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**Filed Pursuant to Rule 424(b)(2)**
**File No. 333-220522**

**CALCULATION OF REGISTRATION FEE(1)**

| Title of Each Class of Securities to be Registered | Amount to Be Registered | Proposed Maximum Offering Price Per Unit | Proposed Maximum Aggregate Offering Price | Amount of Registration Fee |
|---|---|---|---|---|
| Common Stock, $0.001 par value per share | 5,594,593 | $92.50 | $517,499,853(1) | $67,172 |

(1) Calculated in accordance with Rule 457(r) under the Securities Act of 1933, as amended.

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**Prospectus supplement**
**(To prospectus dated September 19, 2017)**

# *4,864,864 Shares*


# Acceleron Pharma Inc.

# *Common stock*

We are offering 4,864,864 shares of our common stock.

Our common stock trades on the Nasdaq Global Market under the symbol "XLRN". On June 30, 2020, the last reported sale price of our common stock was $95.27 per share.

**Investing in our common stock involves risks. See "Risk factors" beginning on page S-7 of this prospectus supplement, page 3 of the accompanying prospectus and the "Risk Factors" disclosure included in the documents that are incorporated by reference therein.**

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement or the accompanying prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

| | Per share | Total |
|---|---|---|
| Public offering price | $ 92.50 | $ 449,999,920 |
| Underwriting discounts and commissions(1) | $ 4.39375 | $ 21,374,996 |
| Proceeds, before expenses, to us | $ 88.10625 | $ 428,624,924 |

(1) We have agreed to reimburse the underwriters for certain expenses incurred in connection with this offering. See "Underwriting".

The underwriters also have the right to purchase up to an additional 729,729 shares of common stock from us at the public offering price, less the underwriting discounts and commissions, at their option, within 30 days of the date of this prospectus supplement. If the underwriters exercise their option to purchase additional shares in full, the total underwriting discounts and commissions payable by us will be $24,581,243 and the total proceeds, before expenses, to us will be $492,918,610.

You should carefully read this prospectus supplement and the accompanying prospectus, together with the documents we incorporated by reference, before you invest in our common stock.

The shares of common stock will be ready for delivery on or about July 6, 2020.

*Joint Book-Running Managers*

**J.P. Morgan** **SVB Leerink** **Cowen**
**Barclays** **Credit Suisse** **Piper Sandler**

*Lead Manager*

**H.C. Wainwright & Co.**

June 30, 2020.

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## Prospectus supplement



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## Presentation of information

These offering materials consist of two documents: (1) this prospectus supplement, including the documents incorporated by reference, which describes the terms of the common stock that we are currently offering, and (2) the accompanying prospectus, including the documents incorporated by reference, which provides general information about us. The information in this prospectus supplement supersedes any inconsistent information included or incorporated by reference in the accompanying prospectus.

You should rely only on the information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus and any relevant free writing prospectus. Neither we nor the underwriters have authorized anyone to provide you with information different from that contained in this prospectus supplement and the accompanying prospectus and any relevant free writing prospectus. If you receive any information not authorized by us or the underwriters, you should not rely on it. You should not assume that the information contained or incorporated by reference in this prospectus supplement or the accompanying prospectus or any relevant free writing prospectus is accurate as of any date other than its respective date.

We and the underwriters are offering to sell, and seeking offers to buy, shares of our common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement, the accompanying prospectus or any free writing prospectus and the offering of the common stock in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement, the accompanying prospectus or any free writing prospectus must inform themselves about, and observe any restrictions relating to, the offering of the common stock and the distribution of this prospectus supplement, the accompanying prospectus and any free writing prospectus outside the United States. This prospectus supplement, the accompanying prospectus and any free writing prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement, the accompanying prospectus or any free writing prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

It is important for you to read and consider all of the information contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference in these documents in making your investment decision. We include cross-references in this prospectus supplement and the accompanying prospectus to captions in these materials where you can find additional related discussions. The table of contents in this prospectus supplement provides the pages on which these captions are located.

Unless the context otherwise requires, "Acceleron," the "Company," "we," "us," "our" and similar names refer to Acceleron Pharma Inc. and its wholly-owned subsidiaries. When we refer to "you" we mean the holders of common stock offered hereby.

## Note regarding forward looking statements

This prospectus supplement contains various "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, which represent our expectations or beliefs concerning future events. Words such as "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "forecast," "goal," "intend," "may," "plan," "potential," "predict," "project," "should," "strategy," "target," "will," "would," "vision," or, in each case, the negative or other variations thereon or other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus supplement include, among other things, statements regarding our intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things:

- the impact on our business of the COVID-19 pandemic and the government's efforts to contain it;
- our ongoing and planned preclinical studies and clinical trials;
- clinical trial data and the timing of results of our ongoing clinical trials;
- our plans to develop and commercialize sotatercept in pulmonary hypertension and our other potential therapeutic candidates;
- our and Bristol Myers Squibb's, or BMS's, plans to develop and commercialize REBLOZYL® (luspatercept-aamt) and sotatercept outside of pulmonary hypertension;
- the potential benefits of strategic partnership agreements and our ability to enter into selective strategic partnership arrangements;
- the timing of anticipated milestone payments under our collaboration agreements with BMS;
- the timing of, and our and BMS's ability to, obtain and maintain regulatory approvals for our therapeutic candidates;
- the rate and degree of market acceptance and clinical utility of any approved therapeutic candidate, particularly in specific patient populations;
- our ability to quickly and efficiently identify and develop therapeutic candidates;
- our manufacturing capabilities and strategy;
- our plans for commercialization and marketing;
- our intellectual property position; and
- our estimates regarding our results of operations, financial condition, liquidity, capital requirements, prospects, growth and strategies.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events, competitive dynamics, and industry change and depend on the economic circumstances that may or may not occur in the future or may occur on longer or shorter timelines than anticipated. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of

operations, financial condition and liquidity, and events in the industry in which we operate may differ materially from the forward-looking statements contained herein.

Any forward-looking statements that we make in this prospectus supplement speak only as of the date of such statement. You should read carefully the risk factors described in the sections "Risk factors" beginning on page S-7 of this prospectus supplement and page 3 of the accompanying prospectus, and the factors described under Item 1A. Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2019 and Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020 to better understand the risks and uncertainties inherent in our business and underlying any forward-looking statements.

## Incorporation of certain information by reference

We incorporate by reference in this prospectus supplement and the accompanying prospectus the documents listed below and any future filings we make with the Securities and Exchange Commission, or the SEC, under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (in each case, other than those documents or the portions of those documents deemed to be "furnished" and not filed in accordance with SEC rules) until we have sold all of the securities to which this prospectus supplement relates. Any statement in a document incorporated by reference in this prospectus supplement and the accompanying prospectus is an important part of this prospectus supplement and the accompanying prospectus. Any statement in a document incorporated by reference in this prospectus supplement and the accompanying prospectus will be deemed to be modified or superseded to the extent a statement contained in this prospectus supplement, the accompanying prospectus or any subsequently filed document that is incorporated by reference in this prospectus supplement and the accompanying prospectus modifies or supersedes such statement.

We incorporate by reference in this prospectus supplement only the documents set forth below that have been previously filed with the SEC:

- Our Annual Report on Form 10-K for the year ended December 31, 2019, filed with the SEC on February 27, 2020;
- Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, filed with the SEC on May 11, 2020;
- The information specifically incorporated by reference into our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 from our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 16, 2020;
- Our Current Reports on Form 8-K filed with the SEC on January 23, 2020, January 27, 2020, March 9, 2020, April 6, 2020, April 7, 2020, April 9, 2020, May 5, 2020, June 4, 2020, June 24, 2020 and June 26, 2020; and
- The description of our common stock contained in our Registration Statement on Form 8-A, filed with the SEC on September 13, 2013 as updated by the description of our common stock contained in Exhibit 4.4 to our Annual Report on Form 10-K for the year ended December 31, 2019, including any amendments or reports filed for the purpose of updating such description.

We will provide without charge to each person to whom a copy of this prospectus supplement is delivered, upon the written or oral request of such person, a copy of any or all of the documents incorporated by reference (other than exhibits to those documents, unless the exhibits are specifically incorporated by reference into those documents). Requests should be directed to:

**Acceleron Pharma Inc.**
**128 Sidney Street**
**Cambridge, Massachusetts 02139**
**(617) 649-9200**

Copies of these filings are also available, without charge, through the "Investors & Media" section of our website (*www.acceleronpharma.com*) as soon as reasonably practicable after they are filed electronically with the SEC. The information contained on our website is not a part of this prospectus.

## Where you can find more information

We file annual and quarterly reports, current reports, proxy statements, and other information with the SEC. We make these documents publicly available, free of charge, on our website at *www.acceleronpharma.com* as soon as reasonably practicable after filing such documents with the SEC. Our filings are also available to the public from the website maintained by the SEC at *http://www.sec.gov*.

We have filed a Registration Statement on Form S-3 under the Securities Act with the SEC with respect to the shares of our common stock being offered pursuant to this prospectus supplement. This prospectus supplement and the accompanying prospectus omit certain information contained in the Registration Statement on Form S-3, as permitted by the SEC. Refer to the Registration Statement on Form S-3, including the exhibits, for further information about us and the shares of our common stock being offered pursuant to this prospectus supplement. Statements in this prospectus supplement and the accompanying prospectus regarding the provisions of documents filed with, or incorporated by reference in, the registration statement are not necessarily complete and each statement is qualified in all respects by that reference. Copies of all or any part of the registration statement, including the documents incorporated by reference or the exhibits, may be obtained upon payment of the prescribed rates at the offices of the SEC listed above and through the SEC's website.

## Summary

This summary highlights selected information included or incorporated by reference in this prospectus supplement and the accompanying prospectus and does not contain all of the information that may be important to you. You should carefully review this entire prospectus supplement, the accompanying prospectus and the documents incorporated herein, including the "Risk factors" sections and the financial statements and the notes to those statements incorporated by reference herein. See "Where You Can Find More Information" and "Incorporation of Certain Information by Reference" in this prospectus supplement.

### Our business

We are a biopharmaceutical company dedicated to the discovery, development and commercialization of therapeutics to treat serious and rare diseases. Our research focuses on key natural regulators of cellular growth and repair, particularly the Transforming Growth Factor-Beta, or TGF-beta, protein superfamily. By combining our discovery and development expertise, including our proprietary knowledge of the TGF-beta superfamily, and our internal protein engineering and manufacturing capabilities, we generate innovative therapeutic candidates, all of which encompass novel potential first-in-class mechanisms of action. If successful, these candidates could have the potential to significantly improve clinical outcomes for patients across these areas of high, unmet need. We focus and prioritize our commercialization, research and development activities within two key therapeutic areas: hematology and pulmonary.

