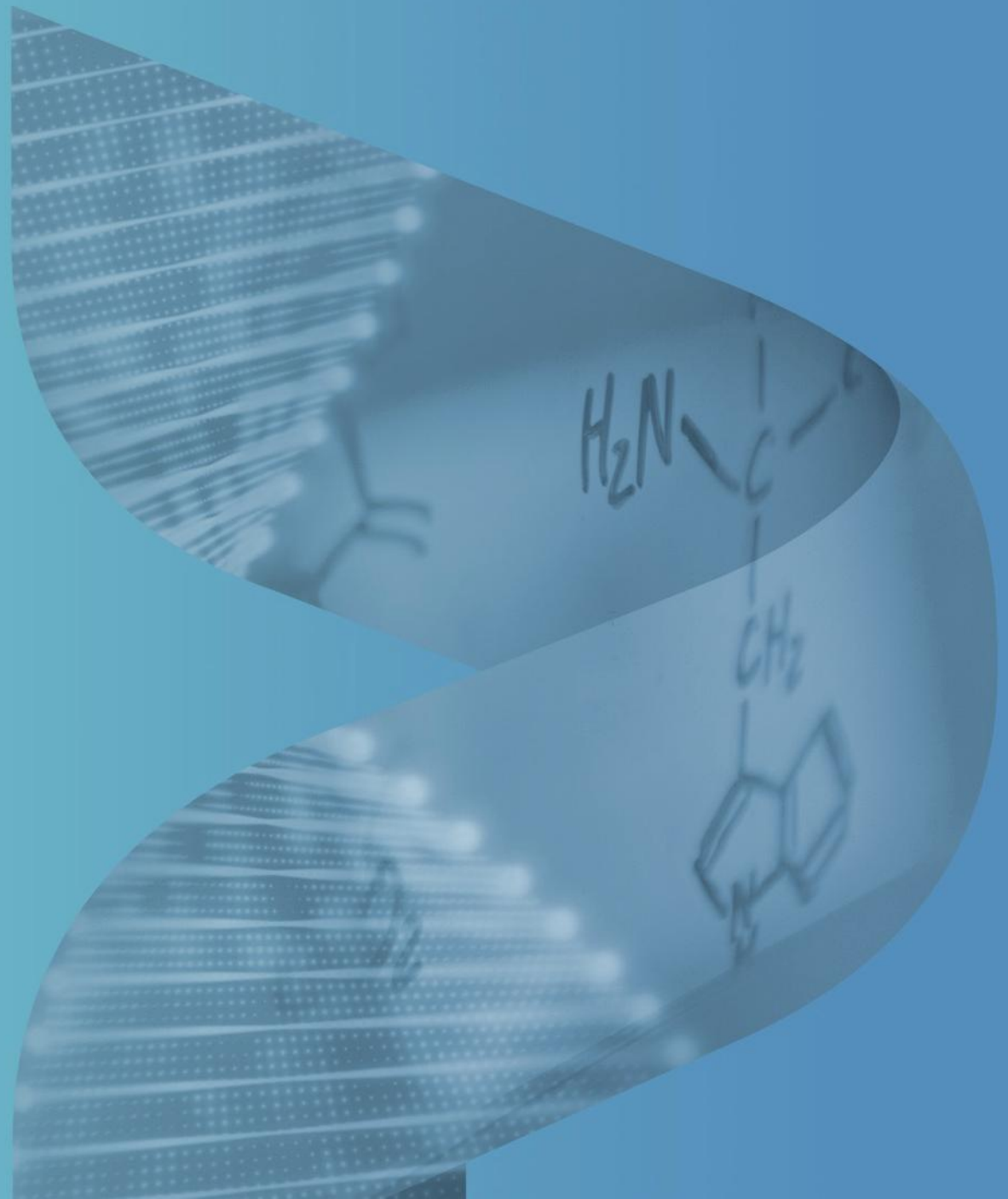
PepGen™

Company Presentation

April 2025

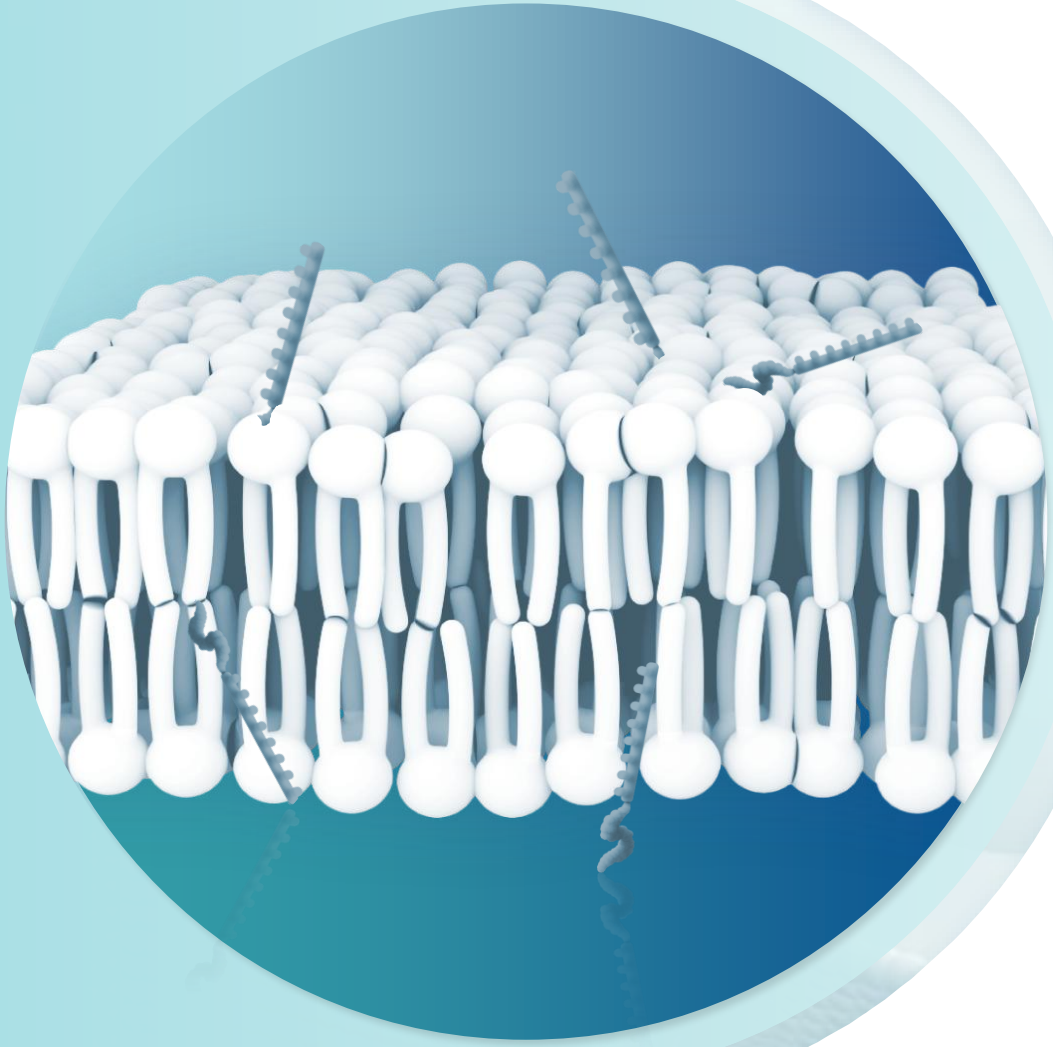


Forward-Looking Statements

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. These statements may be identified by words such as “aims,” “anticipates,” “believes,” “could,” “estimates,” “expects,” “forecasts,” “goal,” “intends,” “may,” “plans,” “possible,” “potential,” “seeks,” “will,” and variations of these words or similar expressions that are intended to identify forward-looking statements. Any such statements in this presentation that are not statements of historical fact may be deemed to be forward-looking statements. These forward-looking statements include, without limitation, statements regarding the potential of our EDO platform to deliver higher levels of oligonucleotide to the nuclei and to dramatically improve the lives of people living with severe neuromuscular and neurological diseases, the therapeutic potential and favorable emerging safety profile of our product candidates, PGN-EDODM1 and PGN-EDO51, including based on early clinical data, the design and ongoing status of our clinical trials, including our FREEDOM-DM1 Phase 1 and FREEDOM2-DM1 Phase 2 trials of PGN-EDODM1 and our CONNECT1-EDO51 and CONNECT2-EDO51 Phase 2 trials of PGN-EDO51, the expected timing for additional data reports from our CONNECT1 trial and FREEDOM trial and for the initial data report from our FREEDOM2 trial, the receipt of a clinical hold from the FDA regarding our IND application to initiate CONNECT2 in the United States and related correspondence from Health Canada, our decision to pause CONNECT2 in the United Kingdom, ongoing and planned regulatory interactions, and our financial resources and cash runway based on currently planned operations

Any forward-looking statements in this presentation are based on current expectations, estimates and projections only as of the date of this presentation and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to: delays or failure to successfully initiate or complete our ongoing and planned development activities for our product candidates, including PGN-EDODM1 and PGN-EDO51; our ability to enroll patients in our clinical trials, including FREEDOM, FREEDOM2 and eventually, CONNECT2; that our interpretation of clinical and preclinical study results may be incorrect, or that we may not observe the levels of therapeutic activity in clinical testing that we anticipate based on prior clinical or preclinical results, including for PGN-EDODM1 and PGN-EDO51; our product candidates, including PGN-EDODM1 and PGN-EDO51, may not be safe and effective or otherwise demonstrate safety and efficacy in our clinical trials; adverse outcomes from our regulatory interactions, including delays in regulatory review, clearance to proceed or approval by regulatory authorities with respect to our programs, including clearance to commence planned clinical studies of our product candidates, or other regulatory feedback requiring modifications to our development programs, including in each case with respect to our including FREEDOM, FREEDOM2, CONNECT1 and CONNECT2 clinical trials; changes in regulatory framework that are out of our control; our ability to obtain, maintain and protect our intellectual property; our ability to enforce our patents against infringers and defend our patent portfolio against challenges from third parties; competition from others developing therapies for the indications we are pursuing; unexpected increases in the expenses associated with our development activities or other events that adversely impact our financial resources and cash runway; and our dependence on third parties for some or all aspects of our product manufacturing, research and preclinical and clinical testing. Additional risks concerning PepGen's programs and operations are described in our most recent annual report on Form 10-K that is filed with the SEC. PepGen explicitly disclaims any obligation to update any forward-looking statements except to the extent required by law.

