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): June 5, 2019

WAVE LIFE SCIENCES LTD.
(Exact name of registrant as specified in its charter)

Singapore	**001-37627**	**Not Applicable**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

7 Straits View #12-00, Marina One East Tower Singapore 018936	**018936**
(Address of principal executive offices)	**(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)

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

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

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

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

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 ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 7.01 Regulation FD Disclosure.

From time to time, the Company presents and/or distributes slides and presentations to the investment community to provide updates and summaries of its business. On June 5, 2019, 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 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 in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a 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 June 5, 2019

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/ Keith C. Regnanate*
Keith C. Regnante
Chief Financial Officer

Date: June 5, 2019

Exhibit 99.1

Wave Life Sciences

Corporate Presentation

June 5, 2019

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.

Targeting genetically defined diseases with stereopure oligonucleotides

Building fully integrated genetic medicines company led by neurology development programs

Neuromuscular

- ***Lead clinical program:*** **Suvodirsen Phase 2/3 trial initiation expected in July 2019 for DMD (exon 51); program on development path toward US and global approvals**
- Advancing additional exon skipping candidates for DMD
- Commercialization activities underway

100% global rights

CNS

- ***Lead clinical program:*** **Two Phase 1b/2a trials ongoing for Huntington's disease using differentiated allele-selective approach**
- Advancing C9orf72 candidate for ALS and FTD
- SNP3 (HD) and ATXN3 (SCA3)

Takeda 50:50 option

Ophthalmology

- Initial candidate selection ongoing for inherited retinal diseases

100% global rights

WAVE LIFE SCIENCES

PRISM

DESIGN & OPTIMIZE

Stereopure oligonucleotides across multiple therapeutic modalities

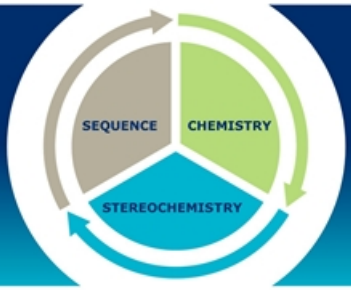
Antisense | RNAi | Splicing

PRISM

Enables Wave to target genetically defined diseases with stereopure oligonucleotides across multiple therapeutic modalities

DESIGN

Unique ability to construct stereopure oligonucleotides with one defined and consistent profile



OPTIMIZE

A deep understanding of how the interplay among oligonucleotide sequence, chemistry, and backbone stereochemistry impacts key pharmacological properties

Through iterative analysis of *in vitro* and *in vivo* outcomes and artificial intelligence-driven predictive modeling, Wave continues to define design principles that are deployed across programs to rapidly develop and manufacture clinical candidates that meet pre-defined product profiles

WAVE LIFE SCIENCES

Designing the optimal, stereopure medicine

STANDARD OLIGONUCLEOTIDE APPROACHES

Pharmacologic properties include >500,000 permutations in every dose

↓

Impact:
Unreliable therapeutic effects
Unintended off-target effects

WAVE RATIONAL DESIGN

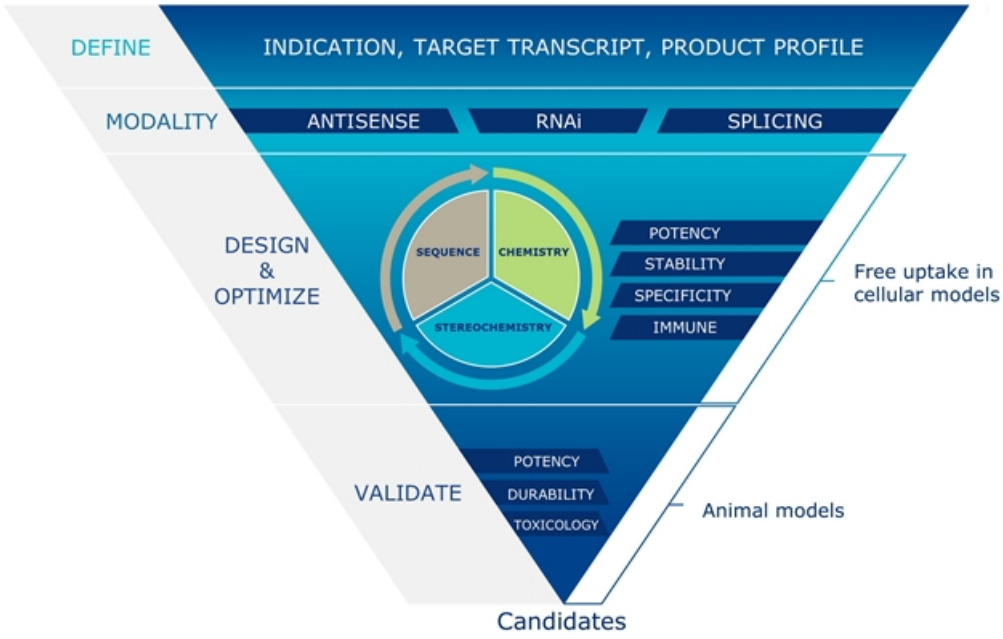
Control of stereochemistry enables the design and manufacture of oligonucleotides with one defined and consistent profile

↓

Impact:
Potential for best-in-class medicines that can address difficult-to-treat diseases

WAVE LIFE SCIENCES

Creating a new class of oligonucleotides

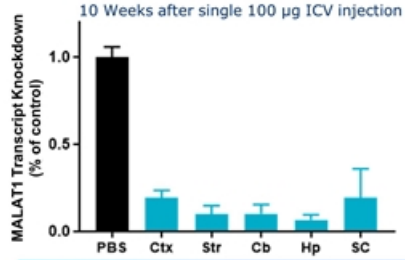


Source: Iwamoto N, et al. Control of phosphorothioate stereochemistry substantially increases the efficacy of antisense oligonucleotides. *Nat Biotechnol*. 2017;35:845-851.

Optimizing potency and durability across multiple tissues

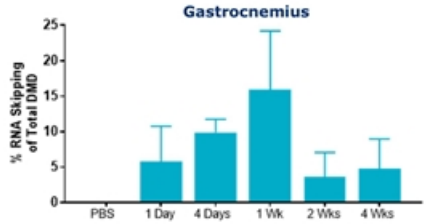
CNS

MALAT1 Transcript Knockdown in Mice
10 Weeks after single 100 µg ICV injection



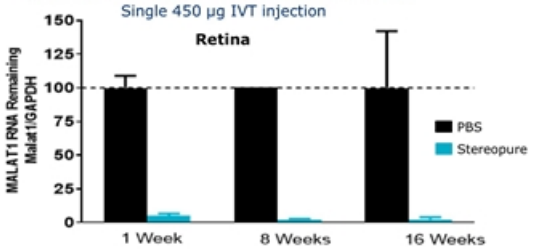
Muscle

DMD: Percent Skipped Transcript in *mdx*23 Mice
Single 150 mg/kg IV injection



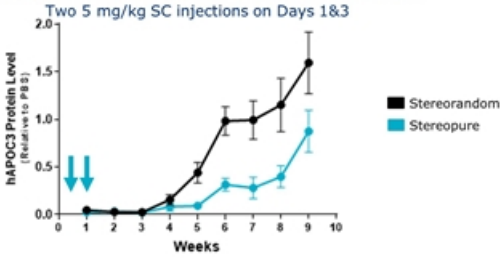
Eye

MALAT1 Knockdown in Non-Human Primates
Single 450 µg IVT injection



Liver

Knockdown of Serum hAPOC3 Protein Levels in Mice
Two 5 mg/kg SC injections on Days 1&3

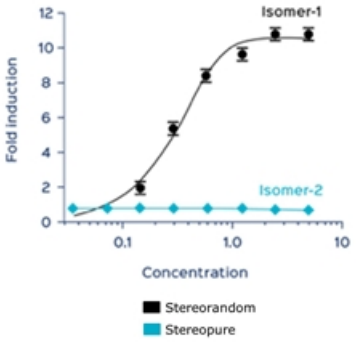


Data represented in this slide from *in vivo* studies. CNS: PBS = phosphate buffered saline; Ctx = cortex; Str = striatum; Cb = cerebellum; Hp = hippocampus; SC = spinal cord. ICV = intracerebral; IVT = intravitreal; IV = intravenous; SC= subcutaneous.

