

# KORRO BIO

Corporate Deck

**Edit the Message,  
Rewrite the Future**

November 2024



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# Expanding the Frontiers of Genetic Medicines via Activation of Biological Pathways

**Affecting a single base RNA edit (A-to-I edit) using proprietary oligonucleotide platform (OPERA™)**



- Specific, transient, titratable and reversible using only an oligonucleotide
- Key internal discoveries driving the potential to develop multiple drug candidates
- Initial focus in rare liver, CNS and cardiometabolic diseases

**Advancing KRRO-110 program for alpha-1 antitrypsin deficiency (AATD) with first participant dosing anticipated in Q1'25**

**Ongoing collaboration with Novo Nordisk to develop up to two therapeutic candidates in cardiometabolic diseases**

**Enabling multiple milestones for KRRO-110 and other pipeline programs with cash runway into 2H'26<sup>1</sup>**

<sup>1</sup> Cash, cash equivalents and marketable securities of \$169.1 million as of September 30, 2024



# Experienced Management Team with Proven Track Record



**Ram Aiyar, Ph.D.**  
Chief Executive Officer  
and President



**Kemi Olugemo, M.D.**  
Chief Medical Officer



**Vineet Agarwal, MBA**  
Chief Financial Officer



**Todd Chappell, MBA**  
Chief Operating Officer



**Jeffrey Cerio,  
Pharm.D., J.D.**  
SVP, General Counsel



**Stephanie Engels**  
SVP, HR People  
and Culture



**Venkat Krishnamurthy,  
Ph.D.**  
SVP, Head of Platform



# Board of Directors with Strong Development and Management Expertise



**Nesson Bermingham, Ph.D.**  
Founder and Executive Chairman; Operating Partner, Khosla Ventures



**Rachel Meyers, Ph.D.**  
Experienced operator in RNA medicines



**Timothy Pearson**  
CEO, Carrick Therapeutics



**Jean-Francois Formela, M.D.**  
Founder Partner, Atlas Venture



**Ali Behbahani, M.D.**  
General Partner, NEA



**Katharine Knobil, M.D.**  
Seasoned pharmaceutical and biotech executive



**Ram Aiyar, Ph.D.**  
President and CEO



# Causal Missense Variants Have Been Identified in Both Rare and Common Diseases

**nature genetics**

Genetic variation in *PNPLA3* confers susceptibility to nonalcoholic fatty liver disease

Stefano Romeo<sup>1,8</sup>, Julia Kozlitina<sup>2,3,8</sup>, Chao Xing<sup>1,2</sup>, Alexander Pe  
Eric Boerwinkle<sup>6</sup>, Jonathan C Cohen<sup>1</sup> & Helen H Hobbs<sup>1,7</sup>

> *Hum Mol Genet.* 2021 Apr 30;30(6):454-466. doi: 10.1093/hmg/ddab058.

**Identification of LRRK2 missense variants in the accelerating medicines partnership Parkinson's disease cohort**

...<sup>1</sup>, Cornelis Blauwendraat<sup>2</sup>, Zhiyong Liu<sup>1</sup>;

> *J Med Genet.* 2022 Sep 30;jmg-2022-108798. doi: 10.1136/jmg-2022-108798.  
Online ahead of print.

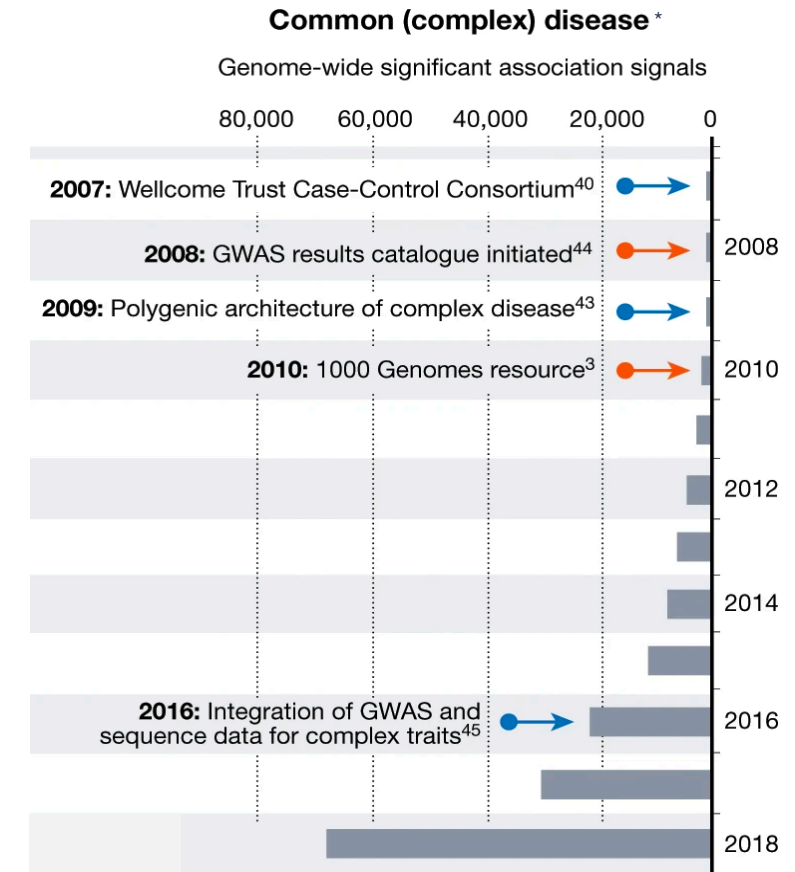
**Identifying the molecular drivers of ALS-implicated missense mutations**

Stephanie Portelli<sup>1 2 3</sup>, Amanda Albanaz<sup>4</sup>, Douglas Edua  
David Benjamin Ascher<sup>1 2 3</sup>

> *Pain Med.* 2018 May 1;19(5):1010-1014. doi: 10.1093/pm/pnx261.

**Common Missense Variant of SCN9A Gene Is Associated with Pain Intensity in Patients with Chronic Pain from Disc Herniation**

Mateusz Kurzawski<sup>1</sup>, Marcin Rut<sup>2</sup>, Violetta Dziedziejko<sup>3</sup>, Krzysztof Safranow<sup>3</sup>,  
Anna Machoy-Mokrzynska<sup>1</sup>, Marek Drozdziak<sup>1</sup>, Monika Bialecka<sup>4</sup>

