of Parent Common Stock and (ii) at the appropriate payment date the amount of dividends or other distributions with a record date after the Effective Time but prior to such surrender and with a payment date subsequent to such surrender payable with respect to such whole Parent Common Stock.

Table of Contents

(e) *Transfer of Ownership.* If any Parent Certificate is to be issued in a name, or cash in lieu of fractional shares paid to a Person, other than that in which the Company Certificate surrendered in exchange therefor is registered, it will be a condition of the issuance and/or payment thereof that the Company Certificate so surrendered will be properly endorsed and otherwise in proper form for transfer and that the Person requesting such exchange will have paid to Parent or any agent designated by it any transfer or other taxes required by reason of the issuance of a Parent Certificate for shares of Parent Common Stock in any name other than that of the registered holder of the Company Certificate surrendered, or established to the satisfaction of Parent or any agent designated by it that such tax has been paid or is not payable.

(f) *Termination of Exchange Agent Funding.* Any portion of funds (including any interest earned thereon) or Parent Certificates held by the Exchange Agent which have not been delivered to holders of Company Certificates pursuant to this Article III within six months after the Effective Time shall promptly be paid or delivered, as appropriate, to Parent, and thereafter holders of Company Certificates who have not theretofore complied with the exchange procedures set forth in and contemplated by this Section 3.02 shall thereafter look only to Parent (subject to abandoned property, escheat and similar laws) only as general creditors thereof for their claim for shares of Parent Common Stock, any cash in lieu of fractional shares of Parent Common Stock and any dividends or distributions (with a record date after the Effective Time) with respect to Parent Common Stock to which they are entitled.

(g) *No Liability.* Notwithstanding anything to the contrary in this Section 3.02, none of the Exchange Agent, the Surviving Corporation or any party hereto shall be liable to any Person in respect of any shares of Parent Common Stock or cash delivered to a public official pursuant to any applicable abandoned property, escheat or similar law.

Section 3.03 *Stock Transfer Books.* As of the Effective Time, the stock transfer books of Company shall each be closed, and there shall be no further registration of transfers of shares of Company Common Stock thereafter on the records of any such stock transfer books. In the event of a transfer of ownership of shares of Company Common Stock that is not registered in the stock transfer records of Company at the Effective Time, a certificate or certificates representing the number of full shares of Parent Common Stock into which such shares of Company Common Stock, as the case may be, shall have been converted, if any, shall be issued to the transferee together with a cash payment in lieu of fractional shares, if any, in accordance with Section 3.04 hereof, and a cash payment in the amount of dividends, if any, in accordance with Section 3.02(d) hereof, if the certificate or certificates representing such shares of Company Common Stock, as the case may be, is or are surrendered as provided in Section 3.02(c) hereof, accompanied by all documents required to evidence and effect such transfer and by evidence of payment of any applicable stock transfer tax.

Section 3.04 *No Fractional Share Certificates.* No scrip or fractional share Parent Certificate shall be issued upon the surrender for exchange of Company Certificates, and an outstanding fractional share interest shall not entitle the owner thereof to vote, to receive dividends or to any rights of a stockholder of Parent or of Surviving Corporation with respect to such fractional share interest. As promptly as practicable following the Effective Time, Parent shall deposit with the Exchange Agent an amount in cash sufficient for the Exchange Agent to pay each holder of Company Common Stock an amount in cash, rounded to the nearest whole cent, equal to the product obtained by multiplying (i) the fractional share interest to which such holder would otherwise be entitled (after taking into account all shares of Company Common Stock held at the Effective Time by such holder) by (ii) the Final Average Closing Price. As soon as practicable after the determination of the amount of cash, if any, to be paid to holders of Company Common Stock with respect to any fractional share interests, the Exchange Agent shall make available such amounts, net of any required withholding taxes, to such holders of Company Common Stock, subject to and in accordance with the terms of Section 3.02 hereof.

Section 3.05 *Company Options; Unvested Shares; Warrants.*

(a) The Company Stock Plans, together with the outstanding Company Options and the unvested shares of Company Common Stock issued under such plans, shall be treated as follows in connection with the Merger:

Table of Contents

(i) At the Effective Time, Parent shall assume each of the Company Stock Plans in its entirety, including the portion of the share reserve thereunder relating to the outstanding Company Options and any remaining unallocated balance of Company Common Stock reserved for issuance under that Company Stock Plan, including, to the extent permissible under applicable law and the rules of the Nasdaq Stock Market, Inc, the annual evergreen increases to the 2003 Stock Incentive Plan under section 4.1(b) of such plan. In effecting such assumption, the reserve of Company Common Stock under each Company Stock Plan at the Effective Time shall be converted into shares of Parent Common Stock by multiplying such Company Common Stock reserve by the Exchange Ratio and rounding down to the nearest whole share of Parent Common Stock. Shares added to the reserve of the 2003 Stock Incentive Plan pursuant to the annual evergreen increases to such plan, if any, shall be added in accordance with section 4.1(b) of the plan, as adjusted to reflect the exchange ratio, in accordance with applicable law and the rules of the Nasdaq Stock Market, Inc. Any new option grants or share issuances under the assumed Company Stock Plans following the Effective Time shall be only be granted to individuals who are not at the Effective Time in the employ or service of the Parent or any Affiliate of the Parent.

(ii) At the Effective Time, each outstanding Company Option, whether vested or unvested, shall be assumed by the Parent upon the terms and subject to the conditions set forth in this Agreement. Each Company Option so assumed by Parent under this Agreement shall continue to have, and be subject to, the same terms and conditions (including the terms and conditions set forth in the Company Stock Plan under which it was granted and the applicable stock option agreement) as are in effect immediately prior to the Effective Time, except that (i) such Company Option shall be exercisable for that number of whole shares of Parent Common Stock equal to the product (rounded down to the nearest whole number of shares of Parent Common Stock) of the number of shares of Company Common Stock subject to such option immediately prior to the Effective Time and the Exchange Ratio, and (ii) the per share exercise price for the shares of Parent Common Stock issuable upon exercise of such Company Option shall be equal to the quotient (rounded up to the nearest whole cent) obtained by dividing the exercise price per share of Company Common Stock at which such option was exercisable immediately prior to the Effective Time by the Exchange Ratio. Consistent with the terms of the applicable Company Stock Plan and the documents governing the outstanding Company Options under such Plan, the Merger shall not terminate any of the Company Options assumed by Parent or accelerate the exercisability or vesting of such options or the shares of Parent Common Stock subject to those assumed options.

(iii) All outstanding rights to repurchase unvested shares of Company Common Stock that Company may hold immediately prior to the Effective Time (the **Repurchase Options**) shall be assigned to Parent in consummation of the Merger and shall thereafter be exercisable by Parent upon the same terms and subject to the same conditions that were in effect immediately prior to the Effective Time, except that, from and after the Effective Time, the shares subject to each Repurchase Option shall be the number of shares of Parent Common Stock equal to the product of the Exchange Ratio and the number of shares of Company Common Stock which would have otherwise been subject to that Repurchase Option at the time of exercise had the Merger not occurred, and the purchase price payable per share under that Repurchase Option shall be determined by dividing the repurchase price in effect for each share of Company Common Stock subject to that Repurchase Option immediately prior to the Effective Time by the Exchange Ratio (with such shares and price per share being subject to adjustment to appropriately reflect any stock split, reverse stock split, stock dividend, reorganization, reclassification, combination, recapitalization or other like change with respect to Parent Common Stock occurring after the Effective Time). As a result of such assignment, Parent shall, upon the exercise of the Repurchase Option, succeed to the entire right, title and interest in and to all of the shares of Parent Common Stock subject to such Repurchase Option.

(b) At the Effective Time, the Company Warrants shall be assumed by the Parent upon the terms and subject to the conditions set forth in this Agreement. The Company Warrants so assumed by Parent under this Agreement shall continue to have, and be subject to, the same terms and conditions as are in effect immediately prior to the Effective Time, subject to adjustment in the same manner as set forth in subparagraph (a)(ii) of this Section 3.05.

Table of Contents

Section 3.06 *Certain Adjustments*. If between the date of this Agreement and the Effective Time, (a) the outstanding shares of Parent Common Stock or Company Common Stock shall be changed into a different number of shares by reason of any reclassification, recapitalization, split-up, combination or exchange of shares, or any dividend payable in stock or other securities shall be declared thereon with a record date within such period, or (b) the number of shares of Company Common Stock on a fully diluted basis exceeds that specified in Section 4.03 or disclosed in Schedule 4.03 of the Company Disclosure Schedule by an amount in excess of 300,000 shares (regardless of whether such excess is a result of an additional issuance of capital stock except as otherwise permitted pursuant to this Agreement or a correction to such Sections), then, in either case, each Exchange Ratio established pursuant to the provisions of Section 3.01 shall be adjusted accordingly to provide to Parent and Company the same economic effect as contemplated by this Agreement prior to such reclassification, recapitalization, split-up, combination, exchange or dividend.

Section 3.07 *Appraisal Rights*. Notwithstanding anything in this Agreement to the contrary, shares of Company Common Stock issued and outstanding immediately prior to the Effective Time that are held by any holder who (i) has not voted such shares of Company Common Stock in favor of the Merger at the Company Stockholders Meeting, (ii) is entitled to demand and properly demands appraisal of such shares pursuant to Section 262 of the Delaware Law (**Section 262**), or, pursuant to Section 1301 of California Law, if applicable (**Section 1301**), and complies in all respects with the provisions of Section 262, or, Section 1301, if applicable, and (iii) has not effectively withdrawn or lost the right to demand relief as a dissenting stockholder under the Delaware Law, or, California Law, if applicable, as of the Effective Time (the **Appraisal Shares**), shall not be converted into the right to receive the Merger Consideration as provided in Section 3.01(a), but instead such holder of Appraisal Shares shall only be entitled to payment of the fair value of such shares in accordance with the provisions of Section 262, or, Section 1301, if applicable. At the Effective Time, all Appraisal Shares shall

automatically be cancelled and shall cease to exist or be outstanding, and each holder of Appraisal Shares shall cease to have any rights with respect thereto, except such rights as are granted under Section 262, or, Section 1301, if applicable. Notwithstanding the foregoing, if any such holder shall fail to perfect or otherwise shall waive, withdraw or lose the right to appraisal under Section 262, or, Section 1301, if applicable, or a court of competent jurisdiction shall determine that such holder is not entitled to the relief provided by Section 262, or, Section 1301, if applicable, then the rights of such holder under Section 262, or, Section 1301, if applicable, shall cease to exist and such Appraisal Shares shall be deemed to have been converted at the Effective Time into, and shall have become, the right to receive such holder's Merger Consideration as provided in Section 3.01(a). Company shall serve prompt notice to Parent of any demands for appraisal of any shares of Company Common Stock, and Parent shall have the right to participate in and, subject to applicable law, direct all negotiations and proceedings with respect to such demands. Company shall not, without the prior written consent of Parent, make any payment with respect to, or settle or offer to settle, any such demands, or agree to do any of the foregoing.

Section 3.08 *Lost, Stolen or Destroyed Certificates*. In the event any Company Certificates shall have been lost, stolen or destroyed, the Exchange Agent shall issue in exchange for such lost, stolen or destroyed Company Certificates, upon the making of an affidavit of that fact by the holder thereof, such shares of Parent Common Stock (and cash in lieu of fractional shares) as may be required pursuant to Section 3.01, provided, however, that Parent may, in its discretion and as a condition precedent to the issuance thereof, require the owner of such lost, stolen or destroyed Company Certificates to indemnify Parent against any claim that may be made against Parent, the Surviving Corporation or the Exchange Agent with respect to the Company Certificates alleged to have been lost, stolen or destroyed.

Section 3.09 *Taking of Necessary Action; Further Action*. If, at any time after the Effective Time, any further action is necessary or desirable to carry out the purposes of this Agreement and to vest the Surviving Corporation with full right, title and possession to all assets, property, rights, privileges, powers and franchises of Company, the officers and directors of Company are fully authorized in the name of their corporation or otherwise to take, and will use commercially reasonable efforts to take, all such lawful and necessary action, so long as such action is not inconsistent with this Agreement.

Table of Contents

ARTICLE IV

REPRESENTATIONS AND WARRANTIES OF COMPANY

Company hereby represents and warrants to Parent and Merger Sub, subject to the exceptions specifically disclosed in writing in the Company Disclosure Schedule, that:

Section 4.01 Organization and Qualification; Subsidiaries.

(a) The Company has been duly organized and is validly existing and in good standing under the laws of Delaware and has the requisite corporate power and authority to own, lease and operate its properties and to carry on its business as it is now being conducted. Company is duly qualified or licensed to do business, and is in good standing (to the extent applicable), in each jurisdiction where the character of the properties owned, leased or operated by it or the nature of its business makes such qualification or licensing necessary, except for such failures to be so qualified or licensed and in good standing that would not have, individually or in the aggregate, a Company Material Adverse Effect.

(b) Company has no Subsidiaries. Except as set forth in Schedule 4.01 of the Company Disclosure Schedule, Company does not own any equity or similar interest in, or any interest convertible into or exchangeable or exercisable for any equity or similar interest in, any partnership or joint venture arrangement or other business entity.

Section 4.02 Certificate of Incorporation and Bylaws; Corporate Books and Records. The copies of Company's certificate of incorporation and bylaws previously provided to Parent by Company are true, complete and correct copies thereof. Such certificate of incorporation and bylaws are in full force and effect. Company is not in violation of any of the provisions of its certificate of incorporation or bylaws. True and complete copies of the minutes of all meetings of stockholders, the board of directors of Company, including exhibits to the minutes since January 1, 2001 have been provided by Company to Parent.

Section 4.03 Capitalization.

(a) The authorized capital stock of Company consists of 50,000,000 shares of Company Common Stock and 10,000,000 shares of Preferred Stock, par value \$0.01 per share, of Company (the ***Company Preferred Stock***). As of the date hereof, (i) 28,635,671 shares of Company Common Stock are issued and outstanding (ii) no shares of Company Preferred Stock were issued and outstanding, (iii) no shares of Company Common Stock are held in the treasury of Company, and (iv) 1,950,988 shares of Company Common Stock are reserved for future issuance pursuant to Company Options and Company Warrants. Each outstanding share of Company Common Stock is duly authorized, validly issued, fully paid and nonassessable and not subject to or issued in violation of any purchase option, call option, right of first refusal, pre-emptive right or similar right under Delaware law, Company's certificate of incorporation, bylaw or Contract to which Company is a party or otherwise bound. None of the outstanding shares of Company's common stock has been issued in violation of any federal or state securities laws.

Edgar Filing: NANOGEN INC - Form S-4/A

(b) The name of each holder of a Company Option or Company Warrant, the grant or issuance date of each Company Option or Company Warrant, the number of shares of Company Common Stock for which each Company Option or Company Warrant is exercisable, the exercise price of each Company Option or Company Warrant and the vesting schedule of each Company Option or Company Warrant are set forth in Schedule 4.03 of the Company Disclosure Schedule. Schedule 4.03 of the Company Disclosure also sets forth a true and complete list as of the date hereof of each outstanding unvested Company Common Stock issuance under the Company Stock Plans, including the holder of those unvested shares, the number of unvested shares of Company Common Stock held by such person, the applicable vesting schedule and the Company Stock Plan under which it was issue and the purchase price paid per share. On the Closing Date, Company shall deliver to Parent a complete update to Schedule 4.03 of the Company Disclosure Schedule current as of the Closing Date. The terms of the Company

A-15

Table of Contents

Stock Plans and each stock option agreement evidencing an outstanding Company Option thereunder permit the assumption of the Company Options without the consent or approval of the holders of those Company Options, Company's stockholders or otherwise. Neither the Company Stock Plans nor any contract, commitment, agreement or instrument of any character to which Company is a party to or by which Company is bound relating to any Company Options or relating to any unvested shares of Company Common Stock requires or otherwise provides for any accelerated vesting or exercisability of any shares of Company Common Stock and/or Company Options in connection with the Merger or any other transaction contemplated by this Agreement or upon any subsequent termination of employment or service with Company. True, correct and complete copies of each form of agreement and instrument relating to or issued under the Company Option Plans pursuant to which any Company Option or other equity incentive has been granted have been provided to Parent, and all such agreements and instruments, as amended, modified or supplemented, entered or issued by the Company have not varied materially from such forms. Except for shares of Company Common Stock issuable pursuant to Company Stock Plans and the Company Warrants and as otherwise set forth in Schedule 4.03 of the Company Disclosure Schedule, there are no options, warrants or other rights, agreements, arrangements or commitments of any character to which Company is a party or by which Company is bound relating to the issued or unissued capital stock of Company or obligating Company to issue or sell any shares of capital stock of, or other

equity interests in, Company. All shares of Company Common Stock subject to issuance as aforesaid, upon issuance prior to the Effective Time on the terms and conditions specified in the instruments pursuant to which they are issuable, will be duly authorized, validly issued, fully paid and nonassessable.

(c) There are no outstanding contractual obligations of Company to repurchase, redeem or otherwise acquire any shares of Company Common Stock. There are no material outstanding contractual obligations of Company to provide funds to, or make any material investment (in the form of a loan, capital contribution or otherwise) in any other entity or Person.

(d) Company is not a party to or bound by any agreement with respect to the voting (including voting trusts or proxies), registration under the Securities Act, or sale or transfer (including agreements relating to pre-emptive rights, rights of first refusal, co-sale rights or drag-along rights) of any securities of Company. Except for the Company Voting Agreements, to the Knowledge of Company, there are no agreements among other parties, to which Company is not a party and by which it is not bound, with respect to the voting (including voting trusts or proxies) or sale or transfer (including agreement relating to rights of first refusal, co-sale rights or drag-along rights) of any securities of Company.

(e) The Company Common Stock constitutes the only class of securities of Company registered or required to be registered under the Exchange Act.

Section 4.04 *Authority Relative to This Agreement*. Company has all necessary corporate power and authority to execute and deliver this Agreement, to perform its obligations hereunder, and to consummate the transactions contemplated hereby. The execution and delivery of this Agreement by Company and the consummation by Company of the transactions contemplated hereby have been duly and validly authorized by all necessary corporate action, and no other corporate proceedings on the part of Company are necessary to authorize this Agreement or to consummate the transactions contemplated hereby (other than, with respect to the Merger, the approval of this Agreement by the holders of a majority of the outstanding shares of Company Common Stock entitled to vote with respect thereto at the Company Stockholders' Meeting (as defined in Section 7.01), and the filing and recordation of the Certificate of Merger as required by Delaware Law). This Agreement has been duly executed and delivered by Company and, assuming the due authorization, execution and delivery by the other parties hereto, constitutes the legal, valid and binding obligation of Company, enforceable against Company in accordance with its terms, except to the extent that enforceability hereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting the enforcement of creditors' rights generally and by principles of equity regarding the availability of remedies. The board of directors of Company has unanimously determined that it is fair to, advisable and in the best interests of Company's stockholders for Company to enter into a business combination with Parent upon the terms and

Table of Contents

subject to the conditions of this Agreement, and has unanimously recommended that Company's stockholders approve and adopt this Agreement and the Merger (the ***Company Board Approval***), and none of the aforesaid actions by Company's board of directors has been amended, rescinded or modified. The Company Board Approval constitutes approval of the Merger and the other transactions contemplated hereby by the Company's board of directors under the provisions of Section 203 of the Delaware Law such that Section 203 of the Delaware Law does not apply to this Agreement or the transactions contemplated hereby. No business combination, fair price, moratorium, control share acquisition or other similar anti-takeover statute or regulation is applicable to Company, the shares of Company Common Stock, the Merger or any of the other transactions contemplated by this Agreement.

Section 4.05 No Conflict; Required Filings and Consents.

(a) The execution and delivery of this Agreement by Company do not, and the performance by Company of its obligations hereunder, and the consummation of the Merger will not, (i) conflict with or violate any provision of the certificate of incorporation or bylaws of Company, (ii) assuming that all filings and notifications described in Section 4.05(b) have been made, conflict with or violate any Law applicable to Company or by which any property or asset of Company is bound or affected or (iii) except as otherwise set forth on Schedule 4.05(a) of the Company Disclosure Schedule, result in any breach of or constitute a default (or an event which with the giving of notice or lapse of time or both could reasonably be expected to become a default) under, or give to others any right of termination, amendment, acceleration or cancellation of, or result in the creation of a lien or other encumbrance on any property or asset of Company pursuant to, any material note, bond, mortgage, indenture, contract, agreement, lease, license, permit, franchise or other instrument or obligation.

(b) The execution and delivery of this Agreement by Company do not, and the performance by Company of its obligations hereunder and the consummation of the Merger will not, require any consent, approval, authorization or permit of, or filing by Company with or notification by Company to, any Governmental Entity, except pursuant to applicable requirements of the Exchange Act, the Securities Act, Blue Sky Laws, the rules and regulations of NSCM, the premerger notification requirements of the HSR Act, and the filing and recordation of the Certificate of Merger as required by Delaware Law.

Section 4.06 Permits; Compliance with Laws.

(a) Company is in possession of all material franchises, grants, authorizations, licenses, establishment registrations, product listings, permits, variances, exemptions, certificates, easements, consents, clearances, approvals and orders of any Governmental Entity necessary for Company to test, manufacture, market, sell, or distribute its products, to own, lease and operate its properties and assets, or otherwise carry on its business as it is now being conducted (collectively, the ***Company Permits***) and all such Company Permits are in full force and effect. As of the date of this Agreement, none of the Company Permits has been withdrawn, revoked, suspended or cancelled nor is any such withdrawal, revocation, suspension or cancellation pending or, to the Knowledge of Company, threatened in writing. Company is not in conflict with, or in default or violation of, (i) any Law applicable to Company or by which any property or asset of Company is bound or affected or (ii) any Company Permits, except for such conflicts, defaults or violations that would not have, individually or in the aggregate, a Company Material Adverse Effect. Schedule 4.06 of the Company Disclosure Schedule sets forth, as of the date of this Agreement, all actions, proceedings, investigations or surveys pending or, to the Knowledge of Company, threatened in writing against Company that could reasonably be expected to result in the suspension or cancellation of any Company Permit. Since January 1, 1999, Company has not received from any Governmental Entity any notice or other with respect to possible or actual conflicts, defaults or violations of any Laws. As appropriate, Company possesses such third party certifications and/or accreditations necessary to conduct its business.

Table of Contents

(b) Except as set forth in Schedule 4.06 of the Company Disclosure Schedule, all activities of Company including, but not limited to, testing, research, and analysis have been, and are currently being, conducted in compliance with all applicable federal, state, or local Laws, ordinances, regulations, rules, guidances or guidelines, permissions, authorizations, consents, interpretations, judgments, decrees, injunctions, permits, licenses, certificates, governmental requirements, orders, and other similar items of any court or other Governmental Entity, except where any such failure would not, individually or in the aggregate, have a Company Material Adverse Effect. Company has all material Permits from any Governmental Entity, including the United States Food and Drug Administration (the

FDA) and any agency of any Governmental Entity exercising authority comparable to that of the FDA (including any non-governmental entity whose approval or authorization is required under foreign Law comparable to that administered by the FDA, if applicable), for its products, that are necessary to the ownership of its property or to the conduct of its business in the manner and to the extent now conducted, including but not limited to, the U.S. Federal Food, Drug and Cosmetic Act (**FDA Act**), Clinical Laboratory Improvement Amendments of 1988 (**CLIA**), the Health Insurance Portability and Accountability Act of 1996 (**HIPAA**), and the rules, regulations, and policies of the United States Department of Health and Human Services.

(c) Except as identified in the Company Disclosure Schedule, since January 1, 1999 no Governmental Entity or regulatory authority has served any notice, Warning Letter, regulatory letter, Section 305 notice, or any other similar written communication on Company stating that its businesses were or are in violation of any Law, regulation, rule, ordinance, clearance, approval, permissions, authorizations, consents, exemption, guidance or guideline, or were or are the subject of any pending, threatened or anticipated administrative agency or Government Entity investigation, proceeding, review, or inquiry, or that there are circumstances currently existing which might reasonably be expected to lead to any loss of or refusal to renew any of the Company Permits held by Company.

(d) As to each product marketed since January 1, 1999 subject to FDA regulation or similar legal provisions in any foreign jurisdiction that is developed, manufactured, tested, packaged, labeled, marketed, sold, distributed, and/or commercialized by Company or licensees (a **Product**), each such Product is being developed, manufactured, tested, packaged, labeled, marketed, sold, distributed, and/or commercialized in compliance with all applicable requirements under the FDA Act and similar Laws, including but not limited to those relating to investigational use, investigational device exemption, premarket notification, premarket approval, good clinical practices, good manufacturing practices, record keeping, filing of reports, and patient privacy and medical record security. As to each product subject to FDA regulation or similar legal provisions in any foreign jurisdiction, all manufacturing facilities of Company are operated in compliance in all material respects with the FDA's Quality System Regulation requirements at 21 C.F.R. Part 820, as applicable.

(e) Since January 1, 1999, all preclinical and clinical trials conducted, supervised or monitored by Company have been conducted in full compliance with all applicable federal, state, and local Laws, and the regulations and requirements of any Governmental Entity, including but not limited to, FDA good clinical practice and good laboratory practice requirements. Company have consistently obtained and maintained any necessary Institutional Review Board (**IRB**) approvals of clinical trials or modifications thereto, conducted, supervised, or monitored by Company. In no clinical trial conducted, supervised or monitored by Company has IRB approval ever been suspended, terminated, put on clinical hold, or voluntarily withdrawn because of deficiencies attributed to Company.

(f) Schedule 4.06 of the Company Disclosure Schedule sets forth a complete and accurate listing of all pre-clinical and clinical studies since January 1, 1999, together with the dates and brief descriptions of such studies, previously or currently undertaken or sponsored by Company with respect to the Products. True, complete and accurate copies of all data and reports with respect to such studies and trials are listed in Schedule 4.06 of the Company Disclosure Schedule and have been provided for review, and Company has otherwise provided for review all material pre-clinical and material clinical studies and trials and all other material information regarding the efficacy, safety and utility of the Products. Company has heretofore provided for

Table of Contents

review all material correspondence and contact information between Company and the FDA or any other Governmental Entities regarding the Products, and, to the extent provided to Company, between FDA and other Governmental Entities relating thereto.

(g) Since January 1, 1999, neither Company nor, to the Knowledge of Company, any officer, employee or agent of Company, has made an untrue statement of a material fact or fraudulent statement to the FDA or any other Governmental Entity, failed to disclose a material fact required to be disclosed to the FDA or any other Governmental Entity, or committed an act, made a statement, or failed to make a statement that, at the time such disclosure was made, would reasonably be expected to provide a basis for the FDA or any other Governmental Entity to invoke its policy respecting fraud, untrue statements, bribery and illegal gratuities or any similar policy. Neither Company nor, to the Knowledge of Company, any officer, employee or agent of Company, has been disqualified or debarred by the FDA, pursuant to 21 U.S.C. §§ 335(a) or (b), or for any purpose, been charged with or convicted under United States Law for conduct relating to the development or approval, or otherwise relating to the regulation of any drug product under the Generic Drug Enforcement Act of 1992, or any other relevant Law. Neither Company nor, to the Knowledge of Company, any officer, employee or agent of Company, has been convicted of any crime or engaged in any conduct for which such person or entity could be excluded from participating in the federal health care programs. Neither Company nor any of its agents or employees, have violated or caused a violation of any federal or state health care fraud and abuse or false claims statute or regulation, including, but not limited to, the Medicare/Medicaid Anti-kickback provisions of the Social Security Act, 42 U.S.C. § 1320a-7b(b), and the relevant regulations in 42 C.F.R. Part 1001.

(h) The Company and its employees have complied in all material respects at all times with all applicable privacy laws and regulations regarding the collection, processing, disclosure and use of all data consisting of personally identifiable information in each case as such term is defined under the applicable law that is, or is capable of being, associated with specific individuals.