Stereochemistry affects immune activation

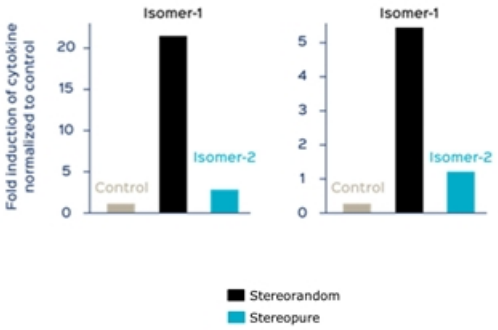
Human TLR9 Activation

Human TLR9 activation assay with 5mC modified CpG containing MOE gapmer



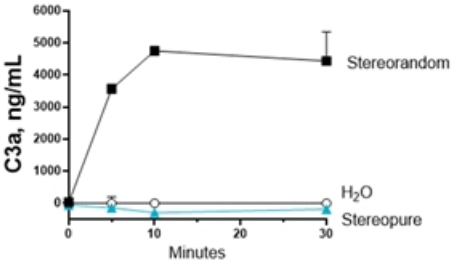
Cytokine Induction

Cytokine induction in human PBMC assay



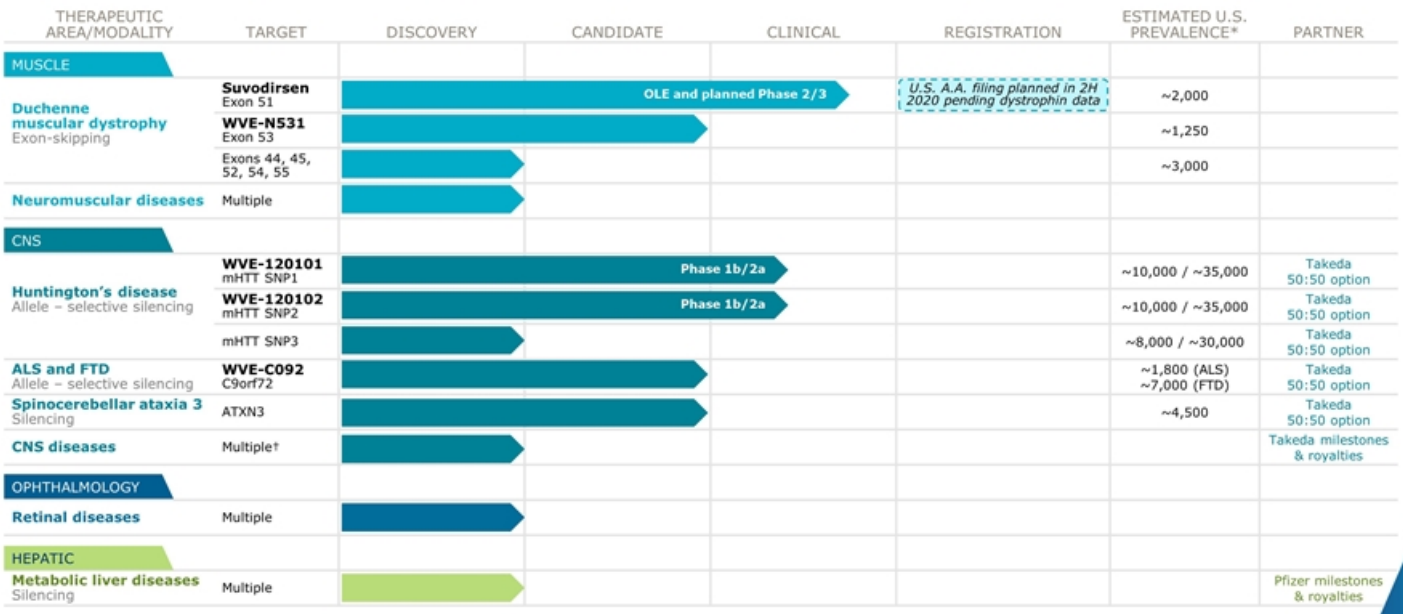
Complement Activation

Complement activation in non-human primate serum assay



Data represented in this slide from *in vitro* studies. MOE = 2′-O-methoxyethylribose; PBMC = peripheral blood mononuclear cell; TLR9 = toll-like receptor 9.

Pipeline spanning multiple modalities, novel targets



WAVE LIFE SCIENCES

*Estimates of U.S. prevalence and addressable population by target based on publicly available data and are approximate; for Huntington's disease, numbers approximate manifest and pre-manifest populations, respectively.
†During a four-year term, Wave and Takeda may collaborate on up to six preclinical targets at any one time.
A.A.: Accelerated approval; ALS: Amyotrophic lateral sclerosis; FTD: Frontotemporal dementia; CNS: Central nervous system

WAVE™
LIFE SCIENCES

Suvodirsen
Duchenne Muscular Dystrophy (DMD)

DMD: a progressive, fatal childhood disorder

- Fatal, X-linked genetic neuromuscular disorder characterized by progressive, irreversible loss of muscle function, including heart and lung
- Genetic mutation in dystrophin gene prevents the production of dystrophin protein, a critical component of healthy muscle function
- Symptom onset in early childhood; one of the most serious genetic diseases in children worldwide
- Current disease modifying treatments have demonstrated minimal dystrophin expression and clinical benefit has not been established
- Impacts 1 in every 5,000 newborn boys each year; 20,000 new cases annually worldwide

WAVE LIFE SCIENCES

Source: Parent Project Muscular Dystrophy. About Duchenne & Becker muscular dystrophy. Available at: https://www.parentprojectmd.org/care/for-healthcare-providers/. Accessed: November 2, 2018.

Potential benefits of stereopure oligonucleotide approach to treating Duchenne muscular dystrophy

Delivery

- Entry into cells (including progenitor cells) via free-uptake
- Enhanced nuclear uptake

Functional dystrophin

- Production of meaningful levels of functional dystrophin protein
- Expected to result in therapeutic benefit

Repeat administration

- Repeat administration may better address muscle cell turnover and need for broad distribution

Scalable manufacturing

- Scalable manufacturing process to meet clinical and commercial supply requirements
- Cost of goods consistent with conventional oligonucleotide therapies

WAVE LIFE SCIENCES

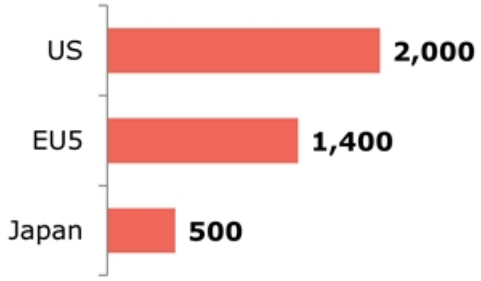
Sources: Arnett ALH, et al. *Mol Ther Methods Clin Dev.* 2014;1:14038. doi:10.1038/mtm.2014.38. Counsell JR, et al. *Sci Rep.* 2017;7:79. doi: 10.1038/s41598-017-00152-5. Duan D. *Mol Ther.* 2018;25:2337-2356. Martinsen B, Dreyer P. *Open Nurs Jrnl.* 2016;10:131-138. Stitelman DH, et al. *Mol Ther Methods Clin Dev.* 2014;1:14040. doi:10.1038/mtm.2014.40.

