

NANOGEN INC
Form S-4
October 06, 2004
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As filed with the Securities and Exchange Commission on October 6, 2004.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

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)

David G. Ludvigson

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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)

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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. "

CALCULATION OF REGISTRATION FEE

Title of Each Class of	Amount to be	Proposed Maximum	Proposed Maximum	Amount of
Securities to be Registered	Registered	Offering Price	Aggregate Offering	Registration
Common Stock, par value \$0.001 per share (including the associated preferred stock purchase right)(3)	(1)	Per Share	Price (2)	Fee
		N/A	\$ 62,253,833	\$ 7,887.56

- (1) In accordance with Rule 457(o) under the Securities Act of 1933, as amended, the number of shares is not set forth herein. Pursuant to Rule 457(o), the registration fee has been computed on the basis of the maximum aggregate offering price of shares of Registrant's common stock expected to be issued upon consummation of the merger of Epoch Biosciences, Inc., a Delaware corporation (Epoch), with and into Empire Acquisition Corp., a Delaware corporation and wholly-owned subsidiary of the Registrant.
- (2) Estimated solely for purposes of calculation of the registration fee in accordance with Rules 457 (c) and (f) of the Securities Act of 1933, as amended, based upon the product of: (A) 32,255,872, the maximum number of shares of Epoch common stock that may be exchanged in the merger (the sum of (i) 28,686,672, the aggregate number of shares of Epoch common stock outstanding on October 5, 2004, (ii) 2,663,200 shares of Epoch common stock that may be issued pursuant to options outstanding as of October 5, 2004 and (iii) 906,000 shares of Epoch common stock that may be issued pursuant to warrants outstanding as of October 5, 2004, multiplied by (B) \$1.93, the average of the high and low sale prices for shares of Epoch common stock as reported on the NASDAQ SmallCap Market on September 30, 2004.
- (3) The preferred share purchase rights, which are attached to the shares of Nanogen common stock being registered hereunder, will be issued for no additional consideration. Accordingly, no additional registration fee is required.

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.

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The information in this joint proxy statement/prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission of which this joint proxy statement/prospectus is a part becomes effective. This joint proxy statement/prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED OCTOBER 6, 2004.

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 5, 2004, the last sale price of Nanogen's common stock was \$4.36 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.

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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:

For Nanogen Stockholders:

[Day of Week], [Month] [Day], 2004 at [Time], local time

[Address]

[City, State ZIP]

For Epoch Stockholders:

[Day of Week], [Month] [Day], 2004 at [Time], local time

[Address]

[City, State ZIP]

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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.

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 [Month] [Day], 2004,
and is first being mailed to stockholders on or about [Month] [Day], 2004.

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NANOGEN, INC.

10398 Pacific Center Court

San Diego, CA 92121

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TO BE HELD ON [Day of Week], [Month] [Day], 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 [Day of Week], [Month] [Day], 2004, beginning at [Time], local time, at [Address], 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 [Month] [Day], 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.

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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
[Month] [Day], 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.

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EPOCH BIOSCIENCES, INC.

21720 23rd Drive SE

Bothell, WA 98021

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TO BE HELD ON [Day of Week], [Month] [Day], 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 [Day of Week], [Month] [Day], 2004, at [Time], local time, at [Address], 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 [Month] [Day], 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.

By order of the Board of Directors,

Bothell, Washington
[Month] [Day], 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.

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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.

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.

Stockholders of Epoch Biosciences, Inc., which we refer to as Epoch, are also being sent 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. Epoch will provide you with copies of other 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

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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 [Month] [Day], 2004.

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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

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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.

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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 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

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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 former Nanogen stockholders will own between and % 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.

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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 [] shares of Nanogen common stock could be issued to the Epoch stockholders in consummation of the merger, or as few as [] 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 [] shares to a low of [] 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 [] shares to a low of [] shares based on the exchange ratio. The total number of Nanogen shares which may become issuable under the plan pursuant to the automatic annual increases to that reserve may range from a high of [] shares to a low of [] shares based on the exchange ratio.

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

A: *Nanogen special meeting:*

The Nanogen special meeting will take place at [Address] at [Time], local time, on [Day of Week], [Month] [Day], 2004.

A: *Epoch special meeting:*

The Epoch special meeting will take place at [Address] at [Time], local time, on [Day of Week], [Month] [Day], 2004.

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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, representing approximately []% 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, beneficially owning approximately []% 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

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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:

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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.

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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?

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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

[Telephone Number]

For Epoch Stockholders:

[Proxy Solicitor for Epoch]

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.

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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

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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

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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)

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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.