Section 4.07 *SEC Filings; Financial Statements; Sarbanes-Oxley.*

(a) Company has timely filed all forms, reports, statements and documents required to be filed by it with the SEC, the NNM and the NSCM since January 1, 2001 (collectively, together with any such forms, reports, statements and documents Company may file subsequent to the date hereof until the Closing, the **Company Reports**). Each Company Report (i) at the time it was filed, complied in all material respects with the requirements of the Securities Act, the Exchange Act or the rules and regulations of the NNM or NSCM, as the case may be, and (ii) did not at the time it was filed contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. Since January 1, 2001, there have been no comment letters received by Company from the staff of the SEC or responses to such comment letters by or on behalf of Company that have not been made available to Parent. For purposes of this Section 4.07, the term **file** shall be broadly construed to include any manner in which a document or information is furnished, supplied or otherwise provided in writing to the SEC.

(b) Each of the consolidated financial statements (including, in each case, any notes thereto) contained in the Company Reports was prepared in accordance with U.S. GAAP (except, in the case of unaudited financial statements, for the absence of footnotes and subject to normal year-end adjustments, which adjustments are not material), applied on a consistent basis throughout the periods indicated (except as may be indicated in the notes thereto) and presented fairly the consolidated financial position of Company as at the respective dates thereof, and its results of operations, stockholders' equity and cash flows for the respective periods indicated therein, except as otherwise noted therein (subject, in the case of unaudited statements, to normal and recurring immaterial year-end adjustments).

Table of Contents

(c) Except as and to the extent set forth or reserved against on the balance sheet of Company as of June 30, 2004 as reported in the Company Reports, Company has no liabilities or obligations of any nature (whether accrued, absolute, contingent or otherwise) that would be required to

be reflected on a balance sheet or in notes thereto prepared in accordance with U.S. GAAP, except for (i) liabilities or obligations which do not in the aggregate exceed \$100,000 or (ii) liabilities or obligations incurred in the ordinary course of business consistent with past practice since June 30, 2004.

(d) Company is not a party to and has no commitment to become a party to, any joint venture, partnership agreement or any similar Contract (including any Contract relating to any transaction, arrangement or relationship between Company, and any unconsolidated Affiliate, including any structured finance, special purpose or limited purpose entity or person, on the other hand) where the purpose or intended effect of such arrangement is to avoid disclosure of any material transaction involving Company in the consolidated financial statements contained in Company Reports.

(e) Company is in compliance with, and have complied, in all material respects with (A) the applicable provisions of the Sarbanes-Oxley Act of 2002 and the related rules and regulations promulgated under such Act (the **Sarbanes-Oxley Act**) or the Exchange Act and (B) the applicable listing and corporate governance rules and regulations of the NNM and NSCM. Except as disclosed in the Company Reports, there are no outstanding loans made by Company to any executive officer (as defined under Rule 3b-7 under the Exchange Act) or director of Company. Since the enactment of the Sarbanes-Oxley Act, Company has not made any loans to any such executive officer or director of Company. Company has established and maintains disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Exchange Act); such disclosure controls and procedures are designed to ensure that information relating to Company, required to be disclosed by Company in the reports that it files or submits under the Exchange Act is accumulated and communicated to Company's principal executive officer and its principal financial officer to allow timely decisions regarding required disclosure, and such disclosure controls and procedures are effective to ensure that information required to be disclosed by Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms. Company has established and maintains internal control over financial reporting (as such term is defined in Rule 13a-15(f) under the Exchange Act); such internal controls are designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP. Company's principal executive officer and its principal financial officer have disclosed, based on their most recent evaluation, to Company's auditors and the audit committee of the board of directors of Company (x) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect Company's ability to record, process, summarize and report financial data and have identified for Company's auditors any material weaknesses in internal controls and (y) any fraud, whether or not material, that involves management or other employees who have a significant role in Company's internal controls. Company has delivered to Parent a correct and complete summary of any such disclosure made by management of Company to Company's auditors and audit committee since January 1, 2001. Since January 1, 2001, neither Company, nor to Company's Knowledge, any director, officer, employee, auditor, accountant or representative of Company has received or otherwise had or obtained Knowledge of any material complaint, allegation, assertion or claim, whether written or oral, regarding the accounting or auditing practices, procedures, methodologies or methods of Company or its internal accounting controls, including any material complaint, allegation, assertion or claim that Company has engaged in questionable accounting or auditing practices. No attorney representing Company, whether or not employed by Company, has reported evidence of a material violation of securities Laws, breach of fiduciary duty or similar violation by Company or any of its officers, directors, employees or agents to the board of directors of Company or any committee thereof or to any director or officer of Company. For purposes of this paragraph, principal executive officer and principal financial officer shall have the meanings given to such terms in the Exchange Act.

Section 4.08 *Absence of Certain Changes or Events*. Except as otherwise set forth on Schedule 4.08 of the Company Disclosure Schedule, since June 30, 2004, Company has conducted its businesses only in the ordinary

Table of Contents

course consistent with past practice and, since such date, there has not been (i) any Company Material Adverse Effect, (ii) any event that could reasonably be expected to prevent or materially delay the performance of Company's obligations pursuant to this Agreement and the consummation of the Merger by Company, (iii) any material change by Company in its accounting methods, principles or practices, (iv) any declaration, setting aside or payment of any dividend or distribution in respect of the shares of Company Common Stock or Company Preferred Stock or any redemption, purchase or other acquisition of any of Company's securities, other than any unvested shares of Company Common Stock repurchased by Company, at the original price paid per share, from employees, consultants and directors upon the termination of their service relationship with Company, (v) any increase in the compensation or benefits payable or to become payable to any officer, employee or other service provider of Company (other than normal salary increases in the ordinary course of business consistent with the past practices of Company), or the establishment or amendment of any bonus, insurance, severance, deferred compensation, pension, retirement, profit sharing, stock-based or stock option (including, without limitation, the granting of stock options, stock appreciation rights, performance awards, phantom stock or restricted stock awards), stock purchase or other employee benefit plan, (vi) any issuance or sale of any stock, notes, bonds or other securities other than as permitted by this Agreement or pursuant to the exercise of outstanding securities set forth in Schedule 4.03 of the Company Disclosure Schedule, or entering into any agreement with respect thereto, (viii) any amendment to Company's certificate of incorporation or bylaws, (vii) other than in the ordinary course of business consistent with past practices, any (a) purchase, sale, assignment or transfer of any material assets, (b) mortgage, pledge or the institution of any lien, encumbrance or charge on any material assets or properties, tangible or intangible, except for liens for taxes not yet delinquent and such other liens, encumbrances or charges which do not, individually or in the aggregate, have a Company Material Adverse Effect, or (c) waiver of any rights of material value or cancellation or any material debts or claims, (x) any incurrence of any material liability (absolute or contingent), except for current liabilities and obligations incurred in the ordinary course of business consistent with past practice, (xi) any incurrence of any damage, destruction or similar loss, whether or not covered by insurance, materially affecting the business or properties of Company, or (xii) any entering into any transaction of a material nature other than in the ordinary course of business, consistent with past practices.

Section 4.09 Employee Benefit Plans; Labor Matters.

(a) With respect to each employee benefit fund, plan, program, arrangement or contract (including, without limitation, any employee benefit plan, as defined in Section 3(3) of ERISA) maintained, sponsored or contributed to or required to be contributed to by Company or other trade or business (whether or not incorporated) treated as a single employer with Company (a ***Company ERISA Affiliate***) pursuant to Code Section 414(b), (c), (m) or (o) or to which Company or any Company ERISA Affiliate is a party, or with respect to which Company or any Company ERISA Affiliate could incur liability under Section 4069, 4212(c) or 4204 of ERISA or Section 412 of the Code (the ***Company Benefit Plans***), Company has delivered or made available to Parent a true, complete and correct copy of (i) such Company Benefit Plan and the most recent summary plan description related to such Company Benefit Plan, if a summary plan description is required therefor, (ii) each trust agreement or other funding arrangement relating to such Company Benefit Plan, (iii) the most recent annual report (Form 5500) filed with the IRS) with respect to such Company Benefit Plan, (iv) the most recent actuarial report or financial statement relating to such Company Benefit Plan and (v) the most recent determination letter issued by the IRS with respect to such Company Benefit Plan, if it is intended to be qualified under Section 401(a) of the Code.

(b) Each Company Benefit Plan has been administered in all material respects in accordance with its terms and all applicable laws, including, without limitation, ERISA and the Code, and all contributions required to be made under the terms of any of the Company Benefit Plans as of the date of this Agreement have been timely made or have been reflected on the most recent consolidated balance sheet filed or incorporated by reference in the Company Reports prior to the date of this Agreement. With respect to the Company Benefit Plans, no event has occurred and, to the Knowledge of Company, there exists no condition or set of circumstances in connection with which Company or any Company ERISA Affiliate could be subject to any material liability (other than for routine benefit liabilities) under the terms of such Company Benefit Plans, ERISA, the Code or any other applicable Law.

Table of Contents

(c) Company on behalf of itself and all of the Company ERISA Affiliates hereby represents that: (i) each Company Benefit Plan which is intended to be qualified under Section 401(a) of the Code or Section 401(k) of the Code has received a favorable determination letter from the IRS as to its qualified status under the Code or either an application for such determination is pending or the period for submitting such application under Code Section 401 with the ability to effect remedial amendments has not expired, and each trust established in connection with any Company which is intended to be exempt from federal income taxation under Section 501(a) of the Code has received a determination letter from the IRS that it is so exempt or either an application for such determination is pending or the period for submitting such application under Code Section 401 with the ability to effect remedial amendments has not expired,, and to the Knowledge of Company no fact or event has occurred since the date of any such determination letter received from the IRS to adversely affect the qualified status of any such Company Benefit Plan or the exempt status of any such trust; (ii) to Knowledge of Company there has been no prohibited transaction (within the meaning of Section 406 of ERISA or Section 4975 of the Code) with respect to any Company Benefit Plan; (iii) each Company Benefit Plan can be amended, terminated or otherwise discontinued after the Effective Time in accordance with its terms, without liability, other than (A) liability for ordinary administrative expenses typically incurred in a termination event or (B) if the Company Benefit Plan is a pension benefit plan subject to Part 2 of Title I of ERISA, liability for the accrued benefits as of the date of such termination (if and to the extent required by ERISA) to the extent that either there are sufficient assets set aside in a trust or insurance contract to satisfy such liability or such liability is reflected on the most recent consolidated balance sheet filed or incorporated by reference in the Company Reports prior to the date of this Agreement.

(d) No Company Benefit Plan is a multiemployer pension plan (as defined in Section 3(37) of ERISA) or other pension plan subject to Title IV of ERISA and neither Company nor any Company ERISA Affiliate has sponsored or contributed to or been required to contribute to a multiemployer pension plan or other pension plan subject to Title IV of ERISA. No material liability under Title IV of ERISA has been incurred by Company or any Company ERISA Affiliate that has not been satisfied in full, and no condition exists that presents a material risk to Company or any Company ERISA Affiliate of incurring or being subject (whether primarily, jointly or secondarily) to a material liability thereunder. None of the assets of Company or any Company ERISA Affiliate is, or may reasonably be expected to become, the subject of any lien arising under ERISA or Section 412(n) of the Code.

(e) With respect to each Company Benefit Plan that is subject to Title IV or Part 3 of Title I of ERISA or Section 412 of the Code, (i) no reportable event (within the meaning of Section 4043 of ERISA, other than an event that is not required to be reported before or within thirty (30) days of such event) has occurred or is expected to occur, (ii) there was not an accumulated funding deficiency (within the meaning of Section 302 of ERISA or Section 412 of the Code), whether or not waived, as of the most recently ended plan year of such Company Benefit Plan; and (iii) there is no unfunded benefit liability (within the meaning of Section 4001(a)(18) of ERISA).

(f) Company has scheduled on Schedule 4.09(f) of the Company Disclosure Schedule and has delivered to Parent true, complete and correct copies of (i) all employment agreements with officers and all consulting agreements of Company providing for annual compensation in excess of \$100,000, (ii) all severance plans, agreements, programs and policies of Company with or relating to their respective employees, directors or consultants, and (iii) all plans, programs, agreements and other arrangements of Company with or relating to their respective employees, directors or consultants which contain change of control provisions. Except as set forth in Schedule 4.09(f) of the Company Disclosure Schedule, which discloses Company's estimate of excess parachute payments based on assumptions described therein, there is no agreement, plan, arrangement or other contract covering any current or former employee or other service provider of Company or other Affiliate to which Company and/or any Company Affiliate is a party or by which Company and/or any Company Affiliate is bound that, considered individually or considered collectively with any other such agreements, plans, arrangements or other contracts, will, or could reasonably be expected to, as a result of the transactions contemplated hereby (whether alone or upon the occurrence of any additional or subsequent event, including

Table of Contents

(without limitation) termination of employee or other service status), give rise directly or indirectly to the payment of any amount that could reasonably be expected to be characterized as a parachute payment within the meaning of Section 280G of the U.S. Internal Revenue Code. Schedule 4.09(f) of the Company Disclosure Schedule lists each person who Company reasonably believes is, with respect to Company or any Company Affiliate, a disqualified individual (within the meaning of Section 280G of the U.S. Internal Revenue Code and the U.S. Treasury Regulation thereunder). Except as otherwise set forth in Section 4.09(f) of the Company Disclosure Schedule, neither the execution and delivery of this Agreement nor the consummation of any of the transactions contemplated hereunder (whether alone or upon the occurrence of any additional or subsequent event, including (without limitation) termination of employee or other service status) will accelerate the time of payment or vesting of any compensation or benefits under any Company Benefit Plan, or increase the amount of compensation or benefits due any employee or former employee of Company. On the Closing Date, Company shall deliver a complete update to Schedule 4.09(f) of Company Disclosure Schedule current as of that date.

(g) Company is not a party to any collective bargaining or other labor union contract applicable to Persons employed by Company and no collective bargaining agreement is being negotiated by Company. There is no labor dispute, strike or work stoppage against Company pending or, to the Knowledge of Company, threatened in writing which may interfere with the respective business activities of Company. Company has complied with all applicable laws relating to the employment of labor, including provisions thereof relating to wages, hours, equal employment opportunity, collective bargaining, non-discrimination, and the withholding and payment of social security and other Taxes except for such failures to comply that would not reasonably be expected to have a Company Material Adverse Effect. There is no pending or, to the Knowledge of Company, threatened charges of unfair labor practices or of employment discrimination or of any other wrongful action with respect to any aspect of employment of any person employed or formerly employed by Company.

(h) Except as required by Law, no Company Benefit Plan provides any of the following retiree or post-employment benefits to any Person: medical, disability or life insurance benefits. To the Knowledge of Company, Company and the Company ERISA Affiliates are in material compliance with (i) the requirements of the applicable health care continuation and notice provisions of the Consolidated Omnibus Budget Reconciliation Act of 1985 (**COBRA**) and the regulations (including proposed regulations) thereunder and (ii) the applicable requirements of the Health Insurance Portability and Accountability Act of 1996 and the regulations (including the proposed regulations) thereunder.

Section 4.10 *Certain Tax Matters*. Neither Company nor, to the Knowledge of Company, any of its Affiliates has taken or agreed to take any action (other than actions contemplated by this

Agreement) that could reasonably be expected to prevent the Merger from constituting a reorganization under Section 368 of the Code. Company is not aware of any agreement or plan to which Company or any of its Affiliates is a party or other circumstances relating to Company or any of its Affiliates that could reasonably be expected to prevent the Merger from so qualifying as a reorganization under Section 368 of the Code.

Section 4.11 *Contracts*. Company has delivered to Parent true and complete copies (and any and all binding amendments, modifications and supplements thereto) of the following (the **Material Contracts**), which, as of the date hereof, shall be listed on Schedule 4.11 of the Company Disclosure Schedule:

(i) all Contracts of Company with customers of Company involving payments by or to Company in excess of \$100,000 for the twelve (12)-month period ending on June 30, 2004;

(ii) all Contracts of Company with Persons which are not customers of Company involving payments by or to Company in excess of \$50,000 for the twelve (12)-month period ending on June 30, 2004;

(iii) all Contracts of Company entered into other than in the ordinary course of business;

(iv) all Contracts of Company that restrict the ability of Company to compete in any business or area;

A-23

Table of Contents

(v) all Contracts of Company with most favored customer pricing provisions;

(vi) all Contracts of Company pursuant to which Company receives its sole source of supply of any material or item which is incorporated in or used by Company to manufacture, distribute or sell a Company Product;

(vii) all Contracts of Company with any Affiliate, director, officer or employee of Company, other than contracts which do not vary in any material respect from the standard form of such contracts provided to Parent;

(viii) all Contracts of Company pursuant to which Company is granted material rights in the Intellectual Property of any third person, other than Contracts pursuant to which independent contractors assign Intellectual Property to Company which do not vary in any material respect from the standard form of such contracts provided to Parent;

(ix) all Contracts of Company pursuant to which Company grants material rights in Intellectual Property to any third person, other than non-exclusive end user licenses which do not vary in any material respect from the standard form of such contracts provided to Parent;

(x) all joint venture, partnership, collaboration or other similar contracts, agreements or arrangements to which Company is a party;

(xi) all Contracts relating to the borrowing of money or extension of credit (collectively, ***Debt Obligations***) pursuant to which any material indebtedness of Company is outstanding or may be incurred and all guarantees of or by Company of any Debt Obligations of any other Person, other than standard form invoices relating to accounts payable of Company disclosed in the Company Reports or incurred in the ordinary course of business since June 30, 2004;

(xii) (A) all Contracts of Company granting any right to make, have made, manufacture, use, sell, offer to sell, import, export, or otherwise distribute any product of Company, currently being distributed or currently under development (a ***Company Product***), with or without the right to sublicense the same, in each case on an exclusive basis, (B) any Contract by which Company grants any ownership right to any Intellectual Property owned by Company, (C) any Contract under which Company grants an option relating to acquiring ownership of any Intellectual Property owned by Company, (D) any Contract under which Company has a stated obligation to make fixed payments of minimum royalties, license fees or service fees aggregating in excess of \$50,000 during the calendar year ending December 31, 2004 with respect to any Intellectual Property owned by Company, (E) any Contract of Company that grants a customer a refund right (other than as a remedy for a breach of warranty) on the installation of a Company Product, and that refund period with respect to any such installation has not passed, lapsed, expired or terminated; and (F) any Contract pursuant to which Company has deposited or is required to deposit with an escrow agent or any other Person any Intellectual Property Rights for Company Products;

(xiii) all Contracts containing any provision requiring the Company to indemnify another party (other than indemnities contained in agreements entered into the ordinary course of business) or containing any covenants not to bring a legal action against any third party;

Edgar Filing: NANOGEN INC - Form S-4/A

(xiv) all powers of attorney given by Company and contracts, agreements and arrangements pursuant to which Company has any obligations or liabilities (whether absolute, accrued, contingent or otherwise), as guarantor, surety, co-signer, endorser, co-maker, or otherwise in respect of any obligation of any Person, or any capital maintenance or similar agreements or arrangements.

(b) Company has performed all of the material obligations required to be performed by it, and to the Knowledge of Company, is not alleged in writing to be in default in respect of any Material Contract. Each of the

A-24

Table of Contents

Material Contracts is in full force and effect, constitutes a legal, valid and binding agreement enforceable in accordance with its terms (subject to applicable laws of bankruptcy, insolvency or similar laws relating to creditors' rights generally and to general principles of equity, whether applied in a proceeding in law or equity) against Company and there exists no material default or event of default or event, occurrence, condition or act, with respect to Company or, to the Knowledge of Company, with respect to the other contracting party, which, with the giving of notice, the lapse of the time or the happening of any other event or conditions, would become a material default or event of default under any Material Contract. To the Knowledge of Company, Company has not, as of the date hereof, entered into a Contract with a Specially Designated National or Blocked Person as defined by the Office of Foreign Asset Control of the United States Department of the Treasury.

(c) Except as set forth in the Company Disclosure Schedule, the execution of this Agreement and the consummation of the transactions contemplated hereby will not conflict with or cause a breach of any Material Contract (or which with the giving of notice or lapse of time or both could reasonably be expected to become a breach) and no approval or consent of any other party to any of Material Contracts is required in order for those Material Contracts to continue in effect after the consummation of the Merger.

Section 4.12 *Litigation*. Except as and to the extent set forth in the Company Reports filed prior to the date of this Agreement, there is no suit, claim, action, proceeding or investigation pending or, to the Knowledge of Company, threatened in writing against Company that could reasonably be expected to have, individually or in the aggregate, a Company Material Adverse Effect or materially interfere with

Company's ability to consummate the transactions contemplated herein. Company is not subject to any outstanding order, writ, injunction or decree which could reasonably be expected to have, individually or in the aggregate, a Company Material Adverse Effect or materially interfere with Company's ability to consummate the transactions contemplated herein.

Section 4.13 *Environmental, Health and Safety Matters*.

(a) There has been no storage, disposal, generation, manufacture, refinement, transportation, handling or treatment of Hazardous Material by Company (or, to the Knowledge of Company, any of its predecessors in interest) at, upon or from any of the property now or previously owned or leased by Company in violation of any Environmental Law, other than immaterial violations that would not have a Company Material Adverse Effect.

(b) There has been no spill, discharge, leak, emission, injection, escape, dumping or release of any kind onto such property or into the environment surrounding such property of any Hazardous Material in violation of any Environment Law other than immaterial violations that would not have a Company Material Adverse Effect, due to or caused by Company or with respect to which Company has Knowledge.

(c) Company and each of the facilities of Company are, and have been, in compliance in all material respects with all applicable Environmental Law, all Health and Safety Laws and/or Environmental Permits. In respect of the facilities no person is undertaking, nor has Company received written notice that they are or may become subject to, remedial action or enforcement action under, or are not otherwise in compliance in all material respects with, applicable Environmental Law, Health and Safety Laws and/or Environmental Permits.

(d) All Permits required under all applicable Environmental Law in relation to the facilities of Company have been obtained and are in full force and effect, and Company has not received any written notice that any such facilities' Environmental Permits will be revoked, suspended or not renewed, except for such failures to obtain, revocations, suspensions or failures to renew as would not have a Company Material Adverse Effect.

Edgar Filing: NANOGEN INC - Form S-4/A

(e) No written claims, including third party claims and claims from Governmental Entities, have been made or to the Knowledge of Company, threatened, against Company that could reasonably be expected to result in liability arising from or as a result of (i) on-site exposures to Hazardous Material at the facilities; (ii) releases of Hazardous Material at or from any facilities; or (iii) off-site treatment, storage or disposal of Hazardous

A-25

Table of Contents

Material transported from the facilities, except for such claims that would not reasonably be expected to give rise to material liabilities.

(f) Copies of all environmental and health and safety audits and other assessments, reviews and reports, written claims and environmental or health and safety test results since November 1, 2000 in the possession or control of Company relating to Company or any of the facilities have been provided to Parent and are listed in Section 4.13(f) of the Company Disclosure Schedule.

Section 4.14 *Intellectual Property*.

(a) Schedule 4.14(a) of the Company Disclosure Schedule sets forth, as of the date hereof, a complete and accurate list of all patents and applications therefor and all reissues, divisions, renewals, extensions, provisionals, continuations and continuations-in-part thereof, registered trademarks and applications or registrations therefor and registered copyrights owned or, in the case of certain

provisional patent applications, controlled by the Company and applications therefor (collectively, ***Company Registered Intellectual Property***). Such intellectual property rights as listed in Schedule 4.14(a) of the Company Disclosure Schedule, together with any other type of rights in Intellectual Property that are owned by Company or, in the case of certain provisional patent applications, controlled by Company, that (x) relate to any Company product, or (y) are otherwise material to the research, development, manufacturing or commercialization of any Company product, are collectively referred to herein as ***Intellectual Property Rights*** . Except to the extent listed in Schedule 4.14(a) or Schedule 4.14(g) of the Company Disclosure Schedule, all Intellectual Property Rights are either (i) owned by, or subject to an obligation of assignment to, Company free and clear of all mortgages, liens, security interests, leases, pledges, encumbrances, equities, claims, charges, options, written restrictions, rights of first refusal, title retention agreements or other exceptions to title which affect the Intellectual Property Rights or restrict the use by Company of the Intellectual Property Rights in any material way (***IP Liens***), or (ii) controlled by Company free and clear (to the Knowledge of Company) of all IP Liens. To the Knowledge of Company, it owns or has a valid license or other right to use all Intellectual Property necessary to conduct the business of Company as presently conducted. Company is in material compliance with all agreements under which such third party Intellectual Property Rights are used and has not received notice of breach of termination from any such third party. To the Knowledge of Company, with respect to all Intellectual Property Rights that are U.S. patents or applications owned by Company subject to a terminal disclaimer against another patent or application, each such patent or application has been and remains commonly owned with the patent or application it is terminally disclaimed against since the filing of the terminal disclaimer with the U.S. Patent and Trademark Office. Except to the extent listed in Schedule 4.14(a) of the Company Disclosure Schedule, Company is the sole legal and beneficial owner of all the Company Registered Intellectual Property. There are no actions pending or, to the Knowledge of Company, threatened with regard to the ownership or control by Company of any Intellectual Property owned or controlled by Company, or to the knowledge of Company, with respect to a third party's Intellectual Property licensed to, or otherwise used by, Company. Except as provided for in any agreement identified in Schedule 4.14(a) of the Company Disclosure Schedule, Company has the legal power to convey to a successor all of their respective ownership or control in the Intellectual Property Rights.

(b) To the Knowledge of Company, the Intellectual Property Rights have not been, and are not being, infringed.

(c) There are no pending or, to the Knowledge of Company, threatened claims that Company has infringed or is infringing (including with respect to the manufacture, use, sale or importation by Company of any commercial products or to the operations of Company) any Intellectual Property of any person. To the Knowledge of Company, there are no patent rights of any third party known to be dominating, interfering, or potentially dominating or interfering and that could be asserted by a person to exclude or prevent Company or licensees from researching, developing, manufacturing or commercializing the products of Company.

Table of Contents

(d) The patent applications listed in Schedule 4.14(a) of the Company Disclosure Schedule that are owned by Company (and, to Company's Knowledge after due inquiry, such material patent applications that are otherwise controlled by Company) are pending and have not been abandoned, and have been and continue to be prosecuted. All patents, registered trademarks and applications therefor owned by Company (and, to Company's Knowledge after due inquiry, all such material patents, registered trademarks and applications otherwise controlled by Company) have been duly registered and/or filed with or issued by each appropriate Governmental Entity in the jurisdiction indicated in Schedule 4.14(a) of the Company Disclosure Schedule, all necessary affidavits of continuing use (and, to Company's Knowledge after due inquiry, with respect to such patents, registered trademarks and applications otherwise controlled by Company) have been timely filed, and all necessary maintenance

fees timely paid to continue all such rights in effect. None of the patents listed in Schedule 4.14(a) of the Company Disclosure Schedule that are owned by Company (and, to Company's Knowledge after due inquiry, no such patents that are otherwise controlled by Company) have expired or been declared invalid, in whole or in part, by any Governmental Entity. To the Knowledge of Company, there are no ongoing interferences, oppositions, reissues, or reexaminations or other inter partes proceedings which could result in a loss or limitation of a patent right or claim involving any of the patents or patent applications listed in Schedule 4.14(a) of the Company Disclosure Schedule and owned or controlled by Company.

(e) To the Knowledge of Company, there are no published patents, patent applications, articles or other prior art references, or any other prior art or material information, that could render invalid in whole or in part any patent owned by Company and listed in Schedule 4.14(a) of the Company Disclosure Schedule or any claim therein. Company has met its duty of candor as required under applicable Law and complied with analogous laws outside the U.S. requiring disclosure of references. To the Knowledge of Company, each of the patents and patent applications listed in Schedule 4.14(a) of the Company Disclosure Schedule that were filed by Company properly identifies each and every inventor of the claims thereof as determined in accordance with the laws of the jurisdiction in which such patent is issued or such patent application is pending.

