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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

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**FORM S-8  
REGISTRATION STATEMENT**  
*UNDER  
THE SECURITIES ACT OF 1933*

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**ALDEYRA THERAPEUTICS, INC.**

(Exact name of registrant as specified in its charter)

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**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**20-1968197**  
(I.R.S. Employer  
Identification No.)

**131 Hartwell Avenue, Suite 320**  
**Lexington, MA**  
(Address of Principal Executive Offices)

**02421**  
(Zip Code)

**2013 Equity Incentive Plan**  
**2016 Employee Stock Purchase Plan**  
(Full title of plan)

**Todd C. Brady, M.D., Ph.D.,**  
**President and Chief Executive Officer**  
**131 Hartwell Avenue, Suite 320**  
**Lexington, MA 02421**  
(Name and address of agent for service)

**(781) 761-4904**  
(Telephone number, including area code, of agent for service)

*Please send copies of all communications to:*

**Jay K. Hachigian**  
**Keith J. Scherer**  
**Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP**  
**One Marina Park Drive, Suite 900**  
**Boston, MA 02210**  
**Telephone: (617) 648-9100**  
**Telecopy: (617) 648-9199**

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer   
Non-accelerated filer

Accelerated filer   
Smaller reporting company   
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

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**PART I**

**EXPLANATORY NOTE**

**INFORMATION REQUIRED IN THE SECTION 10(A) PROSPECTUS**

This Registration Statement on Form S-8 registers additional shares of Common Stock to be issued pursuant to the Equity Incentive Plan and the Purchase Plan. The information contained in the Registrant's registration statements on Form S-8 (SEC File Nos. 333-230161, 333-224019, 333-217043, 333-213045, 333-210492, 333-203076, 333-196674, 333-237129 and 333-254144), together with all exhibits filed therewith or incorporated therein by reference, are hereby incorporated by reference pursuant to General Instruction E to Form S-8.

**PART II**  
**INFORMATION REQUIRED IN THE REGISTRATION STATEMENT**

**Item 8. Exhibits.**

**EXHIBIT INDEX**

| <b>Exhibit<br/>Number</b> | <b>Description of Exhibit</b>                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 5.1*                      | <a href="#">Opinion of Gunderson Dettmer Stough Villeneuve Franklin &amp; Hachigian, LLP.</a>                           |
| 23.1*                     | <a href="#">Consent of BDO USA, LLP, independent registered public accounting firm.</a>                                 |
| 23.2*                     | <a href="#">Consent of Gunderson Dettmer Stough Villeneuve Franklin &amp; Hachigian, LLP (included in Exhibit 5.1).</a> |
| 24.1*                     | <a href="#">Power of Attorney (included in the signature page to the registration statement).</a>                       |
| 107*                      | <a href="#">Filing Fee Table.</a>                                                                                       |

\* Filed herewith.

**SIGNATURES**

Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Lexington, Commonwealth of Massachusetts, on this 17th day of March, 2022.

**ALDEYRA THERAPEUTICS, INC.**

/s/ Todd C. Brady, M.D., Ph.D.

**Todd C. Brady, M.D., Ph.D.**

**President and Chief Executive Officer**

## POWER OF ATTORNEY

**KNOW ALL PERSONS BY THESE PRESENTS**, that the undersigned officers and directors of Aldeyra Therapeutics, Inc., a Delaware corporation, do hereby constitute and appoint Todd C. Brady, M.D., Ph.D. and Joshua Reed, and each of them, the lawful attorneys-in-fact and agents with full power and authority to do any and all acts and things and to execute any and all instruments which said attorneys and agents, and any one of them, determine may be necessary or advisable or required to enable said corporation to comply with the Securities Act, and any rules or regulations or requirements of the Securities and Exchange Commission in connection with this Registration Statement. Without limiting the generality of the foregoing power and authority, the powers granted include the power and authority to sign the names of the undersigned officers and directors in the capacities indicated below to this Registration Statement, to any and all amendments, both pre-effective and post-effective, and supplements to this Registration Statement, and to any and all instruments or documents filed as part of or in conjunction with this Registration Statement or amendments or supplements thereof, and each of the undersigned hereby ratifies and confirms that all said attorneys and agents, or any one of them, shall do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