*Hematology*

Our first commercial product, REBLOZYL® (luspatercept-aamt), is a first-in-class erythroid maturation agent designed to promote red blood cell, or RBC, production through a novel mechanism, and is partnered with Bristol Myers Squibb, or BMS (which acquired Celgene Corporation, or Celgene, in 2019). In November 2019, the U.S. Food and Drug Administration, or FDA, approved REBLOZYL for the treatment of anemia in adult patients with beta-thalassmia who require regular RBC transfusions. In April 2020, the FDA also approved REBLOZYL for the treatment of anemia failing an erythropoiesis stimulating agent and requiring two or more RBC units per eight weeks in adult patients with very low- to intermediate-risk myelodysplastic syndromes, or MDS, with ring sideroblasts or with a myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis. In June 2020, the European Commission, which has the authority to approve medicines for the European Union, approved REBLOZYL, based on the recommendation of the European Medicines Agency, or EMA, for the treatment of adult patients with transfusion-dependent anemia due to very low-, low- and intermediate-risk MDS with ring sideroblasts, who had an unsatisfactory response or are ineligible for erythropoietin-based therapy, and adult patients with transfusion-dependent anemia associated with beta thalassemia.

BMS is currently conducting a Phase 2 clinical trial with luspatercept-aamt in non-transfusion-dependent beta-thalassemia patients, referred to as the BEYOND trial, with topline results currently expected by the end of 2020 or early 2021, and a Phase 3 clinical trial, the COMMANDS trial, in first-line, lower-risk MDS patients, with topline results expected in or after 2022. In myelofibrosis, BMS is conducting a Phase 2 clinical trial in patients with myelofibrosis-associated anemia, and initial results from this trial were presented in December 2019 at the 61st American Society of Hematology Annual Meeting and Exposition showing that luspatercept-aamt improved anemia in patients receiving and not receiving RBC transfusions, with more profound effects in patients treated with ruxolitinib, a small molecule JAK inhibitor. Based on these data, we and BMS announced plans to initiate by the end of 2020 or early 2021 the Phase 3 INDEPENDENCE study in patients with myelofibrosis-associated anemia who are being treated with JAK inhibitor therapy and require RBC transfusions.

If approved in the United States and Europe, we believe that there is an annual peak sales opportunity for REBLOZYL in excess of $2 billion in lower-risk MDS and beta-thalassemia, and upon successful development and approval in the United States and Europe, an additional $1 billion in myelofibrosis and other future development opportunities. We and BMS are evaluating luspatercept-aamt for the treatment of anemia in potential new indications that could provide additional sales opportunities.

BMS is responsible for paying 100% of the development costs for all clinical trials for luspatercept-aamt. We may receive a maximum of $125.0 million for remaining potential regulatory and commercial milestone payments, which includes a $25.0 million milestone payment that we expect to receive now that the EMA has approved REBLOZYL. We have a co-promotion right in North America and our commercialization costs provided in the commercialization plan and budget approved by the Joint Commercialization Committee, or JCC, are entirely funded by BMS. Activities that we elect to conduct outside of the approved development or commercialization budgets to support REBLOZYL are at our own expense. We are eligible to receive tiered royalty payments from BMS on net sales of REBLOZYL in the low-to-mid 20% range.

*Pulmonary*

We are actively developing our lead pulmonary program, sotatercept, for the treatment of patients with pulmonary arterial hypertension, or PAH. Sotatercept is an activin receptor type IIA fusion protein that acts as a ligand trap for members in the TGF-beta protein superfamily involved in the remodeling of a variety of different tissues, including the vasculature and fibrotic tissue. Sotatercept is generally partnered with BMS, but we retain the exclusive rights to fund, develop, and lead the global commercialization of sotatercept in pulmonary hypertension, which we refer to as the PH field, and that includes PAH. PAH is a rare and chronic, rapidly progressing disorder characterized by the constriction of small pulmonary arteries, resulting in abnormally high blood pressure in the pulmonary arteries.

In January 2020, we announced that the PULSAR Phase 2 clinical trial of sotatercept for the treatment of patients with PAH met its primary and key secondary endpoints, as well as other secondary endpoints. The 18-month extension period of the PULSAR trial is ongoing. We are also currently enrolling an exploratory study called SPECTRA to provide us with greater understanding of sotatercept's potential impact on PAH, with preliminary results expected in the first half of 2021. SPECTRA is an open-label, single arm Phase 2 trial. The six-month primary treatment period endpoints are pulmonary vascular resistance, or PVR, six-minute walk distance, or 6MWD, invasive cardiopulmonary exercise test, and cardiac magnetic resonance imaging. We also recently announced that the FDA has granted Breakthrough Therapy designation to sotatercept for the treatment of patients with PAH, and that the EMA has granted Priority Medicines, or PRIME, designation to sotatercept for the treatment of patients with PAH.

If sotatercept is commercialized to treat PAH and we recognize such revenue, then we will owe BMS a royalty in the low 20% range on global net sales. In certain circumstances, BMS may recognize revenue related to the commercialization of sotatercept in PAH, and in this scenario, we will be eligible to receive a royalty from BMS such that the economic position of the parties is equivalent to the scenario in which we recognize such revenue.

As of March 31, 2020, our operations have been primarily funded by $105.1 million in equity investments from venture investors, $773.8 million from public investors, $154.1 million in equity investments from our collaboration partners and $361.2 million in upfront payments, milestones, and net research and development payments from our collaboration partners.

***Recent developments***

On June 24, 2020, we presented topline results of the PULSAR Phase 2 trial of sotatercept in patients with pulmonary arterial hypertension. During the "Breaking News: Clinical Trials in Pulmonary Medicine" session of the American Thoracic Society, or ATS, 2020 Virtual Conference, study investigators reported that patients on stable background PAH-specific therapies treated with sotatercept experienced a statistically significant mean reduction in PVR, the trial's primary endpoint, at week 24 versus placebo.

The PULSAR Phase 2 trial is a randomized, double blind, placebo-controlled study designed to evaluate the efficacy and safety of sotatercept in PAH patients. The primary endpoint of the trial is the change from baseline in pulmonary vascular resistance over a 24-week treatment period. PVR, as measured by right heart catheterization, is the resistance that the heart must overcome to pump blood through the pulmonary circulatory system. The key secondary endpoint was six-minute walk distance, or 6MWD, a measure of functional capacity/endurance. Other exploratory analyses included changes in amino-terminal brain natriuretic propeptide, or NT-proBNP, a hormone secreted by cardiac muscle cells in response to stretching caused by increased blood volume in the heart; mean pulmonary arterial pressure, a hemodynamic measure of average pressure in the main pulmonary arteries, which is elevated in PAH patients; and World Health Organization, or WHO, functional class.

A total of 106 patients were randomized in a 3:3:4 ratio to receive placebo, 0.3 mg/kg of sotatercept, or 0.7 mg/kg of sotatercept subcutaneously every 21 days in combination with stable background PAH-specific therapies, including mono, double, and triple therapy, over a 24-week treatment period. Of the 106 patients participating in the trial, 35% were receiving double background PAH-specific therapies and 56% were receiving triple background PAH-specific therapies. The trial was powered to detect an 18% reduction in the primary endpoint of PVR and a 24-meter improvement in the secondary endpoint of 6MWD.

The trial achieved its primary endpoint and key secondary endpoint, and showed concordance of results across multiple additional endpoints and regardless of baseline characteristics. Patients on stable background therapy who were treated with 0.3 mg/kg or 0.7 mg/kg of sotatercept experienced mean PVR reductions of approximately 21% and 34%, respectively. The trial also achieved a statistically significant all-dose mean improvement from baseline of 54 meters in the key secondary endpoint of six-minute walk distance and a placebo corrected improvement of 25 meters (all doses combined).

## Primary endpoint:

| Treatment* | % Reduction in PVR | P-Value |
|---|---|---|
| Sotatercept 0.3 mg/kg (n=32) | 20.5% | 0.0027 |
| Sotatercept 0.7 mg/kg (n=42) | 33.9% | <0.0001 |
| Placebo (n=32) | 2.1% | |

* All cohorts include stable background PAH-specific therapies.

The trial also achieved the protocol-defined improvement in the key secondary endpoint of 6MWD at 24 weeks. Both sotatercept dose groups achieved at least a 50-meter (LS mean) increase from baseline, as demonstrated in the 0.3 mg/kg group (58 meters) and the 0.7 mg/kg group (50 meters), allowing for a pre-specified pooled analysis. Overall, treatment with sotatercept (pooled analysis) achieved a 54-meter (LS mean) change from baseline and a placebo-corrected (LS mean) difference of 25 meters (nominal p=0.03).

Treatment with sotatercept also demonstrated improvement across multiple exploratory study endpoints at week 24, including a 51% reduction in NT-proBNP and 20% reduction in mean pulmonary arterial pressure. In addition, 23% of subjects improved their WHO functional class.

Sotatercept was generally well tolerated in the trial. Adverse events observed in the study were generally consistent with previously published data on sotatercept in clinical trials in other patient populations. Serious treatment-emergent adverse events, or TEAEs, were reported in 6% ($^{2}/_{32}$) of patients receiving 0.3 mg/kg of sotatercept plus background therapy, 24% ($^{10}/_{42}$) of patients receiving 0.7 mg/kg of sotatercept plus background therapy, and in 9% ($^{3}/_{32}$) of patients receiving placebo plus background therapy. Hemoglobin increase was reported in one patient (3%) in the 0.3 mg/kg sotatercept dose group and in 6 patients (14%) in the 0.7 mg/kg sotatercept dose group. No patient in the placebo group experienced an increase in hemoglobin. Two patients (6%) in the 0.3 mg/kg sotatercept dose group and 5 patients (12%) in the 0.7 mg/kg sotatercept dose group experienced thrombocytopenia. One patient in the 0.7 mg/kg sotatercept dose group who had many pre-existing risk factors died due to a cardiac arrest deemed unrelated to study treatment. A total of 5 patients (2 in the 0.3 mg/kg sotatercept dose group and 3 in the 0.7 mg/kg sotatercept dose group) experienced TEAEs leading to treatment discontinuation as opposed to 1 patient in the placebo group. TEAEs occurring in 10% or more of all patients in any arm were headache, diarrhea, peripheral edema, dizziness, fatigue, hypokalemia, and nausea.

Following the 6-month double-blind treatment period, participants in the PULSAR Phase 2 trial were eligible to continue in the 18-month extension period. As of June 22, 2020, 94 of 97 patients who opted to participate in the 18-month extension period of the trial were still enrolled; 64 patients have now been treated with sotatercept for at least 12 months.

The data was presented by David Badesch, M.D., a Professor of Medicine and Clinical Director of the Pulmonary Hypertension Center at the University of Colorado, during the ATS 2020 Virtual Conference.

***Risk factors***

An investment in our common stock involves a high degree of risk. Any of the factors set forth under "Risk factors" may limit our ability to successfully execute our business strategy. You should carefully consider all of the information set forth in this prospectus supplement and the accompanying prospectus and, in particular, should evaluate the specific factors set forth under "Risk factors" beginning on page S-7 of this prospectus supplement, page 3 of the accompanying prospectus, page 24 of our Annual Report on Form 10-K for the year ended December 31, 2019 and page 27 of our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2020, as updated by our subsequent filings, in deciding whether to invest in our common stock.

***Corporate information***

We were incorporated in the state of Delaware in June 2003 as Phoenix Pharma, Inc., and we subsequently changed our name to Acceleron Pharma Inc. and commenced operations in February 2004. Our principal executive offices are located at 128 Sidney Street, Cambridge, Massachusetts 02139, and our telephone number is (617) 649-9200. Our Internet website is *www.acceleronpharma.com*. The information on, or that can be accessed through, our website is not part of this prospectus, and you should not rely on any such information in making the decision whether to purchase our common stock.