(f) Each inventor named on the patents and patent applications listed in Schedule 4.14(a) of the Company Disclosure Schedule (except as otherwise indicated on such schedule) that were filed by Company, alone or together with any joint owners, has executed an agreement agreeing to assign or actually assigning his or her entire right, title and interest in and to such patent or patent application, and the inventions embodied and claimed therein, to Company, alone or together with any joint owners as appropriate, except as indicated in Schedule 4.14(a) of the Company Disclosure Schedule. To the Knowledge of Company, no such inventor has any contractual or other obligation that would preclude any such assignment or otherwise conflict with the obligations of such inventor to Company or appropriate owners under such agreement with Company or such appropriate owners, as the case may be.

(g) Schedule 4.14(g) of the Company Disclosure Schedule sets forth a true, complete and accurate list of all material agreements or instruments with respect to any options, rights, licenses or interests of any kind relating to Intellectual Property owned or controlled by Company that has been granted (x) to Company (other than agreements commonly generated in the ordinary course of business (including software licenses for generally available software, employee assignment agreements, nondisclosure agreements, consulting agreements, material transfer agreements, clinical trial agreements and evaluation agreements) that individually and in the aggregate have not had and would not reasonably be expected to have a Company Material Adverse Effect) or (y) by Company to any other person (other than agreements commonly generated in the ordinary course of business (including software licenses for generally available software, employee assignment agreements, nondisclosure agreements, consulting agreements, material transfer agreements, clinical trial agreements and evaluation agreements) that individually and in the aggregate have not had and would not reasonably be expected to have a Company Material Adverse Effect). To the Knowledge of Company, there are no such options, rights, licenses or interests of any kind relating to Intellectual Property Rights other than as set forth in the agreements listed in Schedule 4.14(g) of the Company Disclosure Schedule. Schedule 4.14(g) of the Company Disclosure Schedule sets forth, as of the date hereof, all agreements under which Company is obligated

Table of Contents

to make or receive payments (in any form, including royalties, milestones and other contingent payments) to or from third parties for use of any Intellectual Property Rights with respect to the commercialization of any Company product. Company is in material compliance with the terms of all such agreements and, with respect to sublicenses, to the Knowledge of Company, licensor of Company is in material compliance with all agreements granting such Intellectual Property Rights to licensor.

(h) Company does not jointly own or claim any right, title or interest with any other Person in any Company-owned Intellectual Property.

(i) Except pursuant to a Contract listed under Section 4.11 of the Company Disclosure Schedule, Company has not disclosed or delivered to any Person (other than employees, agents and consultants of Company), or permitted the disclosure or delivery to any escrow agent or other Person (other than employees, agents and consultants of Company), of any confidential information underlying the Intellectual Property Rights, including without limitation, any source code for Company Software Programs. No event has occurred, and no circumstance or condition exists as a result of acts or omissions on the part of Company (including the execution of this Agreement or the consummation of any of the transactions contemplated hereby) or, to the Knowledge of Company, as a result of any other event or circumstance, that (with or without notice or lapse of time) will, or could reasonably be expected to, result in the disclosure or delivery to any Person of any Intellectual Property Rights, including without limitation, any source code for Company Software Programs.

(j) Company has used commercially reasonable efforts to maintain their confidential information and trade secrets in confidence, including entering into licenses and contracts that generally require licensees, contractors and other third persons with access to such trade secrets to keep such trade secrets confidential.

(k) Schedule 4.14(i) of the Company Disclosure Schedule contains a true and complete list of all internally-developed software programs of the Company (the ***Company Software Programs***). Company owns full and unencumbered right and good, valid and marketable title to such Company Software Programs free and clear of all mortgages, pledges, liens, security interests, conditional sales agreements or encumbrances.

(l) The source code and system documentation relating to the Company Software Programs (i) have at all times been maintained in strict confidence, (ii) have been disclosed by Company only to employees and contractors on a need to know basis in connection with the performance of their duties to Company, and (iii) to the Knowledge of Company, have not been disclosed to any third party.

(m) To the Knowledge of Company, the Company Software Programs contain no viruses. For the purposes of this Agreement, virus means any computer code intentionally designed to disrupt, disable or harm in any manner the operation of any software or hardware.

Section 4.15 *Taxes*.

(a) Company, and any consolidated, combined, unitary or aggregate group for Tax purposes of which Company is or has been a member, have properly completed and timely filed all Tax Returns required to be filed by them and have paid all Taxes shown thereon to be due. Company has provided adequate accruals in accordance with generally accepted accounting principles in its June 30, 2004 balance sheet contained in the Company Reports (the ***June 30 Balance Sheet***) for any Taxes that have not been paid, whether or not shown as being due on any Tax Returns. Company have no material liability for unpaid Taxes accruing after June 30, 2004 resulting from transactions which were not undertaken in the ordinary course of business.

(b) There is (i) no material claim for Taxes that is a lien against the property of Company or is being asserted against Company other than liens for Taxes not yet due and payable, (ii) no audit of any Tax Return of Company being conducted by a Tax Authority; (iii) no extension of the statute of limitations on the assessment of any Taxes granted by Company and currently in effect, and (iv) no agreement, contract or arrangement to which

A-28

Table of Contents

Company is a party that may result in the payment of any amount that would not be deductible by reason of Section 162(m), 280G or Section 404 of the Code.

(c) Company has not been and will not be required to include any material adjustment in taxable income for any Tax period (or portion thereof) beginning after the Closing Date pursuant to Section 481 or 263A of the Code or any comparable provision under state or foreign Tax laws as a result of transactions, events or accounting methods employed prior to the Merger.

(d) Company is not a party to any Tax sharing or Tax allocation agreement nor does Company have any liability or potential liability to another party under any such agreement.

(e) Company has not filed any disclosures under Section 6662 or comparable provisions of state, local or foreign law to prevent the imposition of penalties with respect to any Tax reporting position taken on any Tax Return.

(f) Since December 31, 1993 Company has not been a member of a consolidated, combined or unitary group of which Company was not the ultimate parent corporation.

(g) Company has in its possession receipts for any Taxes paid to foreign Tax authorities. Company has never been a personal holding company within the meaning of Section 542 of the Code or a United States real property holding corporation within the meaning of Section 897 of the Code.

Section 4.16 *Insurance*. Company is presently insured, and during each of the past five calendar years has been insured, against such risks as companies engaged in a similar business would, in accordance with good business practice, customarily be insured. The policies of fire, theft, liability and other insurance maintained with respect to the assets or businesses of Company provide, in the good faith judgment of Company's management, reasonably adequate coverage against loss. Company has heretofore furnished to Parent a complete and correct list as of the date hereof of all insurance policies maintained by Company, and has made available to Parent complete and correct copies of all such policies, together with all riders and amendments thereto. All such policies are in full force and effect and all premiums due thereon have been paid to the date hereof. Company have complied in all material respects with the terms of such policies.

Section 4.17 *Properties*. Company has good and valid title, free and clear of all Encumbrances, except for Permitted Encumbrances, to all their material properties and assets, whether tangible or intangible, real, personal or mixed, reflected in Company's consolidated financial statements contained in the Company's Annual Report on Form 10-K for the period ended December 31, 2003 as being owned by Company as of the date thereof, other than (i) any properties or assets that have been sold or otherwise disposed of in the ordinary course of business since the date of such financial statements, (ii) liens disclosed in the notes to such financial statements, and (iii) liens arising in the ordinary course of business after the date of such financial statements. All buildings, and all fixtures, equipment and other property and assets that are material to its business on a consolidated basis, held under leases or sub-leases by Company are held under valid instruments enforceable in accordance with their respective terms, subject to applicable laws of bankruptcy, insolvency or similar laws relating to creditors' rights generally and to general principles of equity (whether applied in a proceeding in law or equity). Substantially all of Company's equipment in regular use has been reasonably maintained and is in serviceable condition, reasonable wear and tear excepted.

Edgar Filing: NANOGEN INC - Form S-4/A

Section 4.18 *Affiliates*. Schedule 4.18 of the Company Disclosure Schedule sets forth the names and addresses of each Person who is, in Company's reasonable judgment, an affiliate (as such term is used in Rule 145 under the Securities Act) of Company.

Section 4.19 *Opinion of Financial Advisor*. Molecular Securities Inc. (***Company Financial Advisor***) has delivered to the board of directors of Company its opinion to the effect that, as of the date of such opinion, the Exchange Ratio to be received by the holders of shares of Company Common Stock is fair to such holders from a financial point of view.

A-29

Table of Contents

Section 4.20 *Brokers*.

(a) No broker, finder or investment banker (other than Company Financial Advisor) is entitled to any brokerage, finder's or other fee or commission in connection with the Merger based upon arrangements made by or on behalf of Company.

(b) Attached hereto as Schedule 4.20(b) of the Company Disclosure Schedule are true, complete and correct copies of all agreements between Company and the Company Financial Advisor. Other than as attached hereto as Schedule 4.20(b) of the Company Disclosure Schedule, there are no other agreements between Company and the Company Financial Advisor.

Section 4.21 *Certain Business Practices*. Neither Company nor any directors, officers, agents or employees of Company (in their capacities as such) has (i) used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses relating to political activity or (ii) made any unlawful payment to foreign or domestic government officials or employees or to foreign or domestic political parties or campaigns or violated any provision of the Foreign Corrupt Practices Act of 1977, as amended.

Section 4.22 *Business Activity Restriction*. Except as set forth on the Company Disclosure Schedule, Company has not entered into any agreement under which Company is restricted from selling, licensing or otherwise distributing any of its technology or products to, or providing services to, customers or potential customers or any class of customers, in any geographic area, during any period of time or in any segment of the market or line of business.

Section 4.23 *Interested Party Transactions*. Except as set forth in Section 4.23 of the Company Disclosure Schedule or in the Company Reports, since December 31, 2003, no event has occurred that would be required to be reported as a Certain Relationship or Related Transaction pursuant to Statement of Financial Accounting Standards No. 57.

ARTICLE V

REPRESENTATIONS AND WARRANTIES

OF PARENT AND MERGER SUB

Each of Parent and Merger Sub hereby represents and warrants to Company, subject to the exceptions specifically disclosed in the Parent Disclosure Schedule, all such exceptions to be referenced to a specific representation set forth in this Article V, that:

Section 5.01 *Organization and Qualification; Subsidiaries*. Parent and each directly and indirectly owned Parent Subsidiary, including Merger Sub, has been duly organized and is validly existing and in good standing (to the extent applicable) under the laws of the jurisdiction of its incorporation or organization, as the case may be, and has the requisite corporate power and authority and all necessary governmental approvals to own, lease and operate its properties and to carry on its business

Edgar Filing: NANOGEN INC - Form S-4/A

as it is now being conducted. Parent and each Parent Subsidiary, including Merger Sub, is duly qualified or licensed to do business, and is in good standing (to the extent applicable), in each jurisdiction where the character of the properties owned, leased or operated by it or the nature of its business makes such qualification, licensing or good standing necessary, except for such failures to be so qualified or licensed and in good standing that could not reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect. The most recent copies of Parent's Certificate of Incorporation and Bylaws that are listed as exhibits in the Parent Reports are true and correct copies thereof as in effect on the date hereof. Parent is not in violation of any of the provisions of such Certificate of Incorporation or Bylaws.

Section 5.02 *Capitalization*.

A-30

Table of Contents

(a) The authorized capital stock of Parent consists of 50,000,000 shares of Parent Common Stock and 5,000,000 shares of preferred stock, par value \$0.001 per share (**Parent Preferred Stock**). As of the date hereof (i) 33,377,893 shares of Parent Common Stock are issued and outstanding, all of which are validly issued, fully paid and nonassessable, (ii) 500,189 shares of Parent Common Stock are held in the treasury of Parent, (iii) no shares of Parent Common Stock are held by the Parent Subsidiaries, (iv) 5,176,458 shares of Parent Common Stock are reserved for future issuance pursuant to outstanding options (**Parent Stock Options**), and warrants to purchase Parent Common Stock; (v) 187,514 shares of Parent Common Stock were available for future issuance pursuant to the Parent Employee Stock Purchase Plan (**Parent ESPP**) and (vi) no shares of Parent Preferred Stock are issued and outstanding. Each outstanding share of Parent Common Stock is duly authorized, validly issued, fully paid and nonassessable and not subject to or issued in violation of any purchase option, call option, right of first refusal, pre-emptive right or similar right under Delaware law, the Parent's Certificate of Incorporation, Bylaw or Contract to which the Parent is a party or otherwise bound. None of the outstanding shares of Parent's common stock has been issued in violation of any federal or state securities laws.

(b) Except for the shares of Parent Common Stock issuable pursuant to the Parent Stock Plans and the Parent ESPP, there are no options, warrants or other rights, agreements, arrangements or commitments of any character to which Parent is a party or by which Parent is bound relating to the issued or unissued capital stock of Parent or any Parent Subsidiary or obligating Parent or any Parent Subsidiary to issue or sell any shares of capital stock of, or other equity interests in, Parent or any Parent Subsidiary. All shares of Parent Common Stock subject to issuance as aforesaid, upon issuance prior to the Effective Time on the terms and conditions specified in the instruments pursuant to which they are issuable, will be duly authorized, validly issued, fully paid and nonassessable.

(c) There are no outstanding contractual obligations of Parent or any Parent Subsidiary to repurchase, redeem or otherwise acquire any shares of Parent Common Stock or any capital stock of any Parent Subsidiary. Each outstanding share of capital stock of each Parent Subsidiary is duly authorized, validly issued, fully paid and nonassessable and each such share owned by Parent or another Parent Subsidiary is free and clear of all security interests, liens, claims, pledges, options, rights of first refusal, agreements, limitations on Parent's or such other Parent Subsidiary's voting rights, charges and other encumbrances of any nature whatsoever. There are no material outstanding contractual obligations of Parent or any Parent Subsidiary to provide funds to, or make any material investment (in the form of a loan, capital contribution or otherwise) in, any Parent Subsidiary or any other Person.

(d) Parent is not a party to or bound by any agreement with respect to the voting (including voting trusts or proxies), registration under the Securities Act, or sale or transfer (including agreements relating to pre-emptive rights, rights of first refusal, co-sale rights or drag-along rights) of any securities of Parent or any Parent Subsidiary. To the Knowledge of Parent, there are no agreements

among other parties, to which Parent is not a party and by which it is not bound, with respect to the voting (including voting trusts or proxies) or sale or transfer (including agreement relating to rights of first refusal, co-sale rights or drag-along rights) of any securities of Parent or any Parent Subsidiary.

(e) Parent Common Stock and the Preferred Stock Purchase Rights of Parent constitute the only class of securities of the Parent or any Parent Subsidiaries registered or required to be registered under the Exchange Act.

(f) All of the shares of Parent Common Stock to be issued (i) in connection with the Merger, when issued in accordance with this Agreement, and (ii) upon the conversion of any Company Option or Company Warrant into an option or warrant, as the case may be, to purchase shares of Parent Common Stock in accordance with Section 3.05, when issued upon exercise thereof following the Effective Time, will be validly issued, fully paid and nonassessable and will not be subject to preemptive rights or similar contractual rights granted by Parent.

Table of Contents

Section 5.03 *Authority Relative to This Agreement*. Each of Parent and Merger Sub has all necessary corporate power and authority to execute and deliver this Agreement, to perform its obligations hereunder and to consummate the transactions contemplated hereby. The execution and delivery of this Agreement by each of Parent and Merger Sub and the consummation by Parent and Merger Sub of the transactions contemplated hereby have been duly and validly authorized by all necessary corporate action, and no other corporate proceedings on the part of Parent or Merger Sub are necessary to authorize this Agreement or to consummate such transactions (other than the consent of Parent as sole stockholder of Merger Sub and the approval of the Parent Share Increase (as defined in Section 7.01) and the Share Issuance (as defined in Section 7.01) by the requisite vote of stockholders of Parent at the Parent Stockholders Meeting (as defined in Section 7.01) and the filing and recordation of the Certificate of Merger as required by Delaware Law). This Agreement has been duly executed and delivered by each of Parent and Merger Sub and, assuming the due authorization, execution and delivery by Company, constitutes a legal, valid and binding obligation of each of Parent and Merger Sub enforceable against Parent and Merger Sub in accordance with its terms, except to the extent that enforceability hereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting the enforcement of creditors' rights generally and by principles of equity regarding the availability of remedies. The affirmative vote of holders of a majority of the outstanding shares of Parent Common Stock in favor of the Parent Share Increase and the affirmative vote of a majority of the total votes cast by the holders of Parent Common Stock in favor of the Share Issuance is the only vote of the holders of any class or series of capital stock of Parent necessary to approve this Agreement and the transactions contemplated hereby, including the Merger. The board of directors of Parent, by resolutions duly adopted by unanimous vote at a meeting duly called and held and not subsequently rescinded or modified in any way, has duly approved the Parent Share Increase and the Share Issuance and has duly resolved to recommend that the stockholders of Parent vote for approval of the Parent Share Increase and the Share Issuance.

Section 5.04 *No Conflict; Required Filings and Consents*.

(a) The execution and delivery of this Agreement by Parent and Merger Sub does not, and the performance by Parent and Merger Sub of their obligations hereunder and the consummation of the Merger will not, (i) conflict with or violate any provision of the certificate of incorporation or bylaws of Parent, (ii) assuming that all consents, approvals, authorizations and permits described in Section 5.04(b) have been obtained and all filings and notifications described in Section 5.04(b) have been made, conflict with or violate any Law applicable to Parent or by which any property or asset of Parent is bound or affected or (iii) result in any breach of or constitute a default (or an event which with the giving of notice or lapse of time or both could reasonably be expected to become a default) under, or

give to others any right of termination, amendment, acceleration or cancellation of, or result in the creation of a lien or other encumbrance on any property or asset of Parent pursuant to, any note, bond, mortgage, indenture, contract, agreement, lease, license, permit, franchise or other instrument or obligation.

(b) The execution and delivery of this Agreement by Parent and Merger Sub does not, and the performance by Parent and Merger Sub of their obligations hereunder and the consummation of the Merger will not, require any consent, approval, authorization or permit of, or filing by Parent with or notification by Parent to, any Governmental Entity, except pursuant to applicable requirements of the Exchange Act, the Securities Act, Blue Sky Laws, the rules and regulations of the NNM, the premerger notification requirements of the HSR Act, if any, and the filing and recordation of the Certificate of Merger as required by Delaware Law.

Section 5.05 *Permits; Compliance with Laws*. Each of Parent and each Parent Subsidiary is in possession of all franchises, grants, authorizations, licenses, establishment registrations, product listings, permits, variances, exemptions, certificates, easements, consents, clearances, approvals and orders of any Governmental Entity necessary for Parent or any Parent Subsidiary to test, manufacture, market, sell, or distribute its products, to own, lease and operate its properties and assets, or otherwise carry on its business as it is now being conducted, except where the failure to hold such permit could not reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect (collectively, the **Parent Permits**). All such Parent Permits are in full force and

Table of Contents

effect. As of the date of this Agreement, none of the Parent Permits has been withdrawn, revoked, suspended or cancelled nor is any such withdrawal, revocation, suspension or cancellation pending or, to the Knowledge of Parent or any Parent Subsidiary, threatened in writing. Neither Parent nor any Parent Subsidiary is in conflict with, or in default or violation of, (i) any Parent Permit or (ii) any Law applicable to Parent or any Parent Subsidiary or by which any property or asset of Parent or any Parent Subsidiary is bound or affected, except for such conflicts, defaults or violations of Law that could not reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect. Since December 31, 2000, neither Parent nor any Parent Subsidiary has received from any Governmental Entity any notice or other with respect to possible or actual conflicts, defaults or violations of any Laws.

Section 5.06 *Absence of Certain Changes or Events*. Except as otherwise set forth on Schedule 5.06 of the Parent Disclosure Schedule, since June 30, 2004, Parent and the Parent Subsidiaries have conducted their businesses only in the ordinary course consistent with past practice and, since such date, there has not been (i) any Parent Material Adverse Effect, (ii) any event that could reasonably be expected to prevent or materially delay the performance of Parent's obligations pursuant to this Agreement and the consummation of the Merger by Parent, (iii) any material change by Parent in its accounting methods, principles or practices, (iv) any declaration, setting aside or payment of any dividend or distribution in respect of the shares of Parent Common Stock or any redemption, purchase or other acquisition of any of Parent's securities, other than unvested shares of Parent Common Stock repurchased by the Parent, at the original price paid per share, from employees, consultants and directors upon the termination of their service relationship with the Parent or any Parent Subsidiary, (v) any issuance or sale of any stock, notes, bonds or other securities other than pursuant to the exercise of stock options currently outstanding or hereafter granted under the Parent Stock Plans or purchase rights currently outstanding or hereafter granted under the Parent ESPP, or entering into any agreement with respect thereto, (vi) any amendment to the Parent's certificate of incorporation or bylaws, (vii) other than in the ordinary course of business consistent with past practices, any (a) purchase, sale, assignment or transfer of any material assets, (b) mortgage, pledge or the institution of any lien, encumbrance or charge on any material assets or properties, tangible or intangible, except for liens for taxes not yet delinquent and such other liens, encumbrances or charges which do not, individually or in the aggregate, have a Parent Material Adverse Effect, or (c) waiver of any rights of material value or cancellation or any material debts or claims,

(viii) any incurrence of any material liability (absolute or contingent), except for current liabilities and obligations incurred in the ordinary course of business consistent with past practice, or (ix) any incurrence of any damage, destruction or similar loss, whether or not covered by insurance, that individually or in the aggregate would have a Parent Material Adverse Effect.

Section 5.07 *SEC Filings; Financial Statements; Sarbanes-Oxley*.

(a) Parent has timely filed all forms, reports, statements and documents required to be filed by it (A) with the SEC and the NNM since January 1, 2001 (collectively, together with any such forms, reports, statements and documents Parent may file subsequent to the date hereof until the Closing, the **Parent Reports**). Each Parent Report (i) at the time it was filed, complied in all material respects with the requirements of the Securities Act, the Exchange Act or the NNM, as the case may be, and (ii) did not at the time it was filed contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. No Parent Subsidiary is subject to the periodic reporting requirements of the Exchange Act or required to file any form, report or other document with the SEC, the NNM, any other stock exchange or any other comparable Governmental Entity. Since January 1, 2001 there have been no comment letters received by Parent from the staff of the SEC or responses to such comment letters by or on behalf of Parent that have not been made available to Company. For purposes of this Section 5.07, the term file shall be broadly construed to include any manner in which a document or information is furnished, supplied or otherwise made available in writing to the SEC.

(b) Each of the consolidated financial statements (including, in each case, any notes thereto) contained in the Parent Reports was prepared in accordance with U.S. GAAP (except, in the case of unaudited financial

Table of Contents

statements, for the absence of footnotes and subject to normal year-end adjustments, which adjustments are not material), applied on a consistent basis throughout the periods indicated (except as may be indicated in the notes thereto) and presented fairly the consolidated financial position of Parent and the Parent Subsidiaries as at the respective dates thereof, and their consolidated results of operations, stockholders' equity and cash flows for the respective periods indicated therein, except as otherwise noted therein (subject, in the case of unaudited statements, to normal and recurring immaterial year-end adjustments).

(c) Except as and to the extent set forth or reserved against on the consolidated balance sheet of Parent and the Parent Subsidiaries as of June 30, 2004 as reported in the Parent Reports, none of Parent or any Parent Subsidiary has any liabilities or obligations of any nature (whether accrued, absolute, contingent or otherwise) that would be required to be reflected on a balance sheet or in notes thereto prepared in accordance with U.S. GAAP, except for (i) liabilities or obligations incurred in the ordinary course of business consistent with past practice since June 30, 2004 or (ii) liabilities or obligations that could not reasonably be expected to have a Parent Material Adverse Effect.

(d) Neither Parent nor any Parent Subsidiaries is a party to, or has any commitment to become a party to, any joint venture, partnership agreement or any similar Contract (including any Contract relating to any transaction, arrangement or relationship between or among Parent or any Parent Subsidiary, on the one hand, and any unconsolidated Affiliate, including any structured finance, special purpose or limited purpose entity or person, on the other hand) where the purpose or intended effect of such arrangement is to avoid disclosure of any material transaction involving Parent or any Parent Subsidiary in the consolidated financial statements contained in the Parent Reports.

(e) Parent and each of its officers and directors are in compliance with, and have complied, in all material respects with (A) the applicable provisions of the Sarbanes-Oxley Act or the

Exchange Act and (B) the applicable listing and corporate governance rules and regulations of the NNM. Except as disclosed in the Parent Reports, there are no outstanding loans made by Parent or any Parent Subsidiary to any executive officer (as defined under Rule 3b-7 under the Exchange Act) or director of Parent or any Parent Subsidiary. Since the enactment of the Sarbanes-Oxley Act, neither Parent nor any Parent Subsidiary has made any loans to any executive officer or director of Parent or any Parent Subsidiary. Parent has established and maintains disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Exchange Act); such disclosure controls and procedures are designed to ensure that information relating to Parent, including its consolidated Parent Subsidiaries, required to be disclosed by Parent in the reports that it files or submits under the Exchange Act is accumulated and communicated to Parent principal executive officer and its principal financial officer to allow timely decisions regarding required disclosure, and such disclosure controls and procedures are effective to ensure that information required to be disclosed by Parent in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms. Parent has established and maintains internal control over financial reporting (as such term is defined in Rule 13a-15(f) under the Exchange Act); such internal controls are designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP. Parent's principal executive officer and its principal financial officer have disclosed, based on their most recent evaluation, to Parent's auditors and the audit committee of the board of directors of Parent (x) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect Parent's ability to record, process, summarize and report financial data and have identified for Parent's auditors any material weaknesses in internal controls and (y) any fraud, whether or not material, that involves management or other employees who have a significant role in Parent's internal controls. Parent has delivered to Company a correct and complete summary of any such disclosure made by management of Parent to Parent's auditors and audit committee since January 1, 2001. Since January 1, 2001, neither Parent nor any of its Subsidiaries nor, to Parent's Knowledge, any director, officer, employee, auditor, accountant or representative of Parent or any of its Subsidiaries has received or otherwise had or obtained Knowledge of any material complaint, allegation, assertion or claim, whether written or oral, regarding the accounting or auditing practices, procedures,

Table of Contents

methodologies or methods of Parent or any of Parent Subsidiaries or their respective internal accounting controls, including any material complaint, allegation, assertion or claim that Parent or any of Parent Subsidiaries has engaged in questionable accounting or auditing practices. No attorney representing Parent or any of Parent Subsidiaries, whether or not employed by Parent or any of Parent Subsidiaries, has reported evidence of a material violation of securities Laws, breach of fiduciary duty or similar violation by Parent or any of its officers, directors, employees or agents to the board of directors of Parent or any committee thereof or to any director or officer of Parent. For purposes of this paragraph, principal executive officer and principal financial officer shall have the meanings given to such terms in the Exchange Act.

Section 5.08 *Litigation*. There is no suit, claim, action, proceeding or investigation pending or, to the Knowledge of Parent, threatened in writing against Parent or any Parent Subsidiary that could reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect or materially interfere with Parent's ability to consummate the transactions contemplated herein. Neither Parent nor any Parent Subsidiary is subject to any outstanding order, writ, injunction or decree which could reasonably be expected to have, individually or in the aggregate, a Parent Material Adverse Effect or materially interfere with Parent's ability to consummate the transactions contemplated herein.

Section 5.09 *Intellectual Property*.

