

JOINT PROXY STATEMENT/PROSPECTUS SUPPLEMENT

MAY 14, 2020

This is a supplement (this “supplement”) to the joint proxy statement/prospectus of Lantheus Holdings, Inc. (“Lantheus Holdings”) and Progenics Pharmaceuticals, Inc. (“Progenics”), dated March 19, 2020, that was mailed to stockholders of record as of the close of business on March 18, 2020 in connection with the solicitation of proxies by the board of directors of Lantheus Holdings and the board of directors of Progenics, as applicable, in connection with the merger of Progenics with a wholly-owned subsidiary of Lantheus Holdings pursuant to the terms of an amended and restated merger agreement entered into by Lantheus Holdings and Progenics on February 20, 2020. Capitalized terms used herein but not defined shall have the meanings ascribed to such terms in the joint proxy statement/prospectus.

The purpose of this supplement is, among other things:

- to provide notice of change of dates of the Lantheus Holdings special meeting and the Progenics special meeting to June 16, 2020, change of the record dates for such meetings and change to a virtual meeting format for such meetings;
- to supplement the risk factors contained in the joint proxy statement/prospectus;
- to update the historical financial data of Lantheus Holdings and Progenics contained in the joint proxy statement/prospectus;
- to update the unaudited pro forma condensed combined financial statements contained in the joint proxy statement/prospectus;
- to update the comparative per share market price information provided in the joint proxy statement/prospectus;
- to supplement the information regarding the material U.S. federal income tax consequences of the merger to U.S. holders (as defined in the joint proxy statement/prospectus) of shares of Progenics common stock contained in the joint proxy statement/prospectus;
- to update certain information with respect to the beneficial ownership of shares of Lantheus Holdings and Progenics common stock contained in the joint proxy statement/prospectus;
- to supplement the information regarding certain litigation relating to the merger contained in the joint proxy statement/prospectus;
- to provide information regarding that certain support agreement, entered into on April 14, 2020, by and among Lantheus Holdings, Velan Capital, L.P., Velan Capital Partners LP, Velan Capital Holdings LLC, Velan Capital Investment Management LP, Velan Principals GP LLC, Velan Capital Management LLC, Altiva Management Inc., Balaji Venkataraman, Deepak Sarpangal and Kevin McNeill, which persons are collectively referred to in this supplement as the Velan parties and which agreement is referred to in this supplement as the support agreement; and
- to provide information regarding that certain expense reimbursement agreement, entered into on April 14, 2020, by and among Progenics, Velan Capital, L.P., Altiva Management Inc. and Messrs. Venkataraman and Sarpangal, which persons are collectively referred to in this supplement as the Velan stockholders.

To the extent information in this supplement differs from, updates or conflicts with information contained in the joint proxy statement/prospectus, the information in this supplement is the more current information, and shall supersede or supplement such other information. Lantheus Holdings and Progenics urge you to read carefully and in their entirety the joint proxy statement/prospectus and this supplement.

The joint proxy statement/prospectus and this supplement may also be found on the Internet at www.sec.gov. See “Where You Can Find More Information” beginning on page 260 of the joint proxy statement/prospectus and on page 58 of this supplement.

This supplement is being filed with the Securities and Exchange Commission and is first being mailed to Lantheus Holdings and Progenics stockholders on or about May 14, 2020.

THIS SUPPLEMENT SHOULD BE READ IN CONJUNCTION WITH THE JOINT PROXY STATEMENT/PROSPECTUS.

**NOTICE OF CHANGE OF DATE AND LOCATION OF
THE SPECIAL MEETING OF STOCKHOLDERS OF LANTHEUS HOLDINGS, INC.
TO BE HELD ON JUNE 16, 2020**

To the Stockholders of Lantheus Holdings, Inc.:

Lantheus Holdings, Inc. ("Lantheus Holdings") has changed the date of its upcoming special meeting of stockholders called for the purpose of approving certain proposals relating to the Amended and Restated Agreement and Plan of Merger, dated as of February 20, 2020, among Lantheus Holdings, Plato Merger Sub, Inc. and Progenics Pharmaceuticals, Inc. from April 28, 2020 to June 16, 2020 at 11:15 a.m. Eastern Time.

The special meeting of stockholders will be a virtual meeting conducted exclusively via live webcast due to public health concerns relating to the COVID-19 pandemic and governmental actions related thereto. The Lantheus Holdings board of directors believes that this is the right choice for Lantheus Holdings and its stockholders at this time, as it permits stockholders to attend and participate in the special meeting from any location around the world while safeguarding the health and safety of all of our people, including our stockholders. Lantheus Holdings is committed to ensuring that Lantheus Holdings stockholders will be afforded the same rights and opportunities to participate as they would at an in-person meeting.

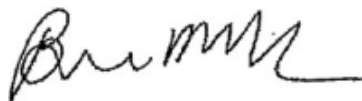
There is no change to the proposals to be presented to our stockholders for consideration at the special meeting of stockholders.

The Lantheus Holdings board of directors has fixed the close of business on May 12, 2020 as the record date for the determination of the stockholders entitled to vote at the Lantheus Holdings special meeting or any adjournment or postponement thereof. Only stockholders of record at the record date are entitled to notice of, and to vote at, the Lantheus Holdings special meeting or any adjournment or postponement thereof.

If you previously submitted a proxy with respect to the proposals for the Lantheus Holdings special meeting, your vote will not be counted. You must submit a new proxy (or proxies) in order for your vote to be counted or you must virtually attend and vote at the Lantheus Holdings special meeting. A new proxy card is supplied with this supplement and may be used to appoint a proxy to vote at the Lantheus Holdings special meeting. Lantheus Holdings urges you to discard any proxy cards originally sent to you. Only votes received using the new proxy card will be counted.

If you have any questions about the merger or about how to vote or direct a vote in respect of your shares of Lantheus Holdings common stock, you may contact Lantheus Holdings' proxy solicitor, Innisfree M&A Incorporated, toll-free at (877) 750-9497 or (412) 232-3651 for international callers.

By order of the Board of Directors,



Brian Markison
Chairman of the Board of Directors
North Billerica, Massachusetts
May 14, 2020

NOTICE OF CHANGE OF DATE AND LOCATION OF THE SPECIAL MEETING OF STOCKHOLDERS OF PROGENICS PHARMACEUTICALS, INC. ORIGINALLY SCHEDULED FOR APRIL 28, 2020

To the Stockholders of Progenics Pharmaceuticals, Inc.:

Progenics Pharmaceuticals, Inc. (“Progenics”) has changed the date of its upcoming special meeting of stockholders called for the purpose of approving certain proposals relating to the Amended and Restated Agreement and Plan of Merger, dated as of February 20, 2020, among Progenics, Lantheus Holdings, Inc. and Plato Merger Sub, Inc. from April 28, 2020 to June 16, 2020 at 10:00 a.m. Eastern Time.

The special meeting of stockholders will be a virtual meeting conducted exclusively via live webcast due to public health concerns relating to the COVID-19 pandemic and governmental actions related thereto. The Progenics board of directors believes that this is the right choice for Progenics and its stockholders at this time, as it permits stockholders to attend and participate in the special meeting from any location around the world while safeguarding the health and safety of all of our people, including our stockholders.

To access the Progenics’ special meeting’s live webcast, you will need to log-in to www.virtualshareholdermeeting.com/PGNX2020SM using the control number found on your proxy card or voting instruction form.

There is no change to the proposals to be presented to our stockholders for consideration at the special meeting of stockholders.

The Progenics board of directors has fixed the close of business on May 12, 2020 as the record date for the determination of the stockholders entitled to vote at the Progenics special meeting or any adjournment or postponement thereof. Only stockholders of record at the record date are entitled to notice of, and to vote at, the Progenics special meeting or any adjournment or postponement thereof.

If you previously submitted a proxy with respect to the proposals for the Progenics special meeting, such proxy is invalid. You must submit a new proxy (or proxies) in order for your vote to be counted or you must virtually attend and vote at the Progenics special meeting. A new proxy card is supplied with this supplement and may be used to appoint a proxy to vote at the Progenics special meeting. Progenics urges you to discard any proxy cards originally sent to you. Only votes received using the new proxy card will be counted.

For additional details on the virtual meeting, please see pages 4-9 of this supplement.

By order of the Board of Directors,



Ann MacDougall
Interim Chairman of the Board of Directors of Progenics
New York, New York
May 14, 2020

ADDITIONAL QUESTIONS AND ANSWERS

The section of the joint proxy statement/prospectus entitled “Questions and Answers about the Merger and the Special Meetings” is hereby supplemented as follows:

The following questions and answers are intended to address briefly some questions regarding attending the special meetings of Lantheus Holdings and Progenics by virtual means. These questions and answers may not address all questions that may be important to you as a Lantheus Holdings or Progenics stockholder. Please refer to the more detailed information contained elsewhere in this supplement and the joint proxy statement/prospectus, each of which Lantheus Holdings and Progenics urge you to read in its entirety. You may obtain the information incorporated by reference in this supplement without charge by following the instructions under “Where You Can Find More Information” on page 260 of the joint proxy statement/prospectus and on page 58 of this supplement.

Additional Questions and Answers for Both Lantheus Holdings and Progenics Stockholders

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

A: You are receiving this supplement to the joint proxy statement/prospectus because on April 2, 2020, in light of the COVID-19 pandemic, Lantheus Holdings and Progenics each announced their intent to reschedule their respective special meetings that were previously scheduled to occur on April 28, 2020.

This supplement provides important information about virtual access to the Lantheus Holdings and Progenics special meetings, as applicable. Lantheus Holdings and Progenics are also filing this supplement to, among other things, update unaudited pro forma condensed combined financial statements reflecting the results for the three months ended March 31, 2020, to add additional risk factors to the joint proxy statement/prospectus and to supplement certain disclosures in the joint proxy statement/prospectus.

Q: Do I still need to read the joint proxy statement/prospectus?

A: Yes. This supplement to the joint proxy statement/prospectus is intended to supplement the joint proxy statement/prospectus by providing an update of certain information contained in the joint proxy statement/prospectus, particularly information that was included in the joint proxy statement/prospectus that has changed in light of the COVID-19 pandemic and the release of both companies’ quarterly financial results for the three months ended and as of March 31, 2020. However, this supplement does not contain all of the information that you need to know about the merger, and we urge you to read the joint proxy statement/prospectus in conjunction with this supplement, all of the annexes thereto and documents incorporated by reference herein and therein.

For Lantheus Holdings Stockholders

Q: When and where will the Lantheus Holdings special meeting be held?

The Lantheus Holdings special meeting will convene at 11:15 a.m. Eastern Time on June 16, 2020 in a virtual meeting format only. Because the Lantheus Holdings special meeting is completely virtual and being conducted via live webcast, Lantheus Holdings stockholders will not be able to attend the meeting in person.

Q: Why is the Lantheus Holdings special meeting a virtual, online meeting?

A: In light of the COVID-19 pandemic, the Lantheus Holdings special meeting will be completely virtual to protect the health and safety of Lantheus Holdings stockholders, directors, management and other stakeholders. There will not be a physical meeting location.

Lantheus Holdings believes that hosting a virtual meeting will facilitate stockholder attendance and participation at the special meeting by enabling stockholders to participate remotely from any location around the world. Lantheus Holdings has designed the special meeting to provide the same rights and opportunities to participate as stockholders as they would at an in-person meeting.

Q: *How can I attend the virtual Lantheus Holdings special meeting?*

A: The Lantheus Holdings special meeting will be a virtual meeting conducted exclusively via live webcast starting at 11:15 a.m. Eastern Time on June 16, 2020. To be admitted to the Lantheus Holdings special meeting's live webcast, you must register at www.proxydocs.com/LNTH by the deadline of 5:00 p.m. Eastern Time on June 12, 2020 as described in your proxy card or voting instruction form. As part of the registration process, you must enter the control number found on your proxy card or voting instruction form. Upon completing your registration, you will receive further instructions via email, including your unique link that will allow you access to the Lantheus Holdings special meeting and to submit questions during the meeting. Please be sure to follow instructions found on your proxy card or voting instruction form and subsequent instructions that will be delivered to you via email.

Q: *Has the record date for the Lantheus Holdings special meeting changed?*

A: Yes. All holders of shares of Lantheus Holdings common stock who held shares as of the close of business on May 12, 2020 will be entitled to vote at the Lantheus Holdings special meeting. Only holders of record of Lantheus Holdings common stock are entitled to notice of the Lantheus Holdings special meeting and to vote at the Lantheus Holdings special meeting and any further adjournments or postponements of the meeting.

Q: *What if I already submitted a proxy? Does my prior vote count?*

A: First, carefully read this supplement and the joint proxy statement/prospectus. It is necessary that you submit a new proxy card or new voting instruction form as to how your shares of Lantheus Holdings common stock should be voted at the Lantheus Holdings special meeting. **Any previously submitted proxy cards or voting instructions are invalid, so you must submit a new proxy (or proxies) or new voting instruction form in order for your vote to be counted.**

Your vote is important. Accordingly, please submit your proxy promptly by Internet, telephone or mail whether or not you plan to virtually attend the Lantheus Holdings special meeting.

If you have previously voted against any of the Lantheus Holdings proposals, Lantheus Holdings encourages you to reconsider your vote and to vote "FOR" the stock issuance proposal and the Lantheus Holdings adjournment proposal.

Q: *May I see a list of stockholders entitled to vote as of the record date?*

A: Yes. We will make a list of stockholders entitled to vote at the Lantheus Holdings special meeting available electronically during the meeting by providing hyperlink access for those attending the Lantheus Holdings special meeting and available electronically for examination by any stockholder for any purpose germane to the Lantheus Holdings special meeting for a period of at least 10 days prior to the Lantheus Holdings special meeting. Please contact Lantheus Holdings' Investor Relations department at (978)-671-8842 or ir@lantheus.com if you wish to inspect the list of stockholders entitled to vote at the Lantheus Holdings special meeting prior to the Lantheus Holdings special meeting.

Q: *Has the agenda for the Lantheus Holdings special meeting changed?*

A: No. The agenda for the Lantheus Holdings special meeting has not been changed.

Q: *Do I need to register to attend the live webcast of the Lantheus Holdings special meeting?*

A: Yes. You must register to attend the Lantheus Holdings special meeting at www.proxydocs.com/LNTH by 5:00 p.m. Eastern Time on June 12, 2020. You will be asked to provide the control number found on your proxy card or voting instruction form. After completion of your registration, you will be emailed further instructions, including a unique link to access the virtual meeting.

Q: *How do I submit questions for the Lantheus Holdings special meeting?*

A: If you wish to submit a question in advance of or during the Lantheus Holdings special meeting, you may submit a question at www.proxydocs.com/LNTH after logging in with the control number found on your proxy card or voting instruction form.

We are committed to ensuring that stockholders will be afforded the same rights and opportunities to participate as they would at an in-person meeting. We will try to answer as many stockholder-submitted questions as time permits, provided that we reserve the right to edit profanity or other inappropriate language, or to exclude questions that are determined by the chairman of the Lantheus Holdings special meeting to not be pertinent to meeting matters or otherwise inappropriate. If substantially similar questions are received, we will group such questions together and provide a single response to avoid repetition. We may post questions and answers if applicable to our business on Lantheus Holdings' investor relations website at <https://investor.lantheus.com/investor-relations> following the special meeting.

Q: *Who do I contact if I am encountering difficulties attending the meeting online?*

A: Lantheus Holdings will have technicians standing by and ready to assist you with any technical difficulties you may have accessing the Lantheus Holdings special meeting via the email address provided to you upon registering for the Lantheus Holdings special meeting. If you encounter any difficulties during the meeting, please call the toll-free phone number provided to you in an email that you will receive one hour before the Lantheus Holdings special meeting.

Q: *How does the Lantheus Holdings Board recommend that I participate at the Lantheus Holdings special meeting?*

A: Whether or not you plan to participate in the Lantheus Holdings special meeting via virtual means, Lantheus Holdings encourages you to vote via the Internet, by telephone or by mail so that your shares will be voted in accordance with your wishes even if you later decide not to attend the Lantheus Holdings special meeting.

Q: *Who can help answer any other questions I might have?*

A: If you have any questions about the merger agreement, the merger, the stock issuance, the stock issuance proposal, the Lantheus Holdings adjournment proposal, the Lantheus Holdings special meeting (including accessing the meeting by virtual means), this supplement or the joint proxy statement/prospectus, desire additional copies of this supplement or the joint proxy statement/prospectus, proxy cards or voting instruction forms or need help voting your shares of Lantheus Holdings common stock, you should contact:



Innisfree M&A Incorporated
501 Madison Avenue, 20th Floor
New York, New York 10022
Telephone (Toll-Free): (877) 750-9497
International Callers: (412) 232-3651
Banks and brokers may call collect: (212) 750-5833

For Progenics Stockholders

Q: *When and where will the Progenics special meeting be held?*

A: The Progenics special meeting will convene at 10:00 a.m. Eastern Time on June 16, 2020 in a virtual meeting format only. Because the Progenics special meeting is completely virtual and being conducted via live webcast, Progenics stockholders will not be able to attend the meeting in person.

Q: *Why is the Progenics special meeting a virtual, online meeting?*

A: In light of the COVID-19 pandemic, the Progenics special meeting will be completely virtual to protect the health and safety of Progenics stockholders, directors, management and other stakeholders. There will not be a physical meeting location.

Progenics believes that hosting a virtual meeting will facilitate stockholder attendance and participation at the special meeting by enabling stockholders to participate remotely from any location around the world.

Q: *How can I attend the virtual Progenics special meeting?*

A: The Progenics special meeting will be a virtual meeting conducted exclusively via live webcast starting at 10:00 a.m. Eastern Time on June 16, 2020. To access the Progenics special meeting's live webcast, you will need to log-in to www.virtualshareholdermeeting.com/PGNX2020SM using the control number found on your proxy card or voting instruction form. Online access to the live webcast will open approximately 5 minutes prior to the start of the Progenics special meeting to allow time for our stockholders to log in and test their device's audio system. We encourage our stockholders to access the meeting in advance of the designated start time.

Q: *Has the record date for the Progenics special meeting changed?*

A: Yes. All holders of shares of Progenics common stock who held shares as of the close of business on May 12, 2020 will be entitled to vote at the Progenics special meeting. Only holders of record of Progenics common stock are entitled to notice of the Progenics special meeting and to vote at the Progenics special meeting and any further adjournments or postponements of the meeting.

Q: *What if I already submitted a proxy? Does my prior vote count?*

A: First, carefully read this supplement and the joint proxy statement/prospectus. It is necessary that you submit a new proxy card or new voting instruction form as to how your shares of Progenics common stock should be voted at the Progenics special meeting. **Any previously submitted proxy cards or voting instructions are invalid, so you must submit a new proxy (or proxies) or new voting instruction form in order for your vote to be counted.**

Your vote is important. Accordingly, please submit your proxy promptly by Internet, telephone or mail whether or not you plan to virtually attend the Progenics special meeting.

If you have previously voted against any of the Progenics proposals, Progenics encourages you to reconsider your vote and to vote "FOR" the merger agreement proposal, the Progenics adjournment proposal and the compensation advisory proposal.

Q: *May I see a list of stockholders entitled to vote as of the record date?*

A: Yes. We will make a list of registered stockholders entitled to vote at the Progenics special meeting available electronically during the meeting at www.virtualshareholdermeeting.com/PGNX2020SM for those attending the Progenics special meeting and available electronically for examination by any stockholder for

any purpose germane to the Progenics special meeting for a period of at least 10 days prior to the Progenics special meeting. Please contact Progenics' Investor Relations Department by email at investor.relations@progenics.com or by phone at (646) 975-2533 if you wish to inspect the list of stockholders entitled to vote at the Progenics special meeting prior to the Progenics special meeting.

Q: *Has the agenda for the Progenics special meeting changed?*

A: No. The agenda for the Progenics special meeting has not been changed.

Q: *How do I submit questions for the Progenics special meeting?*

A: If you wish to submit a question during the Progenics special meeting, you may submit a question at www.virtualshareholdermeeting.com/PGNX2020SM after logging in with the control number found on your proxy card or voting instruction form. We will try to answer as many stockholder-submitted questions as time permits, provided that we reserve the right to edit profanity or other inappropriate language, or to exclude questions that are determined by the chairman of the Progenics special meeting to not be pertinent to meeting matters or otherwise inappropriate. If substantially similar questions are received, we will group such questions together and provide a single response to avoid repetition.

Q: *Who do I contact if I am encountering difficulties attending the meeting online?*

A: We have retained Broadridge Financial Services, Inc. ("Broadridge") to host our virtual special meeting. On the day of the Progenics special meeting, Broadridge will be available by telephone at the technical support number that will be posted on the log in page for our virtual meeting to answer your questions regarding how to attend and participate in the virtual meeting.