Suvodirsen: Wave's lead stereopure exon skipping oligonucleotide for exon 51 amenable DMD

Exon 51: Most frequent mutation among DMD patients

- ~13% of DMD patients amenable to Exon 51 skipping
- One exon-skipping therapy conditionally approved by FDA
  - Minimal increase in dystrophin expression over baseline observed after 48 weeks; **Mean increase 0.28%, Median increase 0.1%**[1]
  - Clinical benefit not established
  - Not approved ex-US
- Demand for additional treatment options remains high
- Established US and EU regulatory paths

Prevalent patient populations amenable to exon 51 skipping[2]



Prevalent patient population represents **>$1.5B** global market opportunity[3]

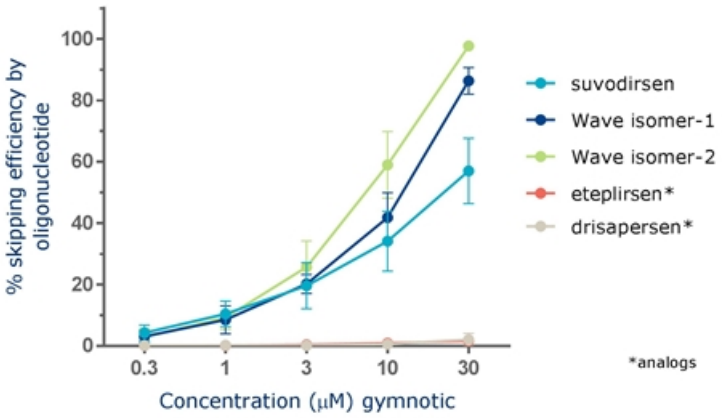
WAVE LIFE SCIENCES

Sources: [1]eteplirsen label; [2]Decision Resources, [3]US, EU5, Japan; market-based pricing of commercially available DMD treatments

Exon 51: improved skipping efficiency

- RNA skipping determined by quantitative RT-PCR
- Wave isomers demonstrated a dose-dependent increase in skipping efficiency *in vitro*
- Free uptake at 10uM concentration of each compound with no transfection agent
- Same foundational stereopure chemistry for Wave isomers; individually optimized to select candidate

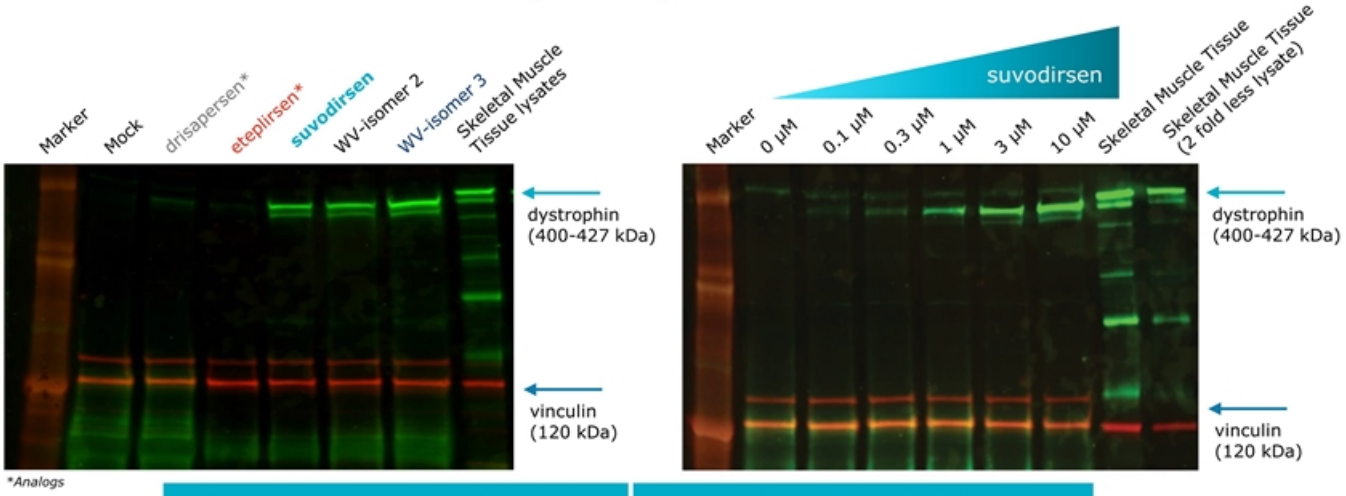
Dose Response on Skipping Efficiency
(mRNA, *in vitro*) (4 days)



WAVE LIFE SCIENCES

Experimental conditions: Free uptake of ASO in human DMD myoblast cells. Skipping quantified by TaqMan assay.

Exon 51: increased dystrophin restoration *in vitro*



*Analogs

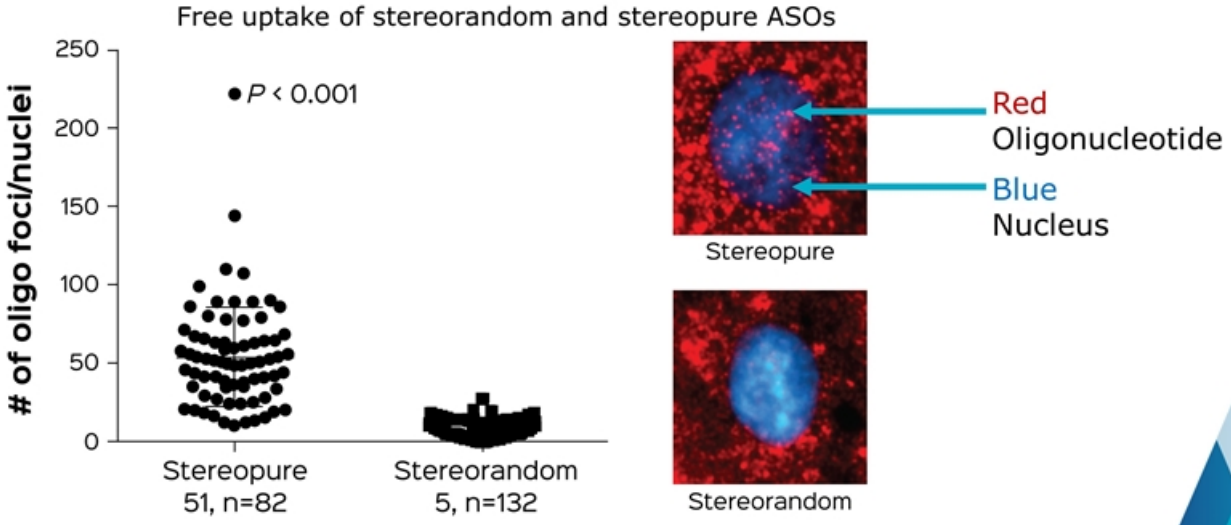
Oligonucleotide at 10 µM concentration	*In vitro* dystrophin restoration
suvodirsen	~52%
drisapersen analogue	~1%
eteplirsen analogue	~1%

WAVE LIFE SCIENCES

Experimental conditions: DMD protein restoration by Western Blot in patient-derived myotubes with clear dose effect. Free uptake at 10 µM concentration of each compound with no transfection agent.

Exon 51: improved oligonucleotide uptake in the nucleus where splicing occurs

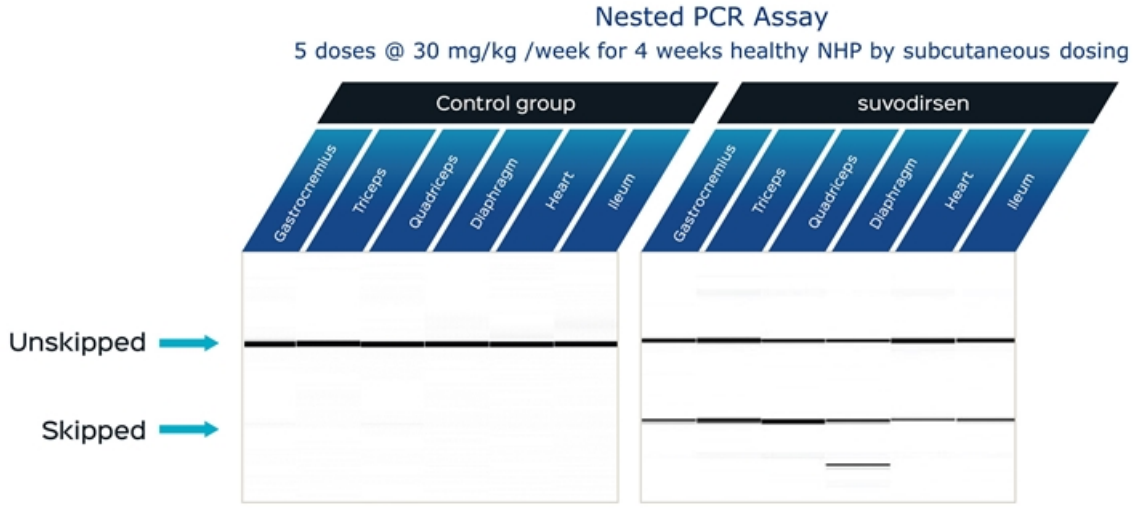
Stereopure oligonucleotides are designed to readily enter the nuclei of cells under free-uptake conditions, which approximates natural delivery in the body



Experimental conditions: Free uptake of ASOs in 18 hour differentiating human DMD myoblasts (Δ48-50).

