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CORPORATE

2024 Research & Development Day

April 25, 2024

Nasdaq: ALDX

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

Welcome and Opening Remarks

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 future expectations, plans and prospects, including, without limitation, statements regarding: the goals, opportunity, and potential for reproxalap, ADX-2191, ADX-246, ADX-248, and ADX-629; anticipated clinical or regulatory milestones for reproxalap, ADX-2191, ADX-246, ADX-248, and ADX-629; FDA agreement with the clinical development plan for reproxalap; expectations regarding the results of scheduled FDA meetings and discussions, clinical trial initiations and completions, and the timing and nature of NDA or other submissions to the FDA; Aldeyra's business, research, development and regulatory plans or expectations; and the structure, timing and success of Aldeyra's planned or pending clinical trials. The results of earlier preclinical or clinical trials may not be predictive of future results. 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," "on track," "scheduled," "target," "design," "estimate," "predict," "contemplates," "likely," "potential," "continue," "ongoing," "aim," "plan," or the negative of these terms, and similar expressions intended to identify forward-looking statements.

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 of, and clinical and regulatory plans or expectations for Aldeyra's investigational new drugs (including reproxalap, ADX-2191, ADX-246, ADX-248, and ADX-629), 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 continuing or post-hoc 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, which regulatory review timeline may be flexible and subject to change based on the regulator's workload and other potential review issues, preclinical and clinical results, regulatory developments in the United States and other countries, and other factors any ofwhich could result in changes to Aldeyra's development plans and programs or delay the initiation, enrolment, 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 April 25, 2024**, 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.

Agenda

	TOPIC	PRESENTER
9:00 – 9:45 a.m.	**Opening Remarks, RASP Overview, and Reproxalap Dry Eye Disease Development Plan**	**Todd C. Brady, M.D., Ph.D.** Chief Executive Officer, Aldeyra Therapeutics
9:45 – 10:30 a.m.	**Next-Generation RASP Modulators**	**Adam Brockman, Ph.D.** Senior Director Translational Science, Aldeyra Therapeutics
10:30 – 10:45 a.m.	**Break**	
10:45 – 11:30 a.m.	**Retinitis Pigmentosa Overview**	**Ramiro S. Maldonado MD** Ophthalmologist, Duke Center for Ophthalmic Genetics
11:30 a.m. – 12:00 p.m.	**ADX-2191 for the Treatment of Retinitis Pigmentosa**	**Todd C. Brady, M.D., Ph.D.**
12:00 – 12:30 p.m.	**Lunch**	
12:30 – 1:00 p.m.	**Pipeline, Milestones, and Concluding Remarks**	**Todd C. Brady, M.D., Ph.D.**

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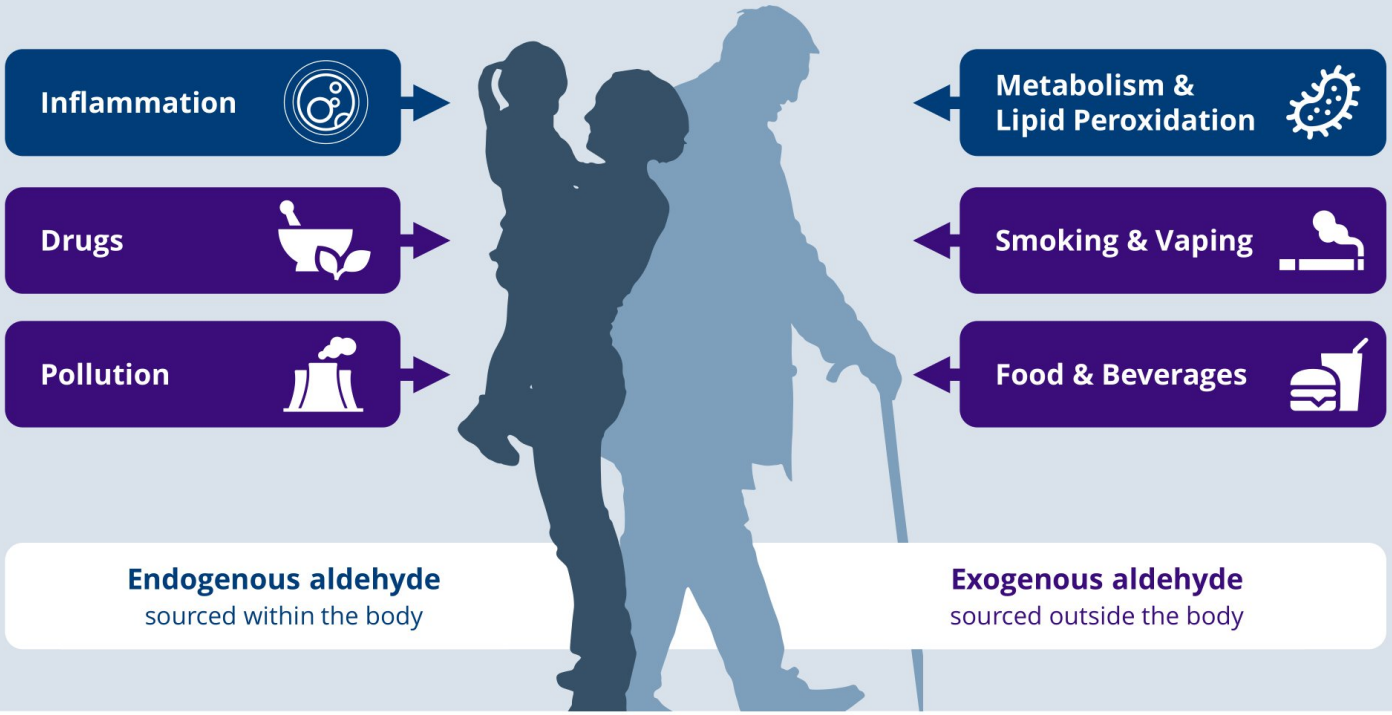
Todd C. Brady, M.D., Ph.D., Chief Executive Officer, Aldeyra Therapeutics

RASP Overview

RASP Are Toxic, and Represent a Novel, Potentially Broadly Applicable Pharmaceutical Target



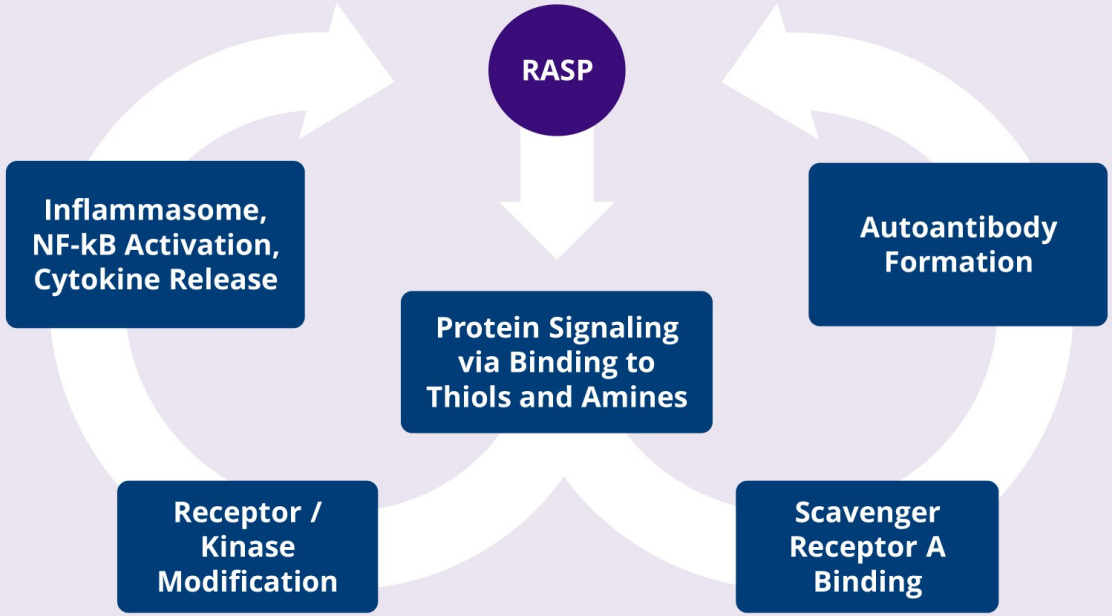
RASP affect large classes of proteins, especially those associated with the immune cascade.

New evidence links RASP with diseases of aging.†

†Oka Y, Nakazawa Y, Shimada M, Ogi T. Endogenous aldehyde-induced DNA-protein crosslinks are resolved by transcription-coupled repair. Nat Cell Biol. 2024 Apr 10. RASP = reactive aldehyde species.

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.



RASP = reactive aldehyde species

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RASP Modulation Represents a Novel Pharmacology

Traditional pharmacology targets specific proteins and is generally limited to two actions: on or off.

Activating or inhibiting specific proteins on a sustained basis, which rarely occurs in nature, may lead to toxicity and could limit activity.

vs.

RASP modulation may allow for control of protein *systems*, without turning any single protein on or off.

Systems-based pharmacology could potentially lead to broader-based activity with less toxicity associated with activation or inhibition of specific proteins.

RASP = reactive aldehyde species

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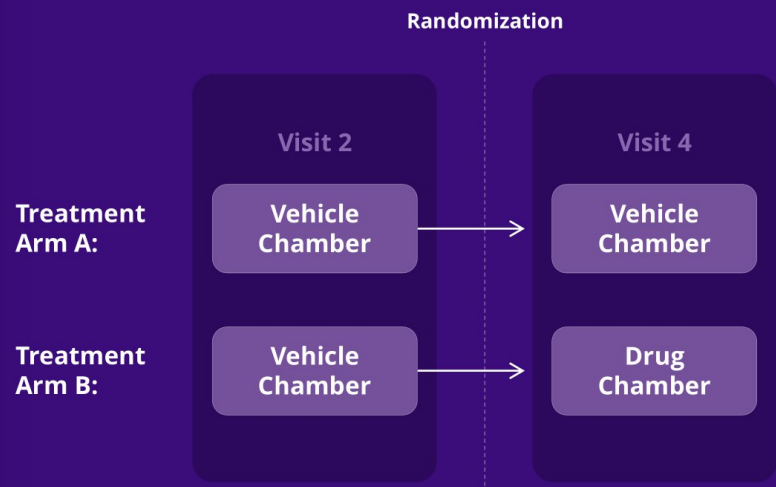
Todd C. Brady, M.D., Ph.D., Chief Executive Officer, Aldeyra Therapeutics

