UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 8-K

CURRENT REPORT Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): March 29, 2022

ALDEYRA THERAPEUTICS, INC. (Exact name of Registrant as specified in its charter)

Delaware te or other jurisdiction of incorporation) (State

001-36332 (Commission File No.)

20-1968197 (IRS Employer Identification No.)

131 Hartwell Avenue, Suite 320 Lexington, MA 02421 (Address of principal executive offices and zip code)

Registrant's telephone number, including area code: (781) 761-4904

Not Applicable (Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

□ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

	Trading	Name of each exchange
Title of each class	Symbol(s)	on which registered
Common Stock, \$0.001 par value per share	ALDX	The Nasdaq Stock Market, LLC

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company \Box

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 13(a) of the Exchange Act. 🗆

Item 7.01. Regulation FD.

On March 29, 2022, Aldeyra Therapeutics, Inc. ("Aldeyra") intends to make a slide presentation at its 2022 Research & Development Day in person in New York City and by webcast on Aldeyra's website. A copy of Aldeyra's slide presentation is furnished as Exhibit 99.1 to this Current Report on Form 8-K and is incorporated by reference herein.

The furnishing of the attached slide presentation is not an admission as to the materiality of any information contained therein. The information contained in the slide presentation is summary information that is intended to be considered in the context of more complete information included in Aldeyra's filings with the Securities and Exchange Commission ("SEC") and other public announcements that Aldeyra has made and may make from time to time by press release or otherwise. Aldeyra undertakes no duty or obligation to update or revise the information contained in this report, although it may do so from time to time as its management believes is appropriate.

Various statements to be made during the conference call are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, statements regarding Aldeyra's plans and expectations for ADX-629 and its proprietary RASP modulation platform, the anticipated timing of commencement of clinical trials and announcement of clinical trial results. Aldeyra intends such forwardlooking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. In some cases, you can identify forward-looking statements by terms 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," "plan" or the negative of these terms, and similar expressions intended to identify forward-looking statements. Such forward-looking statements are based upon current expectations that involve risks, changes in circumstances, assumptions, and uncertainties. Aldeyra is at an early stage of development and may not ever have any products that generate significant revenue. All of Aldevra's development timelines may be subject to adjustment depending on recruitment rate, regulatory review, preclinical and clinical results, and other factors that could delay the initiation or completion of clinical trials. Important factors that could cause actual results to differ materially from those reflected in Aldeyra's forward-looking statements include, among others, the timing of enrollment, commencement and completion of Aldeyra's clinical trials, the timing and success of preclinical studies and clinical trials conducted by Aldeyra and its development partners; updated or refined data based on Aldeyra's continuing review and quality control analysis of clinical data, including P values, Aldeyra's ability to design clinical trials with protocols and endpoints acceptable to applicable regulatory authorities; delay in or failure to obtain regulatory approval of Aldeyra's product candidates; the ability to maintain regulatory approval of Aldeyra's 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 clinical trials involving Aldeyra's product candidates in clinical trials focused on the same or on different indications; the risk that the results from earlier or smaller preclinical or clinical trials, smaller clinical trials, portions of clinical trials, or pooled clinical data may not accurately predict results of subsequent trials or the remainder of a clinical trial; the scope, progress, expansion, and costs of developing and commercializing Aldeyra's product candidates; uncertainty as to Aldeyra's ability to commercialize (alone or with others) Aldeyra's product candidates following regulatory approval, if any; the size and growth of the potential markets and pricing for Aldeyra's product candidates and the ability to serve those markets; Aleyra's expectations regarding Aldeyra's expenses and revenue, the sufficiency or use of Aldeyra's cash resources and needs for additional financing; political, economic, legal, social and health risks, including the COVID-19 pandemic and

related public health measures, and war or other military actions, that may affect Aldeyra's business or the global economy; the rate and degree of market acceptance of any of Aldeyra's product candidates; Aldeyra's expectations regarding competition; Aldeyra's anticipated growth strategies; Aldeyra's ability to attract or retain key personnel; Aldeyra's limited sales and marketing infrastructure; Aldeyra's ability to stablish and maintain development partnerships; Aldeyra's ability to successfully integrate acquisitions into its business; Aldeyra's ability to ostain and maintain foreign regulatory regulatory developments in the United States and foreign countries; Aldeyra's ability to obtain and maintain intellectual property protection for its product candidates; the anticipated trends and challenges in Aldeyra's business and the market in which it operates; and other factors that are described in the "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of Aldeyra's Annual Report on Form 10-K for the year ended December 31, 2021, which is on file with the Securities and Exchange Commission (SEC) and available on the SEC's website at https://www.sec.gov/.

In addition to the risks described above and in Aldeyra's other filings with the SEC, other unknown or unpredictable factors also could affect Aldeyra's results. No forward-looking statements can be guaranteed and actual results may differ materially from such statements. The information conveyed on the conference call is provided only as of the date of the call, and Aldeyra undertakes no obligation to update any forward-looking statements presented on the call on account of new information, future events, or otherwise, except as required by law.

In addition to the risks described above and in Aldeyra's other filings with the SEC, other unknown or unpredictable factors also could affect Aldeyra's results. No forward-looking statements can be guaranteed and actual results may differ materially from such statements. The information conveyed on the conference call is provided only as of the date of the call, and Aldeyra undertakes no obligation to update any forward-looking statements presented on the call on account of new information, future events, or otherwise, except as required by law.

The information in Item 7.01 of this Form 8-K shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference under the Securities Act of 1933, as amended, except as expressly set forth by specific reference in such a filing, regardless of any general incorporation language in any such filing that such information is to be considered "filed" or incorporated by reference therein.

Item 8.01 Other Events.

On March 29, 2022, in connection with its 2022 Research & Development Day, Aldeyra issued a press release regarding its announcement of top-line data from three Phase 2 proof-of-concept clinical trials of ADX-629, a first-in-class orally administered RASP modulator and Aldeyra's updated clinical development plans and pipeline. A copy of the press release is attached as Exhibit 99.2 to this Current Report on Form 8-K and is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits

- Exhibit No. Description
- 99.1 Slide Presentation of Aldeyra Therapeutics, Inc. dated March 29, 2022.
- 99.2 Press Release of Aldeyra Therapeutics, Inc. dated March 29, 2022.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

ALDEYRA THERAPEUTICS, INC.

By: /s/ Joshua Reed Name: Joshua Reed Title: Chief Financial Officer

Dated: March 29, 2022

Exhibit 99.1

aldeyra

March 29, 2022

2022 Research & Development Day

ADX-629: A First-in-Class, Oral RASP Modulator for the Treatment of Systemic Disease

Nasdaq: ALDX © Aldeyra Therapeutics, Inc. 2022



March 29, 2022 Todd C. Brady, M.D., Ph.D., Chief Executive Officer

Welcome and Opening Remarks

Nasdaq: ALDX © Aldeyra Therapeutics, Inc. 2022

Disclaimers and Forward-Looking Statements

This presentation and various remarks which may be made during this presentation contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and Section 21E of the Securities Exchange Act of 1934, as amended, including statements regarding Aldeyra's possible or assumed future results of operations, expenses and financing needs, business strategies and plans, research and development plans or expectations, political, economic, legal, social and health risks, including the-COVID-19 pandemic and related public health measures and other responses to it, that may affect Aldeyra's business or the global economy, the structure, timing and success of Aldeyra's planned or pending clinical trials, expected milestones, market sizing, pricing and reimbursement, competitive position, regulatory matters, industry environment and potential growth opportunities, among other things. The results of earlier or smaller preclinical or clinical trials may not be predictive of future results. As a result of the COVID-19 pandemic, clinical site availability, staffing, and patient recruitment have been negatively affected and the timelines to complet Aldeyra's clinical trials may be delayed. Forward-looking statements include all statements that are not historical facts and, in some cases, can be identified by terms such as "may," "might," "will," "objective," "intend," "should," "could," "can," "would," "expect," "believe," "anticipate," "project," "target," "design," "estimate," "predict," "potential," "plan" or similar expressions and the negatives of those terms.

Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause Aldeyra's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. These statements reflect Aldeyra's current views with respect to future events and are based on assumptions and subject to risks and uncertainties, including the development, clinical and regulatory plans or expectations for Aldeyra's product candidates and systems-based approaches, later developments with the FDA that may be inconsistent with Aldeyra's expectations and beliefs, including the risk that the results from earlier clinical trials, portions of clinical trials, or pooled clinical data may not accurately predict results of subsequent trials or the remainder of a clinical trial for the same or different indications, inconsistent expectations regarding FDA acceptance and review of the company's filings and submitted data sets, and Aldeyra's forward-looking statements are described in Aldeyra's most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q, as well as Aldeyra's subsequent filings with the Securities and Exchange Commission. All of Aldeyra's development plans and timelines may be subject to adjustment depending on funding, recruitment rate, regulatory review, preclinical and clinical results, and other factors any of which could result in changes to Aldeyra's development plans and programs or delay the initiation, completion, or reporting of clinical trials.

In addition to the risks described above and in Aldeyra's other filings with the SEC, other unknown or unpredictable factors also could affect Aldeyra's results. No forward-looking statements can be guaranteed, and actual results may differ materially from such statements. The information in this presentation is provided only **as of March 29**, **2022**, and Aldeyra undertakes no obligation to update any forward-looking statements contained in this presentation on account of new information, future events, or otherwise, except as required by law.

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Agenda

TIN	ME (ET)	ТОРІС	PRESENTER
		RASP Overview	Todd C. Brady, M.D., Ph.D. Chief Executive Officer, Aldeyra Therapeutics
10:	:15 – 10:45 a.m.	RASP and Inflammation	Geoffrey M. Thiele, Ph.D. Umbach Professor, Internal Medicine, University of Nebraska Medical Center
10:		ADX-629 in <i>In vivo</i> and <i>In vitro</i> inflammatory models	Michael J. Duryee, MS Instructor, Internal Medicine, University of Nebraska Medical Center
0 11:	:15 - 11:30 a.m.	Questions	
4 11:	:30 - 11:40 a.m.	Break	
11:	:40 – 11:50 a.m.	Preclinical Activity of ADX-629	Adam Brockman, Ph.D. Director of Translational Science, Aldeyra Therapeutics
0 11:	:50 - 12:20 p.m.	Proof-of-Concept Top-Line Data	Todd C. Brady, M.D., Ph.D.
0 12:	2:20 – 12:35 p.m.	New Molecules, New Indications	Adam Brockman, Ph.D.
12:	:35 – 12:55 p.m.	Questions	
0 12:	::55 - 1:00 p.m.	Concluding Remarks	Todd C. Brady, M.D., Ph.D.

ALDEYRA'S MISSION is to discover and develop innovative medicines that improve the lives of patients who suffer from immune-mediated diseases.

OUR APPROACH is to create therapies that modulate immunological systems, instead of directly inhibiting or activating single protein targets, with the goal of optimizing multiple pathways at once while minimizing toxicity. VISION For our Drug Development Platform Systemic Disease

Aldeyra is a Well-Capitalized Biotechnology Company with a Broad Immunology Pipeline and Near-Term Catalysts

PRODUCT CANDIDATES	DISEASE TARGETS	DEVELOPMENT STAGE	NEXT EXPECTED MILESTONE
RASP PLATFORM FOR OCULAR AND S	YSTEMIC IMMUNE-MEDIATED DISEASES		
Reproxalap	Dry Eye Disease	Phase 3	Mid-2022: Final Pivotal Trial Results
(ophthalmic solution)	Allergic Conjunctivitis	Phase 3	2023: Final Pivotal Trial Results
ADX-629 (oral administration)	Ethanol Toxicity, Chronic Cough, Sjögren-Larsson Syndrome, Minimal Change Disease	Phase 2a	2022 and 2023: Trial Completion
RASP-Modulator Discovery Platform	Multiple Immune-Mediated Retinal and Systemic Indications	Preclinical	2023: IND Submission
VITREOUS METHOTREXATE PLATFORM	I FOR RARE RETINAL INFLAMMATORY DISEASES		
	Primary Vitreoretinal Lymphoma (U.S. FDA Orphan Drug Designation)	Pre-NDA	H2 2022: Regulatory Update
ADX-2191 (intravitreal injection)	Proliferative Vitreoretinopathy (U.S. FDA Orphan Drug and Fast Track Designation)	Phase 3	H2 2022: Part 1 GUARD Trial Results
	Retinitis Pigmentosa (U.S. FDA Orphan Drug Designation)	Phase 2	H2 2022: Trial Results

As of 12/31/2021, cash and cash equivalents were \$229.8M, which is expected to be sufficient to fund operations through the end of 2023, based on projected operating expenses.^{\dagger}

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[†]Company guidance as of March 17, 2022. IND = Investigational New Drug. NDA = New Drug Application.

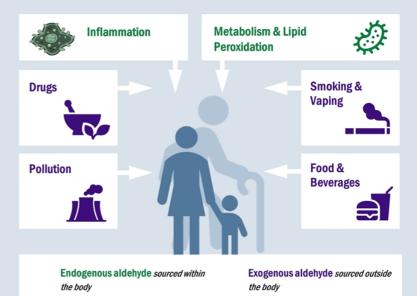
Reactive Aldehyde Species (RASP)

RASP are formed by a variety of metabolic processes, including:

- glucose metabolism,
- alcohol oxidation,
- lipid peroxidation, and
- polyamine metabolism.

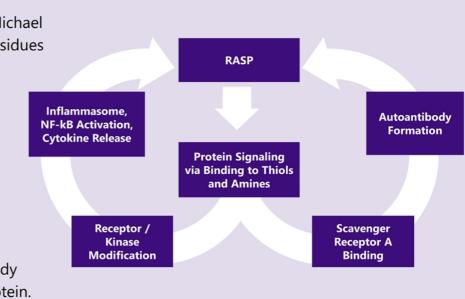
RASP are eliminated by chemical and enzymatic means:

- biomolecular adduction (thiol and amine covalent binding) and
- aldehyde dehydrogenases and reductases.



RASP Induce Inflammation via Multiple Mechanisms

- Aldehydes **covalently bind** thiol (Michael addition) and amine (Schiff base) residues on proteins.
- Direct protein binding leads to conformational and functional changes in proteins, which in turn initiate a pro-inflammatory signaling cascade.
- Aldehyde-protein adducts are ligands for Scavenger Receptor A, subsequently leading to autoantibody formation against the adducted protein.