This presentation discusses PGN-EDODM1 and PGN-EDO51, investigational therapies that have not been approved for use in any country and is not intended to convey conclusions about their efficacy or safety. There is no guarantee that PGN-EDODM1, PGN-EDO51 or any other investigational therapy will successfully complete clinical development or gain regulatory authority approval.



Driven by our proprietary Enhanced Delivery Oligonucleotide (EDO) platform, PepGen is creating a pipeline of disease-modifying therapeutics with the potential to safely and effectively target the underlying cause of serious genetic neuromuscular and neurological diseases

PepGen™

PepGen's Pipeline Enabled by EDO Technology

INVESTIGATIONAL CANDIDATES	CLINICAL PROGRAMS	INDICATIONS	PRECLINICAL	PHASE 1	PHASE 2	PIVOTAL
PGN-EDO51	Connect	DMD – *Exon 51*				
PGN-EDODM1	Freedom	DM1 – *DMPK*				
PGN-EDO53		DMD – *Exon 53*				

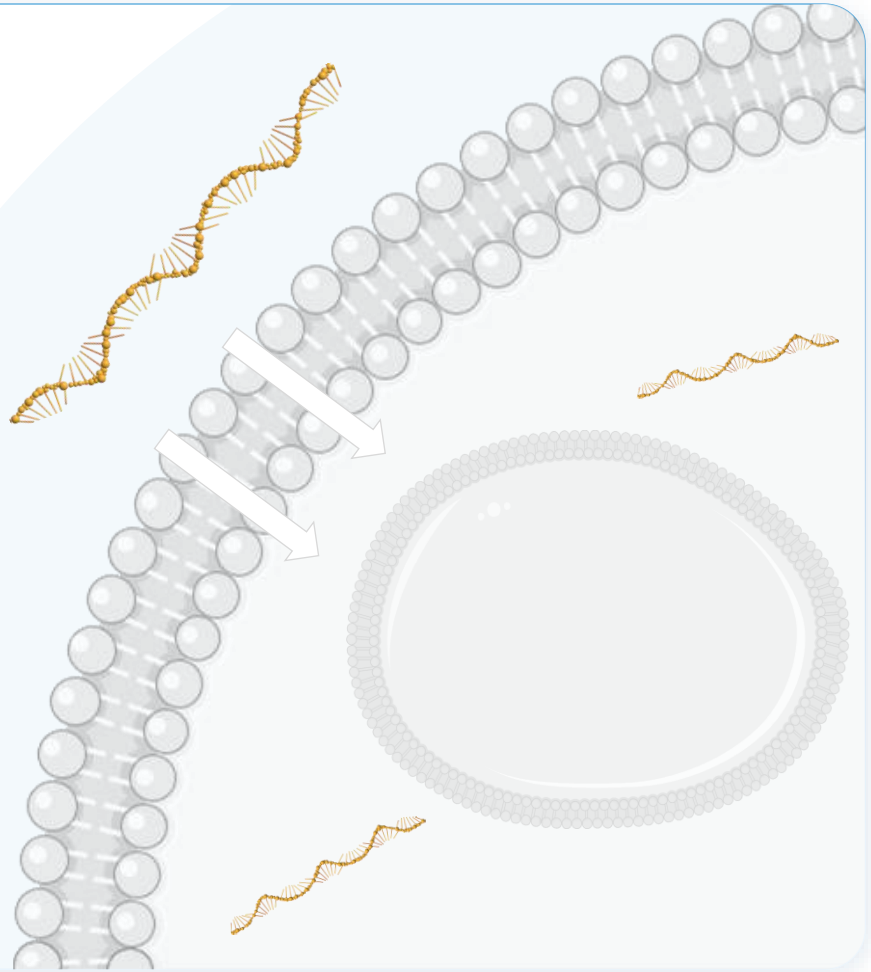
Research

- DMD *Exon 45, Exon 44*
- Additional neuromuscular diseases
- Neurological diseases

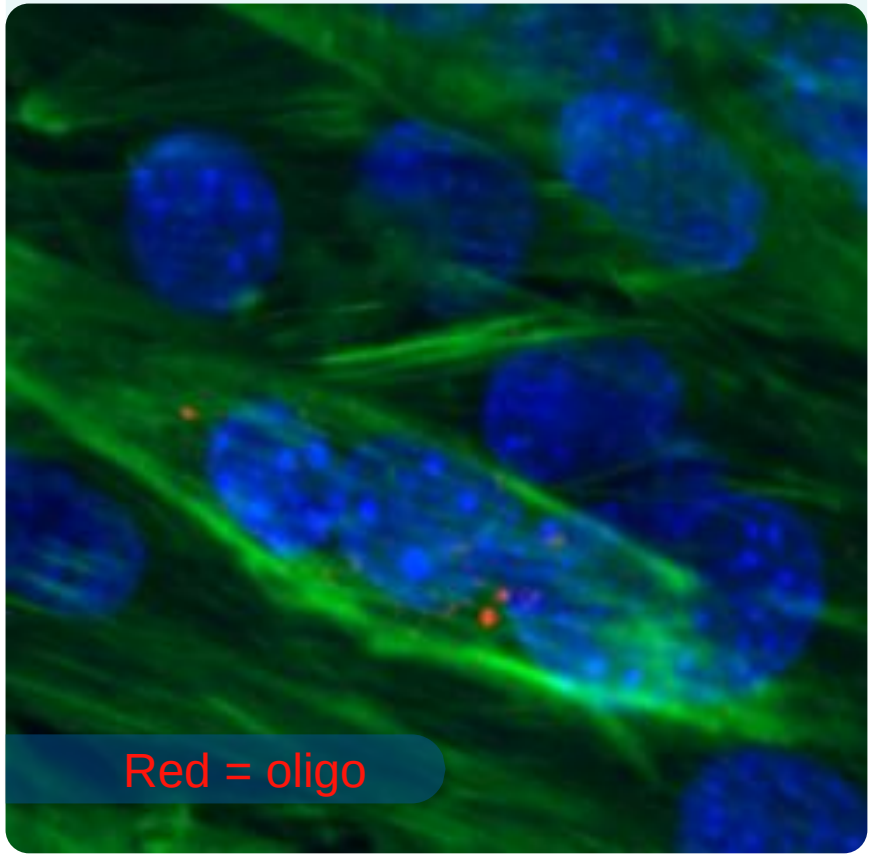
Note: Clinical plans are subject to alignment with regulatory authorities.

The Challenge of Oligonucleotides

Naked oligonucleotides do not efficiently penetrate muscle cells and nucleus



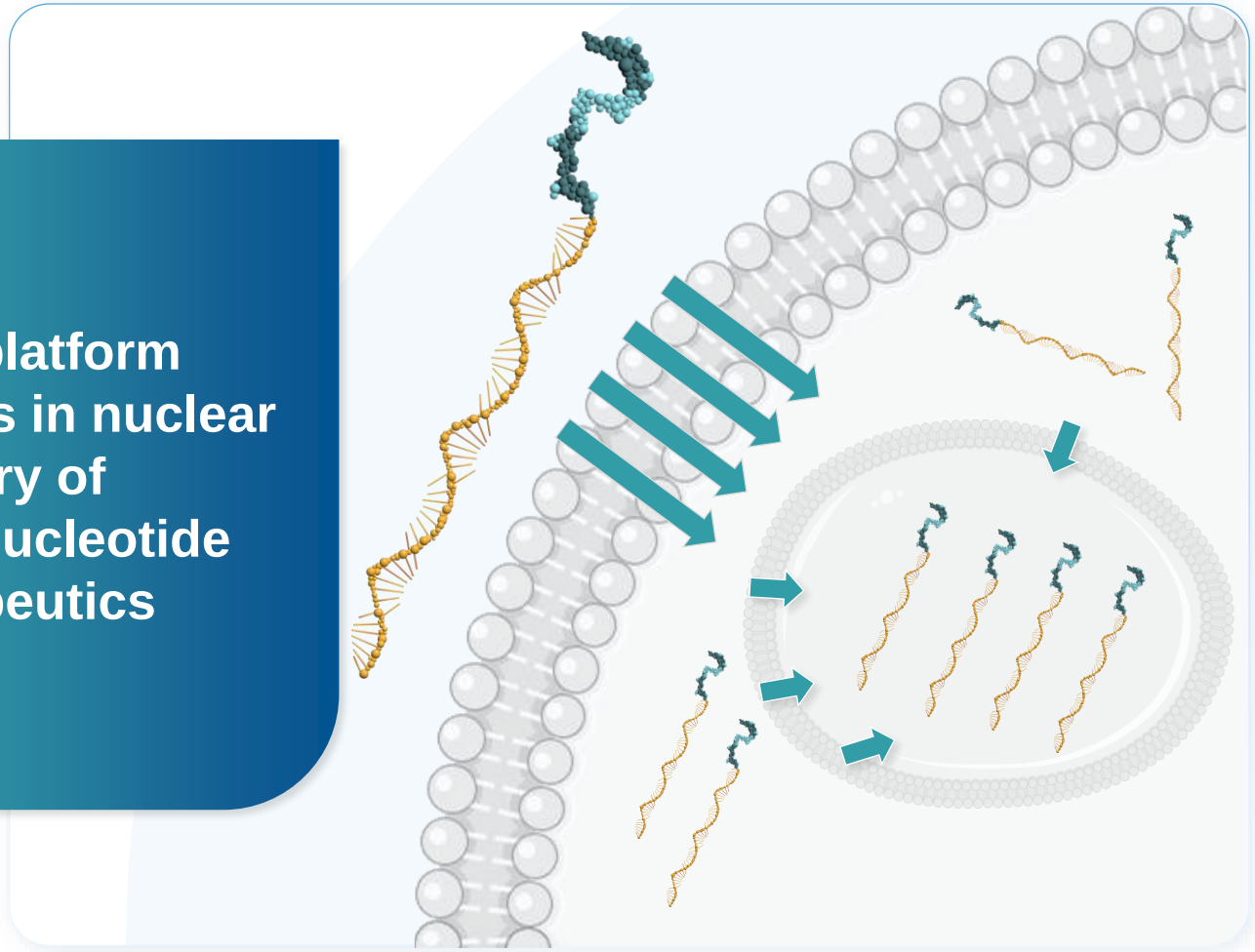
Naked Oligonucleotide (PMO)