Reproxalap Dry Eye Disease Development Plan

Phase 3 Clinical Trial of Reproxalap in a Dry Eye Chamber†

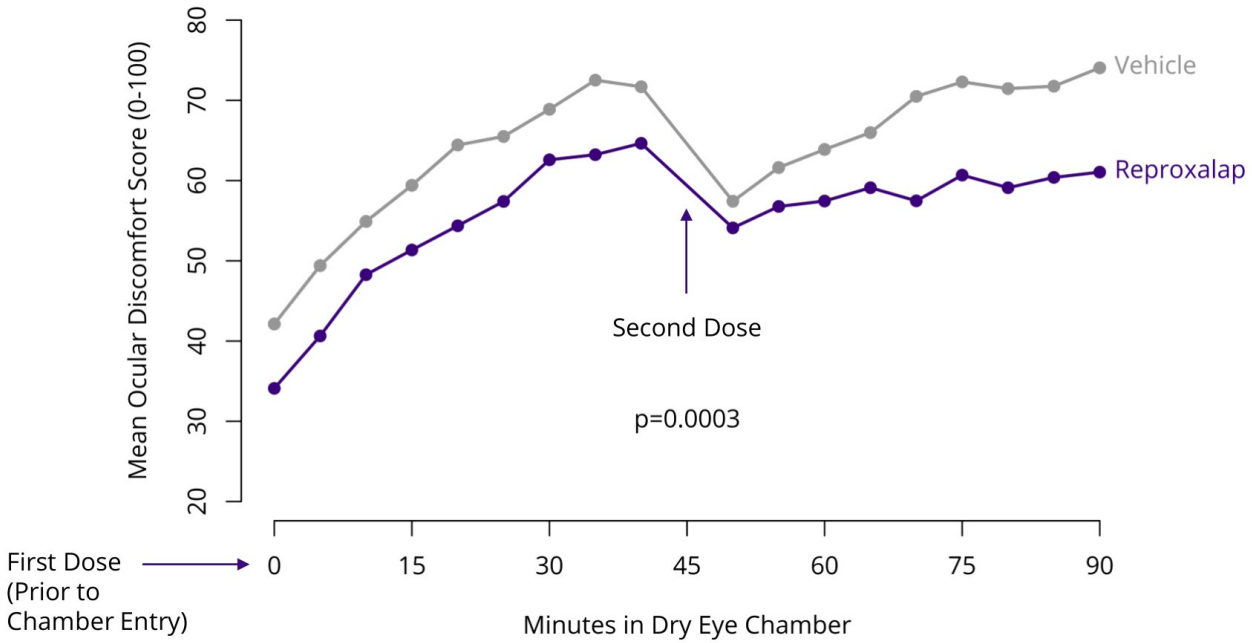
Design	• Randomized, double-masked, vehicle-controlled dry eye chamber challenge
Dosing	• Visit 1: Medical screening • Visit 2: Vehicle dry eye chamber (dosing just before and 50 minutes after entry) • Visit 3: Four doses of randomized treatment (reproxalap or vehicle) • Visit 4: Randomized dry eye chamber (dosing just before and 50 minutes after entry)
Size	~100 dry eye disease patients
Primary Endpoint	Ocular discomfort score
Other Endpoints	Safety



Pending clinical trial results, feedback from ongoing FDA discussions, and other factors, NDA resubmission expected in H2 2024†‡

†The timing of clinical trials depends, in part, on the availability of clinical research facilities and staffing, the ability to recruit patients, and the number of patients in the trial.
‡Regulatory review and discussion timelines are flexible and subject to change based on the regulator's workload and other potential review issues.

Based on Pooled Data from Four Dry Eye Chamber Trials, Ocular Discomfort Score was Lower with Reproxalap than with Vehicle



Ocular discomfort data are derived from four previously completed dry eye chamber clinical trials of reproxalap vs. vehicle, encompassing approximately 110 patients and incorporating trial conduct and statistical analysis amendments.

Topical ocular reproxalap is an investigational new drug candidate that has been studied in more than 2,400 patients with no observed safety concerns; mild and transient instillation site irritation is the most commonly reported adverse event in clinical trials.

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Reproxalap Represents a Novel Potential Therapeutic Approach in Dry Eye Disease with Rapid Activity in Clinical Trials

Potential advantages for patients and healthcare providers could effect a paradigm shift relative to standard of care.

Rapid and sustained symptom improvement

Broad symptomatic activity

Acute reduction of ocular redness

Dry eye disease afflicts 39 million or more adults in the United States.†

†Company estimates and Am J Ophthalmol. 2014;157(4):799-806. Topical ocular reproxalap is an investigational new drug candidate that has been studied in more than 2,400 patients with no observed safety concerns; mild and transient instillation site irritation is the most commonly reported adverse event in clinical trials.

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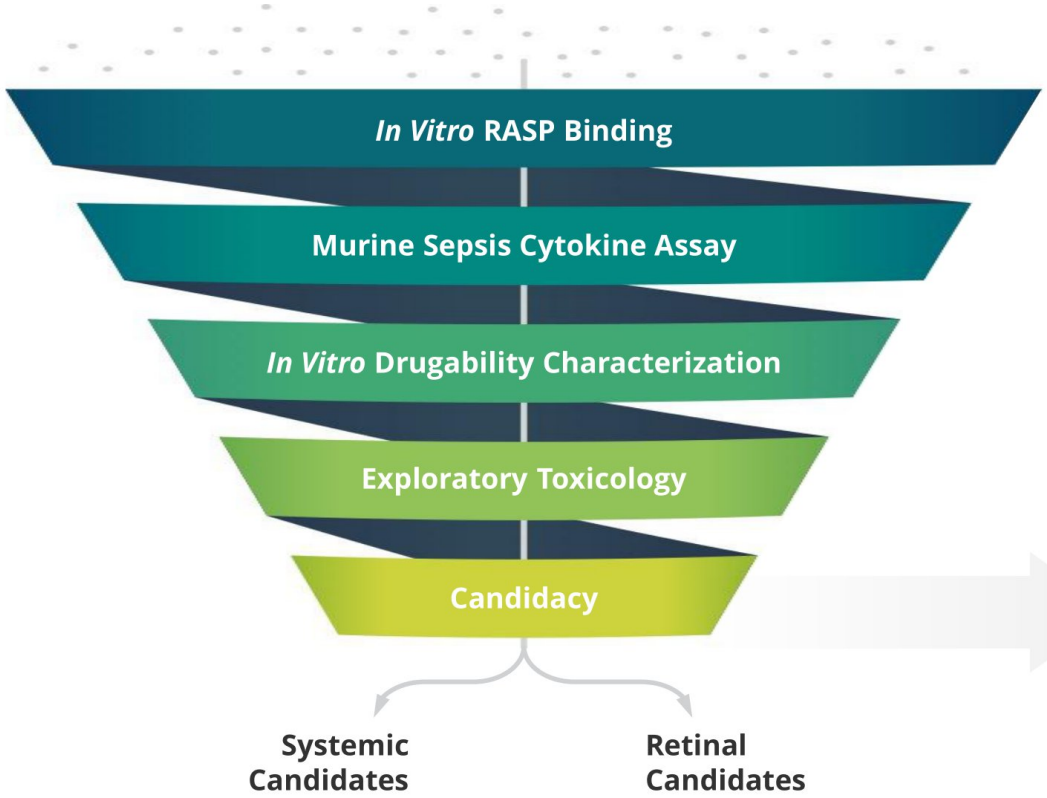
Adam Brockman, Ph.D., DABT, Senior Director of Translational Science, Aldeyra Therapeutics

Next-Generation RASP Modulators

Aldeyra Has Developed the Leading RASP Modulator Discovery Platform



Aldeyra's RASP modulator discovery and development platform is unparalleled

ADX-629, ADX-246, and ADX-248

ADX-629, ADX-248, and ADX-246 are investigational drug candidates.

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Development Indications for New RASP Modulators Are Supported by Mechanistic Rationale

INDICATION	RASP RATIONALE	MODEL
Atopic Dermatitis	Upregulation of pro-inflammatory cytokines	Oxazolone atopic dermatitis
Alcoholic Hepatitis	Association with hepatoxicity	Ethanol toxicity
Non-Opiate Analgesia	Activation of TRPV1 and TRPA1 pain receptors	Carrageenan inflammatory pain
Lipogenesis Modulation	Potentiation of lipid synthesis	Diet-induced obesity

TRPA1 = transient receptor potential ankyrin 1. TRPV1 = transient receptor potential vanilloid 1. RASP = reactive aldehyde species.

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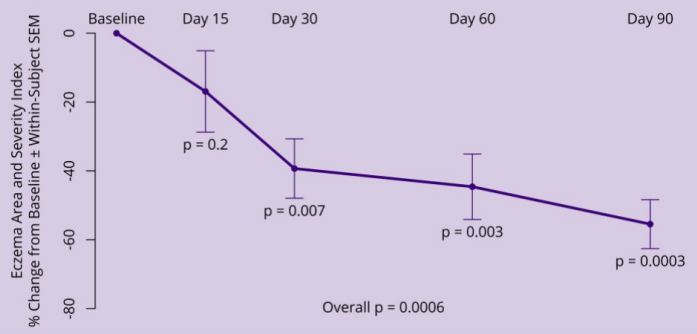
Atopic Dermatitis

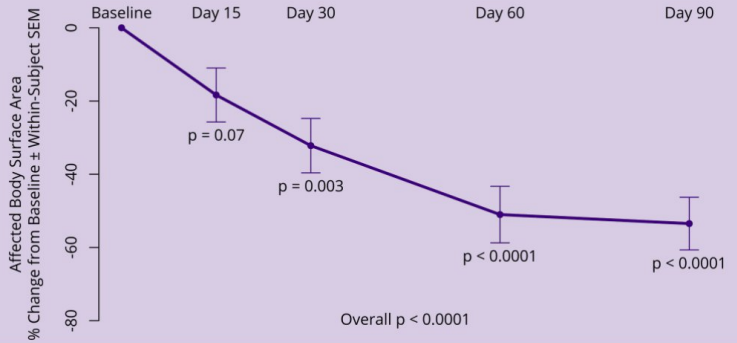
Statistical and Clinically Significant Improvement was Observed in Phase 2 Clinical Trial of RASP Modulator ADX-629 in Atopic Dermatitis

Eczema Area and Severity Index (EASI)

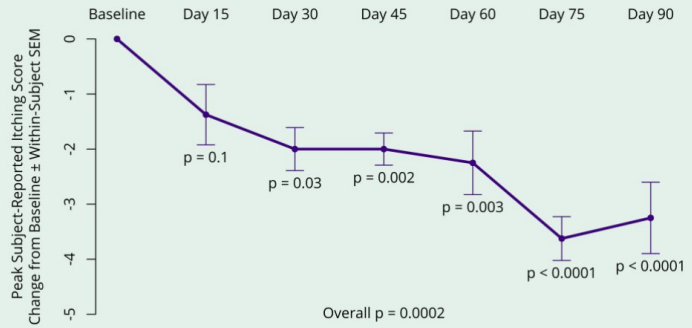


Investigator-Assessed

Investigator Global Assessment

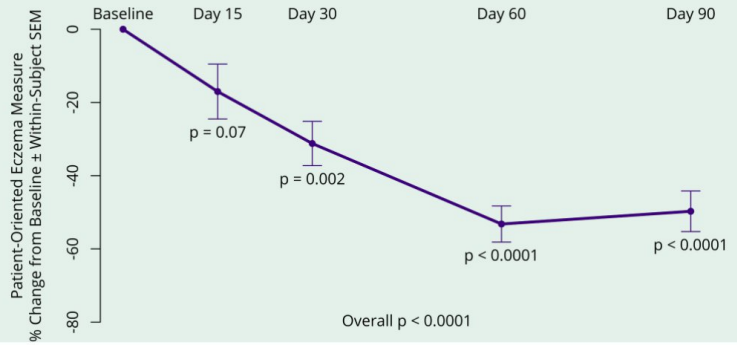


Patient-Reported Itching Score



Patient-Reported

Patient-Oriented Eczema Measure



ADX-629 is an investigational drug candidate. SEM = standard error of mean.