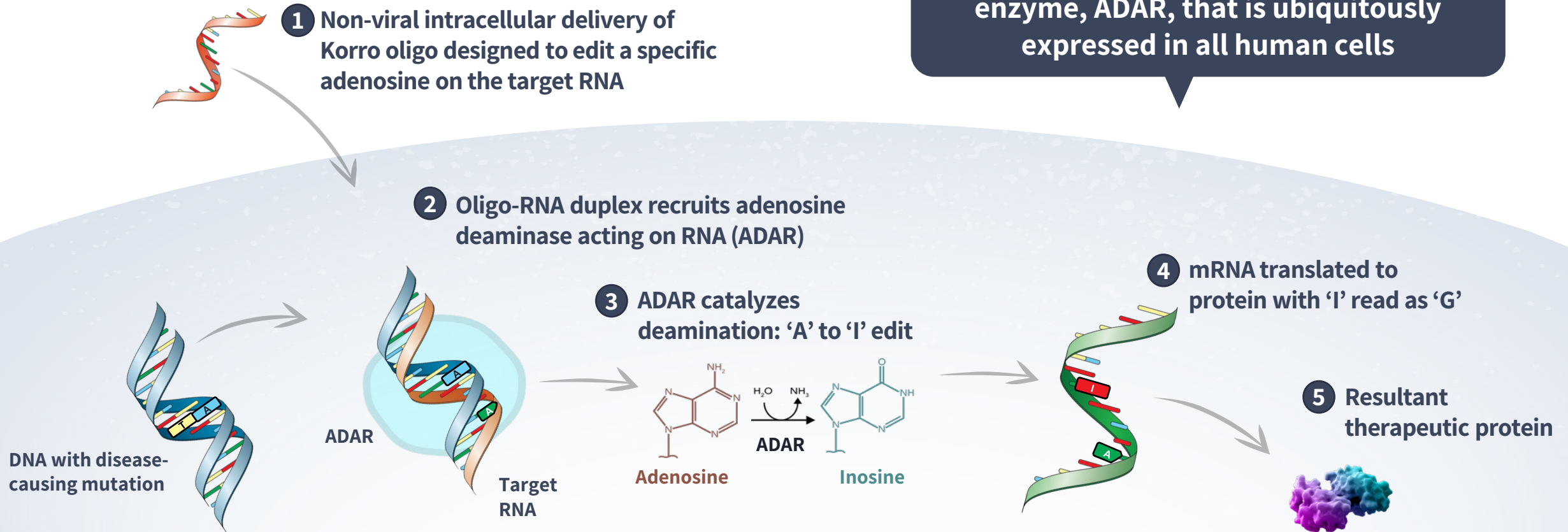


**Need for an approach to transiently edit variants to modify biology and alleviate pathology**

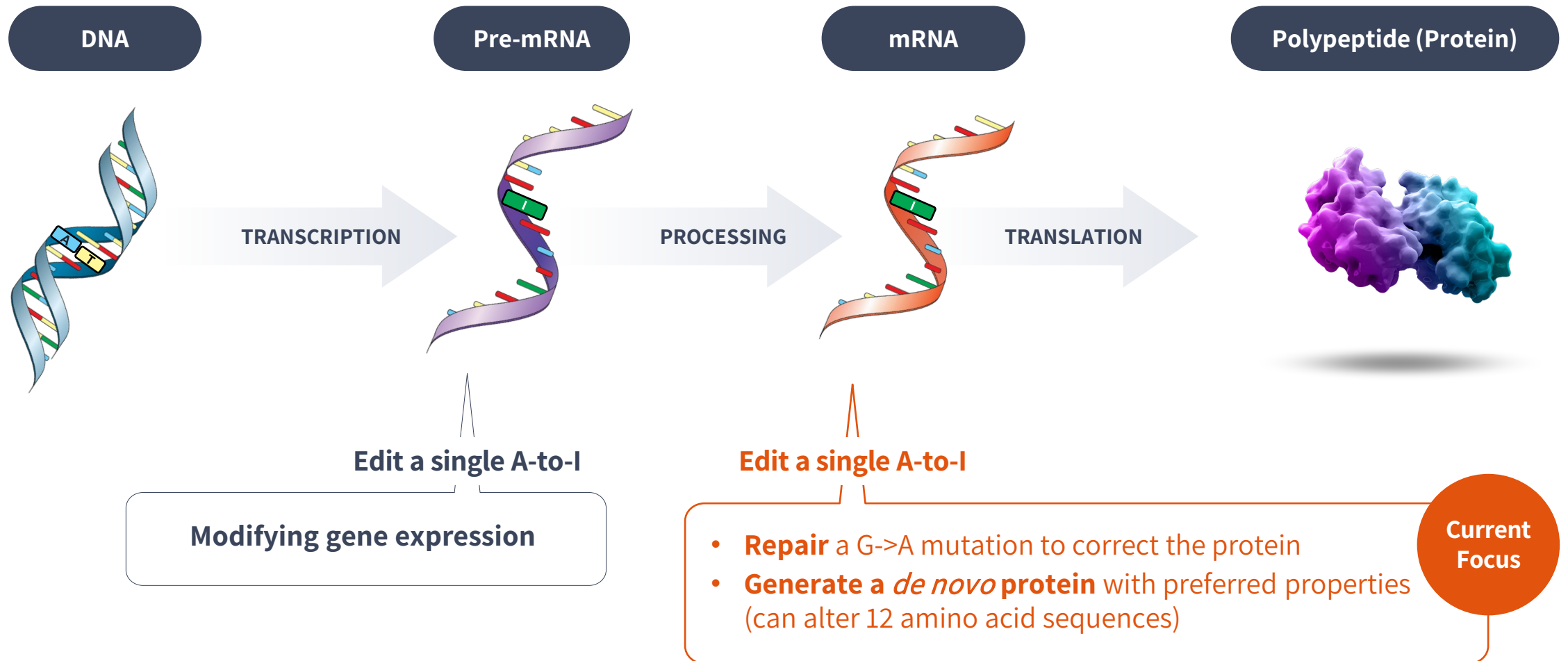
\* Adapted from *Nature* Volume 577, pages 179-189 (2020)

# RNA Editing: Transiently Effecting an A-to-I Edit on RNA Using an Oligonucleotide

Harnessing an endogenous editing enzyme, ADAR, that is ubiquitously expressed in all human cells