## The offering

| | |
|---|---|
| **Issuer** | Acceleron Pharma Inc. |
| **Common stock offered by us** | 4,864,864 shares of common stock (or 5,594,593 shares if the underwriters exercise their option to purchase additional shares of common stock in full). |
| **Common stock outstanding after this offering** | 58,384,784 shares of common stock (assuming no exercise of the underwriters' option to purchase additional shares). |
| **Public offering price per share** | $92.50 |
| **Use of proceeds** | The net proceeds from this offering are estimated to be approximately $428.2 million (or approximately $492.5 million if the underwriters exercise their option to purchase additional shares in full), after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering to conduct clinical trials and associated activities in connection with our therapeutic candidates in our pulmonary programs; to prepare for the potential launch and commercialization of sotatercept; and the remainder for general corporate purposes, including potential future development programs, capital expenditures and working capital, as well as potential acquisitions of rights to additional programs from third parties. See "Use of Proceeds". |
| **U.S. federal income and estate tax consequences** | For certain material U.S. federal income tax and estate tax consequences of the holding and disposition of shares of our common stock, see "Material United States Federal Income and Estate Tax Considerations for Non-U.S. Holders". |
| **Nasdaq Global Market symbol for our common stock** | Our common stock is listed on the Nasdaq Global Market under the symbol "XLRN". |

The number of shares of our common stock to be outstanding after the offering is based on 53,519,920 shares of our common stock outstanding as of March 31, 2020, and excludes:

- 4,231,809 shares of common stock issuable upon the exercise of stock options outstanding as of March 31, 2020, at a weighted-average exercise price of $40.25 per share;
- 39,336 shares of common stock issuable upon the exercise of warrants to purchase shares of common stock outstanding as of March 31, 2020, at a weighted-average exercise price of $5.88 per share;
- 557,042 shares of common stock issuable upon vesting of outstanding restricted stock units as of March 31, 2020;
- 5,813,948 shares of common stock reserved for future issuance under our 2013 Equity Incentive Plan as of March 31, 2020; and

- 100,042 shares of common stock reserved for future issuance under our Employee Stock Purchase Plan as of March 31, 2020.

Except as otherwise indicated, all information in this prospectus supplement assumes:

- no exercise by the underwriters of their option to purchase up to 729,729 additional shares of common stock in this offering; and
- no exercise of stock options or warrants and no vesting of restricted stock units after March 31, 2020.

# Risk factors

Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below in addition to the other information included or incorporated by reference in this prospectus supplement before purchasing our common stock. If any of the following risks actually occurs, our business, financial condition or results of operations would likely suffer, possibly materially. In that case, the trading price of our common stock could fall, and you may lose all or part of the money you paid to buy our common stock. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business.

## Risks related to this offering

***The COVID-19 pandemic, which began in late 2019 and has spread worldwide, may affect our ability to initiate and complete preclinical studies and conduct our ongoing clinical trials, delay the initiation of planned and future clinical trials, interrupt sales of REBLOZYL® (luspatercept-aamt), disrupt regulatory activities, or have other adverse effects on our business and operations. In addition, this pandemic has caused substantial disruption in the financial markets and economies worldwide which could result in adverse effects on our business and operations.***

COVID-19 has been declared by the World Health Organization to be a global pandemic. It has impacted, and is continuing to impact, all aspects of society, including the operation of the healthcare system and other business and economic activity worldwide. The COVID-19 pandemic, and other similar outbreaks of contagious diseases, may adversely impact our business, financial condition and results of operations. For example, we and the third-party clinical trial sites or investigators involved in our current and future clinical trials may experience significant interruptions or delays as a result of this pandemic, and these could impact the conduct of our clinical trials and our ability to complete them in a timely manner or at all, which in turn could delay and/or negatively impact the regulatory review and approval of our product candidates.

In addition, commercial sales of REBLOZYL may be adversely impacted as a result of developments that have transpired, and may continue to transpire, in response to this pandemic, including the implementation of "shelter-in-place" policies, social distancing and other measures. REBLOZYL is administered via injections in a clinic or hospital setting by a healthcare professional. Treating COVID-19 patients has become the priority for many healthcare facilities and workers, so it has become, and may continue to be, difficult for some of our patients to receive our therapies that are administered by injection. Some patients may also choose to skip injections because they do not want to risk exposure to COVID-19 by leaving their home and entering a healthcare facility.

Further, we have implemented work-at-home policies for employees whose jobs do not require them to be on-site, and our sales force for REBLOZYL has transitioned to online video conferences with healthcare professionals. Increased reliance by us and the companies with which we do business on personnel working from home and through video conferencing may negatively impact productivity, increase cyber security risk, create data accessibility issues, increase the risk for communication disruptions, or otherwise disrupt or delay normal business operations. For our employees whose jobs require them to be on-site, we have taken precautions to avoid the spread of COVID-19 among our employees, but we cannot guarantee our workforce will not face an outbreak that could adversely impact our operations.

The COVID-19 pandemic may also impact the third parties on which we or our partners rely for goods and services in the manufacture of our products, which may negatively impact the ability to continue to manufacture and supply our approved and investigational products, or the ability of third parties in our distribution channels to deliver our approved and investigational products in a timely manner or at all. Further, this pandemic and measures to mitigate the spread of COVID-19 have had, and may continue to have, an adverse effect on global economic conditions, which could have an adverse effect on our business and financial condition, including our ability to obtain financing if needed on favorable terms or at all.

The extent to which the COVID-19 pandemic may impact our business, financial condition and results of operations will depend on the manner in which this pandemic continues to evolve and future developments in response thereto, which are highly uncertain and cannot be predicted with confidence as of the date of this prospectus supplement and which may include, among other things, the ultimate severity and duration of this pandemic; governmental, business or other actions that have been, or will be, taken in response to this pandemic, including restrictions on travel and mobility, business closures and imposition of social distancing measures; impacts of the pandemic on the vendors or distribution channels in our or our partners' supply chain and ability to continue to manufacture our approved and investigational products; impacts of the pandemic on the conduct of our clinical trials, including with respect to enrollment rates, availability of investigators and clinical trial sites or monitoring of data; and impacts of the pandemic on the regulatory agencies with which we interact in the development, review, approval and commercialization of our medicines.

***If you purchase shares in this offering, you will suffer immediate and substantial dilution.***

If you purchase shares of our common stock in this offering, you will incur immediate and substantial dilution in the as adjusted net tangible book value of your stock of $78.08 per share as of March 31, 2020, based on the public offering price of $92.50 per share. The price that you pay will be substantially greater than the net tangible book value per share of the shares you acquire. You will experience additional dilution upon the exercise of options and warrants to purchase our common stock, as well as upon the vesting of outstanding restricted stock units, including those options currently outstanding and those granted in the future, and the issuance of restricted stock or other equity awards under our stock incentive plans. To the extent we raise additional capital by issuing equity securities, our stockholders will experience substantial additional dilution.

***We have broad discretion to determine how to use the funds raised in this offering, and may use them in ways that may not enhance our operating results or the market price of our common stock.***

Our management will have broad discretion over the use of proceeds from this offering, and we could spend the proceeds from this offering in ways our stockholders may not agree with or that do not yield a favorable return, if at all. We intend to use the net proceeds from this offering to conduct clinical trials and associated activities in connection with our therapeutic candidates in our pulmonary programs; to prepare for the potential launch and commercialization of sotatercept; and the remainder for general corporate purposes, including potential future development programs, capital expenditures and working capital, as well as potential acquisitions of rights to additional programs from third parties. However, our use of these proceeds may differ substantially from our current plans. If we do not invest or apply the proceeds of this offering in ways that improve our operating results, we may fail to achieve expected financial results, which could cause the market price of our common stock to decline.

***Our ability to use net operating loss and tax credit carryforwards and certain built-in losses to reduce future tax payments is limited by provisions of the Internal Revenue Code, and it is possible that certain transactions or a combination of certain transactions, including this offering, may result in material additional limitations on our ability to use our net operating loss and tax credit carryforwards.***

As of December 31, 2019, we had U.S. federal and state net operating loss carryforwards, or NOL carryforwards, of $666.3 million and $689.8 million, respectively, available to reduce future taxable income, if any. Of these federal and state NOL carryforwards, $438.0 million and $689.4 million, respectively, will expire at various times through 2039. The federal NOL of $228.3 million and state NOL of $0.4 million generated beginning in 2018 can be carried forward indefinitely. In general, if we experience or have experienced a greater than 50 percent aggregate change (by value) in ownership of certain significant stockholders over a three-year period, or a Section 382 ownership change, utilization of our pre-change NOL carryforwards will be subject to an annual limitation under Section 382 of the Internal Revenue Code of 1986, as amended, and similar state laws. Such limitations may result in expiration of a portion of the NOL carryforwards before utilization and may be substantial. If we experience a Section 382 ownership change in connection with our public offerings or as a result of future changes in our stock ownership, some of which changes are outside our control, the tax benefits related to the NOL carryforwards may be limited or lost.

## Risks related to our common stock

***The market price of our common stock may be highly volatile, and you may not be able to resell your shares at or above the price at which you purchased them.***

Since our initial public offering, the price of our common stock as reported on The Nasdaq Global Market has ranged from a low of $16.78 on November 6 and 8, 2013 to a high of $110.49 on June 23, 2020. The market price of shares of our common stock could be subject to wide fluctuations in response to many risk factors listed in this section, and others beyond our control, including:

- results of, and the timing of the release of results of, our clinical trials, including those that are being conducted by BMS;
- failure to obtain sufficient pricing and reimbursement for REBLOZYL or our therapeutic candidates, if approved, from private and governmental payers;
- failure to obtain market acceptance and adoption of REBLOZYL or any other potential product following regulatory approval;
- results of clinical trials of our competitors' products;
- regulatory actions with respect to our products or our competitors' products;
- actual or anticipated fluctuations in our financial condition and operating results;
- publication of research reports by securities analysts about us or our competitors or our industry;
- our failure or the failure of our competitors to meet analysts' projections or guidance that we or our competitors may give to the market;
- additions and departures of key personnel;
- strategic decisions by us or our competitors, such as acquisitions, divestitures, spin-offs, joint ventures, strategic investments or changes in business strategy;

- the passage of legislation or other regulatory developments affecting us or our industry;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- sales of our common stock by us, our insiders or our other stockholders;
- speculation in or expectations of the press or investment community, including with regard to our potential clinical trial results, royalty revenue or market opportunities;
- announcement or expectation of additional financing efforts;
- changes in accounting principles;
- terrorist acts, acts of war or periods of widespread civil unrest;
- natural disasters and other calamities;
- actual or perceived changes in current or future market conditions for biopharmaceutical stocks; and
- changes in general market and economic conditions.

In addition, the stock market has recently experienced significant volatility, particularly with respect to pharmaceutical, biotechnology and other life sciences company stocks. The volatility of pharmaceutical, biotechnology and other life sciences company stocks often does not relate to the operating performance of the companies represented by the stock. As we operate in a single industry, we are especially vulnerable to these factors to the extent that they affect our industry or our products, or to a lesser extent our markets. In the past, securities class action litigation has often been initiated against companies following periods of volatility in their stock price. This type of litigation could result in substantial costs and divert our management's attention and resources, and could also require us to make substantial payments to satisfy judgments or to settle litigation.