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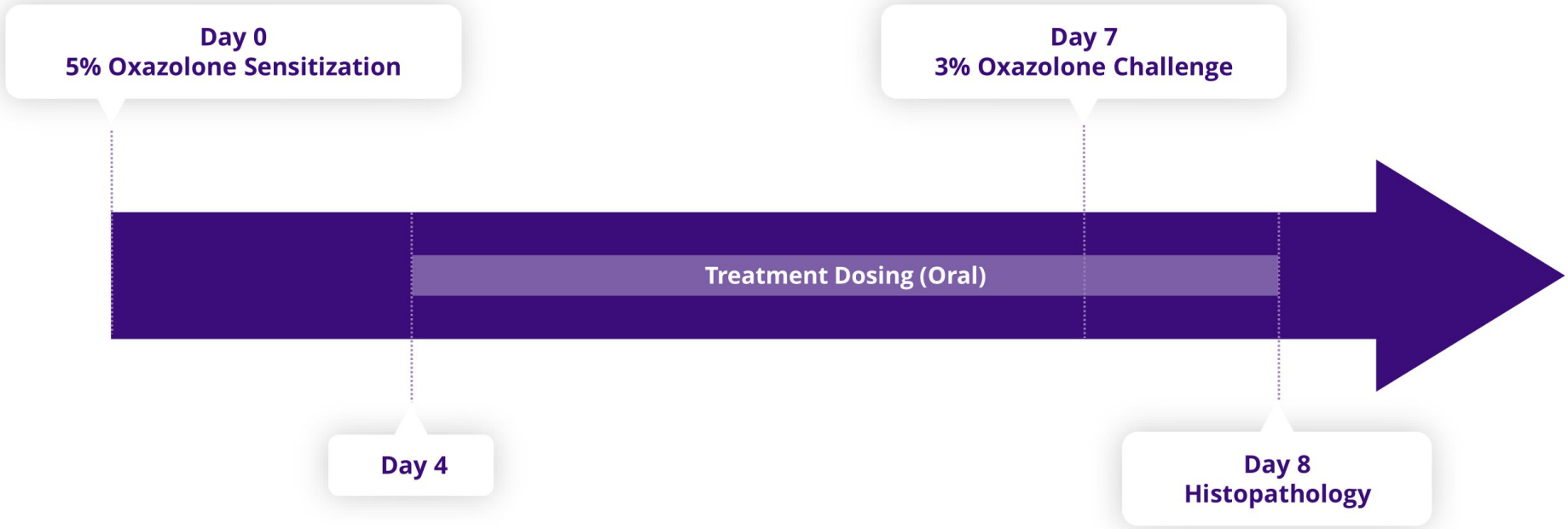
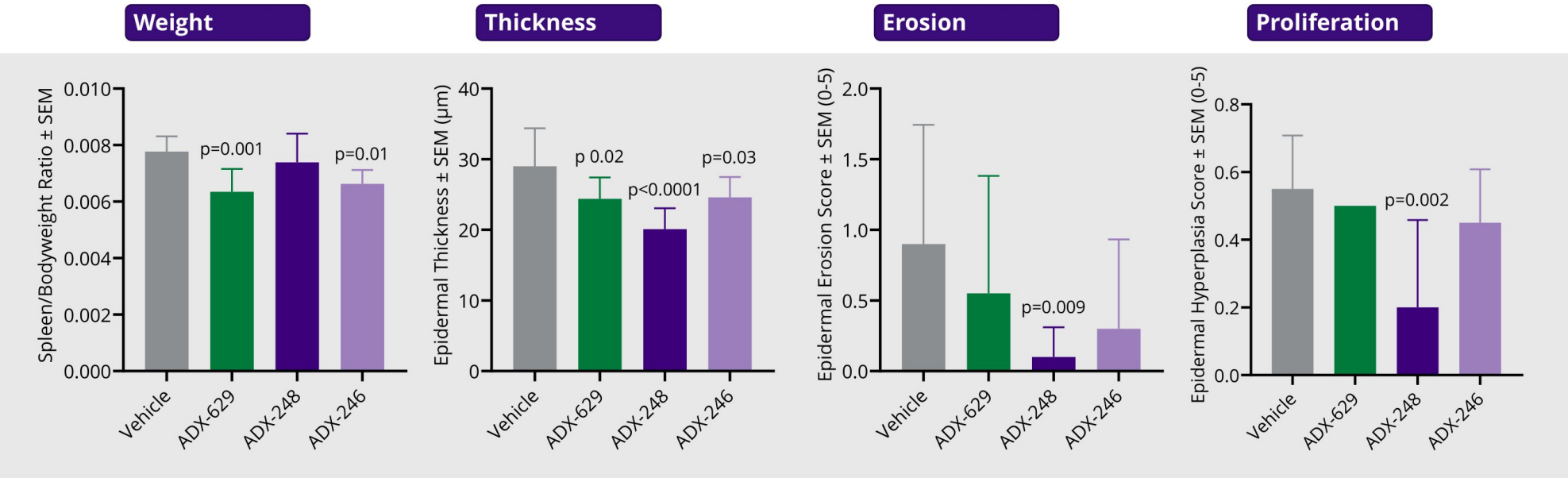
Oxazolone Sensitization is a Well-Characterized Preclinical Model of Atopic Dermatitis



RASP Modulators ADX-629, ADX-248, and ADX-246 Reduced Histopathology and Spleen Weight in a Preclinical Model of Atopic Dermatitis



ADX-629, ADX-248, and ADX-246 are investigational drug candidates. SEM = standard error of mean.

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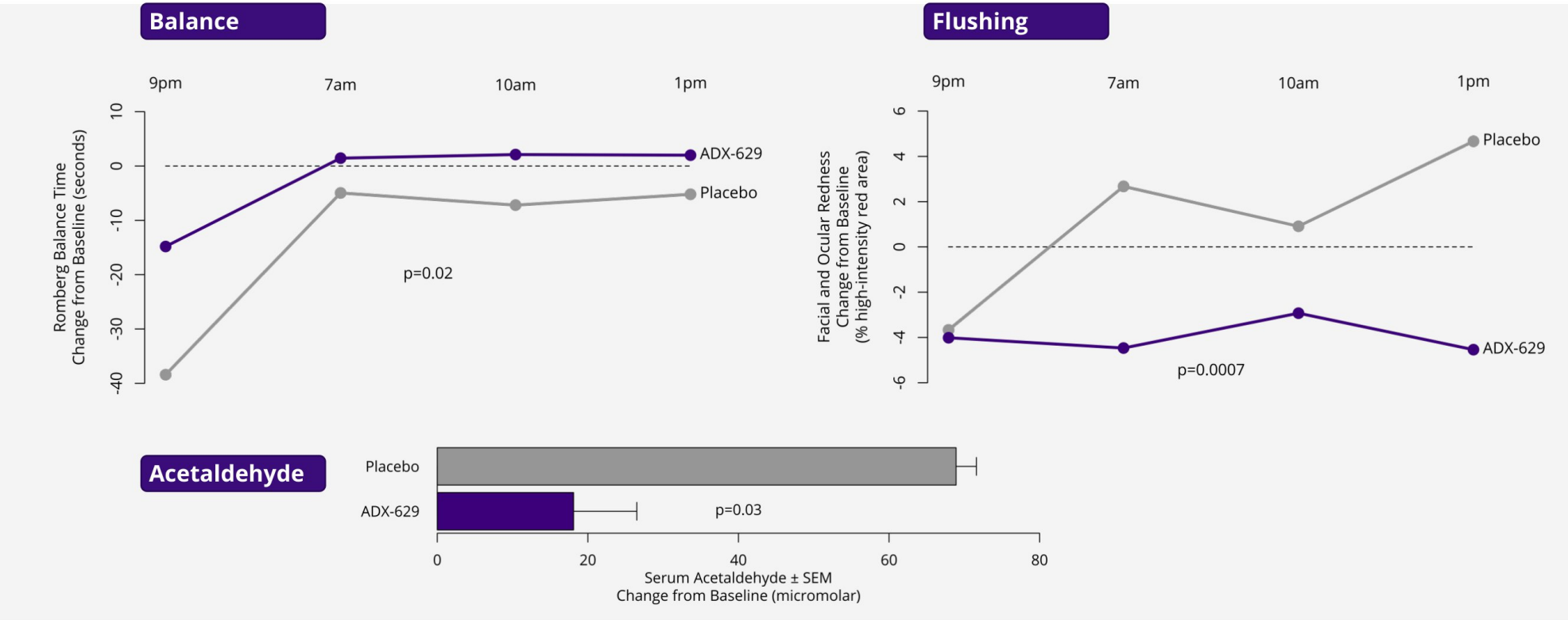
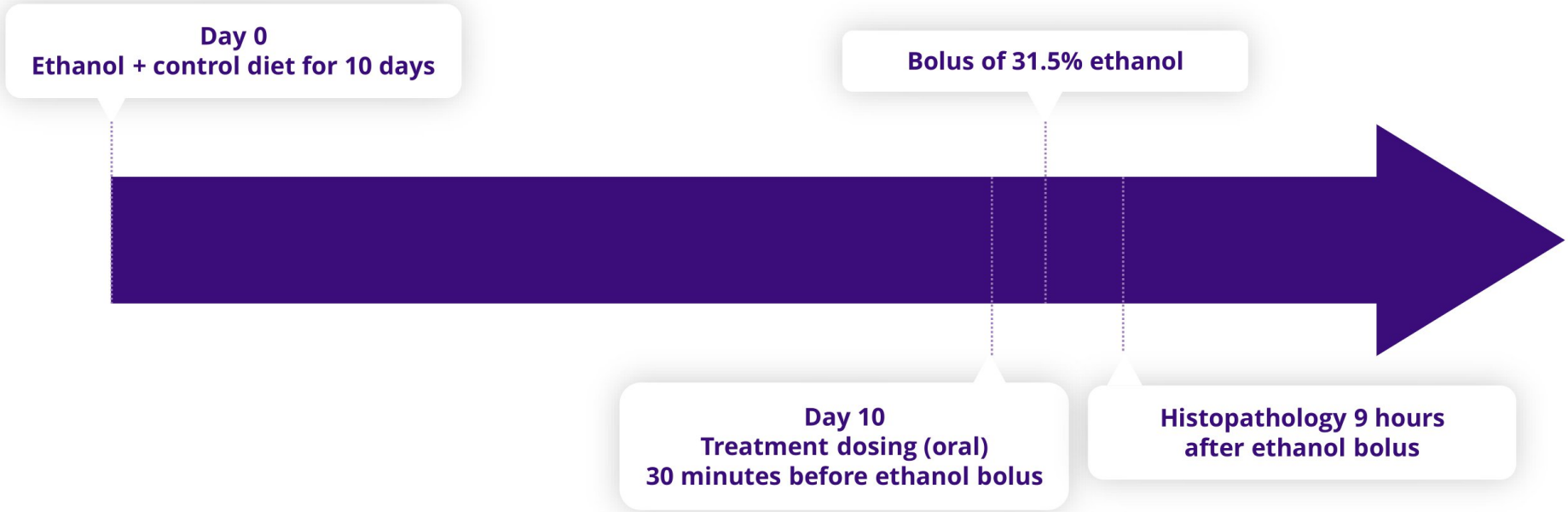
Alcoholic Hepatitis

ADX-629 Improved Balance and Reduced Dermal Flushing and Acetaldehyde Levels in Phase 1/2 Ethanol Toxicity Clinical Trial



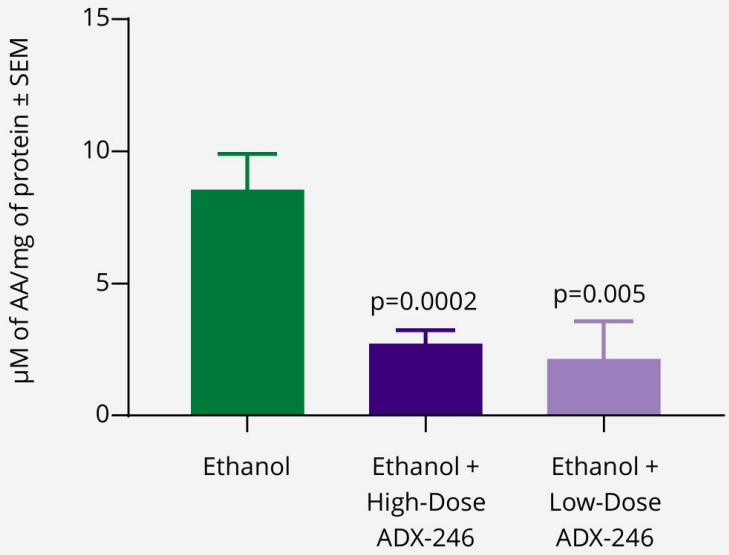
ADX-629 is an investigational drug candidate. SEM = standard error of mean. Data derived from mixed model for repeated measures adjusted for emesis, sequence, visit, and time point.