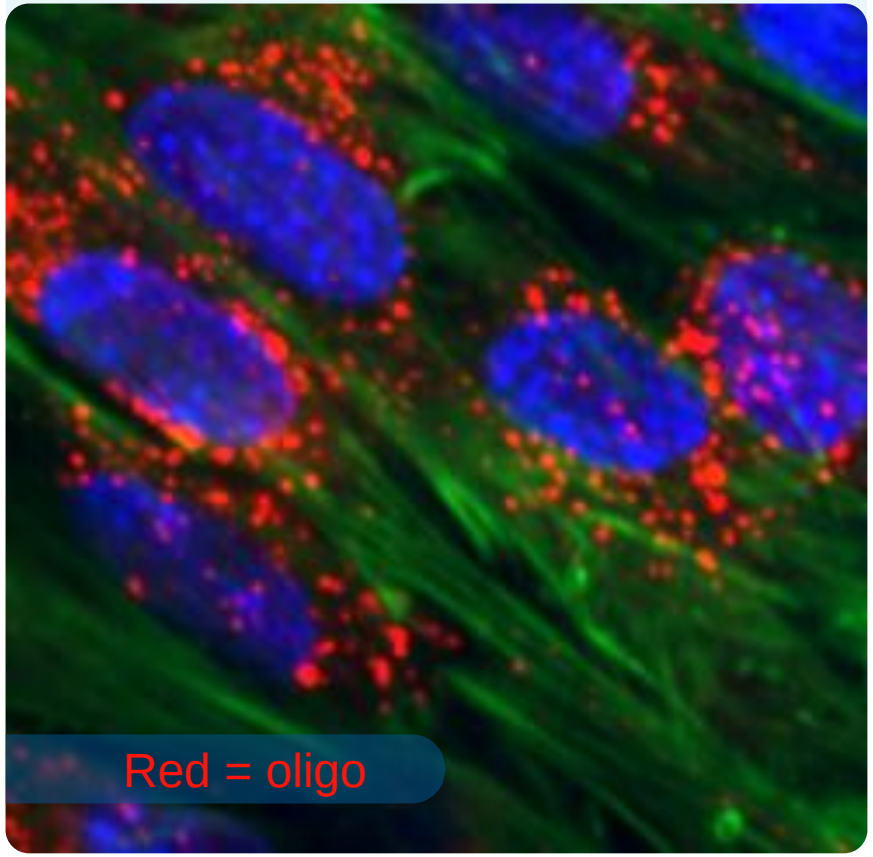
In vitro staining image is shown with 10µM concentration of PMO23 (naked oligonucleotide). C2C12 mouse cells were differentiated for 4 days into myotubes and treated with fluorescently tagged compounds for 24h. PMO: phosphorodiamidate morpholino oligonucleotide

PepGen's EDO Platform Has Been Designed and Developed to Solve this Decades Long Problem

EDO platform results in nuclear delivery of oligonucleotide therapeutics



PepGen's EDO: Up to 25X Higher Nuclear Uptake of Oligonucleotide



In vitro staining image is shown with 10µM conc. of EDO23. C2C12 mouse cells were differentiated for 4 days into myotubes and treated with fluorescently tagged compounds for 24h.

EDO Technology Has Been Shown to Increases Cellular Uptake and Endosomal Escape up to 24-Fold

PMO Delivery in Cells

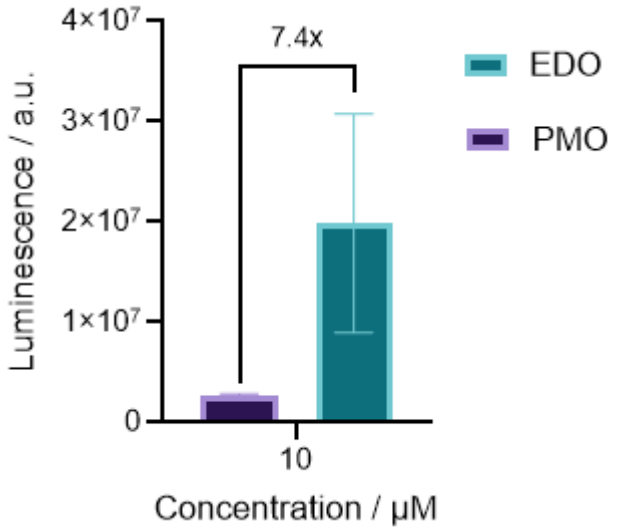
HeLa cells

HOURS:

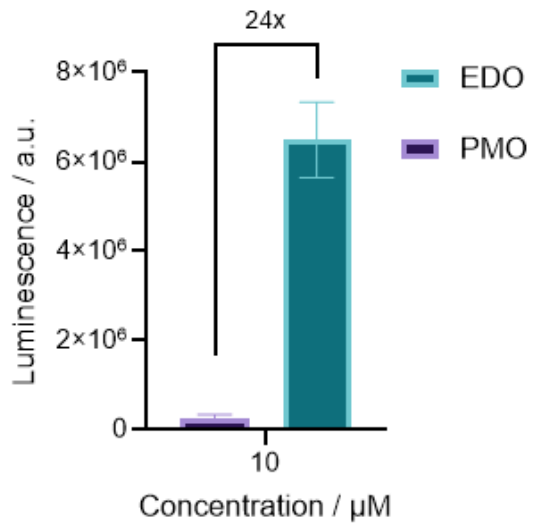
0 24

- PMO or PPMO dose
- Tissue analysis

TOTAL CELLULAR UPTAKE

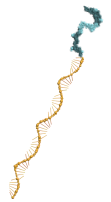


ENDOSOMAL ESCAPE



PMO
(no peptide)

EDO
(peptide with hydrophobic core)



Cells were treated with 0.1 to 20 µM HiBiT-conjugate for 24 h. Following live cell measurement, 0.01% digitonin was added and cells were incubated for 30 min at 37°C. Mean luminescence is shown relative to HiBiT peptide at matched concentration (± s.d., n=3). PMO: phosphorodiamidate morpholino oligonucleotide.

PGN-EDODM1 for DM1

Myotonic Dystrophy Type 1 Overview and Unmet Medical Need

Overview

- CUG expansion in the *DMPK* gene
- Onset of symptoms variable-childhood to adulthood
  - Myotonia
  - Muscle weakness
  - Cardiac arrythmias
  - Loss of lung function
  - Fatigue
- Average life expectancy is 50-60 years for non-congenital forms of DM1

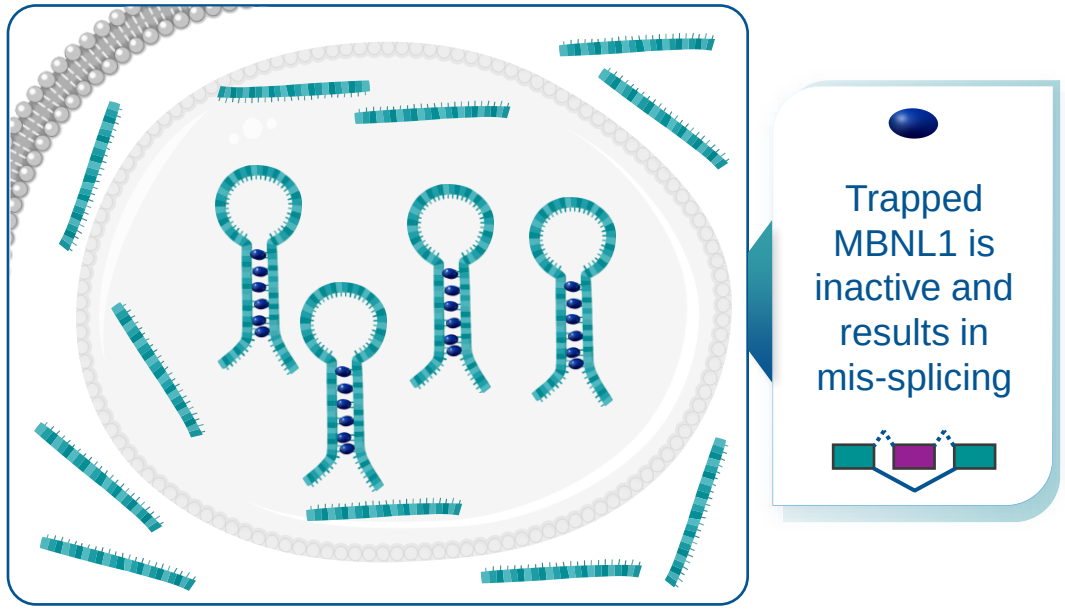
Market Opportunity

- US and EU over 110,000 patients
- No approved therapies that address underlying cause of the disease

Sources: Neuroepidemiology (2022) 56 (3): 163–173., Neurology 2021 Feb 16;96(7):e1045-e1053
CUG: cytosine-uracil-guanine; *DMPK*: dystrophia myotonica protein kinase

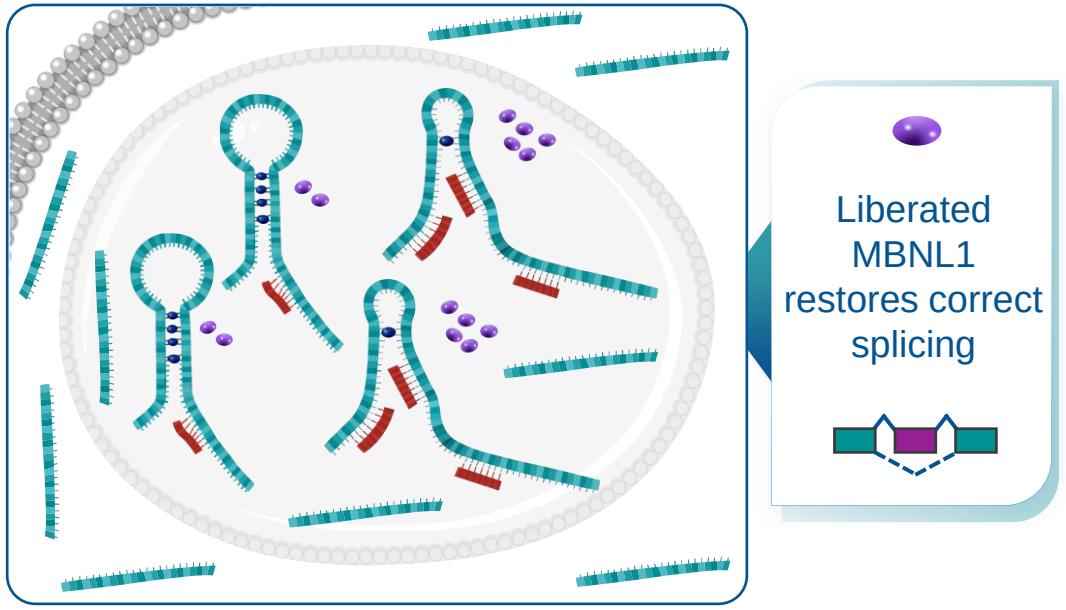
PGN-EDODM1 Blocking Approach Targets the Pathogenic CUG^{exp} Repeats *DMPK* RNA