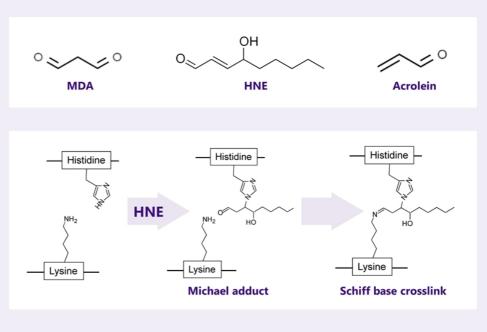


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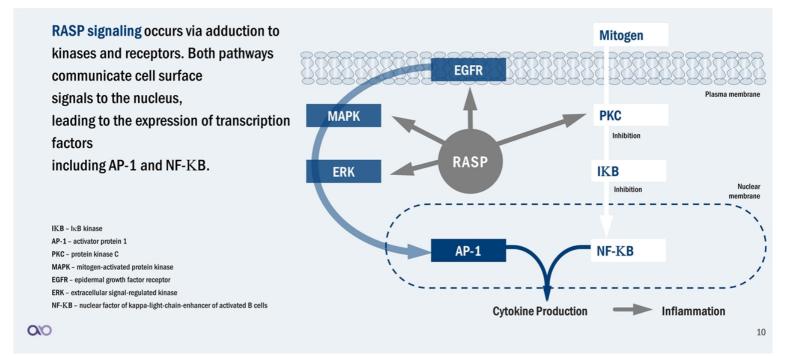
RASP Signaling is Mediated by Covalently Binding Proteins

Lipid-derived aldehydes such as **malondialdehyde** (MDA), **hydroxynonenal** (HNE), and acrolein are the most studied regarding inflammatory signaling

Cysteine thiols are the most sensitive to aldehyde adduction, followed by the amines of **lysine and histidine**.



The Pro-Inflammatory RASP Signaling Cascade is Well Characterized



RASP Signaling is Fundamentally Different from Receptor Signaling

RASP activity represents	MECHANISM	BOND	OUTPUT	MEMORY
a novel pro-inflammatory signal transduction paradigm, distinct from ligand/receptor	RASP	Covalent	Analog Pluripotent and contingent on adduct levels	Solid-State Outcome dependent on prior adduct levels
interactions.	Ligand/ Receptor	lonic, Hydrogen	Digital Unipotent and contingent on binding or no binding	Flash Outcome independent of prior binding state

RASP modulation is one of the few examples of pharmacologic therapies that do not directly target proteins and do not effect digital outcomes.

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Source: Higdon A, Diers AR, Oh JY, Landar A, Darley-Usmar VM. Cell signalling by reactive lipid species: new concepts and molecular mechanisms. Biochem J. 2012 Mar 15;442(3):453-64.

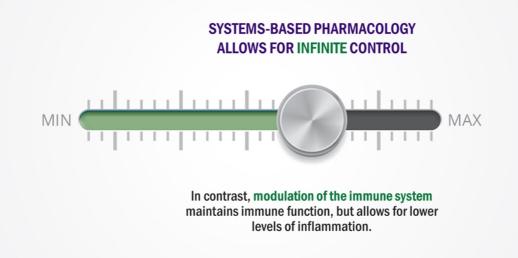
Aldeyra is Developing Technology Designed to Modulate Biological *Systems...*Not Single Targets

TRADITIONAL PHARMACOLOGY IS LIMITED TO TWO OUTCOMES



Most immunological drugs shut down specific molecules, obstructing the immune system and leading to toxicity.

Aldeyra is Developing Technology Designed to Modulate Biological *Systems...*Not Single Targets



Aldeyra is One Pivotal Trial Away from NDA Submission of Reproxalap for Allergic Conjunctivitis⁺

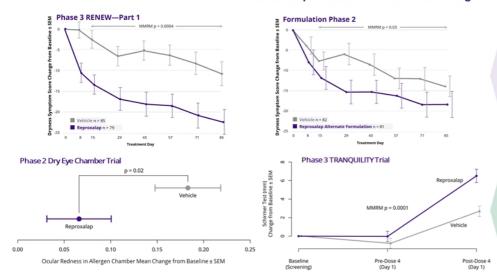


The Phase 3 INVIGORATE Allergen Chamber Trial

NDA submission requirements depend, in part, on clinical results and regulatory feedback. Source: INVIGORATE clinical trial results. Topical ocular reproxalap has been studied in more than 1,500 patients with no observed safety concerns; mild and transient instillation site discomfort is the most commonly reported adverse event in clinical trials. MMRM = mixed model repeated measures.

Aldeyra is One Pivotal Clinical Trial Away from NDA Submission of Reproxalap for Dry Eye Disease[†]

To satisfy efficacy requirements for dry eye disease, the FDA requires two positive trials with the same symptom and two positive trials with the same sign.[‡]



Symptoms

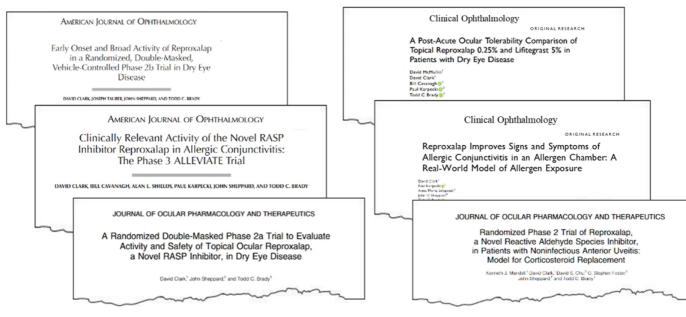
Aldeyra intends to submit two previously completed 12-week adequate and well-controlled **symptom trials** that pre-specified patient-reported ocular dryness score as a primary endpoint or a co-primary endpoint.

Signs

Aldeyra has shown statistically significant results in **ocular redness** in the Phase 2^{*} dry eye chamber trial and in **Schirmer test** in the Phase 3 TRANQUILITY Trial[#]. Both ocular redness and Schirmer test are FDA-sanctioned, objective signs of dry eye.

*NDA submission requirements depend, in part, on clinical results and regulatory feedback. *Draft U.S. Food and Drug Administration (FDA) guidance. *Adequate and well-controlled Phase 2 or Phase 3 clinical trials can be submitted as pivotal. *Schirmer test was a secondary endpoint in the TRANQUILITY Trial. Sources: Clinical trial results on file. MMRM = mixed model repeated measures. SEM = standard error of the mean. Topical ocular reproxalap is an investigational drug candidate that has been studied in more than 1,500 patients with no observed safety concerns; mild and transient instillation site discomfort is the most commonly reported adverse event in clinical trials.

The Activity of Lead RASP Modulator Reproxalap is Supported by Marquee **Peer-Reviewed Publications**



Topical ocular reproxalap is an investigational drug candidate that has been studied in over more than 1,500 patients with no observed safety concerns; mild and transient instillation site discomfort is the most commonly reported adverse event in clinical trials.

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Reactive Aldehyde Species and Inflammation: Evidence for Malondialdehyde and Acetaldehyde as Pro-Inflammatory Mediators

> Geoffrey M. Thiele, Ph.D. Umbach Professor of Rheumatology Department of Internal Medicine Division of Rheumatology and Immunology

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University of Nebraska Medical Center



March 29, 2022

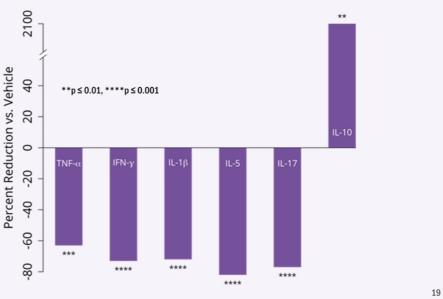
Adam Brockman, Ph.D., DABT, Director of Translational Science

Preclinical Activity of ADX-629 in Models of Inflammation

Nasdaq: ALDX © Aldeyra Therapeutics, Inc. 2022

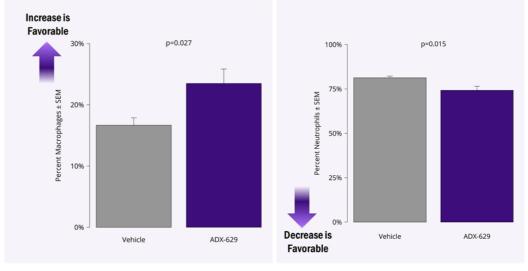
In a Murine Model of Cytokine Storm, ADX-629 Broadly Reduced Inflammatory Cytokines and Increased IL-10

