

The information contained in this preliminary prospectus supplement and the accompanying prospectus is not complete and may be changed. A registration statement relating to the securities has been declared effective by the Securities and Exchange Commission. This preliminary prospectus supplement and accompanying prospectus are not an offer to sell these securities and are not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED APRIL 27, 2021

PRELIMINARY PROSPECTUS SUPPLEMENT
(To Prospectus dated April 15, 2021)

\$125,000,000



Common Stock

We are offering \$125 million of shares of our common stock.

Our common stock is listed on The Nasdaq Capital Market under the symbol "ALDX." On April 27, 2021, the last reported sales price of our common stock on The Nasdaq Capital Market was \$14.85 per share.

Investing in our common stock involves a high degree of risk. Please see "[Risk Factors](#)" beginning on page S-9 of this prospectus supplement and in the related sections noted in the accompanying prospectus and in the other documents that are incorporated by reference herein and therein for more information.

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 supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

	<u>PER SHARE</u>	<u>TOTAL</u>
Public offering price	\$	\$
Underwriting discounts and commissions ⁽¹⁾	\$	\$
Proceeds to us, before expenses	\$	\$

(1) See "Underwriting" for description of compensation payable to the underwriters.

Delivery of the shares of common stock is expected to occur on or about _____, 2021. We have granted the underwriters an option for 30 days from the date of this prospectus supplement to purchase up to an additional _____ shares of our common stock. If the underwriters exercise the option in full, the total underwriting discounts and commissions payable by us will be \$ _____ and the total proceeds to us, before expenses, will be \$ _____.

Joint Book-Running Managers

Jefferies

SVB Leerink

Prospectus Supplement dated _____, 2021

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ABOUT THIS PROSPECTUS SUPPLEMENT

This document is in two parts. The first part is this prospectus supplement, which describes the terms of this offering of common stock and related matters. The second part is the accompanying prospectus, which gives more general information, some of which may not apply to this offering of common stock. To the extent the information contained in this prospectus supplement differs or varies from the information contained in the accompanying prospectus or any document incorporated by reference, the information in this prospectus supplement shall control.

All references in this prospectus supplement and the accompanying prospectus to “Aldeyra,” the “Company,” “we,” “us,” “our,” or similar references refer to Aldeyra Therapeutics, Inc. (and its wholly-owned subsidiaries), except where the context otherwise requires or as otherwise indicated.

You should rely only on the information contained or incorporated by reference in this prospectus supplement, the accompanying prospectus and any free-writing prospectus that we authorize to be distributed to you. We have not, and the underwriters have not, authorized anyone to provide you with different information. This prospectus supplement and the accompanying prospectus are not an offer to sell, nor are they seeking an offer to buy, these securities in any state where the offer or sale is not permitted. The information in this prospectus supplement, the accompanying prospectus, any document incorporated by reference herein or therein, and any free writing prospectus that we have authorized for use in connection with this offering, is complete and accurate as of the date the information is presented, but the information may have changed since that date.

“Aldeyra Therapeutics” and our design logo used in this prospectus supplement and the accompanying prospectus are our trademarks. This prospectus supplement and the accompanying prospectus may also include other trademarks, tradenames and service marks that are the property of their respective holders. Solely for convenience, trademarks and tradenames referred to in this prospectus supplement and the accompanying prospectus may appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable holder will not assert its rights, to these trademarks and tradenames.

No action is being taken in any jurisdiction outside the United States to permit a public offering of the securities or possession or distribution of this prospectus supplement, the accompanying prospectus, or any free writing prospectus provided in connection with this offering in that jurisdiction. Persons who come into possession of this prospectus supplement, the accompanying prospectus, or any free writing prospectus provided in connection with this offering in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus supplement, the accompanying prospectus, or any free writing prospectus provided in connection with this offering applicable to that jurisdiction.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference in these documents contain forward-looking statements. Words such as, but not limited to, “may,” “might,” “will,” “objective,” “intend,” “should,” “could,” “can,” “would,” “expect,” “believe,” “anticipate,” “project,” “on track,” “scheduled,” “target,” “design,” “estimate,” “predict,” “potential,” “aim,” and “plan,” or the negative of these terms and similar expressions or words, identify forward-looking statements. Forward-looking statements are based upon current expectations that involve risks, changes in circumstances, assumptions and uncertainties. Important factors that could cause actual results to differ materially from those reflected in our forward-looking statements include, among others:

- the timing of enrollment, commencement, and completion of our clinical trials;
- the timing and success of preclinical studies and clinical trials conducted by us and our development partners;
- delay in or failure to obtain regulatory approval of our product candidates, including as a result of the U.S. Food and Drug Administration (“FDA”) not accepting our regulatory filings or requiring additional clinical trials or data prior to review or approval of such filings;
- the ability to maintain regulatory approval of our product candidates, and the labeling for any approved products;
- the risk that prior results, such as signals of safety, activity or durability of effect, observed from preclinical or clinical trials, will not be replicated or will not continue in ongoing or future studies or trials involving our product candidates;
- the scope, progress, expansion, and costs of developing and commercializing our product candidates;
- the current and potential future impact of the COVID-19 pandemic on our business, results of operations and financial position;
- uncertainty as to our ability to commercialize (alone or with others) our product candidates following regulatory approval, if any;
- the size and growth of the potential markets and pricing for our product candidates and the ability to serve those markets;
- our expectations regarding our expenses and revenue, the sufficiency or use of our cash resources and needs for additional financing;
- the rate and degree of market acceptance of any of our product candidates;
- our expectations regarding competition;
- our anticipated growth strategies;
- our ability to attract or retain key personnel;
- our limited sales and marketing infrastructure;
- our ability to establish and maintain development partnerships;
- our ability to successfully integrate acquisitions into our business;
- our expectations regarding federal, state and foreign regulatory requirements;
- political, economic, legal, social and health risks, including the recent COVID-19 pandemic and subsequent public health measures, that may affect our business or the global economy;
- regulatory developments in the United States and foreign countries;

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- our ability to obtain and maintain intellectual property protection for our product candidates; and
- the anticipated trends and challenges in our business and the market in which we operate.

All written and verbal forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We caution investors not to rely on the forward-looking statements we make or that are made on our behalf as predictions of future events. We undertake no obligation, and specifically decline any obligation, to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein include statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe these industry publications and third-party research, surveys and studies are reliable, we have not independently verified such data.

In addition, you should refer to the sections of this prospectus supplement and the accompanying prospectus entitled “Risk Factors” as well as the documents we have incorporated by reference for a discussion of other important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this prospectus supplement will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all.

PROSPECTUS SUPPLEMENT SUMMARY

The following summary is qualified in its entirety by, and should be read together with, the more detailed information and financial statements and related notes thereto appearing elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus. Before you decide to invest in our common stock, you should read the entire prospectus supplement and the accompanying prospectus carefully, including the risk factors and the financial statements and related notes incorporated by reference in this prospectus supplement and the accompanying prospectus.

Company Overview

Aldeyra is a biotechnology company devoted to developing and commercializing next-generation medicines to improve the lives of patients with immune-mediated diseases. Our lead product candidate, reproxalap, is a first-in-class treatment in late-stage development for dry eye disease (“DED”) and allergic conjunctivitis (“AC”). We have additional product candidates in development for proliferative vitreoretinopathy (“PVR”), primary vitreoretinal lymphoma (“PVRL”), and other retinal diseases, autoimmune disease, and cancer. We currently intend to commercialize our products directly or through collaborations. None of our product candidates have been approved for sale in the United States or elsewhere.

Our lead product candidate, reproxalap, is a RASP (reactive aldehyde species) inhibitor that has demonstrated statistically significant and clinically relevant improvements across an aggregate of seven Phase 2 clinical trials in DED and AC, two Phase 3 clinical trials in AC, and Part 1 of a Phase 3 clinical trial in DED, when administered topically to the eye as an ophthalmic solution. Administered to the skin as a topical dermatologic formulation in a Phase 2 clinical trial and in Part 1 of a Phase 3 clinical trial, reproxalap demonstrated statistically significant and clinically relevant improvements in ichthyosis (a severe skin disorder) caused by Sjögren-Larsson Syndrome (“SLS”), a rare RASP-mediated disease with no approved therapy. Additionally, in a Phase 1 clinical trial, ADX-629, a first-in-class orally available RASP inhibitor, was well-tolerated and no treatment-related adverse events were observed. Relative to subjects treated with placebo, reduction in the commonly described pro-inflammatory RASP malondialdehyde was observed in ADX-629 treated subjects. A growing body of clinical evidence supports the potential and relevance of RASP inhibition as a new and differentiated mechanism of action. We have discovered and are developing one additional RASP inhibitor, ADX-103, for the treatment of retinal disease.

In April 2021, we announced positive top-line results from the Phase 3 INVIGORATE Clinical Trial of 0.25% reproxalap ophthalmic solution (reproxalap) in patients with AC. The clinical trial successfully achieved the primary endpoint and all three secondary endpoints. The randomized, double-masked, vehicle-controlled, two-way crossover design allergen chamber Phase 3 INVIGORATE Trial enrolled 95 allergic conjunctivitis patients. The primary efficacy endpoint was change from baseline in subject-reported ocular itching score on a 0-4 point scale over a majority of 11 timepoints from 110 to 210 minutes after allergen chamber entry. The key secondary endpoint was change from baseline in ocular redness on a 0-4 point scale over the duration of the allergen chamber (approximately 3.5 hours). Relative to patients treated with vehicle, patients treated with reproxalap reported statistically significant ocular itching score reduction over all 11 pre-specified primary endpoint comparisons ($p < 0.0001$ for each comparison) from 110 to 210 minutes in the allergen chamber. The reproxalap-treated patients demonstrated statistically significant reduction from baseline compared to vehicle ($p < 0.0001$) for the key secondary endpoint of investigator-assessed conjunctival redness over the duration of the allergen chamber. Statistical significance was also achieved for the two secondary endpoints of change from baseline in patient-reported ocular tearing score on a 0-3 point scale over the duration of the allergen chamber ($p < 0.0001$) and change from baseline in total ocular severity score (11-point composite of the itching, redness, and tearing scores) over the duration of the allergen chamber ($p < 0.0001$). We plan to meet with the FDA in the second half of 2021 to discuss the INVIGORATE results and the potential submission of a New Drug Application to the FDA.