Q: *How does the Progenics Board recommend that I participate at the Progenics special meeting?*

A: Whether or not you plan to participate in the Progenics special meeting via virtual means, Progenics encourages you to vote via the Internet, by telephone or by mail so that your shares will be voted in accordance with your wishes even if you later decide not to attend the Progenics special meeting.

Q: *Who can help answer any other questions I might have?*

A: If you have any questions about the merger agreement, the merger, the merger agreement proposal, the Progenics adjournment proposal, the Progenics compensation advisory proposal, the Progenics special meeting (including accessing the meeting by virtual means), this supplement or the joint proxy statement/prospectus, desire additional copies of this supplement or the joint proxy statement/prospectus, proxy cards or voting instruction forms or need help voting your shares of Progenics common stock, you should contact:

MacKenzie Partners, Inc.
1407 Broadway, 27th Floor
New York, New York 10018
Toll-Free: (800) 322-2885
or
(212) 929-5500
Email: pgnx@mackenziepartners.com

On page 3 of the joint proxy statement/prospectus, the answer to the last question is amended and restated as follows (new language and changes underlined):

Q: What is the value of the stock consideration?

A: In the merger, each Progenics stockholder will receive, for each share of Progenics common stock they own as of immediately prior to the completion of the merger (other than excluded shares and dissenting shares) the merger consideration as described under “The Merger Agreement—Merger Consideration” beginning on page 180 of the joint proxy statement/prospectus.

Based on the closing price of shares of Lantheus Holdings common stock on the Nasdaq Global Market on February 19, 2020, the last trading day prior to announcement of the amended transaction between Lantheus Holdings and Progenics, the stock consideration represented approximately \$5.12 in value for each share of Progenics common stock. Based on the closing price of shares of Lantheus Holdings common stock on the Nasdaq Global Market on May 13, 2020, the most recent trading day prior to the date of this supplement for which this information was available, the stock consideration represented approximately \$3.66 in value for each share of Progenics common stock.

Because Lantheus Holdings will issue 0.31 of a share of Lantheus Holdings common stock in exchange for each share of Progenics common stock, the value of the stock consideration will depend on the market price of shares of Lantheus Holdings common stock at the time the merger is completed. The market price of shares of Lantheus Holdings common stock when Progenics stockholders receive those shares after the merger is completed will not be known at the time of the special meetings and could be greater than, less than or the same as the market price of shares of Lantheus Holdings common stock on February 19, 2020, on the date of the joint proxy statement/prospectus or this supplement or at the time of the special meetings or any adjournment or postponement thereof. Because the exchange ratio is fixed and the market price of shares of Lantheus Holdings common stock has fluctuated and will continue to fluctuate, Progenics stockholders cannot be sure of the value of the stock consideration they will receive in the merger. See “Risk Factors—Risks Related to the Merger.”

On page 4 of the joint proxy statement/prospectus, the answer to the last question is amended and restated as follows (new language and changes underlined):

Q: Is it possible that I will not receive any payment under the CVRs or that any payments may be capped?

A: Yes. There can be no assurance that the net sales generated by PyL in calendar years 2022 and 2023 will be in excess of \$100 million and \$150 million, respectively, and that the resulting payments will be required of Lantheus Holdings. The amounts to be received in connection with the CVRs, and the timing of any payments of any such amounts, are contingent solely upon the achievement of the foregoing milestones within the specified time periods and other terms and conditions of the CVR agreement, which may or may not occur and may be outside the control of Lantheus Holdings or Progenics. There may be no payments ultimately made in respect of the CVRs, and the CVRs may ultimately expire without value.

In addition, payments under the CVRs are subject to an aggregate payment cap. The sum of (i) the aggregate amount of payments paid or payable pursuant to the CVR agreement (including any interest on such amounts paid or payable to the rights agent or any CVR holder) and (ii) the amount of any other cash or the fair market value of any property (other than Lantheus Holdings common stock or the CVRs) paid or payable to Progenics stockholders as consideration pursuant to the merger agreement will not (A) exceed 19.9% of the aggregate amount of consideration paid or payable to Progenics stockholders in the merger or (B) constitute an amount the payment of which, in the opinion of nationally recognized tax counsel, would more likely than not prevent the merger from satisfying the requirement of Section 368(a)(2)(E)(ii) of the

U.S. Internal Revenue Code of 1986, as amended, which is referred to in the joint proxy statement/prospectus as the Code. Such amount is referred to in the joint proxy statement/prospectus as the CVR cap.

In order to satisfy the requirement of Section 368(a)(2)(E)(ii) of the Code, the aggregate amount of payments paid or payable pursuant to the CVR agreement could be reduced depending on the amount of any other cash or the fair market value of any property (other than Lantheus Holdings common stock or the CVRs) paid or payable to Progenics stockholders as consideration received in the merger, including the amount payable to Progenics stockholders exercising their appraisal rights under Section 262 of the DGCL and the reimbursement amount paid by Progenics to the Velan stockholders pursuant to the expense reimbursement agreement, which is referred to in this supplement as the Velan reimbursement amount, in each case, to the extent treated as paid by Lantheus Holdings for U.S. federal income tax purposes.

On page 7 of the joint proxy statement/prospectus, the answer to the second question is amended and restated as follows (new language and changes underlined):

Q: What constitutes a quorum for the Lantheus Holdings special meeting?

A: The holders of a majority of the outstanding shares of Lantheus Holdings common stock entitled to vote being present in person or represented by proxy constitutes a quorum for the Lantheus Holdings special meeting. Lantheus Holdings stockholders who virtually attend the Lantheus Holdings special meeting via live webcast will be considered present “in person” for purposes of establishing a quorum and for all other purposes. Shares of Lantheus Holdings common stock whose holders elect to abstain from voting will be deemed present at the Lantheus Holdings special meeting for the purpose of determining the presence of a quorum. Shares of Lantheus Holdings common stock held in “street name” with respect to which the beneficial owner fails to give voting instructions to its broker, bank or other nominee, and shares of Lantheus Holdings common stock with respect to which the beneficial owner otherwise fails to vote, will not be deemed present at the Lantheus Holdings special meeting for the purpose of determining the presence of a quorum.

On page 7 of the joint proxy statement/prospectus, the answer to the third question is amended and restated as follows (new language and changes underlined):

Q: Who is entitled to vote at the Lantheus Holdings special meeting?

A: All holders of shares of Lantheus Holdings common stock who held shares at the record date for the Lantheus Holdings special meeting (the close of business on May 12, 2020) are entitled to receive notice of, and to vote at, the Lantheus Holdings special meeting. As of the close of business on the record date, there were 39,940,964 shares of Lantheus Holdings common stock outstanding. Each holder of shares of Lantheus Holdings common stock is entitled to one vote for each share of Lantheus Holdings common stock owned at the record date.

On page 10 of the joint proxy statement/prospectus, the answer to the first question is amended and restated as follows (new language and changes underlined):

Q: Can I revoke my proxy or change my voting instructions for Lantheus Holdings common stock?

A: Yes. You may revoke your proxy or change your vote at any time before the closing of the polls at the Lantheus Holdings special meeting.

If you are a stockholder of record at the record date for the Lantheus Holdings special meeting (the close of business on May 12, 2020), you can revoke your proxy or change your vote by:

- sending a signed notice, which bears a date later than the date of the proxy you want to revoke and which is received prior to the date of the Lantheus Holdings special meeting, stating that you revoke your proxy to Lantheus Holdings, Inc., 331 Treble Cove Road, North Billerica, Massachusetts 01862;

- submitting a valid, later-dated proxy or voting instructions via the Internet or by telephone before 11:59 p.m., Eastern Time, on the calendar day immediately preceding the Lantheus Holdings special meeting, or by mail that is received prior to the Lantheus Holdings special meeting; or
- attending the Lantheus Holdings special meeting (or, if the special meeting is adjourned or postponed, attending the applicable adjourned or postponed meeting) and voting via virtual means, which automatically will cancel any proxy previously given, but your attendance alone will not revoke any proxy previously given.

If you hold your shares in “street name” through a broker, bank or other nominee, you must contact your broker, bank or other nominee to change your vote or obtain a written legal proxy to vote your shares if you wish to cast your vote via virtual means at the Lantheus Holdings special meeting.

On page 10 of the joint proxy statement/prospectus, the answer to the second question is amended and restated as follows (new language and changes underlined):

Q: What happens if I sell my Lantheus Holdings shares after the record date but before the Lantheus Holdings special meeting?

A: The record date for the Lantheus Holdings special meeting (the close of business on May 12, 2020) is earlier than the date of the Lantheus Holdings special meeting. If you sell or otherwise transfer your shares of Lantheus Holdings common stock after the record date but before the date of the Lantheus Holdings special meeting, you will, unless the transferee obtains a proxy from you, retain your right to vote at the Lantheus Holdings special meeting.

On page 13 of the joint proxy statement/prospectus, the answer to the first question is amended and restated as follows (new language and changes underlined):

Q: What constitutes a quorum for the Progenics special meeting?

A: The holders of a majority of the outstanding shares of Progenics common stock entitled to vote being present in person or represented by proxy constitutes a quorum for the Progenics special meeting. Progenics stockholders who virtually attend the Progenics special meeting via live webcast will be considered present “in person” for purposes of establishing a quorum and for all other purposes. Shares of Progenics common stock whose holders elect to abstain from voting will be deemed present at the Progenics special meeting for the purpose of determining the presence of a quorum. Shares of Progenics common stock held in “street name” with respect to which the beneficial owner fails to give voting instructions to his, her or its broker, bank or other nominee will not be deemed present at the Progenics special meeting for the purpose of determining the presence of a quorum.

On page 13 of the joint proxy statement/prospectus, the answer to the second question is amended and restated as follows (new language and changes underlined):

Q: Who is entitled to vote at the Progenics special meeting?

A: All holders of shares of Progenics common stock who held shares at the record date for the Progenics special meeting (the close of business on May 12, 2020) are entitled to receive notice of, and to vote at, the Progenics special meeting. As of the close of business on the record date, there were 86,596,633 shares of Progenics common stock outstanding. Each holder of shares of Progenics common stock is entitled to one vote for each share of Progenics common stock owned at the record date.

On page 15 of the joint proxy statement/prospectus, the answer to the fourth question is amended and restated as follows (new language and changes underlined):

Q: Can I revoke my proxy or change my voting instructions for Progenics common stock?

A: Yes. You may revoke your proxy or change your vote at any time before the closing of the polls at the Progenics special meeting.

If you are a stockholder of record at the record date for the Progenics special meeting (the close of business on May 12, 2020), you can revoke your proxy or change your vote by:

- sending a signed notice, which bears a date later than the date of the proxy you want to revoke and which is received prior to the date of the Progenics special meeting, stating that you revoke your proxy to MacKenzie Partners, Inc., 1407 Broadway, 27th Floor, New York, New York 10018;
- submitting a valid, later-dated proxy or voting instructions via the Internet or by telephone before 11:59 p.m., Eastern Time, on the calendar day immediately preceding the Progenics special meeting, or by mail that is received prior to the Progenics special meeting; or
- attending the Progenics special meeting (or, if the special meeting is adjourned or postponed, attending the applicable adjourned or postponed meeting) and voting via virtual means, which automatically will cancel any proxy previously given, or revoking your proxy in person, but your attendance alone will not revoke any proxy previously given.

On page 16 of the joint proxy statement/prospectus, the answer to the first question is amended and restated as follows (new language and changes underlined):

Q: What happens if I sell my shares of Progenics common stock after the record date but before the Progenics special meeting?

A: The record date for the Progenics special meeting (the close of business on May 12, 2020) is earlier than the date of the Progenics special meeting and earlier than the date that the merger is expected to be completed. If you sell or otherwise transfer your shares of Progenics common stock after the record date but before the date of the Progenics special meeting, you will, unless the transferee obtains a proxy from you, retain your right to vote at the Progenics special meeting. However, you will not have the right to receive the merger consideration to be received by Progenics stockholders in the merger. In order to receive the merger consideration, you must hold your shares immediately prior to completion of the merger.

SUPPLEMENT TO RISK FACTORS

The section of the joint proxy statement/prospectus entitled “Risk Factors” is hereby supplemented as follows:

In addition to the other information contained in or incorporated by reference into this supplement and the joint proxy statement/prospectus, including the matters addressed in “Cautionary Statement Regarding Forward-Looking Statements” beginning on page 42 of this supplement and on page 74 of the joint proxy statement/prospectus, Lantheus Holdings and Progenics stockholders should carefully consider the following risk factors and the risk factors contained in the joint proxy statement/prospectus before deciding whether to vote for the stockholder proposals. You should also read and consider the risk factors associated with each of the businesses of Lantheus Holdings and Progenics because these risk factors may affect the operations and financial results of the combined company. These risks may be found under Part I, Item 1A, “Risk Factors” in each company’s Annual Report on Form 10-K for the year ended December 31, 2019 and in Part II, Item 1A, “Risk Factors” in each company’s Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020, and future filings with the SEC, each of which is on file or will be filed with the SEC and all of which are incorporated by reference in this supplement.

The first risk factor on page 41 of the joint proxy statement/prospectus is amended and restated as follows (new language and changes underlined):

Because the exchange ratio is fixed and will not be adjusted in the event of any changes in either Lantheus Holdings’ or Progenics’ stock price, and because of the uncertainty of the fair market value of, and the ultimate realization on, the CVRs, Progenics stockholders cannot be sure of the value of the merger consideration they will receive in the merger.

Upon completion of the merger, each share of Progenics common stock outstanding immediately prior to the completion of the merger (other than excluded shares and dissenting shares) will be converted into the right to receive 0.31 of a share of Lantheus Holdings common stock without interest and one CVR representing the right to receive, subject to the CVR cap, such stockholder’s pro rata share of aggregate cash payments equal to 40% of U.S. net sales generated by PyL in calendar years 2022 and 2023 in excess of \$100 million and \$150 million, respectively, as set forth in the CVR agreement. The exchange ratio is fixed and will not be adjusted for changes in the market price of either Lantheus Holdings common stock or Progenics common stock between the date the merger agreement was signed and completion of the merger. As a result, changes in the price of Lantheus Holdings common stock prior to the completion of the merger will affect the value of the Lantheus Holdings common stock that Progenics stockholders will receive upon completion of the merger.

The market price of shares of Lantheus Holdings common stock has fluctuated since the date of the announcement of the merger agreement and may continue to change through the date of each of the Lantheus Holdings and the Progenics special meetings and the date the merger is completed. For example, based on the range of closing prices of Lantheus Holdings common stock during the period from February 19, 2020, the last full trading day before the public announcement of the merger, through May 13, 2020, the last practicable trading date prior to the date of this supplement, the exchange ratio resulted in an implied value of the stock consideration ranging from a high of approximately \$5.17 to a low of approximately \$2.82 for each share of Progenics common stock. The actual market value of the Lantheus Holdings common stock received by holders of Progenics common stock may result in an implied value of the stock consideration outside this range. There is also uncertainty regarding the fair market value of the CVRs and whether any payment will ultimately be realized on the CVRs.

Stock price changes may result from a variety of factors, including, among others, general market and economic conditions, changes in Lantheus Holdings’ and Progenics’ respective businesses, operations and prospects, risks inherent in their respective businesses, reductions or changes in U.S. government spending or budgetary policies, the effects of pandemics and viruses including the recent worldwide pandemic of the novel strain of COVID-19, catastrophic events, both natural and man-made, changes in market assessments of the likelihood that the merger

will be completed and/or the value that may be generated by the merger, and changes with respect to expectations regarding the timing of the merger and regulatory considerations. Many of these factors are outside the control of Lantheus Holdings and Progenics. Due to the negative effect of the COVID-19 pandemic and other factors, the financial markets have experienced significant volatility since the announcement of the merger. Stock prices in the broader equity market, including the prices of the Lantheus Holdings common stock and the Progenics common stock, have generally decreased, experienced fluctuations and may further fluctuate through the date of each of the Lantheus Holdings and the Progenics special meetings and the date the merger is completed. At the time of the Progenics special meeting, Progenics stockholders will not know with certainty the value of the shares of Lantheus Holdings common stock that they will receive upon completion of the merger.

The second risk factor on page 42 of the joint proxy statement/prospectus is amended and restated as follows (new language and changes underlined):

The merger is subject to conditions, some or all of which may not be satisfied, or completed on a timely basis, if at all. Failure to complete the merger could have material adverse effects on Lantheus Holdings' and Progenics' businesses.

The completion of the merger is subject to a number of conditions in addition to the termination or expiration of any applicable waiting period (and any extension thereof) under the HSR Act (which has been obtained by grant of early termination of the HSR Act waiting period on October 25, 2019), including, among other conditions: (i) approval of the merger agreement proposal by Progenics stockholders at the Progenics special meeting; (ii) approval of the stock issuance proposal by Lantheus Holdings stockholders at the Lantheus Holdings special meeting; (iii) approval for the listing on the Nasdaq Global Market of the shares of Lantheus Holdings common stock to be issued in the merger and such other shares to be reserved for issuance in connection with the merger; (iv) the absence of any law enacted or order issued by a governmental authority of competent jurisdiction having the effect of making the merger illegal or otherwise prohibiting completion of the merger; (v) the accuracy of the representations and warranties made in the merger agreement by the other party, subject to the applicable materiality standards set forth in the merger agreement; (vi) the absence of any fact, circumstance, condition, development, change, event, occurrence or effect that has had or would reasonably be expected to have, individually or in the aggregate with all other facts, circumstances, conditions, developments, changes, events, occurrences or effects, a material adverse effect on Progenics since the date of the original merger agreement; (vii) performance or compliance in all material respects by the other party with all the agreements and covenants required to be performed by such party under the merger agreement on or prior to the closing date; and (viii) the effectiveness of the registration statement on Form S-4 relating to the merger and no stop order suspending the effectiveness of the registration statement and no proceedings for such purpose initiated or threatened by the SEC. The impact of the COVID-19 pandemic and the resulting social and economic disruption may increase the risk that one or more of the closing conditions will not be satisfied and the merger will not occur or that the completion of the merger will be delayed.

In addition, the merger agreement contains certain termination rights for both Lantheus Holdings and Progenics, including, among other things, (i) if the merger has not been completed by July 1, 2020, (ii) if the required approval of Lantheus Holdings stockholders or the Progenics stockholders is not obtained, (iii) if the other party willfully breaches its non-solicitation obligations in the merger agreement, (v) if the other party materially breaches its representations, warranties or covenants which breach or failure to perform would result in a failure to satisfy any condition to completion of the merger related to the accuracy of its representations and warranties or the performance of its covenants and agreements, and fails to cure such breach, (vi) if any law or order prohibiting the merger or the stock issuance has become final and nonappealable, or (vii) if the board of directors of the other party changes its recommendation in connection with the merger. If the merger is not completed, the ongoing business of Lantheus Holdings and Progenics may be materially adversely affected and, without realizing any of the benefits that they could have realized had the merger been completed, they will be subject to a number of risks, including the following:

- Lantheus Holdings and Progenics may experience negative reactions from the financial markets, including negative impacts on trading prices of Lantheus Holdings common stock and Progenics common stock, and from their respective customers, vendors, regulators and employees;
- Progenics may be required to pay Lantheus Holdings a termination fee of \$18,340,000 if the merger agreement is terminated under certain circumstances, and Lantheus Holdings may be required to pay Progenics a termination fee of \$18,340,000 if the merger agreement is terminated under certain other circumstances (see “The Merger Agreement—Termination Fees and Expenses” beginning on page 207 of the joint proxy statement/prospectus);
- if the merger agreement is terminated and the Lantheus Holdings Board or the Progenics Board seeks a similar business combination, Lantheus Holdings stockholders and Progenics stockholders cannot be certain that Lantheus Holdings or Progenics will be able to find a party willing to enter into a transaction on terms equivalent to or more attractive than the terms that the other party has agreed to in the merger agreement;
- Lantheus Holdings and Progenics will be required to pay certain transaction expenses and other costs incurred in connection with the merger, whether or not the merger is completed, including regulatory filings and legal, accounting, certain financial advisory, consulting and other advisory expenses, employee benefit-related expenses and filing and printing fees, and for Progenics, certain fees and expenses of Lantheus Holdings in connection with the Lantheus Holdings expense reimbursement if a Progenics stockholder vote termination event occurs and Lantheus Holdings is not otherwise entitled to the Progenics termination fee as described above (see “The Merger Agreement—Termination Fees and Expenses” beginning on page 207 of the joint proxy statement/prospectus); and
- matters relating to the merger (including arranging integration planning) have required, and will continue to, require substantial commitments of time and resources by Lantheus Holdings and Progenics management and the expenditure of significant funds in the form of fees and expenses, which would otherwise have been devoted to day-to-day operations and other opportunities that may have been beneficial to either Lantheus Holdings or Progenics as an independent company.