(a) All patents and applications therefor and all reissues, divisions, renewals, extensions, provisionals, continuations and continuations-in-part thereof, registered trademarks and applications or registrations therefor and registered copyrights and applications therefor owned or controlled by the Parent (collectively, **Parent Registered Intellectual Property**), together with any other type of rights in Intellectual Property that are owned or controlled by Parent or any Parent Subsidiary that (x) relate to any Parent or Parent Subsidiary product, or (y) are otherwise material to the research, development, manufacturing or commercialization of any Parent or Parent Subsidiary product, are collectively referred to herein as **Parent Intellectual Property Rights**. Except to the extent listed in Schedule 5.10(a) of the Parent Disclosure Schedule, all Parent Intellectual Property Rights are either (i) owned by, or subject to an obligation of assignment to, Parent or a Parent Subsidiary free and clear of all mortgages, liens, security interests, leases, pledges, encumbrances, equities, claims, charges, options, written restrictions, rights of first refusal, title retention agreements or other exceptions to title which affect the Parent Intellectual Property Rights or restrict the use by Parent or any Parent Subsidiary of the Parent Intellectual Property Rights in any material way (**Parent IP Liens**), or (ii) controlled by Parent or a Parent Subsidiary free and clear (to the Knowledge of Parent) of all Parent IP Liens. To the Knowledge of Parent, Parent owns or has a valid license or other right to use all Intellectual Property necessary to conduct the business of Parent and the Parent Subsidiaries as presently conducted. Parent is in material compliance with all agreements under which such third party Intellectual Property Rights are used and has not received notice of breach or termination from any such third party. There are no actions pending or, to the Knowledge of Parent, threatened with regard to the ownership or control by Parent or any Parent Subsidiary of any Parent Intellectual Property Rights, or, to the knowledge of Parent, with respect to third party's Intellectual Property licensed to, or otherwise used by, Parent.

(b) To the Knowledge of Parent, the Parent Intellectual Property Rights have not been, and are not being, infringed.

(c) There are no pending or, to the Knowledge of Parent or any Parent Subsidiary, threatened claims that Parent has infringed or is infringing (including with respect to the manufacture, use, sale or importation by Parent or any Parent Subsidiary of any commercial products or to the operations of Parent and Parent Subsidiary) any Intellectual Property of any person. To the Knowledge of Parent, there are no patent rights of any third party known to be dominating, interfering, or potentially dominating or interfering and that could be asserted by a person to exclude or prevent Parent or licensees from researching, developing, manufacturing or commercializing Parent or any Parent Subsidiary products.

(d) All material patents and applications therefor owned by Parent (and, to Parent's Knowledge after due inquiry, all such material patents and applications otherwise controlled by Parent) have been duly filed with or issued by each appropriate Governmental Entity in any jurisdiction in which Parent has, or is, pursuing patent

Table of Contents

protection (and, to Parent's Knowledge after due inquiry, with respect to such patents and applications otherwise controlled by Parent) have been timely filed, and all necessary maintenance fees timely paid to continue all such rights in effect. None of the patents material to the operation of Parent's business have expired or been declared invalid, in whole or in part, by any Governmental Entity. To the Knowledge of Parent, there are no ongoing interferences, oppositions, reissues, or reexaminations or other inter partes proceedings which could result in a loss or limitation of a patent right or claim involving any of the patents or patent applications material to the operation of Parent's business.

(e) To the Knowledge of Parent, there are no published patents, patent applications, articles or other prior art references, or any other prior art or material information, that could render invalid in whole or in part any patent owned by Parent and material to the operation of Parent's business, or any claim therein. Parent has met its duty of candor as required under applicable Law and complied

with analogous laws outside the U.S. requiring disclosure of references. To the Knowledge of Parent, each of the patents and patent applications material to the operation of Parent's business that were filed by Parent properly identifies each and every inventor of the claims thereof as determined in accordance with the laws of the jurisdiction in which such patent is issued or such patent application is pending.

(f) Each inventor named on the patents and patent applications owned by Parent and material to the operation of the Parent's business that were filed by Parent, alone or together with any joint owners, has executed an agreement agreeing to assign or actually assigning his or her entire right, title and interest in and to such patent or patent application, and the inventions embodied and claimed therein, to Parent, alone or together with any joint owners as appropriate. To the Knowledge of Parent, no such inventor has any contractual or other obligation that would preclude any such assignment or otherwise conflict with the obligations of such inventor to Parent.

(g) Parent and any Parent Subsidiary have used commercially reasonable efforts to maintain their confidential information and trade secrets in confidence, including entering into licenses and contracts that generally require licensees, contractors and other third persons with access to such trade secrets to keep such trade secrets confidential.

Section 5.10 *Certain Tax Matters*. Neither Parent nor, to the Knowledge of Parent, any of its Affiliates has taken or agreed to take any action (other than actions contemplated by this Agreement) that could reasonably be expected to prevent the Merger from constituting a reorganization under Section 368 of the Code. Parent is not aware of any agreement or plan to which Parent or any of its Affiliates is a party or other circumstances relating to Parent or any of its Affiliates that could reasonably be expected to prevent the Merger from so qualifying as a reorganization under Section 368 of the Code.

Section 5.11 *Brokers*. No broker, finder or investment banker (other than Seven Hills Group, LLC) is entitled to any brokerage, finder's or other fee or commission in connection with the Merger based upon arrangements made by or on behalf of Parent.

Section 5.12 *Certain Business Practices*. Neither Parent nor any Parent Subsidiary nor any directors, officers, agents or employees of Parent or any Parent Subsidiary (in their capacities as such) has (i) used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses relating to political activity or (ii) made any unlawful payment to foreign or domestic government officials or employees or to foreign or domestic political parties or campaigns or violated any provision of the Foreign Corrupt Practices Act of 1977, as amended.

Section 5.13 *Opinion of Financial Advisor*. Seven Hills Partners (**Parent Financial Advisor**) has delivered to the board of directors of Parent its opinion to the effect that, as of the date of such opinion, the Exchange Ratio to be paid by Parent is fair to Parent from a financial point of view.

Table of Contents

Section 5.14 *Interested Party Transactions*. Except as set forth in Section 5.16 of the Parent Disclosure Schedule or in the Parent Reports, since December 31, 2003, no event has occurred that would be required to be reported as a Certain Relationship or Related Transaction pursuant to Statement of Financial Accounting Standards No. 57.

Section 5.15 *No Prior Activities*. Except for liabilities incurred in connection with its incorporation or organization, and consummation of this Agreement and the transactions contemplated hereby, Merger Sub has not incurred any liabilities, and has not engaged in any business or activities of any type or kind whatsoever or entered into any agreements or arrangements with any Person or entity. Merger Sub is a wholly owned Subsidiary of Parent.

ARTICLE VI

COVENANTS

Section 6.01 *Conduct of Business of Company Pending the Closing*. Company agrees that, between the date of this Agreement and the Effective Time, except as (i) expressly contemplated or permitted by this Agreement, (ii) required by applicable law, rule or regulation, (iii) set forth in Company Disclosure Schedule or (iv) agreed to in writing by Parent (x) the business of Company shall be conducted only in, and Company shall not take any action except in, the ordinary course of business consistent with past practice and (y) Company shall use its reasonable efforts to keep available the services of such of the current officers, significant employees and consultants of Company and to preserve the current relationships of Company with such of the corporate partners, customers, suppliers and other Persons with which Company has significant business relations in order to preserve substantially intact its business organization. Without limitation, except as (i) expressly contemplated or permitted by this Agreement, (ii) required by applicable law, rule or regulation, (iii) set forth in Company Disclosure Schedule or (iv) agreed to in writing by Parent, Company shall not, between the date of this Agreement and the Effective Time, directly or indirectly, do, or agree to do, any of the following without the prior written consent of Parent:

(a) amend or otherwise change its certificate of incorporation or bylaws or equivalent organizational documents;

(b) issue, sell, pledge, dispose of, grant, transfer or encumber, or authorize the issuance, sale, pledge, disposition, grant, transfer or Encumbrance of, any shares of capital stock of Company of any class, or securities convertible into or exchangeable or exercisable for any shares of such capital stock, or any options, warrants or other rights of any kind to acquire any shares of such capital stock, or any other ownership interest (including, without limitation, any phantom interest), of Company, other than (i) the granting of options to employees of Company hired between the date of this Agreement and the Effective Time (other than officers and directors) in the ordinary course of business and consistent with past practice to purchase up to 100,000 shares of Company Common Stock in the aggregate, provided each such option grant has an exercise price per share not less than the fair market value per share of Company Common Stock on the grant date, has a vesting or exercise schedule no more favorable to the optionee than 25% vesting/exercisability upon completion of one year of employment with Company following the grant date and equal monthly vesting/exercisability of the remaining 75% upon the completion of each of the next 36 months of continued employment with Company thereafter, and does not have any vesting/exercisability acceleration features or cash-out provisions (other than such vesting/exercisability acceleration features that are contained in the standard form of stock option agreement for the 2003 Stock Incentive Plan), and (ii) the issuance of shares of Company Common Stock pursuant to the exercise of stock options, warrants or convertible securities outstanding as of the date hereof and set forth in Schedule 4.03 of the Company Disclosure Schedule;

(c) directly or indirectly sell, lease, sell and leaseback, mortgage or otherwise encumber or subject to an Encumbrance or otherwise dispose of any of the properties or assets of Company or any interest therein, other

Table of Contents

than (i) transactions pursuant to existing contracts and (ii) dispositions, leases or licenses of inventory in the ordinary course of business consistent with past practice;

(d) (i) acquire (including, without limitation, by merger, consolidation, or acquisition of stock or assets) any interest in any corporation, partnership, other business organization or Person or any division thereof, other than the purchase of assets in the ordinary course of business consistent with past practice; (ii) incur any indebtedness for borrowed money or issue any debt securities or assume,

guarantee or endorse, or otherwise as an accommodation become responsible for, the obligations of any Person for borrowed money, other than borrowings under any renewal or extension of previously existing credit arrangements not in excess of \$250,000 in the aggregate, or make any loans or advances material to the business, assets, liabilities, financial condition or results of operations of Company, taken as a whole; (iii) make or authorize any capital expenditure, other than capital expenditures in the ordinary course of business consistent with past practice and that are not, in the aggregate, in excess of \$250,000 for Company taken as a whole; or (iv) enter into or amend any Contract that, if fully performed, would not be permitted under this Section 6.01(d);

(e) adopt a plan of complete or partial liquidation, dissolution, consolidation, restructuring or recapitalization of Company or otherwise permit the corporate existence of Company to be suspended, lapsed or revoked;

(f) enter into, modify, amend or terminate (i) any Contract which if so entered into, modified, amended or terminated would (A) have a Company Material Adverse Effect, or (B) impair in any material respect the ability of Company to perform its obligations under this Agreement or (ii) except in the Ordinary Course of Business, any Material Contract;

(g) declare, set aside, make or pay any dividend or other distribution, payable in cash, stock, property or otherwise, with respect to any of its capital stock, except that any Company Subsidiary may pay dividends or make other distributions to Company or any other Company Subsidiary;

(h) reclassify, combine, split or subdivide any of its capital stock or issue or authorize the issuance of any other securities in respect of, in lieu of, or in substitution for the shares of its capital stock or any of its other securities;

(i) accelerate, amend or change the period of exercisability for options granted under the Company Stock Plans or authorize cash payments in exchange for any Company Options granted under any of such plans or accelerate or modify the vesting schedule in effect for outstanding unvested stock issuances under the Company Stock Plans;

(j) amend the terms of, repurchase, redeem or otherwise acquire, or permit any Company Subsidiary to repurchase, redeem or otherwise acquire, any of its securities or any securities of any Company Subsidiary, except repurchases of unvested shares at the original price paid per share, from employees, consultants and directors upon the termination of their service relationship with Company or any Company Subsidiary;

(k) increase the compensation or benefits payable or to become payable to its directors, officers, consultants or employees (other than in the ordinary course of business consistent with the past practices of the Company), grant any rights to severance or termination pay to, or enter into any employment or severance agreement which provides benefits upon a change in control of Company that would be triggered by the Merger (whether alone or in conjunction with any additional or subsequent event, including (without limitation) termination of employee or service

Edgar Filing: NANOGEN INC - Form S-4/A

status) with, any current or former director, officer, consultant or other employee of Company who is not currently entitled to such benefits, establish, adopt, enter into or amend any collective bargaining, bonus, profit sharing, thrift, compensation, stock option, restricted stock, phantom stock, pension, retirement, deferred compensation, employment, termination, severance or other plan, agreement, trust, fund, policy or arrangement for the benefit of any current or former director, officer, consultant or employee of

A-38

Table of Contents

Company, or enter into or amend any contract, agreement, commitment or arrangement between Company and any of Company's directors, officers, consultants or employees; provided, however, that the Company may make payments under its 2004 Bonus Plan prior to the Closing in an aggregate dollar amount not to exceed \$550,000, the amounts of such payments to be determined on a basis consistent with past practices;

(l) pay, discharge or satisfy any claims, liabilities or obligations (absolute, accrued, asserted or unasserted, contingent or otherwise), other than the payment, discharge or satisfaction of claims, liabilities or obligations in the ordinary course of business and consistent with past practice;

(m) except as required by any Governmental Entity or by U.S. GAAP, make any material change with respect to Company's accounting policies, principles, methods or procedures, including, without limitation, revenue recognition policies;

(n) maintain insurance at less than current levels or otherwise in a manner inconsistent with past practice in any material respect;

(o) make or rescind any material election relating to Taxes or settle or compromise any material Tax liability or enter into any closing or other agreement with any Tax authority with respect to any material Tax liability, or file or cause to be filed any material amended Tax return, file or cause to be filed any claim for material refund of Taxes previously paid, or agree to an extension of a statute of limitations with respect to the assessment or determination of Taxes;

(p) fail to file any material Tax returns when due, fail to cause such Tax returns when filed to be materially true, correct and complete, prepare or fail to file any Tax return in a manner inconsistent with past practices in preparing or filing similar Tax returns in prior periods or, on any such Tax return of Company, take any position, make any election, or adopt any method that is inconsistent with positions taken, elections made or methods used in preparing or filing similar Tax returns in prior periods, in each case, except to the extent required by applicable Legal Requirements, or fail to pay any material Taxes when due; or

(q) authorize or enter into any formal or informal agreement or otherwise make any commitment to do any of the foregoing or to take any action which would make any of the representations or warranties of Company contained in this Agreement untrue or incorrect or prevent Company from performing or cause Company not to perform its covenants hereunder or result in any of the conditions to the Merger set forth herein not being satisfied.

Section 6.02 Conduct of Business of Parent Pending the Closing. Parent agrees that, between the date of this Agreement and the Effective Time, except as (i) expressly contemplated or permitted by this Agreement, (ii) required by applicable law, rule or regulation, (iii) set forth in the Parent Disclosure Schedule or (iv) agreed to in writing (x) the respective businesses of Parent and the Parent Subsidiaries shall be conducted only in, and Parent and the Parent Subsidiaries shall not take any action except in, the ordinary course of business consistent with past practice and (y) Parent shall use its reasonable efforts to keep available the services of such of the current officers, significant employees and consultants of Parent and the Parent Subsidiaries and to preserve the current relationships of Parent and the Parent Subsidiaries with such of the corporate partners, customers, suppliers and other Persons with which Parent or any Parent Subsidiary has significant business relations in order to preserve substantially intact its business organization. Without limitation, except as (i) expressly contemplated or permitted by this Agreement, (ii) required by applicable law, rule or regulation, (iii) set forth in the Parent Disclosure Schedule or (iv) agreed to in writing, Parent and the Parent Subsidiaries shall not, between the date of this Agreement and the Effective Time, directly or indirectly, do, or agree to do, any of the following without the prior written consent of Company:

Edgar Filing: NANOGEN INC - Form S-4/A

(a) amend or otherwise change its certificate of incorporation or bylaws of Parent;

A-39

Table of Contents

(b) issue, sell, pledge, dispose of, grant, transfer or encumber, or authorize the issuance, sale, pledge, disposition, grant, transfer or Encumbrance of, any shares of capital stock of Parent or any Parent Subsidiary of any class, or securities convertible into or exchangeable or exercisable for any shares of such capital stock, or any options, warrants or other rights of any kind to acquire any shares of such capital stock, or any other ownership interest (including, without limitation, any phantom interest), of Parent or any Parent Subsidiary, other than (i) the issuance of shares of Parent Common Stock pursuant to the exercise of Parent Options, (ii) the issuance of shares of Parent Common Stock pursuant to Parent ESPP, (iii) the issuance of shares of Parent Common stock pursuant to currently existing obligations, including outstanding warrants to purchase Parent Common Stock, or (iv) the issuance of Parent Options pursuant to the Parent Stock Plans to employees, non-employee directors or consultants of Parent after the date of this Agreement in a manner consistent with past practices;

(c) declare, set aside, make or pay any dividend or other distribution, payable in cash, stock, property or otherwise, with respect to any of its capital stock, except that any Parent Subsidiary may pay dividends or make other distributions to Parent or any other Parent Subsidiary;

(d) reclassify, combine, split or subdivide any of its capital stock or issue or authorize the issuance of any other securities in respect of, in lieu of, or in substitution for the shares of its capital stock or any of its other securities;

(e) adopt a plan of complete or partial liquidation, dissolution, consolidation, restructuring or recapitalization of Parent or any Parent Subsidiary or otherwise permit the corporate existence of Parent or any Parent Subsidiary to be suspended, lapsed or revoked;

(f) acquire or agree to acquire (x) by merging or consolidating with, or by purchasing a substantial portion of the assets of, any business or any corporation, partnership, limited liability company, joint venture, association or other business organization or division thereof or (y) any assets, in each case other than any such acquisitions or agreements (A) in the ordinary course of business consistent with past practice or (B) in the fields of molecular or proteomic diagnostic testing or related services with transaction values not in excess of \$3,000,000 in the aggregate;

(g) (i) except as set forth in Schedule 6.02(g) of the Parent Disclosure Schedule, incur any indebtedness for borrowed money or issue any debt securities or assume, guarantee or endorse, or otherwise as an accommodation become responsible for, the obligations of any Person for borrowed money in excess of \$100,000 in the aggregate or make any loans or advances material to the business, assets, liabilities, financial condition or results of operations of Parent and the Parent Subsidiaries, taken as a whole; and (ii) make or authorize any capital expenditure, other than capital expenditures in the ordinary course of business consistent with past practice and that are not, in the aggregate, in excess of \$500,000 in the aggregate for Parent and the Parent Subsidiaries, taken as a whole;

(h) except as required by any Governmental Entity or by U.S. GAAP, make any material change with respect to Parent's accounting policies, principles, methods or procedures, including, without limitation, revenue recognition policies;

(i) authorize any of, or commit or agree to take any of, the foregoing actions;

(j) authorize or enter into any formal or informal agreement or otherwise make any commitment to do any of the foregoing or to take any action which would make any of the representations or warranties of Parent contained in this Agreement untrue or incorrect or prevent Parent from performing or cause Parent not to perform its covenants hereunder or result in any of the conditions to the Merger set forth herein not being satisfied; or

(k) withdraw, modify or change its recommendation of either the Parent Share Increase or the Share Issuance in a manner adverse to Company or its stockholders.

A-40

Table of Contents

Section 6.03 *Notices of Certain Events*. Each of Parent and Company shall give prompt notice to the other of (i) any notice or other communication from any Person alleging that the consent of such Person is or may be required in connection with the Merger; (ii) any notice or other communication from any Governmental Entity in connection with the Merger; (iii) any actions, suits, claims, investigations or proceedings commenced or, to the Knowledge of Company or the Knowledge of Parent, as the case may be, threatened in writing against, relating to or involving or otherwise affecting Parent or the Parent Subsidiaries or Company, respectively, which, if pending on the date hereof, would have been required to have been disclosed in this Agreement, or that relate to the consummation of the Merger; (iv) the occurrence of a default or event that, with the giving of notice or lapse of time or both, will become a default under any Material Contract and (v) any change that would have a Parent Material Adverse Effect or a Company Material Adverse Effect, respectively, or to delay or impede the ability of either Parent or Company, respectively, to perform their respective obligations pursuant to this Agreement and to effect the consummation of the Merger.

Section 6.04 *Access to Information; Confidentiality*.

(a) Except as required pursuant to any confidentiality agreement or similar agreement or arrangement to which Parent or Company or any of the Parent Subsidiaries is a party or pursuant to applicable Law or the regulations or requirements of any stock exchange or other regulatory organization with whose rules a party hereto is required to comply, from the date of this Agreement to the Effective Time, Parent and Company shall (and Parent shall cause the Parent Subsidiaries to) (i) provide to the other (and its officers, directors, employees, accountants, financial advisors, consultants, legal counsel, agents and other representatives (collectively, ***Representatives***)) access at reasonable times upon prior notice to its and its subsidiaries' officers, employees, agents, properties, offices and other facilities and to the books and records thereof, and (ii) furnish promptly such information concerning its and its subsidiaries' business, properties, contracts, assets, liabilities and personnel as the other party or its Representatives may reasonably request. No investigation conducted pursuant to this Section 6.04 shall affect or be deemed to modify any representation or warranty made in this Agreement.

(b) The parties hereto shall comply with, and shall cause their respective Representatives to comply with, all of their respective confidentiality obligations under the Confidentiality Agreement with respect to the information disclosed pursuant to this Agreement.

Section 6.05 *No Solicitation of Transactions*.

(a) Company shall not, directly or indirectly, and shall cause its Representatives not to, directly or indirectly, solicit, initiate, facilitate or knowingly encourage (including by way of furnishing nonpublic information), any inquiries or the making of any proposal or offer (including, without limitation, any proposal or offer to its stockholders) that constitutes, or may reasonably be expected to lead to, any Company Competing Transaction, or enter into or maintain or continue discussions or negotiate with any Person in furtherance of such inquiries or to obtain a Company Competing Transaction, or agree to or endorse any Company Competing Transaction, or authorize or permit any of Company's Representatives to take any such action; provided, however, that nothing contained in this Section 6.05 shall prohibit the board of directors of Company (i) from complying with Rule 14d-9 or 14e-2(a) promulgated under the Exchange Act or (ii) prior to receipt of the approval by the stockholders of Company of this Agreement and the Merger from providing information (subject to a confidentiality agreement with confidentiality and standstill provisions at least as restrictive as those in the Confidentiality Agreement) in connection with, and negotiating, an unsolicited, bona fide written

proposal regarding a Company Competing Transaction which did not result from a breach of this Section 6.05 and that Company's board of directors shall have concluded in good faith (x) such unsolicited, bona fide written proposal constitutes, or is reasonably likely to lead to, a Company Superior Proposal and (y) the failure to take such action would breach the fiduciary duties of the Company's board of directors under applicable law.

Edgar Filing: NANOGEN INC - Form S-4/A

(b) Company shall not take any of the foregoing actions unless Company shall have delivered to Parent a prior written notice advising Parent that it intends to take such action. In addition, Company shall notify Parent

A-41

Table of Contents

promptly (but in no event later than one (1) Business Day) after receipt by Company (or any of its advisors) of any inquiry, proposal or offer relating to any Company Competing Transaction, any indication that any third party is considering making a Company Competing Transaction or of any written request for information relating to Company or for access to the business, properties, assets, books or records of Company by any third party that may be considering making, or has made, a Company Competing Transaction. Company shall provide such notice orally and in writing and shall identify the third party making, and the terms and conditions of, any such Company Competing Transaction, indication or request. Company shall use reasonable efforts to keep Parent fully informed, on a current basis, of the status and details of any such Company Competing Transaction, indication or request. Company shall not release any third party from, or waive any provision of, any confidentiality or standstill agreement to which it is a party. With respect to any Company Competing Transaction that constitutes a Company Superior Proposal, for a period of five (5) Business Days after such determination, the Company shall, if requested by Parent, negotiate in good faith to revise this Agreement so that Parent has the opportunity to make an offer that the Company Board may determine in its good faith judgment to be at least as favorable to the Company's stockholders as such Company Superior Proposal

Section 6.06 *Control of Operations*. Nothing contained in this Agreement shall give Parent, directly or indirectly, the right to control or direct the operations of Company prior to the Effective Time. Prior to the Effective Time, Company shall exercise, consistent with the terms and conditions of this Agreement, complete control and supervision over its operations.

Section 6.07 *Further Action; Consents; Filings*.

(a) Upon the terms and subject to the conditions hereof, each of the parties hereto shall use all commercially reasonable efforts to (i) take, or cause to be taken, all appropriate action, and do, or cause to be done, all things necessary, proper or advisable under applicable Law or otherwise to consummate and make effective the Merger, (ii) obtain from Governmental Entities any consents, licenses, permits, waivers, approvals, authorizations or orders required to be obtained or made by Parent or Company or any of their respective subsidiaries in connection with the authorization, execution and delivery of this Agreement and the consummation of the Merger and (iii) make all necessary filings, and thereafter make any other required or appropriate submissions, with respect to this Agreement and the Merger required under (A) the rules and regulations of the NNM or the NSCM, (B) the Securities Act, the Exchange Act and any other applicable Federal or state securities Laws, and (C) the HSR Act, if any, and (D) any other applicable Law. The parties hereto shall cooperate and consult with each other in connection with the making of all such filings, including by providing copies of all such documents to the nonfiling parties and their advisors prior to filing, and none of the parties shall file any such document if any of the other parties shall have reasonably objected to the filing of such document. No party shall consent to any voluntary extension of any statutory deadline or waiting period or to any voluntary delay of the consummation of the Merger at the behest of any Governmental Entity without the consent and agreement of the other parties hereto, which consent shall not be unreasonably withheld or delayed.

(b) Each of Company and Parent will give (or will cause their respective subsidiaries to give) any notices to third Persons, and use, and cause their respective subsidiaries to use, reasonable efforts to obtain any consents from third Persons necessary, proper or advisable to consummate the transactions contemplated by this Agreement.

Section 6.08 *Additional Reports*. Company and Parent shall each furnish to the other copies of any reports of the type referred to in Section 4.07 and Section 5.07, which it files with the SEC on or after the date hereof, and Company and Parent, as the case may be, covenant and warrant that as of the respective dates thereof, such reports will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading. Any interim financial statements included in such reports (including any related notes and schedules) will fairly present the financial position of Company or Parent and its consolidated subsidiaries, as the case may be, as of the dates thereof and the results of operations and changes in financial position or other

Table of Contents

information including therein for the periods or as of the date then ended (subject, where appropriate, to normal year-end adjustments), in each case in accordance with past practice and U.S. GAAP (except for the absence of footnotes) consistently applied during the periods involved (except as otherwise disclosed in the notes thereto).

ARTICLE VII

ADDITIONAL AGREEMENTS

Section 7.01 *Registration Statement; Joint Proxy Statement.*

(a) As promptly as practicable after the execution of this Agreement, Parent and Company shall jointly prepare and shall file with the SEC a document or documents that will constitute (i) the registration statement on Form S-4 of Parent (together with all amendments thereto, the **Registration Statement**), in connection with the registration under the Securities Act of Parent Common Stock to be issued to Company's stockholders pursuant to the Merger and (ii) the joint proxy statement with respect to the Merger relating to the special meetings of Company's stockholders to be held to consider approval of this Agreement and the Merger (the **Company Stockholders Meeting**) and of Parent's stockholders to be held to consider approval of an amendment to Parent's Certificate of Incorporation increasing the number of authorized shares of Parent Common Stock to the Proposed Authorized Share Number (as defined below) (the **Parent Share Increase**) and the issuance of Parent Common Stock (**Share Issuance**) to Company's stockholders pursuant to the Merger (the **Parent Stockholders Meeting**) (together with any amendments thereto, the **Joint Proxy Statement**). The **Proposed Authorized Share Number** shall be the greater of (a) 100,000,000 shares and (b) the maximum number of authorized shares of Parent Common Stock that Institutional Shareholder Services advises Parent it would recommend for approval by Parent's stockholders, which amount shall not exceed 200,000,000 shares. Copies of the Joint Proxy Statement shall be provided to the NNM or the NSCM in accordance with its rules. Each of the parties hereto shall use all reasonable efforts to cause the Registration Statement to become effective as promptly as practicable after the date hereof, and, prior to the effective date of the Registration Statement, the parties hereto shall take all action required under any applicable Laws in connection with the issuance of shares of Parent Common Stock pursuant to the Merger. Parent or Company, as the case may be, shall furnish all information concerning Parent or Company as the other party may reasonably request in connection with such actions and the preparation of the Registration Statement and the Joint Proxy Statement. Each of Parent and Company shall notify the other of the receipt of any comments from the SEC on the Registration Statement and the Joint Proxy Statement and of any requests by the SEC for any amendments or supplements thereto or for additional information and shall provide to each other promptly copies of all correspondence between Parent, Company or any of their representatives and advisors and the SEC. As promptly as practicable after the effective date of the Registration Statement, the Joint Proxy Statement shall be mailed to the stockholders

of Company and of Parent. Each of the parties hereto shall cause the Joint Proxy Statement to comply as to form and substance in all material respects with the applicable requirements of (i) the Exchange Act, (ii) the Securities Act, (iii) the rules and regulations of the NNM and the NSCM.