- · Endotoxin model of cytokine storm
- ADX-629 100mg/kg administered intraperitoneally 15 minutes prior to endotoxin
- TH1, TH2, TH17 down-regulation in addition to up-regulation of the key antiinflammatory cytokine, IL-10



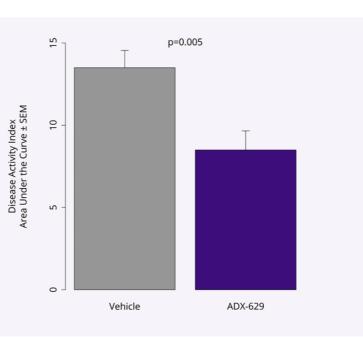
ADX-629 Treatment Reduced Cellular Infiltrate in a Murine Model of Acute Respiratory Distress Syndrome (ARDS)

- Endotoxin model of ARDS
- ADX-629 120mg/kg administered orally two hours prior to endotoxin
- Increased percentages of macrophages and decreased neutrophils in bronchoalveolar lavage fluid



ADX-629 Reduced Disease Activity Index Score in Murine Model of Ulcerative Colitis

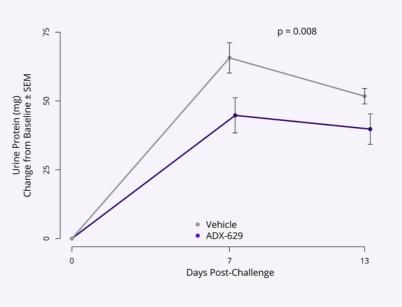
- Dextran sulfate sodium model of ulcerative colitis
- ADX-629 100mg/kg administered intraperitoneally daily for 6 days
- Statistical reduction in disease activity index



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In a Rat Model of Nephritis, ADX-629 Reduced Proteinuria

- Puromycin aminonucleoside (PAN) model of nephritis
- ADX-629 250mg/kg administered orally twice daily for 13 days
- Statistical reduction in proteinuria at 7 and 13 days



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March 29, 2022

Todd C. Brady, M.D., Ph.D., Chief Executive Officer

ADX-629 Proof-of-Concept Top-Line Clinical Trial Data

Nasdaq: ALDX © Aldeyra Therapeutics, Inc. 2022

ADX-629, a RASP Modulator for Oral Administration, Is a First-in-Class Pharmacologic Approach and Highlights the Future of Aldeyra

ADX-629 is an investigational

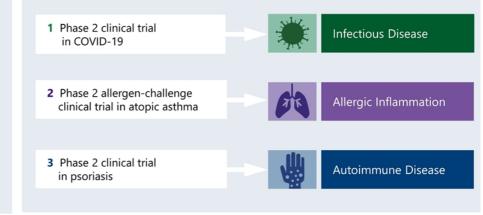
first-in-class, orally available covalent modulator of pro-inflammatory RASP, and potentially represents a new paradigm in the understanding and treatment of systemic immune-mediated disease.

A comprehensive systemic disease

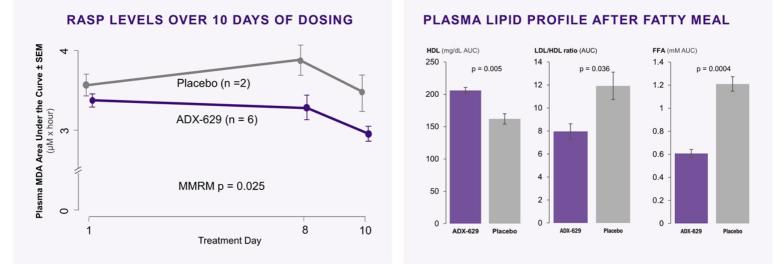
initiative was implemented to assess the activity of ADX-629 in three types of severe inflammation: autoimmune disease; allergic inflammation, and infectious disease.

RASP-MODULATION IN SYSTEMIC DISEASES

Phase 2 Proof-of-Concept, Indication-Selecting Clinical Trials in Three Types of Severe Inflammation



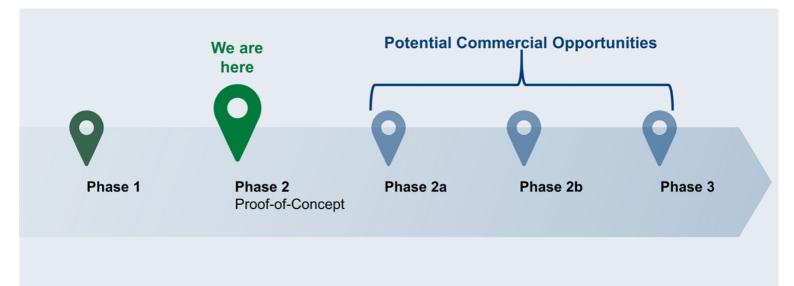
ADX-629 Reduced RASP vs. Placebo in Phase 1 Clinical Trial, Demonstrating Target Engagement, and Improved Lipid Profiles



Source: ADX-629 Phase 1 clinical trial results. MDA = malondialdehyde. SEM = standard error of the mean. MMRM = mixed model repeated measures. HDL = high-density lipoprotein. LDL = low-density lipoprotein. FFA = free fatty acids.

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Proof-of-Concept Trials Are Designed to Select Indications for Subsequent Clinical Trials





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A Phase 2 Proof-of-Concept Safety, Tolerability, and Activity Trial of ADX-629 in Patients with Mild to Moderate COVID-19

DESIGN	Multi-center, randomized, double-masked, parallel-group, placebo-controlled
DOSING	300mg ADX-629 or placebo twice-daily for 28 days 2:1 randomization
PATIENTS	11 (4 placebo, 7 ADX-629) Mild to moderate COVID-19, not on supplemental oxygen
ENDPOINTS	Clinical: Supplemental oxygen use, hospitalization, mechanical ventilation, intensive care unit intensive care unit admission, death, National Institute of Allergy and Infectious Diseases (NIAID) Diseases (NIAID) score Pharmacodynamic: Plasma cytokine, RASP levels



Baseline Characteristics Were Similar Across Treatment Groups

	PLACEBO (n=4)	ADX-629 (n=7)
COVID-19 Status	Mild (25%), Moderate (75%)	Mild (29%), Moderate (71%)
Mean Age (years)	55	49
ВМІ	31	29
Gender	Male (50%), Female (50%)	Male (57%), Female (43%)
Immunological History	0	2 (29%)
Respiratory History	0	2 (29%)

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Compliance, Exposure, and Top-Line Clinical Results Were Similar Across Treatment Groups

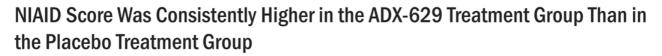
	PLACEBO (n=4)	ADX-629 (n=7)
Compliance	98%	95%
Mean Exposure (days)	23	28
Treatment Discontinuations	1 (25%)	0
Supplemental Oxygen	1 (25%)	0
Hospitalization	1 (25%)	0
Mechanical Ventilation	0	0
ICU Admission	0	0
Death	0	0