***We do not expect to pay any cash dividends for the foreseeable future.***

You should not rely on an investment in our common stock to provide dividend income. We do not anticipate that we will pay any cash dividends to holders of our common stock in the foreseeable future. Instead, we plan to retain any earnings to maintain and expand our operations. In addition, any future debt financing arrangement may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any return on their investment. As a result, investors seeking cash dividends should not purchase our common stock.

***Provisions in our restated certificate of incorporation, our amended and restated by-laws and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders, and may prevent attempts by our stockholders to replace or remove our current management.***

Our restated certificate of incorporation, amended and restated by-laws and Delaware law contain provisions that may have the effect of delaying or preventing a change in control of us or changes in our management. Our restated certificate of incorporation and by-laws include provisions that:

- authorize "blank check" preferred stock, which could be issued by our board of directors without stockholder approval and may contain voting, liquidation, dividend and other rights superior to our common stock;

- create a classified board of directors whose members serve staggered three-year terms;
- specify that special meetings of our stockholders can be called only by our board of directors;
- prohibit stockholder action by written consent;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- provide that our directors may be removed only for cause;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- specify that no stockholder is permitted to cumulate votes at any election of directors;
- expressly authorize our board of directors to modify, alter or repeal our amended and restated by-laws; and
- require supermajority votes of the holders of our common stock to amend specified provisions of our restated certificate of incorporation and amended and restated by-laws.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our management.

In addition, we are subject to the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. As a result, you may lose your ability to sell your stock for a price in excess of the prevailing market price due to these protective measures and efforts by stockholders to change the direction or management of the company may be unsuccessful.

Any provision of our restated certificate of incorporation or amended and restated by-laws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

***Our restated certificate of incorporation designates the Court of Chancery of the State of Delaware and federal court within the State of Delaware as the exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.***

Our restated certificate of incorporation provides that, subject to limited exceptions, the Court of Chancery of the State of Delaware and federal court within the State of Delaware will be exclusive forums for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law, our restated certificate of incorporation or our amended and restated by-laws, or (4) any other action asserting a claim against us that is governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and to have consented to the provisions of our restated certificate of incorporation described

above. This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and employees. Stockholders who do bring a claim in the Court of Chancery of the State of Delaware and federal court within the State of Delaware could face additional litigation costs in pursuing any such claim, particularly if they do not reside in or near the State of Delaware. The Court of Chancery of the State of Delaware and federal court within the State of Delaware may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments or results may be more favorable to us than our stockholders. Alternatively, if a court were to find these provisions of our restated certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business and financial condition. The Court of Chancery of the State of Delaware and federal court within the State of Delaware are not the sole and exclusive forums for actions brought under the Securities Act of 1933, as amended, or the Securities Exchange of 1934, as amended. Accordingly, the forum provision in our restated certificate of incorporation will not relieve us of our duties to comply with the federal securities laws and the rules and regulations thereunder, and our stockholders will not be deemed to have waived our compliance with these laws, rules and regulations.

***Sales of our common stock by our employees, including our executive officers, could cause our stock price to fall or prevent it from increasing for numerous reasons, and sales by such persons could be viewed negatively by other investors.***

In accordance with the guidelines specified under Rule 10b5-1 of the Securities Exchange Act of 1934, as amended, and our policies regarding stock transactions, a number of our employees, including executive officers, have adopted and may continue to adopt stock trading plans pursuant to which they have arranged to sell shares of our common stock from time to time in the future. Generally, sales under such plans by our executive officers and directors require public filings. Sales of our common stock by such persons could cause the price of our common stock to fall or prevent it from increasing. If sales by employees, executive officers or directors cause a substantial number of shares of our common stock to become available for purchase in the public market, the price of our common stock could fall or may not increase. Also, sales by such persons could be viewed negatively by holders and potential purchasers of our common stock.

***If securities analysts do not publish research or reports about our business or if they publish negative, or inaccurate, evaluations of our stock, the price of our stock and trading volume could decline.***

The trading market for our common stock may be impacted, in part, by the research and reports that securities or industry analysts publish about us or our business. There can be no assurance that analysts will cover us, continue to cover us or provide favorable coverage. If one or more analysts downgrade our stock or change their opinion of our stock, our share price may decline. In addition, if one or more analysts cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

## Use of proceeds

The net proceeds from this offering will be approximately $428.2 million (or approximately $492.5 million if the underwriters exercise their option to purchase additional shares of common stock in full), after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering as follows:

- to conduct clinical trials and associated activities in connection with our therapeutic candidates in our pulmonary programs;
- to prepare for the potential launch and commercialization of sotatercept; and
- the remainder for general corporate purposes, including potential future development programs, capital expenditures and working capital, as well as potential acquisitions of rights to additional programs from third parties.

The expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures depend on numerous factors, including the ongoing status of and results from our clinical trials and other studies, the progress of our preclinical development efforts and any unforeseen cash needs. As a result, our management will have broad discretion in applying the net proceeds of this offering. Although we may use a portion of the net proceeds of this offering for the acquisition or licensing, as the case may be, of product candidates, technologies, compounds, other assets or complementary businesses, we have no current understandings, agreements or commitments to do so. Based on our current operating plan and projections, we believe that our current cash, cash equivalents and investments, together with the net proceeds from this offering and expected royalty revenue from REBLOZYL sales, will be sufficient to fund our projected operating requirements for the foreseeable future.

Pending the use of the proceeds from this offering, we intend to invest the net proceeds in short-term, interest-bearing, investment-grade securities, certificates of deposit or government securities.

## Dilution

If you invest in our common stock, your interest will be diluted to the extent of the difference between the price per share you pay in this offering and the net tangible book value per share of our common stock immediately after this offering. Our net tangible book value of our common stock as of March 31, 2020 was approximately $413.8 million, or approximately $7.73 per share of common stock based upon 53,519,920 shares outstanding as of March 31, 2020. Net tangible book value per share is equal to our total tangible assets, less our total liabilities, divided by the total number of shares outstanding.

After giving effect to the sale by us of 4,864,864 shares of common stock at the public offering price of $92.50 per share, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of March 31, 2020 would have been approximately $842.0 million, or $14.42 per share. This would represent an immediate increase in net tangible book value of $6.69 per share to our existing stockholders and an immediate dilution in net tangible book value of $78.08 per share to new investors purchasing our common stock in this offering at the public offering price. The following table illustrates this calculation on a per share basis:

| | | |
|---|---|---|
| Offering price per share | | $ 92.50 |
| Net tangible book value per share as of March 31, 2020 | $ 7.73 | |
| Increase in net tangible book value per share attributable to the offering | $ 6.69 | |
| As adjusted net tangible book value per share after giving effect to the offering | | $ 14.42 |
| Dilution in net tangible book value per share to new investors in the offering | | $ 78.08 |

This discussion of dilution, and the table quantifying it, assumes no exercise of any outstanding options to purchase shares of our common stock or warrants and no vesting of restricted stock units as of March 31, 2020 and no issuance of up to 729,729 shares of common stock that we may sell to the underwriters upon exercise of their option to purchase additional shares, based on the public offering price of $92.50 per share. The exercise of outstanding options or warrants to purchase shares of our common stock having an exercise price less than the public offering price, or the vesting of restricted stock units, would increase the dilutive effect to new investors.

If the underwriters exercise their option to purchase 729,729 shares of common stock in full at the public offering price of $92.50 per share, the pro forma as adjusted net tangible book value after this offering would be approximately $15.33 per share, representing an increase in net tangible book value of approximately $7.60 per share to existing stockholders and immediate dilution in net tangible book value of approximately $77.17 per share to investors purchasing our common stock in this offering at the public offering price.

## Material United States federal income and estate tax considerations for non-U.S. holders

The following is a summary of the material U.S. federal income and estate tax considerations relating to the purchase, ownership and disposition of our common stock by Non-U.S. Holders (defined below). This summary does not purport to be a complete analysis of all the potential tax considerations relevant to Non-U.S. Holders of our common stock. This summary is based upon the Internal Revenue Code, the Treasury regulations promulgated or proposed thereunder and administrative and judicial interpretations thereof, all as of the date hereof and all of which are subject to change at any time, possibly on a retroactive basis.

This summary assumes that shares of our common stock are held as "capital assets" within the meaning of Section 1221 of the Internal Revenue Code (generally, property held for investment). This summary does not purport to deal with all aspects of U.S. federal income and estate taxation that might be relevant to particular Non-U.S. Holders in light of their particular investment circumstances or status, nor does it address specific tax considerations that may be relevant to particular persons (including, for example, financial institutions, broker-dealers, insurance companies, partnerships or other pass-through entities, certain U.S. expatriates, tax-exempt organizations, pension plans, "controlled foreign corporations", "passive foreign investment companies", corporations that accumulate earnings to avoid U.S. federal income tax, persons in special situations, such as those who have elected to mark securities to market or those who hold common stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment, or holders subject to the alternative minimum or the 3.8% Medicare tax on net investment income). In addition, except as explicitly addressed herein with respect to estate tax, this summary does not address estate and gift tax considerations or considerations under the tax laws of any state, local or non-U.S. jurisdiction.

For purposes of this summary, a "Non-U.S. Holder" means a beneficial owner of common stock that for U.S. federal income tax purposes is not classified as a partnership and is not:

- an individual who is a citizen or resident of the United States;
- a corporation or any other organization taxable as a corporation for U.S. federal income tax purposes, created or organized in or under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is included in gross income for U.S. federal income tax purposes regardless of its source; or
- a trust if (1) a U.S. court is able to exercise primary supervision over the trust's administration and one or more U.S. persons have the authority to control all of the trust's substantial decisions or (2) the trust has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person.

If an entity that is classified as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of persons treated as its partners for U.S. federal income tax purposes will generally depend upon the status of the partner and the activities of the partnership. Partnerships and other entities that are classified as partnerships for U.S. federal income tax purposes and persons holding our common stock through a partnership or other entity classified as a partnership for U.S. federal income tax purposes are urged to consult their own tax advisors.

There can be no assurance that the Internal Revenue Service (IRS) will not challenge one or more of the tax consequences described herein, and we have not obtained, nor do we intend to obtain a ruling from the IRS with respect to the U.S. federal income or estate tax consequences to a Non-U.S. Holder of the purchase, ownership or disposition of our common stock.

**THIS SUMMARY IS FOR GENERAL INFORMATION ONLY AND IS NOT INTENDED TO BE TAX ADVICE. NON-U.S. HOLDERS ARE URGED TO CONSULT THEIR TAX ADVISORS CONCERNING THE U.S. FEDERAL INCOME AND ESTATE TAXATION, STATE, LOCAL AND NON-U.S. TAXATION AND OTHER TAX CONSEQUENCES TO THEM OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK.**

## Distributions on our common stock

We do not currently expect to pay dividends. In the event that we do make a distribution of cash or property with respect to our common stock, any such distributions generally will constitute dividends for U.S. federal income tax purposes to the extent of our current and accumulated earnings and profits, if any, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will constitute a return of capital and will first reduce the holder's adjusted tax basis in our common stock, but not below zero. Any remaining excess will be treated as capital gain, subject to the tax treatment described below in "—Gain on Sale, Exchange or Other Taxable Disposition of Our Common Stock". Any such distribution would also be subject to the discussion below under the section titled "—Additional Withholding and Reporting Requirements".

