

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)

COPIES TO:

Scott D. Karchmer, Esq.

Lawrence B. Cohn, Esq.

Angela C. Hilt, Esq.

Michael H. Mulroy, Esq.

Morgan, Lewis & Bockius LLP

Stradling Yocca Carlson & Rauth

One Market Street, Spear Street Tower

660 Newport Center Drive, Suite 1600

San Francisco, California 94105

Newport Beach, CA 92660

Telephone: (415) 442-1000

Telephone: (949) 725-4000

Fax: (415) 442-1001

Fax: (949) 725-4100

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

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

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

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

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.

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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				