Preclinical Model of Ethanol-Induced Hepatitis Enables Detailed Assessment of the Pharmacodynamic Activity of RASP Modulation

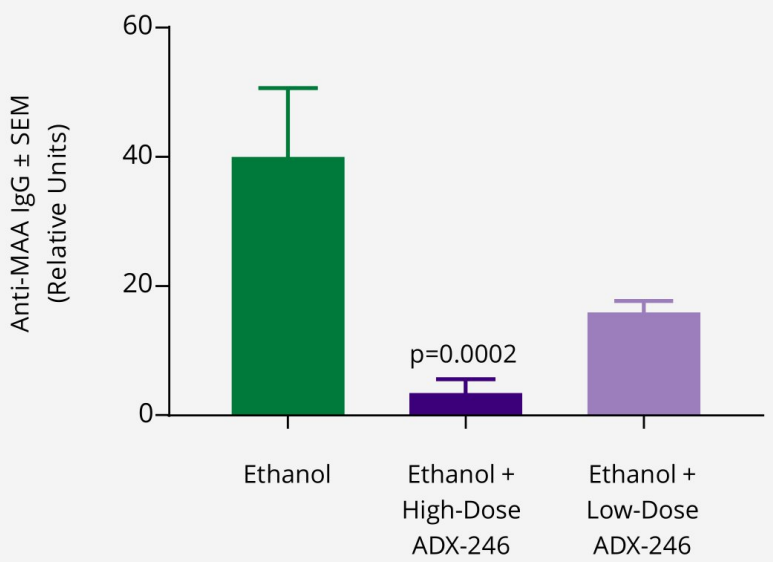


ADX-246 Decreased RASP Levels in Preclinical Model of Ethanol-Induced Hepatitis

Liver Acetaldehyde

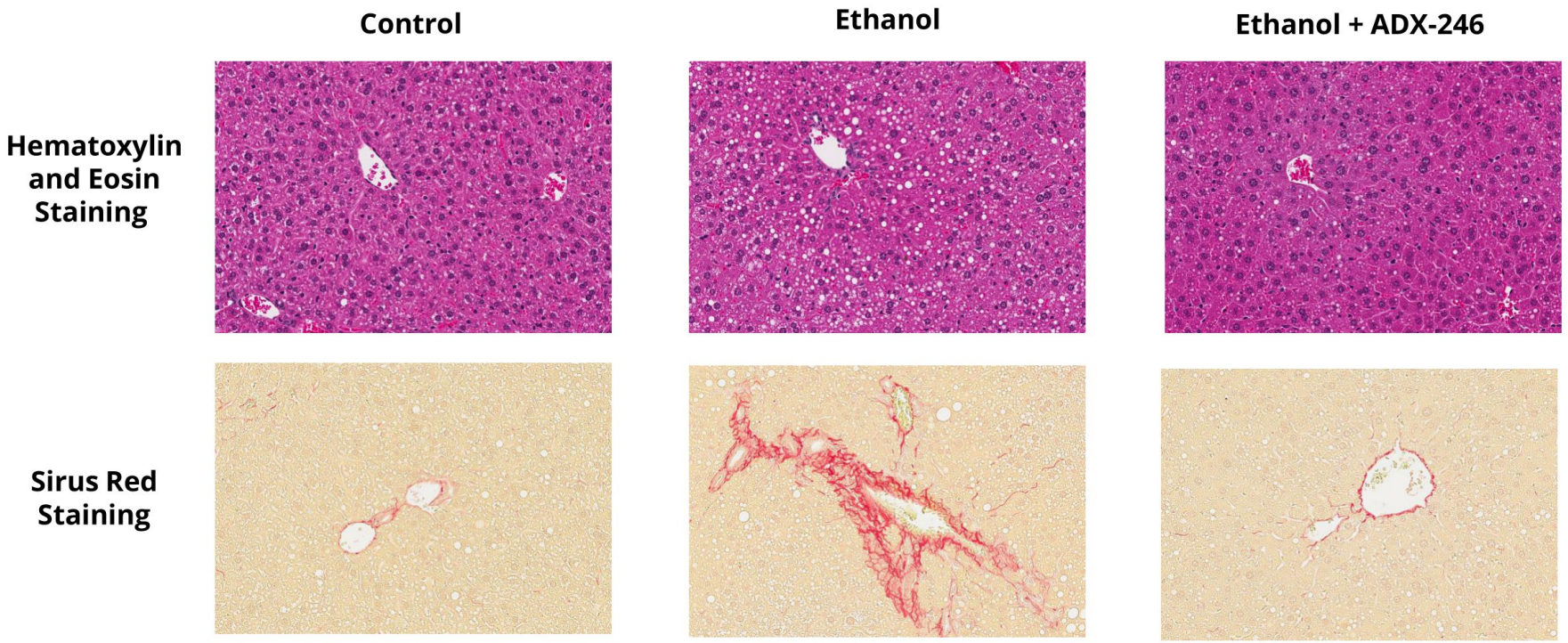


Serum Anti-Malondialdehyde Acetaldehyde Adduct



ADX-246 is an investigational drug candidate. AA = acetaldehyde. MAA = malondialdehyde acetaldehyde adduct. SEM = standard error of mean.

ADX-246 Diminished Histopathological Changes in Preclinical Model of Ethanol-Induced Hepatitis

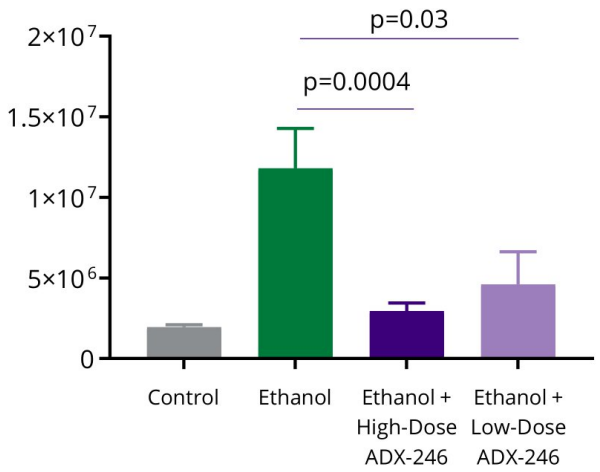


ADX-246 is an investigational drug candidate

ADX-246 Reduced Hepatic Levels of Lipids and Collagen in Preclinical Model of Ethanol-Induced Hepatitis

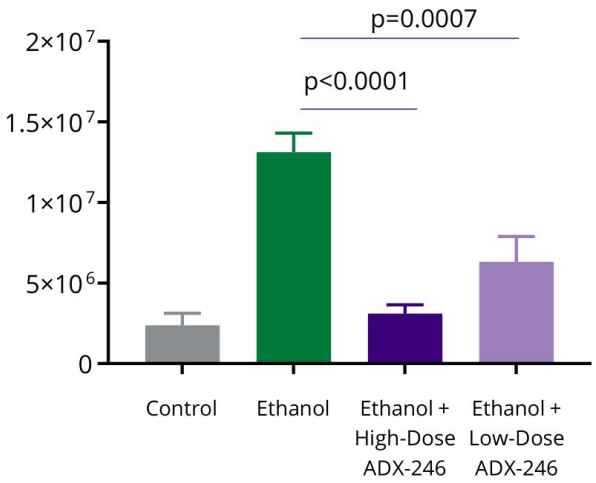
Collagen

Integrated Density ± SEM (pixels)



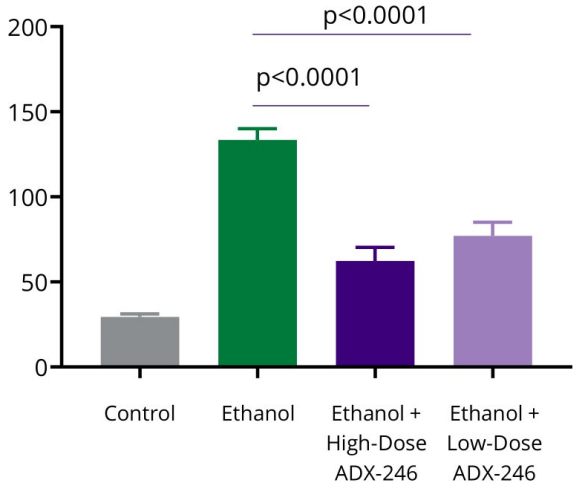
Total Lipids

Integrated Density ± SEM (pixels)



Triglycerides

mg/dL Triglycerides per mg Protein ± SEM



ADX-246 is an investigational drug candidate. SEM = standard error of mean.

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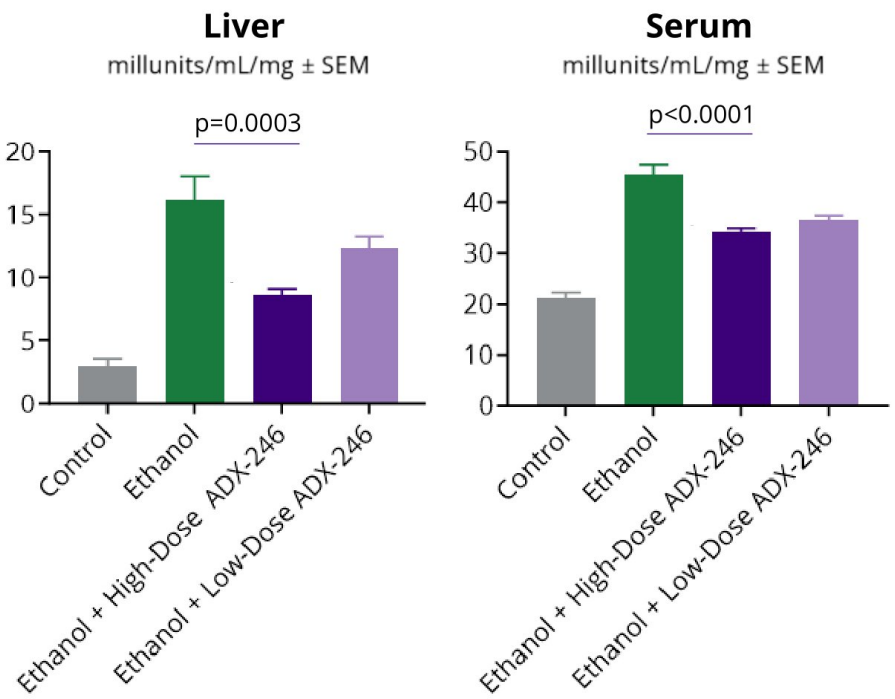
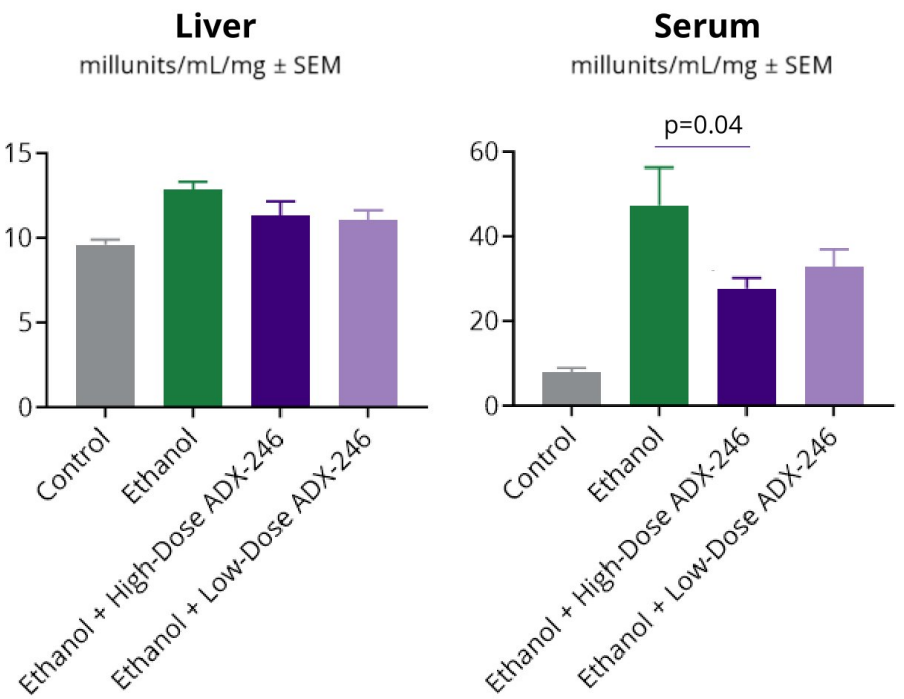
ADX-246 Improved Liver Function Tests in Preclinical Model of Ethanol-Induced Hepatitis