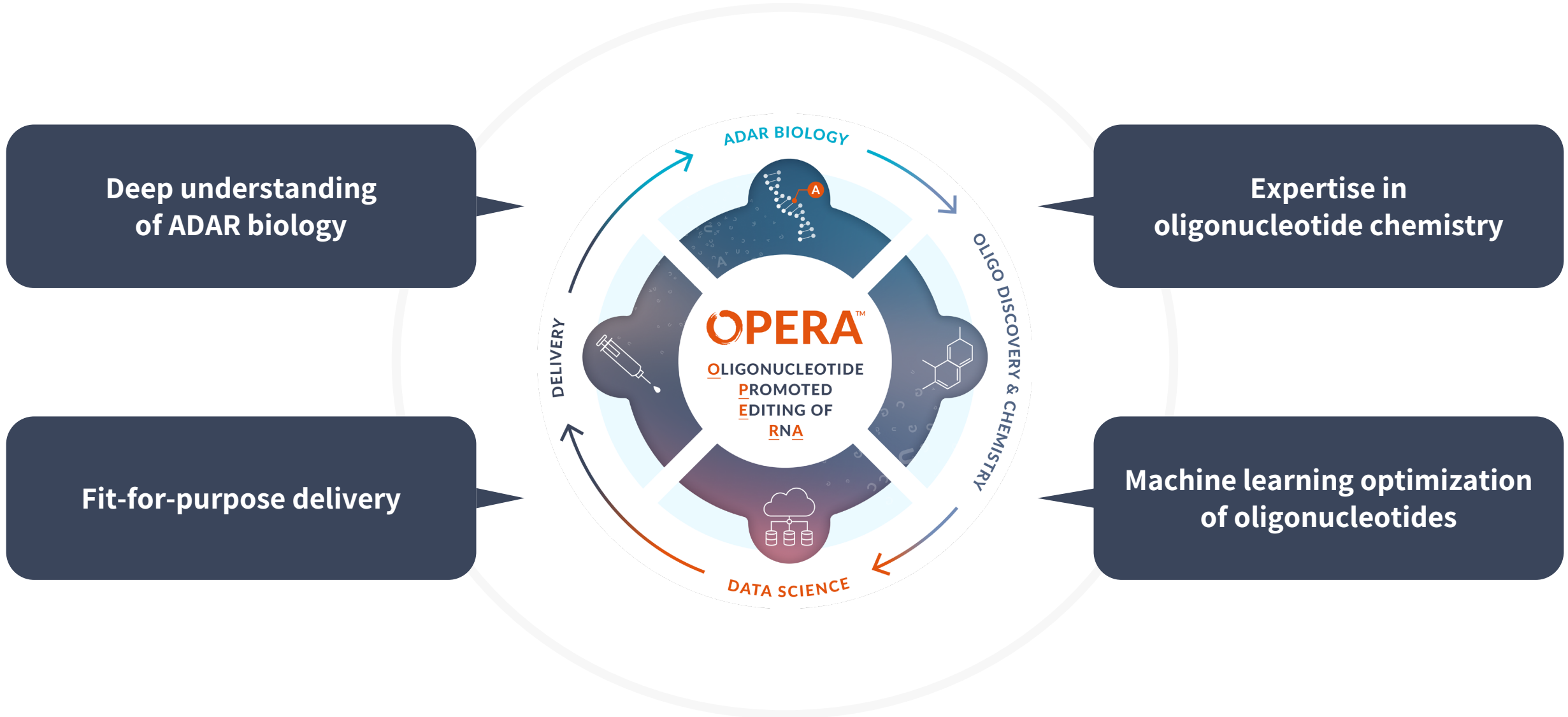


# Broad and Versatile Opportunity to Impact Biology and Potentially Bring Multiple Therapeutic Options to Patients

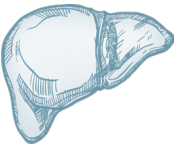






# OPERA: Our Differentiated Approach for RNA Editing



# Robust Pipeline with Multiple High-Value Targets

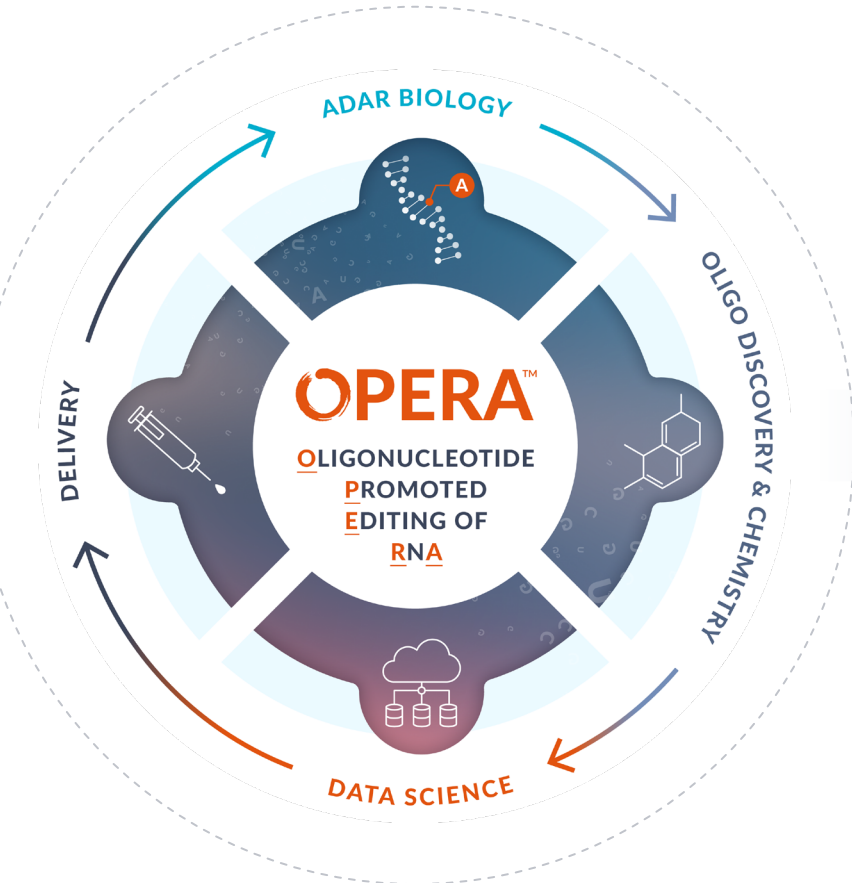
	CONCEPT	PROGRAM / INDICATION	DELIVERY	DISCOVERY	PRECLINICAL DEVELOPMENT	PHASE 1	PHASE 2	PHASE 3
	Repairing a pathogenic variant	<b>KRRO-110</b> AATD	LNP (IV)	<b>AAT</b>	<b>(Phase 1/2a Study)</b>			
	<i>De novo</i> protein to inhibit degradation	Rare metabolic disorder	GalNAc (SQ)	<b>Undisclosed</b>				
	Repairing a pathogenic variant	Parkinson's disease	Undisclosed	<b>LRRK2</b>				
	<i>De novo</i> protein to overcome LoF and GoF <sup>1</sup>	Amyotrophic lateral sclerosis	Undisclosed	<b>TDP43</b>				
	<i>De novo</i> protein to modulate currents	Subsets of pain	Undisclosed	<b>Na<sub>v</sub>1.7</b>				
	Undisclosed	Cardiometabolic	Undisclosed	<b>Up to 2 Targets</b>				

**Advancing KRRO-110 program with first participant dosing anticipated in Q1'25 and interim data in 2H'25**

<sup>1</sup>De Novo protein variant to prevent toxic gain of function (GoF) with TDP43 aggregation, and still continue STMN2 signaling by overcoming toxic Loss-of-function (LOF)

# OPERA: Our Approach

# Customized High-fidelity Oligonucleotides for RNA Deamination (CHORD™)



Designed to have...

High target efficiency

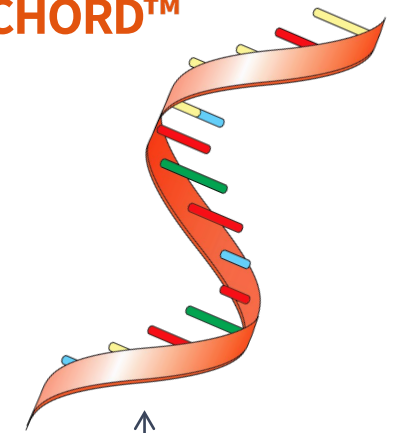
High target specificity

Computational efficiency

Leveraging chemistry

Leveraging delivery

CHORD™



Gen 1.0:

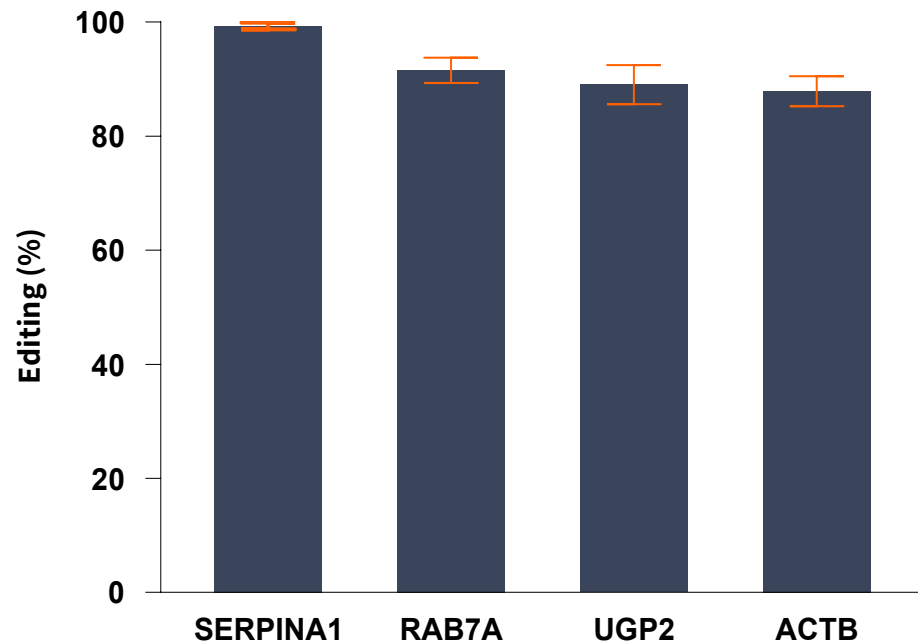
A single-stranded, anti-sense oligonucleotide RNA editor



# High Efficiency: Ability to Potentially Target Any “A” of Interest on Any Transcript

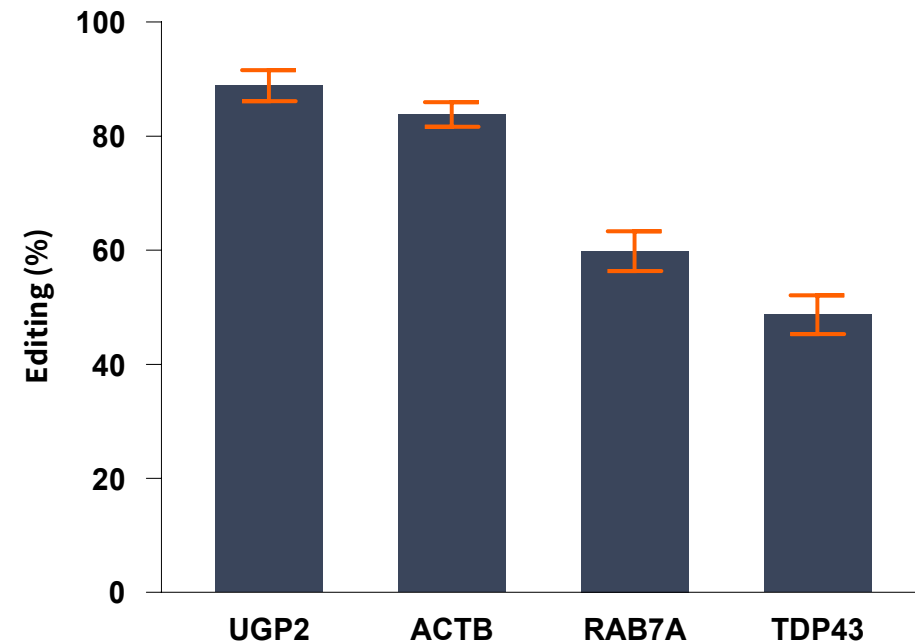
## Primary Mouse Hepatocytes<sup>1</sup>