DM1 is caused by pathogenic *DMPK* transcripts



- DM1 is caused by pathogenic *DMPK* transcripts containing CUG^{exp} repeat sequences that form hairpin loops
- These hairpin loops trap MBNL1 proteins that are needed for correct splicing of mRNAs

PGN-EDODM1 binds selectively to the pathogenic *DMPK* transcript



- PGN-EDODM1 binds selectively to the pathogenic *DMPK* transcript
- This reduces the ability of the CUG^{exp} repeats to form hairpin loops and sequester RNA splicing proteins

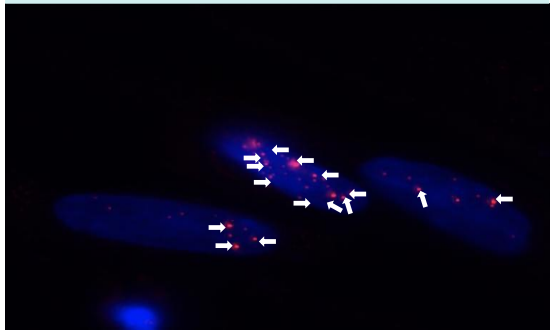
DMPK transcript | Bound MBNL1 (inactive) | PGN-EDODM1 | Free MBNL1 (active)

Wojciechowska, et al., Quantitative Methods to Monitor RNA Biomarkers in Myotonic Dystrophy, *Nature*, April 12, 2018

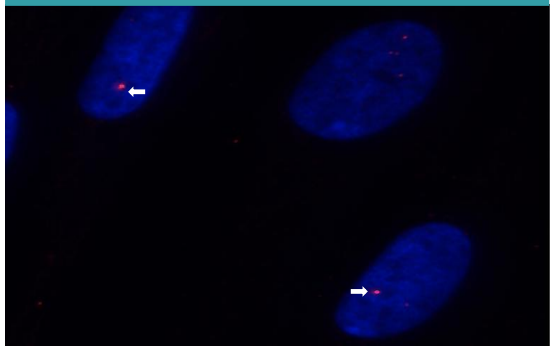
PGN-EDODM1 Reduced Pathogenic Nuclear Foci, Liberated MBNL1 and Corrected Mis-Splicing in Patient Cells with Long CUG Repeats

Foci Reduction

Not Treated



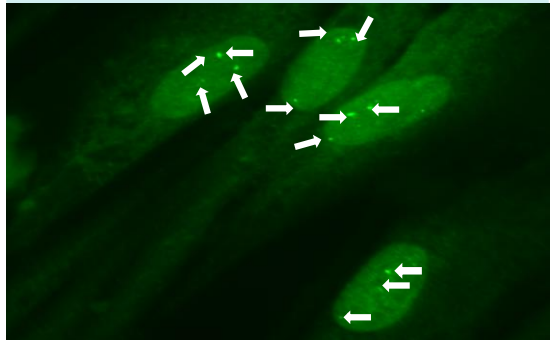
PGN-EDODM1 Treated



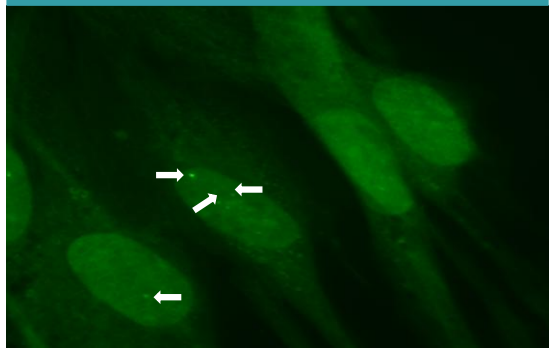
54%
reduction in toxic foci

MBNL1 Liberation

Not Treated



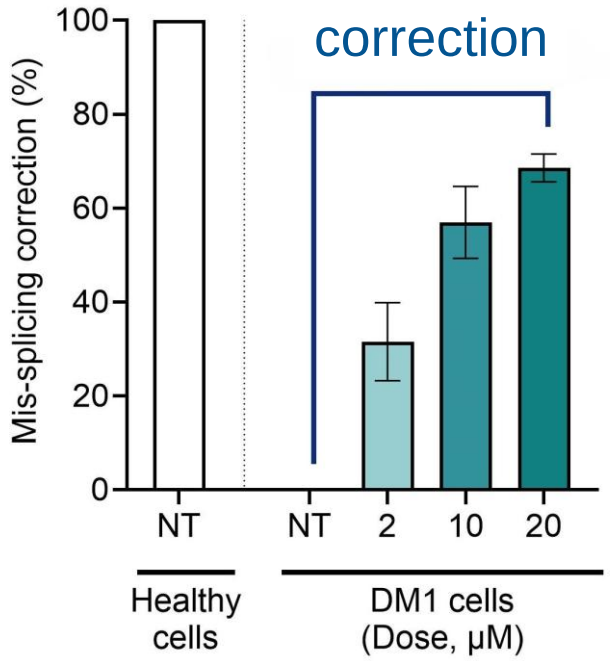
PGN-EDODM1 Treated



Mis-Splicing Correction

Across multiple transcripts

69%
correction

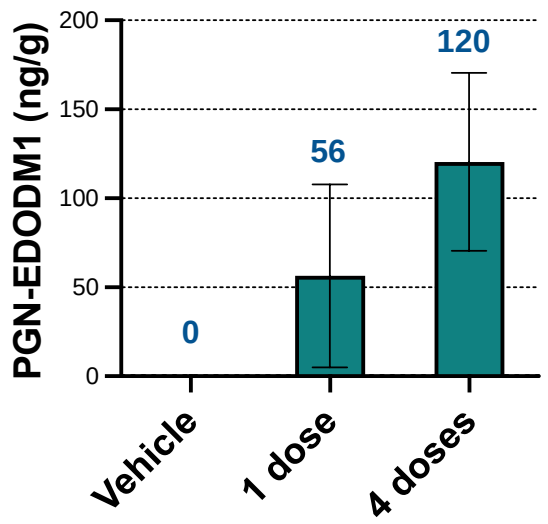


Immortalized myoblasts from healthy individual or DM1 patient with 2600 CTG repeats were cultured then differentiated for 4 days into myotubes. Treatment with peptide-PMO conjugates at concentrations given. Cells were harvested for analysis 24h after treatment. RNA isolation, RT-PCR and capillary electrophoresis (QIAxcel) analysis were performed. Visualization with FISH and immunofluorescence microscopy. Mean ± SD; n = 5 per group.

Multiple Doses of PGN-EDODM1 Led to Greater Improvement in Splicing Correction and Myotonia vs Single Dose in Preclinical Studies

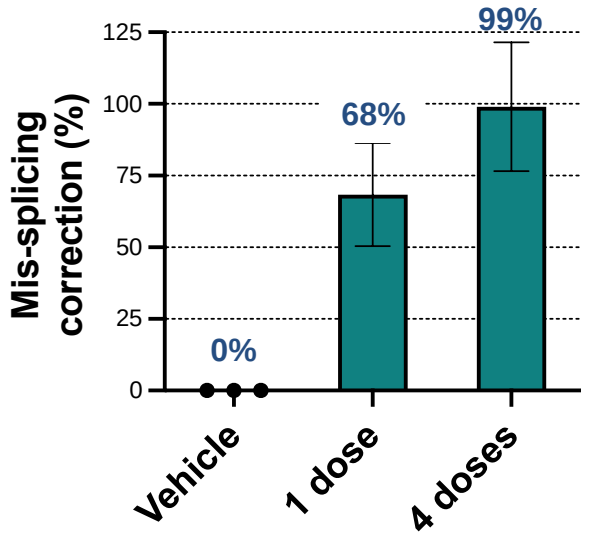
Tissue Concentration

Skeletal muscle



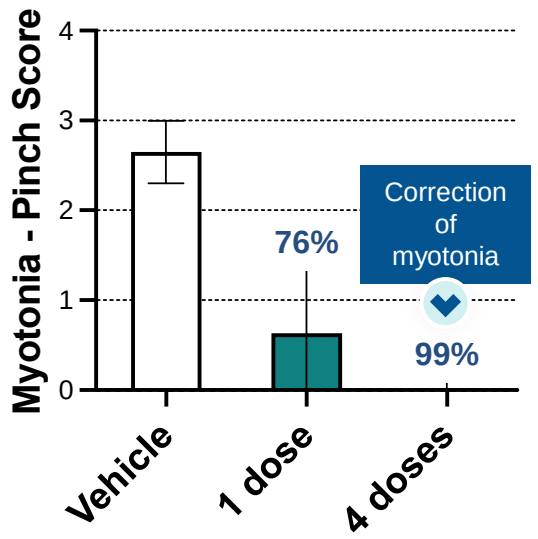
Mis-Splicing Correction

Across multiple transcripts



Correction of Myotonia

Pinch test



Protocol: HSA^{LR} mice received 1 or 4 doses of PGN-EDODM1, with 4-week intervals between doses. Skeletal muscle tissues were collected 4 weeks post-final dose. Skeletal muscle tissue concentration was measured by fluorescent based HPLC method. Graph is presented as mean ± SD; n = 8-12 per cohort. Mis-splicing analysis considers multiple transcripts. Graph is presented as mean ± SD; n = 8-12 per cohort per transcript. Action myotonia evaluation (pinch test) was performed 4 weeks post-final dose. Grade 3 = Clear sign of myotonia strong AND reproducible, Grade 2 = Clear sign of myotonia, strong OR reproducible, Grade 1 = Clear sign of myotonia but non reproducible, Grade 0 = No sign of myotonia. Graph is presented as mean ± SD; n = 12-43 per cohort.