(b) The Joint Proxy Statement shall include (i) with respect to Company and its stockholders, (x) the approval of the Merger and the recommendation of the board of directors of Company to Company's stockholders that they vote in favor of approval of this Agreement and the Merger unless after considering applicable state law and the advice of independent outside legal counsel a withdrawal of such approval and recommendation is determined to be required in order to avoid breaching the fiduciary duties of the board of directors of Company under applicable law and (y) the opinion of Company Financial Advisor referred to in Section 4.19, and (ii) with respect to Parent and its stockholders, (x) the approval of the Parent Share Increase and the recommendation of the board of directors of Parent to Parent's stockholders, that they vote in favor of the Parent Share Increase, (y) the approval of the Share Issuance and the recommendation of the board of directors of Parent to Parent's stockholders that they vote in favor of approval of the Share Issuance, and (z) the opinion of the Parent Financial Advisor referred to in Section 5.15.

Table of Contents

(c) No amendment or supplement to the Joint Proxy Statement or the Registration Statement shall be made without the approval of Parent and Company, which approval shall not be unreasonably withheld or delayed. Each of the parties hereto shall advise the other parties hereto, promptly after it receives notice thereof, of the time when the Registration Statement has become effective or any supplement or amendment has been filed, of the issuance of any stop order, of the suspension of the qualification of the Parent Common Stock issuable in connection with the Merger for offering or sale in any jurisdiction, or of any request by the SEC for amendment of the Joint Proxy Statement or the Registration Statement or comments thereon and responses thereto or requests by the SEC for additional information.

(d) None of the information supplied by Company for inclusion or incorporation by reference in the Registration Statement or the Joint Proxy Statement shall, at the respective times filed with the SEC or other regulatory agency and, in addition, (A) in the case of the Joint Proxy Statement, at the date it or any amendments or supplements thereto are first mailed to stockholders of Company and Parent, at the time of the Company Stockholders Meeting, at the time of the Parent Stockholders Meeting and at the Effective Time and (B) in the case of the Registration Statement, when it becomes effective under the Securities Act and at the Effective Time, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they are made, not misleading. If at any time prior to the Effective Time any event or circumstance relating to Company, or its officers or directors, should be discovered by Company that should be set forth in an amendment or a supplement to the Registration Statement or the Joint Proxy Statement, Company shall promptly inform Parent. All documents that Company is responsible for filing with the SEC in connection with the Merger will comply as to form in all material respects with the applicable requirements of the rules and regulations of the Securities Act and the Exchange Act.

(e) None of the information supplied by Parent for inclusion or incorporation by reference in the Registration Statement or the Joint Proxy Statement shall, at the respective times filed with the SEC or other regulatory agency and, in addition, (A) in the case of the Joint Proxy Statement, at the date it or any amendments or supplements thereto are first mailed to stockholders of Company and Parent, at the time of the Company Stockholders Meeting, at the time of the Parent Stockholders Meeting and at the Effective Time and (B) in the case of the Registration Statement, when it becomes effective under the Securities Act and at the Effective Time, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the

statements therein, in light of the circumstances under which they are made, not misleading. If, at any time prior to the Effective Time, any event or circumstance relating to Parent or any Parent Subsidiary, or their respective officers or directors, should be discovered by Parent that should be set forth in an amendment or a supplement to the Registration Statement or the Joint Proxy Statement, Parent shall promptly inform Company. All documents that Parent is responsible for filing with the SEC in connection with the Merger will comply as to form in all material respects with the applicable requirements of the rules and regulations of the Securities Act and the Exchange Act.

Section 7.02 *Stockholders Meetings.* Company shall establish a record date for, duly call, give notice of, convene and hold the Company Stockholders Meeting, and Parent shall establish a record date for, duly call, give notice of, convene and hold the Parent Stockholders Meeting, as promptly as practicable after the date hereof for the purpose of voting upon the approval of this Agreement and the Merger or Parent Share Increase and the Share Issuance, as the case may be, pursuant to the Joint Proxy Statement, and Company and Parent shall use all reasonable efforts to hold the Company Stockholders Meeting and the Parent Stockholders Meeting on the same date and as soon as practicable after the date on which the Registration Statement becomes effective. Company shall, through its board of directors, recommend to its stockholders that they adopt and approve this Agreement and the Merger, and shall include such recommendation in the Joint Proxy Statement, in each case subject to its rights under Section 6.05, Section 7.01 and Section 7.02. Parent shall, through its board of directors, recommend to its stockholders that they adopt and approve the issuance of shares of Parent Common Stock, and shall include such recommendation in the Joint Proxy Statement. Except as otherwise contemplated by this

Table of Contents

Agreement, Company shall use all reasonable efforts to solicit from its stockholders proxies in favor of the approval of this Agreement and the Merger pursuant to the Joint Proxy Statement and shall take all other action necessary or advisable to secure the vote or consent of stockholders required by Delaware Law or applicable stock exchange requirements to obtain such approval. Except as otherwise contemplated by this Agreement Parent shall use all reasonable efforts to solicit from its stockholders proxies in favor of the Parent Stock Increase and the Share Issuance pursuant to the Joint Proxy Statement and shall take all other action necessary or advisable to secure the vote or consent of stockholders required by the Delaware Law, NNM or applicable stock exchange requirements to obtain such approval. Each of the parties hereto shall use reasonable efforts to take all other action necessary or, in the opinion of the other parties hereto, advisable to promptly and expeditiously secure any vote or consent of stockholders required by applicable Law and such party's certificate or certificate of incorporation and bylaws to effect the Merger or the Share Issuance, as the case may be.

Section 7.03 *Affiliates*. Parent shall be entitled to place legends on the certificates evidencing any of the Parent Common Stock to be received by (i) any Affiliate of Company or (ii) any Person Parent reasonably identifies (by written notice to Company) as being a Person who may be deemed an affiliate within the meaning of Rule 145 promulgated under the Securities Act, and to issue appropriate stop transfer instructions to the transfer agent for such Parent Common Stock. The Company shall use commercially reasonable efforts to promptly obtain an executed affiliate agreement from each affiliate (within the meaning of Rule 145 promulgated under the Securities Act) of the Company in form and substance reasonably satisfactory to Parent and Company.

Section 7.04 *Directors and Officers Indemnification and Insurance*.

(a) The provisions with respect to immunities and indemnification that are set forth in the certificate of incorporation and bylaws of the Surviving Corporation shall not be amended, repealed or otherwise modified for a period of six (6) years from the Effective Time in any manner that would affect adversely the rights thereunder of individuals who at or at any time prior to the Effective Time were directors, officers, employees or agents of Company. The certificate of incorporation and bylaws of Merger Sub immediately prior to the Effective Time shall be as delivered to the Company on the date hereof.

(b) From and after the Effective Time, Parent and the Surviving Corporation shall indemnify and hold harmless each present and former director and officer of Company (the ***Indemnified Parties***), against any costs or expenses (including reasonable attorneys' fees and disbursements), judgments, fines, losses, claims, damages or liabilities (collectively, ***Costs***) incurred in connection with any claim, action, suit, proceeding or investigation, whether civil, criminal, administrative or investigative, arising out of or pertaining to matters relating to their service as such an officer or director existing or occurring at or prior to the Effective Time, whether asserted or claimed prior to, at or after the Effective Time, to the fullest extent that Company would have been permitted under Delaware law and its charter documents (each as in effect on the date hereof) to indemnify such Indemnified Parties.

(c) For a period of six (6) years after the Effective Time, Parent shall provide directors and officers liability insurance in respect of acts or omissions occurring prior the Effective Time covering each such person currently covered by Company's directors and officers liability insurance policy on substantially similar terms with respect to coverage and amount as those in effect on the date of this Agreement; provided, however, that Parent shall only be obligated to maintain such insurance to the extent the aggregate premiums during such period do not exceed 250% of the annual premium currently paid by Company for such coverage, which Company hereby represents is such amount set forth on Schedule 7.04(c) of the Company Disclosure Schedule.

Section 7.05 *Public Announcements*. The initial press release concerning the Merger to be released in connection with the execution and delivery of this Agreement shall be a joint press release and, thereafter, Parent and Company shall consult with each other before issuing any press release or otherwise making any public statements with respect to this Agreement or the Merger and shall not issue any such press release or make any such public statement without the prior approval of the other, except to the extent required by applicable Law or the requirements of

Edgar Filing: NANOGEN INC - Form S-4/A

the rules and regulations of the NNM or the NSCM, as applicable, in which case the issuing

A-45

Table of Contents

party shall use all reasonable efforts to consult with the other party before issuing any such release or making any such public statement.

Section 7.06 *NNM Listing*. Prior to the Effective Time, Parent shall file with the NNM a Notification Form for Listing of Additional Shares with respect to the Parent Common Stock issued or issuable in connection with the Merger and shall use all reasonable efforts to have such Parent Common Stock approved for quotation on the NNM.

Section 7.07 *Blue Sky*. Parent shall use all reasonable efforts to obtain prior to the Effective Time all necessary permits and approvals required under Blue Sky Laws to permit the distribution of the shares of Parent Common Stock to be issued in accordance with the provisions of this Agreement.

Section 7.08 *Company Options/Registration Statements on Form S-8*. Parent shall reserve for issuance the number of shares of Parent Common Stock that will be issuable upon exercise of Company Options and Company Warrants assumed pursuant to Section 3.05 hereof. Parent shall use commercially reasonable efforts to file with the SEC immediately after the Effective Time, but in no event later than ten (10) business days after the Effective Time, one or more registration statements on Form S-8 for the shares of Parent Common Stock purchasable under the assumed Company Options, but only to the extent those shares are registrable on such Form S-8 and will maintain the effectiveness of such registration statements for so long as any of such options or other rights remain outstanding. Such Form S-8 registration statement shall not cover the shares of Parent Common Stock subject to any assumed Company Options which are held by persons who do not become employees of the Parent or any Parent Subsidiary (including the Surviving Corporation) at the Effective Time or who do not otherwise have a continuing service relationship with the Parent or any Parent Subsidiary as of the Effective Time.

Section 7.09 *Employee Matters*. Simultaneously with the Merger, the Surviving Corporation shall assume all employment and severance agreements and arrangements which are in effect at Company on the date hereof. Company and Parent agree to cooperate and take such reasonable actions as may be required to effect an orderly transition of benefits coverage under Company's 401(k) plan, including but not limited to, termination of such plan prior to the Effective Time. As of the Effective Time, Parent shall cause the Surviving Corporation to honor and satisfy all obligations and liabilities with respect to the Company Benefit Plans. Parent shall cause each such Company employee who is terminated within the first six months of the Closing Date to receive severance pay at least equivalent to what such employee would have received as severance pay under the severance program set forth on Schedule 7.09 hereto, which shall be the Company's current severance program. Except as set forth in this Section 7.09, the Surviving Corporation shall not be required to continue any particular Company Benefit Plan after the Effective Time, and any Company Benefit Plan may be terminated in accordance with its terms and applicable law. To the extent that any Company Benefit Plan is terminated after the Effective Time, Parent shall arrange for each individual who is then a participant in such terminated plan to participate in a the corresponding benefit plan (if any) maintained by Parent in accordance with the eligibility criteria thereof.

With respect to each employee benefit plan of Parent ("**Parent Benefit Plan** ") in which employees of Company ("**Company Employees** ") participate after the Effective Time, for purposes of determining eligibility for participation and vesting, service completed with Company prior to the Effective Time or service with a predecessor entity which was treated as credited service with Company prior to the Effective Time shall be taken into account to the same extent as if such service had been performed for Parent; provided, that nothing herein shall require the inclusion of any Company employee in any such Parent Benefit Plan prior to the Effective Time, and provided further, that in determining the amount of vacation pay accruable by any such employee of Company from and after the Effective Time under the applicable terms of the vacation pay plan of Parent, credit shall be given for such employee's service with Company prior to the Effective Time or service with a predecessor entity which was treated as credited service with Company prior to the Effective Time. In no event, however, shall any such credit for service with Company or any predecessor entity be recognized to the extent that such recognition would result in a duplication of benefits or to the extent that such service was not

Table of Contents

recognized under the applicable Company Benefit Plan prior to the Effective Time. Such service credit also shall apply, to the maximum extent permissible under the applicable Parent Benefit Plans, for purposes of satisfying any waiting periods, evidence of insurability requirements, or the application of any pre-existing condition limitations.

Section 7.10 *Section 16 Dispositions*. The board of directors of Company, or a committee thereof consisting of non-employee directors (as such term is defined for purposes of Rule 16b-3(d) under the Exchange Act), shall adopt a resolution in advance of the Effective Time authorizing and approving the following transactions relating to the disposition by the Company Insiders of their shares of Company Common Stock and Company Options: (i) the disposition of the Company Common Stock held by such individuals which is deemed to occur upon the exchange and conversion of those shares into shares of Parent Common Stock in the Merger and (ii) the disposition of the Company Options held by such individuals which is deemed to occur upon the assumption of those options by Parent and their conversion into options to acquire shares of Parent Common Stock in accordance with the assumption provisions of Section 3.05 hereof. Such approval and authorization shall be for the purpose of qualifying those dispositions for the exemption provided pursuant to Rule 16b-3(e) under the Exchange Act. For purposes of this Agreement, ***Company Insiders*** means those officers and directors of Company who are subject to the reporting requirements of Section 16(a) of the Exchange Act.

ARTICLE VIII

CONDITIONS TO THE MERGER

Section 8.01 *Conditions to the Obligations of Each Party to Consummate the Merger*. The obligations of the parties hereto to consummate the Merger are subject to the satisfaction or, if permitted by applicable Law, waiver of the following conditions:

- (a) the Registration Statement shall have been declared effective by the SEC under the Securities Act and no stop order suspending the effectiveness of the Registration Statement shall have been issued by the SEC and no proceeding for that purpose shall have been initiated by the SEC and not concluded or withdrawn;
- (b) this Agreement and the Merger shall have been duly approved by the requisite vote of stockholders of Company in accordance with Delaware Law;
- (c) the issuance of shares of Parent Common Stock in the Merger shall have been duly approved by the requisite vote of stockholders of Parent in accordance with the rules of the NNM;
- (d) no order, statute, rule, regulation, executive order, stay, decree, judgment or injunction shall have been enacted, entered, promulgated or enforced by any court or Governmental Entity which prohibits or prevents the consummation of the Merger which has not been vacated, dismissed or withdrawn prior to the Effective Time. Company and Parent shall use their reasonable best efforts to have any of the foregoing vacated, dismissed or withdrawn by the Effective Time;

Edgar Filing: NANOGEN INC - Form S-4/A

(e) any waiting period (and any extension thereof) applicable to the consummation of the Merger under the HSR Act or any applicable competition, merger control or similar Law shall have expired or terminated;

(f) all consents, approvals and authorizations legally required to be obtained to consummate the Merger shall have been obtained from all Governmental Entities, except where the failure to obtain any such consent, approval or authorization could not reasonably be expected to result in a Parent Material Adverse Effect or a Company Material Adverse Effect; and

(g) The shares of Parent Common Stock to be issued in the Merger shall have been authorized for listing on the NNM, subject to notice of issuance.

A-47

Table of Contents

Section 8.02 *Conditions to the Obligations of Company*. The obligations of Company to consummate the Merger, or to permit the consummation of the Merger are subject to the satisfaction or, if permitted by applicable Law, waiver of the following further conditions:

(a) each of the representations and warranties of Parent and Merger Sub contained in this Agreement shall be true, complete and correct without reference to any qualification as to materiality such that the aggregate effect of any inaccuracies in such representations and warranties will not have a Parent Material Adverse Effect, in each case as of the date of this Agreement and as of the Closing Date (except to the extent such representations speak as of a different date) as though made on and as of the Closing Date, except for changes contemplated by this Agreement. Company shall have received a certificate of the Chief Executive Officer and Chief Financial Officer of Parent to such effect;

(b) Parent and Merger Sub shall have performed or complied in all material respects with all covenants required by this Agreement to be performed or complied with by them on or prior to the Closing Date and Company shall have received certificates of the Chief Executive Officer and Chief Financial Officer of Parent and the President of Merger Sub to that effect;

(c) there shall have been no Parent Material Adverse Effect since the date of this Agreement.

(d) Company shall have received the opinion of Stradling Yocca Carlson & Rauth, counsel to Company, to the effect that, for federal income tax purposes, the Merger will qualify as a reorganization within the meaning of Section 368(a) of the Code (it being agreed that Parent, Merger Sub and Company shall each provide reasonable cooperation, including making reasonable representations to Morgan, Lewis & Bockius LLP and Stradling Yocca Carlson & Rauth to enable it to render such opinion); provided, however, that if Stradling Yocca Carlson & Rauth does not render such opinion, this condition shall nonetheless be deemed to be satisfied if counsel to Parent renders the opinion to Company in form and substance reasonably satisfactory to Company, that the Merger will qualify as a reorganization within the meaning of Section 368(a) of the Code.

Section 8.03 *Conditions to the Obligations of Parent*. The obligations of Parent to consummate the Merger are subject to the satisfaction or waiver of the following further conditions:

(a) each of the representations and warranties of Company contained in this Agreement shall be true, complete and correct without reference to any qualification as to materiality such that the aggregate effect of any inaccuracies in such representations and warranties will not have a Company Material Adverse Effect, in each case as of the date of this Agreement and as of the Closing Date (except to the extent such representations speak as of a different date) as though made on and as of the Closing Date, except for changes contemplated by this Agreement. Parent shall have received a certificate of the Chief Executive Officer and Chief Financial Officer of Company to such effect;

(b) Company shall have performed or complied in all material respects with all covenants required by this Agreement to be performed or complied with by it on or prior to the Closing Date and Parent shall have received a certificate of the Chief Executive Officer and Chief Financial Officer of Company to that effect; and

(c) there shall have been no Company Material Adverse Effect since the date of this Agreement; and

Edgar Filing: NANOGEN INC - Form S-4/A

(d) Parent shall have received the opinion of Morgan, Lewis & Bockius LLP, counsel to Parent, to the effect that, for federal income tax purposes, the Merger will qualify as a reorganization within the meaning of Section 368(a) of the Code (it being agreed that Parent, Merger Sub and Company shall each provide reasonable cooperation including making reasonable representations to Morgan, Lewis & Bockius LLP and Stradling Yocca Carlson & Rauth to enable it to render such opinion); provided, however, that if Morgan, Lewis & Bockius LLP does not render such opinion, this condition shall nonetheless be deemed to be satisfied if counsel to Company renders the opinion to Parent in form and substance reasonably satisfactory to Parent, that the Merger will qualify as a reorganization within the meaning of Section 368(a) of the Code.

A-48

Table of Contents

ARTICLE IX

TERMINATION, AMENDMENT AND WAIVER

Section 9.01 *Termination*. This Agreement may be terminated and the Merger may be abandoned at any time prior to the Effective Time, notwithstanding any requisite adoption and approval of this Agreement, as follows:

(a) by mutual written consent duly authorized by the boards of directors of each of Parent and Company;

(b) by either Parent or Company, if the Effective Time shall not have occurred on or before February 15, 2005; provided, however, that the right to terminate this Agreement under this Section 9.01(b) shall not be available to any party whose failure to fulfill any obligation under this Agreement shall have been a principal reason for or cause of the failure of the Effective Time to occur on or before such date;

(c) by either Parent or Company, if any Governmental Order, writ, injunction or decree preventing the consummation of the Merger shall have been entered by any court of competent jurisdiction, shall be in effect and shall have become final and nonappealable;

(d) by Parent, if (i) the board of directors of Company fails to recommend adoption and approval of this Agreement and the Merger in the Joint Proxy Statement, (ii) the board of directors of Company withdraws, modifies or changes its recommendation of this Agreement or the Merger in a manner adverse to Parent or its stockholders, (iii) the board of directors of Company shall have approved or recommended to the stockholders of Company a Company Competing Transaction, (iv) a Company Competing Transaction shall have been announced or otherwise publicly known and the board of directors of Company shall have (A) failed to recommend against acceptance of such by its stockholders (including by taking no position, or indicating its inability to take a position, with respect to the acceptance of a Company Competing Transaction involving a tender offer or exchange offer by its stockholders), (B) failed to reconfirm its approval and recommendation of this Agreement and the transactions contemplated hereby within ten (10) Business Days of the first announcement or other public knowledge of such proposal for a Company Competing Transaction or (C) determined that such Company Competing Transaction was a Company Superior Proposal and to take any of the actions allowed by clause (ii) of Section 6.05, (v) a willful and material breach by Company of Section 6.05, or (vi) the board of directors of Company resolves, agrees or publicly proposes to take any of the actions described above in subparts (i) through (v);

(e) by the Company if it receives a Company Superior Proposal and the Company Board reasonably determines in good faith, after considering applicable state law and the advice of independent outside legal counsel, that a failure to terminate this Agreement and enter into an agreement to effect the Company Superior Proposal would breach the fiduciary duties of the Company's board of directors under applicable law; *provided*, that the Company may not terminate this Agreement pursuant to this Section 9.01(e) unless it has first complied with its obligations under Section 6.05 and until five (5) Business Days have elapsed following delivery to Parent of written notice of such determination by the Company Board and during such five (5) Business Day period the Company has renegotiated in good faith with Parent and Parent has not submitted a binding offer that the Company Board has determined in its good faith judgment to be at least as favorable to the Company's stockholders as the Company Superior Proposal;

(f) by either Parent or Company, if this Agreement and the Merger is brought to a vote and shall fail to receive the requisite votes for approval at the Company Stockholders' Meeting or any adjournment or postponement thereof;

(g) by either Parent or Company, if the Share Issuance or the Parent Share Increase shall fail to receive the requisite votes for approval at the Parent Stockholders Meeting or any adjournment or postponement thereof;

A-49

Table of Contents

(h) by Parent, ten (10) days after receipt by Company of a written notice from Parent of a breach of any representation, warranty, covenant or agreement on the part of Company set forth in this Agreement, or if any representation or warranty of Company shall have become untrue, incomplete or incorrect, in either case such that the conditions set forth in Section 8.03 would not be satisfied (a ***Terminating Company Breach***); provided, however, that if such Terminating Company Breach is cured by Company within ten (10) days, Parent may not terminate this Agreement under this Section 9.01(h);

(i) by Company, ten (10) days after receipt by Parent of a written notice from Company of a breach of any representation, warranty, covenant or agreement on the part of Parent or Merger Sub set forth in this Agreement, or if any representation or warranty of Parent or Merger Sub shall have become untrue, incomplete or incorrect, in either case such that the conditions set forth in Section 8.02 would not be satisfied (a ***Terminating Parent Breach***); provided, however, that if such Terminating Parent Breach is cured by Parent within ten (10) days, Company may not terminate this Agreement under this Section 9.01(i);

The right of any party hereto to terminate this Agreement pursuant to this Section 9.01 will remain operative and in full force and effect regardless of any investigation made by or on behalf of any party hereto, any Person controlling any such party or any of their respective officers, directors, representatives or agents, whether prior to or after the execution of this Agreement.

Section 9.02 *Effect of Termination*. Except as provided in Section 9.05, in the event of termination of this Agreement pursuant to Section 9.01, this Agreement shall forthwith become void, there shall be no liability under this Agreement on the part of any party hereto or any of its Affiliates or any of its or their officers or directors, and all rights and obligations of each party hereto shall cease; provided, however, that nothing herein shall relieve any party hereto from liability for breach of any of its representations and warranties or the breach of any of its covenants or agreements set forth in this Agreement.

Section 9.03 *Amendment*. This Agreement may be amended by the parties hereto by action taken by or on behalf of their respective boards of directors at any time prior to the Effective Time; provided, however, that, after the approval of this Agreement by the stockholders of Company, no amendment may be made that changes the amount or type of consideration into which Company Common Stock will be converted pursuant to this Agreement. This Agreement may not be amended except by an instrument in writing signed by the parties hereto.

Section 9.04 *Waiver*. At any time prior to the Effective Time, any party hereto may (a) extend the time for or waive compliance with the performance of any obligation or other act of any other party hereto, (b) waive any inaccuracy in the representations and warranties contained herein or in any document delivered pursuant hereto and (c) waive compliance by the other party with any of the agreements or conditions contained herein. Any such extension or waiver shall be valid if set forth in an instrument in writing signed by the party or parties to be bound thereby.

Section 9.05 *Termination Fee; Expenses*.

(a) Except as set forth in this Section 9.05, all Expenses incurred in connection with this Agreement and the Merger shall be paid by the party incurring such Expenses, whether or not the Merger is consummated (including but not limited to, commission or fees of any broker or finder, or any attorneys, accountants or other expert fees) except that Parent and Company each shall pay one half of all Expenses incurred solely for printing, filing and mailing the Registration Statement and the Joint Proxy Statement and all SEC and other regulatory filing fees incurred in connection with the Registration Statement and the Joint Proxy Statement and any fees required to be paid under the HSR Act.

Edgar Filing: NANOGEN INC - Form S-4/A

(b) Without limiting any other remedies available to Parent, in the event that (i) Parent shall terminate this Agreement pursuant to Section 9.01(d), (ii) Company shall terminate this Agreement pursuant to Section 9.01(e), or (iii) (A) a Company Competing Transaction shall have been publicly announced, commenced or

A-50

Table of Contents

otherwise become publicly known or any Person shall have publicly announced an intention to make a Company Competing Transaction, (B) this Agreement is terminated by Parent or Company pursuant to Section 9.01(b) or Section 9.01(f), and (C) within twelve (12) months of the termination of this Agreement Company enters into such Company Competing Transaction (or a Company Competing Transaction that arises out of or relates to such Company Competing Transaction), then within two (2) Business Days after termination of this Agreement in the case of clause (i) and (ii) or within two (2) Business Days after the consummation of the transaction in case of clause (iii), Company shall pay to Parent a fee in the amount of \$1,750,000 (the ***Company Termination Fee***) by wire transfer of immediately available funds to an account designated in writing by Parent.

(c) Without limiting any other remedies available to Company, in the event that Company terminates this Agreement pursuant to Section 9.01(i) and the Terminating Parent Breach is a violation of 6.02(k), then within two (2) Business Days after termination of this Agreement Parent shall pay Company a fee in the amount of \$1,750,000 by wire transfer of immediately available funds to an account designated in writing by Company.

ARTICLE X

GENERAL PROVISIONS

Section 10.01 *Non-Survival of Representations and Warranties*. The representations and warranties in this Agreement shall terminate at the Effective Time or upon the termination of this Agreement pursuant to Section 9.01, as the case may be. This Section 10.01 shall not limit any covenant or agreement of the parties which by its express terms contemplates performance, in whole or in part, after the Effective Time.

Section 10.02 *Notices*. All notices, requests, claims, demands and other communications hereunder shall be in writing and shall be given (and shall be deemed to have been duly given upon receipt) by delivery in Person, by telecopy or facsimile, by registered or certified mail (postage prepaid, return receipt requested) or by a nationally recognized courier service to the respective parties at the following addresses (or at such other address for a party as shall be specified in a notice given in accordance with this Section 10.02):

(a) if to Company:

Epoch Biosciences, Inc.