In February 2021, we announced the finalization of the design of the multi-center, randomized, double-masked, parallel-group, vehicle-controlled Phase 3 TRANQUILITY Trial of 0.25% reproxalap ophthalmic solution for the treatment of dry eye disease. Approximately 150 dry eye disease patients are expected to be enrolled per arm. The primary endpoint is ocular redness over 90 minutes in a dry eye chamber. Tear RASP levels, Schirmer's Test, and dry eye disease symptoms will be secondary endpoints. The protocol will utilize the two-day dosing paradigm, dry eye challenge design, and enrollment criteria of the run-in cohort. Results from the run-in cohort, announced in January 2021, demonstrated statistically significant reductions from vehicle in patient-reported ocular dryness scores and investigator-assessed ocular redness in the dry eye chamber. The primary endpoint of the Phase 3 TRANQUILITY and TRANQUILITY-2 trials is ocular redness over the duration of the chamber. Results from the TRANQUILITY trials in dry eye disease are expected in the second half of 2021.

As we continue to execute on our strategy of expanding our product candidate pipeline, we may license or acquire new immune-modulating approaches with novel therapeutic potential. In January 2019, we acquired Helio Vision, Inc. ("Helio") and thereby obtained rights to ADX-2191, an intravitreal DHFR inhibitor (methotrexate) for the prevention of PVR, a serious sight-threatening retinal disease with no approved treatment. In addition, in December 2016, we in-licensed ADX-1612, which inhibits the protein chaperome, a mechanistically differentiated approach for the potential treatment of a number of inflammatory diseases. In the future, we may enter into additional partnerships that facilitate the development and commercialization of our product candidates.

All of our development timelines may be subject to adjustment depending on recruitment rate, regulatory review, preclinical and clinical results, funding, and other factors that could delay the initiation, completion, or reporting of clinical trials.

We have no products approved for sale. We will not receive any revenue from any product candidates that we develop until we obtain regulatory approval and commercialize such products or until we potentially enter into agreements with third parties for the development and commercialization of product candidates. In addition, it may be difficult or not possible to obtain from the FDA orphan drug designation or a designation that facilitates and expedites development and review of certain new drugs, including breakthrough therapy designation, fast track designation or any other expedited status that we may apply for in the future, for reproxalap or our other product candidates, and if we are unable to obtain such designations, our regulatory and commercial prospects may be negatively impacted. If our development efforts for any of our product candidates result in regulatory approval or we enter into collaboration agreements with third parties, we may generate revenue from product sales or from such third parties. We have primarily funded our operations through the sale of our convertible preferred stock, common stock, convertible promissory notes, warrants and borrowings under our loan and security agreements. We will need to raise additional capital in the form of debt or equity or through partnerships to fund additional development of reproxalap and other product candidates, and we may in-license, acquire, or invest in complementary businesses or products. However, the disruption in the capital markets caused by the COVID-19 pandemic could make any financing more challenging, and there can be no assurance that we will be able to raise capital on commercially reasonable terms or at all. In addition, contingent on capital resources, we may augment, diminish or otherwise modify our clinical development plans.

Since our incorporation, we have devoted substantially all of our resources to the preclinical and clinical development of our product candidates. Our ability to generate revenues largely depends upon our ability, alone or with others, to complete the development of our product candidates to obtain the regulatory approvals for and to manufacture, market and sell our products and product candidates. The results of our operations will vary significantly from year-to-year and quarter-to-quarter and depend on a number of factors, including risks related to our business and industry, risks relating to intellectual property and other legal matters, risks related to our common stock, and other risks that are detailed in, or incorporated by reference into, the section of this prospectus supplement entitled "Risk Factors."

Recent Developments

Preliminary unaudited cash and cash equivalents as of March 31, 2021

On a preliminary unaudited basis, we expect our cash and cash equivalents as of March 31, 2021 to be approximately \$138.4 million. This estimate of cash and cash equivalents is our preliminary estimate based on currently available information and does not present all necessary information for an understanding of our financial condition as of March 31, 2021 or our results of operations for the three months ended March 31, 2021. This preliminary estimate has been prepared by and is the responsibility of our management. Our independent registered public accounting firm has not conducted an audit or review with respect to this preliminary estimate or the accounting treatment thereof and does not express an opinion or any other form of assurance with respect thereto. We expect to complete our financial statements for the three months ended March 31, 2021 subsequent to the completion of this offering. It is possible that we or our independent registered public accounting firm may identify items that require us to make adjustments to the preliminary estimated cash and cash equivalents balance set forth above and those changes could be material. Accordingly, you should not place undue reliance on this preliminary estimate. The preliminary estimate is not necessarily indicative of any future period and should be read together with the sections titled “Risk Factors” and “Special Note Regarding Forward-Looking Statements.”

Our Corporate Information

We were incorporated in the state of Delaware on August 13, 2004 as Neuron Systems, Inc. On December 20, 2012, we changed our name to Aldexa Therapeutics, Inc. and, on March 17, 2014, we changed our name to Aldeyra Therapeutics, Inc. Our principal executive offices are located at 131 Hartwell Avenue, Suite 320, Lexington, Massachusetts 02421. Our telephone number is (781) 761-4904. Our website address is www.aldeyra.com. Information contained on our website is not incorporated by reference into this prospectus supplement, and you should not consider information contained on our website to be part of this prospectus supplement or in deciding whether to purchase shares of our common stock. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), are available free of charge on the Investors portion of our website at <http://ir.aldeyra.com/> as soon as reasonably practicable after we electronically file such material with, or furnish it to, the U.S. Securities and Exchange Commission (the “SEC”).

THE OFFERING

Common stock to be offered by us	shares.
Common stock to be outstanding immediately following this offering	shares (or additional shares in full) shares if the underwriters exercise their option to purchase additional shares in full).
Option to purchase additional shares from us	We have granted the underwriters an option for 30 days from the date of this prospectus supplement to purchase up to an additional shares of our common stock from us.
Use of Proceeds	We expect to use the net proceeds from this offering, principally to fund the preparation of a potential NDA submission for reproxalap; the preparations for the commercial launch of reproxalap and the subsequent commercialization of reproxalap, if approved; early stage pipeline development programs; and working capital and other general corporate purposes, including the potential licensing or acquisition of complementary products or technologies. We may also use a portion of the net proceeds to acquire or invest in businesses, products or technologies that we believe are complementary to our own. See “Use of Proceeds.”
Risk Factors	Investing in our common stock involves a high degree of risk. See “Risk Factors” for a discussion of factors you should carefully consider before deciding to invest in shares of our common stock.
Nasdaq Capital Market symbol	“ALDX”

The number of shares of common stock that will be outstanding after this offering as shown above is based on 38,820,347 shares of common stock outstanding as of December 31, 2020 and excludes the following:

- 7,868,421 shares of our common stock issued to investors in an underwritten public offering completed in January 2021;
- 4,608,311 shares of common stock issuable upon exercise of stock options outstanding at a weighted average exercise price of approximately \$5.73 per share as of December 31, 2020, plus an additional 729,883 shares of common stock issuable upon exercise of stock options outstanding granted subsequent to December 31, 2020 at a weighted average exercise price of approximately \$11.73 per share;
- 927,189 shares of common stock issuable upon the vesting and settlement of outstanding restricted stock units as of December 31, 2020, plus an additional 46,619 shares of common stock issuable upon the vesting and settlement of outstanding restricted stock units awarded subsequent to December 31, 2020;
- 1,224,865 shares of common stock reserved for future grants under our 2013 Equity Incentive Plan as of December 31, 2020, plus 2,329,221 shares of common stock automatically added to the plan on January 1, 2021, less the shares of common stock underlying options and restricted stock units granted subsequent to December 31, 2020 and set forth above; and
- 857,446 shares reserved for future issuance under our 2016 Employee Stock Purchase Plan, plus 388,203 shares of common stock automatically added to the plan on January 1, 2021.

Unless otherwise indicated, all information in this prospectus assumes:

- that the underwriters do not exercise their option to purchase up to additional shares of our common stock; and
- no exercise of the outstanding options, or settlement of outstanding restricted stock units, described above.

RISK FACTORS

An investment in our common stock involves a high degree of risk. You should carefully consider the risks described under “Risk Factors” in our most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q, and all of the other information contained in this prospectus supplement and the accompanying prospectus, and incorporated by reference into this prospectus supplement and the accompanying prospectus, including our financial statements and related notes, before investing in our common stock. If any of the possible events described below or in those sections actually occur, our business, business prospects, cash flow, results of operations or financial condition could be harmed, the trading price of our common stock could decline, and you might lose all or part of your investment in our common stock. In addition, the impacts of COVID-19 and any worsening of the economic environment may exacerbate the risks described below and in those sections, any of which could have a material impact on us. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our operations and results.

Risks Related to This Offering and Our Common Stock

The trading price of the shares of our common stock has been and is likely to continue to be highly volatile, and purchasers of our common stock could incur substantial losses.

Our stock price has been and will likely continue to be volatile for the foreseeable future. The stock market in general and the market for biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, investors may not be able to sell their common stock at or above the price they paid. The market price for our common stock may be influenced by many factors, including:

- results of clinical trials, and the results of trials of our competitors or those of other companies in our market sector;
- the expectations of investors or securities analysts regarding our business and clinical development program, including interim or final top-line results that we may announce;
- regulatory developments in the United States and foreign countries;
- our ability to enroll patients in our clinical trials;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in the structure of healthcare payment systems, especially in light of current reforms to the United States healthcare system;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, or capital commitments;
- market conditions in the pharmaceutical and biotechnology sectors and issuance of securities analysts’ reports or recommendations;
- sales of our stock by insiders and 5% stockholders;
- trading volume of our common stock;
- general economic, industry, and market conditions other events or factors, many of which are beyond our control;
- additions or departures of key personnel; and
- intellectual property, product liability, or other litigation against us.

In addition, in the past, stockholders have initiated class action lawsuits against biotechnology and pharmaceutical companies following periods of volatility in the market prices of these companies’ stock. Such

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litigation, if instituted against us, could cause us to incur substantial costs and divert management's attention and resources, which could have a material adverse effect on our business, financial condition, and results of operations.

If you purchase shares of common stock in this offering, you will experience immediate and substantial dilution.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Based on _____ shares of our common stock being sold at the public offering price of \$ _____ per share, for aggregate gross proceeds of approximately \$ _____ million, and after deducting underwriting discounts and commissions and estimated aggregate offering expenses payable by us, you will experience immediate dilution of \$ _____ per share, representing the difference between our as adjusted net tangible book value per share as of December 31, 2020 after giving effect to this offering and the public offering price. In addition, we are not restricted from issuing additional securities in the future, including shares of common stock, securities that are convertible into or exchangeable for, or that represent the right to receive, common stock or substantially similar securities. The issuance of these securities may cause further dilution to our stockholders. The exercise of outstanding stock options and the vesting of outstanding restricted stock units may also result in further dilution of your investment. See "Dilution" on page S-14 below for a more detailed illustration of the dilution you may incur if you participate in this offering.