| Signature                                                           | Title                                                                            | Date           |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------|
| <u>/s/ Todd C. Brady, M.D., Ph.D.</u><br>Todd C. Brady, M.D., Ph.D. | President, Chief Executive Officer and Director<br>(Principal Executive Officer) | March 17, 2022 |
| <u>/s/ Joshua Reed</u><br>Joshua Reed                               | Chief Financial Officer (Principal Financial<br>(and Accounting Officer)         | March 17, 2022 |
| <u>/s/ Richard H. Douglas, Ph.D.</u><br>Richard H. Douglas, Ph.D.   | Chairman of the Board of Directors                                               | March 17, 2022 |
| <u>/s/ Ben Bronstein, M.D.</u><br>Ben Bronstein, M.D.               | Director                                                                         | March 17, 2022 |
| <u>/s/ Martin J. Joyce</u><br>Martin J. Joyce                       | Director                                                                         | March 17, 2022 |
| <u>/s/ Nancy Miller-Rich</u><br>Nancy Miller-Rich                   | Director                                                                         | March 17, 2022 |
| <u>/s/ Gary Phillips, M.D.</u><br>Gary Phillips, M.D.               | Director                                                                         | March 17, 2022 |
| <u>/s/ Neal Walker, D.O.</u><br>Neal Walker, D.O.                   | Director                                                                         | March 17, 2022 |

March 17, 2022

Aldeyra Therapeutics, Inc.  
131 Hartwell Avenue, Suite 320  
Lexington, MA 02421  
Re: Aldeyra Therapeutics, Inc. Registration Statement on Form S-8 for 4,066,447 Shares of Common Stock

Ladies and Gentlemen:

We refer to the registration statement on Form S-8 (the "Registration Statement") to be filed by Aldeyra Therapeutics, Inc., a Delaware corporation (the "Company"), with the Securities and Exchange Commission (the "Commission") in connection with the registration under the Securities Act of 1933, as amended (the "Act") of (i) 3,485,526 shares of the Company's common stock, \$0.001 par value per share (the "Common Stock" and such shares the "Equity Incentive Plan Shares") issuable in the aggregate under the Company's 2013 Equity Incentive Plan, as amended (the "Equity Incentive Plan") and (ii) 580,921 shares of Common Stock (the "ESPP Shares" and, together with the Equity Incentive Plan Shares, the "Shares") of the Company issuable in the aggregate under the Company's 2016 Employee Stock Purchase Plan (the "ESPP" and, together with the Equity Incentive Plan, the "Plans").

As your counsel, we have examined such matters of fact and questions of law as we have deemed necessary in order to render the opinion set forth herein. In connection with our opinion expressed below, we have relied as to certain factual matters on information obtained from public officials, officers of the Company and other sources believed by us to be responsible. We express no opinion as to matters governed by any laws other than the laws of the Delaware General Corporation Law and the federal laws of the United States.

Based upon and subject to the foregoing, we advise you that, in our opinion, when the Shares have been issued and sold pursuant to the applicable provisions of the Plans, and in accordance with the Registration Statement, such Shares will be validly issued, fully paid and nonassessable shares of the Company's Common Stock.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Gunderson Dettmer Stough Villeneuve Franklin &  
Hachigian, LLP

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Gunderson Dettmer Stough Villeneuve Franklin &  
Hachigian, LLP

Consent of Independent Registered Public Accounting Firm

Aldeyra Therapeutics, Inc.  
Lexington, Massachusetts

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement on Form S-8 of our report dated March 17, 2022, relating to the financial statements of Aldeyra Therapeutics, Inc., appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2021.

/s/ BDO USA, LLP  
Boston, Massachusetts

March 17, 2022

## Calculation of Filing Fee Tables

Form S-8  
(Form Type)Aldeyra Therapeutics, Inc.