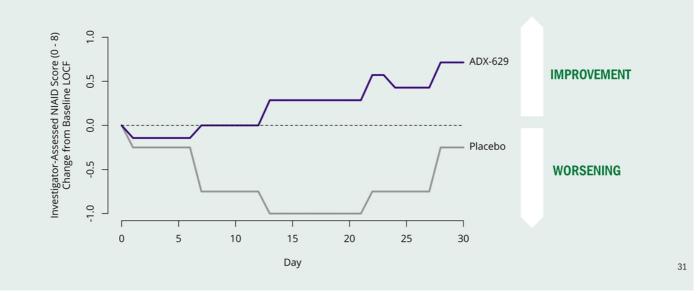


The National Institute of Allergy and Infectious Diseases (NIAID) Score is a Leading Indicator of COVID-19 Outcomes

NIAID SCORE	DESCRIPTION
8	Not hospitalized, no limitation on activities
7	Not hospitalized, limitation on activities and/or requiring home oxygen
6	Hospitalized, not requiring supplemental oxygen or ongoing medical care
5	Hospitalized, not requiring supplemental oxygen, requiring ongoing medical care
4	Hospitalized, requiring supplemental oxygen
3	Hospitalized, on noninvasive ventilation or high-flow oxygen devices
2	Hospitalized, on invasive mechanical ventilation or extracorporeal membrane oxygenation
1	Death









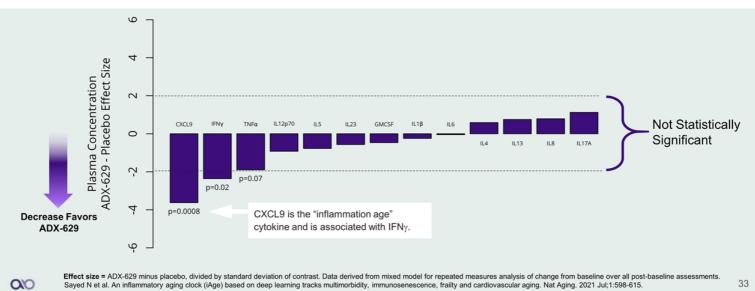
Adverse Events Favored the ADX-629 Treatment Group

	PLACEBO (n=4)	ADX-629 (n=7)
Serious Adverse Events	1 (25%; hypoxia)	0
Severe	1 (25%; hypoxia)	0
Moderate	2 (50%; elevated ALT, AST)	1 (14%; pelvic pain)
Mild	0	2 (29%; flatulence, itching)
Caused Discontinuation	1 (25%)	0

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Pro-Inflammatory Cytokines Were Reduced



Effect size = ADX-629 minus placebo, divided by standard deviation of contrast. Data derived from mixed model for repeated measures analysis of change from baseline over all post-baseline assessments. Sayed N et al. An inflammatory aging clock (iAge) based on deep learning tracks multimorbidity, immunosenescence, frailty and cardiovascular aging. Nat Aging. 2021 Jul;1:598-615. 33



A Phase 2 Proof-of-Concept Safety, Tolerability, and Activity Trial of ADX-629 in Patients with Mild Asthma

DESIGN	Single-center, crossover, allergen challenge
DOSING	300mg ADX-629 or placebo twice-daily for 7 days
PATIENTS	8
ENDPOINTS	Clinical: Asthma Control Questionnaire, sputum cell counts, forced expiratory volume (FEV) expiratory volume (FEV) following allergen and methacholine challenge Pharmacodynamic: Plasma cytokine, RASP levels

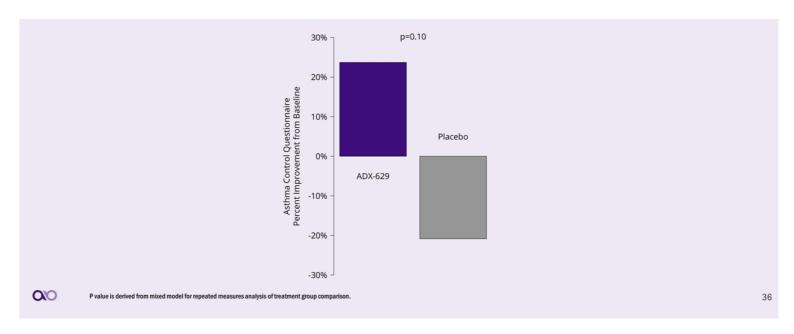


The Asthma Control Questionnaire is a Combination of Symptom and FEV Assessments

QUESTION	RANGE
Sleeping	0=Normal, 6=Unable to sleep
Morning Symptoms	0=None, 6=Very severe
Activity Limitation	0=None, 6=Totally limited
Shortness of Breath	0=None, 6=Very severe
Wheezing	0=None, 6=Constant
Bronchodilator Use	0=None, 6=More than 15 inhalations per day
Forced Expiratory Volume	0=More than 95% predicted, 6=Less than 50% predicted

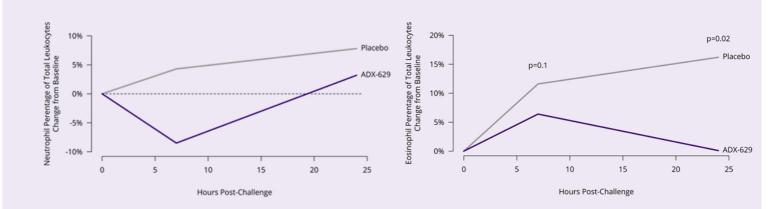


Symptom Improvement Favored ADX-629 Over Placebo





Reductions in Eosinophil and Neutrophil Sputum Cell Counts Supported Drug Activity



QXO P values are derived from mixed model for repeated measures analysis of placebo group comparison to 0 (no change).



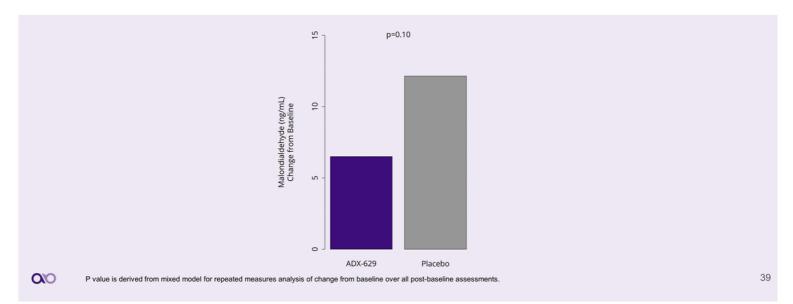
No Safety Concerns Were Evident from Adverse Events

	PLACEBO (n=8)	ADX-629 (n=8)
Serious Adverse Events	0	0
Severe	0	0
Moderate	0	1 (13%; appetite, cough, dyspnea)
Mild	1 (13%; congestion, pruritis)	0
Caused Discontinuation	0	1 (13%)

38

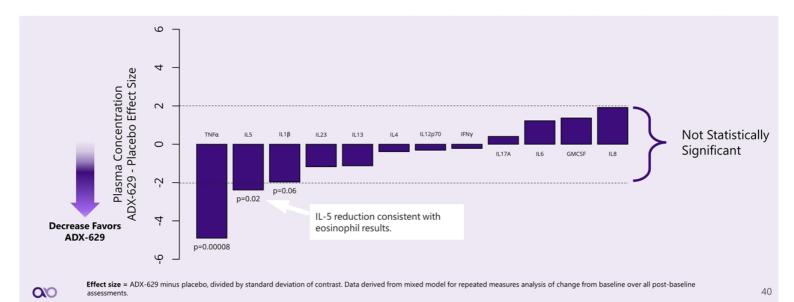


Reduction in Plasma Malondialdehyde Levels Correlated with Clinical Response





Pro-Inflammatory Cytokines Were Reduced





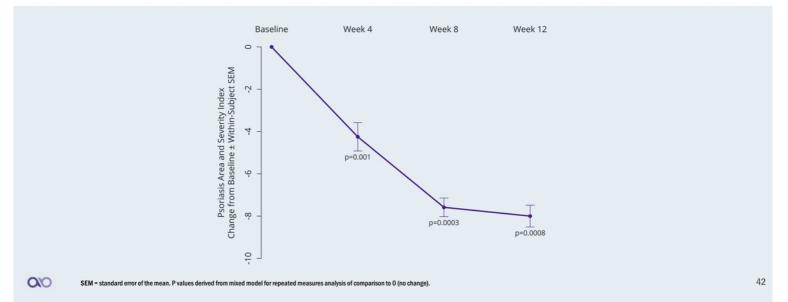
A Phase 2 Proof-of-Concept Safety, Tolerability, and Activity Trial of ADX-629 in Patients with Mild to Moderate Psoriasis