We may allocate our cash resources, including the proceeds from this offering, in ways that you and other stockholders may not approve.

Our management has broad discretion in the application of our cash and cash equivalents, including the proceeds from this offering. Because of the number and variability of factors that will determine our use of our cash resources, their ultimate use may vary substantially from their currently intended use. Our management might not apply our cash resources in ways that ultimately increase the value of your investment. We intend to use the net proceeds from this offering principally to fund the preparation of a potential NDA submission for reproxalap; the preparations for the commercial launch of reproxalap and the subsequent commercialization of reproxalap, if approved; early stage pipeline development programs; and working capital and other general corporate purposes, including the potential licensing or acquisition of complementary products or technologies. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest our cash resources in short-term, investment-grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders. If we do not invest or apply our cash resources, including the proceeds from this offering, in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

We do not intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We have never declared or paid any cash dividend on our common stock and do not currently intend to do so for the foreseeable future. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. In addition, our loan and security agreement with Hercules Capital, Inc. currently prohibits us from paying dividends on our equity securities, and any future debt financing arrangements may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. Any return to stockholders will therefore be limited to the appreciation of their stock. Therefore, the success of an investment in shares of our common stock will depend upon any future appreciation in the value of our common stock. There is no guarantee that shares of our common stock will appreciate in value or even maintain the price at which our stockholders have purchased their shares.

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A substantial number of shares of our common stock could be sold into the public market in the near future, which could depress our stock price.

Sales of substantial amounts of our common stock in the public market could reduce the prevailing market prices for our common stock. Substantially all of our outstanding common stock are eligible for sale as are common stock issuable under vested and exercisable stock options. If our existing stockholders sell a large number of shares of our common stock, or the public market perceives that existing stockholders might sell shares of common stock, the market price of our common stock could decline significantly. Sales by existing stockholders might also make it more difficult for us to sell additional equity securities at a time and price that we deem appropriate.

USE OF PROCEEDS

We estimate that the net proceeds from the public sale of _____ shares of our common stock in this offering will be approximately \$ _____ million, or approximately \$ _____ million if the underwriters exercise in full their option to purchase additional shares of common stock, based on the public offering price of \$ _____ per share, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

As of March 31, 2021, we had cash and cash equivalents of \$138.4 million. We intend to use the net proceeds from this offering principally to fund the preparation of a potential NDA submission for reproxalap; the preparations for the commercial launch of reproxalap and the subsequent commercialization of reproxalap, if approved; early stage pipeline development programs; and working capital and other general corporate purposes, including the potential licensing or acquisition of complementary products or technologies. This expected use of 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. We may also use a portion of the net proceeds to acquire or invest in businesses, products or technologies that we believe are complementary to our own, although we are not currently planning or negotiating any such transactions. We have not yet determined the amount of net proceeds to be used specifically for any of the foregoing purposes. Accordingly, our management will have significant discretion and flexibility in applying the net proceeds from the sale of these securities. Pending any use, as described above, we intend to invest the net proceeds in high-quality, short-term, interest-bearing securities.

We believe, based on our current operating plan and expected expenditures, that our existing cash and cash equivalents, together with the proceeds from this offering, will be sufficient to meet our anticipated cash and capital expenditure requirements through the end of 2023. The amounts we actually expend may vary significantly from our current operating plan and will depend upon a number of factors, including success of our product candidate development and any potential commercialization efforts. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect. Additionally, as the impact of the COVID-19 pandemic on the economy and our operations evolves, we will continue to assess our liquidity needs. Given the economic uncertainty as a result of the pandemic, we have taken actions to improve our current liquidity position, including reducing working capital, reducing operating expenses and substantially reducing discretionary spending. Should we need to secure additional sources of liquidity, we believe that we could finance our needs through the issuance of equity securities or debt offerings. However, we cannot guarantee that we will be able to obtain financing through the issuance of equity securities or debt offerings on reasonable terms or at all in the future. The COVID-19 pandemic has negatively impacted the global economy, created significant volatility and disrupted financial markets. An extended period of economic disruption could materially affect our business, results of operations, access to sources of liquidity and financial condition.

DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings for use in the operation of our business and do not anticipate paying any cash dividends in the foreseeable future. Any future determination to declare cash dividends will be made at the discretion of our board of directors, subject to compliance with certain covenants under our credit facilities, which restrict or limit our ability to declare or pay dividends, and will depend on our financial condition, results of operations, capital requirements, general business conditions and other factors that our board of directors may deem relevant. Our loan and security agreement with Hercules Capital, Inc. currently prohibits us from paying dividends on our equity securities, and any future debt financing arrangements may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock.

DILUTION

If you purchase our common stock in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share of common stock and the pro forma net tangible book value per share of our common stock after this offering. Net tangible book value per share is determined by dividing the number of outstanding shares of our common stock into our total tangible assets (total assets less intangible assets) less total liabilities. As of December 31, 2020, we had a net tangible book value of our common stock of \$59.5 million, or approximately \$1.54 per share.

Pro forma net tangible book value per share represents the amount of our total tangible assets as adjusted to take into account net cash proceeds of approximately \$70.0 million from our follow-on underwritten public offering of 7,868,421 shares of our common stock for the public offering price of \$9.50, which offering closed on January 2021. After giving effect to this transaction, our pro forma net tangible book value per share as of December 31, 2020 would have been approximately \$2.78 per share.

Investors participating in this offering will incur immediate, substantial dilution. After giving further effect to the sale of shares of common stock in this offering at the public offering price of \$ per share, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of December 31, 2020 would have been approximately \$ million, or approximately \$ per share of common stock. This represents an immediate increase in net tangible book value of approximately \$ per share to existing stockholders, and immediate dilution of approximately \$ per share to investors participating in this offering.

The following table illustrates this per share dilution:

Public offering price per share	\$
Historical net tangible book value per share as of December 31, 2020	\$1.54
Increase in net tangible book value per share attributable to our January 2021 public offering	<u>1.24</u>
Pro forma net tangible book value per share as of December 31, 2020	\$2.78
Increase in net tangible book value per share attributable to new investors in this offering	<u> </u>
Pro forma as adjusted net tangible book value per share after this offering	<u> </u>
Dilution per share to investors participating in this offering	<u> </u> \$

If the underwriters exercise in full their option to purchase additional shares of common stock at the public offering price of \$ per share, our pro forma as adjusted net tangible book value as of December 31, 2020 would have been approximately \$ per share, representing an immediate increase in net tangible book value of approximately \$ per share to existing stockholders, and immediate dilution of approximately \$ per share to investors purchasing our common stock in this offering.

The above discussion and tables also exclude:

- 152,856 shares of common stock that are issued and outstanding but that were subject to a right of repurchase by the Company at December 31, 2020 and are not included in stockholders' equity pursuant to U.S. generally accepted accounting principles;
- 4,608,311 shares of common stock issuable upon exercise of stock options outstanding at a weighted average exercise price of approximately \$5.73 per share as of December 31, 2020, plus an additional 729,883 shares of common stock issuable upon exercise of stock options outstanding granted subsequent to December 31, 2020 at a weighted average exercise price of approximately \$11.73 per share;

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- 927,189 shares of common stock issuable upon the vesting and settlement of outstanding restricted stock units, plus an additional 46,619 shares of common stock issuable upon the vesting and settlement of outstanding restricted stock units awarded subsequent to December 31, 2020;
- 1,224,865 shares of common stock reserved for future grants under our 2013 Equity Incentive Plan as of December 31, 2020, plus 2,329,221 shares of common stock automatically added to the plan on January 1, 2021, less the shares of common stock underlying options and restricted stock units granted subsequent to December 31, 2020 and set forth above; and
- 857,446 shares reserved for future issuance under our 2016 Employee Stock Purchase Plan, plus 388,203 shares of common stock automatically added to the plan on January 1, 2021.

To the extent that any of these options are exercised, restricted stock units are settled, new options or restricted stock units are issued under our equity incentive plans and subsequently exercised or settled or we issue additional shares of common stock or securities that are convertible into or exchangeable for, or that represent the right to receive, common stock or substantially similar securities in the future, there will be further dilution to investors participating in this offering.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS

The following summary describes the material U.S. federal income and estate tax consequences of the acquisition, ownership and disposition of our common stock acquired in this offering by Non-U.S. Holders (as defined below). This discussion does not address all aspects of U.S. federal income and estate taxes and does not deal with foreign, state and local tax consequences that may be relevant to Non-U.S. Holders in light of their particular circumstances, nor does it address U.S. federal tax consequences other than income and estate taxes (such as the alternative minimum tax, the Medicare contribution tax on net investment income or the special accounting rules under Section 451(b) of the Code). Special rules different from those described below may apply to certain Non-U.S. Holders that are subject to special treatment under the Internal Revenue Code of 1986, as amended (the “Code”), such as banks, financial institutions, insurance companies, tax-exempt organizations, governmental organizations, brokers, dealers or traders in securities, certain former citizens or long-term residents of the United States, “controlled foreign corporations,” “passive foreign investment companies,” corporations that accumulate earnings to avoid U.S. federal income tax, persons that hold our common stock as part of a “straddle,” “hedge,” “conversion transaction,” “synthetic security” or integrated investment or other risk reduction strategy, persons deemed to sell our common stock under the constructive sale provisions of the Code, persons for whom our common stock constitutes “qualified small business stock” within the meaning of Section 1202 of the Code, persons who received our common stock pursuant to the exercise of an employee stock option or other compensatory transaction, tax-qualified retirement plans, qualified foreign pension funds as defined in Section 897(l)(2) of the Code, and partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein). Such Non-U.S. Holders are urged to consult their own tax advisors to determine the U.S. federal, state, local and other tax consequences that may be relevant to them. Furthermore, the discussion below is based upon the provisions of the Code, and Treasury regulations, rulings and judicial decisions thereunder as of the date hereof, and such authorities may be repealed, revoked or modified, perhaps retroactively, so as to result in U.S. federal income and estate tax consequences different from those discussed below. We have not requested a ruling from the U.S. Internal Revenue Service (the “IRS”), with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with such statements and conclusions. This discussion assumes that the Non-U.S. Holder holds our common stock as a “capital asset” within the meaning of Section 1221 of the Code (generally, property held for investment).

Persons considering the purchase of our common stock pursuant to this offering should consult their own tax advisors concerning the U.S. federal income and estate tax consequences of acquiring, owning and disposing of our common stock in light of their particular situations as well as any consequences arising under the laws of any other taxing jurisdiction, including any state, local or foreign tax consequences.