In addition, if the merger is not completed, Lantheus Holdings and Progenics could be subject to litigation related to any failure to complete the merger or related to any enforcement proceeding commenced against either Lantheus Holdings or Progenics to perform its obligations under the merger agreement. If any such risk materializes, it could adversely impact either Lantheus Holdings’ or Progenics’ ongoing business. Similarly, delays in the completion of the merger could, among other things, result in additional transaction costs, loss of revenue or other negative effects associated with uncertainty about completion of the merger and cause them not to realize some or all of the benefits that they expect to achieve if the merger is successfully completed within its expected timeframe. We cannot assure you that the conditions to the closing of the merger will be satisfied or waived or that the merger will be completed.

In addition, Progenics anticipates it being necessary to obtain additional financing in order to meet its cash requirements if the merger is not consummated. However, there can be no assurances that Progenics will be able to obtain additional capital on acceptable terms and in the amounts necessary to fully fund Progenics' current operating expenses or reduced operating expenses reflecting delays or reductions in the scope of Progenics' product development programs beyond 2020. These and other circumstances raise substantial doubt about Progenics' ability to continue as a going concern if the merger is not consummated. Progenics' independent registered public accounting firm has issued an opinion on Progenics' financial statements as of and for the period ended December 31, 2019 included in Progenics' Annual Report on Form 10-K, and incorporated by reference in the joint proxy statement/prospectus, that states that there is substantial doubt about Progenics' ability to continue as a going concern and that the financial statements do not include any adjustments relating to the recoverability and classification of liabilities that might be necessary should Progenics be unable to continue as a going concern.

On March 15, 2020, Progenics, as borrower, and Lantheus Medical Imaging, as lender, entered into a bridge loan agreement, pursuant to which Lantheus Medical Imaging agreed to provide for a secured short-term loan to Progenics on or after May 1, 2020 in an aggregate principal amount of up to \$10 million. The bridge loan matures on the earlier to occur of (a) September 30, 2020 and (b) the date on which Progenics enters into a debt financing or similar arrangements or any amendment to, or replacement of, its existing debt provided by one or more third parties following the termination date of the merger agreement, in either case, having aggregate net cash proceeds that exceed the amount then required to repay all obligations under the bridge loan agreement in full in cash. If such bridge loan is made by Lantheus Medical Imaging, there is no assurance that such borrowings will be repaid in accordance with the terms of the bridge loan agreement, or at all. See "Bridge Loan Agreement" beginning on page 210 of the joint proxy statement/prospectus for a more detailed description of the bridge loan agreement.

The third risk factor on page 46 of the joint proxy statement/prospectus is amended and restated as follows (new language and changes underlined):

The unaudited pro forma combined financial information and prospective financial information included in the joint proxy statement/prospectus are presented for illustrative purposes only and do not represent the actual financial position or results of operations of the combined company following completion of the merger.

The unaudited pro forma combined financial information and prospective financial information contained in the joint proxy statement/prospectus is presented for illustrative purposes only, contains a variety of adjustments, assumptions and preliminary estimates made prior to the time Lantheus Holdings and Progenics entered into the merger agreement and, in some instances, the original merger agreement, and does not represent the actual financial position or results of operations of Lantheus Holdings and Progenics between the date on which the merger agreement was entered into and the date of this supplement, or any other time prior to the merger or that of the combined company following the merger for several reasons. Among other things, the unaudited pro forma combined financial information does not reflect the projected realization of cost savings following completion of the merger. See the sections entitled "Certain Unaudited Pro Forma Condensed Combined Financial Statements," "Lantheus Holdings Proposal I: Approval of the Stock Issuance and Progenics Proposal I: Adoption of the Merger Agreement—Certain Unaudited Prospective Financial Information" and "Comparative Historical and Unaudited Pro Forma Combined Per Share Data" beginning on pages 59, 157 and 57, respectively, of the joint proxy statement/prospectus, and the sections entitled "Certain Unaudited Pro Forma Condensed Combined Financial Statements," "Update to Comparative Historical and Unaudited Pro Forma Combined Per Share Data" and "Supplement to Lantheus Holdings Proposal I: Approval of the Stock Issuance and Progenics Proposal I: Adoption of the Merger Agreement" beginning on pages 25, 23 and 47 of this supplement.

The actual financial positions and results of operations of Lantheus Holdings and Progenics between the date on which the merger agreement was entered into and the date of this supplement, and any other time prior to the

merger and that of the combined company following the merger may not be consistent with, or evident from, and may differ materially and adversely from, the unaudited pro forma combined financial information or prospective financial information included in the joint proxy statement/prospectus. In addition, the assumptions used in preparing the unaudited pro forma combined financial information and/or the prospective financial information included in the joint proxy statement/prospectus may not be realized, may not prove to be accurate and may be affected by other factors, such as the potential impact of current market conditions, including the impact of the COVID-19 pandemic, which could lead to material changes to the combined company's business that are not reflected in the unaudited pro forma combined financial information.

The first full risk factor on page 47 of the joint proxy statement/prospectus is amended and restated as follows (new language and changes underlined):

The opinions of Progenics' and Lantheus Holdings' respective financial advisors do not reflect changes in circumstances that may have occurred or that may occur between the signing of the merger agreement and the completion of the merger.

Neither the Progenics Board nor the Lantheus Holdings Board has obtained updated opinions from their respective financial advisors as of the date of the joint proxy statement/prospectus, nor do either of them expect to receive updated, revised or reaffirmed opinions prior to the completion of the merger. Changes in the operations and prospects of Progenics or Lantheus Holdings, general market and economic conditions and other factors that may be beyond the control of Progenics or Lantheus Holdings, including, without limitation, the impact of the COVID-19 pandemic on the operations, financial condition and prospects of Lantheus Holdings and Progenics, and on which Progenics' and Lantheus Holdings' financial advisors' opinions were based, may significantly alter the value of Progenics or Lantheus Holdings or the share prices of Progenics common stock or Lantheus Holdings common stock by the time the merger is completed. The opinions do not speak as of the time the merger will be completed or as of any date other than the date of such opinions. Because Progenics' and Lantheus Holdings' financial advisors will not be updating their opinions, the opinions will not address the fairness of the merger consideration from a financial point of view at the time the merger is completed. For a description of the opinions that the Progenics Board and the Lantheus Holdings Board received from their respective financial advisors, see "Lantheus Holdings Proposal I: Approval of the Stock Issuance and Progenics Proposal I: Adoption of the Merger Agreement—Opinion of Lantheus Holdings' Financial Advisor" and "Lantheus Holdings Proposal I: Approval of the Stock Issuance and Progenics Proposal I: Adoption of the Merger Agreement—Opinion of Progenics' Financial Advisor" beginning on pages 140 and 148, respectively, of the joint proxy statement/prospectus.

The third risk factor on page 49 of the joint proxy statement/prospectus is amended and restated as follows (new language and changes underlined):

Progenics stockholders may not receive any payments under the CVRs, which makes it difficult to value the CVRs, and payments under the CVRs are subject to an aggregate payment cap.

Under the merger agreement, in addition to the stock consideration, holders of shares of Progenics common stock have the right to receive one CVR for each share of Progenics common stock held by such person. Each CVR will entitle its holder to receive, subject to the CVR cap, his, her or its pro rata share of aggregate cash payments equal to 40% of U.S. net sales generated by PyL in calendar years 2022 and 2023 in excess of \$100 million and \$150 million, respectively. The CVRs will not have any voting or dividend rights and will not represent any equity or ownership interest in Lantheus Holdings, Merger Sub, Progenics or any of their respective affiliates. Therefore, Progenics stockholders' right to receive any future payment with respect to the CVRs will be contingent solely upon the achievement of the foregoing milestones within the specified time periods and other terms and conditions of the CVR agreement, which may or may not occur and may be outside the control of Lantheus Holdings and Progenics. If the milestones are not achieved, no payment will be made under the CVRs and the CVRs will expire valueless. Accordingly, the value, if any, of the CVRs is speculative, and the CVRs may ultimately have no value at all.

In addition, payments under the CVRs are subject to an aggregate payment cap. The sum of (i) the aggregate amount of payments paid or payable pursuant to the CVR agreement (including any interest on such amounts paid or payable to the rights agent or any CVR holder) and (ii) the amount of any other cash or the fair market value of any property (other than Lantheus Holdings common stock or the CVRs) paid or payable to Progenics stockholders as consideration pursuant to the merger agreement will not (A) exceed 19.9% of the aggregate amount of consideration paid or payable to Progenics stockholders in the merger or (B) constitute an amount the payment of which, in the opinion of nationally recognized tax counsel, would more likely than not prevent the merger from satisfying the requirement of Section 368(a)(2)(E)(ii) of the Code. For a more detailed description of the CVRs, see the section entitled “Description of the CVRs” beginning on page 225 of the joint proxy statement/prospectus and the section entitled “Supplement to the Description of the CVRs” beginning on page 50 of this supplement.

In order to satisfy the requirement of Section 368(a)(2)(E)(ii) of the Code, the aggregate amount of payments paid or payable pursuant to the CVR agreement could be reduced depending on the amount of any other cash or the fair market value of any property (other than Lantheus Holdings common stock or the CVRs) paid or payable to Progenics stockholders as consideration received in the merger, including the amount payable to Progenics stockholders exercising their appraisal rights under Section 262 of the DGCL and the Velan reimbursement amount, in each case to the extent treated as paid by Lantheus Holdings for U.S. federal income tax purposes.

The third risk factor on page 52 of the joint proxy statement/prospectus is amended and restated as follows (new language and changes underlined):

A pandemic, epidemic or outbreak of an infectious disease, such as COVID-19, or coronavirus, may materially and adversely affect Lantheus Holdings or Progenics and their respective financial results.

The recent outbreak of COVID-19 originated in Wuhan, China, in December 2019 and has since spread throughout the world including the United States and Europe. The spread of COVID-19 has already affected the global economy and may adversely affect Lantheus Holdings’ or Progenics’ operations and businesses by causing a period of business disruption, including the potential interruption of global supply chains, manufacturing activities, logistics, radiopharmacies and other distribution channels as well as commercial and clinical development activities. Also, this outbreak may impact the operations of hospitals and clinics at which Lantheus Holdings’ or Progenics’ commercial products are used or product candidates are tested, and it may affect the number of medical procedures in which those products are used or product candidates are tested, thereby potentially reducing demand for commercial products and delaying clinical development of product candidates. In addition, there could be a potential effect of COVID-19 on FDA or other health or regulatory authorities, which could result in delays of reviews and approvals, including with respect to Lantheus Holdings’ or Progenics’ product candidates.

Recent actions by U.S. federal, state and foreign governments to address the COVID-19 pandemic, including the stay-at-home mandates and related safety measures such as the delay or cancellation of elective medical procedures and/or treatments or the inability of some patients to visit hospitals or clinics, may also have a significant adverse effect on the markets in which Lantheus Holdings and Progenics conduct their businesses. The impact to date also has included periods of significant volatility in various markets and industries. This volatility could have an adverse impact on Lantheus Holdings or Progenics’ customers and on the companies’ business, financial condition and results of operations. The extent of impacts resulting from the COVID-19 pandemic and other events beyond the control of Lantheus Holdings, Progenics and the combined company will depend on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of the COVID-19 outbreak and actions taken to contain COVID-19 or its impact, among others.

Neither Lantheus Holdings nor Progenics can presently predict the scope and severity of any potential business shutdowns or disruptions, but if Lantheus Holdings or Progenics or any of the third parties with whom Lantheus Holdings or Progenics engages were to experience shutdowns or other business disruptions, Lantheus Holdings’

or Progenics' ability to conduct business in the manner and on the timelines presently planned could be materially and negatively impacted, which could have a material adverse effect on Lantheus Holdings' or Progenics' business and their results of operation and financial condition.

The following risk factor is added as a new risk factor after the first full paragraph on page 53 of the joint proxy statement/prospectus:

The COVID-19 pandemic could have a material impact on the business, results of operations and financial condition, operating results, cash flows and prospects of the combined company.

In December 2019, a novel strain of coronavirus (COVID-19) emerged in Wuhan China. Less than four months later, in March 2020, the World Health Organization declared COVID-19 a pandemic. While the outbreak initially was largely concentrated in China and caused significant disruptions in its economy, the virus has now spread to many other countries and regions, and every state within the United States, including Massachusetts, where the primary offices and manufacturing facility of the combined company will be located, as well as New York, New Jersey, Puerto Rico and Canada, where other offices and manufacturing facilities of the combined company will be located.

Towards the end of the first quarter of 2020, each of Lantheus Holdings and Progenics began to experience, and through the date of this filing, each are continuing to experience impacts to their respective businesses and operations related to the COVID-19 pandemic, including the impact of stay-at-home mandates and related safety measures such as the delay of elective medical procedures and/or treatments, resulting in a decline in the volume of procedures and/or treatments using Lantheus Holdings and Progenics products. In response to the pandemic, healthcare providers have had to, and may need to further, reallocate resources, such as physicians, staff and facilities, as they prioritize limited resources and personnel capacity to focus on the treatment of patients with COVID-19 and implement limitations on access to hospitals and other medical institutions due to concerns about the potential spread of COVID-19 in such settings. These actions have significantly delayed the provision of other medical care including elective and diagnostic procedures and/or treatments involving Lantheus Holdings and Progenics products, having an adverse effect on each company's revenue. These measures and challenges may continue for the duration of the COVID-19 pandemic, which is uncertain, and may significantly reduce revenue and cash flows of the combined company while the pandemic continues and thereafter until the combined company and its customers are able to resume normal business operations. Lantheus Holdings and Progenics anticipate that in the second quarter of 2020, the impact of the COVID-19 pandemic on each company's business will be more significant than either company experienced in the first quarter as pandemic precautions continue to limit demand for products of each company. Although Lantheus Holdings and Progenics cannot predict the magnitude or duration of the pandemic's impact on the combined company's business, each believes the pandemic will result in a material reduction of its net revenues in the second quarter of 2020 and that the timing and speed of any potential revenue recovery cannot be predicted.

In connection with the COVID-19 pandemic, the following risks could have a material effect on the business, financial condition, results of operations and prospects of the combined company:

- The delay or cancellation by hospitals and clinics of the elective procedures and/or treatments in which the combined company's products are used as a result of their COVID-19 response efforts and the duration of such effects, thereby reducing sales of its products for an unknown period of time;
- The inability or unwillingness of some patients to visit hospitals or clinics in order to undergo elective procedures and/or treatments in which the combined company's products are used, thereby reducing sales of its products for an unknown period of time;
- The inability of some patients to pay for elective procedures and/or treatments and/or the co-pay associated with those procedures and/or treatments in which the combined company's products are used due to job loss or lack of insurance, thereby reducing sales of its products for an unknown period of time;

- The inability of the combined company's distributors, radiopharmacy customers, hospitals, clinics and other customers to conduct their normal operations, including supplying or conducting procedures in which the combined company's products are used, because of their COVID-19 response efforts, or the reduced capacity or productivity of their employees and contractors as a result of possible illness, quarantine or other inability to work, thereby reducing sales of the combined company's products for an unknown period of time;
- The reduction in pulmonary ventilation studies in which the combined company's Xenon-133 gas is used because of institutional concerns about a hospital's ability to adequately decontaminate equipment used to administer those studies during the COVID-19 pandemic, thereby reducing Xenon-133 sales for an unknown period of time;
- The inability of global suppliers of raw materials or components used in the manufacture of the combined company's products, or contract manufacturers of its products, to supply and/or transport those raw materials, components and products to the combined company in a timely and cost effective manner due to shutdowns, interruptions or delays, limiting and precluding the production of its finished products, impacting its ability to supply customers, reducing its sales, increasing its costs of goods sold, and reducing its absorption of overhead;
- The partial or complete delay or cancellation of international or domestic flights by airfreight carriers, resulting in the combined company's inability to receive raw materials, components and products from its global suppliers or to ship and deliver its finished products to domestic and international customers in a timely or cost effective manner, thereby potentially increasing freight costs as the combined company seeks alternate, potentially more expensive, methods to ship raw materials, components or products, and negatively impacting its sales;
- The reduced capacity or productivity of the combined company's complex operations as a result of possible illness, quarantine or other inability of its employees and contractors to work, despite all of the preventative measures the combined company undertakes to protect the health and safety of its workforce;
- The illiquidity or insolvency of the combined company's suppliers, contract manufacturers and freight carriers whose business activities could be shut down, interrupted or delayed;
- The illiquidity or insolvency of the combined company's distributors and customers, or their inability to pay the combined company's invoices in full or in a timely manner, due to the reduction in their revenues caused by the cancellation or delay of procedures and other factors, which could potentially reduce cash flow, reduce liquidity and increase bad debt reserves;
- A portion of the combined company's raw materials or finished product inventory may expire due to reduced demand for its drugs;
- Delays in the combined company's ability, and the ability of its development partners to conduct, enroll and complete clinical development programs such as the flurpiridaz F 18 Phase 3 clinical development program currently being conducted by GE Healthcare, the Phase 1 trial of PSMA TTC being conducted by Bayer AG or the Phase 2 trial of I-131-1095 (for which new enrollment has temporarily been paused);
- Delays of regulatory reviews and approvals, including with respect to the combined company's product candidates, by the FDA or other health or regulatory authorities;
- Decreased sales of those of the combined company's products that are promotionally sensitive, like DEFINITY, due to the reduction of in-person sales and marketing activities and training caused by travel restrictions, quarantines, other similar social distancing measures and more restrictive hospital access policies;
- The combined company's ability to maintain employee morale and motivate and retain management personnel and other key employees as a result of its recent work week and salary reductions and the

furlough of a portion of the clinical, commercial and medical employees at Progenics, to support cost saving measures;

- A disruption or delay in regulatory approval for, and operation of, the combined company's new, on-campus manufacturing facility, which would delay implementation of its supply diversification strategy for certain of its key products and impact its ability to benefit from a lower cost of goods for those products or otherwise result in delays or disruptions of product candidates;
- A reduction in revenue with continued incurrence of high fixed costs relating to the combined company's already-existing, complex and expensive nuclear manufacturing facility could adversely affect its cash flows, liquidity and ability to comply with the financial covenants in the combined company's 2019 Facility, and there can be no assurance that any required waiver or consent related to any such failure to comply would be granted by its current lenders;
- The increased reliance on the combined company's personnel working from home, which may negatively impact productivity, or disrupt, delay or otherwise adversely impact the combined company's business;
- A delay in the stockholder approval and completion of the merger and the delay in achieving, or inability to achieve, successful integration of Progenics into the combined companies, or the synergies, cost savings, innovation and other anticipated benefits of the acquisition due to impact of the COVID-19 pandemic on the operations, financial condition and prospects of the combined company;
- The instability to worldwide economies, financial markets, social institutions, labor markets and healthcare systems as a result of the COVID-19 pandemic, which could result in an economic downturn that could adversely impact the combined company's business, results of operations and financial condition, as well as that of its suppliers, distributors, customers or other business partners; and
- A recurrence of the COVID-19 pandemic after social distancing and other similar measures have been relaxed.

The extent to which the COVID-19 pandemic impacts the combined company's business and its results of operations and financial condition will depend on future developments that are highly uncertain and cannot be predicted, including new information that may emerge in connection with the severity of the virus, the ability to treat and ultimately prevent it, its potential recurrence, and actions that may be taken to contain its impact.

UPDATE TO SELECTED HISTORICAL CONSOLIDATED FINANCIAL DATA OF LANTHEUS HOLDINGS

The following tables present selected historical consolidated financial data of Lantheus Holdings. The selected historical consolidated financial data of Lantheus Holdings for the fiscal years ended December 31, 2019, 2018 and 2017 and as of December 31, 2019 and 2018 are derived from Lantheus Holdings' audited consolidated financial statements and related notes contained in its Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which is incorporated by reference into this supplement and the joint proxy statement/prospectus. The selected historical consolidated financial data of Lantheus Holdings for the fiscal years ended December 31, 2016 and 2015, and as of December 31, 2017, 2016 and 2015, have been derived from Lantheus Holdings' audited consolidated financial statements for such years, which have not been incorporated by reference into this supplement or the joint proxy statement/prospectus.

The selected historical consolidated financial data of Lantheus Holdings for the three months ended March 31, 2020 and 2019 and as of March 31, 2020 are derived from Lantheus Holdings' unaudited condensed consolidated financial statements and related notes contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020, which is incorporated by reference into this supplement and the joint proxy statement/prospectus. The selected historical consolidated financial data of Lantheus Holdings as of March 31, 2019 are derived from Lantheus Holdings' unaudited condensed consolidated financial statements and related notes contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2019, which has not been incorporated by reference into this supplement or the joint proxy statement/prospectus. Lantheus Holdings' unaudited condensed consolidated financial statements have been prepared on a basis consistent with its audited financial statements and include all normal and recurring adjustments necessary for a fair presentation of the results for each interim period.