WAVE LIFE SCIENCES

Exon 51: *in vivo* target engagement of suvodirsen in healthy non-human primate

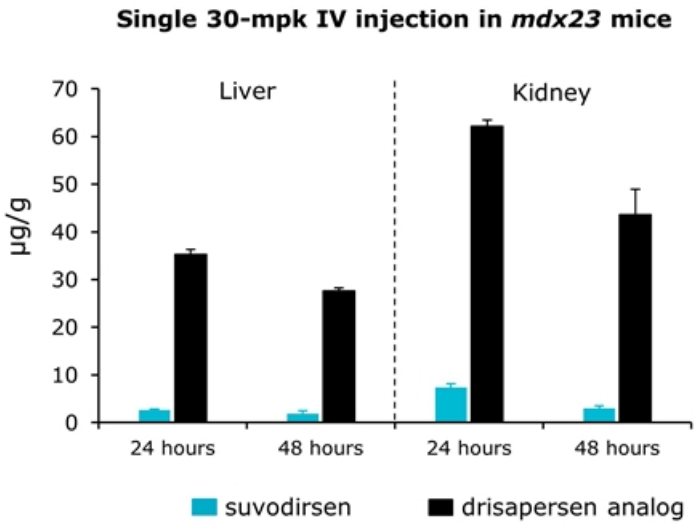


WAVE LIFE SCIENCES

Experimental conditions: Muscle tissues were collected 2 days after the last dose and fresh frozen. Total RNAs were extracted with phenol/chloroform and converted to cDNA using high capacity kit. Nested PCR assay was performed and analyzed by fragment analyzer.

Exon 51: no apparent tissue accumulation observed

- Standard oligonucleotides tend to accumulate in liver and kidney
- Wave rationally designed oligonucleotides optimized to allow compound to clear more effectively
- Suvodirsen demonstrated broad tissue distribution in dose dependent fashion
- No apparent accumulation observed after multiple doses



Experimental conditions: *Mdx23* mice received a single 30-mg/kg intravenous bolus injection of suvodirsen or drisapersen analog (n=3/group), and sacrificed 24 or 48 hours post dose. Oligo quantifications in tissues were performed using hybridization ELISA assay.

WAVE LIFE SCIENCES

Suvodirsen: Phase 1 and OLE clinical trials

Phase 1 Single Ascending Dose Trial

- 40 DMD patients amenable to exon 51 skipping[1]
- ~20% of patients had received eteplirsen previously (following wash out)

Suvodirsen had a favorable safety and tolerability profile in context of available treatments for continued development in OLE and Phase 2/3 trial

Open-Label Extension Trial *Ongoing*

- Open to all patients in Phase 1 trial
- 1:1 randomization to 5 mg/kg and 3.5 mg/kg doses
- Patients receiving weekly IV doses of suvodirsen
- Interim analysis of dystrophin expression expected in 2H 2019

WAVE LIFE SCIENCES

[1]36 patients randomized in Phase 1 and four screened patients expected to enroll directly into Phase 1 OLE
OLE: Open-label Extension; Full Phase 1 Results presented at MDA 2019 Scientific and Clinical Conference.

Suvodirsen: Path towards US and global approvals

Phase 1

- Phase 1 single ascending dose clinical trial
- Based on *in vitro* and *in vivo* preclinical studies and Phase 1 clinical results, two suvodirsen doses selected for Phase 2/3 clinical trial
- **Study complete**

Open-label extension (OLE)

- Multi-dose, open-label study with patients from Phase 1 clinical trial currently underway
- Data will be an important component of submission for accelerated approval in US
- **On track to deliver interim analysis of dystrophin expression in 2H 2019**

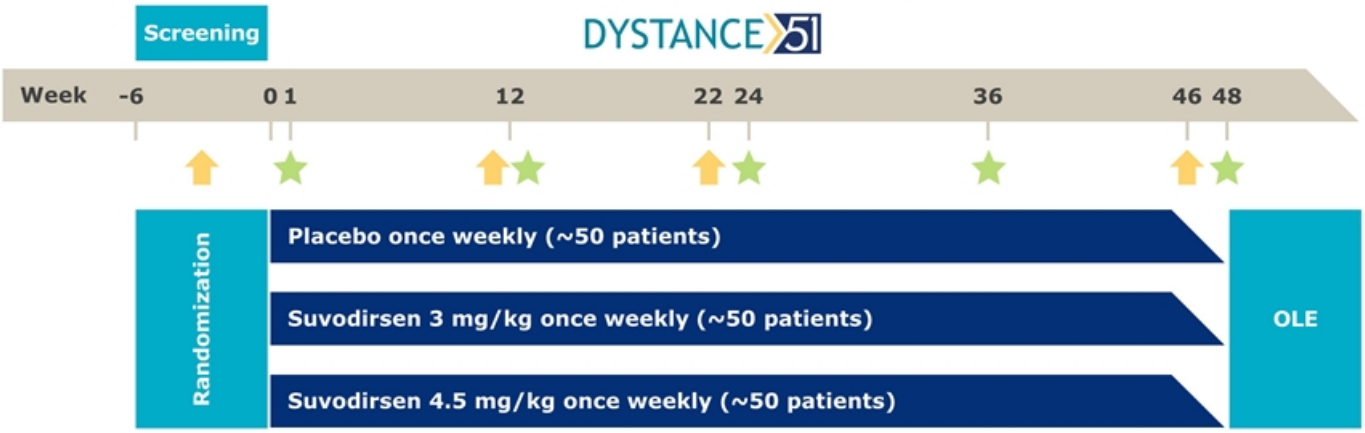
Phase 2/3 DYSTANCE 51

- Phase 2/3 clinical trial to assess clinical efficacy and dystrophin expression
- Efficacy and safety data to serve as basis of regulatory submissions globally
- **Expect to initiate in July 2019**

2H 2020: Potential FDA accelerated approval filing in exon 51 amenable DMD

WAVE LIFE SCIENCES

Phase 2/3 study selected for FDA Complex Innovative Trial Design (CID) pilot program



- Designed with input from global regulatory communities and DMD patient community
- DMD historical control data will be leveraged to help reduce number of patients required to deliver conclusive clinical efficacy results and potentially accelerate study completion

WAVE LIFE SCIENCES

Biopsy = ▲ NSAA = ★

Note: 4.5 mg/kg dose in DYSTANCE 51 provides approximately the same amount of active ingredient as the 5 mg/kg dose in the Phase 1 clinical trial

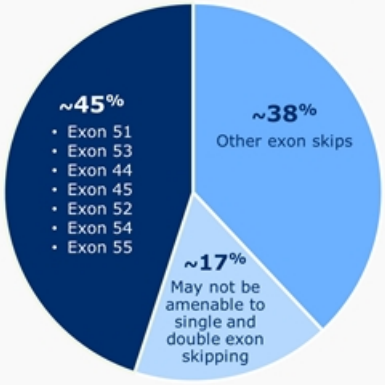
Building a portfolio to transform the care of DMD

Suvodirsen targeting exon 51
- Phase 2/3 trial expected to initiate in July 2019 for global regulatory submissions
- Potential FDA accelerated approval filing in 2H 2020, pending positive clinical dystrophin expression data

WVE-N531 targeting exon 53
- Topline clinical data expected in 2H 2020

Advancing candidate development for exons 44, 45, 52, 54, 55
- Early leads demonstrated similar *in vitro* exon skipping efficiency as suvodirsen and WVE-N531

Percentage of patients with DMD amenable to exon skipping therapeutic approach



Initiating commercialization activities in anticipation of first potential launch in US

WAVE LIFE SCIENCES

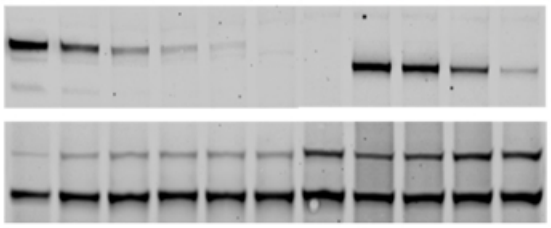
Sources: Aartsma-Rus A, et al. *Hum Mutat.* 2009;30:293-299. Bladen CL, et al. *Hum Mutat.* 2015;36:395–402.