Aspartate Aminotransferase (AST)

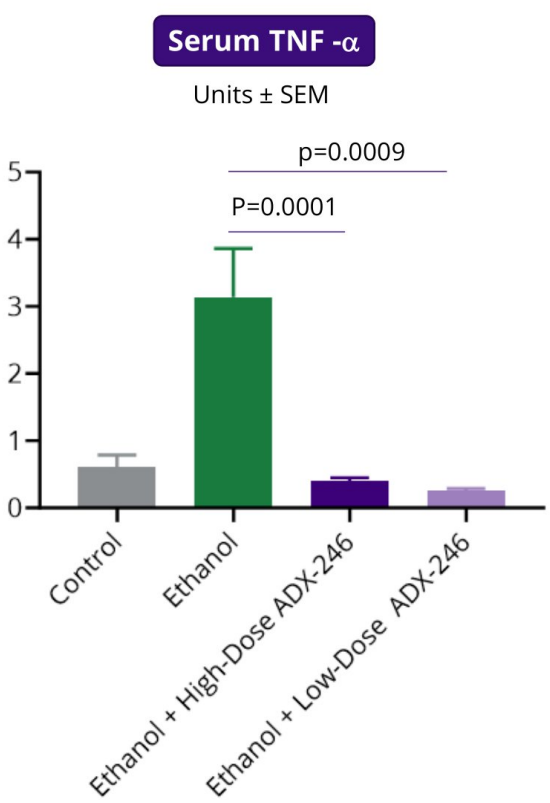


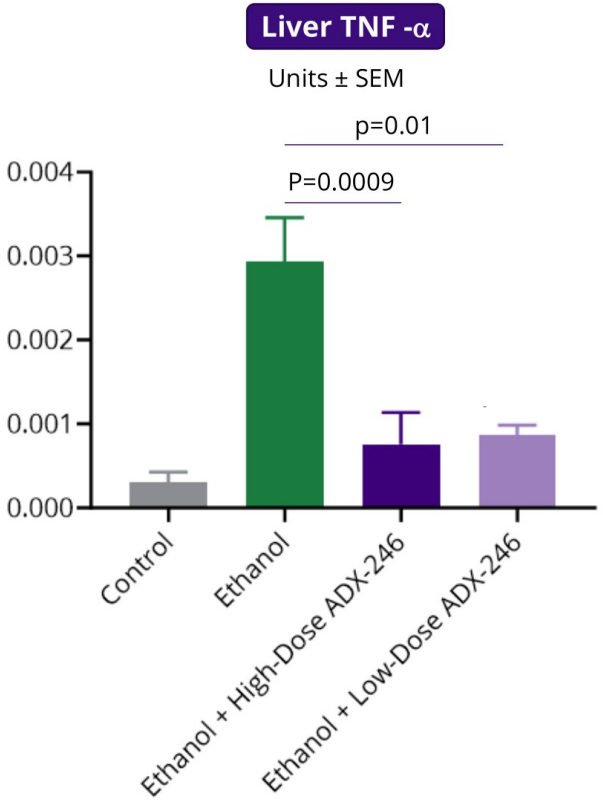
Alanine Aminotransferase (ALT)



ADX-246 is an investigational drug candidate. SEM = standard error of mean.

ADX-246 Decreased Levels of the Inflammatory Cytokine TNF-α in Preclinical Model of Ethanol-Induced Hepatitis



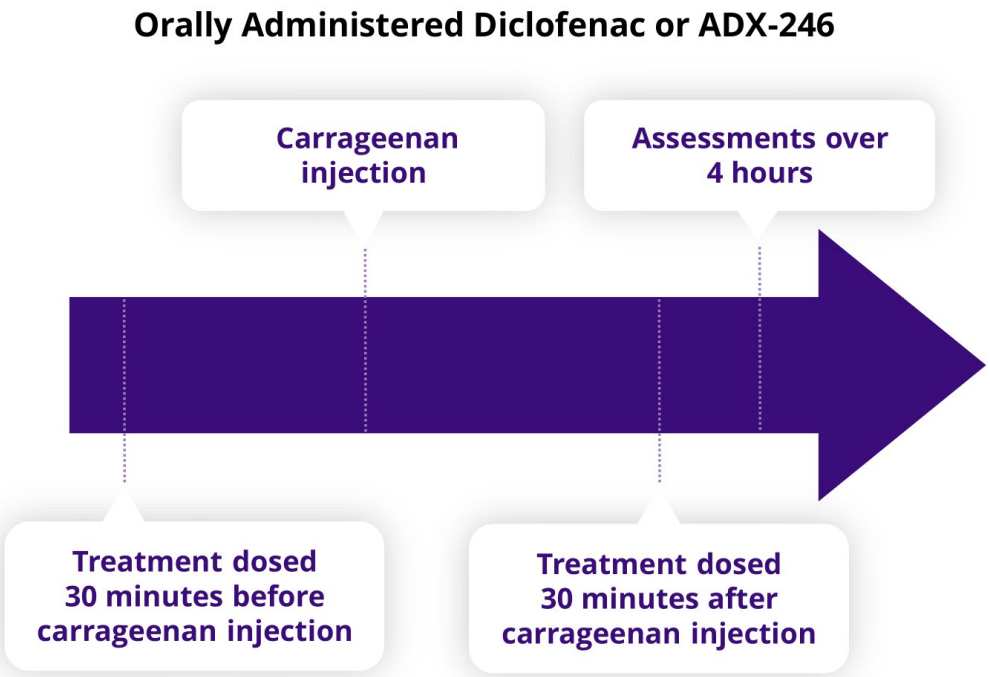


ADX-246 is an investigational drug candidate. SEM = standard error of mean. pg/mL = picogram/milliliter. TNF = tumor necrosis factor.

Non-Opiate Analgesia

The Carrageenan Inflammatory Pain Model Allows for Evaluation of Three Different Outcomes Associated with Inflammation

Test	Model	Assessment (units)
Von Frey	Mechanical Pain Tolerance	Force required for paw withdrawal (grams)
Hargreaves	Thermal Pain Tolerance	Time to withdrawal in response to heat (seconds)
Ankle Caliper	Swelling	Diameter of ankle (millimeters)



ADX-246 is an investigational drug candidate.

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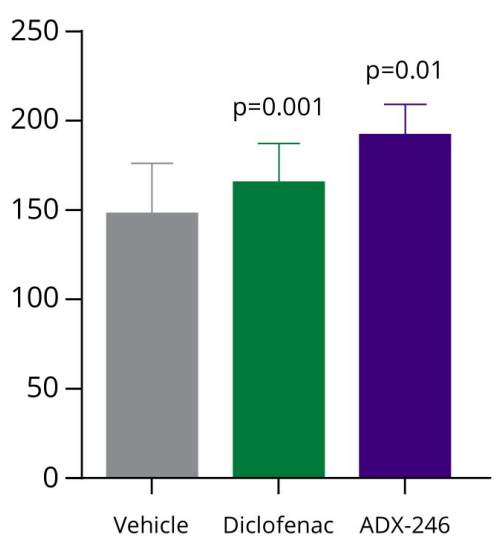
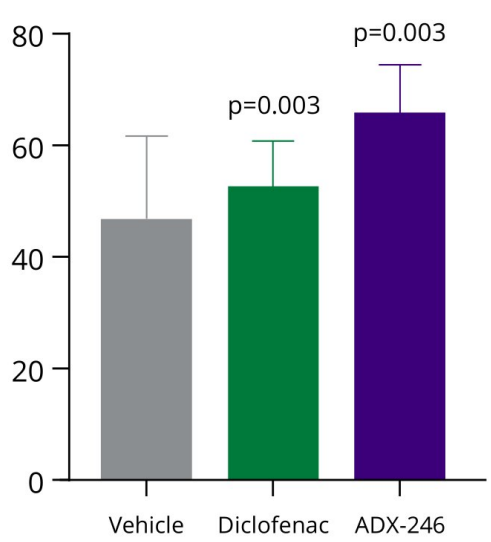
ADX-246 Demonstrated Statistically Significant Activity in the Carrageenan Inflammatory Pain Model

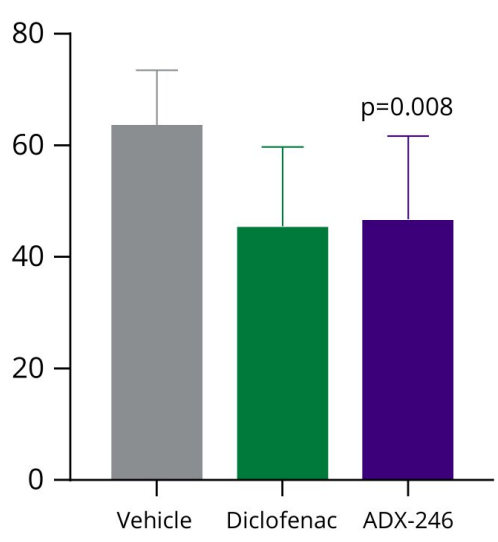
Mechanical Pain Tolerance



Thermal Pain Tolerance



Swelling



ADX-246 is an investigational drug candidate. SEM = standard error of mean. AUC = area under the curve.

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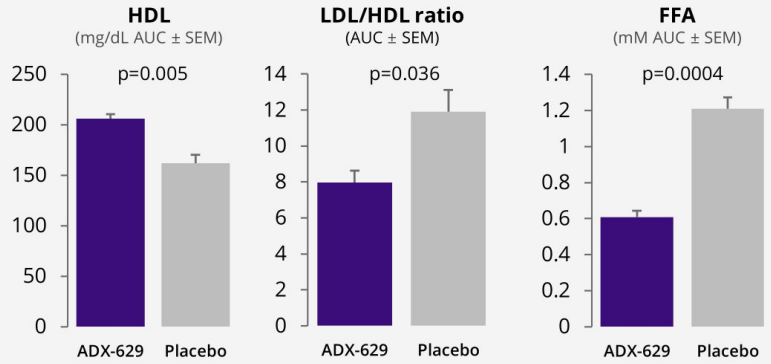
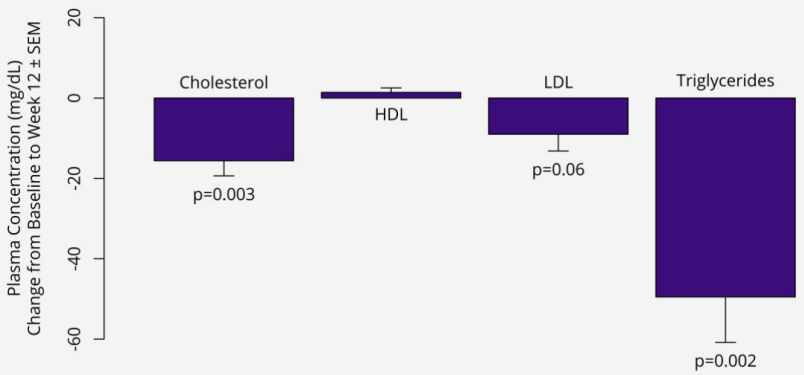
Lipogenesis Modulation

Statistically Significant Changes Observed in Lipid Profiles in Multiple Clinical Trials with RASP-Sequestering Molecule ADX-629