The following selected historical consolidated financial data of Lantheus Holdings set forth below is only a summary and is not necessarily indicative of future results. You should read the following information in conjunction with Lantheus Holdings' audited consolidated financial statements contained in its Annual Report on Form 10-K for the year ended December 31, 2019 and unaudited condensed consolidated financial statements contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the notes to Lantheus Holdings' consolidated financial statements for significant events affecting the comparability of results as well as material uncertainties regarding Lantheus Holdings' future financial condition and results of operations in its entirety. See the section entitled "Where You Can Find More Information" beginning on page 260 of the joint proxy statement/prospectus and on page 58 of this supplement.

	Three Months Ended March 31,		Years Ended December 31,				
	2020	2019	2019	2018	2017	2016	2015
(in thousands, except per share data)							
Statements of Operations							
Revenues	\$90,704	\$86,510	\$347,337	\$343,374	\$331,378	\$301,853	\$293,461
Cost of goods sold	52,702	42,426	172,526	168,489	169,243	164,073	157,939
Sales and marketing	10,130	10,397	41,888	43,159	42,315	36,542	34,740
General and administrative	16,699	12,589	61,244	50,167	49,842	38,832	43,894
Research and development	4,048	4,929	20,018	17,071	18,125	12,203	14,358
Gain on sales of assets	—	—	—	—	—	6,385	—
Operating income	7,125	16,169	51,661	64,488	51,853	56,588	42,530
Interest expense	1,946	4,592	13,617	17,405	18,410	26,618	38,715
Debt retirement costs	—	—	—	—	—	1,896	—
Loss on extinguishment of debt	—	—	3,196	—	2,442	—	15,528
Other (income) expense	(350)	(1,187)	6,221	(2,465)	(8,638)	(220)	65
Income (loss) before income taxes	5,529	12,764	28,627	49,548	39,639	28,294	(11,778)
Income tax expense (benefit)(a)	2,192	2,815	(3,040)	9,030	(83,746)	1,532	2,968
Net income (loss)	\$ 3,337	\$ 9,949	\$ 31,667	\$ 40,518	\$ 123,385	\$ 26,762	\$ (14,746)
Net income (loss) per common share:							
Basic	\$ 0.08	\$ 0.26	\$ 0.81	\$ 1.06	\$ 3.31	\$ 0.84	\$ (0.60)
Diluted	\$ 0.08	\$ 0.25	\$ 0.79	\$ 1.03	\$ 3.17	\$ 0.82	\$ (0.60)
Weighted-average common shares:							
Basic	39,433	38,603	38,988	38,233	37,276	32,044	24,440
Diluted	40,102	39,787	40,113	39,501	38,892	32,656	24,440

(a) The 2017 amount reflects the release of Lantheus Holdings' valuation allowance of \$141.1 million against its deferred tax assets offset by a provision of \$45.1 million for remeasuring the Company's deferred tax assets for the change in tax rates enacted under the Tax Cuts and Jobs Act of 2017.

	March 31,		December 31,				
	2020	2019	2019	2018	2017	2016	2015
(in thousands)							
Balance Sheet Data							
Cash and cash equivalents	\$ 95,713	\$112,061	\$ 92,919	\$113,401	\$ 76,290	\$ 51,178	\$ 28,596
Total assets	404,125	443,908	405,919	439,831	383,858	255,898	242,379
Long-term debt, net	181,488	263,293	183,927	263,709	265,393	274,460	349,858
Total liabilities	285,727	360,695	291,318	368,829	360,567	362,414	427,668
Total stockholders' equity (deficit)	118,398	83,213	114,601	71,002	23,291	(106,516)	(185,289)

UPDATE TO SELECTED HISTORICAL CONSOLIDATED FINANCIAL DATA OF PROGENICS

The following tables present selected historical consolidated financial data of Progenics. The selected historical consolidated financial data of Progenics for the fiscal years ended December 31, 2019, 2018 and 2017 and as of December 31, 2019 and 2018 are derived from Progenics' audited consolidated financial statements and related notes contained in its Annual Report on Form 10-K for the year ended December 31, 2019, which is incorporated by reference into this supplement and the joint proxy statement/prospectus. The selected historical consolidated financial data of Progenics for the fiscal years ended December 31, 2016 and 2015 and as of December 31, 2017, 2016 and 2015 are derived from Progenics' audited consolidated financial statements for such years, which have not been incorporated by reference into this supplement or the joint proxy statement/prospectus.

The selected historical consolidated financial data of Progenics for the three months ended March 31, 2020 and 2019 and as of March 31, 2020 are derived from Progenics' unaudited condensed consolidated financial statements and related notes contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020, which is incorporated by reference into this supplement and the joint proxy statement/prospectus. The selected historical consolidated financial data of Progenics as of March 31, 2019 are derived from Progenics' unaudited condensed consolidated financial statements and related notes contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2019, which has not been incorporated by reference into this supplement or the joint proxy statement/prospectus. Progenics' unaudited condensed consolidated financial statements have been prepared on a basis consistent with its audited financial statements and include all normal and recurring adjustments necessary for a fair presentation of the results for each interim period.

The following selected historical consolidated financial data of Progenics set forth below is only a summary and is not necessarily indicative of future results. You should read the following information in conjunction with Progenics' audited consolidated financial statements contained in its Annual Report on Form 10-K for the year ended December 31, 2019 and unaudited condensed consolidated financial statements contained in its Quarterly Report on Form 10-Q for the quarterly period, ended March 31, 2020, including "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the notes to Progenics' consolidated financial statements for significant events affecting the comparability of results as well as material uncertainties regarding Progenics' future financial condition and results of operations. See the sections entitled "Where You Can Find More Information" beginning on page 260 of the joint proxy statement/prospectus and on page 58 of this supplement.

	Three Months Ended March 31,		Years Ended December 31,				
	2020	2019	2019	2018	2017	2016	2015
Consolidated Statements of Operations Data(a):							
Revenue:							
Product sales	\$ 1,359	\$ —	\$ 1,559	\$ —	\$ —	\$ —	\$ —
Royalty income	4,789	4,161	16,970	14,908	10,965	10,295	6,608
License and other revenue	100	120	16,457	714	733	59,134	2,068
Total revenue	<u>6,248</u>	<u>4,281</u>	<u>34,986</u>	<u>15,622</u>	<u>11,698</u>	<u>69,429</u>	<u>8,676</u>
Operating expenses:							
Cost of goods sold	1,558	—	3,168	—	—	—	—
Research and development	10,367	12,392	49,223	35,147	42,589	37,569	28,196
Selling, general and administrative	10,509	9,224	47,838	29,431	24,909	23,356	18,184
Intangible impairment charges	—	—	—	23,200	—	—	—
Change in contingent consideration liability	(300)	900	916	(5,800)	2,600	(4,600)	1,600
Total operating expenses	<u>22,134</u>	<u>22,516</u>	<u>101,145</u>	<u>81,978</u>	<u>70,098</u>	<u>56,325</u>	<u>47,980</u>
Operating (loss) income	<u>(15,886)</u>	<u>(18,235)</u>	<u>(66,159)</u>	<u>(66,356)</u>	<u>(58,400)</u>	<u>13,104</u>	<u>(39,304)</u>

	Three Months Ended March 31,		Years Ended December 31,				
	2020	2019	2019	2018	2017	2016	2015
	(in thousands, except per share data)						
Other (expense) income:							
Interest (expense) income and other income, net	(915)	(500)	(2,376)	(2,933)	(4,285)	(527)	52
Total other (expense) income	(915)	(500)	(2,376)	(2,933)	(4,285)	(527)	52
(Loss) income before income tax (expense) benefit	(16,801)	(18,735)	(68,535)	(69,289)	(62,685)	12,577	(39,252)
Income tax (expense) benefit	—	—	(17)	1,632	11,672	(1,844)	133
Net (loss) income	(16,801)	(18,735)	(68,552)	(67,657)	(51,013)	10,733	(39,119)
Net loss attributable to noncontrolling interests	—	—	—	—	—	(73)	(7)
Net (loss) income attributable to Progenics	<u>\$(16,801)</u>	<u>\$(18,735)</u>	<u>\$(68,552)</u>	<u>\$(67,657)</u>	<u>\$(51,013)</u>	<u>\$10,806</u>	<u>\$(39,112)</u>
Per share amount on net (loss) income attributable to Progenics:							
Basic	<u>\$ (0.19)</u>	<u>\$ (0.22)</u>	<u>\$ (0.80)</u>	<u>\$ (0.87)</u>	<u>\$ (0.73)</u>	<u>\$ 0.15</u>	<u>\$ (0.56)</u>
Diluted	<u>\$ (0.19)</u>	<u>\$ (0.22)</u>	<u>\$ (0.80)</u>	<u>\$ (0.87)</u>	<u>\$ (0.73)</u>	<u>\$ 0.15</u>	<u>\$ (0.56)</u>

	March 31,		December 31,				
	2020	2019	2019	2018	2017	2016	2015
	(in thousands)						
Consolidated Balance Sheets Data(a):							
Cash and cash equivalents	\$29,531	\$109,587	\$ 42,049	\$137,686	\$ 90,642	\$138,909	\$ 74,103
Working capital	21,447	93,201	41,664	120,683	81,511	131,744	73,556
Total assets	98,344	164,204	119,470	169,497	145,957	198,986	131,251
Other liabilities—long term	48,632	56,383	50,849	44,976	67,145	77,867	30,861
Total stockholders' equity	30,613	83,375	46,553	101,075	63,453	104,762	90,661

- (a) The selected consolidated statement of operations data for the three months ended March 31, 2020 and 2019 and for the fiscal year ended December 31, 2019 and the selected consolidated balance sheet data as of March 31, 2020 and 2019 and December 31, 2019 reflect the modified retrospective adoption of ASU 2016-02, "Leases (Topic 842)."

UPDATE TO COMPARATIVE HISTORICAL AND UNAUDITED PRO FORMA COMBINED PER SHARE DATA

The following table sets forth selected historical and unaudited pro forma combined per share information for Lantheus Holdings and Progenics.

Historical Per Share of Common Stock Information of Lantheus Holdings and Progenics. The historical per share of common stock information of each of Lantheus Holdings and Progenics below is derived from the audited consolidated financial statements of each of Lantheus Holdings and Progenics as of and for the year ended December 31, 2019 and the unaudited condensed consolidated financial statements of each of Lantheus Holdings and Progenics as of and for the three months ended March 31, 2020.

Unaudited Pro Forma Combined Per Lantheus Holdings Share of Common Stock Data. The Lantheus Holdings unaudited pro forma combined per share of common stock data set forth below gives effect to the merger under the acquisition method of accounting as if the merger had been effective on January 1, 2019, the first day of Lantheus Holdings' fiscal year ended December 31, 2019. The unaudited pro forma combined book value per share of Lantheus Holdings common stock data set forth below gives effect to the merger under the acquisition method of accounting as if the merger had been effective March 31, 2020, assuming that each outstanding share of Progenics common stock had been converted into shares of Lantheus Holdings common stock based on the exchange ratio of 0.31.

The acquisition method of accounting is based on ASC 805, and uses the fair value concepts defined in Accounting Standards Codification 820, *Fair Value Measurements* ("ASC 820"). Acquisition accounting requires, among other things, that certain assets acquired and liabilities assumed be recognized at their fair values as of the acquisition date. The pro forma adjustments reflect Lantheus Holdings' provisional estimates of fair value for certain assets and liabilities of Progenics. Differences between these preliminary estimates and the final fair values determined as part of acquisition accounting upon closing of the transaction will occur, and these differences could have a material impact on the unaudited pro forma combined per share information set forth in the following table.

The unaudited pro forma combined per share of Lantheus Holdings common stock data is presented for illustrative purposes only and does not purport to represent the actual financial position or results of operations that Lantheus Holdings would have achieved had the companies been combined during these periods or to project the future financial position or results of operations that Lantheus Holdings may achieve after completion of the merger.

Unaudited Pro Forma Combined Per Progenics Equivalent Share Data. The Progenics unaudited pro forma combined per Progenics equivalent share data set forth below shows the effect of the merger from the perspective of an owner of shares of Progenics common stock. The information was calculated by multiplying the unaudited pro forma combined per share of Lantheus Holdings common stock amounts by the exchange ratio of 0.31.

General Information. You should read the below information in conjunction with the selected historical consolidated financial data included elsewhere in this supplement and the historical consolidated financial statements of Lantheus Holdings and Progenics and related notes that have been filed with the SEC, certain of which are incorporated by reference into this supplement. See "Update to Selected Historical Consolidated Financial Data of Lantheus Holdings," "Update to Selected Historical Consolidated Financial Data of Progenics" beginning on pages 19 and 21, respectively, of this supplement and "Where You Can Find More Information" beginning on page 260 of the joint proxy statement/prospectus and on page 58 of this supplement. The unaudited pro forma combined per share of Lantheus Holdings common stock data and the unaudited pro forma combined per Progenics equivalent share data is derived from, and should be read in conjunction with, the Lantheus Holdings and Progenics unaudited pro forma condensed combined financial statements and related notes

included in this supplement. See “Certain Unaudited Pro Forma Condensed Combined Financial Statements” beginning on page 25 of this supplement.

	As of and For the Three Months Ended March 31, 2020	As of and For the Year Ended December 31, 2019
Lantheus Holdings Historical per Common Share Data:		
Net income—basic	\$ 0.08	\$ 0.81
Net income—diluted	0.08	0.79
Book value ⁽¹⁾	2.98	2.92
Progenics Historical per Common Share Data:		
Net loss—basic and diluted	\$ (0.19)	\$ (0.80)
Book value ⁽¹⁾	0.35	0.54
Unaudited Pro Forma Combined per Lantheus Holdings Common Share Data:		
Net loss—basic and diluted	\$ (0.12)	\$ (0.27)
Book value ⁽¹⁾	6.85	N/A
Unaudited Pro Forma Combined per Progenics Equivalent Share Data:		
Net loss—basic and diluted ⁽²⁾	\$ (0.04)	\$ (0.08)
Book value ⁽²⁾	2.12	N/A

- (1) Amounts calculated by dividing the applicable total stockholders’ equity by the applicable shares of common stock outstanding. Pro forma combined book value per share as of December 31, 2019 is not applicable as the estimated pro forma balance sheet adjustments were calculated as of March 31, 2020.
- (2) Amounts calculated by multiplying unaudited pro forma combined per share amounts by the exchange ratio of 0.31. This information shows how each share of Progenics common stock would have participated in the combined company’s net loss and book value if the pro forma impacts of the transaction had occurred on the relevant dates.

**CERTAIN UNAUDITED PRO FORMA CONDENSED
COMBINED FINANCIAL STATEMENTS**

The following unaudited pro forma condensed combined financial statements are presented to illustrate the estimated effects of the merger.

The unaudited pro forma condensed combined statements of operations for the year ended December 31, 2019 and for the three months ended March 31, 2020 combine the historical consolidated statements of operations of Lantheus Holdings and Progenics, giving effect to the merger as if it occurred on January 1, 2019. The unaudited pro forma condensed combined balance sheet as of March 31, 2020 combines the historical consolidated balance sheets of Lantheus Holdings and Progenics, giving effect to the merger as if the merger had occurred on March 31, 2020. The historical consolidated financial statements have been adjusted in the unaudited pro forma condensed combined financial statements to give effect to pro forma adjustments that are (1) directly attributable to the merger, (2) factually supportable and (3) with respect to the unaudited pro forma condensed combined statements of operations, expected to have a continuing impact on the combined results.

The unaudited pro forma condensed combined financial statements should be read in conjunction with the accompanying notes to the unaudited pro forma condensed combined financial statements. In addition, the unaudited pro forma condensed combined financial statements have been derived from and should be read in conjunction with the following historical consolidated financial statements and notes incorporated by reference into this supplement and the joint proxy statement/prospectus: (a) the audited consolidated financial statements of Lantheus Holdings contained in its Annual Report on Form 10-K for the year ended December 31, 2019; (b) the audited consolidated financial statements of Progenics contained in its Annual Report on Form 10-K for the year ended December 31, 2019; (c) the unaudited condensed consolidated financial statements of Lantheus Holdings contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020; and (d) the unaudited condensed consolidated financial statements of Progenics contained in its Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020. Refer to the section titled “Where You Can Find More Information” of the joint proxy statement/prospectus and this supplement for instructions on how to obtain these documents.

The unaudited pro forma condensed combined financial statements have been prepared by management in accordance with Article 11, Pro Forma Financial Information, under Regulation S-X of the Exchange Act, and are for illustrative and informational purposes only. The unaudited pro forma condensed combined financial statements are not necessarily indicative of what the combined company’s financial position or results of operations actually would have been had the merger been completed as of the dates indicated. In addition, the unaudited pro forma condensed combined financial statements do not purport to project the future financial position or operating results of the combined company. There were no material transactions between Lantheus Holdings and Progenics during the periods presented in the unaudited pro forma condensed combined financial statements that would need to be eliminated.

The unaudited pro forma condensed combined financial statements have been prepared using the acquisition method of accounting under ASC 805, with Lantheus Holdings being the accounting acquirer in the proposed merger with Progenics. As of the date of this supplement, Lantheus Holdings has not completed the detailed valuation studies necessary to arrive at the final estimates of the fair market value of certain Progenics assets to be acquired and liabilities to be assumed and the related allocations of purchase price, nor has it identified all adjustments necessary to conform Progenics to Lantheus Holdings’ accounting policies, except for the ones described in the accompanying notes. The acquisition method of accounting is dependent upon certain valuations that are provisional in nature and subject to change. Accordingly, the pro forma adjustments in the unaudited pro forma condensed combined financial statements are preliminary, based upon available information and made solely for the purpose of preparing these unaudited pro forma condensed combined financial statements. Actual results will differ from the unaudited pro forma condensed combined financial statements once the final acquisition accounting by Lantheus Holdings has been completed, Lantheus Holdings has determined the final

purchase price for Progenics, the valuation studies necessary to finalize the required purchase price allocations have been completed and if Lantheus Holdings identifies any additional conforming accounting policy changes outside of the ones provided in the accompanying notes. There can be no assurance that such finalization will not result in material changes.

The assumptions used in preparing the unaudited pro forma combined financial information included in this supplement may not be realized, may not prove to be accurate and may be affected by other factors, such as the potential impact of current market conditions, including the impact of the COVID-19 pandemic, which could lead to material changes to the combined company's business that are not reflected in the unaudited pro forma combined financial information. See "Cautionary Statement Regarding Forward-Looking Statements" and "Supplement to Lantheus Holdings Proposal I: Approval of the Stock Issuance and Progenics Proposal I: Adoption of the Merger Agreement" beginning on pages 42 and 47, respectively, of this supplement for further information.

The unaudited pro forma condensed combined financial statements do not reflect any expected cost savings, operating synergies or revenue enhancements that the combined company may achieve as a result of the merger, any termination, restructuring or other costs to integrate the operations of Lantheus Holdings and Progenics or the costs necessary to achieve any such cost savings, operating synergies or revenue enhancements.

Lantheus Holdings, Inc.
Unaudited Pro Forma Condensed Combined Balance Sheet
As of March 31, 2020
(in thousands)

	Historical		Pro forma adjustments	(Note 6)	Pro forma combined company
	Lantheus Holdings	Progenics after reclassification (Note 4)			
Assets					
Current assets					
Cash and cash equivalents	\$ 95,713	\$ 29,531	\$ (1,500)	(g)	\$ 123,744
Accounts receivable, net	44,883	6,190	—		51,073
Inventory	30,814	—	—		30,814
Other current assets	8,967	4,825	(2,833)	(j)	10,959
Total current assets	180,377	40,546	(4,333)		216,590
Property, plant and equipment, net	108,613	14,673	—		123,286
Intangibles, net	6,930	6,547	315,975	(c)	329,452
Goodwill	15,714	17,847	6,939	(i)	40,500
Deferred tax assets, net	70,454	—	4,605	(e)	75,059
Other long-term assets	22,037	18,731	7,223	(b)	47,991
Total assets	\$ 404,125	\$ 98,344	\$ 330,409		\$ 832,878
Liabilities and stockholders' equity					
Current liabilities					
Current portion of long-term debt and other borrowings	\$ 10,143	\$ 7,240	\$ 216	(d)	\$ 17,599
Accounts payable	18,980	2,860	—		21,840
Accrued expenses and other liabilities	32,836	8,999	13,277	(b,f,j)	55,112
Total current liabilities	61,959	19,099	13,493		94,551
Asset retirement obligations	13,243	—	—		13,243
Long-term debt, net and other borrowings	181,488	30,166	784	(d)	212,438
Other long-term liabilities	29,037	18,466	8,949	(a,b,e)	56,452
Total liabilities	285,727	67,731	23,226		376,684
Stockholders' equity					
Preferred stock	—	—	—		—
Common stock	398	113	155	(a,h)	666
Additional paid-in capital	253,530	725,388	(374,037)	(a,h,j)	604,881
Accumulated deficit	(133,136)	(694,561)	680,738	(f,g,h)	(146,959)
Accumulated other comprehensive (loss) income	(2,394)	(327)	327	(h)	(2,394)
Total stockholders' equity	118,398	30,613	307,183		456,194
Total liabilities and stockholders' equity	\$ 404,125	\$ 98,344	\$ 330,409		\$ 832,878

The accompanying notes are an integral part of these unaudited pro forma condensed combined financial statements.