Exon 53: WVE-N531 *in vitro* dose-dependent dystrophin restoration

Dystrophin protein restoration of up to 71%

Western Blot normalized to primary healthy human myoblast lysate

Standard Curve (% WT lysate in D45-52 lysate)						D45-52 Cells					
						Mock	WVE-N531				
						0	10	3.3	1.1	0.3	Conc [uM]
100%	50%	25%	12%	6%	0%	0%	71%	65%	37%	9.5%	% Dystrophin



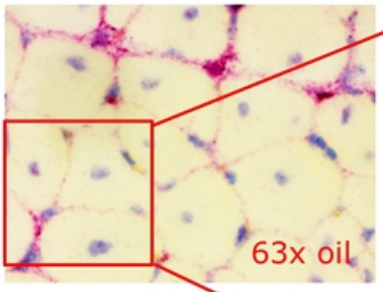
- Free uptake for 6 days in differentiation media with no transfection agent and no peptide conjugated to the oligonucleotide
- Wave stereopure exon 53 candidate demonstrated a dose-dependent increase in dystrophin restoration in DMD patient-derived myoblasts

Topline clinical data expected in 2H 2020

WAVE LIFE SCIENCES

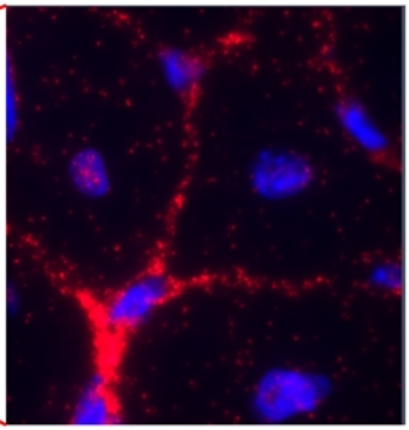
Experimental conditions: D45-52 patient myoblasts were treated with oligonucleotide for 6d under free-uptake conditions in differentiation media. Protein harvested in RIPA buffer and dystrophin restoration analyzed by Western Blot. Signal normalized to vinculin loading control and to primary healthy human myotube lysate (pooled from four donors) forming a standard curve in d45-52 cell lysate.

Exon 53: targeting oligonucleotide rapidly distributes to muscle within 24 hours after injection



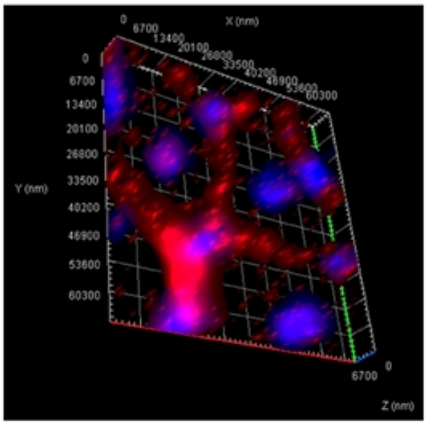
Bright field view

Nucleus: Hematoxylin; Light Blue
Wave oligo: ViewRNA, Fast Red



Fluorescence channel view

Nucleus: Hoechst33342; Blue
Wave oligo: Fast Red/Cy3; Pink Red



Z Stack view

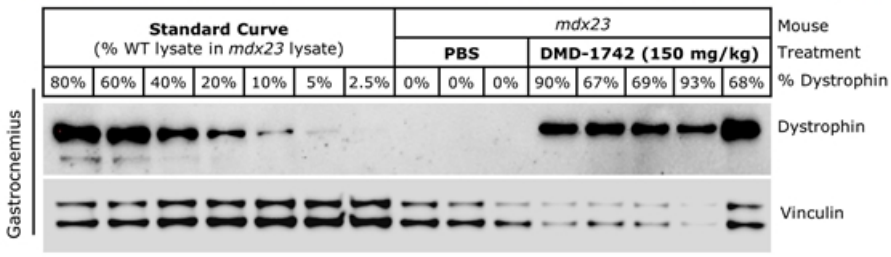
WAVE LIFE SCIENCES

Data derived from *in vivo* preclinical research.

Experimental conditions: A single dose of stereopure oligonucleotide 30 mg/kg IV was administered to *mdx* 23 mice. Tissues collected 24 hours post dose and ASO was detected in muscles using ViewRNA.

In vivo mdx23 dystrophin protein with oligonucleotides

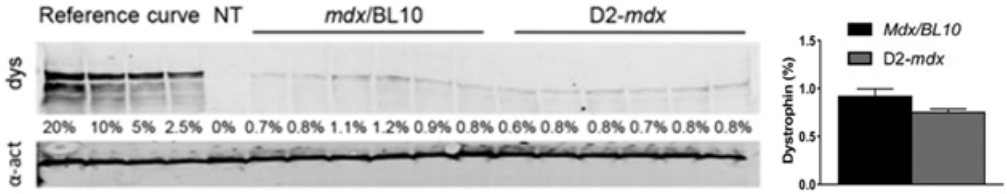
***In vivo* dystrophin protein restoration (stereopure surrogate, 150 mg/kg, 4 weekly IV doses)**



- 70 – 90% dystrophin restoration
- 87% reduction in creatine kinase (CK) levels

Published literature

***In vivo* dystrophin protein restoration (drisapersen surrogate, 200 mg/kg, 8 weekly IV doses)**

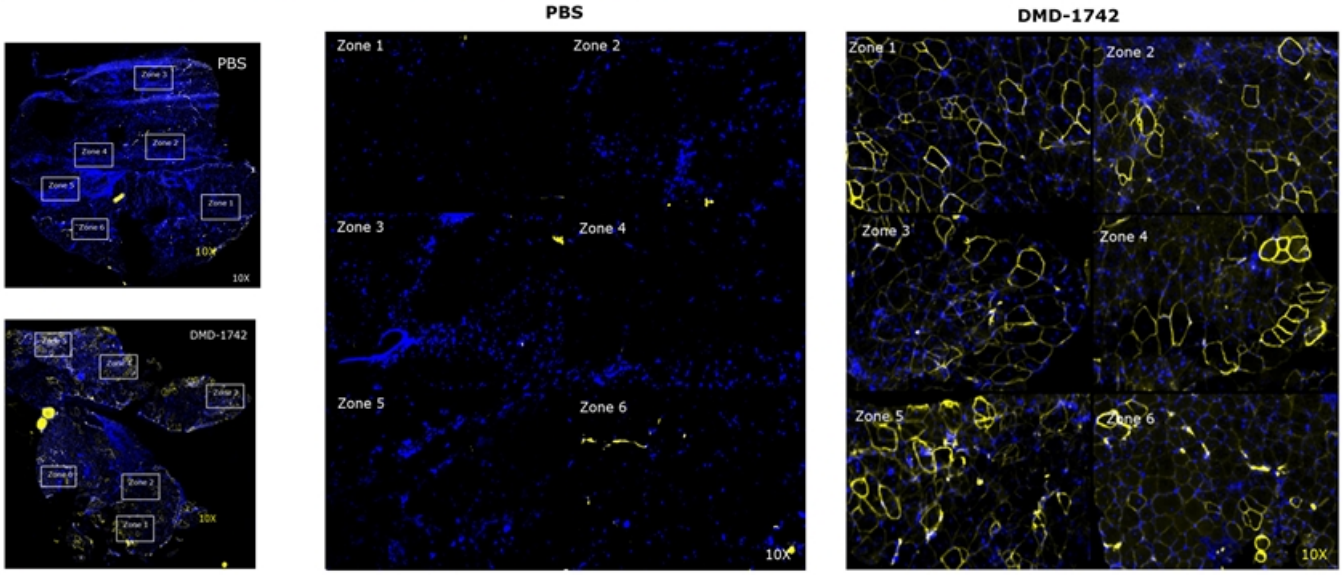


- Less than 1.5% dystrophin restoration in two separate studies[1,2]
- No reduction in CK levels[1]