Dividends paid to a Non-U.S. Holder generally will be subject to a 30% U.S. federal withholding tax unless such Non-U.S. Holder provides us or our agent, as the case may be, with the appropriate IRS Form W-8, such as:

- IRS Form W-8BEN or W-8BEN-E (or successor form) certifying, under penalties of perjury, a reduction in withholding under an applicable income tax treaty, or

- IRS Form W-8ECI (or successor form) certifying that a dividend paid on common stock is not subject to withholding tax because it is effectively connected with a trade or business in the United States of the Non-U.S. Holder (in which case such dividend generally will be subject to regular graduated U.S. tax rates as described below).

The certification requirement described above must be provided to us or our agent prior to the payment of dividends and must be updated periodically. The certification also may require a Non-U.S. Holder that provides an IRS form or that claims treaty benefits to provide its U.S. taxpayer identification number. Special certification and other requirements apply in the case of certain Non-U.S. Holders that hold shares of our common stock through intermediaries or are pass-through entities for U.S. federal income tax purposes.

Each Non-U.S. Holder is urged to consult its own tax advisor about the specific methods for satisfying these requirements. A claim for exemption will not be valid if the person receiving the applicable form has actual knowledge or reason to know that the statements on the form are false.

If dividends are effectively connected with a trade or business in the United States of a Non-U.S. Holder (and, if required by an applicable income tax treaty, are attributable to a permanent establishment maintained by such Non-U.S. Holder in the United States), the Non-U.S. Holder, although exempt from the withholding tax described above (provided that the certifications described above are satisfied), generally will be subject to U.S. federal income tax on such dividends on a net income basis in the same manner as

if it were a resident of the United States. In addition, if a Non-U.S. Holder is treated as a corporation for U.S. federal income tax purposes, the Non-U.S. Holder may be subject to an additional "branch profits tax" equal to 30% (unless reduced by an applicable income treaty) of its earnings and profits in respect of such effectively connected dividend income.

Non-U.S. Holders that do not timely provide us or our agent with the required certification, but which are eligible for a reduced rate of U.S. federal withholding tax pursuant to an income tax treaty, may obtain a refund or credit of any excess amount withheld by timely filing an appropriate claim for refund with the IRS.

## Gain on sale, exchange or other taxable disposition of our common stock

Subject to the discussion below under the section titled "—Additional Withholding and Reporting Requirements", in general, a Non-U.S. Holder will not be subject to U.S. federal income tax or withholding tax on gain realized upon such holder's sale, exchange or other taxable disposition of shares of our common stock, unless (1) such Non-U.S. Holder is an individual who is present in the United States for 183 days or more in the taxable year of disposition, and certain other conditions are met, (2) we are or have been a "United States real property holding corporation", as defined in the Internal Revenue Code (a USRPHC), at any time within the shorter of the five-year period preceding the disposition and the Non-U.S. Holder's holding period in the shares of our common stock, and certain other requirements are met, or (3) such gain is effectively connected with the conduct by such Non-U.S. Holder of a trade or business in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment maintained by such Non-U.S. Holder in the United States).

If the first exception applies, the Non-U.S. Holder generally will be subject to U.S. federal income tax at a rate of 30% (or at a reduced rate under an applicable income tax treaty) on the amount by which such Non-U.S. Holder's capital gains allocable to U.S. sources exceed capital losses allocable to U.S. sources during the taxable year of the disposition. If the third exception applies, the Non-U.S. Holder generally will be subject to U.S. federal income tax with respect to such gain on a net income basis in the same manner as if it were a resident of the United States and a Non-U.S. Holder that is a corporation for U.S. federal income tax purposes may also be subject to a branch profits tax with respect to any earnings and profits attributable to such gain at a rate of 30% (or at a reduced rate under an applicable income tax treaty).

Generally, a corporation is a USRPHC only if the fair market value of its U.S. real property interests (as defined in the Internal Revenue Code) equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance in this regard, we believe that we are not, and do not anticipate becoming, a USRPHC. However, because the determination of whether we are a USRPHC depends on the fair market value of our U.S. real property interests relative to the fair market value of other business assets, there can be no assurance that we will not become a USRPHC in the future. Even if we became a USRPHC, a Non-U.S. Holder would not be subject to U.S. federal income tax on a sale, exchange or other taxable disposition of our common stock by reason of our status as USRPHC so long as our common stock is regularly traded on an established securities market at any time during the calendar year in which the disposition occurs and such Non-U.S. Holder does not own and is not deemed to own (directly, indirectly or constructively) more than 5% of our common stock at any time during the shorter of the five year period ending on the date of disposition and the holder's holding period. However, no assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rules described above. Prospective investors are encouraged to consult their own tax advisors regarding the possible consequences to them if we are, or were to become, a USRPHC.

## Additional withholding and reporting requirements

Sections 1471 through 1474 of the Internal Revenue Code of 1986, as amended, and related Treasury Regulations, together with other Treasury Department and IRS guidance issued thereunder, and intergovernmental agreements, legislation, rules and other official guidance adopted pursuant to such intergovernmental agreements (commonly referred to as "FATCA") impose a U.S. federal withholding tax of 30% on certain payments, including dividends paid on our common stock, paid to (1) a "foreign financial institution" (as defined under FATCA) unless such institution furnishes proper documentation (typically on IRS Form W-8BEN-E) evidencing either (i) an exemption from FATCA withholding, (ii) its compliance (or deemed compliance) with specified due diligence, reporting, withholding and certification obligations under FATCA or (iii) residence in a jurisdiction that has entered into an intergovernmental agreement with the United States relating to FATCA and compliance with the diligence and reporting requirements of the intergovernmental agreement and local implementing rules; or (2) a "non-financial foreign entity" (as defined under FATCA) that does not furnish proper documentation, typically on IRS Form W-8BEN-E, evidencing either (i) an exemption from FATCA or (ii) adequate information regarding substantial United States beneficial owners of such entity (if any). An intergovernmental agreement between the United States and an applicable foreign country may modify these requirements.

The IRS and the Department of Treasury have issued proposed regulations on which taxpayers may rely providing that these withholding rules will not apply to the gross proceeds of a sale or other disposition of shares of our common stock. Prospective investors should consult their tax advisors regarding the effect of FATCA on their ownership and disposition of our common stock.

## Backup withholding and information reporting

We must report annually to the IRS and to each Non-U.S. Holder the gross amount of the distributions on our common stock paid to the holder and the tax withheld, if any, with respect to the distributions. Non-U.S. Holders may have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Internal Revenue Code) in order to avoid backup withholding at the applicable rate, currently 24%, with respect to dividends on our common stock. Dividends paid to Non-U.S. Holders subject to the U.S. withholding tax, as described above under the section titled "—Distributions on Our Common Stock", generally will be exempt from U.S. backup withholding.

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a Non-U.S. Holder effected by or through the U.S. office of any broker, U.S. or foreign, unless the holder certifies its status as a Non-U.S. Holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a Non-U.S. Holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker. Prospective investors should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them, including the availability of and procedure for obtaining an exemption from backup withholding.

Copies of information returns may be made available to the tax authorities of the country in which the Non-U.S. Holder resides or, in which the Non-U.S. Holder is incorporated, under the provisions of a specific treaty or agreement.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a Non-U.S. Holder can be refunded or credited against the Non-U.S. Holder's U.S. federal income tax liability, if any, provided that an appropriate claim is timely filed with the IRS.

## U.S. federal estate tax

Common stock owned (or treated as owned) by an individual who is not a citizen or a resident of the United States (as defined for U.S. federal estate tax purposes) at the time of death will be included in the individual's gross estate for U.S. federal estate tax purposes unless an applicable estate or other tax treaty provides otherwise, and therefore, may be subject to U.S. federal estate tax.

## Underwriting

J.P. Morgan Securities LLC, SVB Leerink LLC and Cowen and Company, LLC are acting as representatives of the underwriters named below. Subject to the terms and conditions stated in the underwriting agreement dated the date of this prospectus supplement, each underwriter named below has severally agreed to purchase, and we have agreed to sell to that underwriter, the number of shares set forth opposite the underwriter's name.

| Underwriter | Number of shares |
|---|---|
| J.P. Morgan Securities LLC | 1,654,054 |
| SVB Leerink LLC | 875,676 |
| Cowen and Company, LLC | 875,676 |
| Barclays Capital Inc. | 535,135 |
| Credit Suisse Securities (USA) LLC | 535,135 |
| Piper Sandler & Co. | 340,541 |
| H.C. Wainwright & Co., LLC | 48,647 |
| Total | 4,864,864 |

The underwriting agreement provides that the obligations of the underwriters to purchase the shares included in this offering are subject to approval of legal matters by counsel and to other conditions. The underwriters are obligated to purchase all the shares (other than those covered by the option to purchase additional shares described below) if they purchase any of the shares.

Shares sold by the underwriters to the public will initially be offered at the public offering price set forth on the cover of this prospectus supplement. Any shares sold by the underwriters to securities dealers may be sold at a discount from the public offering price not to exceed $2.63625 per share. If all the shares are not sold at the initial offering price, the underwriters may change the offering price and the other selling terms. The representatives have advised us that the underwriters do not intend to make sales to discretionary accounts.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus supplement, to purchase up to 729,729 additional shares at the public offering price less the underwriting discount. To the extent the option is exercised, each underwriter must purchase a number of additional shares approximately proportionate to that underwriter's initial purchase commitment. Any shares issued or sold under the option will be issued and sold on the same terms and conditions as the other shares that are the subject of this offering.

We, our officers and directors and certain shareholders have agreed that, for a period of 60 days from the date of this prospectus supplement, we and they will not, without the prior written consent of J.P. Morgan, SVB Leerink, and Cowen, among other things, dispose of or hedge any shares or any securities convertible into or exchangeable for our common stock. Specifically, we and these other persons have agreed, with certain limited exceptions, including upon the exercise of warrants due to expire and trades made pursuant to existing 10b5-1 plans, not to directly or indirectly:

- offer, sell, contract to sell, pledge or otherwise dispose of, or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition of (whether by actual disposition or effective economic disposition due to cash settlement or otherwise) any common stock;

- file or participate in the filing of a registration statement related to the common stock;
- establish or increase a put equivalent position or liquidate or decrease a call equivalent position with respect to any common stock; or
- publicly announce an intention to effect any such transaction.

The lock-up provisions apply to common stock and to securities convertible into or exchangeable or exercisable for common stock. They also apply to common stock owned now or acquired later by the person executing the lock-up agreement or for which the person executing the lock-up agreement later acquires the power of disposition. It does not apply to (i) an aggregate of up to 50,000 shares that may be sold by our Chief Executive Officer pursuant to a Rule 10b5-1 trading plan in effect as of the date of this prospectus supplement and (ii) an exercise of warrants outstanding as of the date of this prospectus supplement on a cashless basis by Celgene, upon the expiration of such warrants.

J.P. Morgan, SVB Leerink and Cowen in their sole discretion may release any of the securities subject to these lock-up agreements at any time, which, in the case of officers and directors, shall be without notice.