For the purposes of this discussion, a “Non-U.S. Holder” is, for U.S. federal income tax purposes, a beneficial owner of common stock that is neither a U.S. Holder, a partnership (or other entity or arrangement treated as a partnership for U.S. federal income tax purposes regardless of its place of organization or formation), nor an entity that is treated as a disregarded entity for U.S. federal income tax purposes (regardless of its place of organization or formation). A “U.S. Holder” means a beneficial owner of our common stock that is for U.S. federal income tax purposes (a) an individual who is a citizen or resident of the United States, (b) a corporation or other entity treated as a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia, (c) an estate the income of which is subject to U.S. federal income taxation regardless of its source or (d) a trust if it (1) is subject to the primary supervision of a court within the United States and one or more U.S. persons have the authority to control all substantial decisions of the trust or (2) has a valid election in effect under applicable U.S. Treasury regulations to be treated as a U.S. person.

If an entity or arrangement 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 such partner and the activities of the partnership. Partnerships and other entities or arrangements that are classified as partnerships for U.S. federal income tax purposes and persons holding our common stock through such partnerships are encouraged to consult with their own tax advisors regarding the possible implications of these rules.

Distributions

As indicated in the “Dividend Policy” section of this prospectus, we have never declared or paid dividends on our common stock and we currently intend to retain all available funds and any future earnings for use in the operation of our business and do not anticipate declaring or paying any dividends in the foreseeable future.

In the event that we do make a distribution, subject to the discussion below, distributions made on our common stock to a Non-U.S. Holder to the extent made out of our current or accumulated earnings and profits (as determined under U.S. federal income tax principles) generally will constitute dividends for U.S. tax purposes and will be subject to withholding tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. To obtain a reduced rate of withholding under a tax treaty, a Non-U.S. Holder generally must provide us with a properly executed applicable IRS Form W-8, or other appropriate form, certifying the Non-U.S. Holder’s entitlement to benefits under that treaty. In the case of a Non-U.S. Holder that is an entity, Treasury Regulations and the relevant tax treaty provide rules to determine whether, for purposes of determining the applicability of a tax treaty, dividends will be treated as paid to the entity or to those persons holding an interest in that entity. If a Non-U.S. Holder holds stock through a financial institution or other agent acting on the holder’s behalf, the holder will be required to provide appropriate documentation to such agent. The holder’s agent will then be required to provide certification to us or our paying agent, either directly or through other intermediaries. If a Non-U.S. Holder is eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty, such Non-U.S. Holder may be able to obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS.

We generally are not required to withhold tax on dividends paid to a Non-U.S. Holder that are effectively connected with the Non-U.S. Holder’s conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, are attributable to a permanent establishment that such holder maintains in the United States) if a properly executed IRS Form W-8ECI, stating that the dividends are so connected, is furnished to us (or, if stock is held through a financial institution or other agent, to such agent). In general, such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular rates applicable to U.S. persons. A corporate Non-U.S. Holder receiving effectively connected dividends may also be subject to an additional “branch profits tax,” which is imposed, under certain circumstances, at a rate of 30% (or such lower rate as may be specified by an applicable treaty) on the corporate Non-U.S. Holder’s effectively connected earnings and profits, subject to certain adjustments.

To the extent distributions on our common stock, if any, exceed our current and accumulated earnings and profits, they will first reduce a Non-U.S. Holder’s adjusted basis in our common stock, but not below zero, and then will be treated as gain to the extent of any excess, and taxed in the same manner as gain realized from a sale or other disposition of common stock as described in the next section.

Gain on Disposition of Our Common Stock

Subject to the discussion below regarding backup withholding and foreign accounts, a Non-U.S. Holder generally will not be subject to U.S. federal income tax with respect to gain realized on a sale or other disposition of our common stock unless (a) the gain is effectively connected with a trade or business of such holder in the United States (and, if required by an applicable income tax treaty, is attributable to a permanent establishment that such holder maintains in the United States), (b) the Non-U.S. Holder is a nonresident alien individual and is present in the United States for 183 or more days in the taxable year of the disposition and certain other conditions are met, or (c) we are or have been a “United States real property holding corporation” within the meaning of Code Section 897(c)(2) at any time within the shorter of the five-year period preceding such disposition or such holder’s holding period. In general, we would be a United States real property holding corporation if interests in U.S. real property comprised (by fair market value) at least half of our worldwide real property interests and our other assets used or held for use in a trade or business. We believe that we are not, and do not anticipate becoming, a United States real property holding corporation. If we are a United States real

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property holding corporation and our common stock is not regularly traded on an established securities market, a Non-U.S. Holder's proceeds received on the disposition of shares will also generally be subject to withholding at a rate of 15%. Prospective investors are encouraged to consult their own tax advisors regarding the possible consequences to them if we are, or were to become, a United States real property holding corporation.

A Non-U.S. Holder described in (a) above, will generally be required to pay tax on the net gain derived from the sale at regular U.S. federal income tax rates applicable to U.S. persons, and corporate Non-U.S. Holders described in (a) above may be subject to the additional branch profits tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty. An individual Non-U.S. Holder described in (b) above, will be required to pay a flat 30% tax on the gain derived from the sale or such lower rate as may be specified by an applicable income tax treaty, which gain may be offset by U.S. source capital losses (even though the individual is not considered a resident of the United States).

Information Reporting Requirements and Backup Withholding

Generally, we must report information to the IRS with respect to any dividends we pay on our common stock including the amount of any such dividends, the name and address of the recipient, and the amount, if any, of tax withheld. A similar report is sent to the holder to whom any such dividends are paid. Pursuant to tax treaties or certain other agreements, the IRS may make its reports available to tax authorities in the recipient's country of residence.

Dividends paid by us (or our paying agents) to a Non-U.S. Holder may also be subject to U.S. backup withholding. U.S. backup withholding generally will not apply to a Non-U.S. Holder who provides a properly executed applicable IRS Form W-8 (and the applicable withholding agent does not have actual knowledge or reason to know that such holder is a U.S. person) or otherwise establishes an exemption.

Under current U.S. federal income tax law, U.S. information reporting and backup withholding requirements generally will apply to the proceeds of a disposition of our common stock effected by or through a U.S. office of any broker, U.S. or foreign, unless the holder provides a properly executed applicable IRS Form W-8 or otherwise meets documentary evidence requirements for establishing Non-U.S. Holder status (and the withholding agent does not have actual knowledge or reason to know that such holder is a U.S. person) or otherwise establishes an exemption. Generally, U.S. information reporting and backup withholding requirements 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 non-U.S. broker. Information reporting and backup withholding requirements may, however, apply to a payment of disposition proceeds if the broker has actual knowledge, or reason to know, that the holder is, in fact, a U.S. person. For information reporting purposes, certain brokers with substantial U.S. ownership or operations will generally be treated in a manner similar to U.S. brokers.

Backup withholding is not an additional tax. Any amounts of tax withheld under the backup withholding rules may be allowed as a refund or credits against the tax liability of persons subject to backup withholding (currently at a rate of 24%), provided that the required information is timely furnished to the IRS.

Additional Withholding and Reporting Requirements on Foreign Accounts

Under Section 1471 through Section 1474 of the Code (commonly referred to as the Foreign Account Tax Compliance Act ("FATCA")), a U.S. federal withholding tax of 30% may apply to dividends and (subject to the proposed Treasury Regulations described below) the gross proceeds of a disposition of our common stock paid to a foreign financial institution (as specifically defined by applicable rules) unless such institution enters into an agreement with the U.S. government to withhold on certain payments and to collect and provide to the U.S. tax authorities substantial information regarding U.S. account holders of such institution (which includes certain equity holders of such institution, as well as certain account holders that are foreign entities with U.S. owners).

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This U.S. federal withholding tax of 30% will also apply to dividends and (subject to the proposed Treasury Regulations described below) the gross proceeds of a disposition of our common stock to a non-financial foreign entity unless such entity provides the withholding agent with either a certification that it does not have any substantial direct or indirect U.S. owners or provides information regarding substantial direct and indirect U.S. owners of the entity. The withholding tax under FATCA will not apply if the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from the rules. An intergovernmental agreement between the United States and an applicable foreign country may modify these requirements. Under certain circumstances, a Non-U.S. Holder might be eligible for refunds or credits of such taxes.

The abovementioned rules currently apply to dividend payments on our common stock. Withholding under FATCA also would have applied to payments of gross proceeds from the disposition of our common stock, but proposed Treasury Regulations (upon which taxpayers are entitled to rely until final Treasury Regulations are issued) eliminate FATCA withholding on payments of gross proceeds. Prospective investors should consult their own tax advisors regarding the possible impact of the FATCA rules on their investment in our common stock, and the possible impact of the FATCA rules on the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of this 30% withholding tax.

U.S. Federal Estate Tax

An individual Non-U.S. Holder who is treated as the owner of, or has made certain lifetime transfers of, an interest in our common stock will be required to include the value thereof in his or her gross estate for U.S. federal estate tax purposes, and may be subject to U.S. federal estate tax unless an applicable estate tax treaty provides otherwise, even though such individual was not a citizen or resident of the United States at the time of his or her death.

EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS OWN TAX ADVISOR REGARDING THE TAX CONSEQUENCES OF PURCHASING, HOLDING AND DISPOSING OF OUR COMMON STOCK, INCLUDING THE CONSEQUENCES OF ANY PROPOSED CHANGE IN APPLICABLE LAW.

UNDERWRITING

Subject to the terms and conditions set forth in the underwriting agreement, dated _____, 2021, among us and Jefferies LLC and SVB Leerink LLC, as representatives of the underwriters named below and joint book-running managers of this offering, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the respective number of shares of common stock shown opposite its name below:

<u>Underwriter</u>	<u>Number of Shares</u>
Jefferies LLC	
SVB Leerink LLC	
Total	

The underwriting agreement provides that the obligations of the several underwriters are subject to certain conditions precedent such as the receipt by the underwriters of officers' certificates and legal opinions and approval of certain legal matters by their counsel. The underwriting agreement provides that the underwriters will purchase all of the shares of common stock if any of them are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the nondefaulting underwriters may be increased or the underwriting agreement may be terminated. We have agreed to indemnify the underwriters and certain of their controlling persons against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the underwriters may be required to make in respect of those liabilities.

The underwriters have advised us that, following the completion of this offering, they currently intend to make a market in the common stock as permitted by applicable laws and regulations. However, the underwriters are not obligated to do so, and the underwriters may discontinue any market-making activities at any time without notice in their sole discretion. Accordingly, no assurance can be given as to the liquidity of the trading market for the common stock, that you will be able to sell any of the common stock held by you at a particular time or that the prices that you receive when you sell will be favorable.