Lantheus Holdings, Inc.
Unaudited Pro Forma Condensed Combined Statement of Operations
For the Three Months Ended March 31, 2020
(in thousands, except per share data)

	Historical		Pro forma adjustments	(Note 7)	Pro forma combined company
	Lantheus Holdings	Progenics after reclassifications (Note 4)			
Revenues	\$90,704	\$ 6,248	\$ —		\$ 96,952
Cost of goods sold	52,702	1,558	3,198	(b)	57,458
Gross profit	38,002	4,690	(3,198)		39,494
Operating expenses:					
Sales and marketing	10,130	2,720	(110)	(d)	12,740
General and administrative	16,699	7,489	(4,136)	(a,b,c,d)	20,052
Research and development	4,048	10,367	(295)	(d)	14,120
Total operating expenses	30,877	20,576	(4,541)		46,912
Operating income (loss)	7,125	(15,886)	1,343		(7,418)
Interest expense	1,946	1,000	—		2,946
Other income	(350)	(85)	—		(435)
Income (loss) before income taxes	5,529	(16,801)	1,343		(9,929)
Income tax expense (benefit)	2,192	—	(3,969)	(e)	(1,777)
Net income (loss)	<u>\$ 3,337</u>	<u>\$ (16,801)</u>	<u>\$ 5,312</u>		<u>\$ (8,152)</u>
Net income (loss) per common share:					
Basic	<u>\$ 0.08</u>				<u>\$ (0.12)</u>
Diluted	<u>\$ 0.08</u>				<u>\$ (0.12)</u>
Weighted-average common shares outstanding:					
Basic	<u>39,433</u>		<u>26,845</u>	(f)	<u>66,278</u>
Diluted	<u>40,102</u>		<u>26,176</u>	(f)	<u>66,278</u>

The accompanying notes are an integral part of these unaudited pro forma condensed combined financial statements.

Lantheus Holdings, Inc.
Unaudited Pro Forma Condensed Combined Statement of Operations
For the Year Ended December 31, 2019
(in thousands, except per share data)

	Historical		Pro forma adjustments	(Note 7)	Pro forma combined company
	Lantheus Holdings	Progenics after reclassification (Note 4)			
Revenues	\$347,337	\$ 34,986	\$ —		\$382,323
Cost of goods sold	172,526	3,168	12,773	(b)	188,467
Gross profit	174,811	31,818	(12,773)		193,856
Operating expenses:					
Sales and marketing	41,888	11,514	(398)	(d)	53,004
General and administrative	61,244	37,240	(13,140)	(a,b,c,d)	85,344
Research and development	20,018	49,223	(1,118)	(d)	68,123
Total operating expenses	123,150	97,977	(14,656)		206,471
Operating income (loss)	51,661	(66,159)	1,883		(12,615)
Interest expense	13,617	4,402	—		18,019
Loss on extinguishment of debt	3,196	—	—		3,196
Other expense (income)	6,221	(2,026)	—		4,195
Income (loss) before income taxes	28,627	(68,535)	1,883		(38,025)
Income tax (benefit) expense	(3,040)	17	(17,419)	(e)	(20,442)
Net income (loss)	<u>\$ 31,667</u>	<u>\$ (68,552)</u>	<u>\$ 19,302</u>		<u>\$ (17,583)</u>
Net income (loss) per common share:					
Basic	<u>\$ 0.81</u>				<u>\$ (0.27)</u>
Diluted	<u>\$ 0.79</u>				<u>\$ (0.27)</u>
Weighted-average common shares outstanding:					
Basic	<u>38,988</u>		<u>26,845</u>	(f)	<u>65,833</u>
Diluted	<u>40,113</u>		<u>25,720</u>	(f)	<u>65,833</u>

The accompanying notes are an integral part of these unaudited pro forma condensed combined financial statements.

**NOTES TO THE UNAUDITED PRO FORMA CONDENSED
COMBINED FINANCIAL STATEMENTS**

1. Description of the merger

On October 1, 2019, Lantheus Holdings, Merger Sub and Progenics entered into the original merger agreement. On February 20, 2020, the parties entered into the merger agreement that amended and restated the original merger agreement in its entirety. Subject to the terms and conditions of the merger agreement and in accordance with applicable law, Merger Sub will be merged with and into Progenics, with Progenics continuing as the surviving corporation and a wholly-owned subsidiary of Lantheus Holdings. Each share of Progenics common stock issued and outstanding will be converted into 0.31 shares of Lantheus Holdings common stock and one CVR per share of Progenics common stock representing the right to receive, subject to the CVR cap as discussed in Note 5, such stockholder's pro rata share of aggregate cash payments equal to 40% of U.S. net sales generated by PyL in calendar years 2022 and 2023 in excess of \$100.0 million and \$150.0 million, respectively, as set forth in the CVR agreement. In addition, Lantheus Holdings will issue replacement awards, subject to the exchange ratio of 0.31, for each in-the-money vested and unvested Progenics stock option outstanding and unexercised immediately before the closing of the merger. Holders of in-the-money Progenics stock options as of the closing date are also entitled to receive one CVR for each share of Progenics common stock underlying such in-the-money options. Holders of out-of-the-money Progenics stock options will receive replacement awards converted on an exchange ratio adjusted based on actual trading prices of common stock of Progenics and Lantheus Holdings prior to the effective time of the merger. See "The Merger Agreement—Treatment of Progenics Stock Options" beginning on page 183 of the joint proxy statement/prospectus for a more detailed explanation.

Based on the closing price of Lantheus Holdings common stock of \$13.05 on April 30, 2020, the common stock component of the purchase price is \$350.3 million. The total estimated purchase price inclusive of the fair value of the portion of the replacement awards attributable to precombination services and the CVRs is \$359.3 million.

The transaction is subject to approval by Lantheus Holdings and Progenics stockholders and the satisfaction of customary closing conditions and regulatory approvals. Lantheus Holdings and Progenics expect to complete the transaction late in the second quarter of 2020.

2. Basis of presentation

The unaudited pro forma condensed combined financial statements were prepared using the acquisition method of accounting and were based on the historical financial statements of Lantheus Holdings and Progenics. Certain reclassifications have been made to the historical financial statements of Progenics to conform to Lantheus Holdings' presentation, which are discussed in more detail in "Note 4. Historical Progenics."

The acquisition method of accounting is based on ASC 805 and utilizes the fair value concepts in ASC 820.

ASC 805 requires, among other things, that certain assets acquired and liabilities assumed be recognized at their fair values as of the acquisition date. In addition, ASC 805 establishes that the consideration transferred be measured at the closing date of the merger at fair value based upon the then-current market price of Lantheus Holdings common stock; this particular requirement will likely result in a per share equity component that is different from the amount assumed in these unaudited pro forma condensed combined financial statements, and that difference may be material.

ASC 820 defines the term "fair value" and sets forth the valuation requirements for any asset or liability measured at fair value. Fair value is defined in ASC 820 as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." This is an exit price concept for the valuation of the asset or liability. In addition, market participants are assumed to be buyers and sellers in the principal (or the most advantageous) market for the asset or liability. Fair value

measurements for an asset assume the highest and best use by these market participants. As a result of these standards, Lantheus Holdings may be required to record assets which are not intended to be used or sold and/or to value assets at fair value measures that do not reflect Lantheus Holdings' intended use of those assets. Many of these fair value measurements can be highly subjective and it is also possible that other professionals, applying reasonable judgment to the same facts and circumstances, could develop and support a range of alternative estimated amounts.

Under ASC 805, acquisition-related transaction costs are not included as a component of consideration transferred but are accounted for as expenses in the period in which the costs are incurred. Total transaction costs in connection with the merger are estimated to be approximately \$31.0 million, which does not include the impacts of any revenue, cost or other operating synergies that may result from the merger or any related restructuring costs that may be contemplated.

The anticipated merger related transaction costs expected to be incurred after March 31, 2020 are reflected in the unaudited pro forma condensed combined balance sheet as an increase to accrued expenses and other liabilities and an increase to accumulated deficit. All transaction expenses that were incurred by Lantheus Holdings and Progenics have been eliminated from the unaudited pro forma condensed combined statements of operations for the three months ended March 31, 2020 and for the year ended December 31, 2019 as these costs do not have a continuing impact.

3. Accounting policies

The unaudited pro forma condensed combined financial statements do not assume any differences in accounting policies, except as described below, as Lantheus Holdings is not aware of any differences that would have a material impact on the unaudited pro forma condensed combined financial statements. Further review of Progenics' detailed accounting policies following the completion of the merger may result in the identification of additional differences between the accounting policies of the two companies that, when conformed, could have a material impact on the financial statements of the combined company. Certain reclassifications have been made to the historical financial statements of Progenics to conform to Lantheus Holdings' presentation, which are discussed in more detail in "Note 4. Historical Progenics."

4. Historical Progenics

Certain reclassifications have been made to the historical financial statements of Progenics to conform to Lantheus Holdings' presentation as follows:

Unaudited pro forma condensed combined balance sheet as of March 31, 2020

<u>Item</u>	<u>Amount (in thousands)</u>	<u>Presentation in Progenics Financial Statements</u>	<u>Presentation in Unaudited Pro Forma Condensed Combined Balance Sheet</u>
Operating right-of-use lease assets	\$ 13,279	Operating right-of-use lease assets	Other long-term assets
Current operating lease liabilities	616	Operating lease liabilities	Accrued expenses and other current liabilities
Noncurrent operating lease liabilities	14,832	Noncurrent operating lease liabilities	Other long-term liabilities
Contingent consideration liability	3,600	Contingent consideration liability	Other long-term liabilities
Deferred tax liability	34	Deferred tax liability	Other long-term liabilities
Treasury stock	(2,741)	Treasury stock	Additional paid-in capital

Unaudited pro forma condensed combined statement of operations for the three months ended March 31, 2020

Item	Amount (in thousands)	Presentation in Progenics Financial Statements	Presentation in Unaudited Pro Forma Condensed Combined Statement of Operations
Sales and marketing	\$ 2,720	Selling, general, and administrative	Sales and marketing expense
General and administrative	7,789	Selling, general, and administrative	General and administrative expense
Change in contingent consideration liability	(300)	Change in contingent consideration liability	General and administrative expense
Interest expense	(1,000)	Interest (expense) income and other income, net	Interest expense
Other income	85	Interest (expense) income and other income, net	Other income

Unaudited pro forma condensed combined statement of operations for the year December 31, 2019

Item	Amount (in thousands)	Presentation in Progenics Financial Statements	Presentation in Unaudited Pro Forma Condensed Combined Statement of Operations
Sales and marketing	\$ 11,514	Selling, general, and administrative	Sales and marketing expense
General and administrative	36,324	Selling, general, and administrative	General and administrative expense
Change in contingent consideration liability	916	Change in contingent consideration liability	General and administrative expense
Interest expense	(4,402)	Interest (expense) income and other income, net	Interest expense
Other income	2,026	Interest (expense) income and other income, net	Other expense (income)

5. Estimate of consideration expected to be transferred in the merger and preliminary purchase price allocation

The following is a preliminary estimate of the consideration expected to be transferred to affect the merger (in thousands, except share and per share data):

Progenics shares outstanding at March 31, 2020	86,596,634
Exchange ratio	0.31
Equivalent Lantheus Holdings shares to be issued	26,844,957
Closing price of Lantheus Holdings common stock on April 30, 2020	\$ 13.05
Estimated fair value of stock consideration	\$ 350,327
Estimated fair value of replacement options issued related to precombination services	4,597
Estimated fair value of CVRs	4,400
Estimated fair value of total consideration to be transferred	\$ 359,324

The preliminary estimate of consideration expected to be transferred reflected in these unaudited pro forma condensed combined financial statements does not purport to represent what the actual consideration transferred will be when the merger is completed. For purposes of these unaudited pro forma condensed combined financial statements, the market price per share of Lantheus Holdings common stock on April 30, 2020 and the Progenics shares of common stock and share-based compensation awards outstanding as of March 31, 2020 were used to calculate the estimate of consideration expected to be transferred. Ultimately, the fair value of equity securities issued as the consideration transferred will be measured using the market price per share of Lantheus Holdings common stock on the closing date. Assuming a 10% change in the closing price per share of the Lantheus Holdings common stock, the estimated fair value of stock consideration transferred would increase or decrease by approximately \$35.0 million, which would be reflected in these unaudited pro forma condensed combined financial statements as an adjustment to the amounts assigned to the identifiable assets acquired, including goodwill, and the liabilities assumed.

The preliminary estimate of the fair value of share-based compensation awards relates to certain options to purchase shares of Progenics common stock that will be converted into Lantheus Holdings stock options to purchase shares of Lantheus Holdings common stock. Given that Lantheus Holdings is obligated to grant replacement awards in conjunction with the merger, the fair value of the replacement awards attributable to precombination services was included in the total consideration transferred. Additionally, as Lantheus Holdings is also obligated to grant CVRs to each owner of Progenics common stock and of in-the-money stock options as of the closing date as a form of contingent consideration, the fair value of the CVRs has been included in consideration transferred. The aggregate amount of the payments made pursuant to the terms of the CVR agreement cannot exceed 19.9% of the aggregate amount of consideration transferred to the Progenics' common stockholders.

The number of shares of Lantheus Holdings common stock issued to holders of Progenics common stock, number of replacement share-based compensation awards and number of CVRs granted are dependent on the number of Progenics shares of common stock and options to purchase shares of Progenics common stock outstanding on the closing date of the merger and for the CVRs, the actual trading price of Progenics common stock during the period immediately preceding the closing date of the merger.

The following is a preliminary estimate of the assets to be acquired and liabilities to be assumed by Lantheus Holdings in the merger, reconciled to the estimate of consideration expected to be transferred (in thousands):

Cash and cash equivalents		\$ 29,531
Accounts receivable		6,190
Other current assets		4,825
Property, plant and equipment	(a)	14,673
Intangible assets	(b)	322,522
Deferred tax assets, net	(c)	4,605
Other long-term assets		25,954
Accounts payable		(2,860)
Accrued expenses and other liabilities		(9,481)
Other long-term liabilities		(23,015)
Long-term debt and other borrowings		(38,406)
Goodwill	(d)	24,786
Estimate of consideration expected to be transferred		<u>\$359,324</u>

- (a) A preliminary fair value estimate of \$14.7 million, equivalent to the current net book value, has been assigned to property, plant and equipment to be acquired, primarily consisting of machinery and equipment, leasehold improvements, computer software and equipment and construction in progress.

- (b) A preliminary fair value estimate of \$322.5 million has been assigned to identifiable intangible assets acquired, consisting primarily of currently marketed product rights, licenses, developed technology and in-process research and development (“IPR&D”).

The fair value of identifiable intangible assets is determined using either an income-based method referred to as the multi-period excess earnings method (“MPEEM”) or a probability weighted expected return method (“PWERM”). The more significant assumptions inherent in the application of the MPEEM include the amount and timing of projected future cash flows (including revenue, cost of sales, research and development costs, sales and marketing expenses, other general and administrative costs and income taxes), the level of and return for other assets that contribute to the subject assets’ ability to generate cash flows, and the discount rate selected to measure the risks inherent in the future cash flows. The more significant assumptions inherent in the application of the PWERM include the amount and timing of future cash flows (including milestone and/or royalty payments), the timing and probability of such payments occurring and the discount rate selected to measure the remaining risks inherent in the future cash flows. Of the total \$6.5 million historical book value of Progenics’ intangible assets as of March 31, 2020, \$1.0 million related to manufacturing know-how, the book value of which was determined to approximate fair value for purposes of these unaudited condensed combined pro forma financial statements.

The estimated fair value of the identifiable intangible assets and a preliminary estimate of their estimated useful lives are as follows (in thousands):

	<u>Estimated fair value</u>	<u>Estimated useful life (in years)</u>
Currently marketed product	\$135,200	17
Licenses	63,700	14
Developed technology	1,600	17
Manufacturing know-how	1,022	6.5
IPR&D*	<u>121,000</u>	N/A
Total	<u>\$322,522</u>	

- * As discussed above, acquired IPR&D assets are initially recognized at fair value and are classified as indefinite-lived assets until the successful completion or abandonment of the associated research and development efforts. Accordingly, during the research and development period after the closing date of the merger, these assets will not be amortized into earnings; instead these assets will be subject to periodic impairment testing. Upon successful completion of the development process for an acquired IPR&D project, determination as to the useful life of the asset will be made; at that point in time, the asset would then be considered a finite-lived intangible asset and Lantheus Holdings would begin to amortize the asset into earnings over its estimated useful life.

- (c) Represents the preliminary estimate of deferred taxes primarily resulting from net operating losses, partially offset by the fair value adjustments for intangible assets. This estimate was determined based on the fair value adjustments at an estimated blended statutory tax rate of 25.68%. The estimate of deferred taxes is preliminary and is subject to change based upon Lantheus Holdings’ final determination of the fair values of the assets acquired and liabilities assumed as well as the applicable statutory tax rates and realizability of the deferred taxes. As of each reporting date, Lantheus Holdings considers new evidence, both positive and negative, that could affect its view of the future realization of deferred tax assets. Based on all available evidence, including the impact of intangible assets acquired as part of this transaction, our history of earnings, and forecasts of future income, Lantheus Holdings has determined that there is sufficient positive evidence to conclude that it is more likely than not that as of March 31, 2020, additional net deferred tax assets of \$4.6 million are realizable. It therefore removed the valuation allowance on Progenics’ historical deferred tax assets. Under Section 382 of the Code, a corporation that undergoes an “ownership change” may be subject to certain limitations on its ability to utilize its net operating losses (“NOLs”) and credits to offset and reduce future taxable income and tax. As such, Lantheus Holdings’ and Progenics’ ability to use

its NOLs may be limited due to “ownership changes”, including any such “ownership change” that is caused by the merger. Actual results will differ from the amounts reflected in the unaudited pro forma condensed combined financial statements once the final acquisition accounting by Lantheus Holdings has been completed.

- (d) The preliminary estimate of goodwill arising from the merger is \$24.8 million. Goodwill is calculated as the difference between the fair value of the consideration expected to be transferred and the fair values assigned to the assets acquired and liabilities assumed. The goodwill is attributable to the workforce of the business and the value of synergies expected to arise after the merger. The pro forma adjustment to goodwill is as follows (in thousands):

	As of March 31, 2020
Estimated goodwill related to the merger	\$ 24,786
Less: Historical Progenics’ goodwill	(17,847)
Total pro forma adjustment	<u>\$ 6,939</u>

The acquisition method of accounting is dependent upon certain valuations that are provisional and subject to change. Accordingly, the pro forma adjustments are preliminary and made solely for the purpose of providing these unaudited pro forma condensed combined financial statements. Differences between these preliminary estimates and the final acquisition accounting for the merger will occur and these differences could have a material impact on the accompanying unaudited pro forma condensed combined financial statements and the future results of operations and financial position of the combined company.

6. Pro forma adjustments to the unaudited pro forma condensed combined balance sheet in connection with the merger

The unaudited pro forma condensed combined balance sheet reflects the proposed combination of Lantheus Holdings and Progenics using the acquisition method of accounting as of March 31, 2020. This note should be read in conjunction with “Note 1. Description of the merger,” “Note 2. Basis of presentation” and “Note 5. Estimate of consideration expected to be transferred in the merger and preliminary purchase price allocation.”

Adjustments included in the column under the heading “Pro forma adjustments” represent the following:

- (a) Estimated fair value of consideration transferred

Reflects the adjustment to record merger consideration of \$359.3 million (including \$350.3 million related to the common stock component of the purchase price, \$4.4 million related to the fair value of the CVRs as contingent consideration, and \$4.6 million related to the fair value of the portion of the replacement awards attributable to precombination services). Of the total consideration transferred, \$0.3 million is recorded as an increase to common stock, \$354.7 million is recorded as an increase to additional paid-in capital and \$4.4 million is recorded as an increase to other long-term liabilities.

- (b) Leases

Reflects the adjustment for leases in which Progenics is the lessee of \$5.1 million to the acquired lease liability, of which there is a current portion of \$0.5 million and a noncurrent portion of \$4.6 million, to record those leases at the present value of the remaining lease payments as if the leases were new leases of Lantheus Holdings at the acquisition date. A pro forma adjustment of \$7.2 million has also been made to the right-of-use asset to measure it at an amount equal to the lease liability on the acquisition date.