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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 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 [Address] at [Time], local time, on [Day of Week], [Month] [Day], 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)

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The special meeting of the Epoch stockholders, which is referred to as the Epoch special meeting, will be held at [Address] at [Time], local time, on [Day of Week], [Month] [Day], 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.

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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, representing approximately []% 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, beneficially owning approximately []% 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;

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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);

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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-Representations and Warranties" on page .

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)

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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.

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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		

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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

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

HISTORICAL BALANCE SHEET DATA:

(In thousands)

	June 30,	December 31,				
	2004	2003	2002	2001	2000	1999
	(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	
	June 30, 2004	Year ended 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	
	June 30, 2004	Year ended 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	
	June 30, 2004	Year ended 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):		

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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

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- 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 5, 2004)	\$ 4.36	\$ 4.12	\$ 2.05	\$ 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 [Month] [Day], 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
[Month][Day], 2004		

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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.

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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.

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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.

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.

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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 and % 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

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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.

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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

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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

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

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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.

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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 [Day of Week], [Month] [Day], 2004 at [Time], local time, or any adjournments or postponements thereof. The meeting will be held at [] located at []. Nanogen's telephone number is (858) 410-4600.

These proxy solicitation materials were mailed on or about [Month] [Day], 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 [Month] [Day], 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 [] 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 [Month] [Day], 2004, the record date for the Nanogen special meeting, directors and executive officers of Nanogen and their affiliates beneficially owned and were entitled to vote [] shares of Nanogen common stock, or approximately []% 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 [] of this joint proxy statement/prospectus.

Nanogen's directors and executive officers, beneficially owning collectively approximately 6.5% of the shares of Nanogen common stock outstanding as of September 7, 2004 and entitled to vote at the Nanogen special meeting, have entered into voting agreements with Epoch that commit 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;

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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)

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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.

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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.

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.

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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 [Day of Week], [Month] [Day], 2004 at [Time], [City], [State] time, or any adjournments or postponements thereof. The meeting will be held at [] located at [City, State, Zip]. Epoch's telephone number is (425) 482-5555.

These proxy solicitation materials were mailed on or about [Month] [Day], 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 [Month] [Day], 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 [] 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 [Month] [Day], 2004, the record date for the Epoch special meeting, directors and executive officers of Epoch and their affiliates beneficially owned and were entitled to vote [] shares of Epoch common stock, or approximately % 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 of this joint proxy statement/prospectus.

Epoch's directors and executive officers and certain other stockholders, beneficially owning, collectively approximately % of the shares of Epoch common stock outstanding as of September 7, 2004 and entitled to vote at the special meeting, have entered into voting agreements with Nanogen that commit 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 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.

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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 [Proxy Solicitor] to assist it in the distribution and solicitation of proxies, respectively. Epoch estimates that it will pay [Proxy Solicitor] approximately \$[] for its services and will reimburse [Proxy Solicitor] 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.

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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.

Recommendation 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 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 Recommendation of Epoch's Board of Directors** beginning 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.

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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.

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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.

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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.

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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.

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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.

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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

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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.

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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.

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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

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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.

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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

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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.

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IVAX Diagnostics, Inc.

Luminex Corporation

Meridian Bioscience, Inc.

Stratagene Corporation

Third Wave Technologies, Inc.

Transgenomic, Inc.

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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

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	<u>Low</u>	<u>Median</u>	<u>Mean</u>	<u>High</u>
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.

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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

<u>Announcement Date</u>	<u>Name of Acquiror</u>	<u>Name of Target</u>
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.

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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

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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.

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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;

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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

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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.

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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;

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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

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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.

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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

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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:

<u>Period Ending September 3, 2004</u>	<u>Range of Closing Prices</u>
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

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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

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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

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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% Range	\$1.57 \$2.76 \$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 Range	\$1.49 \$2.70 \$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

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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:

<u>Benchmark</u>	<u>Multiple Range</u>
2005E Revenues	1.6x 4.1x
2006E Revenues	1.3x 2.9x

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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:

Benchmark	Amount	Multiple Range	Implied 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 Range	\$3.99 - \$5.14 \$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 Range	\$3.10 - \$3.76 \$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%.

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The following table summarizes Molecular Securities DCF analysis:

	<u>Discount Rate</u>		<u>Multiple Range</u>		<u>Implied Share Price</u>	
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

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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:

<u>Period Ending September 3, 2004</u>	<u>Exchange Ratio Range</u>
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:

	<u>Exchange Ratio Range</u>
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

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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

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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.

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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	Weighted
			Average Exercise Price of Outstanding Unvested Options	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.

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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.

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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.

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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

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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

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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

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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;

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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

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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:

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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.

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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

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.

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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.

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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;

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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.

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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.