DESIGN	Multi-center, single-arm
DOSING	250mg ADX-629 twice-daily for 90 days
PATIENTS	10
ENDPOINTS	Clinical: Psoriasis Area and Severity Index (PASI), Investigator Global Assessment (IGA) Pharmacodynamic: Plasma cytokine, RASP levels

41



Psoriasis Area and Severity Index Statistically Decreased Over Time





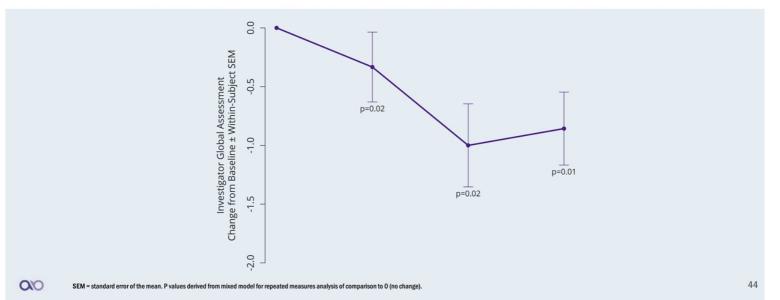
PASI 50% and 75% Responders Significantly Increased Over Time

WEEK OF TREATMENT	PASI-50	PASI-75
4	29% (p=0.047)	0
8	57% (p=0.001)	0
12	38% (p=0.014)	25% (p=0.051)

PASI = psoriasis area and severity index. PASI-50 and PASI-75 responders are defined as patients with PASI scores that improved (decreased) from baseline by at least 50% and 75%, respectively. P values derived from one-sided Clopper-Pearson Exact Tests.



Investigator Global Assessment Supported PASI Results



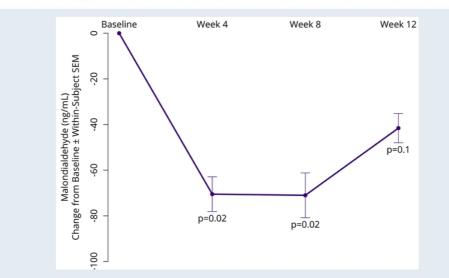


No Safety Concerns Were Evident from Adverse Events

ADVERSE EVENT	NUMBER (%; adverse event)
Serious Adverse Events	0
Severe	0
Moderate	1 (10%; psoriasis)
Mild	2 (20%; diarrhea, sprain)
Caused Discontinuation	1 (10%)



Reduction in Plasma Malondialdehyde Levels Correlated with Clinical Response

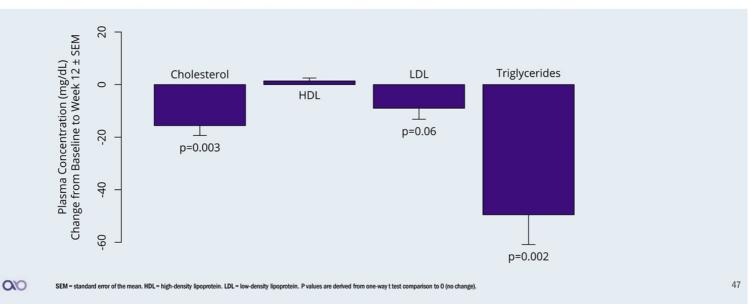


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SEM = standard error of the mean. P values derived from mixed model for repeated measures analysis of comparison to 0 (no change).



Beneficial Changes Observed in Lipid Profiles Consistent with Preclinical and Phase 1 Results





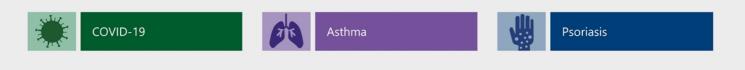
Lesional Tissue Analysis Suggested Normalization of Gene Expression

The DermTech Smart Sticker™ Workflow			Hierarchical Clustering	Color Vy		
	Lesional vs no	n-lesional	Les	ional	Non-Lesional	
	BL vs BNL (n=7)	w12L vs w12NL (n=7)	BL vs w4L (n=7)	BL vs w12L (n=7)	BNL vs w12NL (n=7)	
	(
DEGs (FC>2 and p<0.05)	2469	578	556	3157	835	

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DEG = differentially expressed gene. FC = fold change. BL = baseline lesional. BNL = baseline non-lesional. w4L = Week 4 lesional. w12L = Week 12 lesional. w12NL = Week 12 non-lesional.

ADX-629 Consistently Demonstrated Preliminary Safety and Activity Across Different Inflammatory Diseases



No safety signals observed from adverse events

Clinical activity demonstrated across a variety of types of inflammation, suggestive of the upstream activity of RASP modulation

ADX-629 and related RASP modulators to be **advanced to development indications**

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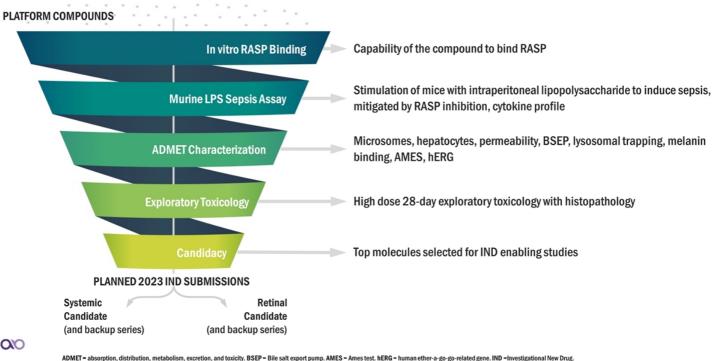
March 29, 2022

Adam Brockman, Ph.D., DABT, Director of Translational Science

New Molecules, New Indications

Nasdaq: ALDX © Aldeyra Therapeutics, Inc. 2022

RASP Modulator Platform



Development Indications for ADX-629 and New RASP Modulators Are Supported by Mechanistic Rationale and Clinical Results

INDICATION	RATIONALE
Ethanol Toxicity/Steatohepatitis	Acetaldehyde sequestration, clinical and preclinical evidence of lipid lowering
Chronic Cough	Evidence of RASP in sputum, symptomatic and cell results in asthma
Sjögren-Larsson Syndrome	Fatty aldehyde dehydrogenase deficiency, clinical RASP reduction
Minimal Change Disease	Corticosteroid synergy in uveitis with reproxalap ⁺ , TH1 activity in psoriasis, activity in PAN model

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PAN = puromycin aminonucleoside nephrosis. †Mandell KJ, Clark D, Chu DS, Foster CS, Sheppard J, Brady TC. Randomized Phase 2 Trial of Reproxalap, a Novel Reactive Aldehyde Species Inhibitor, in Patients with Noninfectious Anterior Uveitis: Model for Corticosteroid Replacement. J Ocul Pharmacol Ther. 2020 Dec;36(10):732-739.

Ethanol Toxicity and Fatty Liver Disease Affect Millions of Patients Worldwide



Up to 10% of adults in the U.S. abuse ethanol, which when done chronically can lead to the development of liver disease.