*>80% editing achieved*



## Patient-derived Neuroblastoma Cells

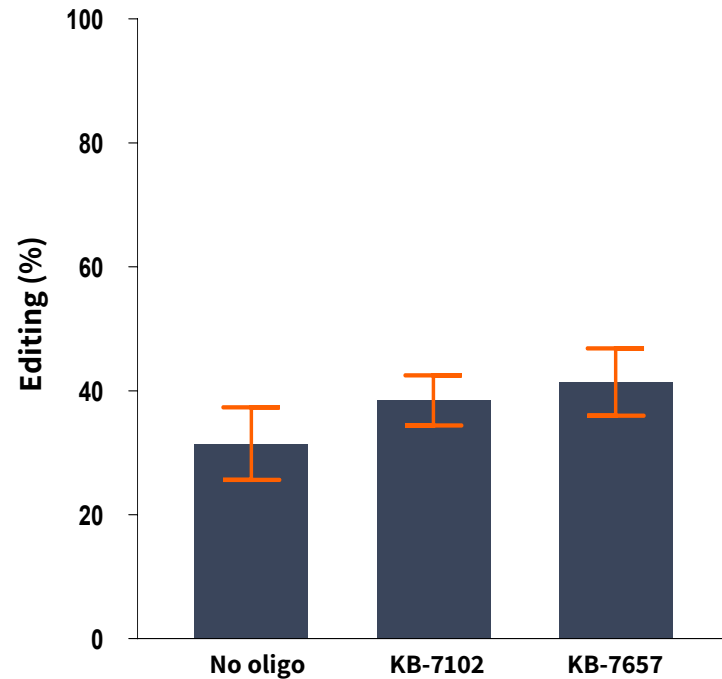
*>45% editing achieved*



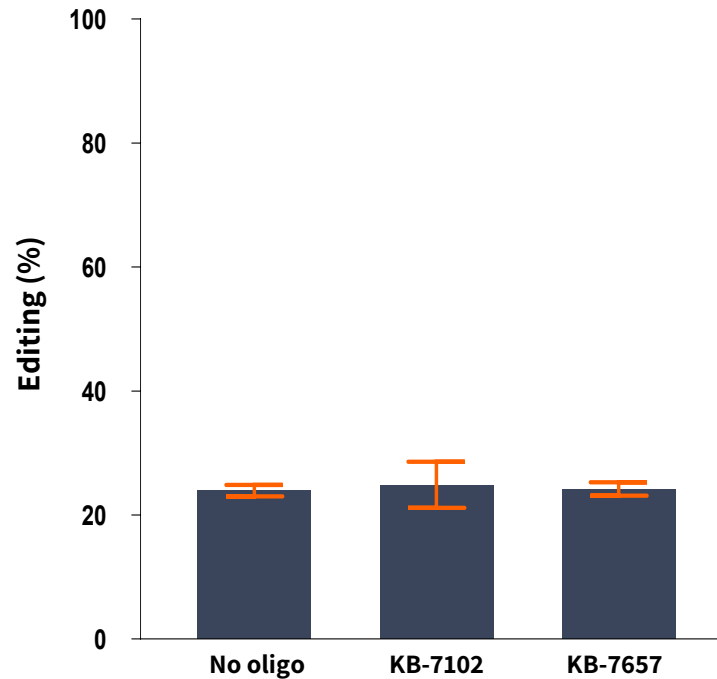
<sup>1</sup> SERPINA1 data is from PiZ primary mouse hepatocytes and ACTB, RAB7, and UGP2 data is from wild-type primary mouse hepatocytes (PMH)

# High Specificity: CHORDs Do Not Interfere with Endogenous ADAR Activity in Preclinical Mouse Models

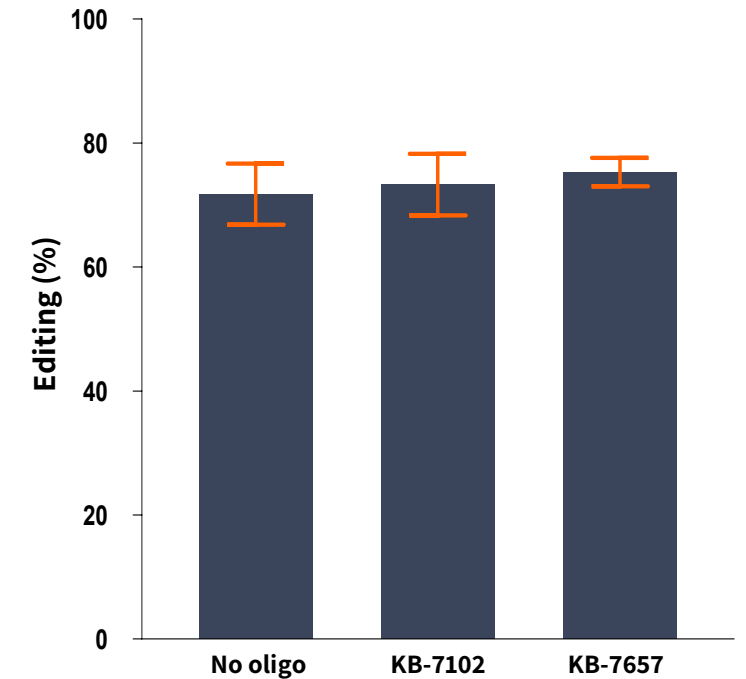
Endogenous site: COG



Endogenous site: COPA



Endogenous site: AJUBA



Note: KB-7102 - Target: Rab7; KB-7657 - Target: SERPINA1

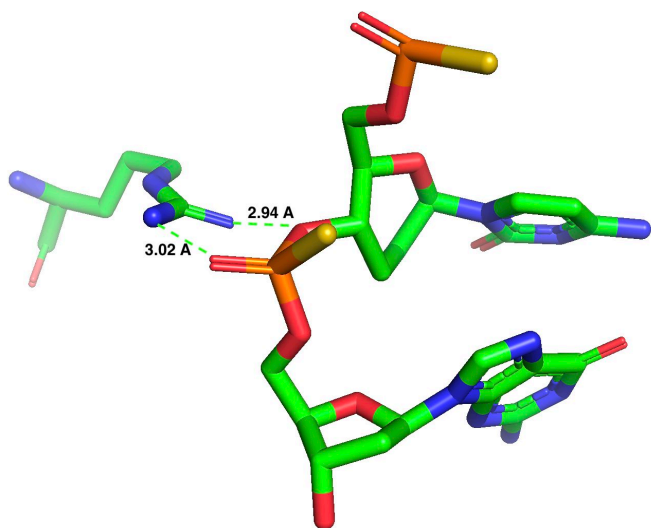
Ref: Edits on serotonin receptor lead to 24 different isoforms: Brenda Bass et. al. Nature Comm. 2011; 2: 319.; COG & COPA are edited by ADAR2 primarily. Tenen, D. J. et. al. Blood 2023; 141; 3078,

AJUBA is edited by ADAR1 only, Jin Billy Li et. al. Nature Comm. 2021;12: 2165

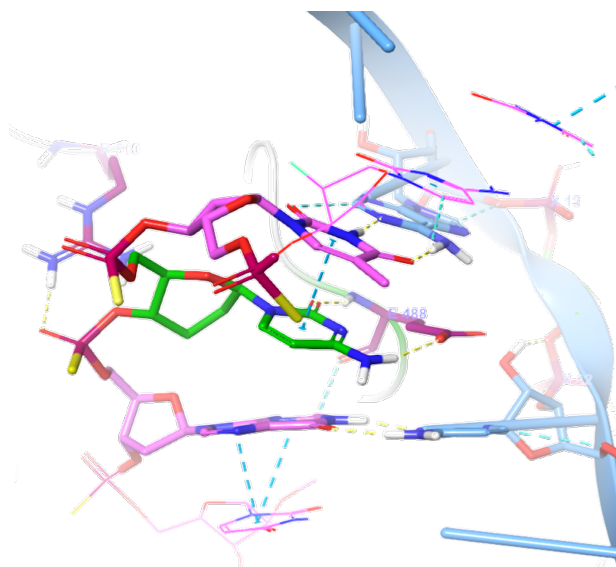


# Leveraging Chemistry: Structural Biology Insights Enable Potency Boosts *In Vivo*

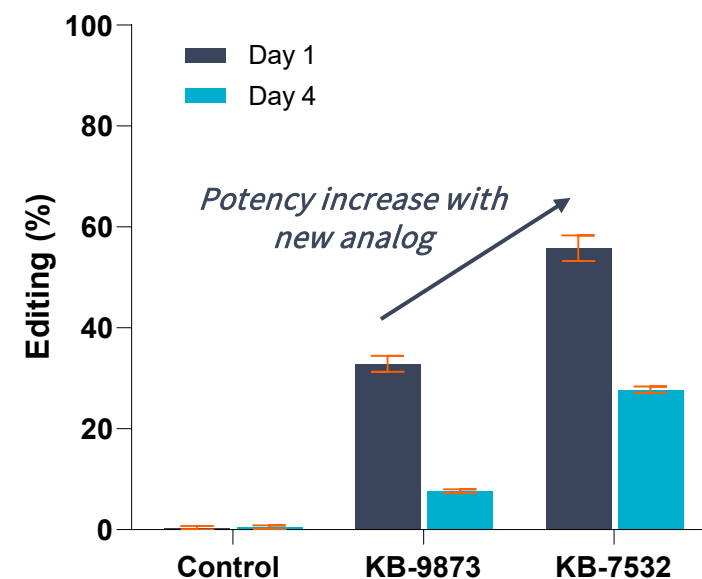
CHORD and target mRNA complexed with ADAR