NT = nontreated *mdx* mouse; *mdx*/BL10 = mdx mouse in C57BL/10ScSnJ background; D2-*mdx* = mdx mouse crossed to DBA/2A background resulting in more severely affected model; CK = creatine kinase
Experimental conditions (stereopure surrogate): Tissues collected 96 hours post final dose. Protein expression determined by western Blot.
1. Experimental conditions (drisapersen surrogate): Tissues collected 1 week after the last injection. Protein expression determined by western blot.
van Putten M, Tanganyika-de Winter C, Bosgra S, Aartsma-Rus A. Nonclinical Exon Skipping Studies with 2'-O-Methyl Phosphorothioate Antisense Oligonucleotides in mdx and mdx-utrn-/- Mice Inspired by Clinical Trial Results. *Nucleic Acid Ther.* 2019 Apr;29(2):92-103.
2. Molecular Therapy – Nucleic Acids (2014) 3, e148

Single dose of surrogate results in restoration of dystrophin in muscle fibers

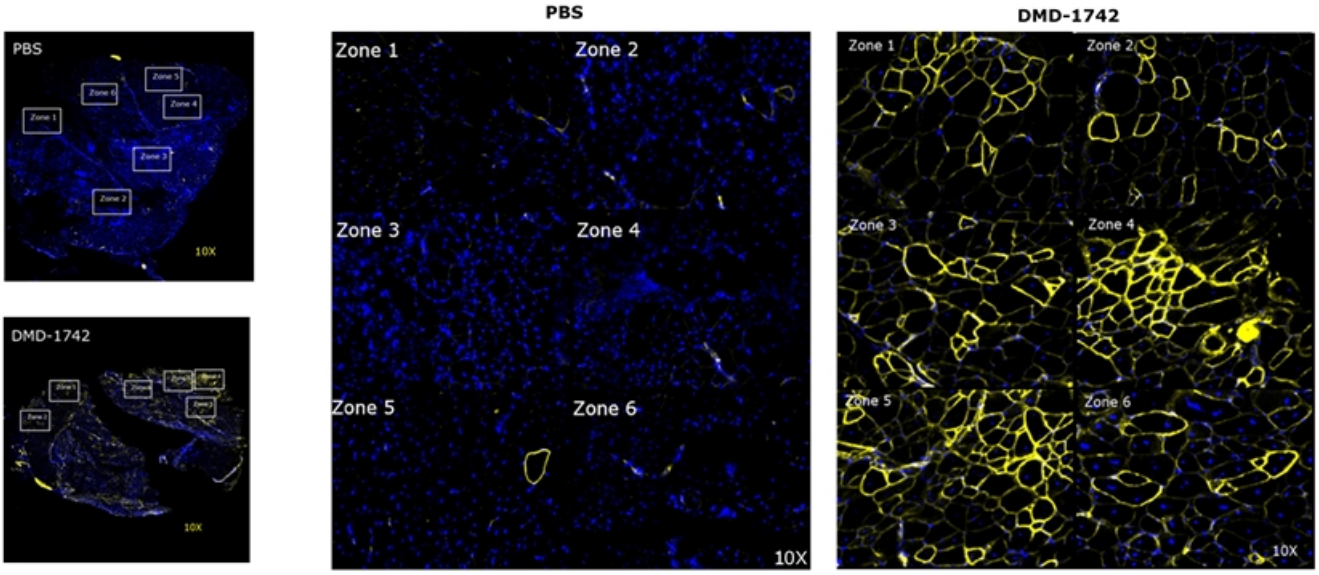
Immunohistochemistry of dystrophin in gastrocnemius in *mdx23* mice at 4 weeks



Experimental conditions: *mdx23* mice received a single IV injection of PBS or DMD-1742 (150 mg/kg).
Immunohistochemistry: Blue: Nuclei, Hoechest; Yellow: Rabbit anti-Dystrophin(#ab15277) 1:400 diluent, 555/Cy3, Cy3 staining is represented by the yellow color.
10X magnification.

Multiple doses of surrogate result in further restoration of dystrophin in muscle fibers

Immunohistochemistry of dystrophin in gastrocnemius in *mdx23* mice at 4 weeks



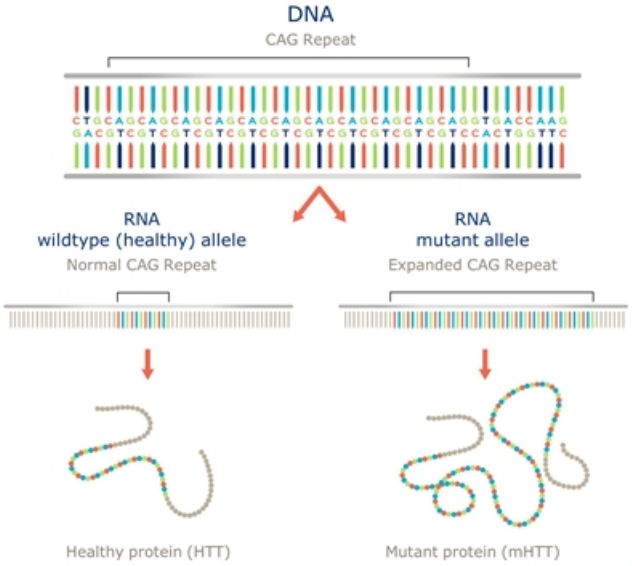
Experimental conditions: *mdx23* mice received 4 weekly IV injections of PBS or DMD-1742 (150 mg/kg).
Immunohistochemistry: Blue: Nuclei, Hoechest; Yellow: Rabbit anti-Dystrophin(#ab15277) 1:400 diluent, 555/Cy3, Cy3 staining is represented by the yellow color.
10X magnification.

WAVE™
LIFE SCIENCES

WVE-120101
WVE-120102
Huntington's Disease

Huntington's disease: a hereditary, fatal disorder

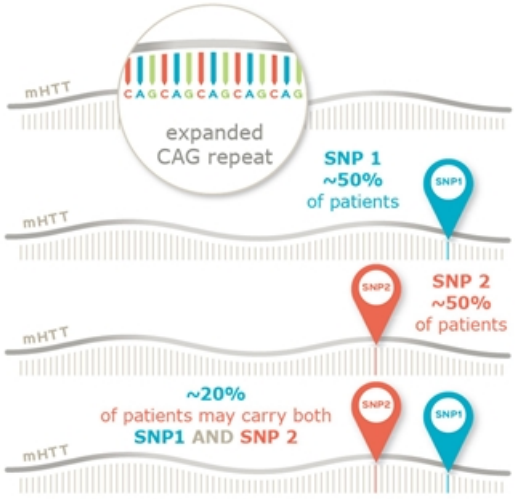
- Autosomal dominant disease, characterized by cognitive decline, psychiatric illness and chorea; fatal
- No approved disease-modifying therapies
- Expanded CAG triplet repeat in HTT gene results in production of mutant huntingtin protein (mHTT); accumulation of mHTT causes progressive loss of neurons in the brain
- Wildtype (healthy) HTT protein critical for neuronal function; suppression may have detrimental long-term consequences
- 30,000 people with Huntington's disease in the US; another 200,000 at risk of developing the condition



Sources: Auerbach W, et al. *Hum Mol Genet*. 2001;10:2515-2523. Dragatsis I, et al. *Nat Genet*. 2000;26:300-306. Leavitt BR, et al. *J Neurochem*. 2006;96:1121-1129. Nasir J, et al. *Cell*. 1995;81:811-823. Reiner A, et al. *J Neurosci*. 2001;21:7608-7619. White JK, et al. *Nat Genet*. 1997;17:404-410. Zeitlin S, et al. *Nat Genet*. 1995;11:155-163. Carroll JB, et al. *Mol Ther*. 2011;19:2178-2185.
Huntington Disease Society of America (HDSA). What is Huntington's disease? Available at: http://hdsa.org/what-is-hd/. Accessed: November 2, 2018.