The underwriters are offering the shares of common stock subject to their acceptance of the shares of common stock from us and subject to prior sale. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commission and Expenses

The underwriters have advised us that they propose to offer the shares of common stock to the public at the initial public offering price set forth on the cover page of this prospectus and to certain dealers, which may include the underwriters, at that price less a concession not in excess of \$ _____ per share of common stock. After the offering, the initial public offering price concession to dealers may be reduced by the representatives. No such reduction will change the amount of proceeds to be received by us as set forth on the cover page of this prospectus.

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The following table shows the public offering price, the underwriting discounts and commissions that we are to pay the underwriters and the proceeds, before expenses, to us in connection with this offering. Such amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase additional shares.

	Per Share		Total	
	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares	Without Option to Purchase Additional Shares	With Option to Purchase Additional Shares
Public offering price	\$	\$	\$	\$
Underwriting discounts and commissions paid by us	\$	\$	\$	\$
Proceeds to us, before expenses	\$	\$	\$	\$

We estimate expenses payable by us in connection with this offering, other than the underwriting discounts and commissions referred to above, will be approximately \$. We have agreed to reimburse the underwriters for certain expenses related to Financial Industry Regulatory Authority, Inc. matters in an amount up to \$.

Listing

Our common stock is listed on The Nasdaq Capital Market under the trading symbol "ALDX."

Stamp Taxes

If you purchase shares of common stock offered in this prospectus, you may be required to pay stamp taxes and other charges under the laws and practices of the country of purchase, in addition to the offering price listed on the cover page of this prospectus.

Option to Purchase Additional Shares

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase, from time to time, in whole or in part, up to an aggregate of shares from us at the public offering price set forth on the cover page of this prospectus, less underwriting discounts and commissions. If the underwriters exercise this option, each underwriter will be obligated, subject to specified conditions, to purchase a number of additional shares proportionate to that underwriter's initial purchase commitment as indicated in the table above.

No Sales of Similar Securities

We and our officers and directors (but not any funds affiliated with our officers and directors) have agreed, subject to specified exceptions (including for sales under our "at-the-market" offering program), not to directly or indirectly:

- offer, sell, assign, transfer, pledge, contract to sell, or otherwise dispose of, or announce the intention to otherwise dispose of shares of common stock or securities convertible into or exercisable or exchangeable for common stock,
- enter into any swap, hedge or similar agreement or arrangement that transfers in whole or in part, the economic risk of ownership of shares of common stock or securities convertible into or exercisable or exchangeable for common stock, or
- engage in any short selling of the common stock or securities convertible into or exercisable or exchangeable for common stock.

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This restriction terminates after the close of trading of the common stock on and including the 90th day after the date of this prospectus.

The representatives may, in their discretion and at any time or from time to time before the termination of the 90-day period release all or any portion of the securities subject to lock-up agreements. There are no existing agreements between the underwriters and any of our shareholders who will execute a lock-up agreement, providing consent to the sale of shares prior to the expiration of the lock-up period.

Stabilization

The underwriters have advised us that they, pursuant to Regulation M under the Securities Exchange Act of 1934, as amended, certain persons participating in the offering may engage in short sale transactions, stabilizing transactions, syndicate covering transactions or the imposition of penalty bids in connection with this offering. These activities may have the effect of stabilizing or maintaining the market price of the common stock at a level above that which might otherwise prevail in the open market. Establishing short sales positions may involve either “covered” short sales or “naked” short sales.

“Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares of our common stock in this offering. The underwriters may close out any covered short position by either exercising their option to purchase additional shares of our common stock or purchasing shares of our common stock in the open market. In determining the source of shares to close out 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.

“Naked” short sales are sales in excess of the option to purchase additional shares of our common stock. The underwriters must close out any naked short position by purchasing 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 of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering.

A stabilizing bid is a bid for the purchase of shares of common stock on behalf of the underwriters for the purpose of fixing or maintaining the price of the common stock. A syndicate covering transaction is the bid for or the purchase of shares of common stock on behalf of the underwriters to reduce a short position incurred by the underwriters in connection with the offering. Similar to other purchase transactions, the underwriter’s purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. A penalty bid is an arrangement permitting the underwriters to reclaim the selling concession otherwise accruing to a syndicate member in connection with the offering if the common stock originally sold by such syndicate member are purchased in a syndicate covering transaction and therefore have not been effectively placed by such syndicate member.

Neither we, nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. The underwriters are not obligated to engage in these activities and, if commenced, any of the activities may be discontinued at any time.

Electronic Distribution

A prospectus in electronic format may be made available by e-mail or on the web sites or through online services maintained by one or more of the underwriters or their affiliates. In those cases, prospective investors

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may view offering terms online and may be allowed to place orders online. The underwriters may agree with us to allocate a specific number of shares of common stock for sale to online brokerage account holders. Any such allocation for online distributions will be made by the underwriters on the same basis as other allocations. Other than the prospectus in electronic format, the information on the underwriters' web sites and any information contained in any other web site maintained by any of the underwriters is not part of this prospectus, has not been approved and/or endorsed by us or the underwriters and should not be relied upon by investors.

Other Activities and Relationships

The underwriter and certain of its affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The underwriter and certain of its affiliates have, from time to time, performed, and may in the future perform, various commercial and investment banking and financial advisory services for us and our affiliates, for which they received or will receive customary fees and expenses. Jefferies LLC has entered into an Open Market Sales AgreementSM with us, dated as of March 11, 2021, for our "at-the-market" equity program, under which we could offer and sell, from time to time through Jefferies LLC, as our sales agent, shares of common stock providing for aggregate sales proceeds of up to \$100.0 million.

In the ordinary course of their various business activities, the underwriter and certain of its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments issued by us and our affiliates. If the underwriters or their respective affiliates have a lending relationship with us, they routinely hedge their credit exposure to us consistent with their customary risk management policies. The underwriters and their respective affiliates may hedge such exposure by entering into transactions which consist of either the purchase of credit default swaps or the creation of short positions in our securities or the securities of our affiliates, including potentially the common stock offered hereby. Any such short positions could adversely affect future trading prices of the common stock offered hereby. The underwriters and certain of their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Disclaimers About Non-U.S. Jurisdictions

Notice to Prospective Investors in the European Economic Area

In relation to each Member State of the European Economic Area and the United Kingdom (each, a "Relevant State"), an offer to the public of any securities which are the subject of the offering contemplated by this prospectus supplement and the accompanying prospectus may not be made in that Relevant State except that an offer to the public in that Relevant State of any securities may be made at any time under the following exemptions under the Prospectus Regulation:

- (a) to any legal entity which is a "qualified investor" as defined in the Prospectus Regulation;
- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Regulation), as permitted under the Prospectus Regulation, subject to obtaining the prior consent of the underwriters or the underwriters nominated by us for any such offer; or
- (c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of securities shall require us or any of the underwriters to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

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For the purposes of this provision, the expression “offer to the public” in relation to any securities in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe the securities, and the expression “Prospectus Regulation” means Regulation (EU) 2017/1129.

Notice to Prospective Investors in the United Kingdom

No shares have been offered or will be offered pursuant to the offering to the public in the United Kingdom prior to the publication of a prospectus in relation to the Shares which has been approved by the Financial Conduct Authority, except that the shares may be offered to the public in the United Kingdom at any time:

- (a) to any legal entity which is a qualified investor as defined under Article 2 of the UK Prospectus Regulation;
- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the UK Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or
- (c) in any other circumstances falling within Section 86 of the FSMA,

provided that no such offer of the shares shall require the Issuer or any Manager to publish a prospectus pursuant to Section 85 of the FSMA or supplement a prospectus pursuant to Article 23 of the UK Prospectus Regulation.

For the purposes of this provision, the expression an “offer to the public” in relation to the shares in the United Kingdom means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares and the expression “UK Prospectus Regulation” means Regulation (EU) 2017/1129 as it forms part of domestic law by virtue of the European Union (Withdrawal) Act 2018.

Notice to Prospective Investors in Canada

(A) Resale Restrictions

The distribution of shares in Canada is being made only in the provinces of Ontario, Quebec, Alberta and British Columbia on a private placement basis exempt from the requirement that we prepare and file a prospectus with the securities regulatory authorities in each province where trades of these securities are made. Any resale of the shares in Canada must be made under applicable securities laws which may vary depending on the relevant jurisdiction, and which may require resales to be made under available statutory exemptions or under a discretionary exemption granted by the applicable Canadian securities regulatory authority. Purchasers are advised to seek legal advice prior to any resale of the securities.

(B) Representations of Canadian Purchasers

By purchasing shares in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to us and the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the shares without the benefit of a prospectus qualified under those securities laws as it is an “accredited investor” as defined under National Instrument 45-106—*Prospectus Exemptions*,
- the purchaser is a “permitted client” as defined in National Instrument 31-103—*Registration Requirements, Exemptions and Ongoing Registrant Obligations*,
- where required by law, the purchaser is purchasing as principal and not as agent, and
- the purchaser has reviewed the text above under Resale Restrictions.

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(C) Conflicts of Interest

Canadian purchasers are hereby notified that the representatives are relying on the exemption set out in section 3A.3 or 3A.4, if applicable, of National Instrument 33-105—*Underwriting Conflicts* from having to provide certain conflict of interest disclosure in this document.

(D) Statutory Rights of Action

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the offering memorandum (including any amendment thereto) such as this document 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 of these securities in Canada 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.

(E) Enforcement of Legal Rights

All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

(F) Taxation and Eligibility for Investment

Canadian purchasers of shares should consult their own legal and tax advisors with respect to the tax consequences of an investment in the shares in their particular circumstances and about the eligibility of the shares for investment by the purchaser under relevant Canadian legislation.

Notice to Prospective Investors in Hong Kong

No securities have been offered or sold, and no securities may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell shares or debentures, whether as principal or agent; or to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong ("SFO") and any rules made under that Ordinance; or in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong ("CO") or which do not constitute an offer or invitation to the public for the purpose of the CO or the SFO. No document, invitation or advertisement relating to the securities has been issued or 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 of Hong Kong (except if permitted under the securities laws of Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under that Ordinance.

This prospectus has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus may not be issued, circulated or distributed in Hong Kong, and the securities may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the securities will be required, and is deemed by the acquisition of the securities, to confirm that he is aware of the restriction on offers of the securities described in this prospectus and the relevant offering documents and that he is not acquiring, and has not been offered any securities in circumstances that contravene any such restrictions.