21720 23rd Drive, SE, Suite 150

Bothell, WA 98021

Facsimile: (425) 482-5550

Attention: Chief Financial Officer

with a copy (which shall not constitute notice) to:

Stradling Yocca Carlson & Rauth

660 Newport Center Drive

Newport Beach, CA 92660

Attention: Lawrence B. Cohn

Facsimile: (949) 725-4100

(b) if to Parent or Merger Sub:

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

Facsimile: (858) 410-4949

Attention: President

A-51

Table of Contents

with a copy to:

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

Facsimile: (858) 410-4949

Attention: General Counsel

and

Morgan, Lewis & Bockius LLP

One Market, Spear Street Tower

San Francisco, CA 94105

Attention: Scott Karchmer, Esq.

Facsimile: (415) 442-1001

Section 10.03 *Severability*. If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of Law or public policy, all other conditions and provisions of this Agreement shall nevertheless remain in full force and effect so long as the economic or legal substance of the Merger is not affected in any manner materially adverse to any party hereto. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner to the fullest extent permitted by applicable Law in order that the Merger may be consummated as originally contemplated to the fullest extent possible.

Section 10.04 *Assignment; Binding Effect; Benefit*. Neither this Agreement nor any of the rights, interests or obligations hereunder shall be assigned by any of the parties hereto (whether by operation of Law or otherwise) without the prior written consent of the other parties hereto. Subject to the preceding sentence, this Agreement shall be binding upon and shall inure to the benefit of the parties

hereto and their respective successors and permitted assigns. Notwithstanding anything contained in this Agreement to the contrary, other than Section 7.04, nothing in this Agreement, expressed or implied, is intended to confer on any Person other than the parties hereto or their respective successors and permitted assigns any rights or remedies under or by reason of this Agreement.

Section 10.05 *Incorporation of Exhibits*. The Parent Disclosure Schedule, the Company Disclosure Schedule and all Annexes attached hereto and referred to herein are hereby incorporated herein and made a part of this Agreement for all purposes as if fully set forth herein. Parent and Company acknowledge that the Parent Disclosure Schedule and the Company Disclosure Schedule (i) are qualified in their entirety by reference

Edgar Filing: NANOGEN INC - Form S-4/A

to specific provisions of this Agreement and (ii) are not intended to constitute and shall not be construed as indicating that such matter is required to be disclosed, nor shall such disclosure be construed as an admission that such information is material with respect to Parent or Company, as the case may be, except to the extent required by this Agreement and by applicable law.

Section 10.06 *Governing Law*. THIS AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF DELAWARE OTHER THAN CONFLICT OF LAWS PRINCIPLES THEREOF DIRECTING THE APPLICATION OF ANY LAW OTHER THAN THAT OF THE STATE OF DELAWARE.

Section 10.07 *Waiver of Jury Trial*. EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES ALL RIGHT TO TRIAL BY JURY IN ANY PROCEEDING (WHETHER BASED ON CONTRACT, TORT OR OTHERWISE) ARISING OUT OF OR RELATING TO THIS AGREEMENT OR ANY TRANSACTION OR AGREEMENT CONTEMPLATED HEREBY OR THE ACTIONS OF ANY PARTY HERETO IN THE NEGOTIATION, ADMINISTRATION, PERFORMANCE OR ENFORCEMENT HEREOF.

A-52

Table of Contents

Section 10.08 *Consent to Jurisdiction*. Each of the parties hereto irrevocably and unconditionally submits to the exclusive jurisdiction of either (a) the Court of Chancery of the State of Delaware or (b) any Federal court of the United States of America sitting in the State of Delaware, for the purposes of any suit, action or other proceeding arising out of this Agreement or any transaction contemplated hereby (and each agrees that no such action, suit or proceeding relating to this Agreement shall be brought by it or any of its Affiliates except in such courts). Each of the parties further agrees that, to the fullest extent permitted by applicable law, service of any process, summons, notice or document by U.S. registered mail to such party's respective address set forth above shall be effective service of process for any action, suit or proceeding in Delaware with respect to any matters to which it has submitted to jurisdiction as set forth above in the immediately preceding sentence. Each of the parties irrevocably and unconditionally waives (and agrees not to plead or claim) any objection to the laying of venue of any action, suit or proceeding arising out of this Agreement or the transactions contemplated hereby in (a) any Court of Chancery of the State of Delaware or (b) any Federal court of the United States of America sitting in the State of Delaware, or that any such action, suit or proceeding brought in any such court has been brought in an inconvenient forum.

Section 10.09 *Enforcement*. The parties hereto agree that in the event that any of the provisions of this Agreement were not performed in accordance with their specific terms or were otherwise breached, monetary damages, even if available, would be an inadequate remedy. It is accordingly agreed that the parties hereto shall be entitled to an injunction or injunctions to prevent breaches of this Agreement and to enforce specifically the terms and provisions of this Agreement, this being in addition to any other remedy in any Delaware State court or any Federal court of the United States of America sitting in the State of Delaware to which they are entitled at law or in equity.

Section 10.10 *Headings; Interpretation*. The descriptive headings contained in this Agreement are included for convenience of reference only and shall not affect in any way the meaning or interpretation of this Agreement. The parties have participated jointly in the negotiation and drafting of this Agreement. In the event an ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the parties, and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any provisions of this Agreement.

Section 10.11 *Counterparts*. This Agreement may be executed and delivered (including by facsimile transmission) in one or more counterparts, and by the different parties hereto in separate counterparts, each of which when executed and delivered shall be deemed to be an original but all of which taken together shall constitute one and the same agreement.

Section 10.12 *Entire Agreement*. This Agreement (including the Annexes, Schedules, the Parent Disclosure Schedule and the Company Disclosure Schedule) and the Confidentiality Agreement constitute the entire agreement among the parties with respect to the subject matter hereof and supersede all prior agreements and understandings among the parties with respect thereto.

Table of Contents

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date first written above by their respective officers thereunto duly authorized.

NANOGEN, INC.

By: /s/ Howard C. Birndorf

Name: Howard C. Birndorf

Title: Chairman of the Board and Chief Executive Officer

EMPIRE ACQUISITION CORP.

By: /s/ Howard C. Birndorf

Name: Howard C. Birndorf

Title: Chief Executive Officer

EPOCH BIOSCIENCES, INC.

By: /s/ William G. Gerber, M.D.

Name: William G. Gerber, M.D.

Title: President and Chief Executive Officer

A-54

Table of Contents

ANNEX B

VOTING AGREEMENT

VOTING AGREEMENT (this Agreement) is made and entered into as of September 7, 2004 between NANOGEN, INC., a Delaware corporation (Parent), and the undersigned stockholder (Stockholder) of EPOCH BIOSCIENCES, INC., a Delaware corporation (the Company). Capitalized terms used and not otherwise defined herein shall have the respective meanings set forth in the Merger Agreement described below.

WITNESSETH:

WHEREAS, pursuant to an Agreement and Plan of Merger and Reorganization dated as of September 7, 2004 by and among Parent, EMPIRE ACQUISITION CORP., a Delaware corporation and a wholly owned subsidiary of Parent (Merger Sub), and Company (the Merger Agreement), Parent has agreed to acquire the outstanding securities of Company pursuant to a statutory merger of Merger Sub with and into Company in which outstanding shares of capital stock of Company will be converted into the right to receive the Merger Consideration;

WHEREAS, as a condition to the willingness of Parent and Merger Sub to enter into the Merger Agreement and as an inducement and in consideration therefor, Stockholder has agreed to enter into this Agreement; and

WHEREAS, Stockholder is the registered and beneficial owner (within the meaning of Rule 13d-3 of the Exchange Act) of such number of shares of capital stock of Company as is indicated on the signature pages hereto (the Shares).

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements herein contained, and intending to be legally bound hereby, the parties hereby agree as follows:

1. Agreement to Retain Shares.

1.1 Transfer and Encumbrance. Prior to the Expiration Date (as defined below), Stockholder shall not: (a) volitionally transfer, assign, sell, gift-over, pledge or otherwise dispose of, or consent to any of the foregoing, (Transfer), any or all of the Shares and the New Shares (as defined below) or any right or interest therein; provided, however, such restrictions shall not be applicable to (i) a gift of the Shares made to one or more charitable foundations or organizations, the Stockholder's spouse or issue, including adopted children, or a trust for the exclusive benefit of the Stockholder or the Stockholder's spouse or issue, provided such transferee agrees to be bound by the terms of this Agreement or (ii) a transfer of title to the Shares effected pursuant to the Stockholder's will or the laws of intestate succession; (b) enter into any contract, option or other agreement, arrangement or understanding with respect to any Transfer; (c) grant any proxy, power-of-attorney or other authorization or consent with respect to any of the Shares (other than the proxy contemplated in Section 3 herein); or (d) deposit any of the Shares into a voting trust, or enter into a voting agreement or arrangement with respect to any of the Shares. As used herein, the term Expiration Date shall mean the earlier to occur of (a) the Effective Time, or (b) termination of the Merger Agreement in accordance with the terms thereof.

B-1

Table of Contents

1.2 New Shares. New Shares shall be subject to the terms and conditions of this Agreement to the same extent as if they constituted Shares. New Shares means:

(a) any shares of capital stock or voting securities of Company that Stockholder purchases or with respect to which Stockholder otherwise acquires beneficial ownership (whether through the exercise of any options, warrants or other rights to purchase shares of Company Common Stock or otherwise) after the date of this Agreement and prior to the Expiration Date; and

(b) any shares of capital stock or voting securities of Company that Stockholder becomes the beneficial owner of as a result of any change in Company Common Stock by reason of a stock dividend, stock split, split-up, recapitalization, reorganization, business combination, consolidation, exchange of shares, or any similar transaction or other change in the capital structure of Company affecting Company Common Stock.

2. Agreement to Vote Shares and Take Certain Other Action.

2.1 Prior to the Expiration Date, at every meeting of the stockholders of Company at which any of the following matters is considered or voted upon, and at every adjournment or postponement thereof, and on every action or approval by written consent of the stockholders of Company with respect to any of the following matters, Stockholder shall vote or give written consent or, using Stockholder's best efforts, and to the full extent legally permitted, cause the holder of record to vote or give written consent with respect to the Shares and any New Shares:

(a) in favor of adoption of the Merger Agreement and the transactions contemplated thereby;

(b) against approval of any proposal made in opposition to or competition with the Merger Agreement and consummation of the Merger;

(c) against any Company Competing Transaction (as defined below) from any party other than Parent or an affiliate of Parent as contemplated by the Merger Agreement;

(d) against any proposal that is intended to, or is reasonably likely to, result in the conditions of Parent's or Merger Sub's obligations under the Merger Agreement not being fulfilled;

(e) against any other action that is intended, or could reasonably be expected, to impede, interfere with, delay, postpone, discourage or adversely affect the Merger or any of the other transactions contemplated by the Merger Agreement;

(f) against any dissolution, liquidation or winding up of Company.

Edgar Filing: NANOGEN INC - Form S-4/A

For purposes of this Agreement, the term Company Competing Transaction shall mean any of the following involving Company (other than the Merger):

(i) any merger, consolidation, share exchange, business combination, recapitalization, liquidation, dissolution, joint venture or other similar transaction;

B-2

Table of Contents

(ii) any sale, lease, exchange, transfer or other disposition of 20% or more of the assets of such party and its subsidiaries, taken as a whole, in a single transaction or series of transactions;

(iii) any tender offer or exchange offer for 20% or more of the outstanding voting securities of such party or the filing of a registration statement under the Securities Act in connection therewith; or

(iv) any Person having acquired beneficial ownership or the right to acquire beneficial ownership of, or any group (as such term is defined under Section 13(d) of the Exchange Act) having been formed which beneficially owns or has the right to acquire beneficial ownership of, 20% or more of the outstanding voting securities of such party;

(v) any solicitation in opposition to the approval of this Agreement by the stockholders of such party; or

(vi) any public announcement of a proposal, plan or intention to do any of the foregoing or any agreement to engage in any of the foregoing.

2.2 Prior to the Expiration Date, Stockholder, as the holder of voting stock of Company, shall be present, in person or by proxy, or, using Stockholder's best efforts and to the full extent legally permitted, attempt to cause the holder of record to be present, in person or by proxy, at all meetings of stockholders of Company at which the matters referred to in Section 2.1 is to be voted upon so that all Shares and New Shares are counted for the purposes of determining the presence of a quorum at such meetings.

2.3 Between the date of this Agreement and the Expiration Date, Stockholder will not, and will not permit any entity under Stockholder's control to, (a) solicit proxies or become a participant in a solicitation (as such terms are defined in Rule 14A under the Exchange Act) with respect to an Opposing Proposal (as defined below), (b) initiate a stockholders' vote with respect to an Opposing Proposal or (c) become a member of a group (as such term is used in Section 13(d) of the Exchange Act) with respect to any voting securities of Company with respect to an Opposing Proposal. For purposes of this Agreement, the term Opposing Proposal means any of the actions or proposals described in clauses (b) through (e) of Section 2.1, along with any proposal or action which would, or could reasonably be expected to, impede, frustrate, prevent, prohibit or discourage the Merger.

2.4 Stockholder shall use commercially reasonable efforts to take, or cause to be taken, all actions, and to do, or cause to be done, and to assist and cooperate with the other parties in doing, all things necessary, proper or advisable to consummate and make effective, in the most expeditious manner practicable, the Merger and the other transactions contemplated by the Merger Agreement.

2.5 Notwithstanding the foregoing, nothing in this Agreement shall limit or restrict Stockholder from (a) acting in Stockholder's capacity as a director or officer of Company, to the extent applicable, it being understood that this Agreement shall apply to Stockholder solely in Stockholder's capacity as a stockholder of Company or (b) voting in Stockholder's sole discretion on any matter other than the matters referred to in Section 2.1.

Table of Contents

3. Irrevocable Proxy. Stockholder has delivered to Parent a duly executed proxy in the form attached hereto as Exhibit A (the Proxy), such Proxy covering the issued and outstanding Shares and all issued and outstanding New Shares in respect of which Stockholder is the record holder and is entitled to vote at each meeting of the stockholders of Company (including, without limitation, each written consent in lieu of a meeting) prior to the Expiration Date. Upon the execution of this Agreement by Stockholder, Stockholder hereby revokes any and all prior proxies or powers of attorney given by Stockholder with respect to voting of the Shares on the matters referred to in Section 2.1 and agrees not to grant any subsequent proxies or powers of attorney with respect to the voting of the Shares on the matters referred to in Section 2.1 until after the Expiration Date.

4. Representations, Warranties and Covenants of Stockholder. Stockholder hereby represents, warrants and covenants to Parent as follows:

(a) (i) Stockholder is the beneficial owner of the Shares set forth on the signature pages hereto; (ii) the Shares set forth on the signature page hereto constitute Stockholder's entire interest in the outstanding capital stock and voting securities of Company as of the date hereof; (iii) the Shares are, and the Shares and any New Shares will be, at all times up until the Expiration Date, free and clear of any liens, claims, options, charges, security interests, proxies, voting trusts, agreements, rights, understandings or arrangements, or exercise of any rights of a stockholder in respect of the Shares or other encumbrances; and (iv) Stockholder has voting power and the power of disposition with respect to all of the Shares outstanding on the date hereof, and will have voting power and power of disposition with respect to all of the Shares and New Shares acquired by such Stockholder after the date hereof; and (v) Stockholder's principal residence or place of business is accurately set forth on the signature page hereto.

(b) In the event that Stockholder is a corporation, partnership, limited liability company or other entity, Stockholder is duly organized and validly existing under the laws of the jurisdiction in which it is incorporated or constituted, and Stockholder has taken all necessary corporate or other action to authorize the execution, delivery and performance of this Agreement. Stockholder has full power and legal capacity to execute and deliver this Agreement and to comply with and perform Stockholder's obligations hereunder. This Agreement has been duly and validly executed and delivered by Stockholder and constitutes the valid and binding obligation of Stockholder, enforceable against Stockholder in accordance with its terms, except as may be limited by (i) the effect of bankruptcy, insolvency, conservatorship, arrangement, moratorium or other laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law. The execution and delivery of this Agreement by Stockholder does not, and the performance of Stockholder's obligations hereunder will not, result in any breach of or constitute a default (or an event that with notice or lapse of time or both would become a default) under, or give to others any right to terminate, amend, accelerate or cancel any right or obligation under, or result in the creation of any lien or encumbrance on any Shares or New Shares pursuant to, any note, bond, mortgage, indenture, contract, agreement, lease, license, permit, franchise or other instrument or obligation to which Stockholder is a party or by which Stockholder or the Shares or New Shares are or will be bound or affected.

Table of Contents

(c) Stockholder understands and agrees that if Stockholder attempts to Transfer, vote or provide any other person with the authority to vote any of the Shares or New Shares other than in compliance with this Agreement, Company shall not, and Stockholder hereby unconditionally and irrevocably instructs Company to not, permit any such Transfer on its books and records, issue a new certificate representing any of the Shares or New Shares or record such vote unless and until Stockholder shall have complied with the terms of this Agreement.

5. Termination. This Agreement and the Proxy delivered in connection herewith and all obligations of Stockholder hereunder and thereunder, shall terminate and shall have no further force or effect as of the Expiration Date.

6. Miscellaneous.

6.1 Severability. If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of law or public policy, all other conditions and provisions of this Agreement shall nevertheless remain in full force and effect so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner materially adverse to either party. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the greatest extent possible.

6.2 Binding Effect and Assignment. Neither this Agreement nor any of the rights, interests or obligations under this Agreement shall be assigned, in whole or in part, by operation of law or otherwise by any party without the prior written consent of the other party; provided, however, Parent may, in its sole discretion, assign its rights and obligations hereunder to any direct or indirect wholly-owned subsidiary of Parent. Any assignment in violation of the preceding sentence shall be void. Subject to the preceding sentence, this Agreement will be binding upon, inure to the benefit of, and be enforceable by, the parties and their respective successors and assigns.

6.3 Amendment and Modification. This Agreement may not be amended except by an instrument in writing signed on behalf of each of the parties.

6.4 Specific Performance; Injunctive Relief. The parties hereto acknowledge that Parent will be irreparably harmed and that there will be no adequate remedy at law for a violation of any of the covenants or agreements of Stockholder set forth herein. Therefore, it is agreed that, in addition to any other remedies that may be available to Parent upon any such violation, Parent shall have the right to enforce such covenants and agreements by specific performance, injunctive relief or by any other means available to Parent at law or in equity and Stockholder hereby waives any and all defenses which could exist in its favor in connection with such enforcement and waives any requirement for the security or posting of any bond in connection with such enforcement.

Table of Contents

6.5 Notices. All notices, requests, claims, demands and other communications under this Agreement shall be in writing and shall be deemed given if delivered personally, via facsimile (which is confirmed) or sent by overnight courier (providing proof of delivery) to the parties at the following addresses (or at such other address for a party as shall be specified by like notice):

(a) If to Stockholder, at the address set forth below Stockholder's signature at the end hereof.

(b) if to Parent, to:

Nanogen, Inc.

10398 Pacific Center Court

San Diego, CA 92121

Facsimile: (858) 410-4949

Attention: General Counsel

with a copy (which shall not constitute notice) to:

Morgan, Lewis & Bockius LLP

One Market, Spear St. Tower

San Francisco, CA 94105

Facsimile: (415) 442-1001

Attention: Scott D. Karchmer, Esq.

or to such other address as any party hereto may designate for itself by notice given as herein provided.

6.6 Governing Law. This Agreement shall be governed by, and construed in accordance with, the laws of the State of Delaware, regardless of the laws that might otherwise govern under applicable principles of conflict of laws thereof.

6.7 No Waiver. The failure of any party hereto to exercise any right, power or remedy provided under this Agreement or otherwise available in respect hereof at law or in equity, or to insist upon compliance by any other party hereto with its obligations hereunder, and any custom or practice of the parties at variance with the terms hereof, shall not constitute a waiver by such party of its right to exercise any such or other right,

power or remedy or to demand such compliance.

6.8 Entire Agreement; No Third-Party Beneficiaries. This Agreement and the Proxy (i) constitute the entire agreement, and supersede all prior agreements and understandings, both written and oral, among the parties with respect to the subject matter of this Agreement and the Proxy and (ii) are not intended to confer upon any Person other than the parties any rights or remedies.

6.9 Counterpart. This Agreement may be executed by facsimile signature and in one or more counterparts, all of which shall be considered one and the same agreement and shall

B-6

Table of Contents

become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

6.10 Effect of Headings. The section headings herein are for convenience only and shall not affect the construction or interpretation of this Agreement.

B-7

Table of Contents

IN WITNESS WHEREOF, the parties have caused this Voting Agreement to be executed as of the date first above written.

NANOGEN, INC.

STOCKHOLDER:

By: _____

(Signature)

Its: _____

(Signature of Spouse)

(Print Name of Stockholder)

(Print Street Address)

(Print City, State and Zip)

Shares owned on the date hereof:

_____ shares of Company Common Stock

_____ shares of Company Common Stock issuable upon the exercise of outstanding options, warrants or other rights.

State of Residence (if different than as set forth in address above):_____

Table of Contents

EXHIBIT A

IRREVOCABLE PROXY

TO VOTE STOCK OF

EPOCH BIOSCIENCES, INC.

The undersigned stockholder of EPOCH BIOSCIENCES, INC., a Delaware corporation (the Company), hereby irrevocably appoints the members of the Board of Directors of NANOGEN, INC., a Delaware corporation (Parent), and each of them, or any other designee of Parent, as the sole and exclusive attorneys and proxies of the undersigned, with full power of substitution and resubstitution, to vote and exercise all voting rights (to the full extent that the undersigned is entitled to do so) with respect to all of the issued and outstanding shares of capital stock of Company that now are owned of record by the undersigned and are owned as of any record date relevant for a vote (collectively, the Shares) in accordance with the terms of this Irrevocable Proxy. The Shares beneficially owned by the undersigned stockholder of Company as of the date of this Irrevocable Proxy are listed on the final page of this Irrevocable Proxy. Upon the undersigned's execution of this Irrevocable Proxy, any and all prior proxies given by the undersigned with respect to the voting of any Shares on the matters referred to in the third full paragraph of this Irrevocable Proxy are hereby revoked and the undersigned agrees not to grant any subsequent proxies with respect to such matters until after the Expiration Date (as defined below).

This Irrevocable Proxy is irrevocable, is coupled with an interest, and is granted in consideration of Parent entering into that certain Agreement and Plan of Merger and Reorganization (the Merger Agreement) by and among Parent, EMPIRE ACQUISITION CORP., a Delaware corporation and a wholly owned subsidiary of Parent (Merger Sub), and Company, which Merger Agreement provides for the merger of Merger Sub with and into Company (the Merger). As used herein, the term Expiration Date shall mean the earlier to occur of (i) such date and time as the Merger shall become effective in accordance with the terms and provisions of the Merger Agreement, and (ii) the date of termination of the Merger Agreement.

The attorneys and proxies named above, and each of them are hereby authorized and empowered by the undersigned, at any time prior to the Expiration Date, to act as the undersigned's attorney and proxy to vote the Shares, and to exercise all voting rights of the undersigned with respect to the Shares (including, without limitation, the power to execute and deliver written consents), at every annual, special or adjourned meeting of the stockholders of Company and in every written consent in lieu of such meeting:

(a) in favor of adoption of the Merger Agreement and the transactions contemplated thereby;

(b) against approval of any proposal made in opposition to or competition with the Merger Agreement and consummation of the Merger;

Exhibit A-1

Table of Contents

(c) against any Company Competing Transaction (as defined below) from any party other than Parent or an affiliate of Parent as contemplated by the Merger Agreement;

(d) against any proposal that is intended to, or is reasonably likely to, result in the conditions of Parent's or Merger Subsidiaries' obligations under the Merger Agreement not being fulfilled;

(e) against any other action that is intended, or could reasonably be expected, to impede, interfere with, delay, postpone, discourage or adversely affect the Merger or any of the other transactions contemplated by the Merger Agreement; and

(f) against any dissolution, liquidation or winding up of Company.

For purposes of this Irrevocable Proxy, the term Company Competing Transaction shall mean any of the following involving Company (other than the Merger):

(i) any merger, consolidation, share exchange, business combination, recapitalization, liquidation, dissolution, joint venture or other similar transaction;

(ii) any sale, lease, exchange, transfer or other disposition of 20% or more of the assets of such party and its subsidiaries, taken as a whole, in a single transaction or series of transactions;

(iii) any tender offer or exchange offer for 20% or more of the outstanding voting securities of such party or the filing of a registration statement under the Securities Act in connection therewith; or

(iv) any Person having acquired beneficial ownership or the right to acquire beneficial ownership of, or any group (as such term is defined under Section 13(d) of the Exchange Act) having been formed which beneficially owns or has the right to acquire beneficial ownership of, 20% or more of the outstanding voting securities of such party;

(v) any solicitation in opposition to the approval of this Agreement by the stockholders of such party; or

(vi) any public announcement of a proposal, plan or intention to do any of the foregoing or any agreement to engage in any of the foregoing.

The attorneys and proxies named above may not exercise this Irrevocable Proxy on any other matter except as provided above. The undersigned stockholder may vote the Shares on all other matters.

Edgar Filing: NANOGEN INC - Form S-4/A

All authority herein conferred shall survive the death or incapacity of the undersigned and any obligation of the undersigned hereunder shall be binding upon the heirs, personal representatives, successors and assigns of the undersigned.

(Remainder of page intentionally left blank)

Exhibit A-2

Table of Contents

This Irrevocable Proxy is coupled with an interest as aforesaid and is irrevocable.

Dated: September __, 2004

(Signature of Stockholder)

(Print Name of Stockholder)

_____ shares of Company Common Stock owned
on the date hereof:

_____ shares of Company Common Stock issuable
upon the exercise of outstanding options, warrants or
other rights.

(Signature Page to Irrevocable Proxy)

Table of Contents

ANNEX C

PARENT VOTING AGREEMENT

PARENT VOTING AGREEMENT (this Agreement) is made and entered into as of September 7, 2004 between EPOCH BIOSCIENCES, INC., a Delaware corporation (Company), and the undersigned stockholder (Stockholder) of NANOGEN, INC., a Delaware corporation (Parent). Capitalized terms used and not otherwise defined herein shall have the respective meanings set forth in the Merger Agreement described below.

WITNESSETH:

WHEREAS, pursuant to an Agreement and Plan of Merger and Reorganization dated as of September 7 2004 by and among Parent, EMPIRE ACQUISITION CORP., a Delaware corporation and a wholly owned subsidiary of Parent (Merger Sub), and Company (the Merger Agreement), Parent has agreed to acquire the outstanding securities of Company pursuant to a statutory merger of Merger Sub with and into Company in which outstanding shares of capital stock of Company will be converted into the right to receive the Merger Consideration;

WHEREAS, as a condition to the willingness of Company to enter into the Merger Agreement and as an inducement and in consideration therefor, Stockholder has agreed to enter into this Agreement; and

WHEREAS, Stockholder is the registered and beneficial owner (within the meaning of Rule 13d-3 of the Exchange Act) of such number of shares of capital stock of Parent as is indicated on the signature pages hereto (the Shares).