Our common stock is listed on the Nasdaq Global Market under the symbol "XLRN".

The following table shows the underwriting discounts and commissions that we are to pay to the underwriters in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares of common stock.

| | Paid by Acceleron | |
|---|---|---|
| | **No exercise** | **Full exercise** |
| Per share | $ 4.39375 | $ 4.39375 |
| Total | $ 21,374,996 | $ 24,581,243 |

We estimate that our portion of the total expenses of this offering will be approximately $465,000.

We have also agreed to reimburse the underwriters for certain of their expenses in an amount up to $15,000 as set forth in the underwriting agreement.

In connection with the offering, the underwriters may purchase and sell shares in the open market. Purchases and sales in the open market may include short sales, purchases to cover short positions, which may include purchases pursuant to the underwriters' option to purchase additional shares, and stabilizing purchases.

- Short sales involve secondary market sales by the underwriters of a greater number of shares than they are required to purchase in the offering.
- "Covered" short sales are sales of shares in an amount up to the number of shares represented by the underwriters' option to purchase additional shares.
- "Naked" short sales are sales of shares in an amount in excess of the number of shares represented by the underwriters' option to purchase additional shares.
- Covering transactions involve purchases of shares either pursuant to the underwriters' option to purchase additional shares or in the open market in order to cover short positions.

- To close a naked short position, the underwriters must purchase shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the shares in the open market after pricing that could adversely affect investors who purchase in the offering.

- To close a covered short position, the underwriters must purchase shares in the open market or must exercise the option to purchase additional shares. In determining the source of shares to close the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares.

- Stabilizing transactions involve bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum.

Purchases to cover short positions and stabilizing purchases, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of the shares. They may also cause the price of the shares to be higher than the price that would otherwise exist in the open market in the absence of these transactions. The underwriters may conduct these transactions on the Nasdaq Global Market, in the over-the-counter market or otherwise. If the underwriters commence any of these transactions, they may discontinue them at any time.

## Other relationships

The underwriters are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their respective affiliates may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses. In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (which may include bank loans and/or credit default swaps) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The underwriters and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the underwriters may be required to make because of any of those liabilities

## Notice to prospective investors in the European Economic Area

In relation to each member state of the European Economic Area that has implemented the Prospectus Directive (each, a relevant member state), with effect from and including the date on which the Prospectus Directive is implemented in that relevant member state (the relevant implementation date), an offer of

shares described in this prospectus supplement may not be made to the public in that relevant member state other than:

- to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- to fewer than 100 or, if the relevant member state has implemented the relevant provision of the 2010 PD Amending Directive, 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the relevant Dealer or Dealers nominated by us for any such offer; or
- in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of securities shall require us or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For purposes of this provision, the expression an "offer of securities to the public" in any relevant member state means the communication in any form and by any means of sufficient information on the terms of the offer and the shares to be offered so as to enable an investor to decide to purchase or subscribe for the shares, as the expression may be varied in that member state by any measure implementing the Prospectus Directive in that member state, and the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the relevant member state) and includes any relevant implementing measure in the relevant member state. The expression 2010 PD Amending Directive means Directive 2010/73/EU.

The sellers of the shares have not authorized and do not authorize the making of any offer of shares through any financial intermediary on their behalf, other than offers made by the underwriters with a view to the final placement of the shares as contemplated in this prospectus supplement. Accordingly, no purchaser of the shares, other than the underwriters, is authorized to make any further offer of the shares on behalf of the sellers or the underwriters.

## Notice to prospective investors in the United Kingdom

This prospectus supplement is only being distributed to, and is only directed at, persons in the United Kingdom that are qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive that are also (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the Order) or (ii) high net worth entities, and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (each such person being referred to as a "relevant person"). This prospectus supplement and its contents are confidential and should not be distributed, published or reproduced (in whole or in part) or disclosed by recipients to any other persons in the United Kingdom. Any person in the United Kingdom that is not a relevant person should not act or rely on this document or any of its contents.

## Notice to prospective investors in France

Neither this prospectus supplement nor any other offering material relating to the shares described in this prospectus supplement has been submitted to the clearance procedures of the Autorité des Marchés Financiers or of the competent authority of another member state of the European Economic Area and notified to the Autorité des Marchés Financiers. The shares have not been offered or sold and will not be

offered or sold, directly or indirectly, to the public in France. Neither this prospectus supplement nor any other offering material relating to the shares has been or will be:

- released, issued, distributed or caused to be released, issued or distributed to the public in France; or
- used in connection with any offer for subscription or sale of the shares to the public in France.

Such offers, sales and distributions will be made in France only:

- to qualified investors (investisseurs qualifiés) and/or to a restricted circle of investors (cercle restreint d'investisseurs), in each case investing for their own account, all as defined in, and in accordance with, articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier;
- to investment services providers authorized to engage in portfolio management on behalf of third parties; or
- in a transaction that, in accordance with article L.411-2-II-1°-or-2°-or 3° of the French *Code monétaire et financier* and article 211-2 of the General Regulations (*Règlement Général*) of the *Autorité des Marchés Financiers*, does not constitute a public offer (*appel public à l'épargne*).

The ordinary shares may be resold directly or indirectly, only in compliance with articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French Code monétaire et financier.

## Notice to prospective investors in Australia

No prospectus or other disclosure document (as defined in the Corporations Act 2001 (Cth) of Australia (Corporations Act)) in relation to the common stock has been or will be lodged with the Australian Securities & Investments Commission (ASIC). This document has not been lodged with ASIC and is only directed to certain categories of exempt persons. Accordingly, if you receive this document in Australia:

(a) you confirm and warrant that you are either:

(i) a "sophisticated investor" under section 708(8)(a) or (b) of the Corporations Act;

(ii) a "sophisticated investor" under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant's certificate to us which complies with the requirements of section 708(8)(c)(i) or (ii) of the Corporations Act and related regulations before the offer has been made;

(iii) a person associated with the company under section 708(12) of the Corporations Act; or

(iv) a "professional investor" within the meaning of section 708(11)(a) or (b) of the Corporations Act, and to the extent that you are unable to confirm or warrant that you are an exempt sophisticated investor, associated person or professional investor under the Corporations Act any offer made to you under this document is void and incapable of acceptance; and

(b) you warrant and agree that you will not offer any of the common stock for resale in Australia within 12 months of that common stock being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

## Notice to prospective investors in Hong Kong

The shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a "prospectus" within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

## Notice to prospective investors in Japan

The shares offered in this prospectus supplement have not been and will not be registered under the Financial Instruments and Exchange Law of Japan. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, in Japan or to or for the account of any resident of Japan (including any corporation or other entity organized under the laws of Japan), except (i) pursuant to an exemption from the registration requirements of the Financial Instruments and Exchange Law and (ii) in compliance with any other applicable requirements of Japanese law.

## Notice to prospective investors in Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

## Notice to prospective investors in Singapore

Each representative has acknowledged that this prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, each representative has represented and agreed that it has not offered or sold any shares or caused the shares to be made the subject of an invitation for

subscription or purchase and will not offer or sell any shares or cause the shares to be made the subject of an invitation for subscription or purchase, and has not circulated or distributed, nor will it circulate or distribute, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares, whether directly or indirectly, to any person in Singapore other than: (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the "SFA")), pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

(c) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

(d) where no consideration is or will be given for the transfer;

(e) where the transfer is by operation of law;

(f) as specified in Section 276(7) of the SFA; or

(g) as specified in Regulation 37A of the Securities and Futures (Offers of Investments) (Securities and Securities-based Derivatives Contracts) Regulations 2018.

In connection with Section 309B of the SFA and the CMP Regulations 2018, unless otherwise specified before an offer of the shares, the Company has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the shares are "prescribed capital markets products" (as defined in the CMP Regulations 2018) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

## Legal matters

The validity of the shares of common stock offered hereby will be passed upon for us by Ropes & Gray LLP, New York, New York. Certain legal matters will be passed upon for the underwriters by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., Boston, Massachusetts.

## Experts

The consolidated financial statements of Acceleron Pharma Inc. appearing in Acceleron Pharma Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2019, and the effectiveness of Acceleron Pharma Inc.'s internal control over financial reporting as of December 31, 2019 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

**PROSPECTUS**

# ACCELERON PHARMA INC.

## Common Stock

## Preferred Stock

## Warrants

We may offer and sell from time to time, in one or more series or issuances and on terms determined at the time of the offering, any combination of the securities described in this prospectus.

Specific terms of any offering will be provided in a supplement to this prospectus. Any prospectus supplement may also add, update or change information contained in this prospectus. You should carefully read this prospectus and the applicable prospectus supplement as well as the documents incorporated or deemed to be incorporated by reference in this prospectus before you purchase any of the securities offered hereby.

These securities may be offered and sold in the same offering or in separate offerings, to or through underwriters, dealers or agents or directly to purchasers. The names of any underwriters, dealers or agents involved in the sale of our securities and their compensation will be described in the applicable prospectus supplement.

**General Information**

Our common stock is traded on the NASDAQ Global Market under the symbol "XLRN". On September 18, 2017, the closing price of our common stock was $39.38.

**Investing in our securities involves risks. See "Risk Factors" on page 3 and in any applicable prospectus supplement and in the documents incorporated by reference in this prospectus for a discussion of the factors you should carefully consider before deciding to purchase these securities.**

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.**

**The date of this prospectus is September 19, 2017.**

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## ABOUT THIS PROSPECTUS

This prospectus is a part of a registration statement that we filed with the Securities and Exchange Commission (the "SEC") using a "shelf" registration process. Under this shelf registration process, any combination of the securities described in this prospectus may be sold in one or more offerings. Each time securities are sold under this shelf registration, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and the applicable prospectus supplement, including all documents incorporated herein by reference, together with additional information described under "Where You Can Find More Information" below.

We have not authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or an accompanying prospectus supplement. This prospectus and the accompanying prospectus supplement, if any, do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and any accompanying prospectus supplement constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and the accompanying prospectus supplement, if any, is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and any accompanying prospectus supplement is delivered or securities are sold on a later date.

Unless the context otherwise requires, "Acceleron", the "Company", "we", "us", "our" and similar names refer to Acceleron Pharma Inc. and its wholly owned subsidiary.

## OUR BUSINESS

### Our Company

We are a leading biopharmaceutical company in the discovery and development of TGF-beta therapeutics to treat serious and rare diseases. Our research focuses on key natural regulators of cellular growth and repair, particularly the Transforming Growth Factor-Beta, or TGF-beta, protein superfamily. By combining our discovery and development expertise, including our proprietary knowledge of the TGF-beta superfamily, and our internal protein engineering and manufacturing capabilities, we have generated several innovative therapeutic candidates, all of which encompass novel potential first-in-class mechanisms of action. We have focused and prioritized our research and development activities within three key therapeutic areas, and if successful, these candidates could have the potential to significantly improve clinical outcomes for patients across these areas of high, unmet need.

Our common stock is listed on the NASDAQ Global Market under the symbol "XLRN". Our principal executive offices are located at 128 Sidney Street, Cambridge, Massachusetts 02139, and our telephone number is (617) 649-9200. Our website address is www.acceleronpharma.com. The information found on our website is not part of this prospectus.