Wave approach: novel, allele-specific silencing

- Utilize association between single nucleotide polymorphisms (SNPs) and genetic mutations to specifically target errors in genetic disorders, including HD
- Allele-specificity possible by targeting SNPs associated with expanded long CAG repeat in mHTT gene
- Approach aims to lower mHTT transcript while leaving healthy HTT relatively intact
- Potential to provide treatment for up to 70% of HD population (either oligo alone could address approximately 50% of HD population)



Total: Due to overlap, an estimated **~70%** of the total HD patient population carry SNP 1 and/or SNP 2

WAVE LIFE SCIENCES

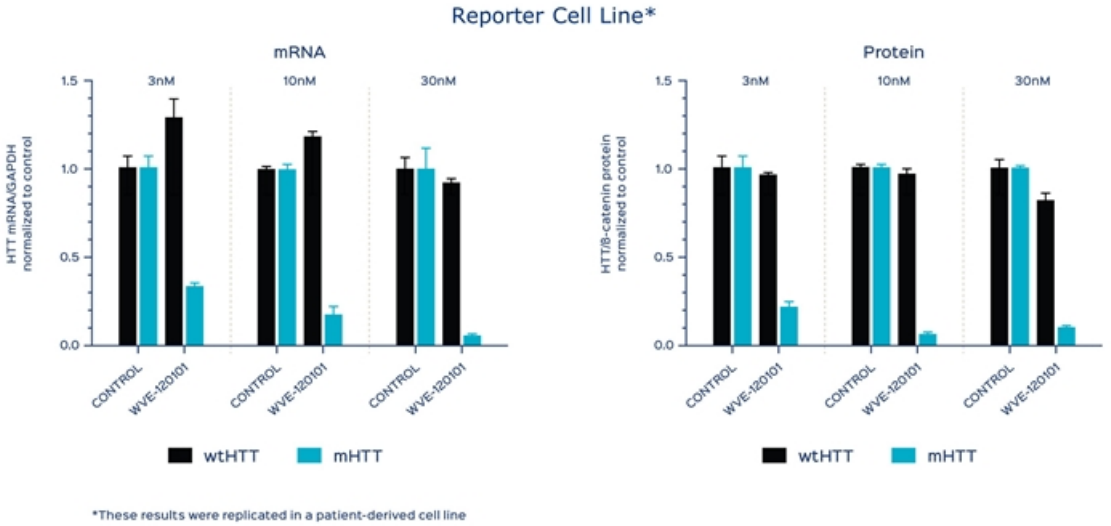
Source: Kay, et al. Personalized gene silencing therapeutics for Huntington disease. *Clin Genet.* 2014;86:29–36.

Two simultaneous Phase 1b/2a clinical trials

- PRECISION-HD is a global clinical program consisting of the PRECISION-HD1 trial evaluating WVE-120101 targeting SNP1 and the PRECISION-HD2 trial evaluating WVE-120102 targeting SNP2
  - Two parallel, multicenter, double-blind, randomized, placebo-controlled Phase 1b/2a clinical trials for WVE-120101 and WVE-120102, administered intrathecally, with single-ascending dose and multiple-ascending dose portions
  - Primary objective: Assess safety and tolerability of intrathecal doses in early manifest HD patients
  - Key additional objectives: Measurement of total HTT and mHTT; exploratory pharmacokinetic (PK), pharmacodynamic (PD), clinical and MRI endpoints
  - Key inclusion criteria: age ≥25 to ≤65, stage I or II HD who have screened positively for the presence of SNP1 or SNP2
  - Expected to enroll approximately 50 patients per trial
- Open-label extension (OLE) study planned to allow for continued dosing and clinical assessments
  - To include patients previously in the Phase 1b/2a clinical trials
  - Assessments of safety, tolerability, PK, PD, MRI and efficacy using validated clinical outcome measures
- Intend to explore efficacy in early manifest and pre-manifest HD patient populations

Phase 1b/2a readout expected by YE 2019

Selective reduction of mHTT mRNA & protein

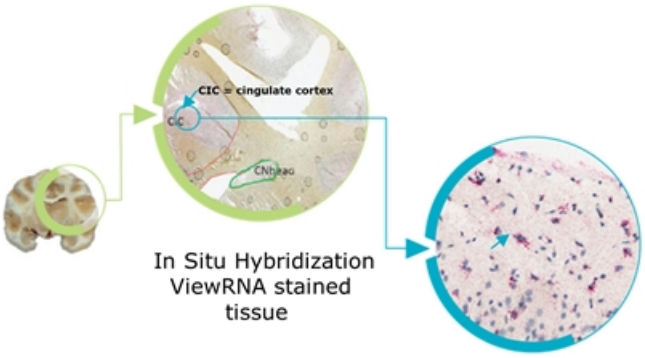


*These results were replicated in a patient-derived cell line

Source: Meena, Zboray L, Svrzikapa N, et al. Selectivity and biodistribution of WVE-120101, a potential antisense oligonucleotide therapy for the treatment of Huntington's disease. Paper presented at: 69th Annual Meeting of the American Academy of Neurology; April 28, 2017; Boston, MA.

Demonstrated delivery to brain tissue

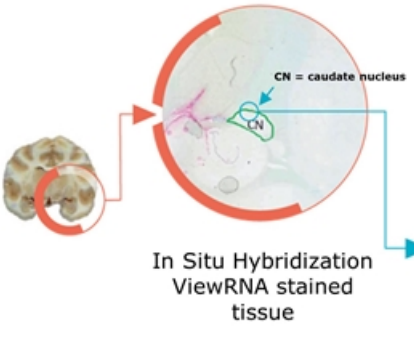
- WVE-120101 and WVE-120102 distribution in cynomolgus non-human primate brain following intrathecal bolus injection



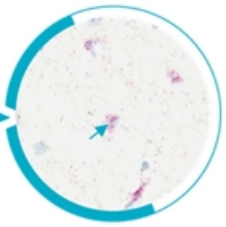
In Situ Hybridization ViewRNA stained tissue

Red dots are WVE-120101 oligonucleotide

Arrow points to nuclear and perinuclear distribution of WVE- 120101 in cingulate cortex



In Situ Hybridization ViewRNA stained tissue



Red dots are WVE-120102 oligonucleotide

Arrow points to nuclear and perinuclear distribution of WVE-120102 in caudate nucleus

WAVE LIFE SCIENCES

Source: Meena, Zboray L, Svrzikapa N, et al. Selectivity and biodistribution of WVE-120101, a potential antisense oligonucleotide therapy for the treatment of Huntington's disease. Paper presented at: 69th Annual Meeting of the American Academy of Neurology; April 28, 2017; Boston, MA.

WAVE™
LIFE SCIENCES

WVE-C092

Amyotrophic Lateral Sclerosis (ALS)
Frontotemporal Dementia (FTD)

C9orf72: a critical genetic risk factor

- C9orf72 gene provides instructions for making protein found in various tissues, with abundance in nerve cells in the cerebral cortex and motor neurons
- C9orf72 genetic mutations are the strongest genetic risk factor found to date for the more common, non-inherited (sporadic) forms of Amyotrophic Lateral Sclerosis (ALS) and Frontotemporal Dementia (FTD); GGGGCC repeat drives the formation and accumulation of dipeptide repeat proteins that accumulate in brain tissue
- First pathogenic mechanism identified to be a genetic link between familial (inherited) ALS and FTD
- Most common mutation identified associated with familial ALS and FTD
- Availability of dipeptide biomarker in CSF has potential to accelerate drug development

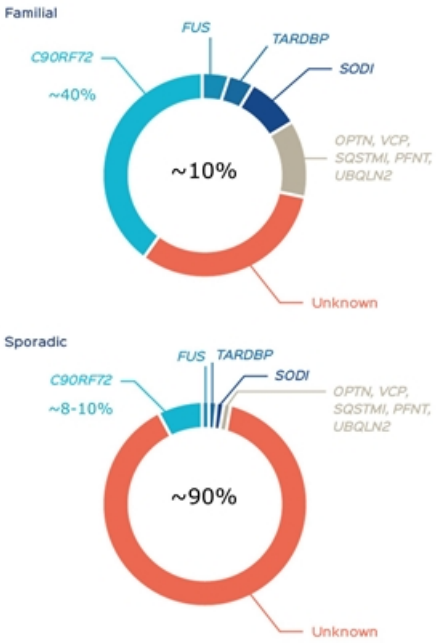
WAVE LIFE SCIENCES

Source: DeJesus-Hernandez M, Mackenzie IR, Boeve BF, et al. *Neuron.* 2011;72:245-256. Renton AE, Majounie E, Waite A, et al. *Neuron.* 2011;72:257-268.