FREEDOM: Phase 1 PGN-EDODM1 Single-Ascending Dose Study Design

Freedom
DM1

FREEDOM Study Overview

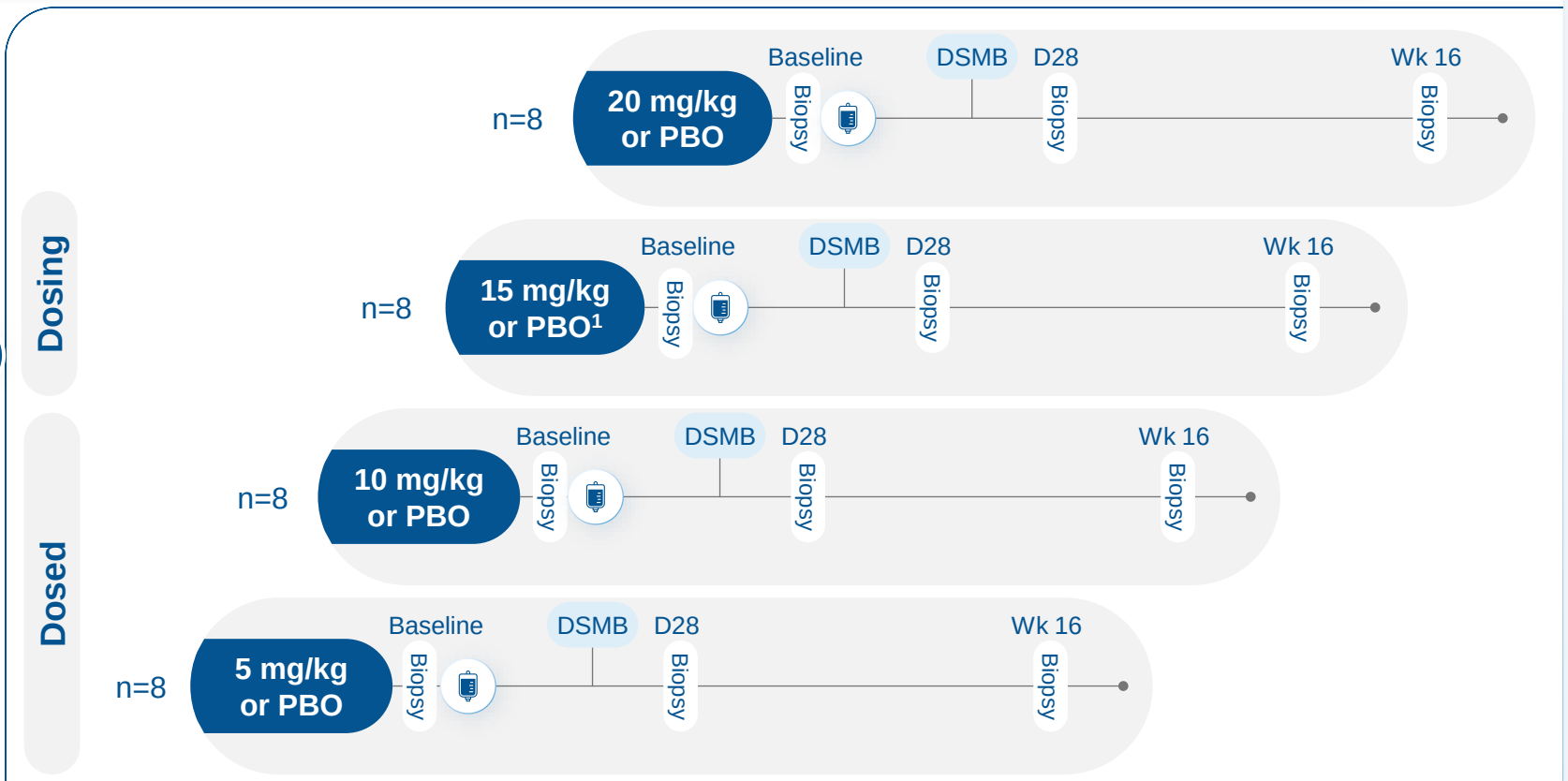
Multinational, randomized, double-blind, placebo-controlled SAD study in patients

Single IV administration of PGN-EDODM1

Muscle biopsies in tibialis anterior at Baseline, Day 28, Week 16

Safety, PK, correction of mis-splicing, initial functional assessments

Single Dose PGN-EDODM1 or Placebo (randomized 3:1)



1.15 mg/kg cohort added to expand pharmacokinetic and pharmacodynamic understanding
DSMB: data safety monitoring board; IV: intravenous; PBO: placebo; SAD: single-ascending dose; PK: pharmacokinetics

PepGen™

PGN-EDODM1 dose

FREEDOM: Demographics and Baseline Characteristics in First Two Cohorts

	Mean (SD) or n (%)		
	Placebo (n=4)	5 mg/kg (n=6)	10 mg/kg (n=6)
Age (years)	39.0 (10.9)	36.3 (9.0)	34.7 (8.2)
Female, n (%)	3 (75%)	3 (50%)	3 (50%)
BMI (kg/m^2)	20.0 (3.3)	22.8 (5.0)	22.8 (5.7)
Splicing Index	72.3 (16.3)	73.7 (15.2)	53.6* (26.0)
vHOT – middle finger (sec)	14.1 (5.6)	12.6 (7.3)	9.3 (2.8)
10MWRT (sec)	4.3 (1.6)	3.9 (1.5)	4.4 (1.5)

*n=5 as one participant's sample showed splicing index outside the pre-specified assay range at Baseline (no detectable mis-splicing)
Splicing Index (SI) Mild = 0–0.4, SI Moderate = 0.41–0.75, and SI Severe = 0.76–1.0. Provenzano, et al.
SD: standard deviation; BMI: body mass index; PBO: placebo; vHOT: video hand opening time; 10MWRT: 10-meter walk run test

Favorable Emerging Safety Profile of PGN-EDODM1[1]

Summary of Treatment Emergent Adverse Events (TEAEs)	5 mg/kg (n=8)[2] n(%)	10 mg/kg (n=8)[2] n(%)
Any related TEAE	1 (13)	3 (38)
• Mild/Moderate • Severe	1 (13) 0	2 (25) 1 (13)
Any Serious Adverse Event (SAE)	1 (13)	2 (25)
Any related SAE	0	1 (13)
Any TEAE leading to study withdrawal, dose modification or dose interruption	0	0
Any TEAE leading to death	0	0

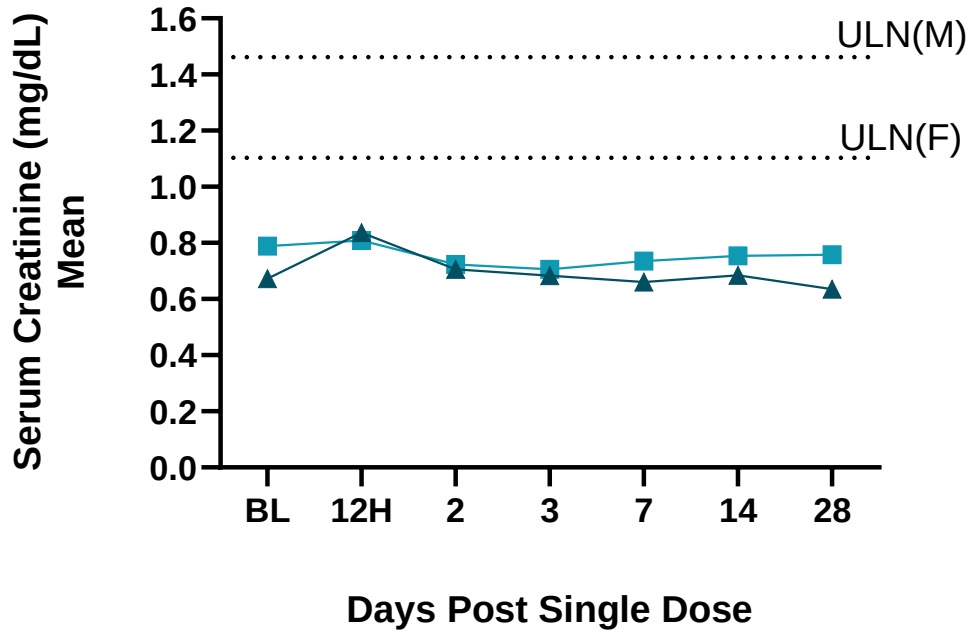
PGN-EDODM1 was Generally Well-Tolerated

- Treatment-related TEAE reported in >1 participant was nausea
- SAE related to study drug:
  - Abdominal pain (10 mg/kg) potentially confounded by use of prohibited, off-label drug taken on the morning of PGN-EDODM1 dosing[3]
- SAEs unrelated to study drug:
  - Appendicitis (5 mg/kg)
  - Right anterior tibial artery pseudoaneurysm (10 mg/kg) in connection with biopsy procedure
- No adverse events related to electrolytes or renal biomarkers

1. As of December 3, 2024
2. Includes all participants (placebo and PGN-EDODM1 treated); cohorts remain blinded
3. Data Safety Monitoring Board reviewed event and recommended continuation of study/dosing

PGN-EDODM1 Demonstrated Normal Mean Serum Creatinine Levels

Serum Creatinine

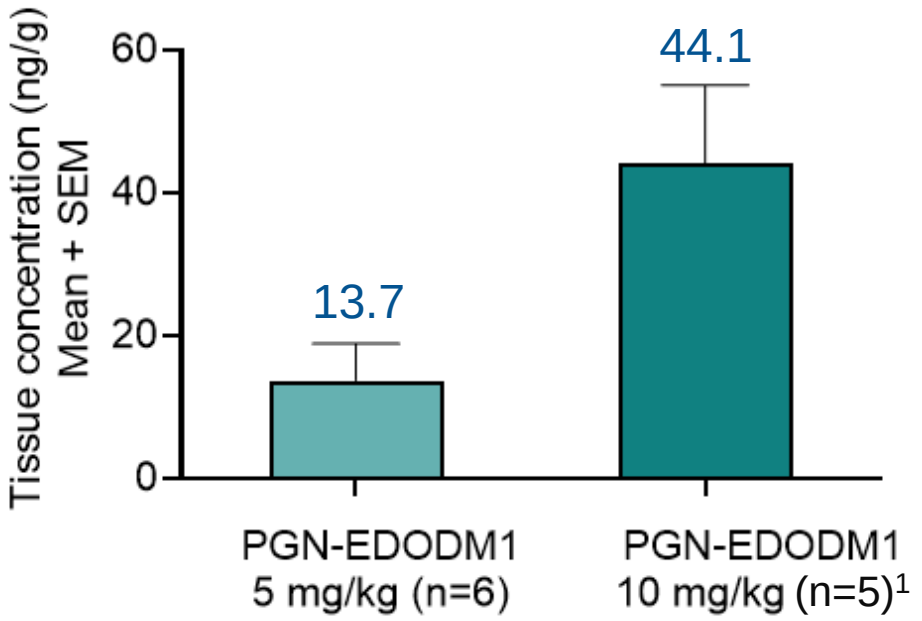


All participants in both cohorts remained below ULN

1. Includes all participants (placebo and PGN-EDODM1 treated); cohorts remain blinded
BL: baseline; ULN: upper limit of normal; M: male; F: female