New chemistry introduces improved potency



Significant improvement in editing *in vivo* in C57BL/6 mouse\*



\*3mg/kg oligo formulated in MC3 LNP injected IV

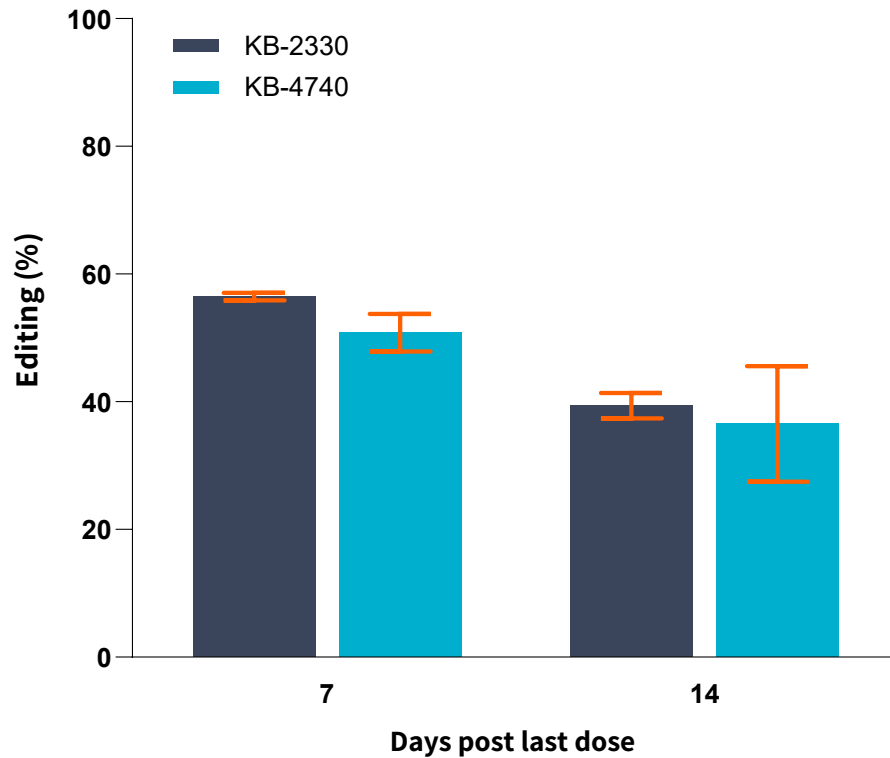


# Leveraging Delivery: Fit-for-Purpose Based on Target Product Profile

## GalNAc (ACTB)



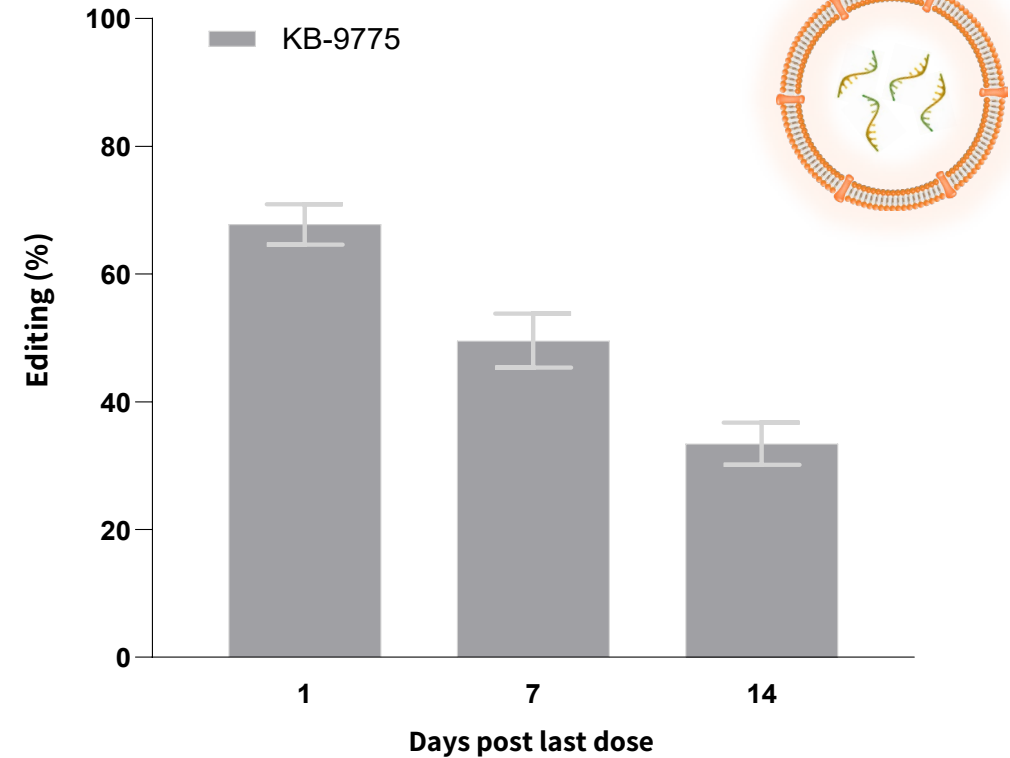
10mg/kg (QDx5); SC administration



## MC3-LNP (RAB7A)



2mg/kg (single dose); IV administration

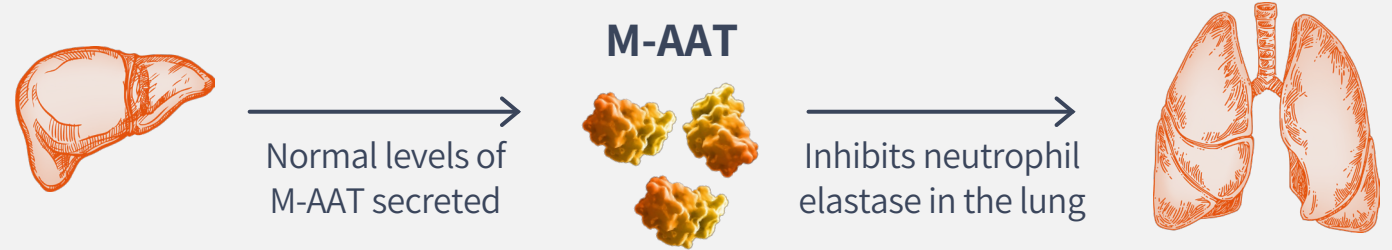


# Alpha 1 Anti-trypsin Deficiency (AATD)

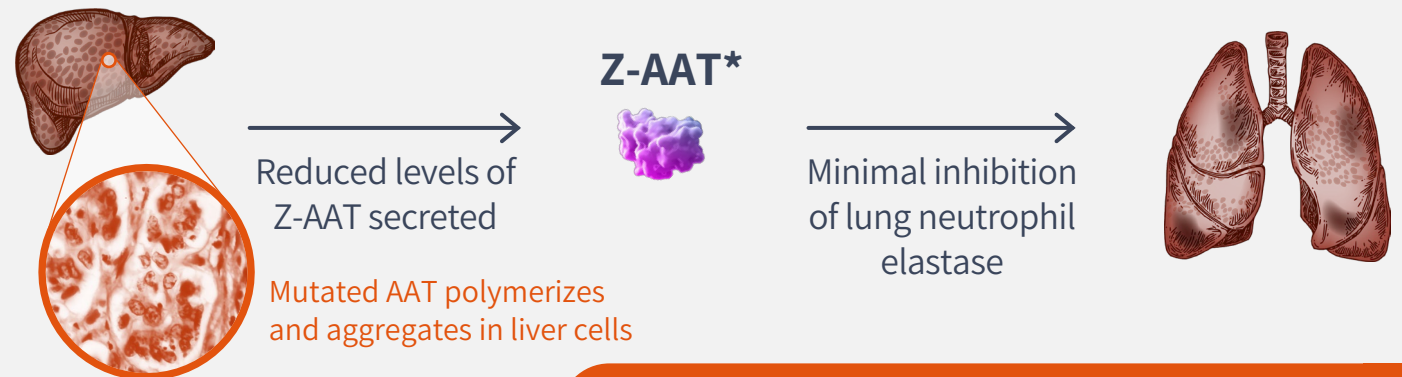
**Delivering a Potential Best-in-Class Candidate**

# AATD Most Commonly Caused by a Single Missense (G-to-A) Mutation in SERPINA1 Gene in the Liver

## MM Genotype (normal liver and lung)



## ZZ Genotype (fibrotic liver and decreased lung function)



*~100K PiZZ adult patients in U.S. \*\**

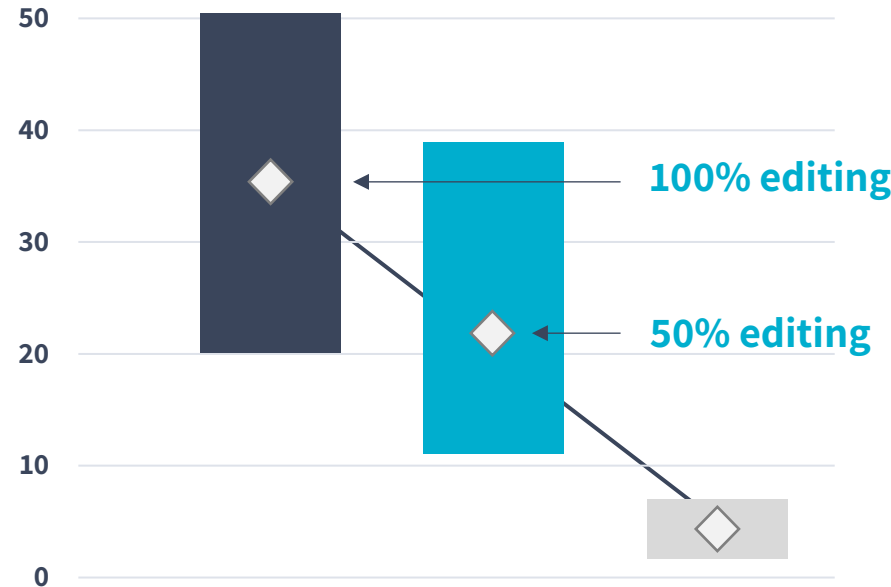
Note: AAT protein is encoded by the gene SERPINA1. The E342K mutation (G to A) in SERPINA1 (Z allele) is the most frequent mutation and causes severe lung and liver disease

