



January 2021

CORPORATE REVIEW

Systems-Based Approaches to Regulate Immune Response

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 recent COVID-19 outbreak and subsequent 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 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 complete 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 smaller clinical trials or portions of clinical trials may not accurately predict results of larger scale trials or the remainder of a clinical trial, inconsistent expectations regarding FDA acceptance and review of the company's filings and submitted data sets, and Aldeyra's continuing review and quality control analysis of clinical data. Important factors that could cause actual results to differ materially from those reflected in 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 January 7, 2021, 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.

Immunology is a Key Component of Many Diseases

~7%
Of Western Society

Suffer from some form of **immune-mediated disease**, and incidence is **increasing**

Dry Eye Disease

Psoriasis

Asthma

Lupus

Allergy

Respiratory Distress

Inflammatory Bowel Disease

Alzheimer's

... Etc. ...

Unmet Needs

Disease control elusive despite existing therapies, and thus **novel approaches are needed**

*Inflammation:
A Unifying Theory of Disease?*

Harvard Health Letter
April, 2006

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

Traditional



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

The traditional approach is limited to two outcomes.

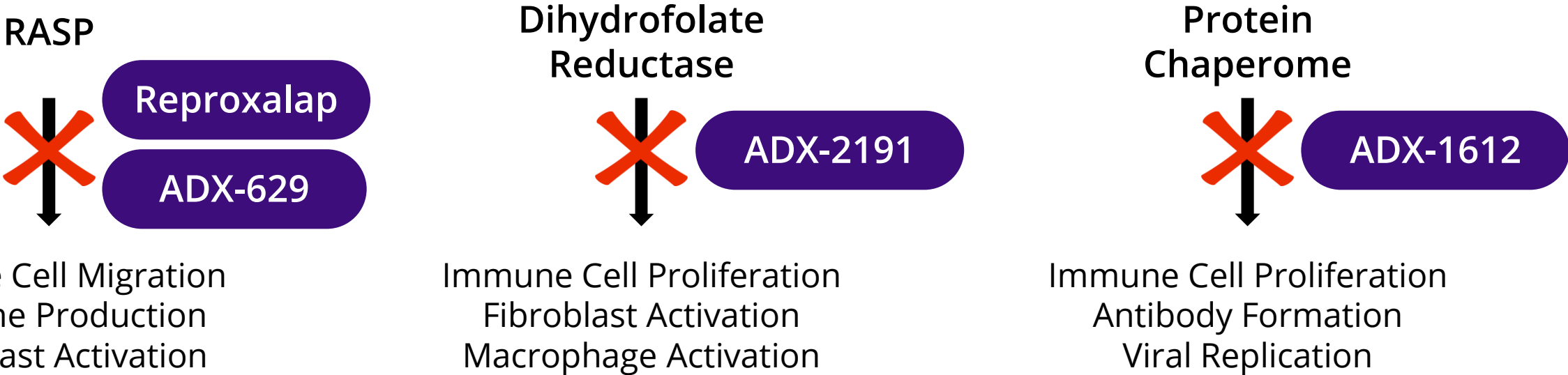
In contrast, **modulation** of the immune **system** maintains immune function, but allows for lower levels of inflammation.

A systems-based approach allows for infinite control.

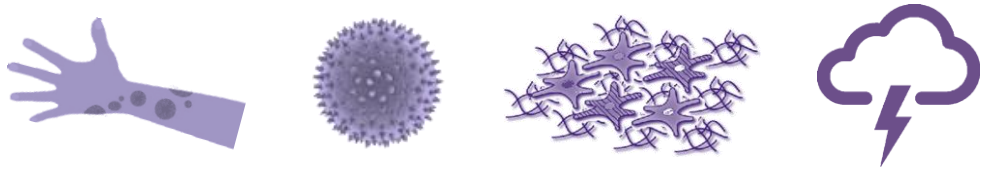
Systems-Based



Aldeyra is Developing Novel Approaches for Immune System Regulation



Immune Mediated Diseases:
Autoimmune Disease, Allergy, Fibrosis, Cytokine Release Syndrome



Innovative Pipeline Addressing Immunological Disease

Disease Area	Compound	Mechanism	Indication	Preclinical	Phase 1	Phase 2	Phase 3
Ocular Diseases	Reproxalap	RASP	Dry Eye Disease				
			Allergic Conjunctivitis				
	ADX-2191	DHFR	Proliferative Vitreoretinopathy				
			Primary Vitreoretinal Lymphoma				
	ADX-103/10X	RASP	Retinal Disease				
Systemic Diseases	ADX-629	RASP	Cytokine Release Syndrome (COVID-19)				
			Allergy (Atopic Asthma)				
			Autoimmune Disease (Psoriasis)				
	ADX-1612	CHP	Ovarian Cancer	Investigator-Sponsored Trial			
			SARS-CoV2 Antiviral (COVID-19)				

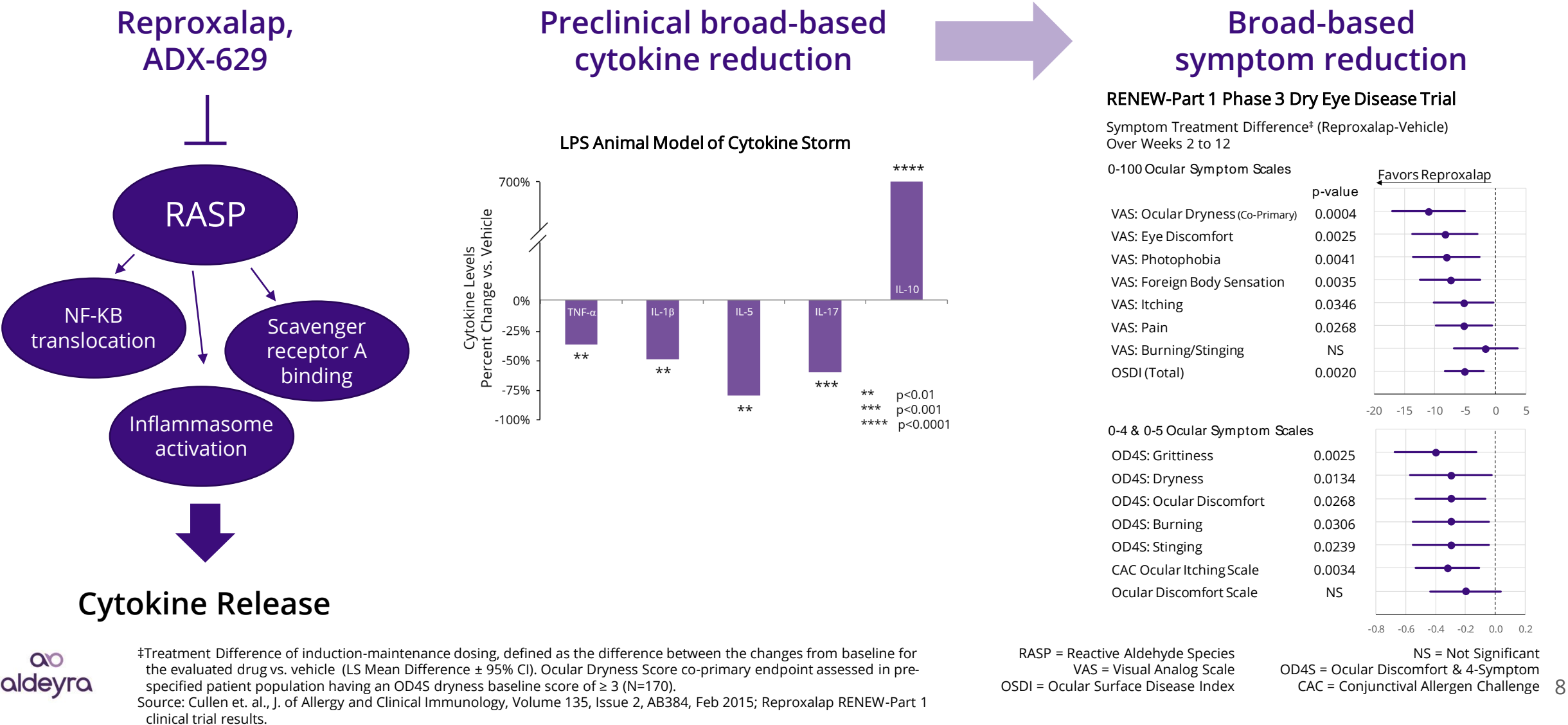


January 2021

CORPORATE REVIEW

Reactive Aldehyde Species (RASPs) Inhibition

RASP Inhibition is a Pre-Cytokine, Systems-Based Approach that Has Been Clinically Validated in Late-Stage Trials