PGN-EDODM1 Observed to Have Robust and Dose-Dependent Increase in Muscle Tissue Concentration Following Single Dose

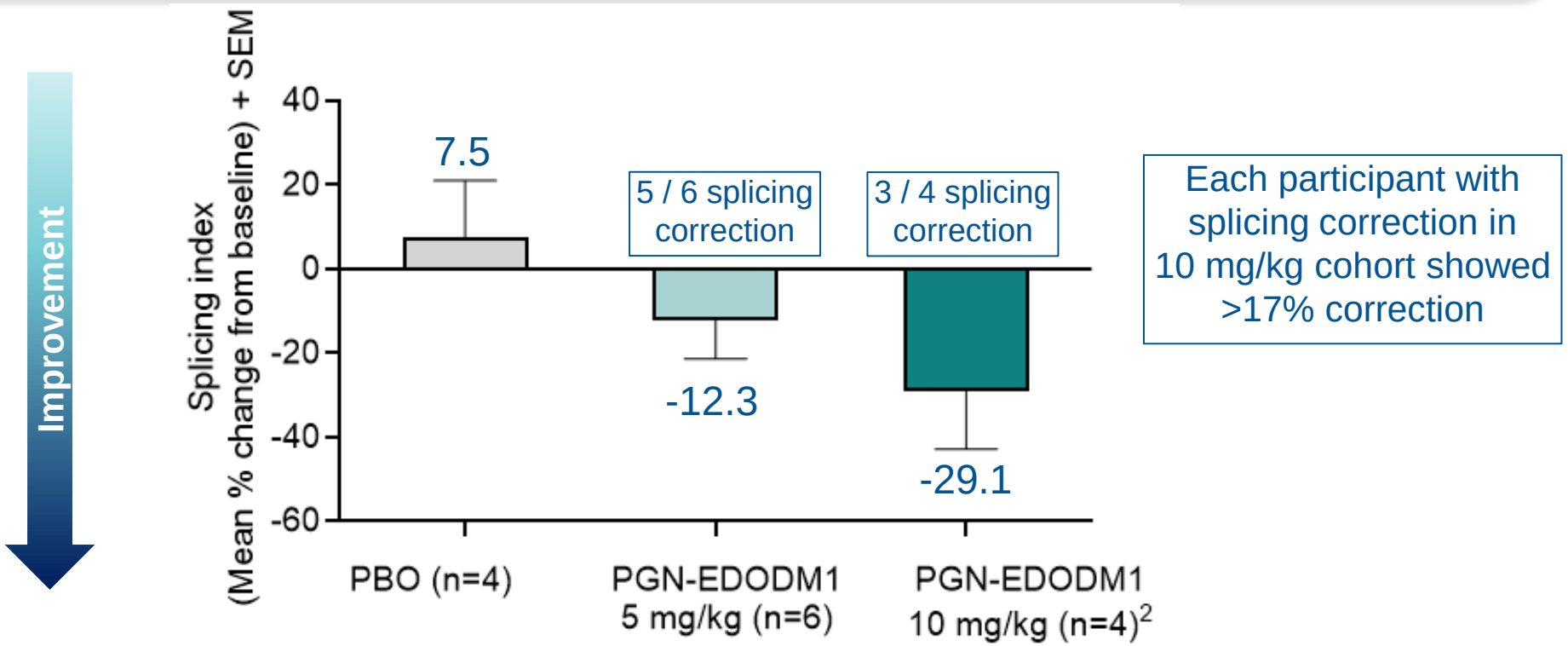
Muscle Tissue Concentration at D28



1. One participant's biopsy was not collected at Day 28 due to pseudoaneurysm in connection with biopsy procedure
SEM: standard error of the mean; Placebo tissue concentration was below level of quantification

PGN-EDODM1 Produced Mean 29% Splicing Correction Following Single 10 mg/kg Dose

Splicing Index Changes: 22-Gene Panel[1] at D28

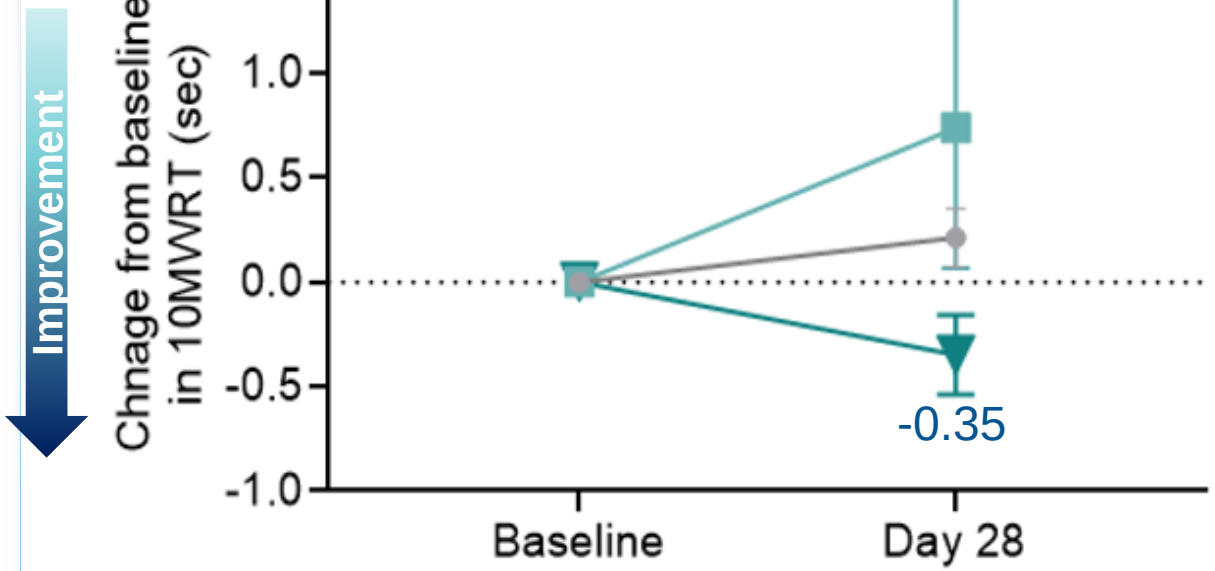


Each participant with splicing correction in 10 mg/kg cohort showed >17% correction

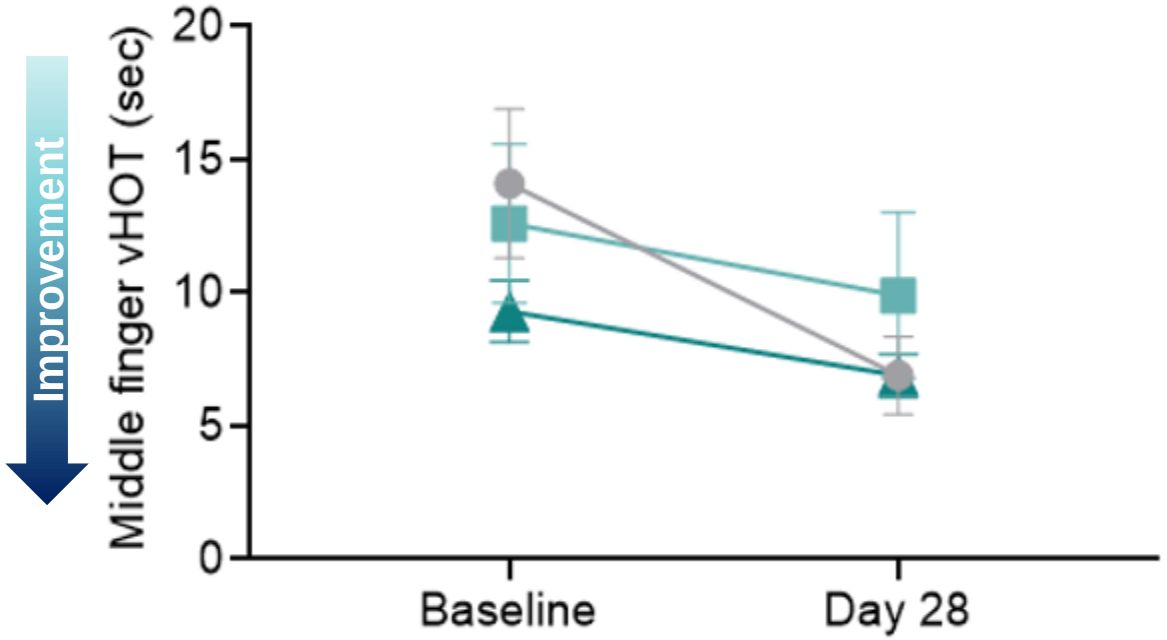
1. Provenzano et al., The Splice Index as a prognostic biomarker of strength and function in myotonic dystrophy type 1, *J Clin. Invest*. 2025
2. In 10 mg/kg cohort: One participant's biopsy was not collected at Day 28 due to pseudoaneurysm in connection with biopsy procedure and one participant's sample showed splicing index outside the pre-specified assay range at Baseline and Day 28 (no detectable mis-splicing) and was excluded from the analysis.