Notice to Prospective Investors in Singapore

This prospectus has not been and will not be lodged or registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the

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offer or sale, or invitation for subscription or purchase, of the shares may not be circulated or distributed, nor may the shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the “SFA”), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), 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 (as defined in Section 239(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 ADSs pursuant to an offer made under Section 275 of the SFA except:
 - (i) to an institutional investor or to a relevant person defined in Section 275(2) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
 - (ii) where no consideration is or will be given for the transfer;
 - (iii) where the transfer is by operation of law;
 - (iv) as specified in Section 276(7) of the SFA; or
 - (v) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Notice to Prospective Investors in Japan

The offering has not been and will not be registered under the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948 of Japan, as amended) (“FIEL”), and the underwriters will not offer or sell any shares of common stock, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means, unless otherwise provided herein, any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to a resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the FIEL and any other applicable laws, regulations and ministerial guidelines of Japan.

Notice to Prospective Investors in Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (“SIX”) or on any other stock exchange or regulated trading facility in Switzerland. This prospectus has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this prospectus nor any other offering or marketing material relating to the securities or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this prospectus nor any other offering or marketing material relating to the offering, the Company or the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this

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prospectus will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of securities has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (“CISA”). The investor protection afforded to acquirers of interests in collective investment schemes under the CISA does not extend to acquirers of securities.

Notice to Prospective Investors in Israel

This document does not constitute a prospectus under the Israeli Securities Law, 5728-1968, or the Securities Law, and has not been filed with or approved by the Israel Securities Authority. In Israel, this prospectus is being distributed only to, and is directed only at, and any offer of the shares of common stock is directed only at, (i) a limited number of persons in accordance with the Israeli Securities Law and (ii) investors listed in the first addendum, or the Addendum, to the Israeli Securities Law, consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million and “qualified individuals,” each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case, purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors are required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of same and agree to it.

Notice to Prospective Investors in Australia

This prospectus is not a disclosure document for the purposes of Australia’s Corporations Act 2001 (Cth) of Australia, or Corporations Act, has not been lodged with the Australian Securities & Investments Commission and is only directed to the categories of exempt persons set out below. Accordingly, if you receive this prospectus in Australia:

(A) You confirm and warrant that you are either:

- a “sophisticated investor” under section 708(8)(a) or (b) of the Corporations Act;
- a “sophisticated investor” under section 708(8)(c) or (d) of the Corporations Act and that you have provided an accountant’s certificate to the Company 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;
- a person associated with the Company under Section 708(12) of the Corporations Act; or
- a “professional investor” within the meaning of section 708(11)(a) or (b) of the Corporations Act.

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 prospectus is void and incapable of acceptance.

(B) You warrant and agree that you will not offer any of the securities issued to you pursuant to this prospectus for resale in Australia within 12 months of those securities being issued unless any such resale offer is exempt from the requirement to issue a disclosure document under section 708 of the Corporations Act.

LEGAL MATTERS

The validity of the shares of common stock being offered by this prospectus will be passed upon for us by Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, Boston, Massachusetts. As of December 31, 2020, certain partners and employees of Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP are the beneficial owners of 1,000 shares of our common stock. Certain intellectual property matters will be passed upon for us by Dechert LLP, Boston, Massachusetts. Cooley LLP, New York, New York is acting as counsel for the underwriters in connection with this offering.

EXPERTS

The consolidated financial statements as of December 31, 2020 and 2019 and for each of the two years in the period ended December 31, 2020 incorporated by reference in this Prospectus and in the Registration Statement have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the securities offered by this prospectus supplement. This prospectus supplement and the accompanying prospectus, which are part of the registration statement, omits certain information, exhibits, schedules and undertakings set forth in the registration statement, as permitted by the SEC. For further information pertaining to us and the securities offered in this prospectus supplement, reference is made to that registration statement and the exhibits and schedules to the registration statement. Statements contained in this prospectus supplement and the accompanying prospectus as to the contents or provisions of any documents referred to in this prospectus are not necessarily complete, and in each instance where a copy of the document has been filed as an exhibit to the registration statement, reference is made to the exhibit for a more complete description of the matters involved.

We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website at www.sec.gov that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC, including us.

Our common stock is listed on The Nasdaq Capital Market under the symbol "ALDX." General information about our company, including our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as any amendments and exhibits to those reports, are available free of charge through our website at www.aldeyra.com as soon as reasonably practicable after we file them with, or furnish them to, the SEC. Information on, or than can be accessed through, our website is not incorporated into this prospectus supplement or other securities filings and is not a part of these filings.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus supplement the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus supplement, and later information that we file with the SEC will automatically update and supersede some of this information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, including filings made after the date of the initial registration statement, until we sell all of the shares covered by this prospectus supplement or the sale of shares by us pursuant to this prospectus supplement is terminated. In no event, however, will any of the information that we furnish to, pursuant to Item 2.02 or Item 7.01 of any Current Report on Form 8-K (including exhibits related thereto) or other applicable SEC rules, rather than file with, the SEC be incorporated by reference or otherwise be included herein, unless such information is expressly incorporated herein by a reference in such furnished Current Report on Form 8-K or other furnished document. The documents we incorporate by reference are:

- our annual report on [Form 10-K](#) for the fiscal year ended December 31, 2020, filed with the SEC on March 11, 2021 (the “Form 10-K”);
- the information contained in our definitive proxy statement on [Schedule 14A](#) for our 2021 annual meeting of stockholders, filed with the SEC on April 14, 2021, to the extent incorporated by reference in Part III of the Form 10-K;
- our current reports on Form 8-K filed with the SEC on [January 7, 2021](#), [January 14, 2021](#), [January 25, 2021](#), [March 11, 2021](#), [April 21, 2021](#) and [April 27, 2021](#); and
- the description of our common stock contained in the registration statement on [Form 8-A](#) (File no. 001-36332), filed on March 4, 2014, and all amendments and reports updating such description.

Any statement contained in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We will provide each person to whom a prospectus is delivered a copy of all of the information that has been incorporated by reference in this prospectus but not delivered with the prospectus. You may obtain copies of these filings, at no cost, through the “Investor Relations” section of our website (www.aldeyra.com) and you may request a copy of these filings (other than an exhibit to any filing unless we have specifically incorporated that exhibit by reference into the filing), at no cost, by writing or telephoning us at the following address:

131 Hartwell Avenue, Suite 320
Lexington, Massachusetts 02421
(781) 761-4904

Information on, or that can be accessed through, our website is not incorporated into this prospectus or other securities filings and is not a part of these filings.

PROSPECTUS



\$300,000,000

**Common Stock
Preferred Stock
Warrants
Units**

We may offer and sell up to \$300.0 million in the aggregate of the securities identified above from time to time in one or more offerings. This prospectus provides you with a general description of the securities.

We will provide specific terms of any offering 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 or issuer free writing prospectus relating to a particular offering 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.

We may offer and sell the securities described in this prospectus and any prospectus supplement to or through one or more underwriters, dealers and agents, or directly to purchasers, or through a combination of these methods. If any underwriters, dealers or agents are involved in the sale of any of the securities, their names and any applicable purchase price, fee, commission or discount arrangement between or among them will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement. See the sections of this prospectus entitled “About this Prospectus” and “Plan of Distribution” for more information. No securities may be sold without delivery of this prospectus and the applicable prospectus supplement describing the method and terms of the offering of such securities.

Our common stock is listed on The Nasdaq Capital Market under the symbol “ALDX.” On April 14, 2021, the last reported sale price for our common stock was \$11.75 per share. We will provide information in any applicable prospectus supplement regarding any listing of securities other than shares of our common stock on any securities exchange.

INVESTING IN OUR SECURITIES INVOLVES SIGNIFICANT RISKS. SEE “[RISK FACTORS](#)” BEGINNING ON PAGE 4 OF THIS PROSPECTUS AND ANY SIMILAR SECTION CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT CONCERNING FACTORS YOU SHOULD CONSIDER BEFORE INVESTING IN OUR 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 April 15, 2021

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the United States Securities and Exchange Commission, or the SEC, using a “shelf” registration process. Under this shelf process, we may, from time to time, sell any combination of the securities described in this prospectus in one or more offerings up to a total amount of \$300,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may include a discussion of any risk factors or other special considerations that apply to those securities. The prospectus supplement may also add to, update or change information contained in the prospectus and, accordingly, to the extent inconsistent, information in this prospectus is superseded by the information in the prospectus supplement.

The prospectus supplement to be attached to the front of this prospectus may describe, as applicable: the terms of the securities offered; the initial or secondary public offering price; the price paid for the securities; net proceeds; and the other specific terms related to the offering of the securities.

You should only rely on the information contained or incorporated by reference in this prospectus and any prospectus supplement or issuer free writing prospectus relating to a particular offering. No person has been authorized to give any information or make any representations in connection with this offering other than those contained or incorporated by reference in this prospectus, any accompanying prospectus supplement and any related issuer free writing prospectus in connection with the offering described herein and therein, and, if given or made, such information or representations must not be relied upon as having been authorized by us. Neither this prospectus nor any prospectus supplement nor any related issuer free writing prospectus shall constitute an offer to sell or a solicitation of an offer to buy offered securities in any jurisdiction in which it is unlawful for such person to make such an offering or solicitation. This prospectus does not contain all of the information included in the registration statement. For a more complete understanding of the offering of the securities, you should refer to the registration statement, including its exhibits.

You should read the entire prospectus and any prospectus supplement and any related issuer free writing prospectus, as well as the documents incorporated by reference into this prospectus or any prospectus supplement or any related issuer free writing prospectus, before making an investment decision. Neither the delivery of this prospectus or any prospectus supplement or any issuer free writing prospectus nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference herein or in any prospectus supplement or issuer free writing prospectus is correct as of any date subsequent to the date hereof or of such prospectus supplement or issuer free writing prospectus, as applicable. You should assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate only as of the date of the applicable documents, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

PROSPECTUS SUMMARY

This summary description about us and our business highlights selected information contained elsewhere in this prospectus or incorporated in this prospectus by reference. This summary does not contain all of the information you should consider before buying securities in this offering. You should carefully read this entire prospectus and any applicable prospectus supplement, including each of the documents incorporated herein or therein by reference, before making an investment decision. As used in this prospectus, “we,” “us,” “Aldeyra,” “Aldeyra Therapeutics,” and “our” refer to Aldeyra Therapeutics, Inc., a Delaware corporation.

Overview

We are a clinical-stage biotechnology company focused on the development of novel therapies with the potential to improve the lives of patients with immune-mediated diseases. Two of our lead investigational compounds, reproxalap and ADX-629, target RASP (reactive aldehyde species), which are elevated in ocular and systemic inflammatory disease and result in cytokine release via activation of a broad array of inflammatory factors, including NF- κ B, inflammasomes, and Scavenger Receptor A. Reproxalap is being evaluated in Phase 3 clinical trials in patients with dry eye disease and allergic conjunctivitis. Our clinical pipeline also includes ADX-2191, a dihydrofolate reductase inhibitor in Phase 3 testing for proliferative vitreoretinopathy, and ADX-1612, a chaperome inhibitor in development for COVID-19 and ovarian cancer.