Lead RASP Inhibitor Reproxalap, a Novel Topical Ocular Drug, Now in Two Phase 3 Programs for Ocular Inflammation

Dry Eye Disease



Often months to demonstrate even modest efficacy with current Rx

34 million or more adults in the U.S.¹

Allergic Conjunctivitis



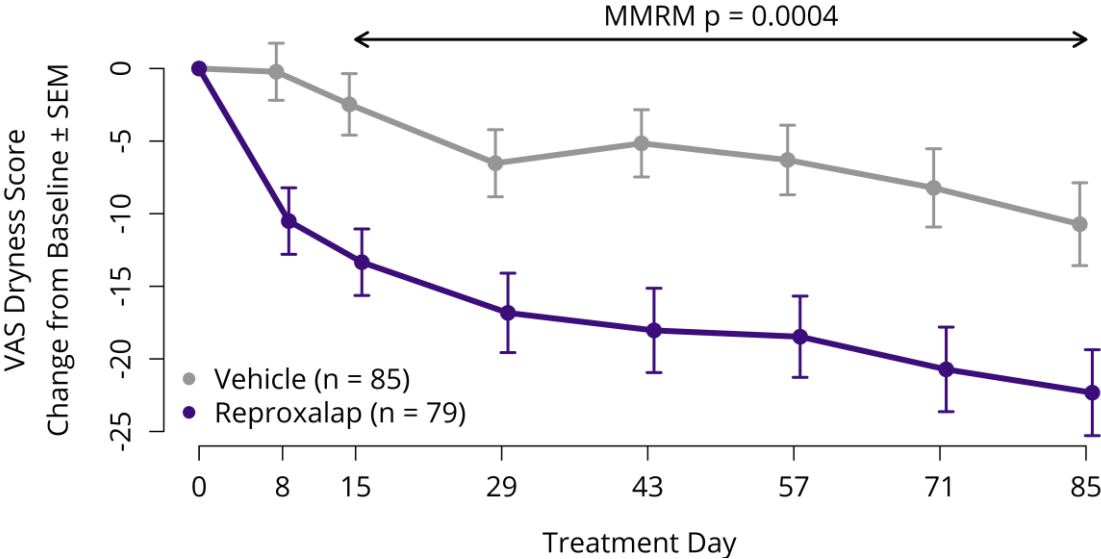
Unchecked growing disease burden and limited options beyond OTC/Rx antihistamines

66 million or more adults in the U.S.²

Reproxalap poised to potentially be the next novel entrant in the dry eye disease and allergic conjunctivitis markets.

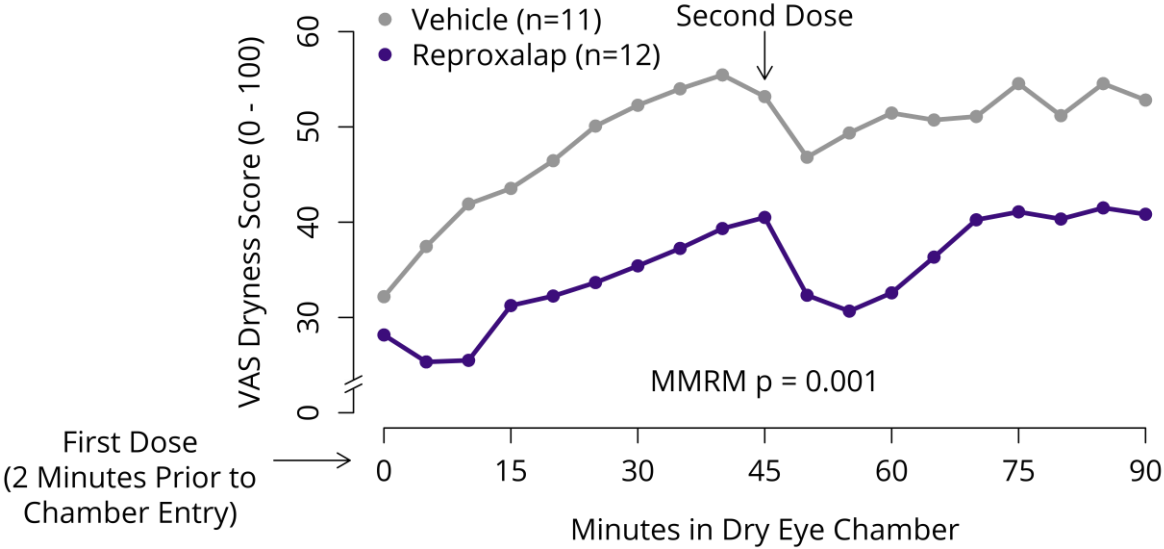
Reproxalap Exhibited First-Line Ocular Symptom Control in Dry Eye Disease Clinical Trials

RENEW-Part 1 Phase 3 Trial
(Induction-Maintenance Dosing)



Rapid and durable symptom improvement over 12 Weeks of chronic therapy.

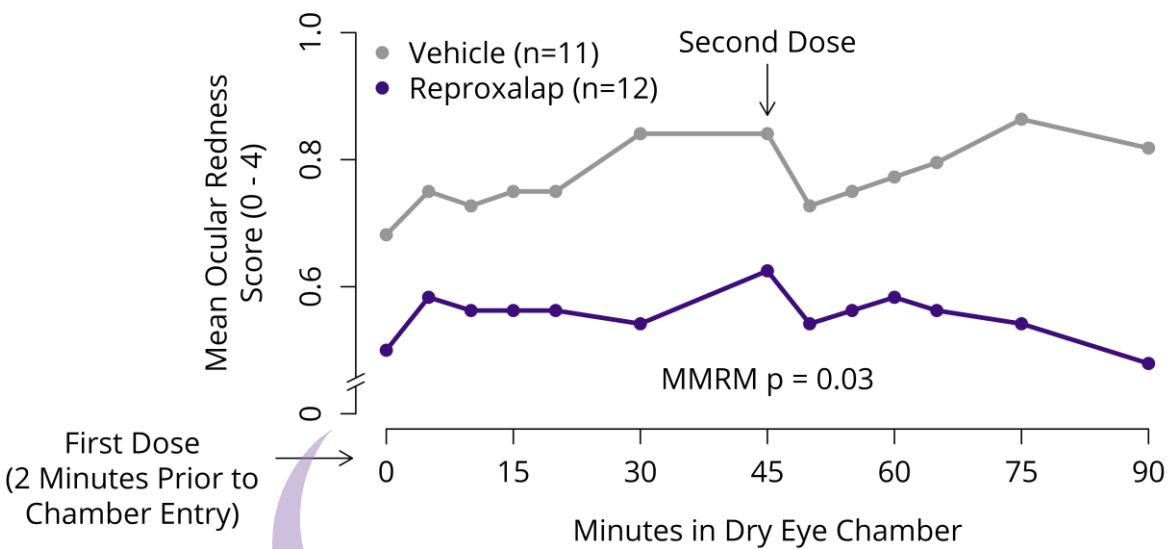
Phase 3 TRANQUILITY Run-In Cohort
(Dry Eye Chamber Results)



Near-immediate (within minutes) and sustained symptom improvement with acute therapy during ocular surface challenge.

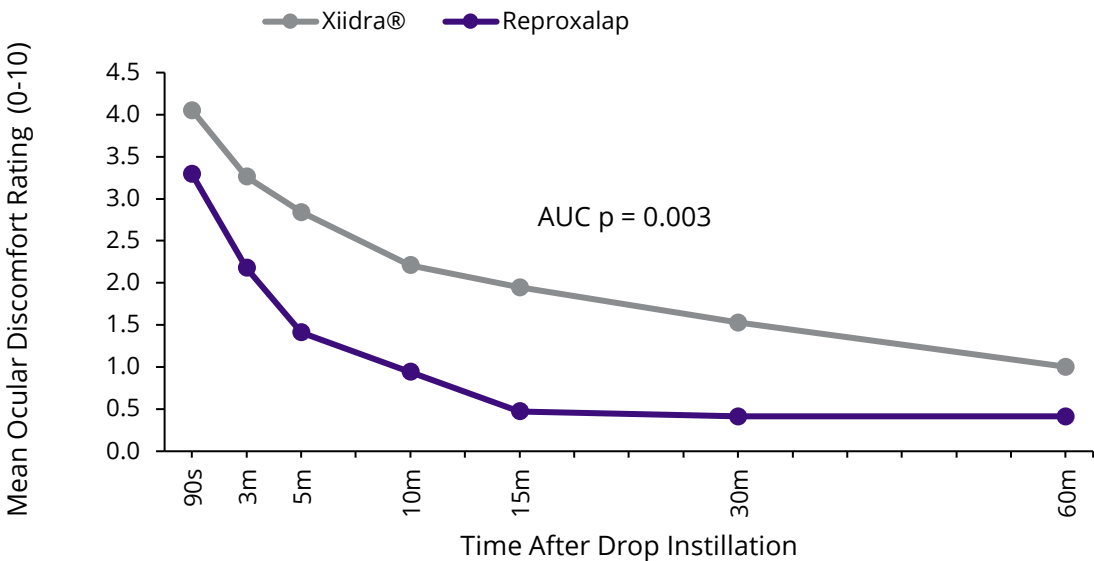
Reproxalap Exhibited Acute and Durable Improvements in Redness and Tolerability in Dry Eye Disease Clinical Trials

Phase 3 TRANQUILITY Run-In Cohort (Dry Eye Chamber Results)



Redness is an FDA-approvable objective sign of dry eye disease.*

Head-to-Head Tolerability Trial vs. Xiidra®

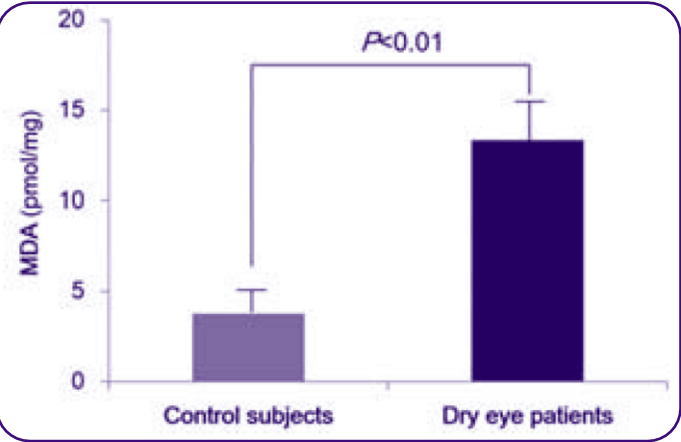


*Currently FDA approved dry eye products have utilized Schirmer's Test, corneal staining, and conjunctival hyperemia (redness) as objective sign measures. Topical ocular reproxalap has been studied in over 1,100 patients with no observed safety concerns; mild instillation site irritation is the most commonly reported adverse event in clinical trials. Source: Reproxalap TRANQUILITY Run-In Cohort initial results and Drop Experience clinical trial results.

Reproxalap's Mechanism of Action Reduces RASP, a Potential Dry Eye Disease Biomarker

RASP in Dry Eye Disease

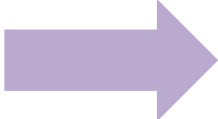
- RASP markers are upregulated in dry eye disease.
- RASP levels have been shown to correlate with worsening symptoms and signs.



Source: Curr Eye Res. 2016, 41(9):1143-9

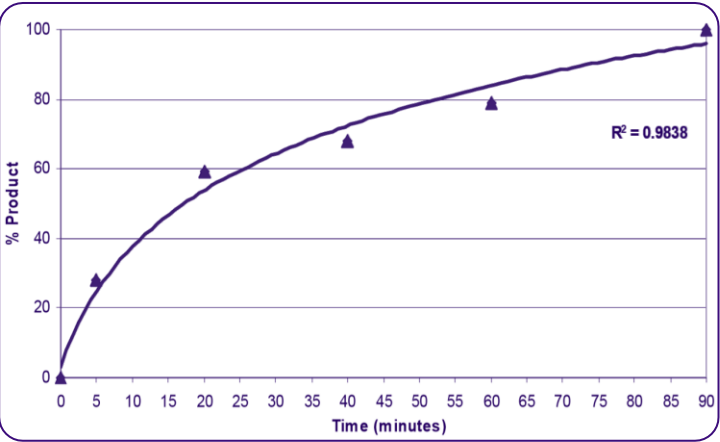
Reproxalap

Preclinical rapid and complete RASP binding

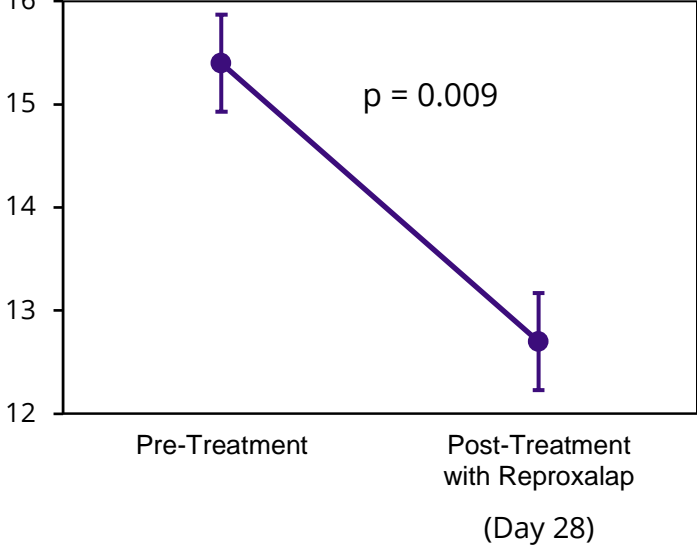


Clinical reduction in RASP adducts

In vitro Reproxalap-Malondialdehyde (MDA) adduct formation over time
(% of MDA bound by reproxalap)



Phase 2a
Tear RASP Levels in Dry Eye Disease Patients
(μ M Malondialdehyde Adduct; Mean \pm Within-Subject SEM)



Phase 3 TRANQUILITY Main Cohort Clinical Trial in Dry Eye Disease

Enrollment Initiation Expected February 2021

- Main cohort trial design, endpoints, and patient numbers to be confirmed following completion of tear RASP analysis from the run-in cohort.
- TRANQUILITY main cohort design options:

Trial Design Option:

Challenge-Model

Duration:	Two days
Size:	~200 patients total*
Primary endpoint:	Objective DED Sign
Secondary endpoints:	Additional DED Sign and DED Symptoms
Design:	Multi-center randomized, double-masked, parallel design, vehicle-controlled clinical trial

Trial Design Option:

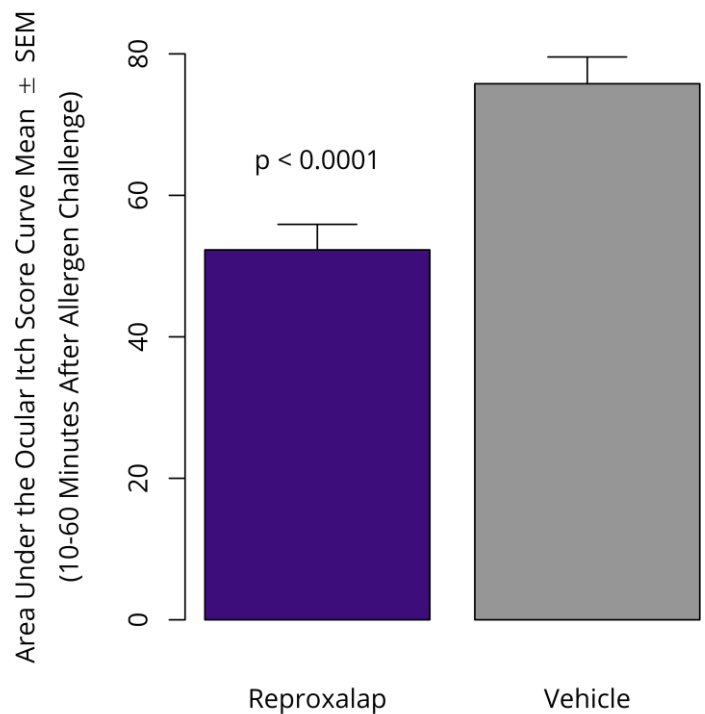
Challenge-Model + Environmental Exposure

Duration:	Four weeks
Size:	~200 patients total*
Primary endpoint:	Objective DED Sign
Secondary endpoints:	Additional DED Sign and DED Symptoms
Design:	Multi-center randomized, double-masked, parallel design, vehicle-controlled clinical trial

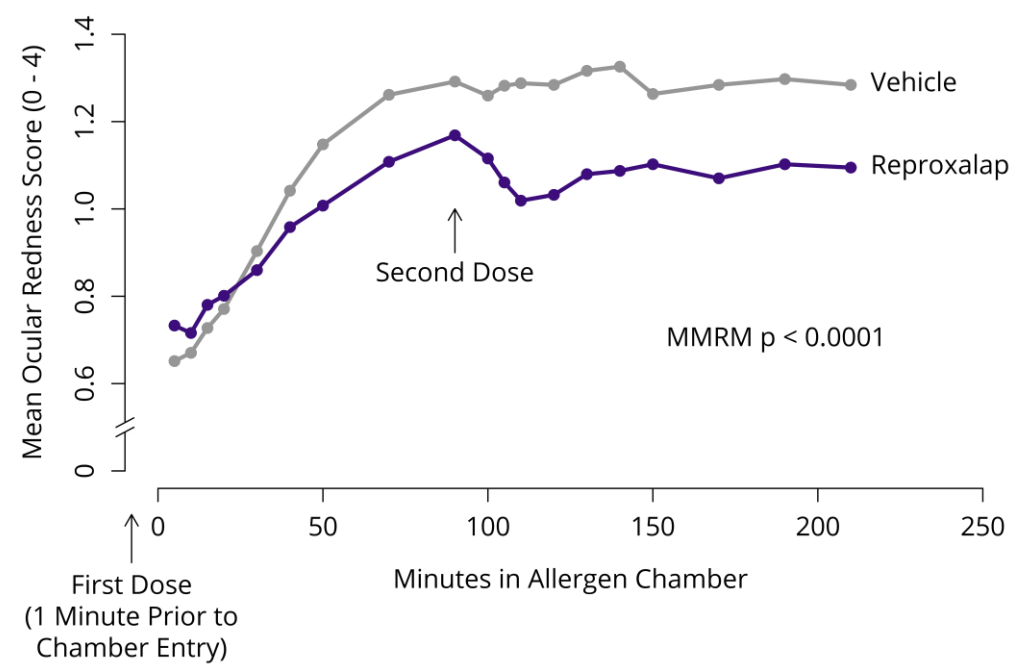
Main cohort expected to begin enrollment in February 2021.

Reproxalap Reduced Itching and Redness in Late-Stage Clinical Trials for Allergic Conjunctivitis

ALLEVIATE Phase 3 Trial



Phase 2 Allergen Chamber Trial



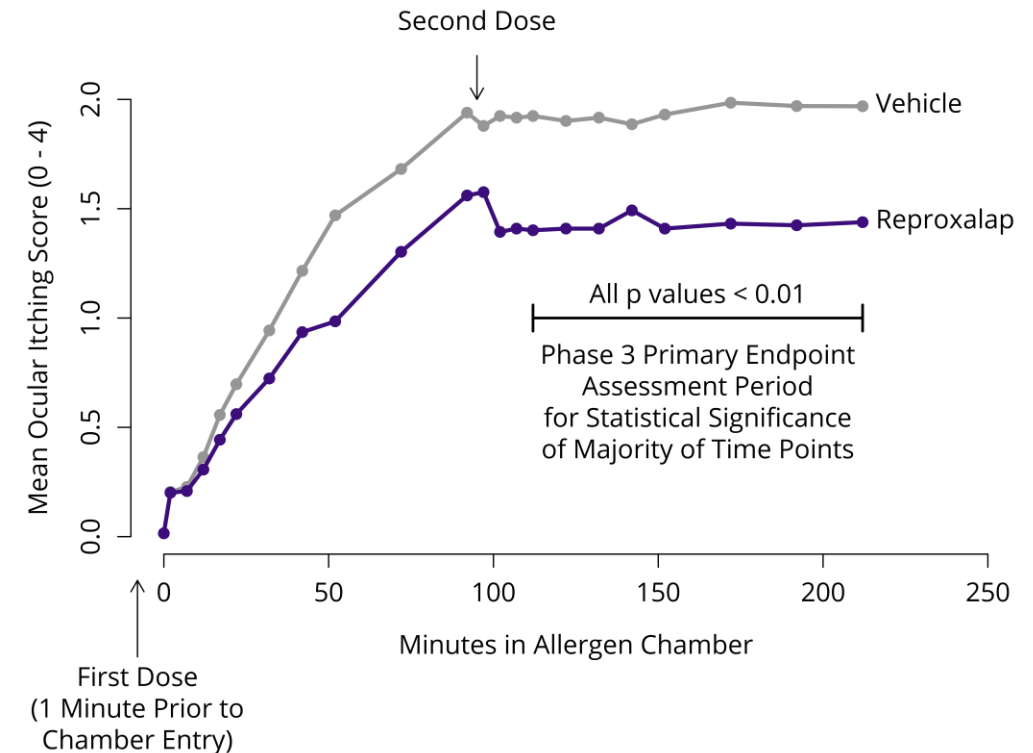
Topical ocular reproxalap has been studied in over 1,100 patients with no observed safety concerns reported; mild instillation site irritation is the most commonly reported adverse event in clinical trials.
Source: Reproxalap ALLEVIATE Phase 3 and allergen chamber Phase 2 clinical trial results; Ocular itch scale (0-4); Ocular redness scale (0-4). MMRM = Mixed Effect Model Repeated Measures

Results from the INVIGORATE Phase 3 Trial in Allergic Conjunctivitis Expected in H1 2021

- **Design:**
 - Two-way randomized crossover, ~100 patients total
- **Primary endpoint:**
 - Statistical significance in ocular itch (0-4 scale) at a majority of eleven time points between 110 and 210 minutes
- **Secondary endpoints:**
 - Investigator-assessed ocular redness score
 - Patient-reported ocular tearing score
 - Total ocular symptom score
- **Inclusion/exclusion criteria:**
 - History of moderate to severe allergic conjunctivitis to ragweed pollen
 - Itching score of ≥ 2.5 or redness score ≥ 2 in baseline chamber test
- **Chamber exposure and dosing schedule:**
 - 3.5 hours continuous allergen exposure
 - First dose 5 minutes before chamber entry
 - Second dose 90 minutes after entry (when non-treated patients reach peak allergy symptoms)



Phase 2 Results Were Statistically Significant During Phase 3 Primary Endpoint Time Points*

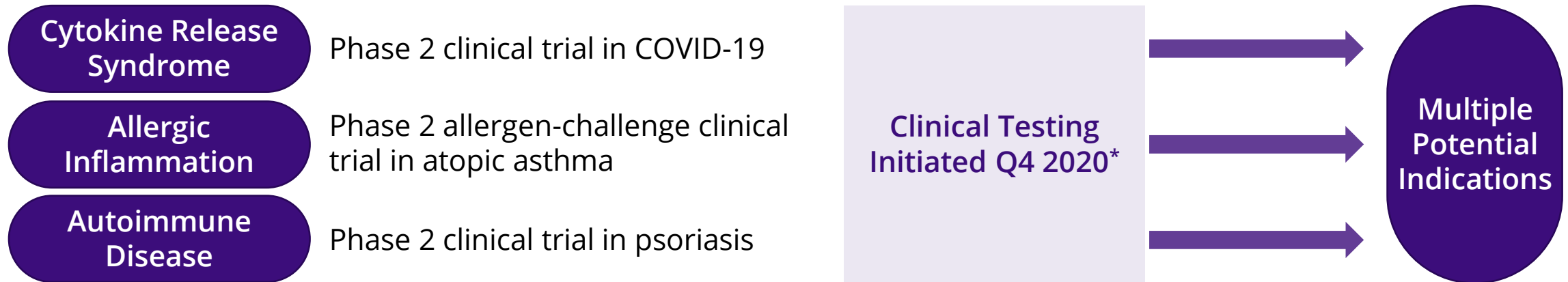


ADX-629 Clinical Initiative in Systemic Inflammatory Disease Complements Late-Stage Programs

- ADX-629 is a first-in-class orally available and irreversible covalent inhibitor of pro-inflammatory RASP, and potentially represents a new paradigm in the understanding and treatment of immune-mediated disease.
- Comprehensive systemic disease initiative designed to assess the activity of ADX-629 in three types of severe inflammation: cytokine release syndrome, allergic inflammation, and autoimmune disease.

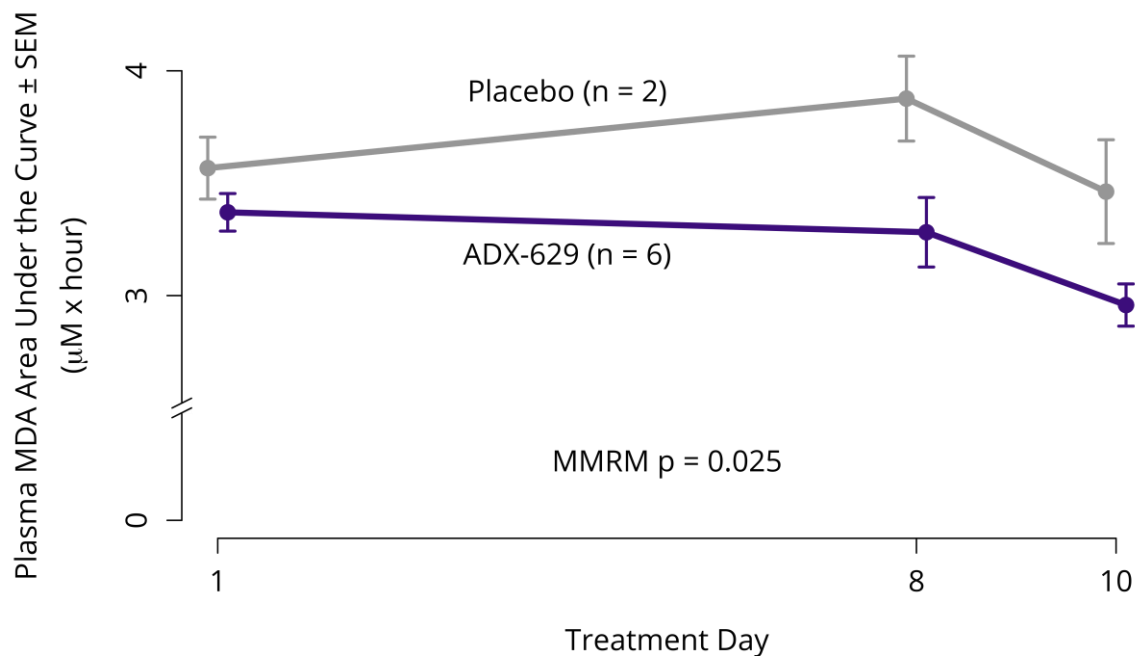
RASP-Inhibition in Systemic Diseases

ADX-629 Proof of Concept in Three Types of Severe Inflammation

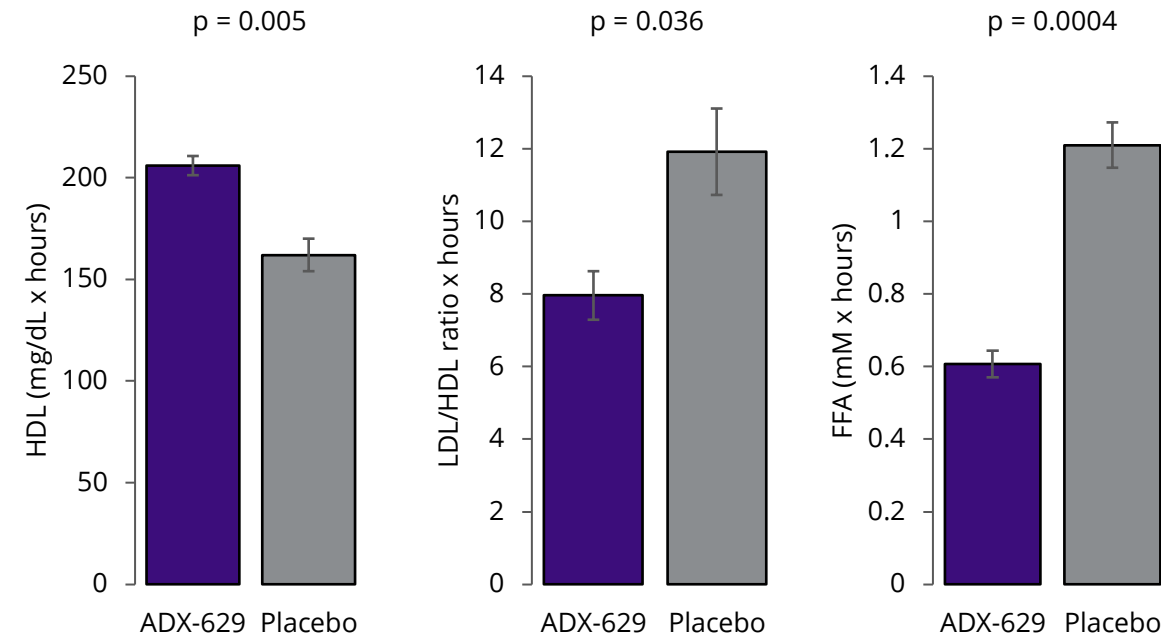


ADX-629 Reduced RASP vs. Placebo in Phase 1 Clinical Trial, Demonstrating Target Engagement, and Also Improved Lipid Profiles





MDA Levels Over Ten Days of Dosing



Plasma Lipid Profile After Fatty Meal



Upcoming Expected RASP Inhibition Development Milestones*

-  Reproxalap dry eye disease **Phase 3 TRANQUILITY main cohort enrollment initiation February 2021**
-  Reproxalap dry eye disease **Phase 3 TRANQUILITY-2 initiation Q1 2021**
-  Reproxalap allergic conjunctivitis **INVIGORATE Phase 3 study top-line results H1 2021**
-  ADX-629 **Phase 2 clinical testing results in systemic diseases 2021** to assess activity across different types of severe inflammation: cytokine release syndrome (COVID-19), allergic inflammation (atopic asthma), and autoimmune disease (psoriasis)



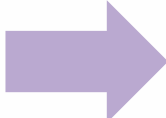
January 2021

CORPORATE REVIEW

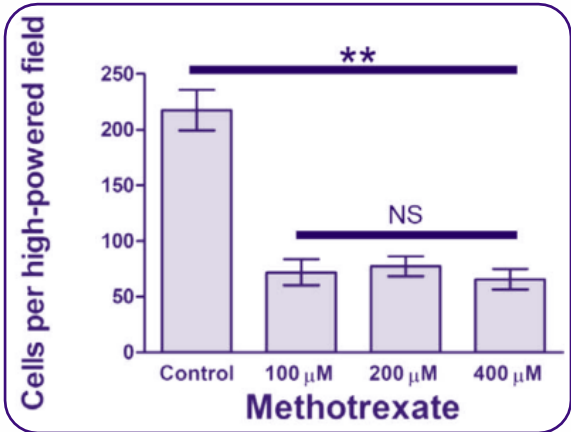
Dihydrofolate Reductase Inhibition

ADX-2191, a Novel Intravitreal Formulation of Methotrexate, Represents a Clinically Proven Systems Modulating Approach

Preclinical reduction in cellular proliferation

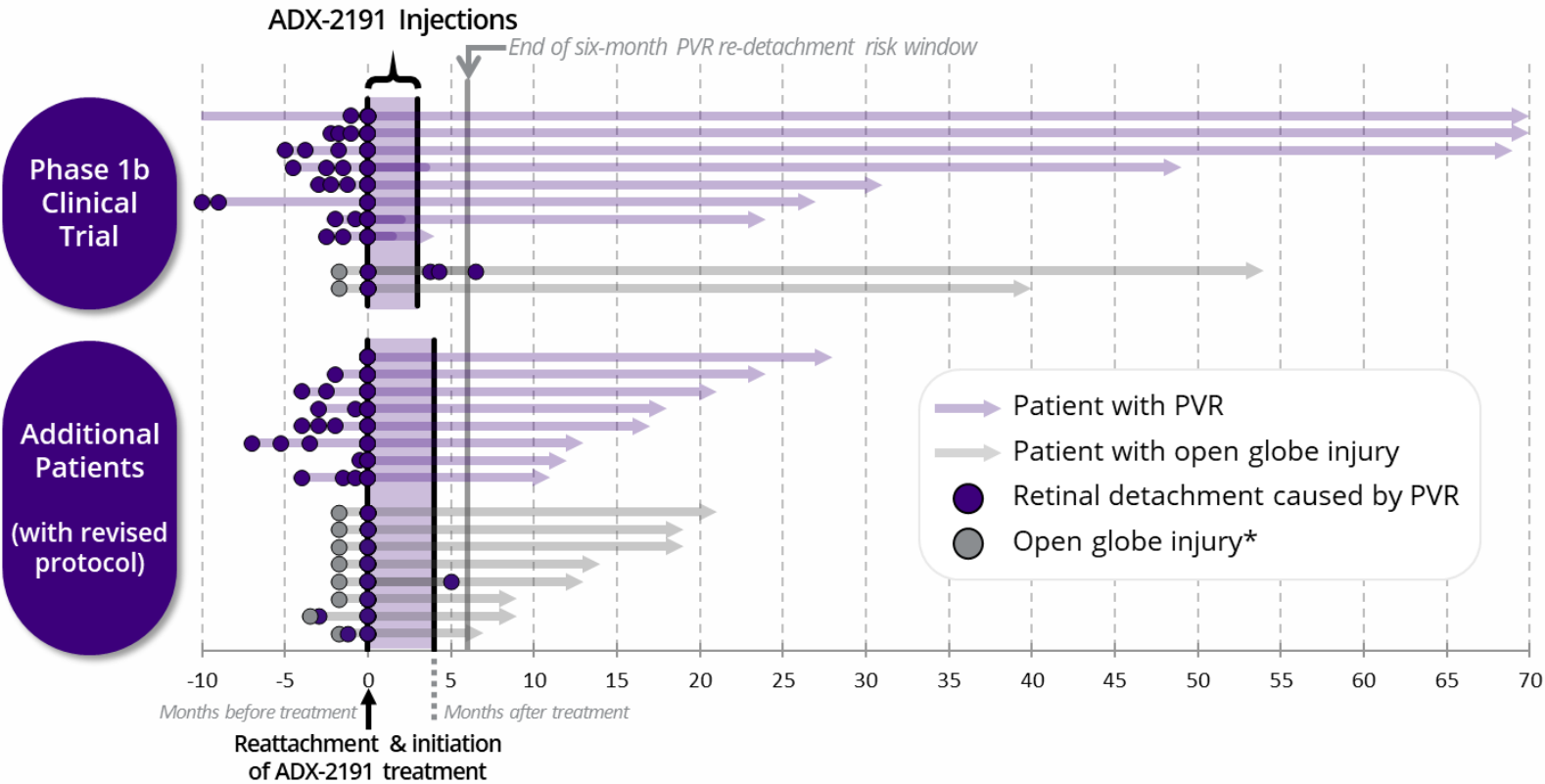


Clinical reduction in retinal detachment



Source: Invest Ophthalmol Vis. Sci. 2017; 58:3940–3949

Retinal Detachments Over Time by Patient



*Timing of open globe injury as shown is estimated. Typically 6-8 weeks prior to reattachment & initiation of ADX-2191. There is no assurance that prior results, such as signals of safety, activity or durability of effect, observed from this open label investigator sponsored trial will be replicated in more rigorous clinical trials involving ADX-2191. Source: ADX-2191 PVR Phase 1b investigator sponsored clinical trial (n=10) results and additional in-practice use (n=16)

ADX-2191 Represents a Novel Approach and Potential Therapeutic Breakthrough in Proliferative Vitreoretinopathy Treatment

Proliferative vitreoretinopathy

ADX-2191

4,000
U.S.

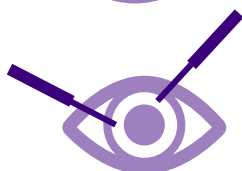
PVR is a **rare disease**, with ~4,000 patients per year in the U.S. and nearly twice as many in Europe and Japan combined.



Left untreated, retinal detachment due to PVR can **progress to permanent blindness**.



There is currently **No FDA- or EMA-approved therapy**.



Repeat surgery, which can lead to **vision loss**, is currently the only possible course of action.

ADX-2191

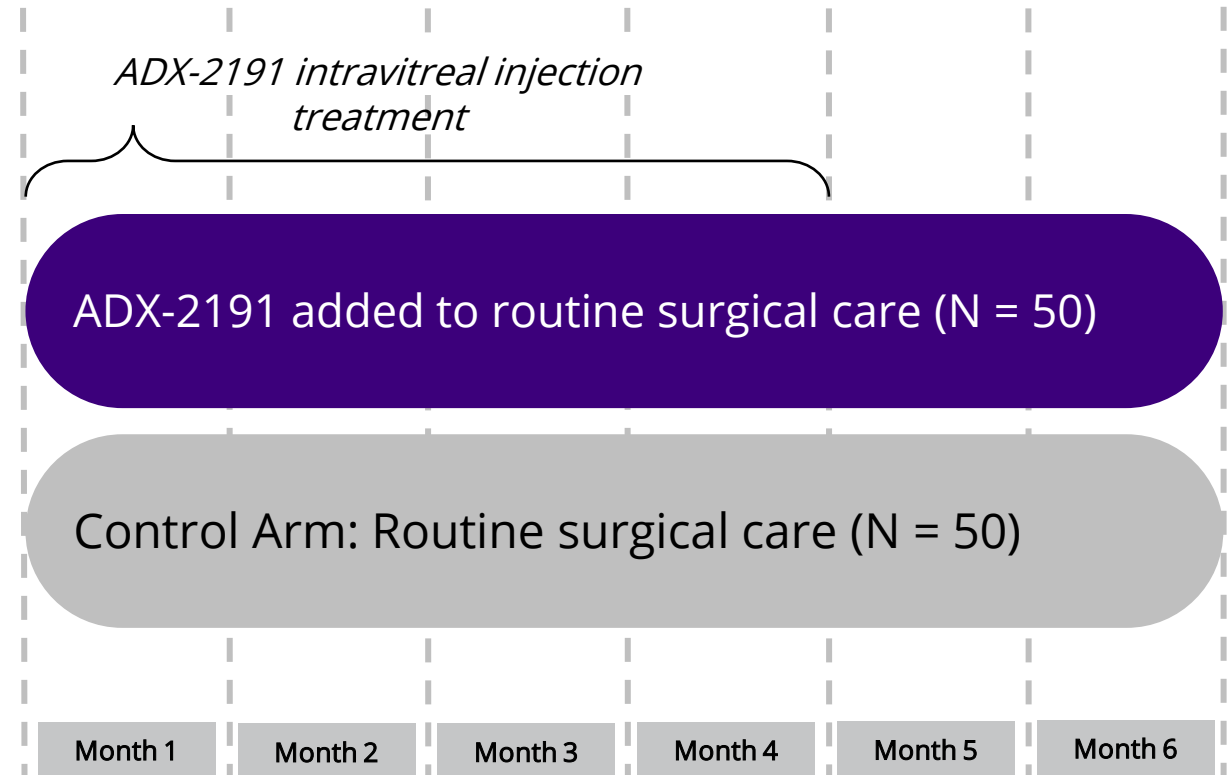
- A potential therapeutic breakthrough in PVR treatment
- **Granted U.S. orphan designation and FDA fast track designation** for the prevention of PVR
- **Tolerability and reattachment success** during study period **demonstrated in Phase 1b** open-label investigator sponsored clinical trial
- **GUARD adaptive Phase 3 clinical trial** for the prevention of recurrent retinal detachment due to PVR ongoing
- **Exploring additional indications**, including primary intraocular lymphoma

ADX-2191: GUARD Trial Design in Proliferative Vitreoretinopathy

Adaptive Phase 3 (Part 1) Clinical Trial Design

- **Primary objective:**
 - Evaluate efficacy of intravitreal ADX-2191 injections for prevention of recurrent retinal detachment due to proliferative vitreoretinopathy (PVR)
- **Design:**
 - Multi-center, randomized, controlled, two- part, adaptive Phase 3 clinical trial
- **Inclusion highlights:**
 - Recurrent retinal detachment due to PVR, or
 - Retinal detachment associated with open-globe injury
- **Dosing regimen:**
 - At surgery, weekly (x8), and then every other week (x4) intravitreal ADX-2191 injections
- **Endpoint:**
 - Retinal re-detachments due to PVR requiring re-operation within 6 months:
 1. OCT demonstrating fovea-off retinal detachment
 2. Photographic documentation retinal detachment

Adaptive Phase 3 PVR Clinical Trial Design: Part 1



Completion of Enrollment Expected in 2021

ADX-2191 Has the Potential to be the Only Approved Drug for Primary Vitreoretinal Lymphoma, a Rare but Serious Retinal Cancer



Small (top) and large (bottom) subretinal infiltrates in patients with primary vitreoretinal lymphoma

- Primary vitreoretinal lymphoma (PVRL) is a rare, aggressive, high-grade cancer that arises in the vitreous and retina.
- Approximately 2,900 people in the United States suffer from PVRL.
- Approximately 600 new cases of PVRL are diagnosed in the United States per year.
- The median survival for newly diagnosed patients is 4.83 years.
- The most common ocular complaints reported by patients include blurred vision, painless loss of vision, floaters, red eye, and photophobia.
- No approved treatments are currently available.

Upcoming Expected ADX-2191 Regulatory and Development Milestones

- Primary Vitreoretinal Lymphoma **orphan drug designation in H1 2021**
- GUARD Phase 3 Trial **completion of enrollment in 2021***



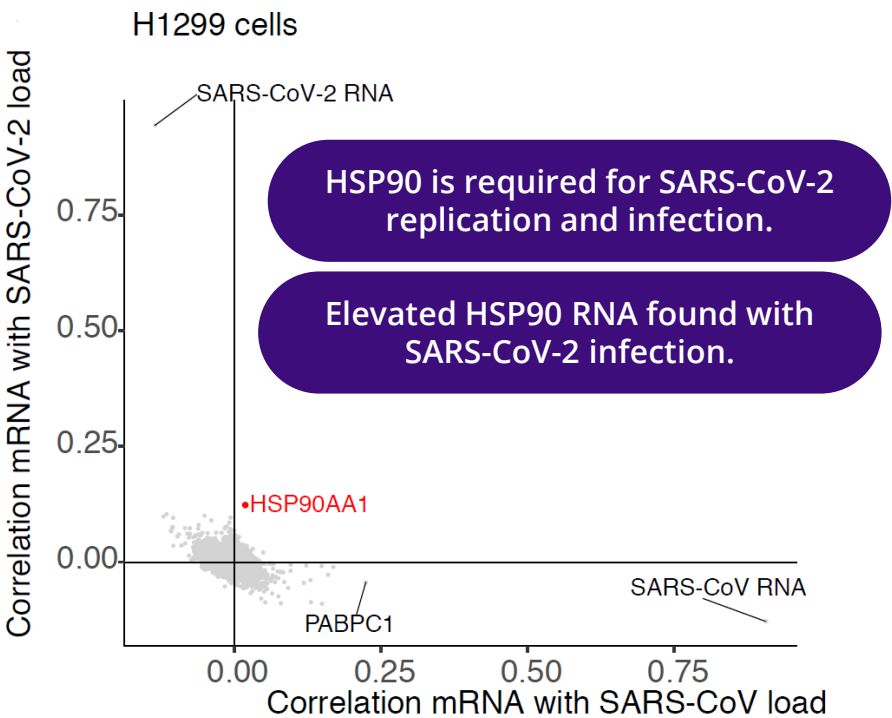
January 2021

CORPORATE REVIEW

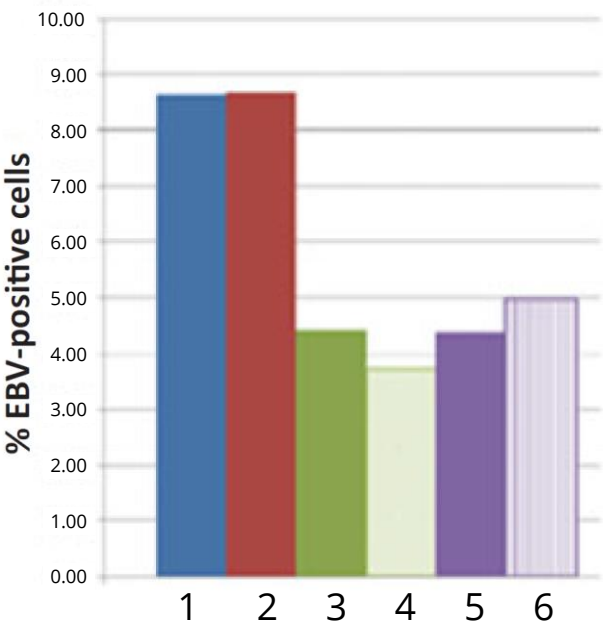
Protein Chaperome Inhibition

HSP90 Recently Identified as a Potential Therapeutic Target of SARS-CoV-2 and Demonstrated Clinical Activity Against EBV

HSP90 is a chaperone protein that controls the function of hundreds of client proteins, a system known collectively as the protein chaperome.



Wyller et al. *Bulk and single-cell gene expression profiling of SARS-CoV-2 infected human cell lines identifies molecular targets for therapeutic intervention*, bioRxiv preprint, May 5, 2020.
DOI:10.1101/2020.05.05.079194. Not certified by peer review.



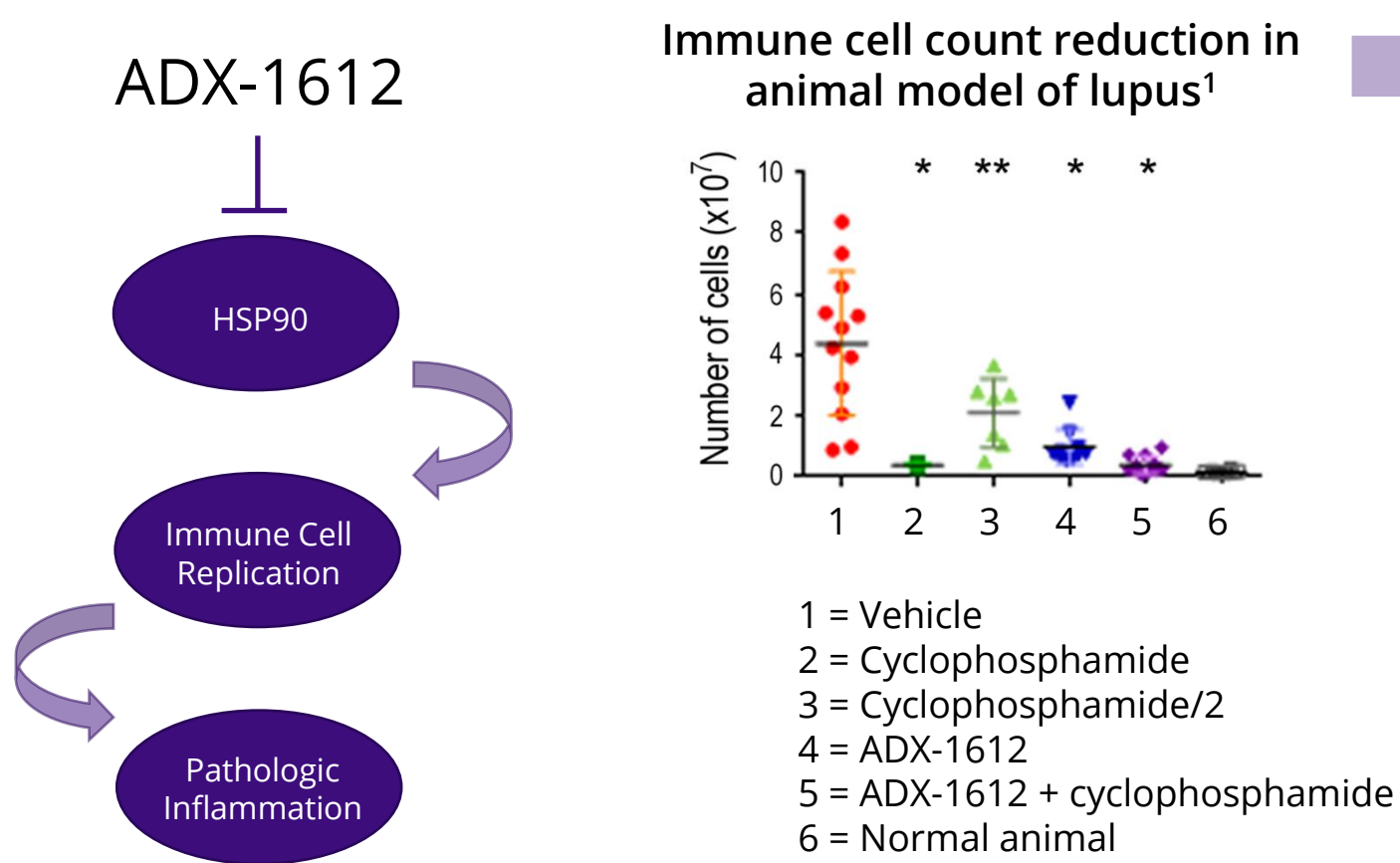
In an EBV-infected patient, ADX-1612 reduced the percentage of circulating EBV-positive cells.

- 1 = Pre-treatment
- 2 = Pre-treatment
- 3 = 1 week post dose 1 (120 mg/m²)
- 4 = 1 day post dose 2 (120 mg/m²)
- 5 = 2 weeks post dose 2 (120 mg/m²)
- 6 = 2 days post dose 1 (150 mg/m²)

Shatzer et al. *Ganetespib, an HSP90 inhibitor, kills Epstein-Barr virus (EBV)-infected B and T cells and reduces the percentage of EBV-infected cells in the blood*, Leukemia & Lymphoma, 2016, DOI: 10.1080/10428194.2016.1213823

EBV = Epstein Barr Virus

In Addition to Antiviral Activity, ADX-1612 Has Demonstrated Potential Suppression of Pathologic Inflammation



Clinical response in patient with chronic vasculitis after a single dose



¹Liu et al. *The HSP90 Inhibitor Ganetespib Alleviates Disease Progression and Augments Intermittent Cyclophosphamide Therapy in the MRL/lpr Mouse Model of Systemic Lupus Erythematosus*, PLoS One, May 14, 2015.

DOI:10.1371/journal.pone.0127361



January 2021

CORPORATE REVIEW

The Aldeyra Value Proposition

The Aldeyra Value Proposition



NOVEL SYSTEMS-BASED APPROACHES FOR IMMUNOLOGY

- RASP-inhibition represents a first-in-class therapeutic approach.
- Three unique immune-modulating mechanisms of action in development.



NEAR-TERM DEVELOPMENT CATALYSTS*

- Phase 3 objective sign trial of reproxalap in dry eye disease ongoing.
- Phase 2 clinical development of ADX-629 in systemic inflammatory conditions ongoing.
- Top-line results from Phase 3 INVIGORATE Trial in allergic conjunctivitis .



SIGNIFICANT MARKET OPPORTUNITY

- Reproxalap targets a U.S. addressable market of >\$20B.
- ADX-2191 represents a potential therapeutic breakthrough for PVR and PVRL.



SOLID CASH POSITION

- Cash, cash equivalents and marketable securities were \$86.2 million as of September 30, 2020.
- Based on current operating plans and expectations, cash runway through the end of 2022.**

Experienced Management Team and Board of Directors

Management Team

Todd Brady, M.D., Ph.D.
President, CEO, & Director



Joshua Reed, M.B.A.
Chief Financial Officer



David McMullin, M.B.A.
Chief Business Officer



Stephen Machatha, Ph.D.
Chief Development Officer



Board of Directors

Richard Douglas, Ph.D.
CHAIRMAN
Former SVP Corporate Development at Genzyme

Ben Bronstein, M.D.
Former CEO Peptimmune⁷

Marty Joyce, M.B.A.
Former CFO of Serono USA

Nancy Miller-Rich
Former SVP BD&L and Commercial Strategy at Merck

Gary Phillips, M.D.
CEO OrphoMed

Jesse Treu, Ph.D.
Domain Associates

Neal Walker, D.O.
CEO Aclaris Therapeutics

Todd Brady, M.D., Ph.D.
CEO Aldeyra Therapeutics

1. Acquired by Xanthus/Antisoma
2. Acquired by Schwarz/UCB
3. Acquired by Takeda
4. Acquired by Ligand

5. Acquired by Merck
6. Acquired by Alexion
7. Acquired by Genzyme



January 2021

CORPORATE REVIEW

Systems-Based Approaches to Regulate Immune Response