Functional Outcomes Data After Single Dose

10-Meter Walk Run Test (10MWRT) at D28



Myotonia (vHOT) at D28



PBO (n=4)
PGN-EDODM1 5 mg/kg (n=6)
PGN-EDODM1 10 mg/kg (n=6)

vHOT: video hand opening time

PGN-EDODM1 Selectively Targets Only Pathogenic *DMPK* to Correct RNA Mis-Splicing

Favorable emerging safety profile[1] in patients with myotonic dystrophy type 1

Dose-dependent increase in drug **tissue concentration** observed in first two cohorts

Dose-dependent increases in evaluable patients[2] in mean **splicing correction** following single dose

~29% at 10 mg/kg

~12% at 5 mg/kg

1. Through February 24, 2025
2. Two participants in the 10 mg/kg cohort were excluded from the splicing correction assay. One participant's biopsy was not collected at Day 28 and the other participant's splicing index values were outside of the pre-specified assay range, both at Baseline and at Day 28.

FREEDOM2 Phase 2 MAD Study Underway

Freedom 2
DM1

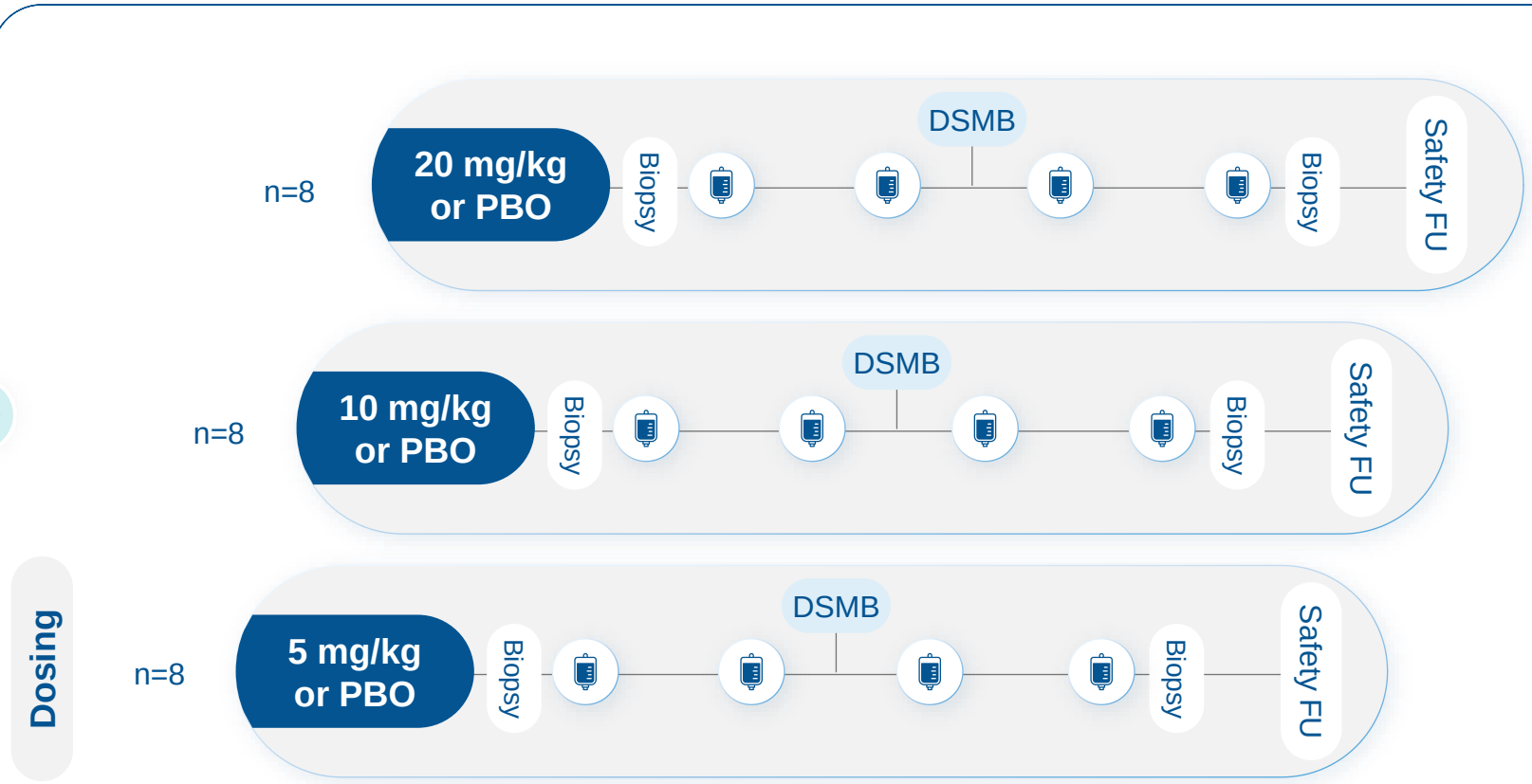
FREEDOM2 Study Overview

Multinational, randomized, double-blind, placebo-controlled, MAD study open in UK and Canada

IV administration of PGN-EDODM1 or placebo every 4 weeks for a period of 12 weeks

Key endpoints: Safety, PK, correction of splicing, functional assessments: vHOT, hand grip, 10-meter walk run test

4 Doses of PGN-EDODM1 or Placebo (randomized 3:1)



DSMB: data safety monitoring board; FU: follow-up; IV: intravenous; MAD: multiple-ascending dose; PBO: placebo; PK: pharmacokinetics; vHOT: video hand opening test

PGN-EDODM1 dose every 4 weeks

PGN-EDO51 for DMD

Duchenne Muscular Dystrophy (DMD) Overview and Unmet Medical Need

Overview

- Caused by mutations in dystrophin gene resulting in progressive muscle damage
- Onset of symptoms in early childhood
  - Loss of ambulation by early adolescence
  - Loss of respiratory and cardiac function resulting in early adulthood mortality

Market opportunity

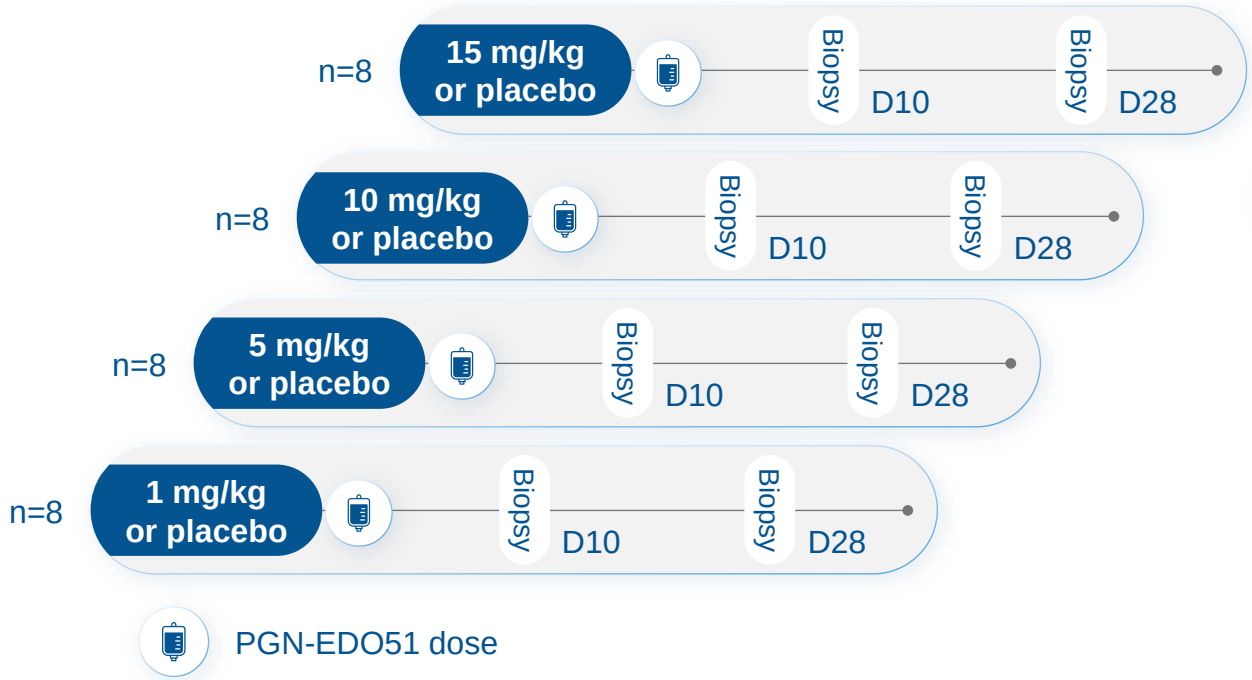
- US and EU ~40,000 patients
- ~13% of patients amenable to exon 51 skipping approach
- Novel therapies needed to restore functional dystrophin and prevent loss of muscle function and early mortality

Source: https://www.cureduchenne.org/cure/exon-skipping/.

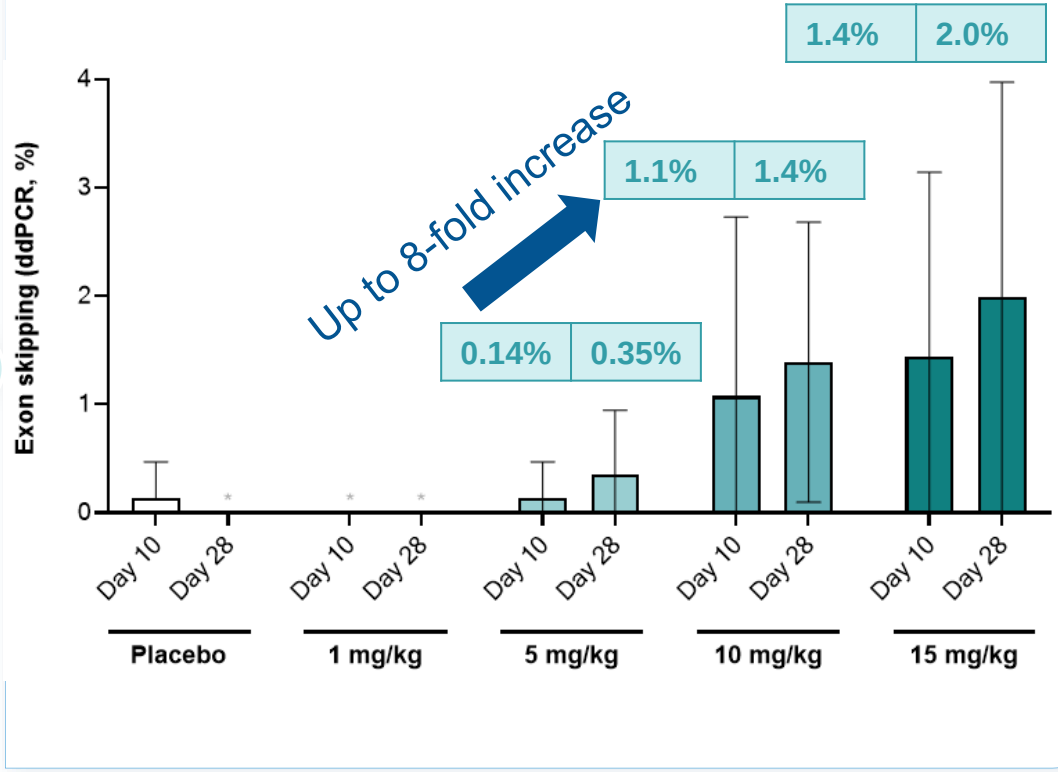
Healthy Volunteer Study Results Led to CONNECT1: Robust Exon 51 Skipping in Humans Following Single Dose of PGN-EDO51