Corporate Information

We were incorporated in the state of Delaware on August 13, 2004 as Neuron Systems, Inc. On December 20, 2012, we changed our name to Aldexa Therapeutics, Inc. and on March 17, 2014, we changed our name to Aldeyra Therapeutics, Inc. Our principal executive offices are located at 131 Hartwell Avenue, Suite 320, Lexington, Massachusetts 02421. Our telephone number is (781) 761-4904. Our internet website is www.aldeyra.com. Information contained on our website is not part of the registration statement of which this prospectus is a part.

The Securities We May Offer

We may offer up to \$300,000,000 of common stock, preferred stock and warrants in one or more offerings and in any combination, including in units from time to time. This prospectus provides you with a general description of the securities we may offer. A prospectus supplement, which we will provide each time we offer securities, will describe the specific amounts, prices and terms of these securities.

Common Stock

Each holder of our common stock is entitled to one vote for each share on all matters to be voted upon by the stockholders, and there are no cumulative rights. Subject to any preferential rights of any outstanding preferred stock, holders of our common stock are entitled to receive ratably the dividends, if any, as may be declared from time to time by the board of directors out of funds legally available therefor. If there is a liquidation, dissolution or winding up of our company, holders of our common stock would be entitled to share in our assets remaining after the payment of liabilities and any preferential rights of any outstanding preferred stock. Our common stock is described in greater detail in this prospectus under “Description of Capital Stock — Common Stock.”

Preferred Stock

Under the terms of our amended and restated certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of

directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

Each series of preferred stock, if issued, will be more fully described in the particular prospectus supplement that will accompany this prospectus, including redemption provisions, rights in the event of our liquidation, dissolution or winding up, voting rights and rights to convert into common stock. We have no present plans to issue any shares of preferred stock, nor are any shares of our preferred stock presently outstanding. Preferred stock is described in greater detail in this prospectus under “Description of Capital Stock — Preferred Stock.”

Warrants

We may issue warrants for the purchase of common stock or preferred stock. We may issue warrants independently or together with other securities.

The warrants will be evidenced by warrant certificates issued under one or more warrant agreements, which are contracts between us and an agent for the holders of the warrants. In this prospectus, we have summarized certain general features of the warrants under “Description of Warrants.” We urge you, however, to read the prospectus supplements and any free writing prospectus that we may authorize to be provided to you related to the series of warrants being offered, as well as the complete warrant agreements and warrant certificates that contain the terms of the warrants. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference as an exhibit to the registration statement which includes this prospectus.

Units

We may issue units comprised of one or more of the other classes of securities issued by us as described in this prospectus in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Units are described in greater detail in this prospectus under “Description of Units.”

RISK FACTORS

An investment in our securities involves a high degree of risk. The prospectus supplement applicable to each offering of our securities will contain a discussion of the risks applicable to an investment in our securities. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed under the heading “Risk Factors” in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, “Risk Factors,” in our most recent Annual Report on Form 10-K and in our Quarterly Reports on Form 10-Q filed subsequent to such Annual Report on Form 10-K, as well as any amendments thereto, all of which are incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future and by information contained in any prospectus supplement related to a particular offering. The risks and uncertainties we have described 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.

FORWARD-LOOKING STATEMENTS

This prospectus, each prospectus supplement and the information incorporated by reference in this prospectus and each prospectus supplement contain certain statements that constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. The words “estimate,” “project,” “predict,” “believe,” “expect,” “anticipate,” “potential,” “should,” “will,” “may,” “plan,” “goal,” “can,” “could,” “continuing,” “ongoing,” “intend” and similar expressions and variations thereof are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements. Those statements appear in this prospectus, any accompanying prospectus supplement and the documents incorporated herein and therein by reference, particularly in the sections entitled “Prospectus Summary,” “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Business,” and include statements regarding the intent, belief or current expectations of the Company and management that are subject to known and unknown risks, uncertainties and assumptions.

This prospectus, any prospectus supplement and the information incorporated by reference in this prospectus and any prospectus supplement also contain statements that are based on the current expectations of our company and management. You are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, and that actual results may differ materially from those projected in the forward-looking statements as a result of various factors.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. The risks, uncertainties and assumptions that could cause actual results to differ materially from those anticipated or implied in our forward-looking statements include, but are not limited to, those set forth above under the section entitled “Risk Factors” and in the applicable prospectus supplement, together with all of the other information contained in or incorporated by reference into the prospectus supplement or appearing or incorporated by reference into this prospectus.

Except as required by applicable law, including the securities laws of the United States and the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements contained herein after we distribute this prospectus, whether as a result of any new information, future events or otherwise.

USE OF PROCEEDS

Unless otherwise indicated in the prospectus supplement, we will use the net proceeds from the sale of securities offered by this prospectus for general corporate purposes, which may include, among other purposes, working capital, capital expenditures, other corporate expenses and acquisitions of assets, licenses, products, technologies or businesses. The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business. As a result, unless otherwise indicated in the prospectus supplement, our management will have broad discretion to allocate the net proceeds of the offerings. Pending their ultimate use, we intend to invest the net proceeds in short-term, investment-grade, interest-bearing instruments.

DESCRIPTION OF SECURITIES WE MAY OFFER

We may offer under this prospectus up to \$300,000,000 of common stock, preferred stock and warrants in one or more offerings and in any combination, including in units from time to time as described below. This prospectus provides you with a general description of the securities we may offer. A prospectus supplement, which we will provide each time we offer securities, will describe the specific amounts, prices and terms of these securities. Each time we offer a type or series of securities, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities.

DESCRIPTION OF SECURITIES

The following information describes our common stock and preferred stock, as well as certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws. This description is only a summary. You should also refer to our amended and restated certificate of incorporation and amended and restated bylaws, which have been filed with the SEC as exhibits to our registration statement, of which this prospectus forms a part.

General

Our authorized capital stock consists of 150,000,000 shares of common stock, with a \$0.001 par value per share, and 15,000,000 shares of preferred stock, with a \$0.001 par value per share, all of which shares of preferred stock are undesignated. Our board of directors may establish the rights and preferences of the preferred stock from time to time. As of December 31, 2020, there were 38,820,347 shares of common stock issued and outstanding, held of record by 20 stockholders, although we believe that there may be a significantly larger number of beneficial owners of our common stock.

Common Stock

The holders of common stock are entitled to one vote per share on all matters to be voted upon by the stockholders. The holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by the board of directors out of funds legally available, subject to preferences that may be applicable to preferred stock, if any, then outstanding. In the event of a liquidation, dissolution or winding up of our company, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior distribution rights of preferred stock, if any, then outstanding. The common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and non-assessable.

The rights, preferences and privileges of the holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

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Our common stock is listed on The Nasdaq Capital Market under the symbol “ALDX.” The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company.

Preferred Stock

The following description of preferred stock and the description of the terms of any particular series of preferred stock that we choose to issue hereunder and that will be set forth in the related prospectus supplement are not complete. These descriptions are qualified in their entirety by reference to our amended and restated certificate of incorporation and the certificate of designation relating to any series. The rights, preferences, privileges and restrictions of the preferred stock of each series will be fixed by the certificate of designation relating to that series. The prospectus supplement also will contain a description of certain United States federal income tax consequences relating to the purchase and ownership of the series of preferred stock that is described in the prospectus supplement.

Under the terms of our amended and restated certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock. There are no restrictions presently on the repurchase or redemption of any shares of our preferred stock.

The prospectus supplement for a series of preferred stock will specify:

- the maximum number of shares;
- the designation of the shares;
- the annual dividend rate, if any, whether the dividend rate is fixed or variable, the date or dates on which dividends will accrue, the dividend payment dates, and whether dividends will be cumulative;
- the price and the terms and conditions for redemption, if any, including redemption at our option or at the option of the holders, including the time period for redemption, and any accumulated dividends or premiums;
- the liquidation preference, if any, and any accumulated dividends upon the liquidation, dissolution or winding up of our affairs;
- any sinking fund or similar provision, and, if so, the terms and provisions relating to the purpose and operation of the fund;
- the terms and conditions, if any, for conversion or exchange of shares of any other class or classes of our capital stock or any series of any other class or classes, or of any other series of the same class, or any other securities or assets, including the price or the rate of conversion or exchange and the method, if any, of adjustment;
- the voting rights; and
- any or all other preferences and relative, participating, optional or other special rights, privileges or qualifications, limitations or restrictions.

The issuance of preferred stock will affect, and may adversely affect, the rights of holders of common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of common stock until the board of directors determines the specific rights attached to that preferred stock. The effects of issuing preferred stock could include one or more of the following:

- restricting dividends on the common stock;

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- diluting the voting power of the common stock;
- impairing the liquidation rights of the common stock; or
- delaying or preventing changes in control or management of our company.

We have no present plans to issue any shares of preferred stock nor are any shares of our preferred stock presently outstanding. Preferred stock will be fully paid and nonassessable upon issuance.

DESCRIPTION OF WARRANTS

We may issue warrants for the purchase of our preferred stock, common stock or any combination thereof. Warrants may be issued independently or together with our preferred stock or common stock and may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a bank or trust company, as warrant agent. The warrant agent will act solely as our agent in connection with the warrants. The warrant agent will not have any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants. This summary of certain provisions of the warrants is not complete. For the terms of a particular series of warrants, you should refer to the prospectus supplement for that series of warrants and the warrant agreement for that particular series.

The prospectus supplement relating to a particular series of warrants to purchase such securities will describe the terms of the warrants, including the following:

- the title of the warrants;
- the offering price for the warrants, if any;
- the aggregate number of warrants;
- the designation and terms of the securities that may be purchased upon exercise of the warrants;
- if applicable, the designation and terms of the securities 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 any securities issued with the warrants will be separately transferable;
- whether the warrants will be issued in registered form or bearer form;
- information with respect to book-entry procedures, if any;
- the number and basic terms of the securities that may be purchased upon exercise of a warrant and the exercise price for the warrants;
- the dates on which the right to exercise the warrants shall commence and expire;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- if applicable, a discussion of material U.S. federal income tax considerations;
- the antidilution provisions of the warrants, if any;
- the redemption or call provisions, if any, applicable to the warrants;
- any provisions with respect to the holder's right to require us to repurchase the warrants upon a change in control or similar event; and
- any additional terms of the warrants, including procedures, and limitations relating to the exchange, exercise and settlement of the warrants.

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Holders of equity warrants will not be entitled:

- to vote, consent or receive dividends;
- receive notice as stockholders with respect to any meeting of stockholders for the election of our directors or any other matter; or
- exercise any rights as stockholders of us.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

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 of any warrant. A single bank or trust company may act as 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.