\*Z-AAT not as active as M-AAT

\*\*Source: Alpha-1 Foundation. Numbers reflected here are carrier of ZZ genotypes

# Focused on Increasing AAT levels in ZZ Patients to Between MM and MZ Levels

Serum AAT levels ( $\mu\text{M}$ )



Korro's goal for median editing has potential to reduce lung and liver risk

Linear relationship with total AAT and genotype

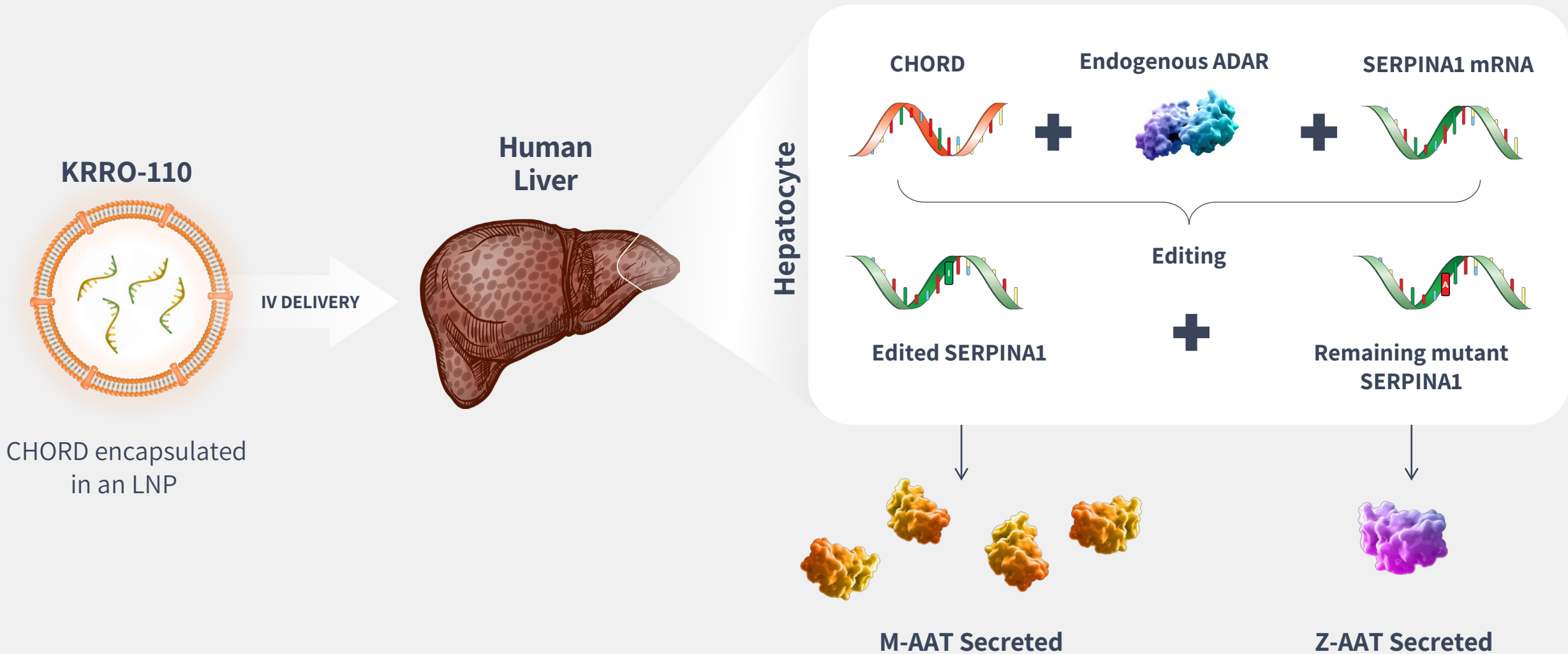
Odds Ratio <sup>1</sup>	MM	MZ	ZZ
COPD <sup>2</sup>	1.0	1.0	8.8
Cirrhosis	1.0	1.5	7.8

<sup>1</sup>Nakanishi T. et al. Eur Respir J. 2020 Dec 10;56(6):2001441

<sup>2</sup>Chronic obstructive pulmonary disease



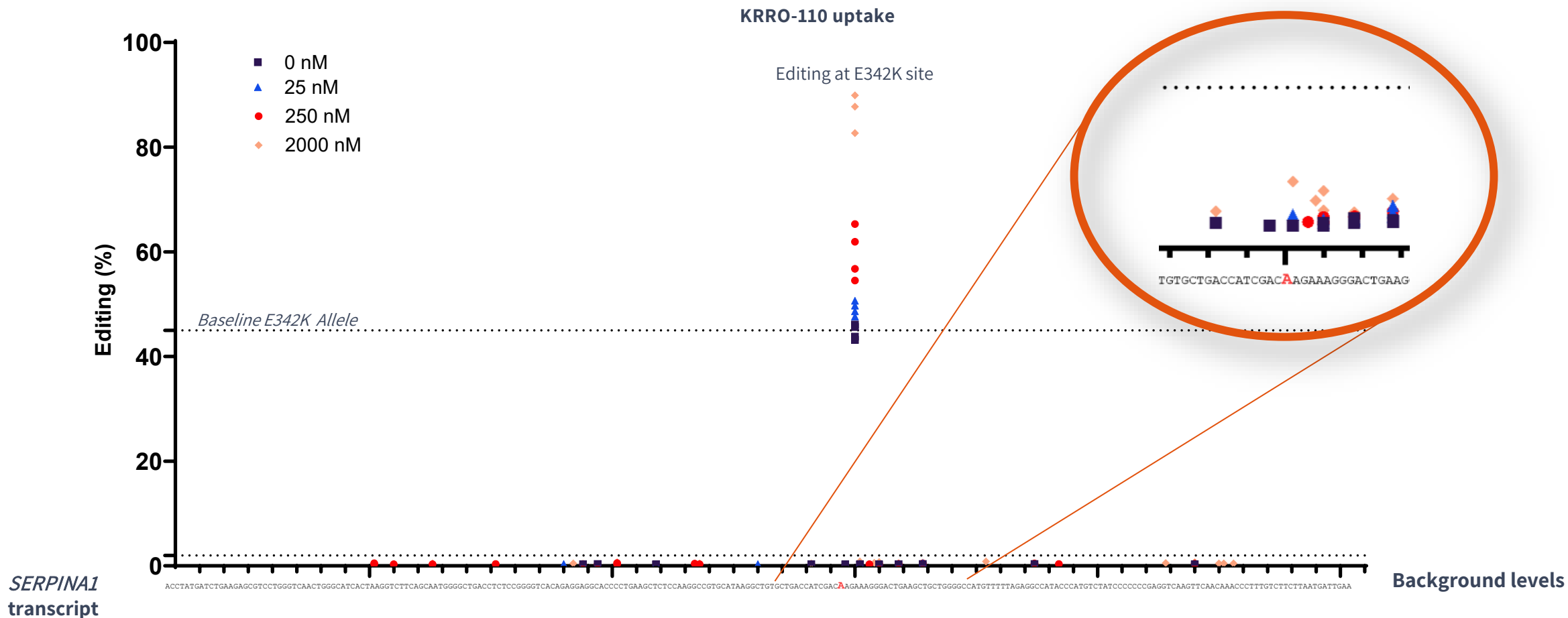
# KRRO-110 Designed to Correct the Pathogenic Z-AAT Protein to M-AAT Protein in Preclinical Models



CHORD encapsulated in an LNP

# Negligible *In Vitro* Cis Off-Target Editing Observed for KRRO-110 in MZ Hepatocytes

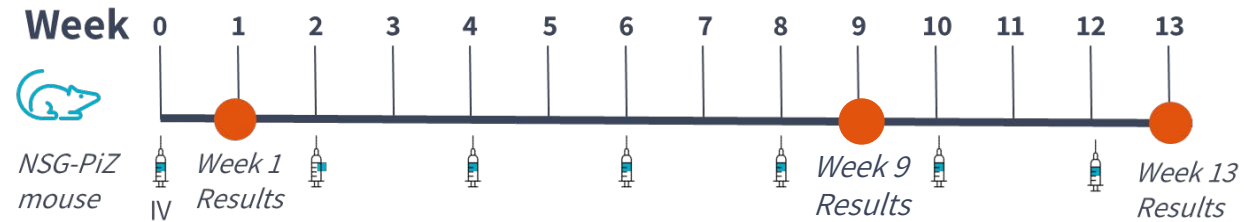
MZ Primary Human Hepatocytes\*



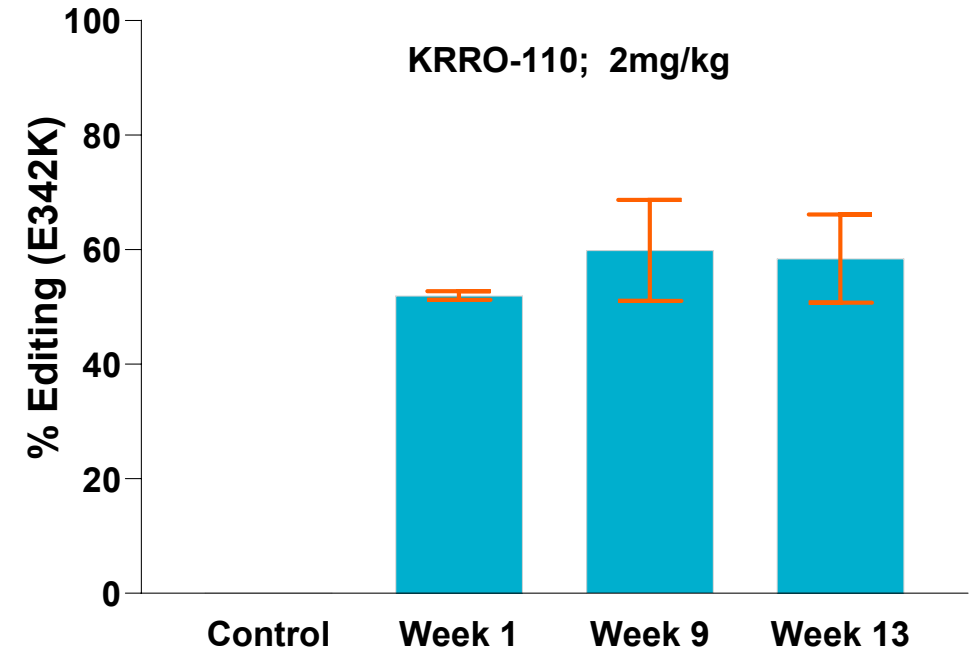
\*Note: Each data point represents one experimental replicate with statistically significant editing above sequencing error

# Achieved ~60% Editing in Human Transgenic Mouse Model After Multiple Doses

## Study design

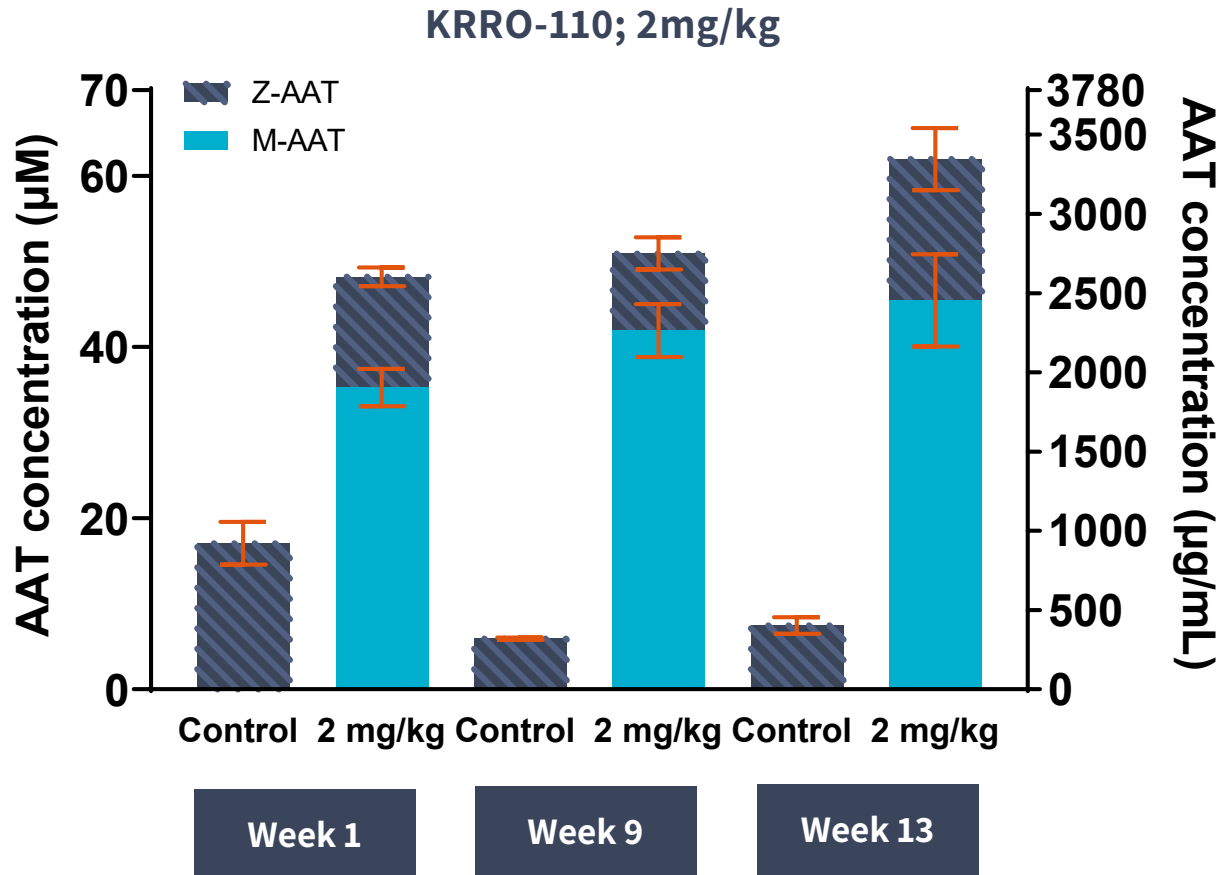


## RNA Editing in NSG-PiZ mouse

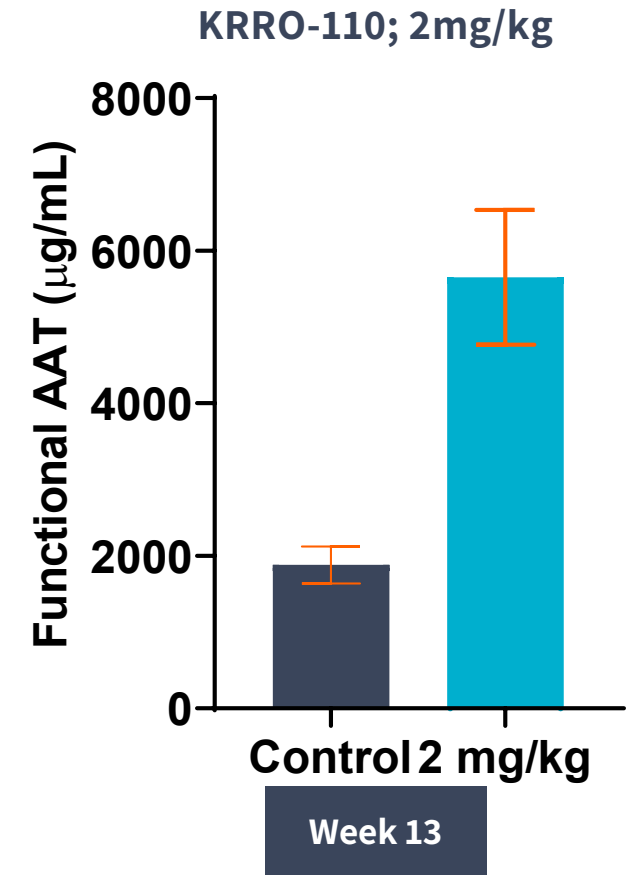


# Achieved Greater Than 60uM total AAT Protein and 45uM of M-AAT Levels at Week 13

Serum human-AAT concentration

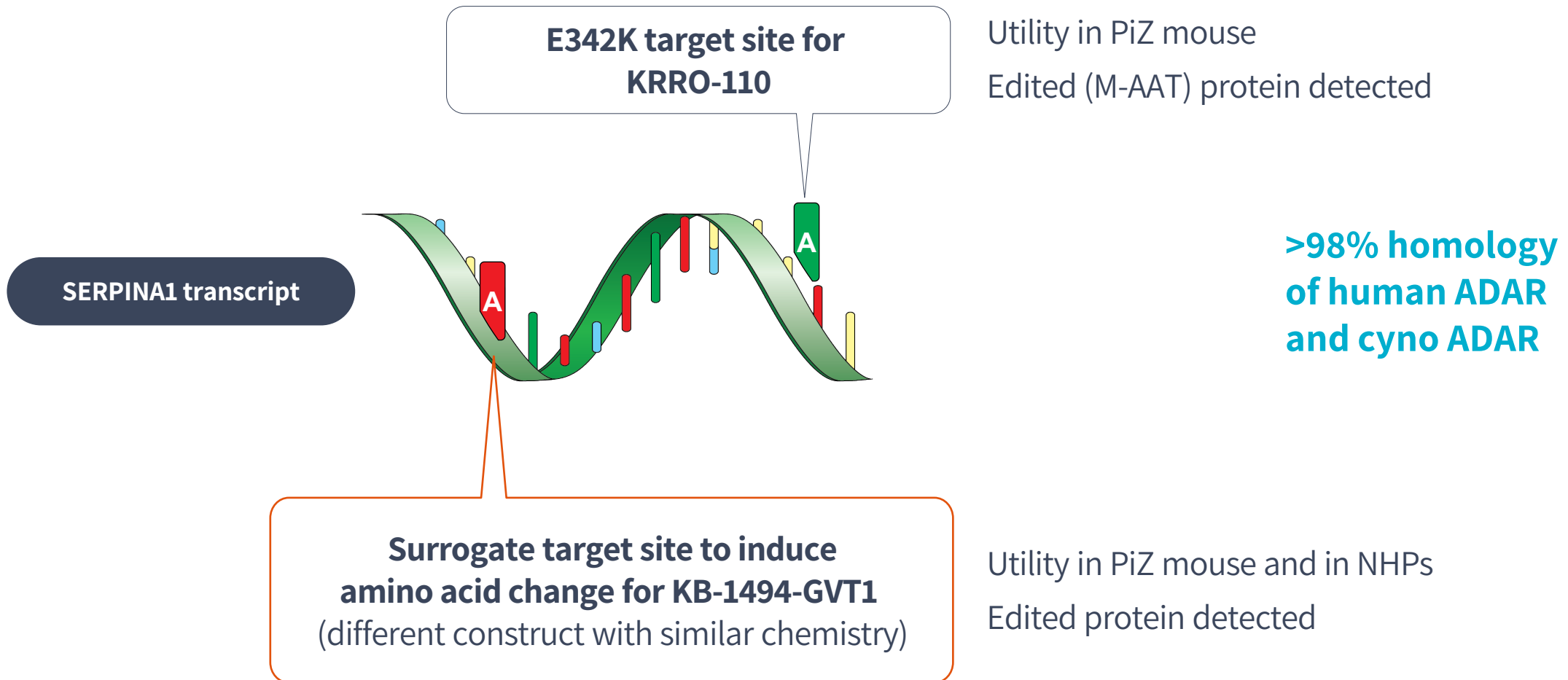


NSG-PiZ mouse functional AAT concentration



Note: Data represented as average values (n=3) +/- SD  
 \* Positive control human serum inhibits the human neutrophil elastase

# Editing *De Novo* Adenosine on Cyno SERPINA1 to Elucidate Editing in Higher Species

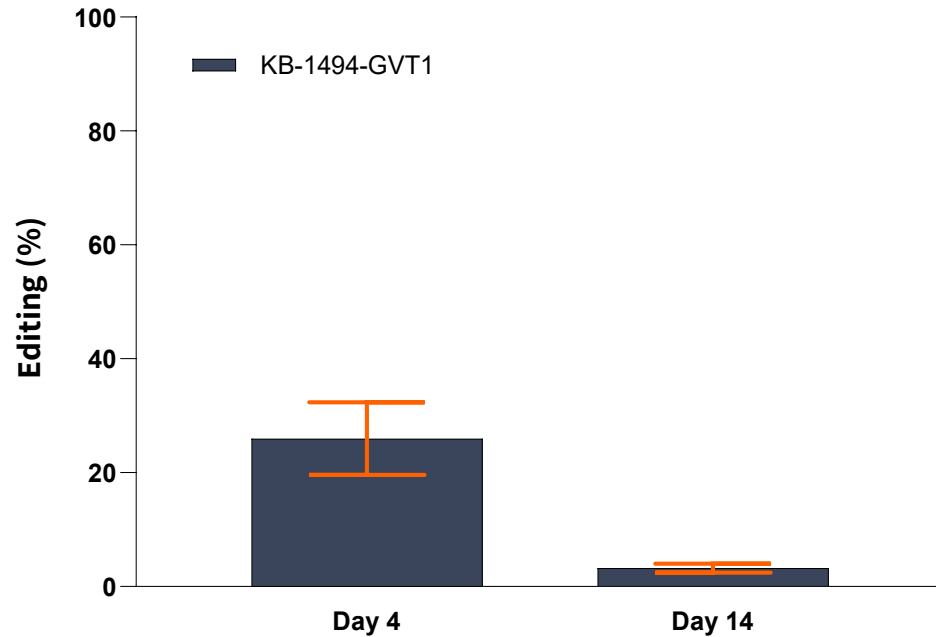


# Editing at Surrogate Target Site in AATD Mouse Model Translated to Higher Species

Editing in C57BL/6-PiZ mice (%)



2mg/kg (single dose)

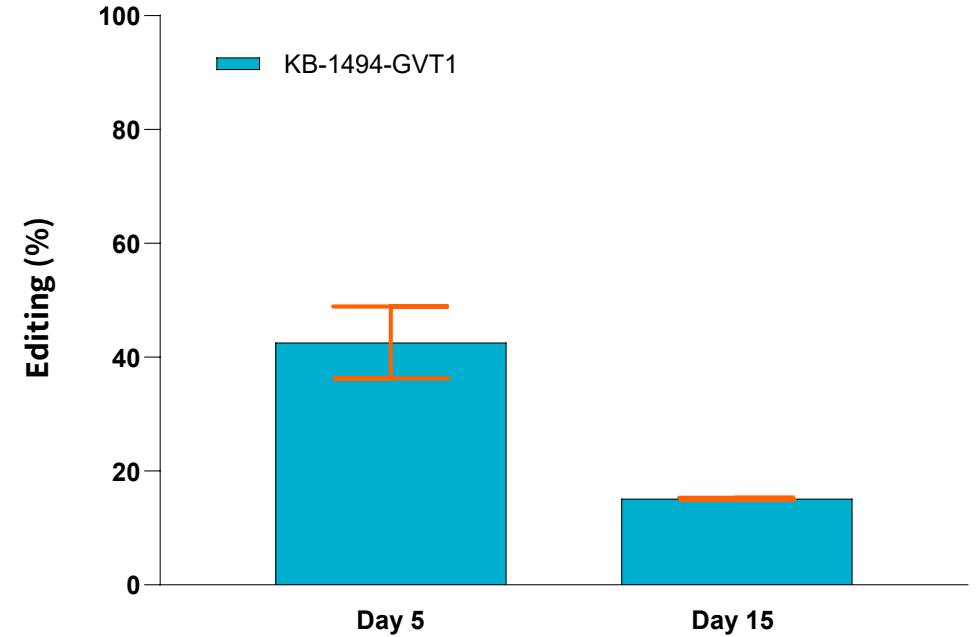


Surrogate Target Site: SERPINA1

Editing in NHPs (%)



2mg/kg (single dose)



Surrogate Target Site: SERPINA1

# KRRO-110 Has Potential for Best-in-Class Profile for AATD Patients

## Efficacy

- ✓ Achieved AAT levels between MM and MZ in rodents as early as Week 1
- ✓ Secreted functional AAT and inhibits neutrophil elastase
- ✓ Rapid reduction in Z-aggregates and Z-AAT protein



## Safety

- ✓ No off-target effect observed to date
- ✓ No effect on endogenous ADAR activity observed to date
- ✓ Well tolerated in non-GLP safety studies (mice, NHP)



## Translation to higher species

- ✓ Ability to edit in human cells
- ✓ Translation to NHP with surrogate oligo

**First participant dosing expected in Q1'25; Interim data readout anticipated in 2H'25**



# Clinical Study of KRRO-110 for AATD

Phase 1/2a, Two Part, Single- and Multiple-Dose Escalation Study



## Study Population

- Up to 64 adult participants
- PiMM healthy volunteers or clinically stable PiZZ patients



## Study Design

- **Part 1 (SAD):** Active: PBO (2:1) Cohorts of PiMM and PiZZ
- **Part 2 (MAD):** Open-label, Cohorts of PiZZ patients



## Endpoints

- Primary: Safety and tolerability
- Secondary: Pharmacokinetic (PK) parameters; T-AAT, M-AAT, Z-AAT, functional antiprotease activity



**Two clinical study sites identified in Australia with plans to expand into additional sites in Australia and other geographies**

[Clinicaltrials.gov](https://clinicaltrials.gov) | [NCT06677307](https://www.clinicaltrials.gov/ct2/show/study/NCT06677307)

# Clinical Advisory Board with Leading Lung and Liver Experts in AATD

## Pulmonary Experts



Daniel Chambers, MBBS,  
MRCP, FRACP, MD, FQA



Monica Goldklang, MD



Noel G. McElvaney,  
MBBCh, FRCPI, DSc



Alice M. Turner, MBChB  
(Hons), MRCP, PGCE  
(MedEd), PhD

## Hepatic Experts



Pavel Strnad, MD



Jeffrey Teckman, MD



The Prince  
Charles  
Hospital



# Expanding the Frontiers of Genetic Medicines via Activation of Biological Pathways

**Affecting a single base RNA edit (A-to-I edit) using proprietary oligonucleotide platform (OPERA™)**



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- Key internal discoveries driving the potential to develop multiple drug candidates
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