Approximately 12 million adults in the United States have alcoholic fatty liver disease (AFLD).

The incidence of steatohepatitis is increasing in males and females.

Up to 50% of patients with AFLD develop **cirrhosis**.

The classic clinical syndrome of AFLD consists of jaundice, varying degrees of hepatic failure, abdominal distress, fever, and leukocytosis.

No approved treatments are currently available for the treatment of ethanol toxicity and AFLD, though medications (e.g., corticosteroids) may be used to reduce liver inflammation.

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Sources: Company estimates; UpToDate (Ethanal intoxication in adults updated 03/19/20). . Wong et al. JAMA. 2019;321(17):1723-25. Neuman et al. Exp Mol Pathol. 2014;97(3):492-510. Singh et al. World J Gastroenterol. 2017;23:6549-6570.

Chronic Cough is A Common Disease with No Currently Approved Therapy



Chronic cough is defined as a cough that lasts eight weeks or longer in adults.

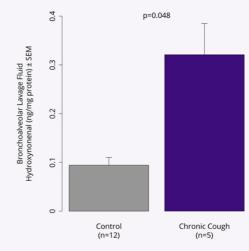
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Affects an estimated 13M adults in the United States, and up to approximately 10% of people worldwide.

In the U.S., people with chronic cough are more frequently female (60%), have an average age of 50, and are often current smokers (30%).

Quality of life is impaired in patients with chronic cough and has been associated with anxiety, depression, and sleep disturbance.

RASP are increased in the lungs of patients with chronic cough.



Sources: Company estimates; Meltzer et al. J Allergy Clin Immunol Pract. 2021;9:4037-4044. Arinze et al. ERJ Open Res. 2021;6:00300-2019; data on file.

Sjögren-Larsson Syndrome (SLS) Is a Rare Neurological and Dermal Condition with No Approved Therapy



Autosomal recessive neurocutaneous disorder caused error of metabolism involving fatty alcohol oxidation

The prevalence of SLS is approximately **1,300 patients** in the United States.

Caused by mutations in *ALDH3A2* and results in abnormal metabolism of aldehydes and alcohols.

Dermatologic features in addition to motor, cognitive, speech, and ocular manifestations.

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Sources: UpToDate (Sjögren-Larsson syndrome updated 10/27/21). Rizzo et al. Expert Opin Orphan Drugs. 2016;4:395-406. Willemsen et al. Brain. 2001;124:1426-37.

Minimal Change Disease Is a Rare Kidney Disease with No Approved Therapy

Minimal change disease is characterized by effacement of epithelial cell foot processes.



Major cause of nephrotic syndrome in children reaching 90% of cases in children and approximately 10%-15% of adults.

The incidence in children ranges from ~1,400 to ~5,000 in the U.S. while the exact prevalence is not well understood.

Treatment involves corticosteroids and other immunosuppressant alternatives. Relapse occurs in 40%-50% of children often during corticosteroid tapering or soon after corticosteroid discontinuation, requiring second-line therapy.

In adults, relapses are frequent, occurring in 56% to 76% of patients.

Sources: Company estimates; Vivarelli et al. Clin J Am Soc Nephrol. 2017;2:332-345. UpToDate (Minimal Change Disease updated 12/3/21).

Development Indication Phase 2a Trials Initiating in 2022 Represent Varied Trial Designs and Are Expected to Complete in 2022 and 2023

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INDICATION	PLANNED DESIGN	PLANNED ENDPOINTS	EXPECTED COMPLETION	
Ethanol Toxicity	Crossover, ethanol challenge, acute dosing, ~20 subjects	Symptoms, plasma chemistry, flushing	H2 2022	
Chronic Cough	Crossover, 28-day dosing, ~50 subjects	Cough frequency, symptoms	2023	
Sjögren-Larsson Syndrome	Baseline-controlled, ~6 subjects	Plasma biomarkers, magnetic resonance imaging, quality of life	2023	
Minimal Change Disease	Baseline-controlled, ~ 6 subjects	Relapse (corticosteroid dependency, proteinuria)	2023	57

Timing depends, in part, on restrictions related to the COVID-19 pandemic, the availability of clinical research facilities and staffing, the ability to recruit patients, and regulatory feedback.



March 29, 2022

Questions

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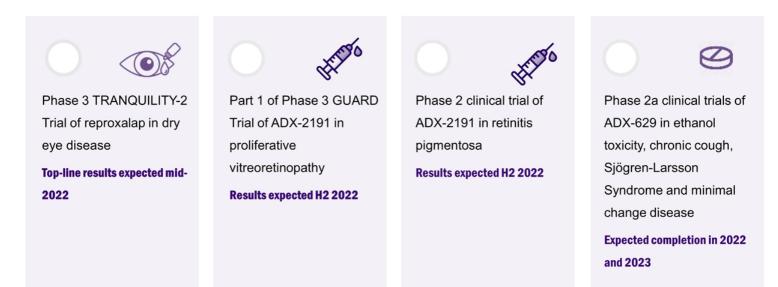


March 29, 2022 Todd C. Brady, M.D., Ph.D., Chief Executive Officer

Concluding Remarks

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Upcoming Planned Clinical Milestones*



The timing of ongoing clinical trials depend, in part, on restrictions related to COVID-19, the availability of clinical research facilities and staffing, and the ability to recruit patients.

We Are Creating What We Believe Are Best-in-Class Therapeutic Platforms for Modulation of Inflammatory Disease

Unparalleled drug discovery and development engine targeting RASP, with multiple early and late-stage milestones expected over the next two years⁺

- Reproxalap NDA submission in dry eye disease expected mid-2022
- ADX-629 advancing to Phase 2 trials in four new indications

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 New compounds for systemic and retinal disease expected in the clinic in 2023

Unique methotrexate formulation with orphan drug status in three rare retinal diseases

 ADX-2191 represents potential gold-standard treatment for proliferative vitreoretinopathy, retinitis pigmentosa, and primary vitreoretinal lymphoma.

'Timing depends, in part, on restrictions related to the COVID-19 pandemic, the availability of clinical research facilities and staffing, the ability to recruit patients, and regulatory feedback. NDA submission requirements depend, in part, on clinical results and regulatory feedback. NDA = New Drug Application.

News Release



Aldeyra Therapeutics to Announce Top-Line Data for Systemic RASP Modulator ADX-629 at 2022 Research & Development Day

- Signs of Pharmacodynamic and Clinical Activity Generated Across Three Phase 2 Proof-of-Concept Clinical Trials in Patients with
- Immune-Mediated Disease; No Safety or Tolerability Issues Observed
 - ADX-629 to Be Advanced to New Development Indications: Ethanol Toxicity, Chronic Cough, Minimal Change Disease, and Sjögren-Larsson Syndrome
- Novel RASP Modulators for Systemic and Retinal Disease Expected to Initiate Clinical Testing in 2023
- Live Audio Webcast of R&D Day Scheduled to Begin at 10:00 a.m. ET Today

LEXINGTON, Mass., March 29, 2022 – <u>Aldeyra Therapeutics. Inc.</u> (Nasdaq: ALDX) (Aldeyra), a biotechnology company discovering and developing innovative therapies for the treatment of immune-mediated diseases, today will announce at its 2022 Research & Development Day that three clinical trials of ADX-629, a first-in-class orally administered RASP modulator, generated signs of pharmacodynamic and clinical activity consistent with broad-based reduction in pathologic inflammation.