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements herein contained, and intending to be legally bound hereby, the parties hereby agree as follows:

1. Agreement to Retain Shares.

1.1 Transfer and Encumbrance. Prior to the Expiration Date (as defined below), Stockholder shall not: (a) volitionally transfer, assign, sell, gift-over, pledge or otherwise dispose of, or consent to any of the foregoing (Transfer), any or all of the Shares and the New Shares (as defined below) or any right or interest therein; provided, however, such restrictions shall not be applicable to (i) a gift of the Shares made to one or more charitable foundations or organizations, the Stockholder's spouse or issue, including adopted children, or a trust for the exclusive benefit of the Stockholder or the Stockholder's spouse or issue, provided in each instance such transferee agrees to be bound by the terms of this Agreement or (ii) a transfer of title to the Shares effected pursuant to the Stockholder's will or the laws of intestate succession; (b) enter into any contract, option or other agreement, arrangement or understanding with respect to any Transfer; (c) grant any proxy, power-of-attorney or other authorization or consent with respect to any of the Shares (other than the proxy contemplated in Section 3 herein); or (d) deposit any of the Shares into a voting trust, or enter into a voting agreement or arrangement with respect to any of the Shares. As used herein, the term Expiration Date shall mean the earlier to occur of (a) the Effective Time or (b) termination of the Merger Agreement in accordance with the terms thereof.

1.2 New Shares. New Shares shall be subject to the terms and conditions of this Agreement to the same extent as if they constituted Shares. New Shares means:

(a) any shares of capital stock or voting securities of Parent that Stockholder purchases or with respect to which Stockholder otherwise acquires beneficial ownership (whether through the exercise of any options, warrants or other rights to purchase shares of Parent Common Stock or otherwise) after the date of this Agreement and prior to the Expiration Date; and

(b) any shares of capital stock or voting securities of Parent that Stockholder becomes the beneficial owner of as a result of any change in Parent Common Stock by reason of a stock dividend, stock split, split-up,

C-1

Table of Contents

recapitalization, reorganization, business combination, consolidation, exchange of shares, or any similar transaction or other change in the capital structure of Parent affecting Parent Common Stock.

2. Agreement to Vote Shares and Take Certain Other Action.

2.1 Prior to the Expiration Date, at every meeting of the stockholders of Parent at which any of the following matters is considered or voted upon, and at every adjournment or postponement thereof, and on every action or approval by written consent of the stockholders of Parent with respect to any of the following matters, Stockholder shall vote or give written consent or, using Stockholder's best efforts, and to the full extent legally permitted, cause the holder of record to vote or give written consent with respect to the Shares and any New Shares:

(a) in favor of adoption of the Parent Share Increase and the Share Issuance;

(b) against approval of any proposal made in opposition to, or competition with the Parent Share Increase, the Share Issuance, the Merger Agreement or consummation of the Merger;

(c) against any other action that is intended, or could reasonably be expected, to impede, interfere with, delay, postpone, discourage or adversely affect the Merger or any of the other transactions contemplated by the Merger Agreement;

(d) against any proposal that is intended to, or is reasonably likely to, result in a breach by Parent of the Merger Agreement; and

(e) against any dissolution, liquidation or winding up of Parent.

Prior to the Expiration Date, Stockholder, as the holder of voting stock of Parent, shall be present, in person or by proxy, or, using Stockholder's best efforts and to the full extent legally permitted, attempt to cause the holder of record to be present, in person or by proxy, at all meetings of stockholders of Parent at which the matters referred to in Section 2.1 is to be voted upon so that all Shares and New Shares are counted for the purposes of determining the presence of a quorum at such meetings.

2.2 Between the date of this Agreement and the Expiration Date, Stockholder will not, and will not permit any entity under Stockholder's control to, (a) solicit proxies or become a participant in a solicitation (as such terms are defined in Rule 14A under the Exchange Act) with respect to an Opposing Proposal (as defined below), (b) initiate a stockholders' vote with respect to an Opposing Proposal or (c) become a member of a group (as such term is used in Section 13(d) of the Exchange Act) with respect to any voting securities of Parent with respect to an Opposing Proposal. For purposes of this Agreement, the term Opposing Proposal means any of the actions or proposals described in clauses (b) through (e) of Section 2.1, along with any proposal or action which would, or could reasonably be expected to, impede, frustrate, prevent, prohibit or discourage the Merger.

Edgar Filing: NANOGEN INC - Form S-4/A

2.3 Stockholder shall use commercially reasonable efforts to take, or cause to be taken, all actions, and to do, or cause to be done, and to assist and cooperate with the other parties in doing, all things necessary, proper or advisable to consummate and make effective, in the most expeditious manner practicable, the Merger and the other transactions contemplated by the Merger Agreement.

2.4 Notwithstanding the foregoing, nothing in this Agreement shall limit or restrict Stockholder from (a) acting in Stockholder's capacity as a director or officer of Parent, to the extent applicable, it being understood that this Agreement shall apply to Stockholder solely in Stockholder's capacity as a stockholder of Parent or (b) voting in Stockholder's sole discretion on any matter other than the matters referred to in Section 2.1.

3. Irrevocable Proxy. Stockholder has delivered to Company a duly executed proxy in the form attached hereto as Exhibit A (the "Proxy"), such Proxy covering the issued and outstanding Shares and all issued and outstanding New Shares in respect of which Stockholder is the record holder and is entitled to vote at each meeting of the

C-2

Table of Contents

stockholders of Parent (including, without limitation, each written consent in lieu of a meeting) prior to the Expiration Date. Upon the execution of this Agreement by Stockholder, Stockholder hereby revokes any and all prior proxies or powers of attorney given by Stockholder with respect to voting of the Shares on the matters referred to in Section 2.1 and agrees not to grant any subsequent proxies or powers of attorney with respect to the voting of the Shares on the matters referred to in Section 2.1 until after the Expiration Date.

4. **Representations, Warranties and Covenants of Stockholder.** Stockholder hereby represents, warrants and covenants to Company as follows:

(a) (i) Stockholder is the beneficial owner of the Shares set forth on the signature pages hereto; (ii) the Shares set forth on the signature page hereto constitute Stockholder's entire interest in the outstanding capital stock and voting securities of Parent as of the date hereof; (iii) the Shares are, and the Shares and any New Shares will be, at all times up until the Expiration Date, free and clear of any liens, claims, options, charges, security interests, proxies, voting trusts, agreements, rights, understandings or arrangements, or exercise of any rights of a stockholder in respect of the Shares and New Shares or other encumbrances; (iv) Stockholder has voting power and the power of disposition with respect to all of the Shares outstanding on the date hereof, and will have voting power and power of disposition with respect to all of the Shares and New Shares acquired by such Stockholder after the date hereof; and (v) Stockholder's principal residence or place of business is accurately set forth on the signature page hereto.

(b) In the event that Stockholder is a corporation, partnership, limited liability company or other entity, Stockholder is duly organized and validly existing under the laws of the jurisdiction in which it is incorporated or constituted, and Stockholder has taken all necessary corporate or other action to authorize the execution, delivery and performance of this Agreement. Stockholder has full power and legal capacity to execute and deliver this Agreement and to comply with and perform Stockholder's obligations hereunder. This Agreement has been duly and validly executed and delivered by Stockholder and constitutes the valid and binding obligation of Stockholder, enforceable against Stockholder in accordance with its terms, except as may be limited by (i) the effect of bankruptcy, insolvency, conservatorship, arrangement, moratorium or other laws affecting or relating to the rights of creditors generally, or (ii) the rules governing the availability of specific performance, injunctive relief or other equitable remedies and general principles of equity, regardless of whether considered in a proceeding in equity or at law. The execution and delivery of this Agreement by Stockholder does not, and the performance of Stockholder's obligations hereunder will not, result in any breach of or constitute a default (or an event that with notice or lapse of time or both would become a default) under, or give to others any right to terminate, amend, accelerate or cancel any right or obligation under, or result in the creation of any lien or encumbrance on any Shares or New Shares pursuant to, any note, bond, mortgage, indenture, contract, agreement, lease, license, permit, franchise or other instrument or obligation to which Stockholder is a party or by which Stockholder or the Shares or New Shares are or will be bound or affected.

(c) Stockholder understands and agrees that if Stockholder attempts to Transfer, vote or provide any other person with the authority to vote any of the Shares or New Shares other than in compliance with this Agreement, Parent shall not, and Stockholder hereby unconditionally and irrevocably instructs Parent to not, permit any such Transfer on its books and records, issue a new certificate representing any of the Shares or New Shares or record such vote unless and until Stockholder shall have complied with the terms of this Agreement.

5. **Termination.** This Agreement and the Proxy delivered in connection herewith and all obligations of Stockholder hereunder and thereunder, shall terminate and shall have no further force or effect as of the Expiration Date.

6. **Miscellaneous.**

6.1 **Severability.** If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of law or public policy, all other conditions and provisions of this Agreement shall

C-3

Table of Contents

nevertheless remain in full force and effect so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner materially adverse to either party. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in a mutually acceptable manner in order that the transactions contemplated hereby be consummated as originally contemplated to the greatest extent possible.

6.2 **Binding Effect and Assignment.** Neither this Agreement nor any of the rights, interests or obligations under this Agreement shall be assigned, in whole or in part, by operation of law or otherwise by any party without the prior written consent of the other party; provided, however, Company may, in its sole discretion, assign its rights and obligations hereunder to any direct or indirect wholly-owned subsidiary of Company. Any assignment in violation of the preceding sentence shall be void. Subject to the preceding sentence, this Agreement will be binding upon, inure to the benefit of, and be enforceable by, the parties and their respective successors and assigns.

6.3 **Amendment and Modification.** This Agreement may not be amended except by an instrument in writing signed on behalf of each of the parties.

6.4 **Specific Performance; Injunctive Relief.** The parties hereto acknowledge that Company will be irreparably harmed and that there will be no adequate remedy at law for a violation of any of the covenants or agreements of Stockholder set forth herein. Therefore, it is agreed that, in addition to any other remedies that may be available to Company upon any such violation, Company shall have the right to enforce such covenants and agreements by specific performance, injunctive relief or by any other means available to Company at law or in equity and Stockholder hereby waives any and all defenses which could exist in its favor in connection with such enforcement and waives any requirement for the security or posting of any bond in connection with such enforcement.

6.5 **Notices.** All notices, requests, claims, demands and other communications under this Agreement shall be in writing and shall be deemed given if delivered personally, via facsimile (which is confirmed) or sent by overnight courier (providing proof of delivery) to the parties at the following addresses (or at such other address for a party as shall be specified by like notice):

(a) If to Stockholder, at the address set forth below Stockholder's signature at the end hereof.

(b) if to Company, to:

EPOCH BIOSCIENCES INC.

21720 23RD Drive, SE, Suite 150

Bothel, WA 98021

Facsimile: (425) 482-5550

Attention: William G. Gerber, M.D.

Edgar Filing: NANOGEN INC - Form S-4/A

with a copy (which shall not constitute notice) to:

Stradling Yocca Carlson & Rauth

660 Newport Center Drive

Newport Beach, CA 92660

Facsimile: (949) 725-4100

Attention: Lawrence B. Cohn

or to such other address as any party hereto may designate for itself by notice given as herein provided.

C-4

Table of Contents

6.6 Governing Law. This Agreement shall be governed by, and construed in accordance with, the laws of the State of Delaware, regardless of the laws that might otherwise govern under applicable principles of conflict of laws thereof.

6.7 No Waiver. The failure of any party hereto to exercise any right, power or remedy provided under this Agreement or otherwise available in respect hereof at law or in equity, or to insist upon compliance by any other party hereto with its obligations hereunder, and any custom or practice of the parties at variance with the terms hereof, shall not constitute a waiver by such party of its right to exercise any such or other right, power or remedy or to demand such compliance.

6.8 Entire Agreement; No Third-Party Beneficiaries. This Agreement and the Proxy (i) constitute the entire agreement, and supersede all prior agreements and understandings, both written and oral, among the parties with respect to the subject matter of this Agreement and the Proxy and (ii) are not intended to confer upon any Person other than the parties any rights or remedies.

6.9 Counterpart. This Agreement may be executed by facsimile signature and in one or more counterparts, all of which shall be considered one and the same agreement and shall become effective when one or more counterparts have been signed by each of the parties and delivered to the other parties.

6.10 Effect of Headings. The section headings herein are for convenience only and shall not affect the construction or interpretation of this Agreement.

Table of Contents

IN WITNESS WHEREOF, the parties have caused this Voting Agreement to be executed as of the date first above written.

COMPANY

By: _____
Its: _____

STOCKHOLDER:

(Signature)

(Signature of Spouse)

(Print Name of Stockholder)

(Print Street Address)

(Print City, State and Zip)

(Print Facsimile Number)

Shares owned on the date hereof:

_____ shares of Parent Common Stock

_____ shares of Parent Common Stock issuable upon the exercise of outstanding options, warrants or other rights.

State of Residence (if different than as set forth in address above):_____

Table of Contents

EXHIBIT A

IRREVOCABLE PROXY

TO VOTE STOCK OF

NANOGEN, INC.

The undersigned stockholder of NANOGEN, INC., a Delaware corporation (Parent), hereby irrevocably appoints the members of the Board of Directors of EPOCH BIOSCIENCES, INC., a Delaware corporation (Company), and each of them, or any other designee of Company, as the sole and exclusive attorneys and proxies of the undersigned, with full power of substitution and resubstitution, to vote and exercise all voting rights (to the full extent that the undersigned is entitled to do so) with respect to all of the issued and outstanding shares of capital stock of Parent that now are owned of record by the undersigned and are owned as of any record date relevant for a vote (collectively, the Shares), in accordance with the terms of this Irrevocable Proxy. The Shares beneficially owned by the undersigned stockholder of Parent as of the date of this Irrevocable Proxy are listed on the final page of this Irrevocable Proxy. Upon the undersigned's execution of this Irrevocable Proxy, any and all prior proxies given by the undersigned with respect to the voting of any Shares on the matters referred to in the third full paragraph of this Irrevocable Proxy are hereby revoked and the undersigned agrees not to grant any subsequent proxies with respect to such matters until after the Expiration Date (as defined below).

This Irrevocable Proxy is irrevocable, is coupled with an interest, and is granted in consideration of Company entering into that certain Agreement and Plan of Merger and Reorganization (the Merger Agreement) by and among Parent, EMPIRE ACQUISITION CORP., a Delaware corporation and a wholly owned subsidiary of Parent (Merger Sub), and Company, which Merger Agreement provides for the merger of Merger Sub with and into Company (the Merger). As used herein, the term Expiration Date shall mean the earlier to occur of (i) such date and time as the Merger shall become effective in accordance with the terms and provisions of the Merger Agreement, and (ii) the date of termination of the Merger Agreement.

The attorneys and proxies named above, and each of them are hereby authorized and empowered by the undersigned, at any time prior to the Expiration Date, to act as the undersigned's attorney and proxy to vote the Shares, and to exercise all voting rights of the undersigned with respect to the Shares (including, without limitation, the power to execute and deliver written consents), at every annual, special or adjourned meeting of the stockholders of Parent and in every written consent in lieu of such meeting:

(a) in favor of adoption of the Parent Share Increase and the Share Issuance;

(b) against approval of any proposal made in opposition to, or competition with the Parent Share Increase, the Share Issuance, the Merger Agreement or consummation of the Merger;

Edgar Filing: NANOGEN INC - Form S-4/A

(c) against any other action that is intended, or could reasonably be expected, to impede, interfere with, delay, postpone, discourage or adversely affect the Merger or any of the other transactions contemplated by the Merger Agreement;

(d) against any proposal that is intended to, or is reasonably likely to, result in a breach by Parent of the Merger Agreement; and

(e) against any dissolution, liquidation or winding up of Parent.

The attorneys and proxies named above may not exercise this Irrevocable Proxy on any other matter except as provided above. The undersigned stockholder may vote the Shares on all other matters.

All authority herein conferred shall survive the death or incapacity of the undersigned and any obligation of the undersigned hereunder shall be binding upon the heirs, personal representatives, successors and assigns of the undersigned.

Exhibit A-1

Table of Contents

This Irrevocable Proxy is coupled with an interest as aforesaid and is irrevocable.

Dated: September __, 2004

(Signature of Stockholder)

(Print Name of Stockholder)

_____ shares of Parent Common Stock owned on
the date hereof:

_____ shares of Parent Common Stock issuable
upon the exercise of outstanding options, warrants or
other rights.

(Signature Page to Irrevocable Proxy)

Table of Contents

Annex D

September 7, 2004

Board of Directors

Nanogen, Inc.

10398 Pacific Center Ct.

San Diego, CA 92121

Members of the Board:

You have requested our opinion as to the fairness, from a financial point of view, to Nanogen, Inc. (the "Company") of the Exchange Ratio (as defined below) in the proposed merger (the "Merger") of Empire Acquisition Corp., a wholly owned subsidiary of the Company ("Merger Sub"), with and into Epoch Biosciences, Inc. ("Epoch") pursuant to the Agreement and Plan of Merger to be entered into by and among the Company, Merger Sub and Epoch (the "Agreement"). Pursuant to the Agreement, each outstanding share of common stock, par value \$0.01 per share, of Epoch (the "Epoch Common Stock"), will be converted into the right to receive between 0.4673 to 0.6329 shares, to be determined at closing in accordance with the Agreement, (the "Exchange Ratio") of common stock, par value \$0.001 per share, of the Company (the "Company Common Stock"), plus cash in respect of any fractional shares.

In connection with this opinion, Seven Hills, among other things:

- a. reviewed certain publicly available financial statements and other information of the Company and Epoch, respectively;
- b. reviewed certain internal financial statements and other financial and operating data concerning the Company and Epoch, prepared by the managements of the Company and Epoch, respectively;
- c. reviewed certain financial projections prepared by the managements of the Company and Epoch;
- d. reviewed certain projections of the anticipated financial benefits and synergies of the Merger including cost savings, and costs anticipated prior to and resulting from the Merger, prepared by the managements of the Company and Epoch;

Edgar Filing: NANOGEN INC - Form S-4/A

e. reviewed the pro forma impact of the Merger on certain financial and operating metrics, including the impact on cash balances, for the combined company;

f. discussed with senior executives of the Company and Epoch the past and current operations and financial condition and the prospects of the Company and Epoch, including financial projections prepared by the managements of the Company and Epoch and information relating to certain strategic, financial and operational benefits anticipated from the Merger;

g. reviewed and compared the reported prices and trading activity for the Company Common Stock and Epoch Common Stock;

SEVEN HILLS PARTNERS LLC

88 KEARNY STREET SAN FRANCISCO, CA 94108

TEL: (415) 869-6200 FAX: (415) 869-6262

MEMBER OF NASD AND SIPC

D-1

Table of Contents

h. reviewed and compared certain financial and stock market information for the Company and Epoch with similar information for certain other companies the securities of which are publicly traded;

i. reviewed and compared the financial terms, to the extent publicly available, of certain transactions;

j. reviewed and discussed with the senior managements of the Company and Epoch their strategic and financial rationales for the Merger;

k. participated in discussions and negotiations among representatives of the Company, Epoch and their respective advisors;

l. reviewed the draft dated September 7, 2004 of the Merger Agreement and certain related documents; and

m. reviewed such other financial studies and analyses and took into account such other matters as Seven Hills deemed necessary, including its assessment of general economic, market and other conditions.

We have relied upon the accuracy and completeness of all of the financial, accounting and other information discussed with or reviewed by us and have assumed such accuracy and completeness for purposes of rendering this opinion, and we have not assumed responsibility for independent verification of such information. We have relied upon the assurances of management of the Company that it is not aware of any facts that would make such information inaccurate or misleading. With respect to projections and information relating to the strategic, financial and operational costs and benefits anticipated prior to and resulting from the Merger, we have assumed that they were reasonably prepared on bases reflecting the best currently available estimates and judgments of the future financial performance of the Company and Epoch, in each case on a standalone and combined basis. Furthermore, we did not obtain or make, or assume responsibility for obtaining or making any independent evaluation or appraisal of the properties or assets or liabilities (contingent or otherwise) of the Company or Epoch, nor were we furnished with any such evaluations or appraisals, nor have we evaluated the solvency or fair value of the Company or Epoch under any state or federal laws relating to bankruptcy, insolvency or similar matters. We have also assumed that all material governmental, regulatory or other consents and approvals necessary for the consummation of the transaction contemplated by the Agreement will be obtained without any adverse effect on the Company, on Epoch or on the contemplated benefits of the transaction contemplated by the Agreement. We have also assumed the Merger will qualify as a tax-free reorganization for U.S. federal income tax purposes. We have further assumed that the Merger will be consummated in accordance with the terms contained in the draft of the definitive agreement and other documents furnished to us, which we assume will not differ in any material respects from the final Agreement, and without waiver by the Company of any of the conditions to its obligations thereunder. We note that we are not legal, tax or regulatory experts and have relied upon, without assuming any responsibility for independent verification or liability therefor, the assessment of the Company's legal, tax and regulatory advisors with respect to the legal, tax and regulatory matters related to the Merger.

Our opinion does not address the relative merits of the transaction contemplated by the Agreement as compared to any alternative business transaction that might be available to the Company. Our advisory services and the opinion expressed herein are provided for the information and assistance of the Board of Directors of the Company in connection with its consideration of the transaction contemplated by the Agreement and such opinion does not constitute a recommendation as to how any holder of shares of Company Common Stock should vote with respect to such transaction.

Edgar Filing: NANOGEN INC - Form S-4/A

Our opinion is necessarily based on economic, market and other conditions as in effect on, and the information made available to us as of, the date hereof. It should be understood that subsequent developments may affect this opinion and that we do not have any obligation to update, revise, or reaffirm this opinion. Our opinion is limited to the fairness, from a financial point of view, to the Company of the Exchange Ratio in the Merger and we express no opinion as to the underlying decision by the Company to engage in the Merger. We are expressing no opinion herein as to the price at which Company Common Stock or the Epoch Common Stock will trade at any future time, including upon announcement and consummation of the Merger.

D-2

Table of Contents

We have acted as financial advisor to the Company with respect to the Merger and will receive a fee from the Company for our services, including rendering this opinion, a significant portion of which is contingent upon the consummation of the Merger. The Company has agreed to indemnify us for certain liabilities that may arise out of the rendering of this opinion. We have previously served as placement agent in the Company's offerings of common stock and warrants on September 19, 2003; common stock on March 5, 2004 and common stock on April 7, 2004. We also acted as the Company's financial advisor with regard to its acquisition of SynX Pharma Inc. which closed on April 21, 2004. We have received compensation from the Company for our advisory services regarding these matters. In addition, Seven Hills may provide investment banking services to the Company and the combined company in the future, for which services Seven Hills may receive compensation.

Based upon and subject to the foregoing and based upon such other matters as we consider relevant, it is our opinion that, as of the date hereof, the Exchange Ratio pursuant to the Agreement is fair from a financial point of view to the Company.

This opinion and a summary discussion of our underlying analyses and role as the Company's financial advisor with respect to the Merger, in form and substance satisfactory to us and our legal counsel, may be included in a proxy or registration statement of the Company distributed in connection with the Merger. In furnishing this opinion, Seven Hills does not admit that we are experts within the meaning of the term "experts" as used in the Securities Act of 1933, as amended (the "Securities Act"), and the rules and regulations promulgated thereunder, nor do we admit that this opinion constitutes a report or valuation within the meaning of Section 11 of the Securities Act.

Very truly yours,

Seven Hills Partners LLC

D-3

Table of Contents

Annex E

September 7, 2004

Strictly Confidential

Board of Directors

Epoch Biosciences, Inc.

21720 23rd Drive SE, Suite 150

Bothell, WA 98021

Members of the Board:

We understand that Epoch Biosciences, Inc. (Epoch or the Company), Nanogen, Inc. (Nanogen) and Epoch Acquisition Corp., a wholly owned subsidiary of Nanogen (Merger Sub), have entered into an Agreement and Plan of Merger and Reorganization, dated September 7, 2004 (the Merger Agreement), which provides, among other things, for the merger (Merger) of the Merger Sub with and into the Company. Pursuant to the Merger, Epoch will become a wholly owned subsidiary of Nanogen and each issued and outstanding share of common stock, par value \$0.01 per share (the Epoch Common Stock), of Epoch, other than shares held in treasury or held by Nanogen, Merger Sub or any subsidiary of Nanogen or Merger Sub or as to which dissenters' rights have been perfected, will be converted into the right to receive a number of shares of common stock, par value \$0.001 per share (the Nanogen Common Stock), of Nanogen equal to \$2.00 divided by the average closing price per share of Nanogen Common Stock over the 20 consecutive trading days ending on and including the third trading day preceding the closing; provided, however, that in no event will the number of shares of Nanogen Common Stock to be issued for each share of Epoch Common Stock be less than 0.4673 of a share of Nanogen Common Stock or more than 0.6329 of a share of Nanogen Common Stock (the Consideration). The terms and conditions of the Merger are more fully set forth in the Merger Agreement.

We have acted as financial advisor to Epoch in connection with the Merger for which we received an advisory fee and will receive an additional fee in the event the Merger closes. In connection with our engagement, you have requested our opinion as to whether the Consideration to be received by the holders of Epoch Common Stock pursuant to the Merger Agreement is fair from a financial point of view to such holders.

In connection with our opinion, we have (among other things): (a) reviewed certain publicly available financial statements and other information of Nanogen and Epoch, respectively; (b) reviewed certain internal financial statements, financial forecasts and other information concerning Nanogen and Epoch, prepared by the managements of Nanogen and Epoch, respectively, and concerning the pro forma combined company (including synergies and other expected benefits of the Merger, together with the associated expected costs), prepared by the managements of both Nanogen and Epoch; (c) discussed the past, current and forecasted financial position and results of operations and cash flows of Nanogen and Epoch, with senior executives of Nanogen and Epoch, respectively, and the current and forecasted financial position and results of

Edgar Filing: NANOGEN INC - Form S-4/A

operations and cash flows (including synergies and other expected benefits of the Merger, together with the associated expected costs) of the pro forma combined company, with senior executives of both Nanogen and Epoch; (d) reviewed the reported prices and trading activity for Nanogen Common Stock and Epoch Common Stock, respectively; (e) compared the financial performance of Nanogen and Epoch and the prices and trading activity of Nanogen Common Stock and Epoch Common Stock, respectively, with that of certain other comparable publicly-traded companies and their securities; (f) reviewed the financial terms, to the extent publicly available, of certain comparable acquisition transactions; (g) participated in discussions and negotiations among representatives of Nanogen and Epoch, and certain other parties, and their financial and legal advisors; (h) reviewed the Merger Agreement and certain related documents; and (i) reviewed such other information, conducted such other discussions with management of Nanogen and Epoch (respectively), performed such other analyses, and considered such other factors as we have deemed appropriate.

E-1

Table of Contents

For the purposes of our opinion, we have assumed and relied upon without independent verification the accuracy and completeness of all the financial and other information reviewed by, or discussed with, us and, with respect to the internal financial forecasts, we have assumed that they were reasonably prepared on bases reflecting the best currently available estimates and judgments of the future financial performance of Nanogen, Epoch and the pro forma combined company, respectively, including management's respective estimates and judgments in relation to each company's technology, product and intellectual property position. We have not made any independent valuation or appraisal of the assets or liabilities of Nanogen or Epoch, nor have we been furnished with any such appraisals.

We have also assumed, for the purposes of our opinion, that the Merger will be consummated in accordance with the terms set forth in the Merger Agreement, including, among other things, that the Merger will be treated as a tax-free reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986 (as amended) and that, in connection with the receipt of all the necessary regulatory approvals for the proposed Merger, no restrictions will be imposed or delays will result that would have a material adverse affect on the contemplated benefits expected to be derived in the proposed Merger.

Our opinion is necessarily based on the information made available to us, and the financial, economic, market and other conditions as they exist and can reasonably be evaluated, on the date hereof. In arriving at our opinion, we also took into account that, in connection with our engagement, we approached third parties to solicit indications of interest in a possible acquisition or other business combination involving the Company and held preliminary discussions with certain of these parties prior to the date hereof. Our opinion, however, does not address the relative merits of the Merger as compared to other business strategies or transactions that may be available to the Company, nor does it address the underlying business decision of the Company to engage in the Merger. Furthermore, our opinion does not in any manner address the prices at which the Epoch Common Stock will trade following the announcement, nor the prices at which the pro forma combined company will trade following the consummation, of the Merger.