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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

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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 [Month] [Day], 2004, the record date for the Epoch special meeting, an aggregate number of shares of Nanogen common stock ranging from [] to [] 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 [] to [] will be reserved for issuance upon the exercise of the outstanding options and warrants to

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purchase 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 [] to [] for issuance under

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the assumed 2003 plan (excluding shares to added pursuant to the automatic increase feature), depending 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

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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.

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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.

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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;

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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;

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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.

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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);

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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.

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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;

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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.

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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;

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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;

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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.

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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.

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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.

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AGREEMENTS RELATED TO THE MERGER

Voting Agreements

Effective on September 7, 2004, the following directors and executive officers of Nanogen, holding an aggregate of 2,253,855 shares of Nanogen common stock, which were either outstanding as of September 7, 2004 or issuable upon the exercise of outstanding options which are exercisable within 60 days of September 7, 2004, and representing approximately 6.5% of the shares of Nanogen common stock outstanding as of September 7, 2004 and issuable upon the exercise of outstanding options which are exercisable within 60 days of September 7, 2004, 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

Also effective on September 7, 2004, the following directors and executive officers of Epoch and certain of their affiliated stockholders, beneficially owning an aggregate of 2,691,753 shares of Epoch common stock (including options and warrants to purchase Epoch common stock), which were either outstanding as of September 7, 2004 or issuable upon the exercise of outstanding options or warrants which are exercisable within 60 days of September 7, 2004, and representing approximately 9.1% of the shares of Epoch common stock outstanding as of September 7, 2004 and issuable upon the exercise of outstanding options or warrants which are exercisable within 60 days of September 7, 2004, 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, directors and executive officers of Nanogen and their affiliates owned and were entitled to vote _____ shares of Nanogen common stock, which represents approximately _____ % of the outstanding shares of Nanogen common stock. As of the record date, the directors and executive officers of Epoch and their affiliates beneficially owned and were entitled to vote _____ outstanding shares of Nanogen common stock, which represents approximately _____ % of the outstanding shares of Nanogen common stock. Holders of a majority of the votes cast at the Nanogen special meeting must vote in favor of the share issuance in order for it to be approved.

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As of the record date, the directors and executive officers of Epoch and their affiliates beneficially owned and were entitled to vote shares of Epoch common stock, which represents approximately % of the outstanding shares of Epoch common stock. As of the record date, directors and executive officers of Nanogen and their affiliates owned and were entitled to vote outstanding shares of Epoch common stock, which represents approximately % 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.

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

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;

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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's 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.

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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.

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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)**

	<u>Historical Nanogen</u>	<u>Historical Epoch</u>	<u>Pro Forma Adjustments (Note 2)</u>	<u>Pro Forma Combined</u>
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
	<u>66,559</u>	<u>10,958</u>	<u>(4,500)</u>	<u>73,017</u>
Total current assets				
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
	<u>87,925</u>	<u>14,892</u>	<u>50,985</u>	<u>153,802</u>
Total assets				
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
	<u>6,085</u>	<u>3,485</u>	<u>(371)</u>	<u>9,199</u>
Total current liabilities				
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
	<u>5,996</u>	<u>3,353</u>	<u>(2,616)</u>	<u>6,733</u>
Total long-term liabilities				
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)

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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)**

	<u>Historical Nanogen</u>	<u>SynX Acquired Business</u>	<u>Pro Forma Adjustments (Note 3)</u>	<u>Pro Forma Combined</u>	<u>Historical Epoch</u>	<u>Pro Forma Adjustments (Note 2)</u>	<u>Pro Forma Combined</u>
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):							
	\$ (1.38)						\$ (1.14)

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Net loss per share basic and diluted

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):							

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Net loss per share basic and diluted	\$ (0.61)		\$ (0.52)
Basic and diluted shares outstanding	29,870	13,381 (H)	43,251

See notes to unaudited pro forma condensed combined consolidated financial statements

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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):

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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
	<hr/>
Total estimated purchase price	\$ 64,590
	<hr/>

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)
	<u>8,203</u>
Fair value of identifiable intangible assets acquired:	
Completed technology	12,136
Customer relationships	2,950
	<u>15,086</u>
Deferred compensation	64
Goodwill	41,237
	<u>\$ 64,590</u>

(C) Adjustments to intangibles are as follows (in thousands):

Completed technology acquired	\$ 12,136
Customer relationships acquired	2,950
	<u>15,086</u>
Value assigned to intangible assets	15,086
Less: historical net book value of intangibles	(838)
	<u>\$ 14,248</u>

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)
	<hr/>
Net adjustment to common stock	\$ (272)
	<hr/>
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)
	<hr/>
Net adjustment to additional paid-in capital	\$ (24,999)
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(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 calculation