## RISK FACTORS

Investing in our securities involves risk. Prior to making a decision about investing in our securities, you should carefully consider the specific risk factors discussed under the heading "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2016, on file with the SEC, which is incorporated by reference into this prospectus and any prospectus supplement in its entirety, as the same may be amended, supplemented or superseded from time to time by our filings under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), together with those under the heading "Risk Factors" in any applicable prospectus supplement and all of the other information contained or incorporated by reference in this prospectus or such prospectus supplement. See "Where You Can Find More Information." The risks and uncertainties we describe are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. If any of these risks were to occur, our business, financial condition or results of operations would likely suffer. In that event, the trading price of our common stock could decline, and you could lose all or part of your investment.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, any prospectus supplement and the other documents we have filed with the SEC that are incorporated herein by reference contain forward-looking statements that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause our results to differ materially from those expressed or implied by such forward-looking statements. In some cases, these forward-looking statements can be identified by the use of forward-looking terminology. The statements contained in this prospectus that are not purely historical are "forward-looking statements" within the meaning of Section 27A of the Securities Act. The terms "anticipate", "believe", "contemplate", "continue", "could", "estimate", "expect", "forecast", "goal", "intend", "may", "plan", "potential", "predict", "project", "should", "strategy", "target", "will", "would", "vision", or, in each case, the negative or other variations thereon or other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus, any prospectus supplement and the other documents we have filed with the SEC that are incorporated herein by reference include, among other things, statements regarding our intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things:

- our ongoing and planned preclinical studies and clinical trials;
- clinical trial data and the timing of results of our ongoing clinical trials;
- our plans to develop and commercialize ACE-083 and our other preclinical therapeutic candidates and our and Celgene's plans to develop and commercialize luspatercept and sotatercept;
- the potential benefits of strategic partnership agreements and our ability to enter into selective strategic partnership arrangements;
- the timing of, and our and Celgene's ability to, obtain and maintain regulatory approvals for our therapeutic candidates;
- the rate and degree of market acceptance and clinical utility of any approved therapeutic candidate, particularly in specific patient populations;
- our ability to quickly and efficiently identify and develop therapeutic candidates;
- our commercialization, marketing and manufacturing capabilities and strategy;

- our intellectual property position; and

- our estimates regarding our results of operations, financial condition, liquidity, capital requirements, prospects, growth and strategies.

Given these uncertainties, you should not place undue reliance on these forward-looking statements. You should read this prospectus, any supplements to this prospectus and the documents that we reference in this prospectus with the understanding that our actual future results may be materially different from what we expect. Except as required by law, we do not undertake any obligation to update or revise any forward-looking statements contained in this prospectus or any supplement to this prospectus, whether as a result of new information, future events or otherwise.

## USE OF PROCEEDS

Except as otherwise provided in the applicable prospectus supplement, we intend to use the net proceeds from the sale of the securities offered by us by this prospectus for general corporate purposes, including working capital, capital expenditures, research, development and manufacturing expenditures, clinical trial expenditures, general and administrative expenses, or commercial expenditures. We may temporarily invest the net proceeds in short-term, interest-bearing, investment-grade securities, certificates of deposit or government securities until they are used for their stated purpose. We have not determined the amount of net proceeds to be used specifically for such purposes. As a result, management will retain broad discretion over the allocation of net proceeds.

Additional information on the use of net proceeds from the sale of securities offered by us by this prospectus may be set forth in the prospectus supplement relating to the specific offering.

## RATIO OF COMBINED FIXED CHARGES AND PREFERRED STOCK DIVIDENDS TO EARNINGS

The following table sets forth our historical ratios of fixed charges and preferred stock dividends to earnings for the periods indicated. You should read this table in conjunction with the financial statements and notes incorporated by reference in this prospectus.

| | Year Ended December 31, | | | | | Six Months Ended |
|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | June 30, 2017 |
| Ratio of combined fixed charges and preferred stock dividends to earnings(1) | — | — | — | — | — | — |

(1) Earnings were inadequate to cover fixed charges and preferred dividends for the years ended December 31, 2012, 2013, 2014, 2015 and 2016 by $59.6 million, $39.0 million, $51.3 million, $63.9 million and $57.0 million, respectively, and for the six months ended June 30, 2017, by $55.1 million.

## PLAN OF DISTRIBUTION

We may sell securities in any of the ways described below or in any combination:

- to or through underwriters or dealers;
- through one or more agents; or
- directly to purchasers or to a single purchaser.

The distribution of the securities may be effected from time to time in one or more transactions:

- at a fixed price, or prices, which may be changed from time to time;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Each prospectus supplement will describe the method of distribution of the securities and any applicable restrictions.

The prospectus supplement with respect to the securities of a particular series will describe the terms of the offering of the securities, including the following:

- the name or names of any underwriters, dealers or agents and the amounts of securities underwritten or purchased by each of them;
- the public offering price of the securities and the proceeds to us and any discounts, commissions or concessions allowed or reallowed or paid to dealers; and
- any securities exchanges on which the securities may be listed.

Any offering price and any discounts or concessions allowed or reallowed or paid to dealers may be changed from time to time.

Only the agents or underwriters named in each prospectus supplement are agents or underwriters in connection with the securities being offered thereby.

We may authorize underwriters, dealers or other persons acting as our agents to solicit offers by certain institutions to purchase securities from us pursuant to delayed delivery contracts providing for payment and delivery on the date stated in each applicable prospectus supplement. Each contract will

be for an amount not less than, and the aggregate amount of securities sold pursuant to such contracts shall not be less nor more than, the respective amounts stated in each applicable prospectus supplement. Institutions with whom the contracts, when authorized, may be made include commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutions, but shall in all cases be subject to our approval. Delayed delivery contracts will be subject only to those conditions set forth in each applicable prospectus supplement, and each prospectus supplement will set forth any commissions we pay for solicitation of these contracts.

Agents, underwriters and other third parties described above may be entitled to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, or to contribution from us with respect to payments that the agents, underwriters or other third parties may be required to make in respect thereof. Agents, underwriters and such other third parties may be customers of, engage in transactions with, or perform services for us in the ordinary course of business.

One or more firms, referred to as "remarketing firms," may also offer or sell the securities, if a prospectus supplement so indicates, in connection with a remarketing arrangement upon their purchase. Remarketing firms will act as principals for their own accounts or as our agents. These remarketing firms will offer or sell the securities in accordance with the terms of the securities. Each prospectus supplement will identify and describe any remarketing firm and the terms of its agreement, if any, with us and will describe the remarketing firm's compensation. Remarketing firms may be deemed to be underwriters in connection with the securities they remarket. Remarketing firms may be entitled under agreements that may be entered into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, and may be customers of, engage in transactions with or perform services for us in the ordinary course of business.

Certain underwriters may use this prospectus and any accompanying prospectus supplement for offers and sales related to market-making transactions in the securities. These underwriters may act as principal or agent in these transactions, and the sales will be made at prices related to prevailing market prices at the time of sale.

The securities may be new issues of securities and may have no established trading market. The securities may or may not be listed on a securities exchange. Underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making at any time without notice. We can make no assurance as to the liquidity of, or the existence of trading markets for, any of the securities.

Certain persons participating in an offering may engage in overallotment, stabilizing transactions, short covering transactions and penalty bids in accordance with rules and regulations under the Securities Exchange Act. Overallotment involves sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a short covering transaction to cover short positions. Those activities may cause the price of the securities to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of the activities at any time.

## DESCRIPTION OF CAPITAL STOCK

### General

The following description of our capital stock is intended as a summary only and is qualified in its entirety by reference to our restated certificate of incorporation and amended and restated by-laws,

which are filed as exhibits to the registration statement of which this prospectus is a part, and to the applicable provisions of the Delaware General Corporation Law. We refer in this section to our restated certificate of incorporation as our certificate of incorporation, and we refer to our amended and restated by-laws as our by-laws.

Our authorized capital stock consists of 175,000,000 shares of our common stock, par value $0.001 per share, and 25,000,000 shares of our preferred stock, par value $0.001 per share, all of which preferred stock is undesignated.

As of June 30, 2017, we had issued and outstanding:

- 38,636,505 shares of our common stock;
- options to purchase a total of 3,541,003 shares of our common stock with a weighted-average exercise price of $28.57 per share; and
- warrants to purchase a total of 63,296 shares of our common stock with a weighted-average exercise price of $5.94 per share.

As of June 30, 2017, we had 92 stockholders of record.

**Common Stock**

*Dividend Rights.* Subject to preferences that may apply to shares of preferred stock outstanding at the time, holders of outstanding shares of common stock will be entitled to receive dividends out of assets legally available at the times and in the amounts as the board of directors may from time to time determine.

*Voting Rights.* Each outstanding share of common stock will be entitled to one vote on all matters submitted to a vote of stockholders. Holders of shares of our common stock shall have no cumulative voting rights.

*Preemptive Rights.* Our common stock will not be entitled to preemptive or other similar subscription rights to purchase any of our securities.

*Conversion or Redemption Rights.* Our common stock will be neither convertible nor redeemable.

*Liquidation Rights.* Upon our liquidation, the holders of our common stock will be entitled to receive pro rata our assets which are legally available for distribution, after payment of all debts and other liabilities and subject to the prior rights of any holders of preferred stock then outstanding.

*Listing.* Our common stock is listed on the NASDAQ Global Market under the symbol "XLRN".

**Preferred Stock**

Our board of directors may, without further action by our stockholders, from time to time, direct the issuance of shares of preferred stock in series and may, at the time of issuance, determine the designations, powers, preferences, privileges, and relative participating, optional or special rights as well as the qualifications, limitations or restrictions thereof, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of the common stock. Satisfaction of any dividend preferences of outstanding shares of preferred stock would reduce the amount of funds available for the payment of dividends on shares of our common stock. Holders of shares of preferred stock may be entitled to receive a preference payment in the event of our liquidation before any payment is made to the holders of shares of our common stock. Under certain circumstances, the issuance of shares of preferred stock may render more difficult or tend to discourage a merger, tender offer or proxy contest, the assumption of control by a holder of a large block of our securities or the removal of incumbent management. Upon the

affirmative vote of a majority of the total number of directors then in office, our board of directors, without stockholder approval, may issue shares of preferred stock with voting and conversion rights which could adversely affect the holders of shares of our common stock and the market value of our common stock. There are no shares of preferred stock outstanding, and we have no present intention to issue any shares of preferred stock.

**Registration Rights**

We are party to an amended and restated registration rights agreement with certain holders of our common stock.

Under the amended and restated registration rights agreement, holders of registrable shares can demand that we file a registration statement or request that their shares be included on a registration statement that we are otherwise filing, in either case, registering the resale of their shares of common stock. These registration rights are subject to conditions and limitations, including the right, in certain circumstances, of the underwriters of an offering to limit the number of shares included in such registration and our right, in certain circumstances, not to effect a requested S-1 or S-3 registration within 60 days before the Company's estimated date of filing a registration statement or six months following the effective date of a registration statement pertaining to an underwritten public offering of securities for the account of the Company, including this offering.

*Demand Registration Rights*

The holders of at least a majority of the registrable shares may require us to file a registration statement under the Securities Act at our expense with respect to the resale of their registrable shares, and we are required to use our best efforts to effect the registration.