"The promising results exhibited by ADX-629 represent the first clinical data supportive of RASP modulation as a novel pharmacology for the potential treatment of systemic disease," stated Todd C. Brady, M.D., Ph.D., President and CEO of Aldeyra. "Accordingly, we plan to advance our proprietary RASP modulator platform, which includes ADX-629 and other novel molecules, into new indications mediated by RASP, effecting a new milestone for Aldeyra as we continue to expand our focus to systemic and retinal diseases."

Top-Line Data from Phase 2 Proof-of-Concept Trials of ADX-629

Autoimmune Disease: Psoriasis

Following treatment of ten moderate psoriasis patients with ADX-629 for 12 weeks, psoriasis area and severity index (PASI) scores were statistically significantly decreased (p=0.008 vs. baseline at Week 12), and peak PASI 50% and PASI 75% responder percentages were 57% (p=0.001) and 25% (p=0.051), respectively. Investigator global assessment scores decreased over the duration of treatment (p=0.01 vs. baseline at Week 12). Lesional pan-gene expression analysis suggested a trend toward normalization of global gene expression patterns; by Week 12 no gene expression pathways in lesional tissue were dysregulated compared to non-lesional skin. Plasma levels of the commonly described pro-inflammatory RASP malondialdehyde were reduced relative to baseline as soon as four weeks after initiation of treatment (p=0.02).

Allergic Inflammation: Asthma

In a placebo-controlled crossover trial of eight mild asthma patients treated for 7 days, asthma symptom scores and sputum eosinophil cell counts were numerically reduced following treatment with ADX-629 relative to treatment with placebo. Compared to placebo treatment, treatment with ADX-629 led to statistically significant reductions in plasma levels of the pro-inflammatory cytokines IL-5 (p=0.02) and TNF α (p<0.0001), and numerical reductions in plasma levels.

Infectious Disease: COVID-19

Following treatment of 11 mild to moderate COVID-19 patients with ADX-629 or placebo for four weeks, change from baseline in the National Institute of Allergy and Infectious Diseases Score (1=death, 8=no activity limitation) was numerically higher in ADX-629-treated patients (n=7) than in placebo-treated patients (n=4) over all days assessed. Consistent with the clinical findings, relative to placebo-treated patients, reductions in plasma levels of the cytokines CXCL9 (p=0.0008), IFNg (p=0.02), and TNF α (p=0.07) were observed in patients treated with ADX-629.

Across all three clinical trials, in patients treated with ADX-629, no safety concerns were evident from adverse events and there were no serious adverse events observed.

ADX-629 Advanced to New Indications

Today's R&D Day will include a presentation from Geoffrey M. Thiele, Ph.D., Umbach Professor of Rheumatology in the Department of Internal Medicine at the University of Nebraska Medical Center, who will discuss new results from preclinical studies indicating consistent activity of ADX-629 in reducing hepatic inflammation, lowering RASP, and improving lipid profiles in animals and in human liver tissue exposed to ethanol.

Aldeyra also will announce the advancement of ADX-629 to new clinical development indications: ethanol toxicity; chronic cough; minimal change disease, a rare renal disease that commonly afflicts children; and Sjögren-Larsson Syndrome, a rare inborn error of aldehyde metabolism. Results from the ethanol toxicity trial are expected in the second half of 2022 and results from the chronic cough, minimal change disease, and Sjögren-Larsson Syndrome trials are expected in 2023.

Webcast Details

The R&D Day presentations are scheduled to begin at 10:00 a.m. (ET) today, March 29, 2022, in New York, NY. A live audio webcast of the presentation and a slide deck will be available via the company's Investor Relations website at <u>https://ir.aldeyra.com/</u>. Following the live webcast, an archived version will be available on the website for 90 days.

About Aldeyra Therapeutics

Aldeyra Therapeutics discovers and develops innovative therapies designed to treat immune-mediated diseases. Our approach is to develop therapies that modulate immunological systems, instead of directly inhibiting or activating single protein targets, with the goal of optimizing multiple pathways at once while minimizing toxicity. Two of our lead product candidates, reproxalap and ADX-629, target pre-cytokine, systems-based mediators of inflammation known as RASP (reactive aldehyde species). Reproxalap is in Phase 3 clinical trials in patients with dry eye disease and allergic conjunctivitis. ADX-629, an orally administered RASP modulator, is in Phase 2 clinical testing. Our pipeline also includes ADX-2191 (intravitreal methotrexate 0.8%), in development for the prevention of proliferative vitreoretinopathy and the treatment of retinitis pigmentosa and primary vitreoretinal lymphoma. For more information, visit <u>https://www.aldeyra.com/</u> and follow us on <u>LinkedIn, Facebook</u>, and <u>Twitter</u>.

Safe Harbor Statement

This release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including, but not limited to, statements regarding Aldeyra's plans and expectations for ADX-629 and its proprietary RASP modulation platform, the anticipated timing of commencement of clinical trials and announcement of clinical trial results. Aldeyra intends such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. In some cases, you can identify forward-looking statements by terms such as, but not limited to, "may," "might," "will," "objective," "intend," "could," "can," "would," "expect, "believe," "anticipate," "project," "on track," "scheduled," "target," "design," "estimate," "predict," "potential," "aim," "plan" or the negative of these terms, and similar expressions intended to identify forward-looking statements. Such forward-looking statements are based upon current expectations that involve risks, changes in circumstances, assumptions, and uncertainties. Aldeyra is at an early stage of development and may not ever have any products that generate significant revenue. All of Aldeyra's development timelines may be subject to adjustment depending on recruitment rate, regulatory review, preclinical and clinical results, and other factors that could delay the initiation or completion of clinical trials. Important factors that could cause actual results to differ materially from those reflected in Aldeyra's forward-looking statements include, among others, the timing of enrollment, commencement and completion of Aldeyra's clinical trials conducted by Aldeyra and its development partners; updated or refined data based on Aldeyra's continuing review and quality control analysis of clinical data, including P values, Aldeyra's ability to design clinical trials with

protocols and endpoints acceptable to applicable regulatory authorities; delay in or failure to obtain regulatory approval of Aldeyra's product candidates; the ability to maintain regulatory approval of Aldeyra's 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 clinical trials involving Aldeyra's product candidates in clinical trials focused on the same or on different indications; the risk that the results from earlier or smaller preclinical or clinical trials, portions of clinical trials or pooled clinical data may not accurately predict results of subsequent trials or the remainder of a clinical trial; be cope, progress, expansion, and costs of developing and commercializing Aldeyra's product candidates; uncertainty as to Aldeyra's ability to commercialize (alone or with others) Aldeyra's product candidates following regulatory approval, if any; the size and growth of the potential markets and pricing for Aldeyra's product candidates and the ability to serve those markets; Aldeyra's expectations regarding Aldeyra's expenses and revenue, the sufficiency or use of Aldeyra's cash resources and needs for additional financing; political, economic, legal, social and health risks, including the COVID-19 pandemic and related public health measures, and war or other military actions, that may affect Aldeyra's business or the global economy; the rate and degree of market acceptance of any of Aldeyra's product candidates; Aldeyra's expectations regarding competition, Aldeyra's anticipated growth strategies; Aldeyra's ability to attract or retain key personnel; Aldeyra's limited sales and marketing infrastructure; Aldeyra's ability to establish and maintain development partnerships; Aldeyra's ability to successfully integrate acquisitions into its business; Aldeyra's expectations regarding federal

In addition to the risks described above and in Aldeyra's other filings with the SEC, other unknown or unpredictable factors also could affect Aldeyra's results. No forward-looking statements can be guaranteed and actual results may differ materially from such statements. The information in this release is provided only as of the date of this release, and Aldeyra undertakes no obligation to update any forward-looking statements contained in this release on account of new information, future events, or otherwise, except as required by law.

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