It is understood that our opinion is for the information of the Board of Directors of Epoch and may not be used for any other purpose without our prior written consent, except that a copy of this letter may be included in its entirety in any filing made by Epoch in respect of the Merger with the Securities and Exchange Commission, and that we express no opinion or recommendation as to how the stockholders of Epoch should vote at the stockholders' meeting to be held in connection with the Merger.

Based on and subject to the foregoing, we are of the opinion on the date hereof that the Consideration to be received by holders of Epoch Common Stock pursuant to the Merger Agreement is fair from a financial point of view to such holders.

Very truly yours,

Molecular Securities Inc.

By: /s/ ALEX LIPE

Alex Lipe

President

Table of Contents

Annex F

GENERAL CORPORATION LAW OF THE STATE OF DELAWARE

SECTION 262. *Appraisal Rights.*

(a) Any stockholder of a corporation of this State who holds shares of stock on the date of the making of a demand pursuant to subsection (d) of this section with respect to such shares, who continuously holds such shares through the effective date of the merger or consolidation, who has otherwise complied with subsection (d) of this section and who has neither voted in favor of the merger or consolidation nor consented thereto in writing pursuant to Section 228 of this title shall be entitled to an appraisal by the Court of Chancery of the fair value of the stockholder's shares of stock under the circumstances described in subsections (b) and (c) of this section. As used in this section, the word "stockholder" means a holder of record of stock in a stock corporation and also a member of record of a nonstock corporation; the words "stock" and "share" mean and include what is ordinarily meant by those words and also membership or membership interest of a member of a nonstock corporation; and the words "depository receipt" mean a receipt or other instrument issued by a depository representing an interest in one or more shares, or fractions thereof, solely of stock of a corporation, which stock is deposited with the depository.

(b) Appraisal rights shall be available for the shares of any class or series of stock of a constituent corporation in a merger or consolidation to be effected pursuant to Section 251 (other than a merger effected pursuant to Section 251(g) of this title), Section 252, Section 254, Section 257, Section 258, Section 263 or Section 264 of this title:

(1) Provided, however, that no appraisal rights under this section shall be available for the shares of any class or series of stock, which stock, or depository receipts in respect thereof, at the record date fixed to determine the stockholders entitled to receive notice of and to vote at the meeting of stockholders to act upon the agreement of merger or consolidation, were either (i) listed on a national securities exchange or designated as a national market system security on an interdealer quotation system by the National Association of Securities Dealers, Inc. or (ii) held of record by more than 2,000 holders; and further provided that no appraisal rights shall be available for any shares of stock of the constituent corporation surviving a merger if the merger did not require for its approval the vote of the stockholders of the surviving corporation as provided in subsection (f) of Section 251 of this title.

(2) Notwithstanding paragraph (1) of this subsection, appraisal rights under this section shall be available for the shares of any class or series of stock of a constituent corporation if the holders thereof are required by the terms of an agreement of merger or consolidation pursuant to Sections 251, 252, 254, 257, 258, 263 and 264 of this title to accept for such stock anything except:

a. Shares of stock of the corporation surviving or resulting from such merger or consolidation, or depository receipts in respect thereof;

b. Shares of stock of any other corporation, or depository receipts in respect thereof, which shares of stock (or depository receipts in respect thereof) or depository receipts at the effective date of the merger or consolidation will be either listed on a national securities exchange or designated as a national market system security on an interdealer quotation system by the National Association of Securities Dealers, Inc. or held of record by more than 2,000 holders;

Edgar Filing: NANOGEN INC - Form S-4/A

c. Cash in lieu of fractional shares or fractional depository receipts described in the foregoing subparagraphs a. and b. of this paragraph; or

d. Any combination of the shares of stock, depository receipts and cash in lieu of fractional shares or fractional depository receipts described in the foregoing subparagraphs a., b. and c. of this paragraph.

(3) In the event all of the stock of a subsidiary Delaware corporation party to a merger effected under Section 253 of this title is not owned by the parent corporation immediately prior to the merger, appraisal rights shall be available for the shares of the subsidiary Delaware corporation.

F-1

Table of Contents

(c) Any corporation may provide in its certificate of incorporation that appraisal rights under this section shall be available for the shares of any class or series of its stock as a result of an amendment to its certificate of incorporation, any merger or consolidation in which the corporation is a constituent corporation or the sale of all or substantially all of the assets of the corporation. If the certificate of incorporation contains such a provision, the procedures of this section, including those set forth in subsections (d) and (e) of this section, shall apply as nearly as is practicable.

(d) Appraisal rights shall be perfected as follows:

(1) If a proposed merger or consolidation for which appraisal rights are provided under this section is to be submitted for approval at a meeting of stockholders, the corporation, not less than 20 days prior to the meeting, shall notify each of its stockholders who was such on the record date for such meeting with respect to shares for which appraisal rights are available pursuant to subsection (b) or (c) hereof that appraisal rights are available for any or all of the shares of the constituent corporations, and shall include in such notice a copy of this section. Each stockholder electing to demand the appraisal of such stockholder's shares shall deliver to the corporation, before the taking of the vote on the merger or consolidation, a written demand for appraisal of such stockholder's shares. Such demand will be sufficient if it reasonably informs the corporation of the identity of the stockholder and that the stockholder intends thereby to demand the appraisal of such stockholder's shares. A proxy or vote against the merger or consolidation shall not constitute such a demand. A stockholder electing to take such action must do so by a separate written demand as herein provided. Within 10 days after the effective date of such merger or consolidation, the surviving or resulting corporation shall notify each stockholder of each constituent corporation who has complied with this subsection and has not voted in favor of or consented to the merger or consolidation of the date that the merger or consolidation has become effective; or

(2) If the merger or consolidation was approved pursuant to Section 228 or Section 253 of this title, then either a constituent corporation before the effective date of the merger or consolidation or the surviving or resulting corporation within 10 days thereafter shall notify each of the holders of any class or series of stock of such constituent corporation who are entitled to appraisal rights of the approval of the merger or consolidation and that appraisal rights are available for any or all shares of such class or series of stock of such constituent corporation, and shall include in such notice a copy of this section. Such notice may, and, if given on or after the effective date of the merger or consolidation, shall, also notify such stockholders of the effective date of the merger or consolidation. Any stockholder entitled to appraisal rights may, within 20 days after the date of mailing of such notice, demand in writing from the surviving or resulting corporation the appraisal of such holder's shares. Such demand will be sufficient if it reasonably informs the corporation of the identity of the stockholder and that the stockholder intends thereby to demand the appraisal of such holder's shares. If such notice did not notify stockholders of the effective date of the merger or consolidation, either (i) each such constituent corporation shall send a second notice before the effective date of the merger or consolidation notifying each of the holders of any class or series of stock of such constituent corporation that are entitled to appraisal rights of the effective date of the merger or consolidation or (ii) the surviving or resulting corporation shall send such a second notice to all such holders on or within 10 days after such effective date; provided, however, that if such second notice is sent more than 20 days following the sending of the first notice, such second notice need only be sent to each stockholder who is entitled to appraisal rights and who has demanded appraisal of such holder's shares in accordance with this subsection. An affidavit of the secretary or assistant secretary or of the transfer agent of the corporation that is required to give either notice that such notice has been given shall, in the absence of fraud, be prima facie evidence of the facts stated therein. For purposes of determining the stockholders entitled to receive either notice, each constituent corporation may fix, in advance, a record date that shall be not more than 10 days prior to the date the notice is given, provided, that if the notice is given on or after the effective date of the merger or consolidation, the record date shall be such effective date. If no record date is fixed and the notice is given prior to the effective date, the record date shall be the close of business on the day next preceding the day on which the notice is given.

Table of Contents

(e) Within 120 days after the effective date of the merger or consolidation, the surviving or resulting corporation or any stockholder who has complied with subsections (a) and (d) hereof and who is otherwise entitled to appraisal rights, may file a petition in the Court of Chancery demanding a determination of the value of the stock of all such stockholders. Notwithstanding the foregoing, at any time within 60 days after the effective date of the merger or consolidation, any stockholder shall have the right to withdraw such stockholder's demand for appraisal and to accept the terms offered upon the merger or consolidation. Within 120 days after the effective date of the merger or consolidation, any stockholder who has complied with the requirements of subsections (a) and (d) hereof, upon written request, shall be entitled to receive from the corporation surviving the merger or resulting from the consolidation a statement setting forth the aggregate number of shares not voted in favor of the merger or consolidation and with respect to which demands for appraisal have been received and the aggregate number of holders of such shares. Such written statement shall be mailed to the stockholder within 10 days after such stockholder's written request for such a statement is received by the surviving or resulting corporation or within 10 days after expiration of the period for delivery of demands for appraisal under subsection (d) hereof, whichever is later.

(f) Upon the filing of any such petition by a stockholder, service of a copy thereof shall be made upon the surviving or resulting corporation, which shall within 20 days after such service file in the office of the Register in Chancery in which the petition was filed a duly verified list containing the names and addresses of all stockholders who have demanded payment for their shares and with whom agreements as to the value of their shares have not been reached by the surviving or resulting corporation. If the petition shall be filed by the surviving or resulting corporation, the petition shall be accompanied by such a duly verified list. The Register in Chancery, if so ordered by the Court, shall give notice of the time and place fixed for the hearing of such petition by registered or certified mail to the surviving or resulting corporation and to the stockholders shown on the list at the addresses therein stated. Such notice shall also be given by 1 or more publications at least 1 week before the day of the hearing, in a newspaper of general circulation published in the City of Wilmington, Delaware or such publication as the Court deems advisable. The forms of the notices by mail and by publication shall be approved by the Court, and the costs thereof shall be borne by the surviving or resulting corporation.

(g) At the hearing on such petition, the Court shall determine the stockholders who have complied with this section and who have become entitled to appraisal rights. The Court may require the stockholders who have demanded an appraisal for their shares and who hold stock represented by certificates to submit their certificates of stock to the Register in Chancery for notation thereon of the pendency of the appraisal proceedings; and if any stockholder fails to comply with such direction, the Court may dismiss the proceedings as to such stockholder.

(h) After determining the stockholders entitled to an appraisal, the Court shall appraise the shares, determining their fair value exclusive of any element of value arising from the accomplishment or expectation of the merger or consolidation, together with a fair rate of interest, if any, to be paid upon the amount determined to be the fair value. In determining such fair value, the Court shall take into account all relevant factors. In determining the fair rate of interest, the Court may consider all relevant factors, including the rate of interest which the surviving or resulting corporation would have had to pay to borrow money during the pendency of the proceeding. Upon application by the surviving or resulting corporation or by any stockholder entitled to participate in the appraisal proceeding, the Court may, in its discretion, permit discovery or other pretrial proceedings and may proceed to trial upon the appraisal prior to the final determination of the stockholder entitled to an appraisal. Any stockholder whose name appears on the list filed by the surviving or resulting corporation pursuant to subsection (f) of this section and who has submitted such stockholder's certificates of stock to the Register in Chancery, if such is required, may participate fully in all proceedings until it is finally determined that such stockholder is not entitled to appraisal rights under this section.

(i) The Court shall direct the payment of the fair value of the shares, together with interest, if any, by the surviving or resulting corporation to the stockholders entitled thereto. Interest may be simple or compound, as the Court may direct. Payment shall be so made to each such stockholder, in the case of holders of uncertificated stock forthwith, and the case of holders of shares represented by certificates upon the surrender to the corporation

Table of Contents

of the certificates representing such stock. The Court's decree may be enforced as other decrees in the Court of Chancery may be enforced, whether such surviving or resulting corporation be a corporation of this State or of any state.

(j) The costs of the proceeding may be determined by the Court and taxed upon the parties as the Court deems equitable in the circumstances. Upon application of a stockholder, the Court may order all or a portion of the expenses incurred by any stockholder in connection with the appraisal proceeding, including, without limitation, reasonable attorney's fees and the fees and expenses of experts, to be charged pro rata against the value of all the shares entitled to an appraisal.

(k) From and after the effective date of the merger or consolidation, no stockholder who has demanded appraisal rights as provided in subsection (d) of this section shall be entitled to vote such stock for any purpose or to receive payment of dividends or other distributions on the stock (except dividends or other distributions payable to stockholders of record at a date which is prior to the effective date of the merger or consolidation); provided, however, that if no petition for an appraisal shall be filed within the time provided in subsection (e) of this section, or if such stockholder shall deliver to the surviving or resulting corporation a written withdrawal of such stockholder's demand for an appraisal and an acceptance of the merger or consolidation, either within 60 days after the effective date of the merger or consolidation as provided in subsection (e) of this section or thereafter with the written approval of the corporation, then the right of such stockholder to an appraisal shall cease. Notwithstanding the foregoing, no appraisal proceeding in the Court of Chancery shall be dismissed as to any stockholder without the approval of the Court, and such approval may be conditioned upon such terms as the Court deems just.

(l) The shares of the surviving or resulting corporation to which the shares of such objecting stockholders would have been converted had they assented to the merger or consolidation shall have the status of authorized and unissued shares of the surviving or resulting corporation.

Table of Contents

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 20. *Indemnification of Directors and Officers.*

Nanogen's certificate of incorporation provides that Nanogen shall, to the fullest extent permitted by the Delaware General Corporation Law, indemnify any person who is or is made a party or is threatened to be made a party to or is involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was a director, officer, employee or agent of Nanogen, or is or was serving at the request of Nanogen as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against all expenses, liability and loss reasonably incurred or suffered by such person in connection with such action, suit or proceeding; provided, however, that, the corporation shall indemnify any such person seeking indemnification in connection with a proceeding initiated by such person only if such proceeding was authorized by Nanogen's board of directors. Nanogen's certificate of incorporation also provides that such indemnification rights shall not be exclusive of other indemnification rights to which those seeking indemnification may be entitled under any statute, provision of Nanogen's restated certificate of incorporation, bylaw, agreement or the vote of its stockholders or disinterested directors.

Nanogen's bylaws provide that Nanogen shall, to the fullest extent authorized by Section 145 of the Delaware General Corporation Law, indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of Nanogen), by reason of the fact that such person is or was a director, officer, employee or agent of Nanogen or is or was serving at the request of Nanogen as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses, judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of Nanogen. In the event of an action, suit or proceeding by or in the right of Nanogen, no indemnification is available for any person adjudged to be liable for negligence or misconduct in the performance of such person's duty to Nanogen unless the Delaware Court of Chancery determines such person is fairly and reasonably entitled to indemnification. Nanogen's bylaws also provide that such indemnification rights shall not be exclusive of other indemnification rights to which those seeking indemnification may be entitled under any bylaw, agreement or the vote of its stockholders or disinterested directors.

Nanogen intends to purchase and maintain insurance on behalf of any person who is a director or officer against any loss arising from any claim asserted against him or her and incurred by him or her in any such capacity, subject to certain exclusions.

Item 21. *Exhibits and Financial Statement Schedules.*

The following exhibits are filed with this registration statement:

Exhibit No

Exhibit Title

Edgar Filing: NANOGEN INC - Form S-4/A

3.1 (3)	Restated Certificate of Incorporation. (3.(i)1)
3.2 (3)	Certificate of Designations, as filed with the Delaware Secretary of State on November 23, 1998. (3.(i)2)
3.3 (11)	Amended and Restated Bylaws of Registrant. (3.(ii)1).
4.1 (1)	Form of Common Stock Certificate. (4.1)
4.2 (2)	Rights Agreement dated as of November 17, 1998, between Registrant and BankBoston, N.A.
4.3 (8)	Amendment No. 1 to Rights Agreement, dated as of December 11, 2000 between Registrant and FleetBoston, N.A.

Table of Contents

<u>Exhibit No</u>	<u>Exhibit Title</u>
5.1 (**)	Opinion of Morgan, Lewis & Bockius LLP as to the validity of the common stock of Nanogen, Inc. being registered hereby, together with consent.
8.1 (***)	Form of Opinion of Morgan, Lewis & Bockius, LLP, counsel to Nanogen, Inc., as to certain U.S. tax matters, together with consent.
8.2 (***)	Form of Opinion of Stradling Yocca Carlson & Rauth, counsel to Epoch Biosciences, Inc., as to certain U.S. tax matters, together with consent.
10.1 (20)	1997 Stock Incentive Plan of Nanogen, Inc. (1997 Plan), as amended.
10.2 (6)	Form of Incentive Stock Option Agreement under the 1997 Plan, as amended. (10.2)
10.3 (6)	Form of Nonqualified Stock Option Agreement under the 1997 Plan, as amended. (10.3)
10.4 (20)	Nanogen, Inc. Employee Stock Purchase Plan, as amended.
10.5 (13)	Nanogen, Inc. 2002 Stock Bonus Plan.
10.6 (1)	Form of Indemnification Agreement between Registrant and its directors and executive officers. (10.7)
10.7 (7)	Warrant to Purchase Common Stock between Registrant and Aventis Research and Technologies Verwaltungs, GmbH, dated September 22, 2000. (10.9)
10.8 (12)	Warrant to Purchase Common Stock between Registrant and Genetic Technologies Limited, dated June 3, 2002. (10.9)
10.9 (16)	Form of Securities Purchase Agreement between Registrant and investors described therein, dated September 17, 2003.
10.10 (17)	Warrant to Purchase Common Stock between Registrant and Aventis Pharma Deutschland, GmbH, dated June 6, 2003. (10.10)
10.11 (5)(+)	Reader, Loader and Cassette Low Cost Engineering and Manufacturing Agreement by and between Registrant and Hitachi, Ltd. dated as of December 15, 1999.
10.11 (7)(+)	First Amendment to Reader, Loader and Cassette Low Cost Engineering and Manufacturing Agreement between Registrant and Hitachi, Ltd., dated July 26, 2000. (10.7)
10.12 (7)(+)	Collaboration Agreement between Registrant and Hitachi, Ltd., Nissei Sangyo Co. Ltd. And Hitachi Instruments Service Co. Ltd., (collectively, the Hitachi Parties), dated July 26, 2000. (10.6)
10.14 (7)	Common Stock Purchase Agreement between Registrant and the Hitachi Parties, dated July 26, 2000. (10.8)
10.15 (1)	Amended and Restated Investors Rights Agreement between Registrant and certain security holders set forth therein, dated as of May 5, 1997, as amended. (10.18)
10.16 (1)	Master Lease Agreement between Registrant and Mellon US Leasing, dated September 11, 1997. (10.19)
10.17 (1)	Master Lease Agreement between Registrant and LMP Properties, Ltd., dated June 29, 1994 as amended on March 14, 2001. (10.20)
10.18 (1)	Lease Agreement between Registrant and Lease Management Services, Inc., dated April 26, 1994, as amended on December 13, 1994 and June 13, 1996. (10.21)
10.19 (1)	Form of Promissory Note between Registrant and certain of its executive officers, dated August 22, 1996. (10.23)

Table of Contents

<u>Exhibit No</u>	<u>Exhibit Title</u>
10.20 (1)	Form of Promissory Note between Registrant and certain of its executive officers, dated June 30, 1995. (10.24)
10.21 (1)	Form of Performance Stock Option Agreement. (10.26)
10.22 (11)	Amended and Restated Employment Agreement between Registrant and Howard C. Birndorf, dated as of June 3, 2001. (10.2)
10.23 (15)	Separation Agreement between Registrant and Kieran T. Gallahue, dated as of January 2, 2003
10.24 (15)	Separation Agreement between Registrant and Dr. Vance R. White, dated as of December 11, 2002.
10.25 (17)	Separation Agreement between Registrant and Ira Marks, dated August 15, 2003. (10.25)
10.26 (15)	Employment Agreement between Registrant and Bruce A. Huebner, dated December 1, 2002.
10.27 (15)	Employment Agreement between Registrant and William Franzblau, dated January 24, 2003.
10.28 (15)	Employment Agreement between Registrant and David Macdonald, dated January 24, 2003.
10.29 (15)	Employment Agreement between Registrant and Graham Lidgard, dated January 24, 2003
10.30 (17)	Separation Agreement between Registrant and Gerard A. Wills, dated as of May 21, 2003. (10.30)
10.31 (15)	Indemnification Agreement between Registrant and Bruce A. Huebner, dated effective as of December 1, 2002.
10.32 (15)	Indemnification Agreement between Registrant and Graham Lidgard, dated effective as of January 24, 2003.
10.33 (9) (+)	Cooperation and Shareholders Agreement among Aventis Research & Technologies GmbH & Co. KG (Aventis R&T), Registrant and Nanogen Recognomics GmbH (Nanogen Recognomics), dated June 29, 2001. (10.3).
10.34 (9)(+)	Contribution Agreement among Aventis R&T, Registrant and Nanogen Recognomics, dated June 27, 2001. (10.4).
10.35 (11)(+)	Settlement Agreement between Motorola, Inc., Genometrix, Inc., the Massachusetts Institute of Technology and Registrant, dated July 20, 2001. (10.6)
10.36 (14)	Settlement Agreement between CombiMatrix Corporation, Dr. Donald Montgomery, Acacia Research Corporation and Registrant, dated September 30, 2002.
10.37 (4)	Master Loan and Security Agreement between Registrant and Transamerica Business Credit Corporation, dated June 14, 1999.
10.38 (18)	Offer Letter dated May 8, 2003 between David Ludvigson and the Company (10.1).
10.39 (19)	Offer letter dated April 30, 2004 between David Ludvigson and the Company (10.1).
10.40 (19) (++)	Cross License Agreement on NT-proBNP dated July 17, 2003 between SynX Pharma Inc. and Roche Diagnostics GmbH. (10.2).
10.41 (19) (++)	Development and Manufacturing Agreement dated October 9, 2001 between SynX Pharma Inc. and Princeton BioMeditec Corporation. (10.3)
10.42(*)	Offer letter dated January 28, 2004 between William L. Respass and the Company.
23.1 (**)	Consent of Ernst & Young LLP, Nanogen, Inc. s independent registered public accounting firm.

Table of Contents

Exhibit No	Exhibit Title
23.2 (**)	Consent of KPMG LLP, Epoch Biosciences, Inc. s independent registered public accounting firm.
23.3 (**)	Consent of KPMG LLP, SynX Pharma Inc. s independent auditors.
23.4 (**)	Consent of Morgan, Lewis & Bockius, LLP. (included in Exhibit 5.1)
23.5 (***)	Consent of Morgan, Lewis & Bockius, LLP. (included in Exhibit 8.1)
23.6 (***)	Consent of Stradling Yocca Carlson & Rauth (included in Exhibit 8.1)
24.1 (*)	Power of Attorney (included in the signature page of this registration statement)
99.1 (*)	Consent of Seven Hills Partners, LLC.
99.2 (**)	Consent of Molecular Securities Inc.
99.3 (*)	Form of Proxy for Nanogen, Inc.
99.4 (*)	Form of Proxy for Epoch Biosciences, Inc.

(*) Previously filed with the Registrant s initial Registration Statement on Form S-4 on October 6, 2004.

(**) Filed herewith.

(***) To be filed by post-effective amendment.

(1) Incorporated by reference to Registrant s Registration Statement on Form S-1 (File No. 333-42791). Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(2) Incorporated by reference to Exhibit 4.2 to the Registrant s Registration Statement on Form 8-A, filed on November 24, 1998.

(3) Incorporated by reference to Registrant s Annual Report on Form 10-K for the year ended December 31, 1998. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(4) Incorporated by reference to Exhibit 10.38 to the Registrant s Annual Report on Form 10-K for the year ended December 31, 1999.

(5) Incorporated by reference to Exhibit 10.1 to the Registrant s Quarterly Report on Form 10-Q for the quarter ended March 31, 2000.

(6) Incorporated by reference to the Registrant s Form S-8 filed on June 15, 2000. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(7) Incorporated by reference to the Registrant s Quarterly Report on Form 10-Q for the quarter ended September 30, 2000. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(8) Incorporated by reference to Exhibit 10.1 to the Registrant s Form 8-K filed on December 12, 2000.

(9) Incorporated by reference to the Registrant s Quarterly Report on Form 10-Q for the quarter ended June 30, 2001. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(10) Incorporated by reference to Exhibit 10.1 to the Registrant s Form S-8 filed on June 20, 2001. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(11) Incorporated by reference to the Registrant s Quarterly Report on Form 10-Q for the quarter ended September 30, 2001. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(12) Incorporated by reference to the Registrant s Quarterly Report on Form 10-Q for the quarter ended June 30, 2002. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.

(13) Incorporated by reference to Exhibit 10.1 to the Registrant s Form S-8 filed on August 16, 2002.

Table of Contents

- (14) Incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 31, 2002.
- (15) Incorporated by reference to Registrant's Annual Report on Form 10-K for the year ended December 31, 2002. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.
- (16) Incorporated by reference to Exhibit 10.1 to the Registrant's Form 8-K filed on September 22, 2003.
- (17) Incorporated by reference to the Registrant's Form 10-K for the year ended December 31, 2003. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.
- (18) Incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2004.
- (19) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2004. Parenthetical references following the description of each document relate to the exhibit number under which such exhibit was initially filed.
- (20) Incorporated by reference to the Registrant's proxy statement on Schedule 14A filed on April 24, 2004.
- (+) Confidential treatment has been granted for certain information contained in this document pursuant to an order of the Securities and Exchange Commission. Such information has been omitted and filed separately with the Securities and Exchange Commission.
- (++) Confidential treatment has been requested for certain information contained in this document. Such information has been omitted and filed separately with the Securities and Exchange Commission.

Table of Contents

Item 22. *Undertakings.*

(a) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(b) The undersigned registrant hereby undertakes as follows:

(1) that prior to any public reoffering of the securities registered hereunder through use of a prospectus which is a part of this registration statement, by any person or party who is deemed to be an underwriter within the meaning of Rule 145(c), the issuer undertakes that such reoffering prospectus will contain the information called for by the applicable registration form with respect to reofferings by persons who may be deemed underwriters, in addition to the information called for by the other items of the applicable form; and

(2) that every prospectus: (i) that is filed pursuant to paragraph (1) immediately preceding, or (ii) that purports to meet the requirements of Section 10(a)(3) of the Securities Act and is used in connection with an offering of securities subject to Rule 415, will be filed as a part of an amendment to the registration statement and will not be used until such amendment is effective, and that, for purposes of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer, or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

(d) The undersigned registrant hereby undertakes to respond to requests for information that is incorporated by reference into the prospectus pursuant to Item 4, 10(b), 11 or 13 of this form, within one business day of receipt of such request, and to send the incorporated documents by first class mail or other equally prompt means. This includes information contained in documents filed subsequent to the effective date of the registration statement through the date of responding to the request.

(e) The undersigned registrant undertakes to supply by means of a post-effective amendment all information concerning a transaction, and the company being acquired involved therein, that was not the subject of and included in the registration statement when it became effective.

Table of Contents**SIGNATURES**

Pursuant to the requirements of the Securities Act, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on October 26, 2004.

NANOGEN, INC.

By: /s/ HOWARD C. BIRNDORF

Howard C. Birndorf
Chairman of the Board and
Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following person in the capacities and as of the dates indicated.

Signature —	Title —	Date —
<u>/s/ HOWARD C. BIRNDORF</u>	Chairman of the Board and Chief Executive Officer	October 26, 2004
Howard C. Birndorf	<i>(Principal Executive Officer)</i>	
*	President and Chief Operating Officer	October 26, 2004
David G. Ludvigson	<i>(Principal Financial Officer)</i>	
*	Senior Director, Finance	October 26, 2004
Nicholas J. Venuto	<i>(Principal Accounting Officer)</i>	
*	Director	October 26, 2004
Val Buonaiuto		
*	Director	October 26, 2004
Stelios B. Papadopolous		
*	Director	October 26, 2004
David R. Schreiber		
*	Director	October 26, 2004
Robert E. Whalen		

*By:

/s/ HOWARD C. BIRNDORF
Howard C. Birndorf

Attorney-in-fact

II-7