*Piggyback Registration Rights*

If we propose to register any of our securities under the Securities Act for our own account or the account of any other holder, the holders of registrable shares are entitled to notice of such registration and to request that we include registrable shares for resale on such registration statement, subject to the right of any underwriter to limit the number of shares included in such registration.

We will pay all registration expenses, other than underwriting discounts and commissions, related to any demand or piggyback registration. The amended and restated registration rights agreement contains customary cross-indemnification provisions, pursuant to which we are obligated to indemnify the selling stockholders, in the event of misstatements or omissions in the registration statement attributable to us and they are obligated to indemnify us for misstatements or omissions attributable to them, in each case, except in the event of fraud. The registration rights will not terminate until all registrable shares have been sold or no longer qualify as registrable shares.

**Anti-Takeover Effects of Our Certificate of Incorporation and Our By-Laws**

Our certificate of incorporation and by-laws contain certain provisions that are intended to enhance the likelihood of continuity and stability in the composition of our board of directors and which may have the effect of delaying, deferring or preventing a future takeover or change in control of the company unless such takeover or change in control is approved by our board of directors.

These provisions include:

*Classified Board.* Our certificate of incorporation provides that our board of directors be divided into three classes of directors, with the classes as nearly equal in number as possible. As a result, approximately one-third of our board of directors will be elected each year. The classification of directors has the effect of making it more difficult for stockholders to change the composition of our

board. Our certificate of incorporation also provides that, subject to any rights of holders of preferred stock to elect additional directors under specified circumstances, the number of directors is fixed exclusively pursuant to a resolution adopted by our board of directors.

*Action by Written Consent; Special Meetings of Stockholders.* Our certificate of incorporation provides that, except as otherwise provided for by a resolution of the board of directors providing for the issuance of a series of preferred stock, stockholder action can be taken only at an annual or special meeting of stockholders and cannot be taken by written consent in lieu of a meeting. Our certificate of incorporation and the by-laws also provide that, except as otherwise required by law, and subject to any special rights of the holders of preferred stock, special meetings of the stockholders can only be called pursuant to a resolution adopted by a majority of the board of directors. Except as described above, stockholders are not permitted to call a special meeting or to require the board of directors to call a special meeting.

*Removal of Directors.* Our certificate of incorporation provides that, subject to any special rights of holders of preferred stock, our directors may be removed only for cause by the affirmative vote of at least 75% of the voting power of our outstanding shares of capital stock, voting together as a single class. This requirement of a supermajority vote to remove directors could enable holders of a minority of our capital stock to prevent a change in the composition of our board.

*Advance Notice Procedures.* Our by-laws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to the board of directors. Stockholders at an annual meeting will only be able to consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of the board of directors or by a stockholder who was a stockholder of record on the record date for the meeting, who is entitled to vote at the meeting and who has given our Secretary timely written notice, in proper form, of the stockholder's intention to bring that business before the meeting. Although the by-laws do not give the board of directors the power to approve or disapprove stockholder nominations of candidates or proposals regarding other business to be conducted at a special or annual meeting, the by-laws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempting to obtain control of the company.

*Supermajority Approval Requirements.* The Delaware General Corporation Law generally provides that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or by-laws, unless either a corporation's certificate of incorporation or by-laws require a greater percentage. Our certificate of incorporation provides that the affirmative vote of holders of at least 75% of the voting power of the outstanding shares of our capital stock is required to amend, alter, change or repeal our by-laws. This requirement of a supermajority vote to approve amendments to our by-laws could enable holders of a minority of our capital stock to exercise veto power over any such amendments.

*Authorized but Unissued Shares.* Our authorized but unissued shares of common stock and preferred stock will be available for future issuance without stockholder approval. These additional shares may be utilized for a variety of corporate purposes, including future public offerings to raise additional capital, corporate acquisitions and employee benefit plans. The existence of authorized but unissued shares of common stock and preferred stock could render more difficult or discourage an attempt to obtain control of a majority of our common stock by means of a proxy contest, tender offer, merger or otherwise.

*Exclusive Forum.* Our certificate of incorporation provides that, subject to limited exceptions, the state or federal court located within the State of Delaware is the sole and exclusive forum for (1) any

derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our by-laws, or (4) any other action asserting a claim against us that is governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and to have consented to the provisions of our certificate of incorporation described above. Although we believe these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that, in connection with one or more actions or proceedings described above, a court could find the choice of forum provisions contained in our certificate of incorporation to be inapplicable or unenforceable.

*Section 203 of the Delaware General Corporation Law.* We are subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or did own within three years prior to the determination of interested stockholder status, 15% or more of the corporation's voting stock.

Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions: before the stockholder became interested, the board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances; or at or after the time the stockholder became interested, the business combination was approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

A Delaware corporation may "opt out" of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or by-laws resulting from a stockholders' amendment approved by at least a majority of the outstanding voting shares. We have not opted out of these provisions. As a result, mergers or other takeover or change in control attempts of us may be discouraged or prevented.

**Transfer Agent and Registrar**

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A. The transfer agent and registrar's address is 462 South 4$^{th}$ Street, Suite 1600, Louisville, Kentucky 40202.

## DESCRIPTION OF WARRANTS

The following description, together with the additional information that we include in any applicable prospectus supplements and in any related free writing prospectuses that we may authorize

to be distributed to purchasers, summarizes the material terms and provisions of the warrants that we may offer under this prospectus. While the terms we have summarized below will apply generally to any warrants that we may offer under this prospectus, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. The terms of any warrants offered under a prospectus supplement may differ from the terms described below.

We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of warrant agreement that describes the terms of the series of warrants we are offering, and any supplemental agreements, before the issuance of the related series of warrants. The following summaries of material terms and provisions of the warrants are subject to, and qualified in their entirety by reference to, all the provisions of the warrant agreement and any supplemental agreements applicable to a particular series of warrants. We urge purchasers to read the applicable prospectus supplements related to the particular series of warrants that we may offer under this prospectus, as well as any related free writing prospectuses and the complete warrant agreement and any supplemental agreements that contain the terms of the warrants.

*General Terms.* We may issue warrants to purchase common stock or preferred stock. We may offer warrants separately or together with one or more additional warrants, common stock or preferred stock, or any combination of those securities in the form of units, as described in the applicable prospectus supplement. If we issue warrants as part of a unit, the accompanying prospectus supplement will specify whether those warrants may be separated from the other securities in the unit prior to the expiration date of the warrants.

We will specify in a prospectus supplement the terms of the series of warrants, including, if applicable, the following:

- the specific designation and aggregate number of, and the offering price at which we will issue, the warrants;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- the date on which the right to exercise the warrants will begin and the date on which that right will expire or, if a holder may not continuously exercise the warrants throughout that period, the specific date or dates on which such holder may exercise the warrants;
- whether the warrants are to be sold separately or with other securities as parts of units;
- whether the warrants will be issued in definitive or global form or in any combination of these forms, although, in any case, the form of a warrant included in a unit will correspond to the form of the unit and of any security included in that unit;
- any applicable material U.S. federal income tax consequences;
- the identity of the warrant agent for the warrants and of any other depositaries, execution or paying agents, transfer agents, registrars or other agents;
- the proposed listing, if any, of the warrants or any securities purchasable upon exercise of the warrants on any securities exchange;
- the designation and terms of any equity securities purchasable upon exercise of the warrants;
- if applicable, the designation and terms of the preferred stock or common stock with which the warrants are issued and, the number of warrants issued with each security;
- if applicable, the date from and after which the warrants and common stock and/or preferred stock will be separately transferable;

- the number of shares of preferred stock or the number of shares of common stock purchasable upon exercise of a warrant and the price at which those shares may be purchased;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;
- information with respect to book-entry procedures, if any;
- the antidilution provisions of, and other provisions for changes to or adjustment in the exercise price of, the warrants, if any;
- any redemption or call provisions; and
- any additional terms of the warrants, including terms, procedures and limitations relating to the exchange or exercise of the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including, in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

The provisions described in this section, as well as those described under "Description of Capital Stock" will apply to each warrant, as applicable, and to any common stock or preferred stock included in each warrant, as applicable.

*Enforceability of Rights by Holders of Warrants.* Each warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder or any warrant. A single bank or trust company may act as a warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the securities purchasable upon exercise of, its warrants.

## WHERE YOU CAN FIND MORE INFORMATION

We file annual and quarterly reports, current reports, proxy statements, and other information with the SEC. We make these documents publicly available, free of charge, on our website at www.acceleronpharma.com as soon as reasonably practicable after filing such documents with the SEC.

You may read and copy any materials that we file with the SEC at its Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at (800) 732-0330. Our filings are also available to the public from the website maintained by the SEC at http://www.sec.gov.

## INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information in documents that we file later with the SEC will automatically update and supersede information in this prospectus. We incorporate by reference into this prospectus the documents listed below and any future filings made by us with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act until we terminate or complete this offering (other than documents or information deemed to have

been furnished and not filed in accordance with SEC rules). We hereby incorporate by reference the following documents:

- Our Annual Report on Form 10-K for the year ended December 31, 2016, filed with the SEC on March 1, 2017;
- Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017 and June 30, 2017, filed with the SEC on May 8, 2017 and August 3, 2017, respectively;
- The information specifically incorporated by reference into our Annual Report on Form 10-K for the fiscal year ended December 31, 2016 from our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 13, 2017;
- Our Current Reports on Form 8-K filed with the SEC on April 27, 2017, May 2, 2017, May 10, 2017, June 6, 2017, June 15, 2017, June 30, 2017, July 19, 2017 and September 19, 2017; and
- The description of our common stock contained in our Registration Statement on Form 8-A, filed with the SEC on September 13, 2013, including any amendments or reports filed for the purpose of updating such description.

A statement contained in a document incorporated by reference into this prospectus shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, any future prospectus supplement or in any other subsequently filed document that is also incorporated in this prospectus modifies or replaces such statement. Any statements so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. You should not assume that the information in this prospectus or in the documents incorporated by reference is accurate as of any date other than the date on the front of this prospectus or those documents.

You may request a copy of these documents, which will be provided to you at no cost, by contacting:

**Acceleron Pharma Inc.**
**128 Sidney Street**
**Cambridge, Massachusetts 02139**
**(617) 649-9200**

Copies of these filings are also available, without charge, through the "Investors/Media" section of our website (www.acceleronpharma.com) as soon as reasonably practicable after they are filed electronically with the SEC. The information contained on our website is not a part of this prospectus.

## LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Ropes & Gray LLP, Boston, Massachusetts. The validity of any securities will be passed upon for any underwriters or agents by counsel that we will name in the applicable prospectus supplement.

## EXPERTS

The consolidated financial statements of Acceleron Pharma Inc. appearing in Acceleron Pharma Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2016, and the effectiveness of Acceleron Pharma Inc.'s internal control over financial reporting as of December 31, 2016 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

***4,864,864 Shares***


## Acceleron Pharma Inc.

***Common stock***

# Prospectus supplement

**July 1, 2020**

*Joint Book-Running Managers*

| | | |
|---|---|---|
| **J.P. Morgan** | **SVB Leerink** | **Cowen** |
| **Barclays** | **Credit Suisse** | **Piper Sandler** |

*Lead Manager*

**H.C. Wainwright & Co.**