(c) Intangible assets

Reflects the adjustment to record Progenics' intangible assets at their estimated fair value of \$322.5 million and to eliminate the book value of Progenics' historical intangible assets of \$6.5 million. IPR&D of \$121.0 million will be capitalized and accounted for as indefinite-lived intangible assets and will be subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project and launch of the product, Lantheus Holdings will make a separate determination of the useful life of the IPR&D intangibles and Lantheus Holdings will begin to amortize the asset into earnings over its estimated useful life. Refer to Note 5(b) above for additional information.

(d) Long-term debt

Reflects the adjustment to record Progenics' long-term debt assumed by Lantheus Holdings at its estimated fair value of \$38.4 million, including the elimination of historical deferred financing costs of \$0.4 million to goodwill, of which \$0.2 million was allocated to the current portion of long-term debt, and recording a \$0.6 million change in control fee payable to the lender, pursuant to existing contractual terms, to long-term debt, net and other borrowings. After giving effect to the elimination of historical deferred financing fees and the lenders fee, noted above, as well as the contractual terms of the debt, the historical book value of the debt was determined to approximate fair value for purposes of these unaudited condensed combined pro forma financial statements.

(e) Deferred taxes

Reflects the preliminary estimate of deferred income taxes primarily resulting from net operating losses, partially offset by the fair value adjustments for identifiable intangible assets. This estimate was determined based on the fair value adjustments at an estimated 25.68% U.S. federal and state statutory tax rate. Refer to Note 5(c) above for additional information.

(f) Transaction costs

Reflects the adjustment for estimated transaction costs related to the merger of \$12.3 million that were not previously recorded in the historical combined financial statements. These costs are reflected as an increase in accrued expenses and other liabilities and an increase to accumulated deficit in the unaudited pro forma condensed combined balance sheet.

(g) Progenics retention payments

Reflects the adjustment to record post-combination compensation expense of \$1.5 million related to retention payments payable on the closing date of the merger to certain existing Progenics employees. The adjustment is reflected as a reduction to cash and cash and equivalents and increase to accumulated deficit in the unaudited pro forma condensed combined balance sheet. The total amount of retention payments owed to certain existing Progenics employees is \$3.0 million. The unaudited pro forma condensed combined balance sheet does not include an adjustment for the remaining \$1.5 million of retention payments as those payments are contingent upon the employees' continued employment through a specified period of six months after the closing date of the merger and the related expense will begin to accrue upon the closing of the merger. Additionally, as there is no continuing impact, these costs are not included in the unaudited pro forma condensed combined statements of operations. The retention payments were determined to be for the benefit of Lantheus Holdings and will be recorded as post-combination compensation expense in Lantheus Holdings' consolidated statements of operations. Refer to "Interests of Progenics' Directors and Executive Officers in the Merger—Retention Payment Agreements" beginning on page 213 of the joint proxy statement/prospectus for a more detailed explanation.

(h) Stockholders' equity

Reflects the adjustment to eliminate Progenics' historical stockholders' equity.

(i) Goodwill

Reflects the recognition of \$24.8 million of goodwill as a result of the merger, which represents the excess of the preliminary consideration transferred over the fair value of the assets acquired and liabilities assumed. Refer to Note 5(d) above for additional information, including calculation of the pro forma adjustment to goodwill of \$6.9 million.

(j) Equity Issuance Costs

Reflects the adjustment to record \$3.3 million of equity issuance costs that are specific, incremental costs related to issuing equity in conjunction with the merger as outlined in Note 1. Of this amount, \$2.8 million had been capitalized on the historical Lantheus Holdings balance sheet as of March 31, 2020 and has been reclassified from other current assets to additional paid-in capital. In addition, \$0.5 million of estimated incremental equity issuance costs necessary to effect the merger have been recorded as an increase to accrued expenses and other liabilities and a decrease to additional paid-in capital in the unaudited pro forma condensed combined balance sheet.

7. Pro forma adjustments to the unaudited pro forma condensed combined statements of operations in connection with the merger

The unaudited pro forma condensed combined statements of operations reflects the proposed combination of Lantheus Holdings and Progenics using the acquisition method of accounting as of January 1, 2019. This note should be read in conjunction with “Note 1. Description of the merger,” “Note 2. Basis of presentation” and “Note 5. Estimate of consideration expected to be transferred in the merger and preliminary purchase price allocation.”

Adjustments included in the column under the heading “Pro forma adjustments” represent the following:

(a) Transaction costs

Reflects the adjustment to eliminate the transaction costs incurred by Lantheus Holdings and Progenics related to the merger of \$3.9 million and \$11.5 million that were incurred for the three months ended March 31, 2020 and for the year ended December 31, 2019, respectively. As there is no continuing impact, the impact of these costs is not included in the unaudited pro forma condensed combined statements of operations. The impact of the incremental transaction costs accrued for on the unaudited pro forma condensed combined balance sheet in Note 6(f) above are not included in the unaudited pro forma condensed combined statements of operations as they have no continuing impact on the combined company.

(b) Amortization of intangibles

Reflects the adjustment to amortization expense to:

- (i) include an estimate of intangible asset amortization based on the straight-line method for acquired definite-lived intangible assets of \$3.2 million for the three months ended March 31, 2020 and \$12.8 million for the year ended December 31, 2019 within cost of goods sold; and
- (ii) eliminate Progenics’ historical intangible asset amortization expense of \$0.3 million for the three months ended March 31, 2020 and \$1.1 million for the year ended December 31, 2019 within general and administrative expenses.

As IPR&D intangible assets are indefinite-lived intangible assets, no amortization related to IPR&D is reflected in the unaudited pro forma condensed combined statements of operations. See Note 5(b) above for additional information.

(c) Leasing

Reflects the adjustment of incremental rent expense of \$0.2 million for the three months ended March 31, 2020 and \$0.7 million for the year ended December 31, 2019 related to the leases acquired from Progenics as if the leases were new leases of Lantheus Holdings at the acquisition date in accordance with acquisition accounting.

(d) Stock-based compensation expense

Reflects the adjustment to reduce stock-based compensation expense by \$0.5 million for the three months ended March 31, 2020 and \$2.8 million for the year ended December 31, 2019 which related to the replacement options issued to existing Progenics optionholders. The aggregate fair value of those awards, totaling \$8.6 million, was determined using the Black-Scholes option pricing model using a stock price of \$13.05 per share, which was the last reported sale price of Lantheus Holdings common stock on April 30, 2020. Of that amount, \$4.6 million relates to the fair value of the replacement awards for precombination services and was allocated to purchase consideration. Additionally, \$4.0 million was excluded from purchase consideration and will be recognized as compensation expense in the post-combination period over the remaining service periods of the related awards. Refer to the table below for a summary of the line items within the unaudited pro forma condensed combined statements of operations that reflect this adjustment (in thousands):

	Three months ended March 31, 2020	Year ended December 31, 2019
Research and development expenses	\$ (295)	\$ (1,118)
General and administrative expenses	(127)	(1,259)
Sales and marketing expenses	(110)	(398)
Total adjustment to stock-based compensation expense	<u>\$ (532)</u>	<u>\$ (2,775)</u>

(e) Income taxes

Reflects the income tax effects of the pro forma adjustments based on an estimated blended statutory tax rate of 25.68% in effect for both the three months ended March 31, 2020 and the year ended December 31, 2019 as well as income tax adjustments for Progenics losses that could not be benefited previously due to its valuation allowance in the periods presented. The effective tax rate of the combined company could be significantly different than the estimated blended statutory tax rate assumed for purposes of preparing the unaudited pro forma condensed combined financial statements. Refer to Note 5(c) above for additional information.

(f) Weighted-average number of shares and net income (loss) per share

The unaudited pro forma combined basic net income (loss) per share for the periods presented have been adjusted by the 26,844,957 Lantheus Holdings common shares expected to be issued in connection with the merger, which are assumed outstanding for the three months ended March 31, 2020 and for the year ended December 31, 2019 for pro forma purposes. The unaudited pro forma diluted net income (loss) per share for the three months ended March 31, 2020 and for the year ended December 31, 2019 is equal to the unaudited pro forma basic net income (loss) per share due to the combined company's pro forma net loss. The weighted average common shares outstanding used to compute diluted net income (loss) per share for the three months ended March 31, 2020 and for the year ended December 31, 2019 have been adjusted by 669,000 shares and 1,125,000 shares, respectively, due to the net loss reported in those periods on a pro forma basis.

8. Items not included in the unaudited pro forma condensed combined financial statements

The unaudited pro forma condensed combined statements of operations do not include the impacts of any revenue, cost or other operating synergies that may result from the merger or any related restructuring costs that may be contemplated.

The unaudited pro forma condensed combined statements of operations do not include any non-recurring transaction costs incurred by Lantheus Holdings or Progenics after March 31, 2020 as those costs are not expected to have a continuing impact on the operations of the combined business.

The unaudited pro forma condensed combined statements of operations do not include an adjustment for \$3.0 million of retention payments to be paid to certain employees of Progenics contingent upon their continued employment as those expenses are not expected to have a continuing impact on the operations of the combined business. The unaudited pro forma condensed combined balance sheet does not include an adjustment for \$1.5 million of retention payments to be paid to certain employees of Progenics contingent upon their continued employment through a specified period of six months after the closing date of the merger as that expense will begin to accrue upon the closing of the merger.

The unaudited pro forma condensed combined statements of operations do not include the impacts of any amortization related to the IPR&D intangible assets as these assets are indefinite-lived intangible assets. Upon successful completion of the development process for an acquired IPR&D project, determination as to the useful life of the asset will be made; at that point in time, the asset would then be considered a finite-lived intangible asset and Lantheus Holdings would begin to amortize the asset into earnings over its estimated useful life.

UPDATE TO COMPARATIVE PER SHARE MARKET PRICE INFORMATION

Market Prices

The shares of Lantheus Holdings common stock are traded on the Nasdaq Global Market under the symbol “LNTH” and the shares of Progenics common stock are traded on the Nasdaq Stock Market under the symbol “PGNX.” The following table sets forth, for the calendar periods indicated, the high and low sales prices per share of Lantheus Holdings common stock as reported on the Nasdaq Global Market and the high and low sales prices per share of Progenics common stock as reported on the Nasdaq Stock Market.

	Shares of Lantheus Holdings Common Stock		Shares of Progenics Common Stock	
	High	Low	High	Low
2016:				
First Calendar Quarter	\$ 3.38	\$ 1.76	\$ 6.13	\$ 3.61
Second Calendar Quarter	4.37	1.82	5.75	4.00
Third Calendar Quarter	10.10	3.46	7.09	4.19
Fourth Calendar Quarter	10.85	7.61	9.78	4.84
2017:				
First Calendar Quarter	\$ 14.25	\$ 7.95	\$ 11.72	\$ 8.15
Second Calendar Quarter	17.85	10.65	9.56	6.10
Third Calendar Quarter	20.45	15.05	7.39	4.60
Fourth Calendar Quarter	24.10	17.15	7.81	5.16
2018:				
First Calendar Quarter	\$ 24.45	\$ 14.45	\$ 8.63	\$ 5.01
Second Calendar Quarter	19.95	13.55	9.12	6.48
Third Calendar Quarter	16.60	12.80	9.42	5.45
Fourth Calendar Quarter	19.31	12.59	6.54	3.62
2019:				
First Calendar Quarter	\$ 25.49	\$ 14.57	\$ 5.00	\$ 3.96
Second Calendar Quarter	28.48	23.23	6.19	4.02
Third Calendar Quarter	29.80	20.33	6.31	3.42
Fourth Calendar Quarter	25.33	17.85	6.37	4.58
2020:				
First Calendar Quarter	\$ 20.67	\$ 8.67	\$ 5.37	\$ 1.89
Second Calendar Quarter (through May 13, 2020)	\$ 14.28	\$ 10.21	\$ 4.37	\$ 2.92

The following table sets forth the closing sale price per share of Lantheus Holdings common stock as reported on the Nasdaq Global Market and closing sale price per share of Progenics common stock as reported on the Nasdaq Stock Market on February 19, 2020, the last trading day prior to the public announcement of the merger agreement, and on May 13, 2020, the most recent trading day prior to the date of this supplement for which this information was available. The table also shows the implied value of the merger consideration for each share of Progenics common stock. This implied value was calculated by multiplying the closing sale price of a share of Lantheus Holdings common stock on the relevant date by the exchange ratio.

	Shares of Lantheus Holdings Common Stock	Shares of Progenics Common Stock	Implied Per Share Value of Merger Consideration
February 19, 2020	\$ 16.53	\$ 4.55	\$ 5.12
May 13, 2020	\$ 11.82	\$ 3.58	\$ 3.66

The market prices of shares of Lantheus Holdings common stock and shares of Progenics common stock have fluctuated since the date of the announcement of the merger agreement and will continue to fluctuate from the

date of this supplement to the dates of the Lantheus Holdings special meeting and the Progenics special meeting and the date the merger is completed. No assurance can be given concerning the market prices of shares of Lantheus Holdings common stock or shares of Progenics common stock before completion of the merger or shares of Lantheus Holdings common stock after completion of the merger. The exchange ratio is fixed in the merger agreement, but the market price of shares of Lantheus Holdings common stock (and therefore the value of the stock consideration) when received by Progenics stockholders after the merger is completed could be greater than, less than or the same as shown in the table above. Accordingly, Progenics stockholders are advised to obtain current market quotations for shares of Lantheus Holdings common stock and shares of Progenics common stock in deciding whether to vote for adoption of the merger agreement.

This information should be read together with the consolidated financial statements and related notes of Lantheus Holdings and Progenics that are incorporated by reference in this supplement and with the unaudited pro forma combined financial data included under the section titled "Certain Unaudited Pro Forma Condensed Combined Financial Statements" beginning on page 25 of this supplement.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This supplement (including information included or incorporated by reference herein) contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that are subject to risks and uncertainties and are made pursuant to the safe harbor provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements are based upon current plans, estimates and expectations that are subject to various risks and uncertainties. The inclusion of forward-looking statements should not be regarded as a representation that such plans, estimates and expectations will be achieved. Words such as “anticipates,” “expects,” “projects,” “intends,” “believes,” “may,” “will,” “should,” “could,” “targets,” “plans,” “contemplates,” “estimates,” “seeks,” “predicts,” “potential,” “opportunity,” “creates” and words and terms of similar substance used in connection with any discussion of future plans, actions or events identify forward-looking statements. All statements, other than historical facts, including the expected timing of the closing of the merger; the ability of the parties to complete the merger considering the various closing conditions; the expected benefits of the merger, such as efficiencies, cost savings, synergies, revenue growth, creating shareholder value, growth potential, market profile, enhanced competitive position, and financial strength and flexibility; the competitive ability and position of the combined company; and any assumptions underlying any of the foregoing, are forward-looking statements.

Important factors that could cause actual results to differ materially from Lantheus Holdings’ and Progenics’ plans, estimates or expectations could include, but are not limited to, the following:

- the risk that Lantheus Holdings stockholders do not approve the stock issuance proposal;
- the risk that Progenics stockholders do not approve the merger agreement proposal;
- the risk that the conditions to the closing of the merger may not be satisfied;
- the ability of Lantheus Holdings or Progenics to retain and hire key personnel and maintain relationships with customers, suppliers and others with whom Lantheus Holdings or Progenics does business, or on Lantheus Holdings’ or Progenics’ operating results and business generally;
- Lantheus Holdings’ or Progenics’ respective businesses may suffer as a result of uncertainty surrounding the merger and disruption of management’s attention due to the merger;
- that the merger agreement limits the ability of the parties to pursue alternatives to the merger;
- the risk that potential litigation in connection with the merger may affect the timing or occurrence of the merger or result in significant costs;
- the risk that the merger may not be accretive and may cause dilution to Lantheus Holdings’ earnings per share, which may negatively affect the market price of its common stock;
- risks that the CVRs to be issued by Lantheus Holdings as part of the merger consideration may result in substantial future payments and could divert the attention of Lantheus Holdings management;
- risks that in connection with the merger, the exercise of appraisal rights by dissenting stockholders could increase the aggregate amount Lantheus Holdings will have to pay for Progenics;
- risks that the anticipated benefits of the merger or other commercial opportunities may not be fully realized or may take longer to realize than expected;
- the risk that the merger may involve unexpected costs, liabilities or delays;
- risks relating to the tax treatment of the merger;
- the risk that the combined company may be unable to successfully integrate the Progenics business into the Lantheus Holdings business and realize the anticipated benefits of the merger;
- unanticipated risks to integration, including in connection with timing, talent and the potential need for additional resources;

- new or previously unidentified manufacturing, regulatory, or research and development issues in the Progenics business;
- the impact of legislative, regulatory, competitive and technological changes;
- that the combined company is expected to incur substantial expenses related to the completion of the merger and integration of the Progenics business;
- Lantheus Holdings or Progenics may be adversely affected by other economic, business, and/or competitive factors;
- risks associated with global public health emergencies, including the recent COVID-19 (coronavirus) outbreak, which could adversely affect manufacturing and supply chains for radioisotopes and other critical materials, logistics, distribution channels, radiopharmacies, the hospitals and clinics at which the products of Lantheus Holdings or Progenics are used or tested or the medical procedures and/or treatments in which those products are used or tested and the recruitment for and conduct of clinical trials, which can in turn impact pipeline milestones;
- risks relating to the COVID-19 pandemic and its effect on each of Lantheus Holdings' and Progenics' businesses and on the combined company's operations, financial condition and prospects;
- the occurrence of any event, change or other circumstances that could give rise to the termination of the merger agreement; and
- other risks to the completion of the merger, including the risk that the merger will not be completed within the expected time period or at all.

The foregoing list sets forth some, but not all, of the factors that could have an impact upon Lantheus Holdings' and Progenics' ability to achieve results described in any forward-looking statements. A further list and description of these and other factors can be found in the sections entitled "Supplement to Risk Factors" and "Risk Factors" beginning on pages 10 of this supplement and 41 of the joint proxy statement/prospectus, respectively, and elsewhere in this supplement and the joint proxy statement/prospectus. In addition, all of the forward-looking statements Lantheus Holdings or Progenics make in this document are qualified by the information incorporated by reference into this supplement, including, but not limited to (i) the information contained under this heading and (ii) the information discussed under the sections entitled "Risk Factors" in Lantheus Holdings' Annual Report on Form 10-K for the fiscal year ended December 31, 2019 and Lantheus Holdings' Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020, and in Progenics' Annual Report on Form 10-K for the fiscal year ended December 31, 2019 and Progenics' Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020. See the sections entitled "Where You Can Find More Information" beginning on page 260 of the joint proxy statement/prospectus and on page 58 of this supplement.

It should also be noted that projected financial information for the businesses of Lantheus Holdings and Progenics, on a stand-alone basis and as a combined company, is based on management's estimates, assumptions and projections prior to the time that the merger agreement and, in some instances, the original merger agreement, was entered into and has not been prepared in conformance with the applicable accounting requirements of Regulation S-X of the Exchange Act relating to pro forma financial information, and the required pro forma adjustments have not been applied and are not reflected therein. Furthermore, the effects of the COVID-19 pandemic on Lantheus Holdings' and Progenics' businesses were not taken into account by Lantheus Holdings and Progenics when preparing financial projections and may further impact the likelihood that the projected results set forth in the financial projections will be realized. While the uncertainties associated with the scope and duration of the COVID-19 pandemic, and uncertain timing of global recovery and economic normalization, render Lantheus Holdings and Progenics unable to estimate the overall impacts on their respective operations and financial results, Lantheus Holdings and Progenics anticipate that such impacts are likely to be material and are likely to prevent the parties, and the combined company, from achieving the results set forth in the financial projections contained herein for 2020 and potentially thereafter. Since the time that the merger

agreement was signed, each of Lantheus Holdings and Progenics have experienced impacts to their respective businesses and operations related to the COVID-19 pandemic, including the impact of stay-at-home mandates and related safety measures such as the delay of elective medical procedures and/or treatments, resulting in a decline in the volume of procedures and/or treatments using Lantheus Holdings and Progenics products. In response to the pandemic, healthcare providers have, and may need to further, reallocate resources, such as physicians, staff and facilities, as they prioritize limited resources and personnel capacity to focus on the treatment of patients with COVID-19 and implement limitations on access to hospitals and other medical institutions due to concerns about the potential spread of COVID-19 in such settings. These actions have significantly delayed the provision of other medical care including elective and diagnostic procedures and/or treatments involving Lantheus Holdings and Progenics products, having an adverse effect on each company's revenue. These measures and challenges may continue for the duration of the COVID-19 pandemic, and such duration is uncertain, and may significantly reduce revenue and cash flows of the combined company while the pandemic continues and thereafter until the combined company and its customers are able to resume normal business operations. Lantheus Holdings and Progenics anticipate that in the second quarter of 2020, the impact of the COVID-19 pandemic on each company's business will be more significant than either company experienced in the first quarter as pandemic precautions continue to limit demand for products of each company. For further information, see the sections entitled "Certain Unaudited Prospective Financial Information" beginning on page 157 of the joint proxy statement/prospectus and on page 47 of this supplement, and "Supplement to Risk Factors" beginning on page 10 of this supplement. None of this information should be considered in isolation from, or as a substitute for, the historical financial statements of Lantheus Holdings or Progenics.