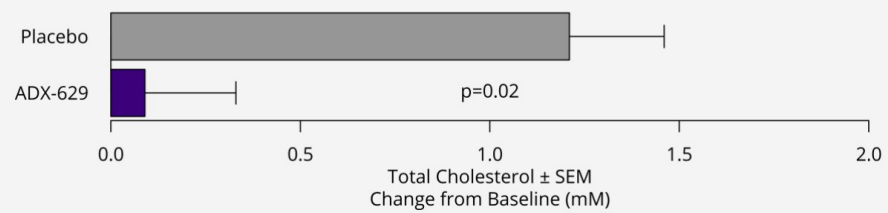
Phase 1 Clinical Trial

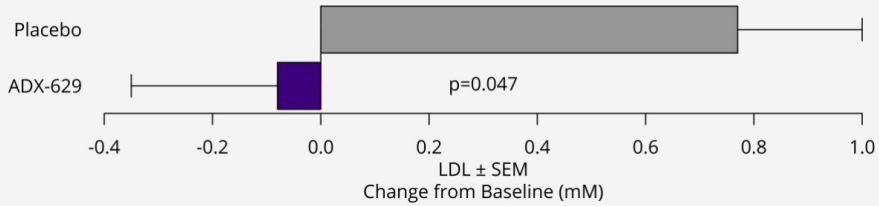


Phase 2 Psoriasis Clinical Trial



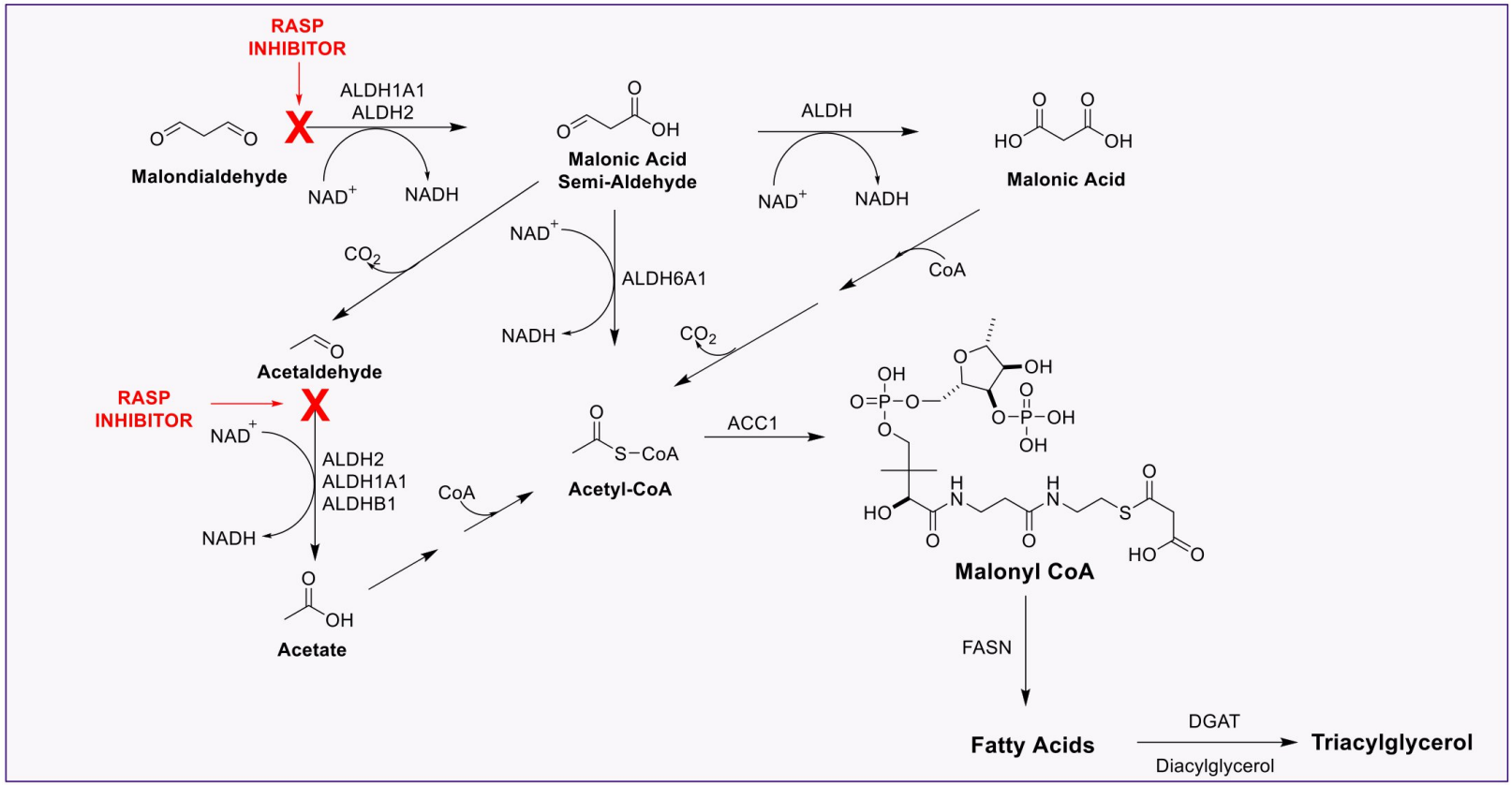
Phase 1/2 Ethanol Toxicity Clinical Trial





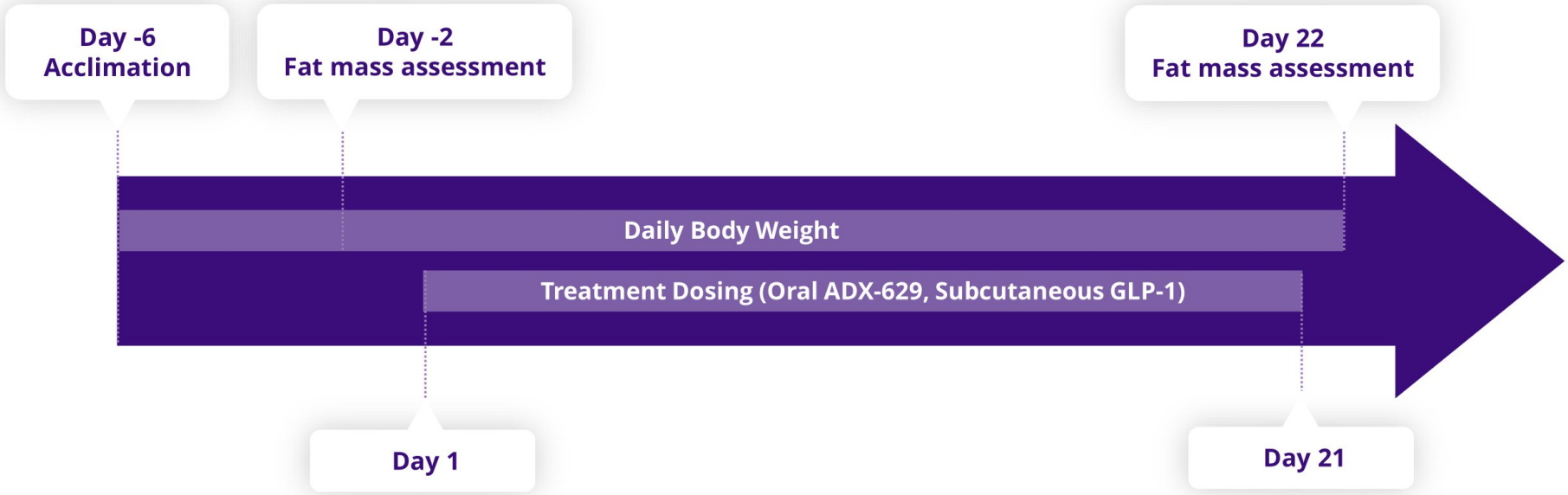
ADX-629 is an investigational drug candidate. SEM = standard error of the mean. HDL = high-density lipoprotein. LDL = low-density lipoprotein. FFA = free fatty acids. AUC = area under the curve. mM = millimolar.

RASP May Potentiate Triglyceride Synthesis



ALDH = aldehyde dehydrogenase. DGAT = diglyceride acyl transferase. ACC1 = acetyl coenzyme A carboxylase. FASN = fatty acid synthase. CoA = coenzyme A. NAD = nicotinamide adenine dinucleotide.

High-Fat Diet-Induced Obesity Model Allows for Assessment of Weight Loss and Body Composition



ADX-629 is an investigational drug candidate. GLP-1 = glucagon-like peptide 1.

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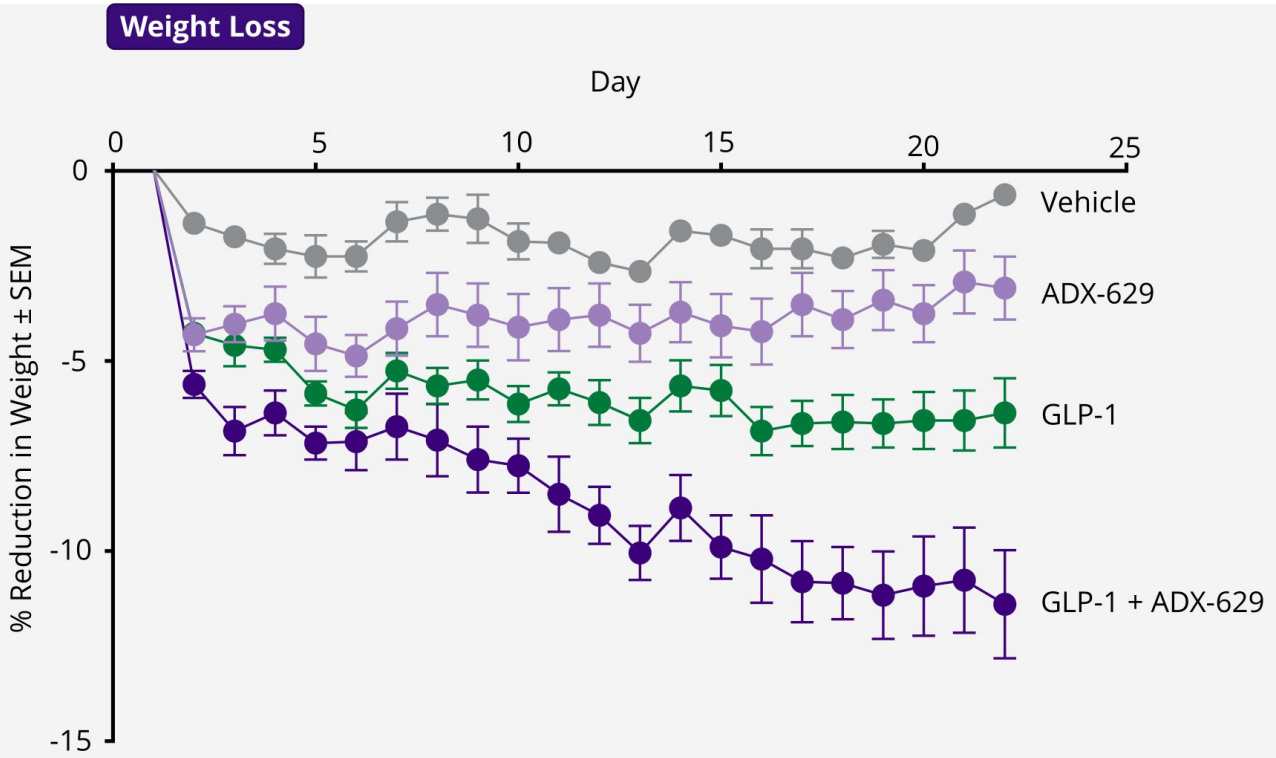
Treatment with Oral ADX-629 Enhanced GLP-1 Weight Loss in Preclinical Model of Obesity



ADX-629 is an investigational drug candidate. SEM = standard error of the mean. GLP-1 = glucagon-like peptide 1.