Amyotrophic lateral sclerosis

- Fatal neurodegenerative disease characterized by the progressive degeneration of motor neurons in the brain and spinal cord
- Affects approximately 15,000-20,000 people in the US with a median survival of three years
- C9orf72 is present in approximately 40% of familial ALS and 8-10% of sporadic ALS; currently the most common demonstrated mutation related to ALS, far more so than SOD1 or TDP-43
- Pathogenic transcripts of the C9orf72 gene contain hundreds to thousands of hexanucleotide repeats compared to 2-23 in wild-type transcripts; dominant trait with high penetrance

Clinical development expected to initiate in 2H 2020

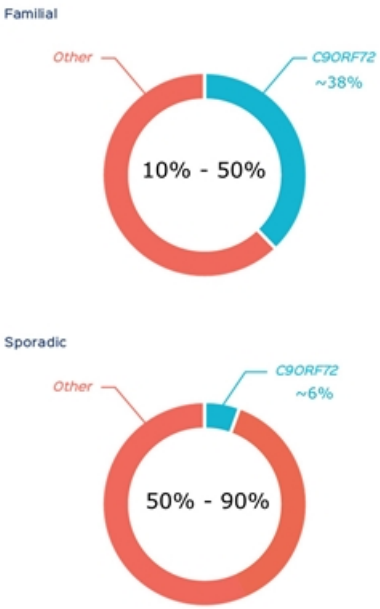


WAVE LIFE SCIENCES

Source: Renton AE, Chiò A, Traynor BJ. State of play in amyotrophic lateral sclerosis genetics. *Nat Neurosci*. 2014;17:17–23.

Frontotemporal dementia

- Progressive neuronal atrophy with loss in the frontal and temporal cortices characterized by personality and behavioral changes, as well as gradual impairment of language skills
- Affects approximately 55,000 people in the US
- Second most common form of early-onset dementia after Alzheimer's disease in people under the age of 65
- Up to 50% of FTD patients have a family history of dementia, many inheriting FTD as an autosomal dominant trait with high penetrance
- Pathogenic transcripts of the C9orf72 gene contain hundreds to thousands of hexanucleotide repeats compared to 2-23 in wild-type transcripts



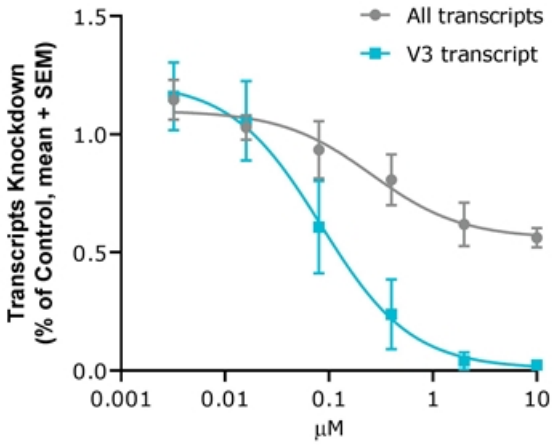
Clinical development expected to initiate in 2H 2020

WAVE LIFE SCIENCES

Sources: Stevens M, et al. Familial aggregation in frontotemporal dementia. *Neurology*. 1998;50:1541-1545. Majounie E, et al. Frequency of the C9orf72 hexanucleotide repeat expansion in patients with amyotrophic lateral sclerosis and frontotemporal dementia: a cross-sectional study. *Lancet Neurol.* 2012;11:323-330.

WVE-C092 demonstrated selective and potent silencing of expanded C9orf72 repeat transcripts

WVE-C092 preferentially reduces repeat-containing V3 transcripts



Stereochemistry and chemistry optimization improves potency

	IC_{50} (nM)
WVE-C092	**84**
WVE-3972-01	411
Stereorandom ASO	845

10-fold

WAVE LIFE SCIENCES

in vitro experimental methods: C9 ALS patient derived MNs were treated with ASO gymnotically (free-uptake) for 1 week. Cell were harvested with Trizol reagent for RNA extraction. Taqman qPCR assays were used to detect V3 and all V.

WAVE™
LIFE SCIENCES

Ophthalmology

Building a portfolio for inherited retinal diseases

Inherited retinal diseases (IRDs)

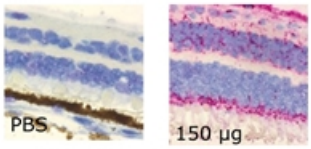
- Rare eye disorders caused by genetic mutations leading to progressive vision loss
- No approved therapies for almost any IRDs
- Approximately 200,000 affected in the U.S. and millions world-wide

Wave opportunity

- Oligonucleotides allow for intravitreal (IVT) injection; targeting twice per year dosing
- Stereopure oligonucleotides open up novel strategies in both dominant and recessive IRDs; potential for potent and durable effect with low immune response
- Established imaging markers, easily identifiable patient population and historical ophthalmology trial success rates suggest clear path to market

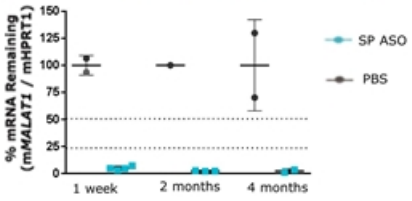
Single IVT injection of stereopure oligonucleotide to NHP results in distribution throughout all layers of the retina and potent, extended duration of effect

Broad Distribution
One Week Post-Dose



MALAT1 oligonucleotide detected using ViewRNA assay; pink = oligonucleotide

>95% Knockdown
in Retina Tissue



Genetic target	Inherited retinal disease	US Population Addressable by Wave Approach
RHO P23H	Retinitis pigmentosa	~1,800
USH2A	Usher syndrome 2A	~5,000
ABCA4	Stargardt disease	~2,000
CEP290	Leber congenital amaurosis 10	~1,000

Initial candidate expected in 2H 2019

WAVE LIFE SCIENCES

Sources: Daiger S, et al. *Clin Genet*. 2013;84:132-141. Wong CH, et al. *Biostatistics*. 2018; DOI: 10.1093/biostatistics/kxx069. Athanasiou D, et al. *Prog Retin Eye Res*. 2018;62:1–23. Daiger S, et al. *Cold Spring Harb Perspect Med*. 2015;5:a017129. Verbakel S, et al. *Prog Retin Eye Res*. 2018:66:157-186.

Anticipated upcoming Wave milestones

Neuromuscular

- **July 2019:** Initiation of DYSTANCE 51 Phase 2/3 clinical trial for suvodirsen in DMD (exon 51)
- **2H 2019:** Interim dystrophin data readout for suvodirsen from OLE in DMD (exon 51)
- **2H 2020:** Accelerated approval filing for suvodirsen in DMD (exon 51) in US, pending positive clinical dystrophin expression data
- **2H 2020:** Topline clinical data for WVE-N531 in DMD (exon 53)

CNS

- **By YE 2019:** Topline data readout from PRECISION-HD Phase 1b/2a trials in Huntington's disease
- **2H 2020:** Initiation of clinical development of WVE-C092 (C9orf72) in ALS and FTD

Ophthalmology

- **2H 2019:** Selection of initial development candidate for inherited retinal disease

WAVE™
LIFE SCIENCES

WAVE™
LIFE SCIENCES

Realizing the potential of genetic medicines

For more information:
Kate Rausch, Investor Relations
krausch@wavelifesci.com
617.949.4827