Persons reading this supplement are cautioned not to place undue reliance on these forward-looking statements. These forward-looking statements are and will be based upon management's then-current views and assumptions regarding future events and operating performance, and are applicable only as of the dates of such statements. You also should understand that it is not possible to predict or identify all such factors and that this list should not be considered a complete statement of all potential risks and uncertainties. Investors also should realize that if underlying assumptions prove inaccurate or if unknown risks or uncertainties materialize, actual results could vary materially from Lantheus Holdings' or Progenics' projections. Except as otherwise required by law, neither Lantheus Holdings nor Progenics is under any obligation, and each expressly disclaim any obligation, to update, alter, or otherwise revise any forward-looking statements included in this supplement or elsewhere, whether written or oral, that may be made from time to time relating to any of the matters discussed in this supplement, whether as a result of new information, future events or otherwise, as of any future date.

On page 80 of the joint proxy statement/prospectus, the third paragraph is amended and restated as follows (new language and changes underlined):

Lantheus Holdings Record Date; Outstanding Shares; Stockholders Entitled to Vote

The Lantheus Holdings Board has fixed the close of business on May 12, 2020 as the record date for the determination of the Lantheus Holdings stockholders entitled to notice of and to vote at the Lantheus Holdings special meeting or any adjournment or postponement of the Lantheus Holdings special meeting. Only Lantheus Holdings stockholders of record at the record date are entitled to receive notice of, and to vote at, the Lantheus Holdings special meeting or any adjournment or postponement thereof. As of the close of business on the record date, there were 39,940,964 shares of Lantheus Holdings common stock, \$0.01 par value per share, outstanding and entitled to vote at the Lantheus Holdings special meeting. Each holder of shares of Lantheus Holdings common stock is entitled to one vote for each share of Lantheus Holdings common stock owned at the record date.

On page 80 of the joint proxy statement/prospectus, the fourth paragraph is amended and restated as follows (new language and changes underlined):

Quorum

The presence at the Lantheus Holdings special meeting, in person or by proxy, of the holders of a majority of the outstanding shares of Lantheus Holdings common stock at the record date (the close of business on May 12, 2020) and entitled to vote at the meeting will constitute a quorum. Lantheus Holdings stockholders who virtually attend the Lantheus Holdings special meeting via live webcast will be considered present “in person” for purposes of establishing a quorum and for all other purposes. Elections to abstain from voting will be deemed present at the Lantheus Holdings special meeting for the purpose of determining the presence of a quorum. Shares of Lantheus Holdings common stock held in “street name” with respect to which the beneficial owner fails to give voting instructions to its broker, bank or other nominee, and shares of Lantheus Holdings common stock with respect to which the beneficial owner otherwise fails to vote, will not be deemed present at the Lantheus Holdings special meeting for the purpose of determining the presence of a quorum. There must be a quorum for the vote on the stock issuance proposal to be taken at the Lantheus Holdings special meeting. Failure of a quorum to be present at the Lantheus Holdings special meeting will necessitate an adjournment of the meeting by the Chairperson of the meeting and will subject Lantheus Holdings to additional expense.

On page 81 of the joint proxy statement/prospectus, the first full paragraph is amended and restated as follows (new language and changes underlined):

Stock Ownership of and Voting by Lantheus Holdings Directors and Executive Officers

As of the close of business on the record date, Lantheus Holdings’ directors and executive officers and their affiliates beneficially owned and had the right to vote in the aggregate 748,334 shares of Lantheus Holdings common stock at the Lantheus Holdings special meeting, which represents approximately 1.9% of the shares of Lantheus Holdings common stock entitled to vote at the Lantheus Holdings special meeting. Each of Lantheus Holdings’ directors and executive officers is expected, as of the date of the joint proxy statement/prospectus, to vote his or her shares of Lantheus Holdings common stock “FOR” the stock issuance proposal and “FOR” the Lantheus Holdings adjournment proposal, although none of Lantheus Holdings’ directors or executive officers has entered into any agreement requiring them to do so.

SUPPLEMENT TO SPECIAL MEETING OF STOCKHOLDERS OF PROGENICS

On page 86 of the joint proxy statement/prospectus, the third paragraph is amended and restated as follows (new language and changes underlined):

Progenics Record Date; Outstanding Shares; Stockholders Entitled to Vote

The Progenics Board set the close of business on May 12, 2020 as the record date for the determination of the Progenics stockholders entitled to notice of and to vote at the Progenics special meeting or any adjournment or postponement of the Progenics special meeting. Only Progenics stockholders of record at the record date are entitled to receive notice of, and to vote at, the Progenics special meeting or any adjournment or postponement of the Progenics special meeting. As of the close of business on the record date, there were 86,596,633 shares of Progenics common stock outstanding and entitled to vote at the Progenics special meeting. Each holder of shares of Progenics common stock is entitled to one vote for each share of Progenics common stock owned at the record date.

On page 86 of the joint proxy statement/prospectus, the fourth paragraph is amended and restated as follows (new language and changes underlined):

Quorum

The presence at the Progenics special meeting, in person or by proxy, of the holders of a majority of the outstanding shares of Progenics common stock at the record date (the close of business on May 12, 2020) and entitled to vote at the meeting will constitute a quorum. Progenics stockholders who virtually attend the Progenics special meeting via live webcast will be considered present “in person” for purposes of establishing a quorum and for all other purposes. Elections to abstain from voting will be deemed present at the Progenics special meeting for the purpose of determining the presence of a quorum. Shares of Progenics common stock held in “street name” with respect to which the beneficial owner fails to give voting instructions to its broker, bank or other nominee, and shares of Progenics common stock with respect to which the beneficial owner otherwise fails to vote, will not be deemed present at the Progenics special meeting for the purpose of determining the presence of a quorum. There must be a quorum for the vote on the merger agreement proposal and the vote on the Progenics compensation advisory proposal to be taken at the Progenics special meeting. Failure of a quorum to be present at the Progenics special meeting will necessitate an adjournment of the meeting and will subject Progenics to additional expense.

**SUPPLEMENT TO
LANTHEUS HOLDINGS PROPOSAL I: APPROVAL OF THE STOCK ISSUANCE AND
PROGENICS PROPOSAL I: ADOPTION OF THE MERGER AGREEMENT**

Certain Unaudited Prospective Financial Information—General Note Regarding Certain Unaudited Prospective Financial Information

The following language is inserted as a full paragraph after the first full paragraph and before the second full paragraph on page 164 of the joint proxy statement/prospectus:

In particular, following the date the financial projections were prepared and Lantheus Holdings and Progenics entered into the merger agreement, there has been an outbreak and global spread of the COVID-19 pandemic. As a result, during the first quarter of 2020, Lantheus Holdings and Progenics have experienced a significant reduction in their respective businesses and expect to record greater losses for the second quarter of 2020, and Lantheus Holdings and Progenics are unable at this time to estimate the extent of the effect of COVID-19 on their respective businesses. The effects of COVID-19 on Lantheus Holdings' and Progenics' business were not taken into account by Lantheus Holdings and Progenics when preparing financial projections prior to entering into the merger agreement and, in some instances, the original merger agreement, and may further impact the likelihood that the projected results set forth in the financial projections will be realized.

Material U.S. Federal Income Tax Consequences—Supplemental Information Regarding the Expense Reimbursement Agreement

On page 172 of the joint proxy statement/prospectus, the third full paragraph is amended and restated as follows (new language and changes underlined):

Generally, for the merger to qualify as a “reorganization” within the meaning of Section 368(a) of the Code, numerous requirements, including the requirement as described in Section 368(a)(2)(E)(ii) of the Code, must be satisfied. Under Section 368(a)(2)(E)(ii) of the Code, for the merger to qualify as a “reorganization” within the meaning of Section 368(a) of the Code, Progenics stockholders must exchange, for an amount of voting stock of Lantheus Holdings, an amount of stock in Progenics which constitutes “control” of Progenics, which is referred to as the “control” requirement in this disclosure. The “control” requirement would be satisfied if Lantheus Holdings common stock constitutes at least 80% of the value of the aggregate consideration Progenics stockholders receive in the merger. In determining whether this requirement is satisfied, the CVRs, any cash paid in lieu of issuing fractional shares of Lantheus Holdings, and any cash treated as paid by Lantheus Holdings to dissenters for U.S. federal income tax purposes are considered consideration other than Lantheus Holdings common stock that is received by Progenics stockholders in the merger. Additionally, although not expected by Lantheus Holdings or Progenics, all or part of the reimbursement paid by Progenics to the Velan stockholders pursuant to the expense reimbursement agreement could be treated, under limited circumstances, as provided by Lantheus Holdings and treated as consideration other than Lantheus Holdings common stock received by Progenics stockholders in the merger. For purposes of the joint proxy statement/prospectus, this discussion assumes that such reimbursement payments will not be treated as consideration other than Lantheus Holdings common stock received by Progenics stockholders in the merger. Thus, there can be no assurance that the IRS will ultimately conclude that the merger meets the “control” requirement or any of the other requirements for qualification as a “reorganization” within the meaning of Section 368(a) of the Code or that any of the other statements made herein would not be challenged by the IRS and, if so challenged, sustained upon review in a court.

On page 177 of the joint proxy statement/prospectus, the section entitled “Litigation Relating to the Merger” is amended and restated as follows (new language and changes underlined):

Litigation Relating to the Merger

Nine securities lawsuits—six putative class actions and three individual actions—have been filed against Progenics and the Progenics Board alleging inadequate disclosure by Progenics relating to the merger, three of

which also name Lantheus Holdings and Merger Sub as defendants. Three of nine lawsuits were voluntarily dismissed without prejudice by plaintiffs, with no settlements from, or other agreed obligations by, the respective defendants thereunder.

On November 22, 2019, a purported stockholder filed a putative class action complaint in the United States District Court for the District of Delaware, captioned Johnson v. Progenics Pharmaceuticals, Inc., et al., Civil Action No. 1:19-cv-02183, against Progenics and members of the Progenics Board. On March 5, 2020, the Johnson Action was voluntarily dismissed without prejudice. On November 25, 2019, a second purported stockholder filed a putative class action complaint in the United States District Court for the District of Delaware, captioned Thompson v. Progenics Pharmaceuticals, Inc., et al., Civil Action No. 1:19-cv-02194, against Progenics, certain members of the Progenics Board, Lantheus Holdings, and Merger Sub. On March 10, 2020, the Thompson Action was voluntarily dismissed without prejudice. On November 26, 2019, a third purported stockholder filed a complaint in the United States District Court for the Southern District of New York, captioned Wang v. Progenics Pharmaceuticals, Inc., et al., Civil Action No. 1:19-cv-10936, against Progenics and members of the Progenics Board. On December 9, 2019, a fourth purported stockholder filed a putative class action complaint in the United States District Court for the District of New Jersey, captioned Michael A. Bernstein IRA v. Progenics Pharmaceuticals, Inc. et al., Civil Action No. 2:19-cv-21200, against Progenics, members of the Progenics Board, Lantheus Holdings, and Merger Sub, which is referred to in the joint proxy statement/prospectus as the Bernstein IRA Action. On April 21, 2020, an amended complaint was filed in the Bernstein IRA Action, and on May 6, 2020, the Bernstein IRA Action was transferred to the United States District Court for the Southern District of New York under Civil Action No. 1:20-cv-03521. On December 12, 2019, a fifth purported stockholder filed a putative class action complaint in the United States District Court for the District of Delaware, captioned Pill v. Progenics Pharmaceuticals, Inc., et al., Civil Action No. 1:19-cv-02268, against Progenics and members of the Progenics Board. The purported stockholder voluntarily dismissed this action without prejudice and the court closed the case on March 10, 2020. On December 20, 2019, a sixth purported stockholder filed a complaint in the United States District Court for the Southern District of New York, captioned Hess v. Progenics Pharmaceuticals, Inc., et al., Civil Action No. 1:19-cv-11683, against Progenics, Progenics' Chief Executive Officer and Chief Financial Officer, and members of the Progenics Board, which is referred to in the joint proxy statement/prospectus as the Hess Action. On April 8, 2020, an amended complaint was filed in the Hess Action. On April 2, 2020, a seventh purported stockholder filed a complaint in the United States District Court for the Southern District of New York, captioned Goldstone v. Progenics Pharmaceuticals, Inc. et al., Civil Action No. 1:20-cv-02750, against Progenics, members of the Progenics Board, Lantheus Holdings, and Merger Sub, which is referred to in the joint proxy statement/prospectus as the Goldstone Action. On April 6, 2020, the purported stockholder in the Johnson Action filed a new complaint in the United States District Court for the Southern District of New York, captioned Johnson v. Progenics Pharmaceuticals, et al., Civil Action No. 1:20-cv-02847, against Progenics and members of the Progenics Board, which is referred to in the joint proxy statement/prospectus as the Johnson S.D.N.Y. Action. On April 8, 2020, an eighth purported stockholder filed a complaint in the United States District Court for the Southern District of New York, captioned Krueger v. Progenics Pharmaceuticals Inc., et al., Civil Action No. 1:20-cv-02913, against Progenics and members of the Progenics Board, which is referred to in the joint proxy statement/prospectus as the Krueger Action.

The complaints in the Wang, Bernstein IRA, Hess, Goldstone, Johnson S.D.N.Y., and Krueger Actions allege, among other things, that Progenics and the members of the Progenics Board violated Sections 14(a) and 20(a) of the Exchange Act, and 17 C.F.R. § 244.100 and Rule 14a-9 promulgated under the Exchange Act, by misstating or omitting certain allegedly material information in the registration statement filed with the SEC on November 12, 2019, the amended registration statement filed with the SEC on March 16, 2020 and/or the Schedule 14A proxy statement filed with the SEC on March 19, 2020 related to the merger. The Bernstein IRA Action also alleges that Lantheus Holdings and Merger Sub violated Sections 14(a) and 20(a) of the Exchange Act. The Goldstone Action further alleges that the members of the Progenics Board breached their fiduciary duties of care, loyalty, and good faith to the stockholders of Progenics related to the merger, that Progenics, Lantheus Holdings and Merger Sub aided and abetted such breaches of fiduciary duty and that Lantheus Holdings and Merger Sub violated Section 14(a) of the Exchange Act. The complaints seek, among other things,

injunctive relief preventing the consummation of the merger, damages in the event of consummation of the merger, declaratory relief related to disclosures in the registration statement, and certain fees and expenses. Progenics intends to vigorously defend itself against these complaints.

In addition, by letter dated October 14, 2019, Progenics received a shareholder demand from the Fireman's Retirement System of St. Louis under Section 220 of the DGCL to inspect its books and records concerning, among other things, the opposition to the consent solicitation commenced by Velan and the negotiation and execution of the original merger agreement, and asserting that the Progenics Board may have breached its fiduciary obligations. Progenics and the Fireman's Retirement System of St. Louis executed a confidentiality agreement and negotiated the scope of the production of books and records in response to the FRS Demand which Progenics has provided.

SUPPLEMENT TO THE DESCRIPTION OF THE CVRS

The following language is inserted as a full paragraph after the third paragraph on page 226 of the joint proxy statement/prospectus:

In order to satisfy the requirement of Section 368(a)(2)(E)(ii) of the Code, the aggregate amount of payments paid or payable pursuant to the CVR agreement could be reduced depending on the amount of any other cash or the fair market value of any property (other than Lantheus Holdings common stock or the CVRs) paid or payable to Progenics stockholders as consideration received in the merger, including the amount payable to Progenics stockholders exercising their appraisal rights under Section 262 of the DGCL and the Velan reimbursement amount, in each case to the extent treated as paid by Lantheus Holdings for U.S. federal income tax purposes.

THE SUPPORT AGREEMENT

The following is a summary of the material terms and conditions of the support agreement. This summary may not contain all the information about the support agreement that is important to you. This summary is qualified in its entirety by reference to the support agreement, a copy of which is attached as Exhibit 10.1 to Lantheus Holdings' Form 8-K, filed on April 14, 2020, and incorporated herein by reference. You are encouraged to read carefully and in their entirety the support agreement, this supplement and joint proxy statement/prospectus.

Voting for Merger

On April 14, 2020, Lantheus Holdings entered into the support agreement with the Velan parties, pursuant to which, among other things and subject to the terms and conditions set forth in the support agreement, the Velan parties agreed to:

- vote or cause to be voted their respective shares of Progenics common stock in favor of adoption and approval of the merger agreement, which is referred to in this supplement as the Progenics stockholder approval; and
- vote or cause to be voted their respective shares of Lantheus Holdings common stock in favor of the issuance of Lantheus Holdings common stock in connection with the transactions contemplated by the merger agreement, which is referred to in this supplement as the Lantheus Holdings stockholder approval.

Prohibition on Transfers

Until the later of (i) the date of the Lantheus Holdings special meeting to seek Lantheus Holdings stockholder approval and (ii) the date of the Progenics special meeting to seek Progenics stockholder approval, each of the Velan parties has agreed that it will not, subject to certain exceptions permitted under the support agreement, sell, short sell, transfer, exchange, offer, pledge, assign, hypothecate, encumber, tender or otherwise dispose of shares of Lantheus Holdings and Progenics beneficially owned by the Velan parties. The support agreement provides that any transfer in violation of the foregoing will be of no effect and null and void.

Standstill

Until the earlier of (i) the first business day after the date of Lantheus Holdings' 2021 annual meeting of stockholders, (ii) the date on which the Progenics stockholder approval shall not have been obtained at the Progenics special meeting called for such purpose or any adjournments or postponements thereof, (iii) the date on which the Lantheus Holdings stockholder approval shall not have been obtained at the Lantheus Holdings special meeting called for such purpose or any adjournments or postponements thereof or (iv) the termination of the merger agreement (the earliest to occur is referred to in this supplement as the standstill expiration date), each of the Velan parties has agreed that it will not:

- seek or submit or knowingly encourage any person to seek or submit nominees in furtherance of a contested solicitation for the appointment, election or removal of directors of Lantheus Holdings;
- make any proposal for consideration by stockholders of Lantheus Holdings at any annual or special meeting of stockholders or calling a special meeting of stockholders of Lantheus Holdings; and
- seek, alone or in concert with others, (a) representation on the Lantheus Holdings Board, (b) to control, advise, direct or knowingly influence the management, the Lantheus Holdings Board and policies or affairs of Lantheus Holdings or (c) to disclose any plan or proposal with respect to Lantheus Holdings, or any securities or assets of Lantheus Holdings.

Voting for Matters Unrelated to Merger

Each of the Velan parties has also agreed, at each annual and special meeting of stockholders of Lantheus Holdings held prior to the standstill expiration date, to, among other things, and subject to certain specified

exceptions, vote, or cause to be voted, all shares of Lantheus Holdings common stock owned by each of the Velan parties and their respective affiliates:

- in favor of each of the directors nominated by the Lantheus Holdings Board and recommended by the Lantheus Holdings Board in the election of directors,
- against any other nominees to serve on the Lantheus Holdings Board that have not been recommended by the Lantheus Holdings Board, and
- with respect to all other matters, in accordance with the recommendations of the Lantheus Holdings Board as identified in Lantheus Holdings' proxy statement, including in favor of all other matters recommended for stockholder approval by the Lantheus Holdings Board.

Termination

The support agreement will terminate upon and have no further force or effect after the standstill expiration date, except that, the Velan parties' obligations with respect to voting for merger and transfer of shares of Lantheus Holdings and Progenics beneficially owned by the Velan parties will terminate upon the earliest to occur of:

- the effective time of the merger,
- the termination of the merger agreement in accordance with its terms,
- the termination of the support agreement by the mutual written agreement of Lantheus Holdings and the Velan parties,
- the entry of Lantheus Holdings, Merger Sub or Progenics, without the prior written consent of the Velan parties, into any amendment or modification of the merger agreement that (i) results in any decrease to the merger consideration, (ii) materially increases the obligations or liabilities of any of the Velan parties under the support agreement, or (iii) is in a manner materially adverse to the Velan parties, or
- a change in recommendation by the Lantheus Holdings Board or the Progenics Board.

THE EXPENSE REIMBURSEMENT AGREEMENT

On April 14, 2020, Progenics entered into that certain expense reimbursement agreement with the Velan stockholders, pursuant to which Progenics agreed to pay the Velan stockholders \$1.3 million as partial reimbursement for their expenses incurred in connection with the Velan stockholders' involvement with Progenics, including the successful consent solicitation commenced on September 18, 2019 to reconstitute the Progenics Board. The reimbursement will be in full satisfaction of the Velan stockholders' claims with respect to such expenses and will be paid promptly following the Progenics stockholder approval and the Lantheus Holdings stockholder approval.