(Exact name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

| Security Type                 | Security Class Title                      | Fee Calculation Rule(4)    | Amount Registered(1) | Proposed Maximum Offering Price Per Share | Maximum Aggregate Offering Price | Fee Rate  | Amount of Registration Fee(5) |
|-------------------------------|-------------------------------------------|----------------------------|----------------------|-------------------------------------------|----------------------------------|-----------|-------------------------------|
| Equity                        | Common stock, par value \$0.001 per share | Rule 457(h)<br>Rule 457(c) | 3,485,526 (2)        | \$3.9250 (4)                              | \$13,680,689.55                  | 0.0000927 | \$1,268.20                    |
| Equity                        | Common stock, par value \$0.001 per share | Rule 457(h)<br>Rule 457(c) | 580,921 (3)          | \$3.3363 (4)                              | \$1,938,097.69                   | 0.0000927 | \$179.66                      |
| <b>Total Offering Amounts</b> |                                           |                            |                      |                                           | \$15,618,787.24                  |           | \$1,447.86                    |
| <b>Total Fee Offsets</b>      |                                           |                            |                      |                                           |                                  |           | —                             |
| <b>Net Fee Due</b>            |                                           |                            |                      |                                           |                                  |           | \$1,447.86                    |

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement shall also cover any additional shares of Registrant’s common stock, par value \$0.001 per share (the “Common Stock”), that become issuable under (a) the Registrant’s 2013 Equity Incentive Plan, as amended (the “2013 EIP”) and (b) the Registrant’s 2016 Employee Stock Purchase Plan (the “2016 ESPP”), as a result of any stock dividend, stock split, recapitalization, or other similar transaction effected without the receipt of consideration that results in an increase to the number of outstanding shares of Registrant’s Common Stock, as applicable. Common Stock issuable under the 2013 EIP and 2016 ESPP were previously registered on a Registration Statement on June 11, 2014 (File No. 333-196674), March 27, 2015 (File No. 333-203076), March 30, 2016 (File No. 333-210492), August 10, 2016 (File No. 333-213045), March 30, 2017 (File No. 333-217043), March 29, 2018 (File No. 333-224019), March 8, 2019 (File No. 333-230161), March 12, 2020 (File No. 333-237129) and March 11, 2021 (File No. 333-254144).
- (2) Represents 3,485,526 shares of Common Stock that were automatically added to the shares reserved for issuance under the 2013 EIP on January 3, 2022 pursuant to an “evergreen” provision contained in the 2013 EIP (the “2013 EIP Evergreen Shares”). The number of shares of Common Stock available for issuance under the 2013 EIP is subject to an automatic annual increase on the first business day of each fiscal year of the Registrant equal to the least of (a) 6% of the total number of Common Stock outstanding on the last calendar day of the prior fiscal year or (b) a number of shares of Common Stock determined by the Registrant’s board of directors.
- (3) Represents 580,921 shares of Common Stock that were automatically added to the shares reserved for issuance under the 2016 ESPP on January 3, 2022 pursuant to an “evergreen” provision contained in the 2016 ESPP (the “2016 ESPP Evergreen Shares”). The number of shares of Common Stock available for issuance under the 2016 ESPP is subject to an automatic annual increase on the first business day of each fiscal year of the Registrant equal to the least of (i) 1% of the total number of shares of Common Stock actually issued and outstanding on the last business day of the prior fiscal year (excluding any rights to purchase shares of common shares that may be outstanding, such as options or warrants), or (ii) a number of shares of Common Stock determined by the Registrant’s board of directors.
- (4) This estimate is made pursuant to Rule 457(h)(1) and Rule 457(c) of the Securities Act solely for purposes of calculating the registration fee. The price per share and aggregate offering price of the 2013 EIP Evergreen Shares are based upon the average of the high and low prices of the Common Stock on March 14, 2022, as reported on the Nasdaq Stock Market, which date is within five business days prior to the filing of this Registration Statement. The price per share and aggregate offering price of the 2016 ESPP Evergreen Shares are based upon the average of the high and low prices of the Common Stock on March 14, 2022, as reported on the Nasdaq Stock Market, which date is within five (5) business days prior to the filing of this Registration Statement, multiplied by 85%, which is the percentage of the price per share applicable to purchasers under the 2016 ESPP.
- (5) The Registrant does not have any fee offsets.