DESCRIPTION OF UNITS

We may issue units consisting of any combination of the other types of securities offered under this prospectus in one or more series. We may evidence each series of units by unit certificates that we will issue under a separate agreement. We may enter into unit agreements with a unit agent. Each unit agent will be a bank or trust company that we select. We will indicate the name and address of the unit agent in the applicable prospectus supplement relating to a particular series of units.

The following description, together with the additional information included in any applicable prospectus supplement, summarizes the general features of the units that we may offer under this prospectus. You should read any prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of units being offered, as well as the complete unit agreements that contain the terms of

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the units. Specific unit agreements will contain additional important terms and provisions and we will file as an exhibit to the registration statement of which this prospectus is a part, or will incorporate by reference from another report that we file with the SEC, the form of each unit agreement relating to units offered under this prospectus.

If we offer any units, certain terms of that series of units will be described in the applicable prospectus supplement, including, without limitation, the following, as applicable:

- the title of the series of units;
- identification and description of the separate constituent securities comprising the units;
- the price or prices at which the units will be issued;
- the date, if any, on and after which the constituent securities comprising the units will be separately transferable;
- a discussion of certain United States federal income tax considerations applicable to the units; and
- any other terms of the units and their constituent securities.

Enforceability of Rights by Holders of Units

To the extent applicable, each unit agent will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

We, any unit agents and any of their agents may treat the registered holder of any unit certificate as an absolute owner of the units evidenced by that certificate for any purpose and as the person entitled to exercise the rights attaching to the units so requested, despite any notice to the contrary.

PLAN OF DISTRIBUTION

We may sell the securities offered through this prospectus in primary offerings (1) to or through underwriters or dealers, (2) directly to purchasers, including our affiliates, (3) through agents, or (4) through a combination of any these methods. The securities may be distributed at a fixed price or prices, which may be changed, market prices prevailing at the time of sale, prices related to the prevailing market prices, or negotiated prices. The prospectus supplement will include the following information:

- the terms of the offering;
- the names of any underwriters or agents;
- the name or names of any managing underwriter or underwriters;
- the purchase price of the securities;
- the net proceeds from the sale of the securities;
- any delayed delivery arrangements;
- any underwriting discounts, commissions and other items constituting underwriters' compensation;
- any initial public offering price;

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- any discounts or concessions allowed or reallocated or paid to dealers; and
- any commissions paid to agents.

Sale through underwriters or dealers

If underwriters are used in the sale, the underwriters will acquire the securities for their own account, including through underwriting, purchase, security lending or repurchase agreements with us. The underwriters may resell the securities from time to time in one or more transactions, including negotiated transactions. Underwriters may sell the securities in order to facilitate transactions in any of our other securities (described in this prospectus or otherwise), including other public or private transactions and short sales. Underwriters may offer securities to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more firms acting as underwriters. Unless otherwise indicated in the prospectus supplement, the obligations of the underwriters to purchase the securities will be subject to certain conditions, and the underwriters will be obligated to purchase all the offered securities if they purchase any of them. The underwriters may change from time to time any initial public offering price and any discounts or concessions allowed or reallocated or paid to dealers. The prospectus supplement will include the names of the principal underwriters the respective amount of securities underwritten, the nature of the obligation of the underwriters to take the securities and the nature of any material relationship between an underwriter and us.

If dealers are used in the sale of securities offered through this prospectus, we will sell the securities to them as principals. They may then resell those securities to the public at varying prices determined by the dealers at the time of resale. The prospectus supplement will include the names of the dealers and the terms of the transaction.

Direct sales and sales through agents

We may sell the securities offered through this prospectus directly. In this case, no underwriters or agents would be involved. Such securities may also be sold through agents designated from time to time. The prospectus supplement will name any agent involved in the offer or sale of the offered securities and will describe any commissions payable to the agent by us. Unless otherwise indicated in the prospectus supplement, any agent will agree to use its reasonable best efforts to solicit purchases for the period of its appointment.

We may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act with respect to any sale of those securities. The terms of any such sales will be described in the prospectus supplement.

Delayed delivery contracts

If the prospectus supplement indicates, we may authorize agents, underwriters or dealers to solicit offers from certain types of institutions to purchase securities at the public offering price under delayed delivery contracts. These contracts would provide for payment and delivery on a specified date in the future. The contracts would be subject only to those conditions described in the prospectus supplement. The applicable prospectus supplement will describe the commission payable for solicitation of those contracts.

Market making, stabilization and other transactions

Unless the applicable prospectus supplement states otherwise, each series of offered securities will be a new issue and will have no established trading market. We may elect to list any series of offered securities on an exchange. Any underwriters that we use in the sale of offered securities may make a market in such securities, but may discontinue such market making at any time without notice. Therefore, we cannot assure you that the securities will have a liquid trading market.

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Any underwriter may also engage in stabilizing transactions, syndicate covering transactions and penalty bids in accordance with Rule 104 under the Securities Exchange Act of 1934, as amended. Stabilizing transactions involve bids to purchase the underlying security in the open market for the purpose of pegging, fixing or maintaining the price of the securities. Syndicate covering transactions involve purchases of the securities in the open market after the distribution has been completed in order to cover syndicate short positions.

Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a syndicate covering transaction to cover syndicate short positions. Stabilizing transactions, syndicate covering transactions and penalty bids may cause the price of the securities to be higher than it would be in the absence of the transactions. The underwriters may, if they commence these transactions, discontinue them at any time.

Derivative transactions and hedging

We, the underwriters or other agents may engage in derivative transactions involving the securities. These derivatives may consist of short sale transactions and other hedging activities. The underwriters or agents may acquire a long or short position in the securities, hold or resell securities acquired and purchase options or futures on the securities and other derivative instruments with returns linked to or related to changes in the price of the securities. In order to facilitate these derivative transactions, we may enter into security lending or repurchase agreements with the underwriters or agents. The underwriters or agents may effect the derivative transactions through sales of the securities to the public, including short sales, or by lending the securities in order to facilitate short sale transactions by others. The underwriters or agents may also use the securities purchased or borrowed from us or others (or, in the case of derivatives, securities received from us in settlement of those derivatives) to directly or indirectly settle sales of the securities or close out any related open borrowings of the securities.

Electronic auctions

We may also make sales through the Internet or through other electronic means. Since we may from time to time elect to offer securities directly to the public, with or without the involvement of agents, underwriters or dealers, utilizing the Internet or other forms of electronic bidding or ordering systems for the pricing and allocation of such securities, you should pay particular attention to the description of that system we will provide in a prospectus supplement.

Such electronic system may allow bidders to directly participate, through electronic access to an auction site, by submitting conditional offers to buy that are subject to acceptance by us, and which may directly affect the price or other terms and conditions at which such securities are sold. These bidding or ordering systems may present to each bidder, on a so-called “real-time” basis, relevant information to assist in making a bid, such as the clearing spread at which the offering would be sold, based on the bids submitted, and whether a bidder’s individual bids would be accepted, prorated or rejected.

Upon completion of such an electronic auction process, securities will be allocated based on prices bid, terms of bid or other factors. The final offering price at which securities would be sold and the allocation of securities among bidders would be based in whole or in part on the results of the Internet or other electronic bidding process or auction.

General information

Agents, underwriters, and dealers may be entitled, under agreements entered into with us, to indemnification by us against certain liabilities, including liabilities under the Securities Act.

CUSIP Number

The Committee on Uniform Securities Identification Procedures assigns a unique number, known as a CUSIP number, to a class or issue of securities in which all of the securities have similar rights. Certain shares of

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common stock covered by this prospectus included shares with a CUSIP number based on the shares being issued to an initial purchaser under Rule 144A.

Any sales of shares of our common stock by means of this prospectus must be settled with shares of common stock bearing our general (not necessarily restricted) common stock CUSIP number. The process of obtaining such shares might take a number of business days. SEC rules generally require trades in the secondary market to settle in two business days, unless the parties to any such trade expressly agree otherwise.

LEGAL MATTERS

The validity of the securities offered by this prospectus will be passed upon by Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP, Boston, Massachusetts. Additional legal matters may be passed upon for us or any underwriters, dealers or agents, by counsel that we will name in the applicable prospectus supplement.

EXPERTS

The consolidated financial statements as of December 31, 2020 and 2019 and for each of the two years in the period ended December 31, 2020 incorporated by reference in this Prospectus and in the Registration Statement have been so incorporated in reliance on the report of BDO USA, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and other reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at www.sec.gov. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, including any amendments to those reports, and other information that we file with or furnish to the SEC pursuant to Section 13(a) or 15(d) of the Exchange Act can also be accessed free of charge through the Internet. These filings will be available as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

We have filed with the SEC a registration statement under the Securities Act of 1933 relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the SEC at the address listed above. The registration statement and the documents referred to below under "Incorporation by Reference" are also available on our Internet website, www.aldeyra.com. We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus certain information we file with it, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information that we file later with the SEC will automatically update and supersede information contained in this prospectus and any accompanying prospectus supplement. We incorporate by reference the documents listed below that we have previously filed with the SEC (excluding any portions of any Form 8-K that are not deemed "filed" pursuant to the General Instructions of Form 8-K):

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2020, filed with the SEC on March 11, 2021;

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- our Current Reports on Form 8-K filed with the SEC on [January 7, 2021](#), [January 14, 2021](#) and [January 25, 2021](#) and [March 11, 2021](#) (each to the extent filed and not furnished);
- our [Definitive Proxy Statement](#) on Schedule 14A, filed with the SEC on April 14, 2021; and
- the description of our common stock contained in our Registration Statement on [Form 8-A](#) as filed with the SEC on March 4, 2014 pursuant to Section 12(b) of the Exchange Act.

We also incorporate by reference into this prospectus additional documents that we may file with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the completion or termination of the offering, including all such documents we may file with the SEC after the date of the initial registration statement and prior to the effectiveness of the registration statement, but excluding any information deemed furnished and not filed with the SEC. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

This prospectus may contain information that updates, modifies or is contrary to information in one or more of the documents incorporated by reference in this prospectus. You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date of this prospectus or the date of the documents incorporated by reference in this prospectus.

We will provide to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, at no cost to the requester, a copy of any and all of the information that is incorporated by reference in this prospectus.

Requests for such documents should be directed to:

Aldeyra Therapeutics, Inc.
131 Hartwell Avenue, Suite 320
Lexington, MA 02421
(781) 761-4904

You may also access the documents incorporated by reference in this prospectus through our website at www.aldeyra.com. Except for the specific incorporated documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.

\$125,000,000



Common Stock

PROSPECTUS SUPPLEMENT

Joint Book-Running Managers

**Jefferies
SVB Leerink**

, 2021