Phase 1 Healthy Volunteer (HV) Trial Design

- Study population: Healthy adult males (N=32; 8 per cohort, 3:1 PGN-EDO51:placebo)
- Dosing: Single dose, IV administration
- Biceps biopsies conducted on Day 10 and Day 28



Trial Results: Exon Skipping (Biceps)



Protocol PGN-EDO51-101: Phase 1, first in human, randomized double blind, placebo controlled, single ascending dose study in healthy adult volunteers. Single dose of either PGN-EDO51 or placebo administered by IV infusion at doses indicated. Participants were followed for 28-day period following dose administration to evaluate safety, tolerability, pharmacokinetics, and pharmacodynamics. Needle biopsies of biceps muscle were taken on Days 10 and 28. Exon skipping measured by ddPCR. Shown as mean ± SD; n = 6 PGN-EDO51: 2 placebo per cohort (n=5 for D10 at 15 mg/kg). Asterisk indicates values that were under the lower level of quantification.

CONNECT1: Designed to Establish Proof-of-Concept and Inform CONNECT2 Clinical Trial Design

Connect 1
EDO51

CONNECT1 Study Overview

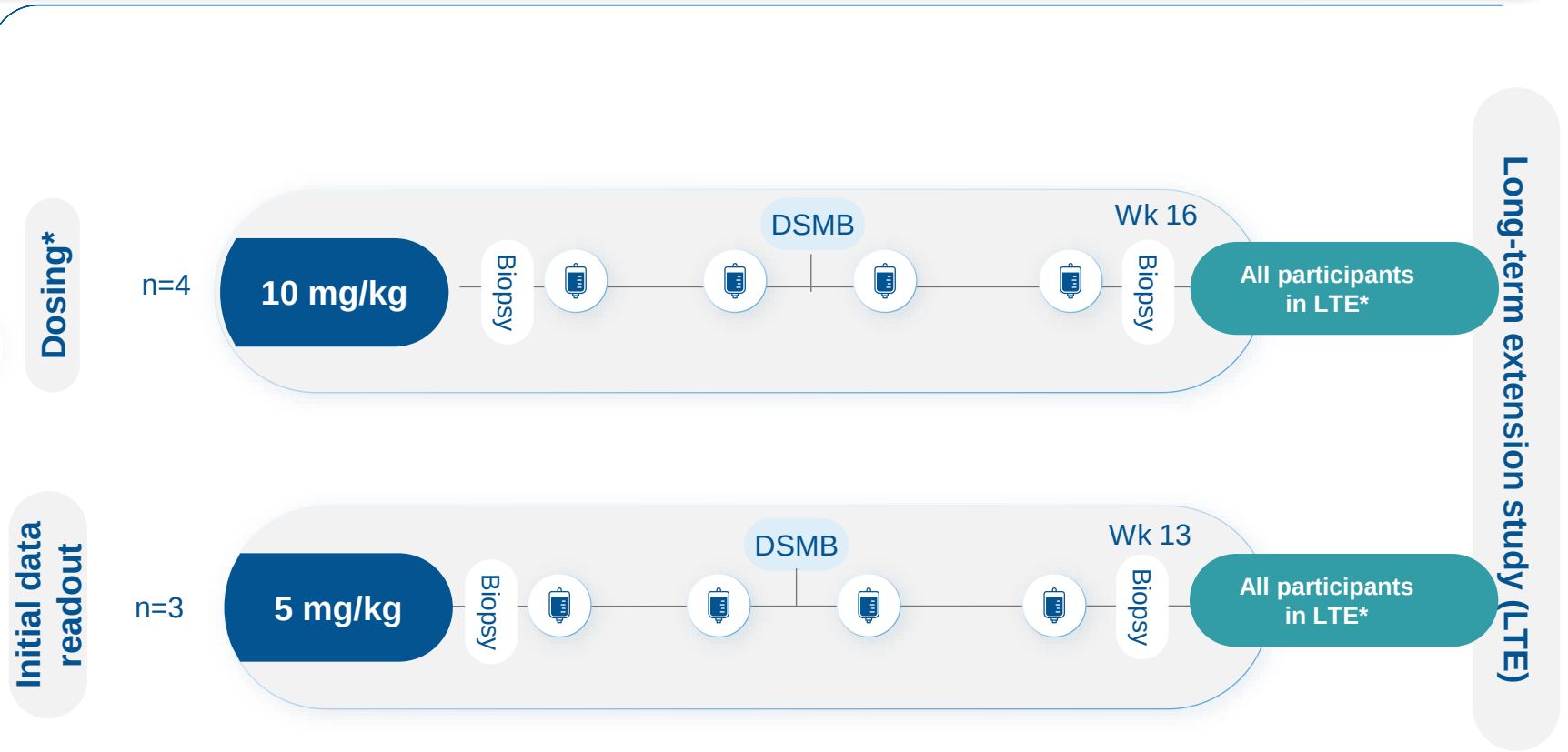
Open label, multiple ascending dose (MAD) clinical trial in Canada

DMD patients with exon 51 skippable mutation

Ages 6-16, ambulatory and non-ambulatory

Key endpoints: Safety and tolerability, dystrophin production, muscle tissue concentration of PGN-EDO51, exon skipping

Open Label Study in Patients with DMD Amenable to Exon 51 Skipping Therapy



* Dosing remains ongoing in the 5 mg/kg LTE and 10 mg/kg groups without further escalations at this time; data collection remains ongoing. Dose interruption for 1 participant at 10 mg/kg.

DSMB: data safety monitoring board

PGN-EDO51 dose every 4 weeks

CONNECT1 5 mg/kg: Baseline Characteristics of Participants (n=3)

	Mean (SD)
Age (years)	11.7 (1.5)
BMI (kg/m^2)	19.8 (2.7)
Height (cm)	132.0 (9.9)
Weight (kg)	34.4 (3.9)
Age of DMD genetic diagnosis (years)	6.3 (1.5)
Number of patients on daily corticosteroid dosing regimen	3
Number of ambulatory patients	3
Number of patients previously on DMD therapy	0

Favorable Emerging Safety Profile of PGN-EDO51[1]

Summary of Treatment Emergent Adverse Events (TEAEs)	5 mg/kg (n=3) n(%)	10 mg/kg (n=4) n(%)
Any related TEAE	2 (67)	3 (75)
• Mild//Moderate • Severe	2 (67) 0	3 (75) 0
Any SAE	0	0
Any TEAE leading to study withdrawal, dose modification or dose interruption	0	1 (25)
Any TEAE leading to death	0	0
Total number of doses administered	40	17

All Treatment-Related Adverse Events Have Been Mild

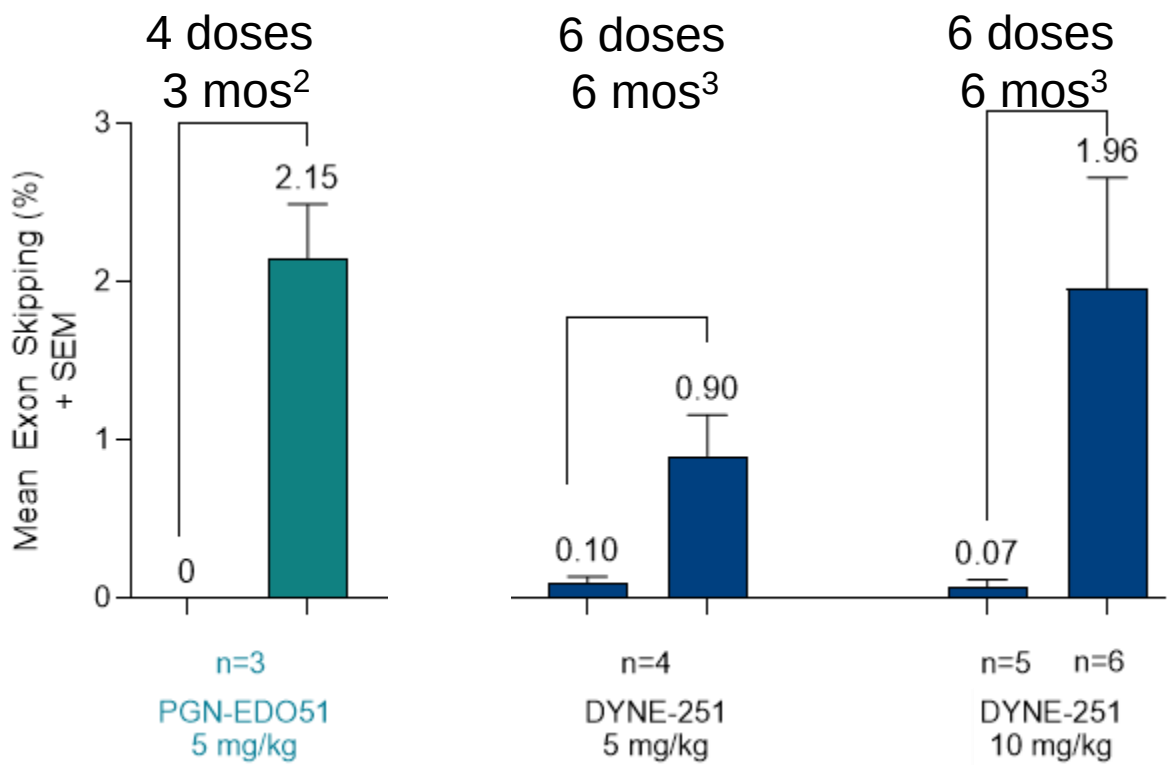
- