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): September 5, 2023

WAVE LIFE SCIENCES LTD.

(Exact name of registrant as specified in its charter)

Singapore (State or other jurisdiction of incorporation) 001-37627 (Commission File Number) 98-1356880 (IRS Employer Identification No.)

7 Straits View #12-00, Marina One East Tower Singapore (Address of principal executive offices)

018936 (Zip Code)

Registrant's telephone number, including area code: +65 6236 3388

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 (see General Instruction A.2. below):

□ 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)

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

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

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. \Box

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

Title of each class	Trading symbol	Name of each exchange on which registered
\$0 Par Value Ordinary Shares	WVE	The Nasdaq Global Market

Item 7.01 Regulation FD Disclosure.

From time to time, Wave Life Sciences Ltd. (the "Company") presents and/or distributes slides and presentations to the investment community to provide updates and summaries of its business. On September 5, 2023, the Company updated its corporate presentation, which is available on the "For Investors & Media" section of the Company's website at http://ir.wavelifesciences.com/. This presentation is also furnished as Exhibit 99.1 to this Current Report on Form 8-K.

The information in this Item 7.01 and exhibit 99.1 attached hereto is being furnished and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that Section, nor shall it be deemed incorporated by reference into any registration statement or other filing under the Securities Act of 1933, as amended, or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

The following exhibit relating to Item 7.01 is furnished and not filed:

Exhibit No.	Description
99.1	Corporate Presentation of Wave Life Sciences Ltd. dated September 5, 2023
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURES

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

WAVE LIFE SCIENCES LTD.

By: /s/ Paul B. Bolno, M.D. Paul B. Bolno, M.D. President and Chief Executive Officer

Date: September 5, 2023

Wave Life Sciences Corporate Presentation

September 5, 2023



Forward-looking statements

This document contains forward-looking statements. All statements other than statements of historical facts contained in this document, including statements regarding possible or assumed future results of operations, preclinical and clinical studies, business strategies, research and development plans, collaborations and partnerships, regulatory activities and timing thereof, competitive position, potential growth opportunities, use of proceeds and the effects of competition are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause the actual results, performance or achievements of Wave Life Sciences Ltd. (the "Company") to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "expect," "plan," "aim," "anticipate," "could," "intend," "target," "project," "contemplate," "believe," "estimate," "predict," "potential" or "continue" or the negative of these terms or other similar expressions. The forward-looking statements in this presentation are only predictions. The Company has based these forward-looking statements largely on its current expectations and projections about future events and financial trends that it believes may affect the Company's business, financial condition and results of operations. These forward-looking statements speak only as of the date of this presentation and are subject to a number of risks, uncertainties and assumptions, including those listed under Risk Factors in the Company's Form 10-K and other filings with the SEC, some of which cannot be predicted or quantified and some of which are beyond the Company's control. The events and circumstances reflected in the Company's forward-looking statements may not be achieved or occur, and actual results could differ materially from those projected in the forward-looking statements. Moreover, the Company operates in a dynamic industry and economy. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties that the Company may face. Except as required by applicable law, the Company does not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.





Emerging leader in RNA medicines

Multi-modal drug discovery and development platform to address new areas of disease biology RNA editing, splicing and silencing Differentiated, clinicalstage RNA medicines pipeline with first-inclass RNA editing programs Strategic collaborations to expand and advance pipeline (GSK and Takeda)

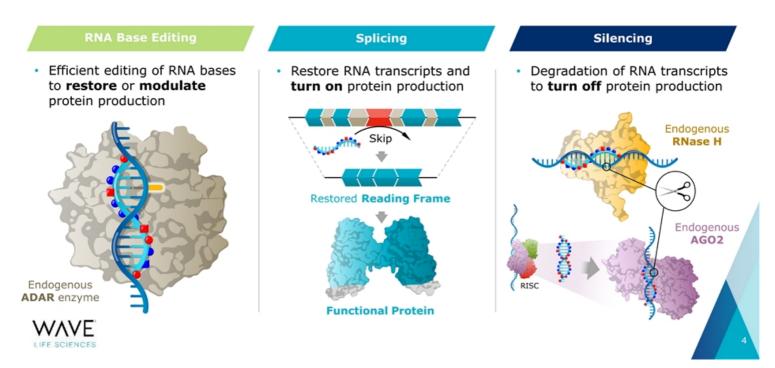
Multiple pipeline and platform catalysts expected in 2023 and beyond Well-capitalized with expected cash runway into 2025

GMP manufacturing

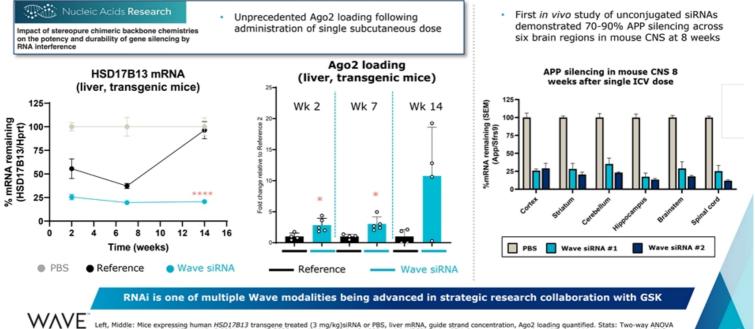
Strong and broad IP position

Wave Life Sciences is an RNA medicines company committed to delivering life-changing treatments for people battling devastating diseases

RNA medicines allow matching disease target to therapeutic modality

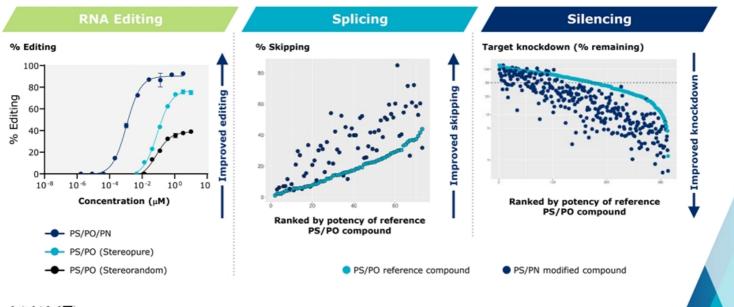


Potential for best-in-class RNAi enabled by Wave's PRISM platform



Left, Middle: Mice expressing human HSD17B13 transgene treated (3 mg/kg)siRNA or PBS, liver mRNA, guide strand concentration, Ago2 loading quantified. Stats: Two-way ANOVA with post-hoc test * P<0.05; ****P<0.0001. Lu et al., 2023 Nuc Acids Res doi: 10.1093/nar/gkad268; Right: ICV: Intracerebroventricular; APP: Amyloid precursor protein ; CNS: used for RNA PD, relative fold changes of App to Sfrs9 mRNA normalized to percentage of PBS group. All treated group show P≤0.0001 compared to PBS group in 2way ANOVA.

Proprietary PN chemistry enhances potency across modalities





Left: Experiment was performed in iPSC-derived neurons in vitro; target mRNA levels were monitored using qPCR against a control gene (HPRT1) using a linear model equivalent of the △△Ct method; Middle: DMD patient-derived myoblasts treated with PS/PO or PS/PO/PN stereopure oligonucleotide under free-uptake conditions. Exon-skipping efficiency evaluated by qPCR. Right: Data from independent experiments

Robust RNA medicines pipeline including first-inclass RNA editing programs

Program	Discovery	Preclinical	Clinical	Rights	Patient population (US & Europe)
RNA EDITING					
WVE-006 SERPINA1 (AATD)				GSK exclusive global license	200K
Multiple undisclosed				100% global	-
SPLICING					
WVE-N531 Exon 53 (DMD)			Phase 1/2	100% global	2.3K
Other exons (DMD)				100% global	Up to 18K
SILENCING: ANT	ISENSE				
WVE-003 mHTT (HD)			Phase 1/2	Takeda 50:50 Option	25K Manifest (SNP3) 60K Pre-Manifest (SNP3)
SCA3 (ATXN3)				Takeda 50:50 Option	8К
SILENCING: RNA	i				
Undisclosed				100% global	-

WAVE

ES AATD: Alpha-1 antitrypsin deficiency; DMD: Duchenne muscular dystrophy; HD: Huntington's disease; SCA3: Spinocerebellar ataxia 3



WVE-N531 Duchenne muscular dystrophy

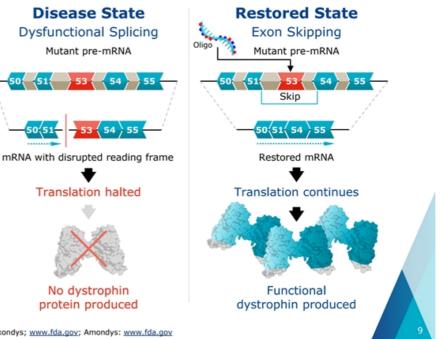
Duchenne muscular dystrophy

- Genetic mutation in dystrophin gene prevents the production of dystrophin protein, a critical component of healthy muscle function
- Impacts approx. 1 in every 5,000 newborn boys each year; approx. 20,000 new cases annually worldwide
 - Approx. 8-10% are amenable to exon 53 skipping
- Dystrophin protein established by FDA as surrogate endpoint reasonably likely to predict benefit in boys1 for accelerated approval in DMD
- Increasing amount of functional dystrophin expression over minimal amount shown with approved therapies is expected to result in greater benefit for boys with DMD

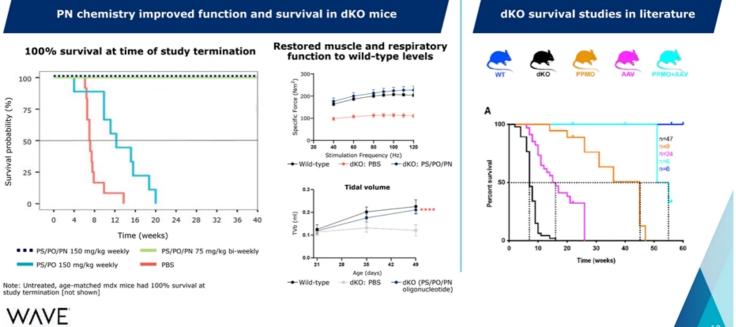


¹Vyondys: <u>www.fda.gov</u>; viltepso; <u>www.fda.gov</u>; Exondys; <u>www.fda.gov</u>; Amondys: <u>www.fda.gov</u>

50(51



Extended survival in dKO preclinical model supports potential of exon-skipping therapeutics for DMD



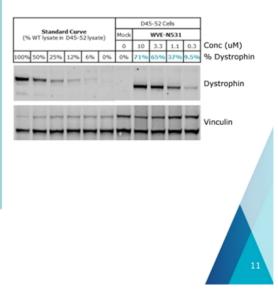
LIFE SCIENCES Left: Kandasamy et al., 2022; doi: 10.1093/nar/gkac018; Right: Forand et al., 2020; doi: https://doi.org/10.1016/j.omtm.2020.03.011.

Preclinical data supported advancing WVE-N531 to clinical development

K		mg/kg biweekly	2-days post-final dose
NHP	15 mg/kg 15 m	ng/kg 15 mg/kg 15 mg/	kg blopsles
NHP	•	issue Concent	kg biopsies
NHP 15 mg/kg* IV dose	•	• • •	kg biopsies

WVE-N531: Dystrophin restoration of up to 71% in vitro

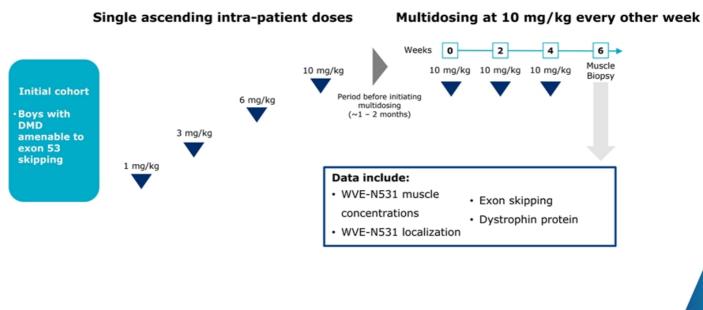
Western Blot normalized to primary healthy human myoblast lysate



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IENCES 26th Annual ASGCT meeting, May 16-20, 2023

In multidose portion of study, patients received three biweekly 10 mg/kg doses





Dose WVE-N531

WVE-N531 in DMD: Delivered positive proof-of-concept data in 4Q 2022

- High exon skipping and muscle concentrations after three biweekly 10 mg/kg doses
- Similar exon skipping regardless of mutation
 - Patient 1: del48-52
 - Patient 2: del45-52
 - Patient 3: del51-52
- PK analysis indicated 25-day half-life in plasma
- WVE-N531 appeared safe and well-tolerated

Patient	Tissue Source	concentration (µg/g)	% Exon skipping by RT-PCR	Dystrophin by Western blot (% of normal)
1	Deltoid	85.5	61.5	0.24
2	Deltoid	33.5	49.8	0.23
3	Bicep	8.3	47.9	0.34

Mean muscle concentration: 42 µg/g 53%

Mean dystrophin: 0.27% of normal (BLQ)

Data presented March 22, 2023 at Muscular Dystrophy Association Clinical and Scientific Conference



Biopsies collected ~2 weeks post-last dose (3 biweekly doses of 10 mg/kg) Data cut-off: December 6, 2022

42 μg/g = 6.1 μM

BLQ: Below level of quantification (1%)

Initiating Part B, a potentially registrational Phase 2 clinical trial of WVE-N531

Screening	Biweekly Dosing (10 mg/kg IV)	Safety Follow-up	
Functional assessment	 Biopsy after 24 weeks of treatment Functional assessment 	 Biopsy after 48 weeks of treatment Functional assessment 	
-	B : Phase 2, open-label, 10 mg/kg every other w		

- Endpoints: Dystrophin (powered for >5% of normal), safety/tolerability, pharmacokinetics, functional assessments (incl. NSAA and others)
- Biopsies:
 - After 24 weeks of treatment
 - After 48 weeks of treatment
- Data from Part B expected in 2024







GSK Collaboration and WVE-006 for Alpha-1 antitrypsin deficiency (AATD)

Strategic collaboration with GSK to develop transformative RNA medicines for genetically defined diseases

- ✓ \$170 million upfront to Wave (cash and equity¹)
- ✓ Additional research support funding
- Potential for up to \$3.3 billion in milestones²
- ✓ Expands Wave's pipeline

Extends cash runway into 2025



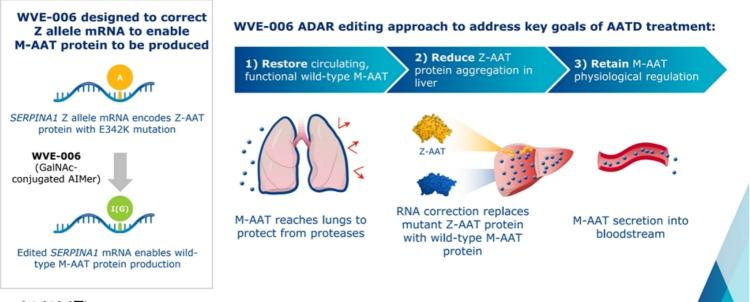
it to			
ty¹)	Milestone / royalties	Milestone / royalties	Genetic targets
ipport	GSK granted exclusive global license to WVE-006 for AATD	GSK to advance <u>up to eight</u> collaboration programs	Wave to leverage GSK's genetic insights
3.3 5 ²	Up to \$225 million in development and launch milestones	Up to \$1.2 billion in aggregate in initiation, development and launch milestones	
ine	Up to \$300 million in sales-related milestones	Up to \$1.6 billion in aggregate in sales-related milestones	Wave to advance up to three wholly owned collaboration
ay	Double-digit tiered royalties as a percentage of net sales up to high- teens	Tiered royalties as a percentage of net sales up to low-teens	programs (or more pending agreement with GSK) ³
	Development and commercialization responsibilities transfer to GSK after completion of first-in-patient study	Development and commercialization responsibilities transfer to GSK at development candidate	
	First-in-class RNA editing program	Collaboration leverages Wave's u PN-chemistry containing PRISM™ editing, splicing, silencing (RI	platform, including

Multiple value drivers to Wave



¹\$120 million in cash and \$50 million equity investment received in January 2023, ²Initiation, development, launch, and commercialization milestones for WVE-006 and programs progressed during initial 4-year research term (8 GSK collaboration programs) ³GSK eligible to receive tiered royalty payments and commercial milestones from Wave

WVE-006: Designed to correct mutant SERPINA1 transcript to address both liver and lung manifestations of AATD

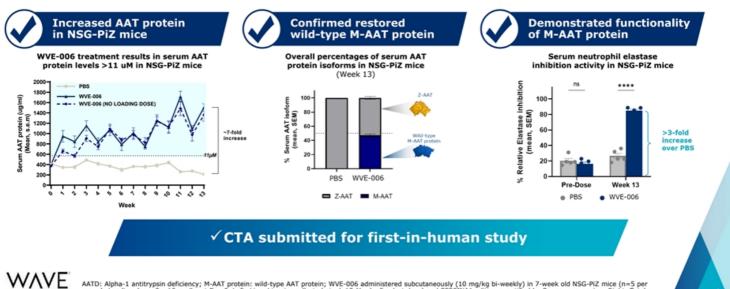




AAT: Alpha-1 antitrypsin Strnad et al., 2020 N Engl J Med 382:1443-55; Blanco et al., 2017 Int J Chron Obstruct Pulmon Dis 12:561-69; Remih et al., 2021 Curr Opin Pharmacol 59:149-56.

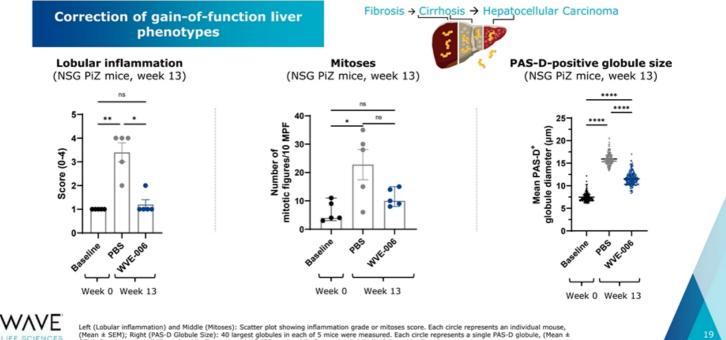
WVE-006 in AATD: First-in-class RNA editing candidate approaching the clinic

Potentially comprehensive approach to address both lung and liver manifestations of AATD



ATD: Alpha-1 antitrypsin deficiency; M-AAT protein: wild-type AAT protein; WVE-006 administered subcutaneously (10 mg/kg bi-weekly) in 7-week old NSG-PiZ mice (n=5 per group); Loading dose: 3 x 10 mg/kg at Day 0. Left: Liver biopsies collected at wk 13 (1 wk after last dose) and SERPINA1 editing quantified by Sanger sequencing; Right: Total serum AAT protein quantified by ELISA; Stats: Two-Way ANOVA with adjustment for multiple comparisons (Tukey)

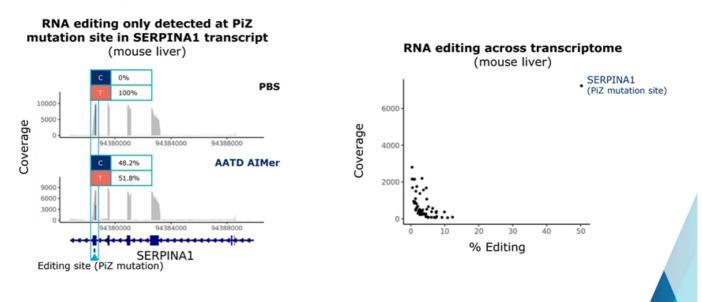
WVE-006 decreases lobular inflammation and PAS-D globule size, prevents increase in hepatocyte turnover



Left (Lobular inflammation) and Middle (Mitoses): Scatter plot showing inflammation grade or mitoses score. Each circle represents an individual mouse, (Mean ± SEM); Right (PAS-D Globule Size): 40 largest globules in each of 5 mice were measured. Each circle represents a single PAS-D globule, (Mean ± SEM). Baseline: week 0 (7 weeks old); Treated week 13 (20 weeks old); Stats: Kruskal-Wallis followed by Dunn's test

AIMer-directed editing is highly specific in mice

No bystander editing observed on SERPINA1 transcript





Dose 3x10 mg/kg (days 0, 2, 4) SC with AATD AIMer (SA1 – 4). Liver biopsies day 7. RNA-seq to quantify on-target SERPINA1 editing, to quantify off-target editing reads mapped to entire mouse genome; plotted circles represent sites with LOD>3 (N=4), SERPINA1 edit site is indicated



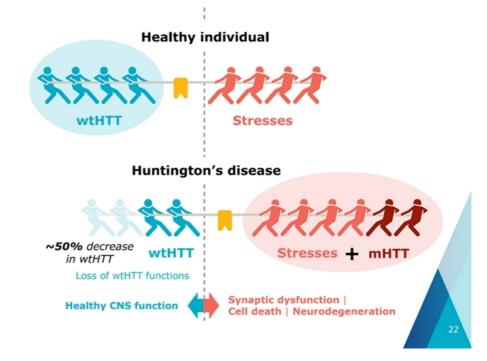
WVE-003 Huntington's Disease

mHTT toxic effects lead to neurodegeneration; loss of wtHTT functions may also contribute to HD

Huntington's disease (HD)

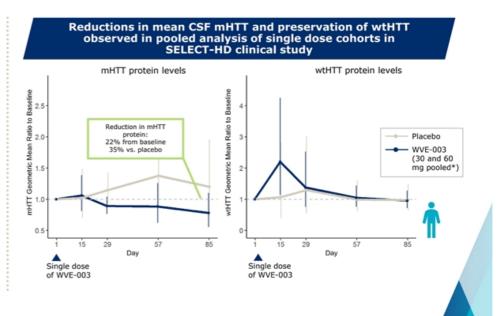
- Wild-type HTT (wtHTT) is critical for normal neuronal function
- Expanded CAG triplet repeat in HTT gene results in production of mutant huntingtin protein (mHTT)
- HD is a monogenic autosomal dominant genetic disease; fully penetrant and affects entire brain
- Fatal disease characterized by cognitive decline, psychiatric illness, and chorea
- 30,000 people with HD in the US and more than 200,000 at risk of developing HD





WVE-003: First-in-class allele-selective candidate for HD

- mHTT protein reductions observed in single dose cohorts (Sep. 2022)
- wtHTT protein levels appear consistent with allele-selectivity
- Generally safe and well-tolerated
- Additional single-dose and available multi-dose biomarker and safety clinical data expected in 2H 2023





mHTT: mutant huntingtin protein; wtHTT: wild-type huntingtin protein *Pooled considering no apparent dose response between 2 cohorts; Data cut-off: August 29, 2022



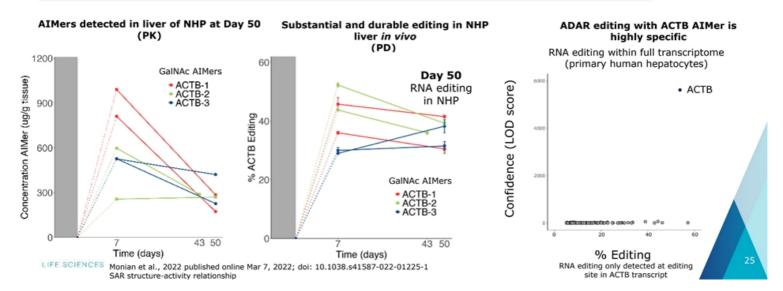
AIMers RNA base editing capability

Proof-of-concept preclinical RNA editing data published in *Nature Biotechnology* (March 2022)

Endogenous ADAR-mediated RNA editing in non-human primates using stereopure chemically modified oligonucleotides Specificity in vitro & in vivo (NHPs) •

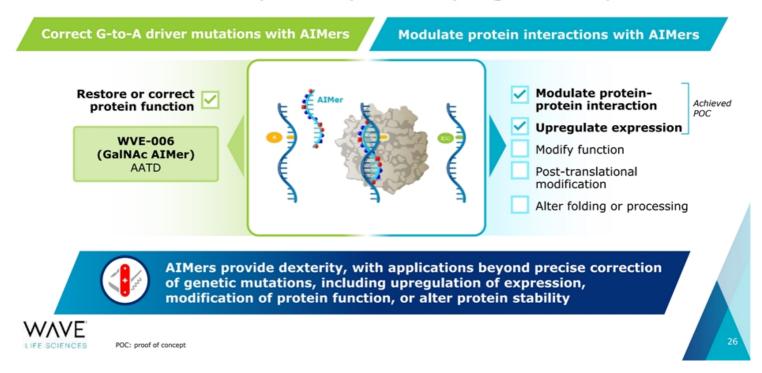
In vitro-in vivo translation (NHPs)

GalNAc conjugation Foundational AIMer SAR

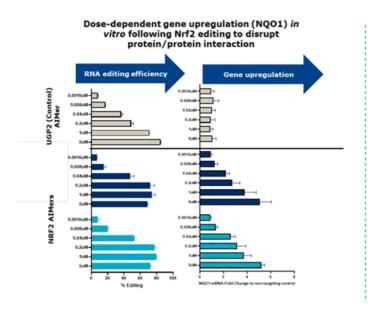


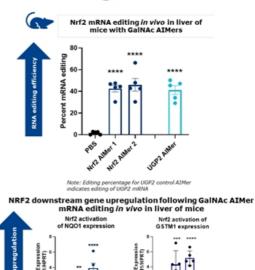
nature biotechnology

Expanding addressable disease target space using AIMers to activate pathways and upregulate expression



Modulation of protein-protein interactions: AIMers enable activation of gene pathway *in vivo* with single edit

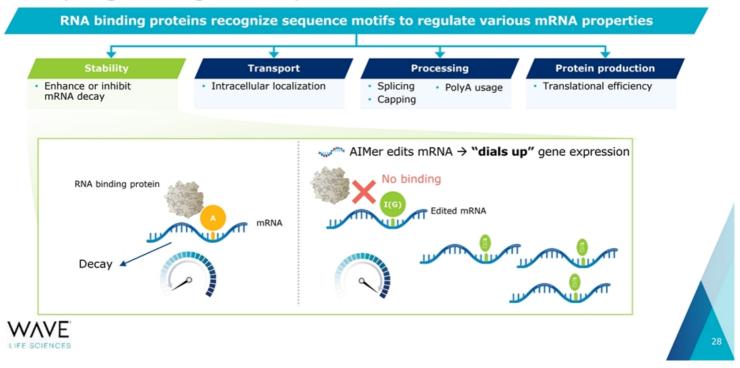




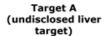
WAVE SCIENCES

SCIENCES n=2; Primary hepatocytes 48h of treatment with the indicated dose concentration of AIMers

Upregulation: AIMers can edit RNA motifs to restore or upregulate gene expression



AIMers upregulate mRNA and downstream serum protein *in vivo* above anticipated threshold



- High unmet need with potential for multiple large indications
- Preserves endogenous protein function
- Serum protein with biomarkers of pathway activation
- Potential benefit 3fold+ upregulation in mouse

mRNA editing mRNA upregulation Protein upregulation 7 days post-initial dose 7 days post-initial dose 7 days post-initial dose GalNAc AIMer GalNAc AIMer GalNAc AIMer 80 Fold increase pre-post dose Serum Target A (pg/mL) Farget A mRNA fold change Percent Editing **RNA editing** Upregulati 40 5 20 • AIMER-2 PBS AIMER-1 AIMER-2 PBS AIMER-1 AIMER-1 PBS AIMER-2 Potential threshold for benefit

In vitro to in vivo translation of mouse Target A mRNA upregulation
 In vivo mRNA upregulation corresponds to an upregulation of Target A protein in serum at Day 7 demonstrating proof-of-concept



hADAR mouse dosed subcutaneously 3 x 10 mg/kg GalNAc-conjugated AIMer or PBS days (0, 2, 4), taken down at day 7



Anticipated upcoming milestones

Anticipated upcoming milestones

SILENCING	RNAi
WVE-003 for HD First-in-class vild-type huntingtin protein (wtHTT)-sparing approach Data expected 2H 2023 Enables discussion on next steps with Takeda	Newest modality in Wave platform Preclinical data suggest best-in-class potential for Wave RNAi capability Hepatic, CNS, and beyond
	COLLABORATIONS

"R&D Day" virtual event on September 28, 2023 during which Wave will demonstrate how it is continuing to extend its leadership in RNA editing and share preclinical data on new wholly-owned programs

Advance collaboration activities with GSK, with potential for additional cash inflows in 2023 and beyond



Realizing a brighter future for people affected by genetic diseases

For more information:

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