**UPDATE TO INTERESTS OF PROGENICS' DIRECTORS AND EXECUTIVE OFFICERS IN
THE MERGER**

Update to Treatment of Progenics Stock options

The following table supplements the table on page 213 of the joint proxy statement/prospectus and sets forth, as of May 12, 2020, the number of options held by Mr. Fabbio based on the assumptions set forth on pages 211-213 of the joint proxy statement/prospectus. The number of options held by each other person listed in the table on page 213 of the joint proxy statement/prospectus remains unchanged as of May 12, 2020 based on the assumptions set forth on pages 211-213 of the joint proxy statement/prospectus.

Name	Number of In-the-Money Options (#)	Weighted Average Exercise Price of In-the-Money Options (\$)	Number of Out-of-the-Money Options (#)	Weighted Average Exercise Price of Out-of-the-Money Options (\$)
Patrick Fabbio	112,750	4.52	245,750	8.26

Update to Quantification of Potential Payments and Benefits to Progenics' Named Executive Officers in Connection with the Merger

The following table supplements the table on page 215 of the joint proxy statement/prospectus and sets forth, as of May 12, 2020, updated estimated amounts that Mr. Fabbio would receive in the merger, assuming the effective time of the merger occurred on May 12, 2020. The estimated amounts to be received in the merger by each other person listed in the table on page 215 remains unchanged as of May 12, 2020, assuming (i) the effective time of the merger occurred on May 12, 2020 and (ii) each such person's employment was terminated without cause at such time. Except as specified in this paragraph or in the note below, the estimated amounts described herein are based on the assumptions set forth on page 214-215.

Golden Parachute Compensation

Named Executive Officer	Cash (\$)(1)	Equity (\$)(2)	Perquisites/ Benefits (\$)	Tax Reimbursement (\$)	Other (\$)	Total (\$)
Patrick Fabbio	180,000	0	0	0	0	180,000

- (1) Represents the amount that Mr. Fabbio will be entitled to receive under his consulting agreement upon consummation of the merger if the merger is consummated on or before July 1, 2020. This payment was originally provided for in Mr. Fabbio's retention agreement with Progenics, except that such payment will now be made in a single lump sum upon or promptly after the closing of the merger and will not be contingent on Mr. Fabbio's continued service with Progenics after the closing.
- (2) Effective March 27, 2020, Mr. Fabbio resigned as Progenics' Chief Financial Officer and his then-unvested Progenics stock options terminated on that date.

UPDATE TO STOCK OWNERSHIP OF AND VOTING BY LANTHEUS HOLDINGS DIRECTORS AND EXECUTIVE OFFICERS AND CERTAIN STOCKHOLDERS

The following table sets forth, as of May 12, 2020 (except as otherwise noted), beneficial ownership of shares of Lantheus Holdings common stock by each director, each of the named executive officers, all directors and named executive officers as a group, and all persons known by the Lantheus Holdings Board to be beneficial owners of more than five percent of the outstanding shares of Lantheus Holdings common stock. Shares are beneficially owned when an individual has voting and/or investment power over the shares or could obtain voting and/or investment power over the shares within 60 days. Voting power includes the power to direct the voting of the shares and investment power includes the power to direct the disposition of the shares. Unless otherwise noted, shares listed below are owned directly or indirectly with sole voting and investment power. There are no beneficial owners of more than 5% of the outstanding shares of Lantheus Holdings' preferred stock.

<u>Name of Beneficial Owner</u>	<u>Number of Shares of Common Stock Beneficially Owned⁽¹⁾</u>	<u>Percentage Ownership</u>
Directors and Named Executive Officers		
Brian Markison	86,462	*
Samuel Leno	69,243	*
Julie McHugh	15,754	*
Dr. Frederick Robertson	40,402	*
Dr. Derace Schaffer	16,994	*
Dr. James Thrall	9,764	*
Gary Pruden	10,072	*
Kenneth Pucel	13,264	*
Mary Anne Heino ⁽²⁾	376,187	*
John Bolla ⁽³⁾	10,382	*
Robert J. Marshall Jr. ⁽⁴⁾	889	*
Michael P. Duffy ⁽⁵⁾	98,921	*
Paul Blanchfield ⁽⁶⁾	0	*
Istvan Molnar ⁽⁷⁾	0	*
All Directors and Named Executive Officers as a Group (14 persons) ⁽⁸⁾	748,334	1.9%
5% Stockholders		
Blackrock, Inc. ⁽⁹⁾	6,058,429	15.2%
Wellington Management Group LLP ⁽¹⁰⁾	4,500,958	11.3%
T. Rowe Price Associates, Inc. ⁽¹¹⁾	3,183,805	8.0%
The Vanguard Group, Inc. ⁽¹²⁾	2,863,926	7.2%

* Less than one percent.

- (1) Shares subject to restricted stock awards that are currently vested or that will vest within 60 days of the date of the joint proxy statement/prospectus, and stock options currently exercisable or exercisable within 60 days of the date of the joint proxy statement/prospectus, are deemed to be outstanding and beneficially owned by the person holding those restricted stock awards and options for the purposes of computing the percentage of beneficial ownership of that person and any group of which that person is a member, but are not deemed outstanding for the purpose of computing the percentage of beneficial ownership for any other person.
- (2) Does not include 302,615 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Ms. Heino.
- (3) Does not include 46,804 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Mr. Bolla.
- (4) Does not include 84,885 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Mr. Marshall.

- (5) Does not include 59,392 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Mr. Duffy.
- (6) Does not include 29,000 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Mr. Blanchfield.
- (7) Does not include 29,000 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Mr. Molnar.
- (8) Does not include 616,456 unvested restricted stock awards, restricted stock units and performance-based vesting stock awards held by Lantheus Holdings' directors and named executive officers as a group. Each of Lantheus Holdings' directors and executive officers is expected, as of the date of this supplement, to vote his or her shares of Lantheus Holdings common stock "FOR" the stock issuance proposal and "FOR" the Lantheus Holdings adjournment proposal, although none of Lantheus Holdings' directors and executive officers has entered into any agreement requiring them to do so.
- (9) Based solely on Amendment No. 3 to Schedule 13G filed on February 4, 2020 by Blackrock, Inc. In that filing, Blackrock, Inc. reports sole voting power with respect to 5,993,131 shares of Lantheus Holdings common stock and sole dispositive power with respect to 6,058,429 shares of Lantheus Holdings common stock, and lists its address as 55 E. 52nd Street, New York, New York 10055.
- (10) Based solely on the Schedule 13G filed on April 9, 2020 by Wellington Management Group LLP, Wellington Group Holdings LLP, Wellington Investment Advisors Holdings LLP and Wellington Management Company LLP (collectively, "Wellington"). In that filing, (i) Wellington Management Group LLP, Wellington Group Holdings LLP and Wellington Investment Advisors Holdings LLP each report shared voting power with respect to 4,260,788 Shares and shared dispositive power with respect to 4,500,958 Shares and (ii) Wellington Management Company LLP reports shared voting power with respect to 4,200,925 Shares and shared dispositive power with respect to 4,441,095 Shares. In that filing, Wellington also reports that (a) all of these Shares are owned of record by clients of one or more of the following of its investment advisors: Wellington Management Company LLP, Wellington Management Canada LLC, Wellington Management Singapore Pte Ltd, Wellington Management Hong Kong Ltd, Wellington Management International Ltd, Wellington Management Japan Pte Ltd and Wellington Management Australia Pty Ltd (collectively, the "Wellington Investment Advisers"), (b) none of those clients owns more than 5% of Shares, except for Wellington Trust Company, NA, (c) Wellington Management Group LLP is the parent holding company of certain holding companies and the Wellington Investment Advisers, (d) Wellington Investment Advisors Holdings LLP controls directly, or indirectly through Wellington Management Global Holdings, Ltd., the Wellington Investment Advisers, (e) Wellington Investment Advisors Holdings LLP is owned by Wellington Group Holdings LLP and (f) Wellington Group Holdings LLP is owned by Wellington Management Group LLP. Also in that filing, Wellington lists its address as c/o Wellington Management Company LLP, 280 Congress Street, Boston, MA 02210.
- (11) Based solely on the Schedule 13G filed on February 14, 2020 by T. Rowe Price Associates, Inc. In that filing, T. Rowe Price Associates, Inc. reports sole voting power with respect to 635,583 shares of Lantheus Holdings common stock and sole dispositive power with respect to 3,183,805 shares of Lantheus Holdings common stock, and lists its address as 100 E. Pratt Street, Baltimore, MD 21202.
- (12) Based solely on the Amendment No. 2 to Schedule 13G filed on February 12, 2020 by The Vanguard Group, Inc. In that filing The Vanguard Group, Inc. reports sole voting power with respect to 81,705 shares of Lantheus Holdings common stock and sole dispositive power with respect to 2,773,135 shares of Lantheus Holdings common stock, shared voting power with respect to 14,494 shares of Lantheus Holdings common stock and shared dispositive power with respect to 90,791 shares of Lantheus Holdings common stock and lists its address as 100 Vanguard Blvd., Malvern, PA 19355.

UPDATE TO STOCK OWNERSHIP OF AND VOTING BY PROGENICS DIRECTORS AND EXECUTIVE OFFICERS AND CERTAIN STOCKHOLDERS

The following table supplements the table on page 232 of the joint proxy statement/prospectus and sets forth, as of May 12, 2020, the beneficial ownership of Progenics common stock held by Altiva Management Inc. and affiliates and all Progenics directors and executive officers as a group. The beneficial ownership of Progenics common stock held by the individual directors and named executive officers listed in the table on page 232 of the joint proxy statement/prospectus remains unchanged as of May 12, 2020.

Name and Address of Beneficial Owner	Shares Beneficially Owned	
	Number	Percent
Altiva Management Inc. and affiliates ⁽¹⁾ 1055b Powers Place Alpharetta, GA 30009	8,011,733	9.25%
All directors and executive officers as a group ⁽²⁾	1,375,360	1.56%

(1) Includes shares beneficially owned by the Velan parties. Based on a Schedule 13D (Amendment No. 6) filed on April 15, 2020, Velan Capital Partners LP, Velan Capital Holdings LLC, Velan Principals GP LLC, Velan Capital Investment Management LP and Velan Capital Management LLC have sole voting and dispositive power over 8,011,633 shares of Progenics common stock; Altiva Management, Inc. and Velan Capital, L.P. have sole voting and dispositive power over 100 shares of Progenics common stock; and Balaji Venkataraman and Deepak Sarpangal have shared voting power over 8,011,633 shares of Progenics common stock.

(2) Includes 87,323 shares outstanding and 1,288,037 issuable upon exercise of currently exercisable options held by directors and executive officers of Progenics.

WHERE YOU CAN FIND MORE INFORMATION

In connection with the merger, Lantheus Holdings and Progenics prepared the joint proxy statement/prospectus, which was (i) included in the registration statement on Form S-4 filed by Lantheus Holdings with the SEC on November 12, 2019 (File No. 001-36569), as amended by Amendment No. 1 on March 16, 2020, and declared effective on March 18, 2020, (ii) filed by Lantheus Holdings with the SEC as a prospectus on March 19, 2020, (iii) filed by Progenics with the SEC as a definitive proxy statement on Schedule 14A (File No. 000-23143) on March 19, 2020 and (iv) mailed by Lantheus Holdings and Progenics to their respective stockholders on or about March 19, 2020.

Investors and security holders of Lantheus Holdings and Progenics are strongly encouraged to read the joint proxy statement/prospectus and other documents that are filed or will be filed with the SEC carefully and in their entirety because they contain or will contain important information. Investors and security holders are able to obtain free copies of the registration statement on Form S-4, of which the joint proxy statement/prospectus forms a part, and other documents filed with the SEC by Lantheus Holdings or Progenics through the website maintained by the SEC at <https://www.sec.gov>. Copies of the documents filed with the SEC by Lantheus Holdings will also be available free of charge on Lantheus Holdings' website at <https://www.lantheus.com/> or by contacting Lantheus Holdings' Investor Relations Department by email at ir@lantheus.com or by phone at (978) 671-8001. Copies of the documents filed with the SEC by Progenics will also be available free of charge on Progenics' internet website at <https://www.progenics.com/> or by contacting Progenics' Investor Relations Department by email at mdowns@progenics.com or by phone at (646) 975-2533.

The joint proxy statement/prospectus, as supplemented by this supplement, incorporates by reference the documents set forth below that Lantheus Holdings and Progenics have, respectively, previously filed with the SEC and any additional documents that either company may file with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this supplement and before the respective dates of Progenics' and Lantheus Holdings' special meetings (other than, in each case, those documents, or the portions of those documents or exhibits thereto, deemed to be furnished and not filed in accordance with SEC rules). In the event of conflicting information in these documents, the information in the latest filed documents should be considered correct. These documents contain important information about Lantheus Holdings and Progenics and their respective financial performance that is not included in or delivered with the joint proxy statement/prospectus.

Lantheus Holdings SEC Filings (File No. 001-36569)

Annual Report on [Form 10-K](#)

Quarterly Report on [Form 10-Q](#)

Proxy Statement on [Schedule 14A](#)

Current Reports on Form 8-K

Period

Fiscal year ended December 31, 2019

Quarterly period ended March 31, 2020

Filed on March 12, 2020 (solely to the extent incorporated by reference to Part III of Lantheus Holdings' Annual Report on Form 10-K for the year ended December 31, 2019)

Filed on [January 13, 2020](#), [January 27, 2020](#), [February 3, 2020](#), [February 20, 2020](#), [February 20, 2020](#), [April 2, 2020](#), [April 10, 2020](#), [April 14, 2020](#) and [April 24, 2020](#)

The description of Lantheus Holdings common stock contained in Lantheus Holdings' registration statement on [Form 8-A](#) filed under Section 12 of the Exchange Act on July 25, 2014, including any subsequently filed amendments and reports updating such description.

Progenics SEC Filings (File No. 000-23143)

Annual Report on [Form 10-K](#)

Quarterly Report on [Form 10-Q](#)

Current Reports on Form 8-K

Period

Fiscal year ended December 31, 2019

Quarterly period ended March 31, 2020

Filed on [February 20, 2020](#), [February 20, 2020](#), [March 4, 2020](#),
[March 16, 2020](#), [April 1, 2020](#), [April 2, 2020](#) and [April 14, 2020](#)

NO OFFER OR SOLICITATION

This supplement does not constitute an offer to sell or the solicitation of an offer to buy any securities or a solicitation of any vote or approval in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to appropriate registration or qualification under the securities laws of such jurisdiction. No offering of securities shall be made except by means of a prospectus meeting the requirements of Section 10 of the U.S. Securities Act of 1933, as amended.

CERTAIN INFORMATION REGARDING PARTICIPANTS

Lantheus Holdings, Progenics, and their respective directors and executive officers may be considered participants in the solicitation of proxies in connection with the merger. Information about the directors and executive officers of Lantheus Holdings is set forth in its Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the SEC on February 25, 2020, and its definitive proxy statement for its 2020 annual meeting of stockholders, which was filed with the SEC on March 12, 2020. Other information regarding the participants of Lantheus Holdings in the proxy solicitation and a description of their direct and indirect interests, by security holdings or otherwise, are contained in the joint proxy statement/prospectus and this supplement.

Information about the directors and executive officers of Progenics is set forth in its Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the SEC on March 13, 2020. Other information regarding the participants of Progenics in the proxy solicitations and a description of their direct and indirect interests, by security holdings or otherwise, are contained in the joint proxy statement/prospectus and this supplement. You may obtain these documents (when they become available) free of charge through the website maintained by the SEC at <https://www.sec.gov> and from Investor Relations at Lantheus Holdings or Progenics as described above.



SPECIAL MEETING OF LANTHEUS HOLDINGS, INC.

Date: Tuesday, June 16, 2020
Time: 11:15 a.m. (Eastern Time)
Place: Special Meeting to be held live via the Internet – please visit www.proxydocs.com/LNTH for more details.

Please make your marks like this: Use dark black pencil or pen only

The Board of Directors Recommends a Vote **FOR** proposals 1 and 2.

1: Stock Issuance Proposal: To approve the issuance of shares of Lantheus Holdings common stock, par value \$0.01 per share, in the merger contemplated by the Amended and Restated Agreement and Plan of Merger, dated as of February 20, 2020, as it may be further amended from time to time, among Lantheus Holdings, Inc., Plato Merger Sub, Inc., a Delaware corporation and wholly-owned subsidiary of Lantheus Holdings, Inc., and Progenics Pharmaceuticals, Inc., a Delaware corporation, pursuant to which Plato Merger Sub, Inc. will be merged with and into Progenics Pharmaceuticals, Inc., with Progenics Pharmaceuticals, Inc. surviving the merger as a wholly-owned subsidiary of Lantheus Holdings, Inc.

For Against Abstain

2: Adjournment Proposal: To approve the adjournment from time to time of the special meeting of stockholders of Lantheus Holdings, if necessary to solicit additional proxies if there are not sufficient votes at the time of the Lantheus Holdings special meeting, or any adjournment or postponement thereof, to approve the stock issuance proposal.

For Against Abstain

TO ATTEND the Special Meeting of Lantheus Holdings, Inc., please visit www.proxydocs.com/LNTH for virtual meeting registration details.

Authorized Signatures - This section must be completed for your Instructions to be executed.

Please Sign Here Please Date Above

Please Sign Here Please Date Above

Please sign exactly as your name(s) appears on your stock certificate. If held in joint tenancy, all persons should sign. Trustees, administrators, etc., should include title and authority. Corporations should provide full name of corporation and title of authorized officer signing the proxy.

↑ Please separate carefully at the perforation and return just this portion in the envelope provided. ↑



**Special Meeting of Lantheus Holdings, Inc.
 to be held on Tuesday, June 16, 2020
 for Holders as of May 12, 2020**

This proxy is being solicited on behalf of the Board of Directors

VOTE BY:

INTERNET
 Go To www.proxypush.com/LNTH
 • Cast your vote online 24 hours a day/7 days a week.
 • Have your Proxy Card/Voting Instructions Form ready.
 • View Meeting Documents.

TELEPHONE
 Call **866-240-5317**
 • Use any touch-tone telephone toll-free 24 hours a day/7 days a week.
 • **Have your Proxy Card/Voting Instruction Form ready.**
 • Follow the simple recorded instructions.

OR
MAIL
 • Mark, sign and date your Proxy Card/Voting Instruction Form.
 • Detach your Proxy Card/Voting Instruction Form.
 • Return your Proxy Card/Voting Instruction Form in the postage-paid envelope provided.

The undersigned hereby appoints Mary Anne Heino, Robert J. Marshall, Jr., Michael P. Duffy, Daniel Niedzwiecki and Eric Green and each or any of them, as the true and lawful attorneys of the undersigned, with full power of substitution and revocation, and authorizes them, and each of them, to vote all the shares of capital stock of Lantheus Holdings, Inc. which the undersigned is entitled to vote at said meeting and any adjournment thereof upon the matters specified and upon such other matters as may be properly brought before the meeting or any adjournment or postponement thereof, conferring authority upon such true and lawful attorneys to vote in their discretion on such other matters as may properly come before the meeting and revoking any proxy heretofore given.

THE SHARES REPRESENTED BY THIS PROXY WILL BE VOTED AS DIRECTED OR, IF NO DIRECTION IS GIVEN, SHARES WILL BE VOTED FOR PROPOSALS 1 AND 2.

All votes must be received by 11:59 P.M., Eastern Time, June 15, 2020



**PROXY TABULATOR FOR
 LANTHEUS HOLDINGS, INC.
 P.O. BOX 8016
 CARY, NC 27512-9903**





Proxy for Special Meeting of Stockholders to be held on Tuesday, June 16, 2020

This proxy is being solicited on behalf of the Board of Directors

Please vote, date and sign this Proxy on the other side and return it in the enclosed envelope.

The Stockholders signing on the reverse side (the "undersigned"), having received the joint proxy statement/prospectus, hereby appoint(s) Mary Anne Heino, Robert J. Marshall, Jr., Michael P. Duffy, Daniel Niedzwiecki and Eric Green, and each of them, Proxies of the undersigned (with full power of substitution) to attend the Special Meeting of Stockholders of Lantheus Holdings, Inc. (the "Company") to be held on Tuesday, June 16, 2020, and all adjournments and postponements thereof (the "Meeting"), and to vote all shares of Common Stock of the Company that the undersigned would be entitled to vote, if personally present, in regard to all matters that may properly come before the Meeting.

The undersigned hereby confer(s) upon the Proxies, and each of them, discretionary authority to consider and act upon such business, matters or proposals as may properly come before the Meeting. **The Proxy, when properly executed, will be voted in the manner specified herein. If no specification is made, the Proxies intend to vote FOR proposals 1 and 2.**