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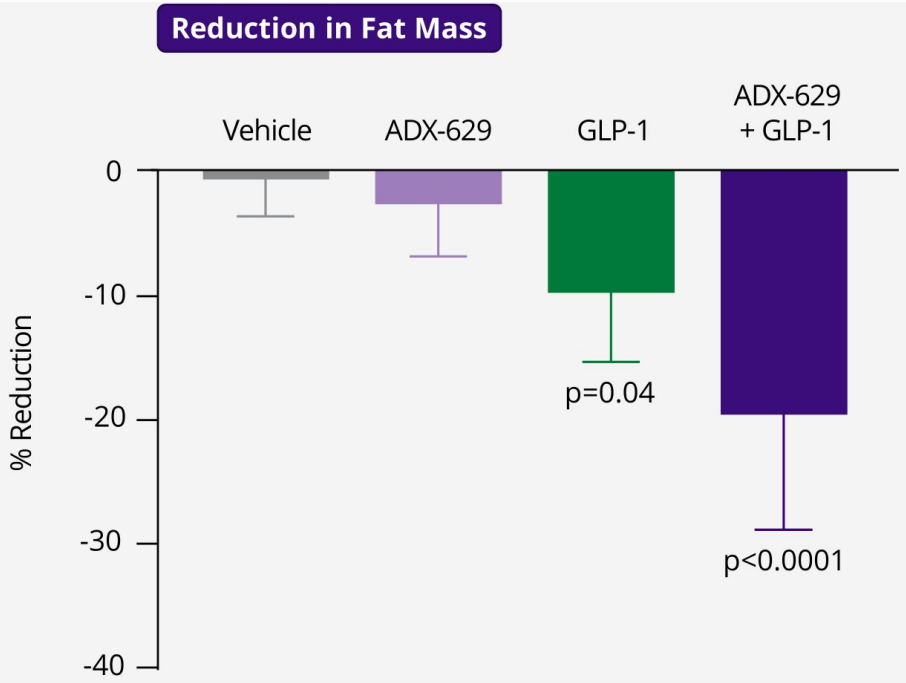
Treatment with Oral ADX-629 Enhanced GLP-1 Fat Mass Loss in Preclinical Model of Obesity



ADX-629 is an investigational drug candidate. SEM = standard error of the mean. GLP-1 = glucagon-like peptide 1.

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Ramiro S. Maldonado, M.D., Assistant Professor of Ophthalmology, Duke University

Retinitis Pigmentosa: An Overview

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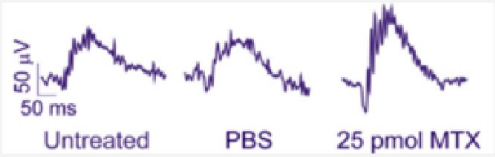
Todd C. Brady, M.D., Ph.D. Chief Executive Officer

Phase 2 Clinical Trial of ADX-2191 in Retinitis Pigmentosa

ADX-2191 has the potential to be the first approved drug for retinitis pigmentosa, a clinical group of rare genetic eye diseases.

Retinitis pigmentosa refers to a group of inherited retinal diseases characterized by cell death and loss of vision.

- Retinitis pigmentosa **affects more than 1 million people** worldwide. Mutations leading to rhodopsin misfolding account for approximately one-third of cases.
- There is **no approved therapy** for retinitis pigmentosa.
- **U.S. FDA Orphan Drug Designation** for ADX-2191 for the treatment of retinitis pigmentosa was granted in August 2021.



Preclinical electroretinographic evidence in a P23H rhodopsin mutation mouse model of retinitis pigmentosa **suggests that methotrexate improves retinal function.**

ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. Sources: Aldeyra internal estimates; FASEB J. 34(8): 10146-10167, 2020.
PBS = phosphate-buffered saline. MTX = methotrexate.

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ADX-2191: Phase 2 Clinical Trial Design in Retinitis Pigmentosa

Design

Single-center, dose-ranging, open-label clinical trial of ADX-2191 (400µg methotrexate in 0.05mL) in patients with retinitis pigmentosa

Inclusion Highlights

Diagnosis of retinitis pigmentosa due to rhodopsin gene mutations, including P23H

Dosing Regimen

Cohort A (n = 4):
Monthly injections of ADX-2191 for three months

Cohort B (n = 4):
Twice-monthly injections of ADX-2191 for three months

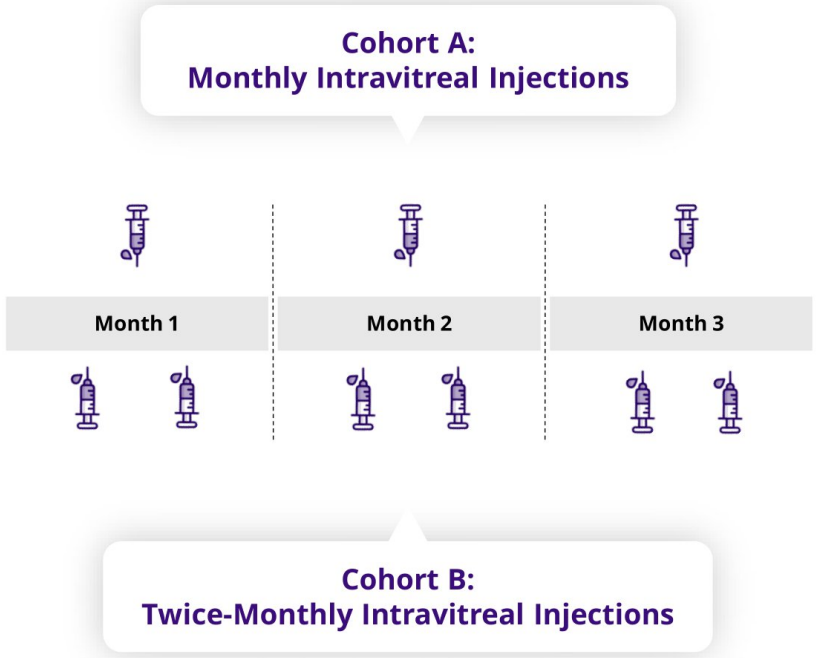
Primary Endpoint

Safety and tolerability

Secondary Endpoints

1. Best corrected and low-light visual acuity
2. Macular retinal sensitivity as assessed by MAIA perimetry
3. Dark-adapted flash analyzed by ERG
4. Peripheral retinal sensitivity as assessed by DAC perimetry
5. Retinal morphology as assessed by OCT

Acuity, perimetry, and OCT assessments were performed monthly for four months from initiation of therapy. ERG was performed at baseline and at 90 days from initiation of therapy.



ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. MAIA = Macular Integrity Assessment. ERG = full field electroretinography. DAC = dark-adapted chromatic. OCT = optical coherence tomography.

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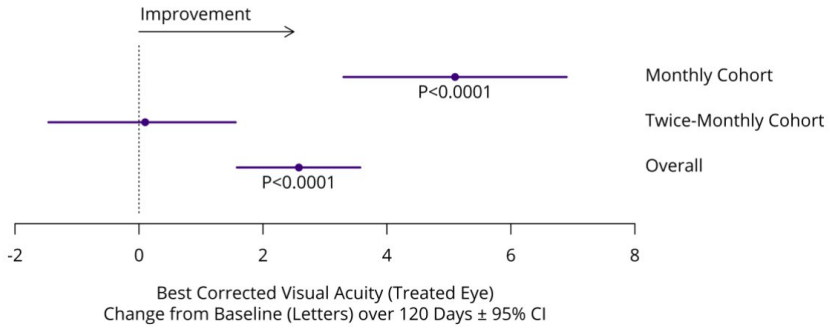
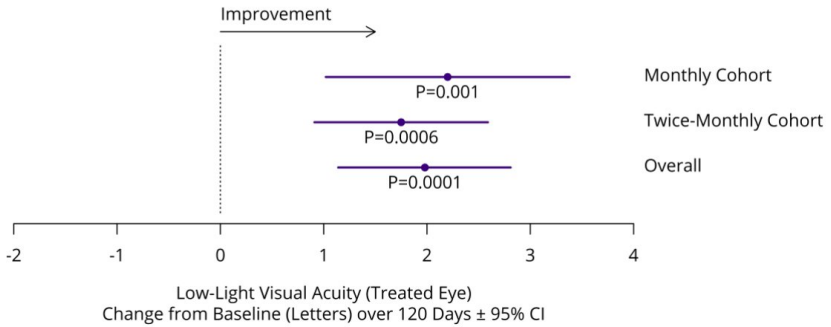
Statistically Significant Improvement in Visual Acuity Observed in the Retinitis Pigmentosa Phase 2 Clinical Trial

Normal Lighting



Dim Lighting



ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. Baseline best corrected visual acuity for the twice-monthly dosing cohort was on average approximately 20/20. Data derived from mixed model for repeated measures with baseline, day, and dose (if applicable) as factors. CI = confidence interval.

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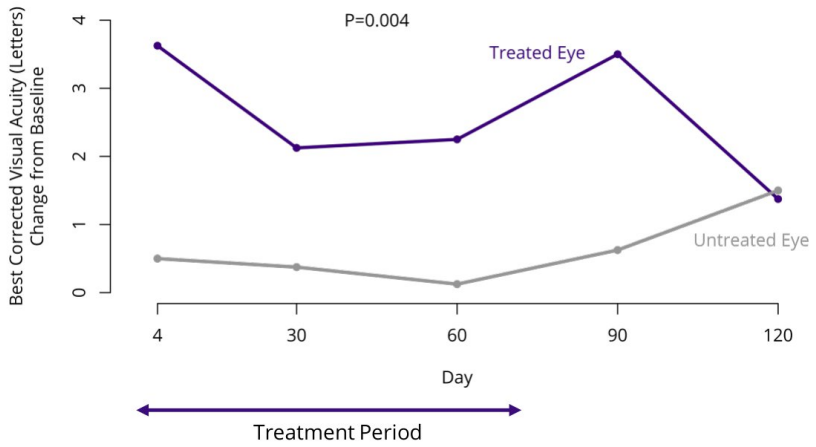
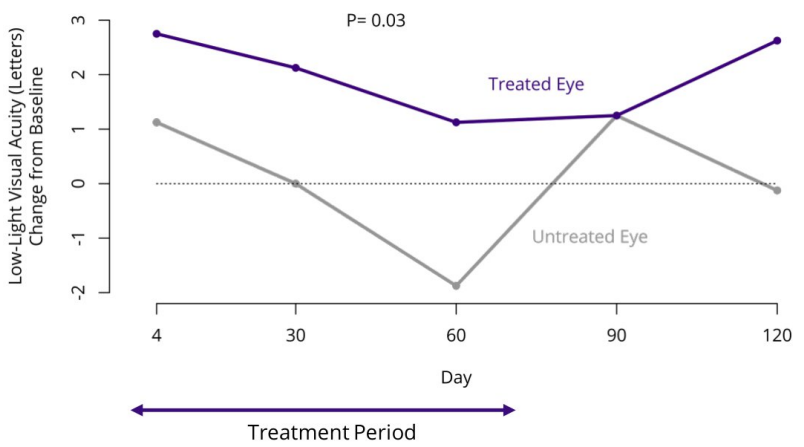
In the Retinitis Pigmentosa Phase 2 Clinical Trial, Visual Acuity in ADX-2191-Treated Eyes Was Superior to that of Untreated Eyes

Normal Lighting



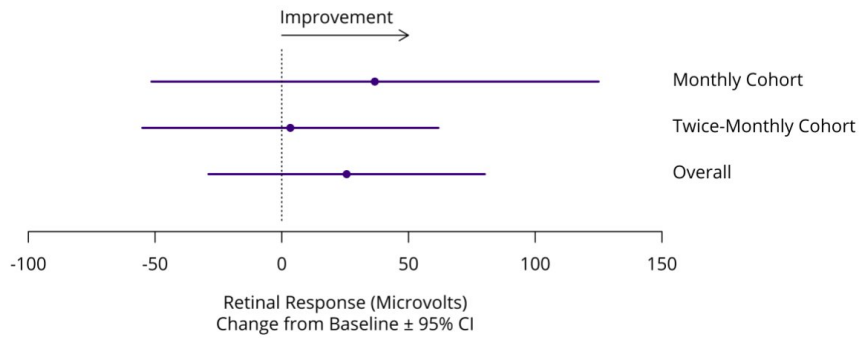
Dim Lighting



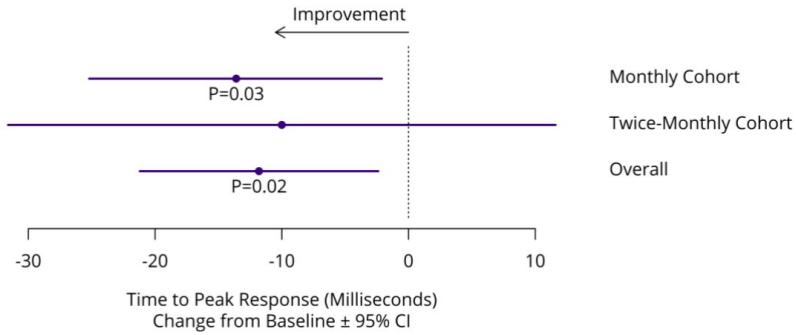
ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. Data derived from mixed model for repeated measures of both dosing cohorts with baseline, day, dose, and treatment eye as factors.

As Assessed by ERG, Retinal Function Improved in the Retinitis Pigmentosa Phase 2 Clinical Trial

Peak Response



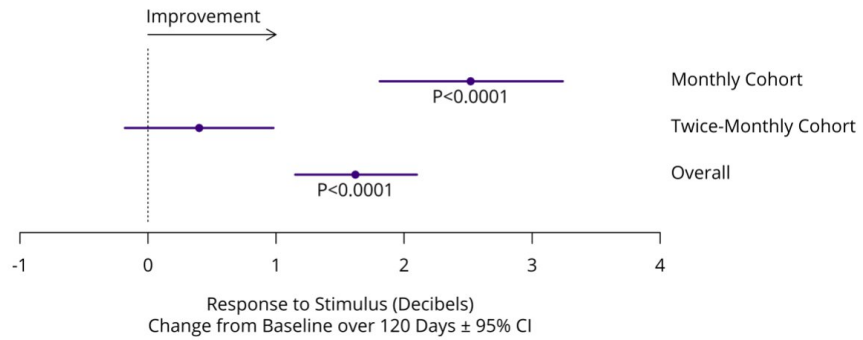
Time to Response



ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. B-wave response and implicit time following dim flash under scotopic conditions were assessed. Data derived from mixed model for repeated measures with baseline and dose (if applicable) as factors. CI = confidence interval. ERG = full field electroretinography.

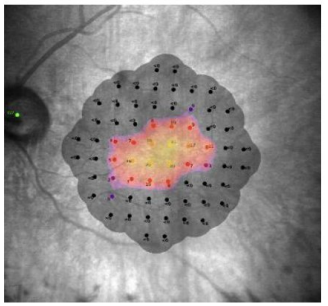
As Assessed by MAIA Microperimetry, Statistically Significant Improvement in Retinal Sensitivity Observed in the Retinitis Pigmentosa Phase 2 Clinical Trial

Retinal Sensitivity

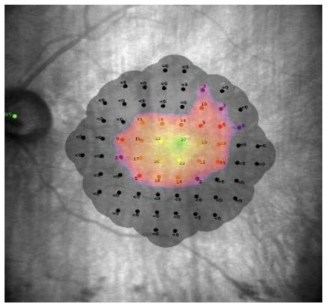


Illustrative results from an enrolled patient indicate central and peripheral improvement in macular retinal sensitivity

Baseline



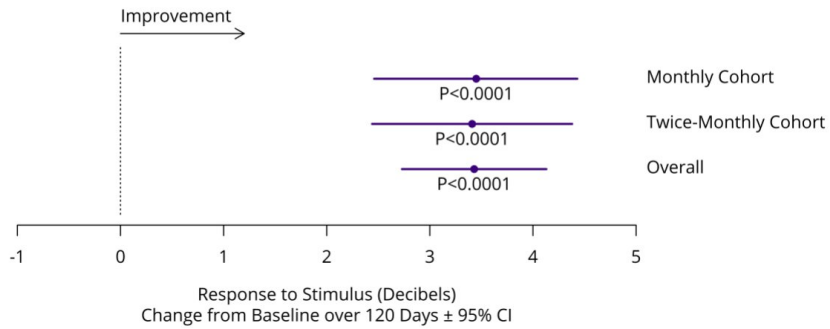
Day 90



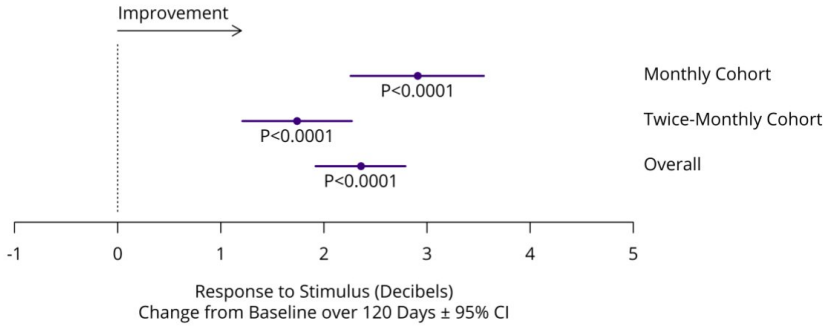
ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. Baseline retinal sensitivity was approximately 50% higher in the twice-monthly dosing cohort than in the monthly dosing cohort. Data derived from mixed model for repeated measures with baseline, day, and dose (if applicable) as factors. Retinal sensitivity assessed where non-zero sensitivity losses were ≥7 decibels from nearest concentric assessment. MAIA = Macular Integrity Assessment. CI = confidence interval.

As Assessed by DAC Perimetry, Statistically Significant Improvement in Retinal Sensitivity Observed in the Retinitis Pigmentosa Phase 2 Clinical Trial

Green Stimulus



Red Stimulus



ADX-2191 (methotrexate injection, USP) for intravitreal administration is an investigational drug candidate. Data derived from mixed model for repeated measures with baseline, day, and dose (if applicable) as factors. Retinal sensitivity assessed where non-zero sensitivity losses were ≥7 decibels from nearest concentric assessment. DAC = dark-adapted chromatic. CI = confidence interval.

Planned Phase 2/3 Clinical Trial of ADX-2191 in Retinitis Pigmentosa

Design	Randomized, double-masked, clinical trial
Dosing	40 µg vs. 400 µg administered monthly for 12 months
Size	30 retinitis pigmentosa patients with rhodopsin mutations, randomized 1:1
Primary Endpoint	Peripheral vision sensitivity to green (rod-mediated) light under dimly lit (scotopic), dark-adapted conditions
Other Endpoints	Best-corrected and low-light visual acuity, safety

Clinical trial initiation expected in H2 2024†

†The timing of clinical trials depends, in part, on the availability of clinical research facilities and staffing, the ability to recruit patients, and the number of patients in the trial.

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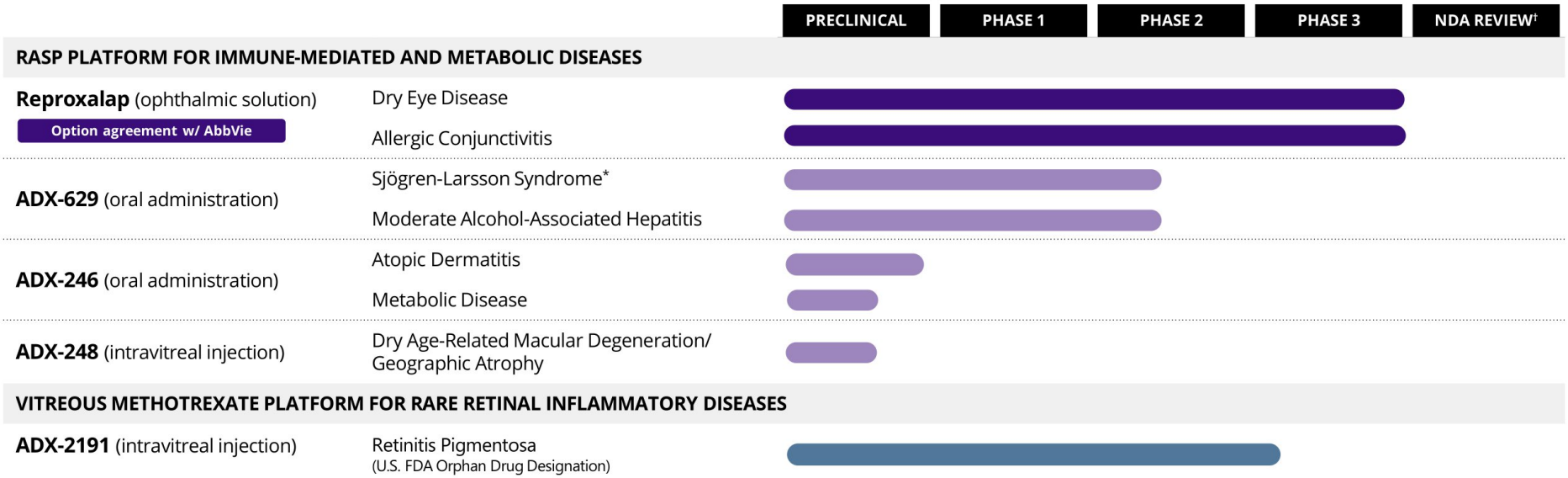
Todd C. Brady, M.D., Ph.D., Chief Executive Officer, Aldeyra Therapeutics

Pipeline and Milestone Review

Aldeyra Is a Well-Capitalized Biotechnology Company with a Broad Immunology and Metabolic Pipeline



As of 12/31/2023, cash and cash equivalents were $142.8M, which Aldeyra believes will be sufficient to fund the Company beyond 2026.‡

†Regulatory review timelines are flexible and subject to change based on the regulator's workload and other potential review issues. ‡Company guidance as of March 7, 2024; includes continued early and late-stage development of our product candidates in ocular and systemic immune-mediated diseases. Guidance does not include any potential licensing or product revenue associated with reproxalap. *Investigator sponsored. NDA = New Drug Application

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Clinical and Regulatory Milestones

Reproxalap

ADX-629

ADX-246

ADX-248

ADX-2191

†Regulatory review and discussion timelines are flexible and subject to change based on the regulator's workload and other potential review issues. ‡The timing of clinical trials depends, in part, on the availability of clinical research facilities and staffing, the ability to recruit patients, and the number of patients in the trial. *Investigator sponsored.

- [x] **Allergic Conjunctivitis**
  Positive Phase 3 INVIGORATE 2 trial top-line results announced
- [ ] **Dry Eye Disease**
  Proposed clinical trial top-line results and potential NDA resubmission expected in second half of 2024, pending clinical trial results, feedback from ongoing FDA discussions, and other factors†‡
- [x] **Sjögren-Larsson Syndrome**
  Phase 2 clinical trial top-line results announced*
- [ ] **Moderate Alcohol-Associated Hepatitis**
  Open-label Phase 2 clinical trial results expected H2 2024‡
- [ ] **Atopic Dermatitis**
  Phase 1 clinical trial initiation expected in H1 2024‡
- [x] **Metabolic Disease**
  Pre-clinical program initiated
- [ ] **Dry Age-Related Macular Degeneration/Geographic Atrophy**
  IND expected to be submitted in 2024
- [ ] **Retinitis Pigmentosa**
  Phase 3 clinical trial initiation expected in H2 2024‡

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

Concluding Remarks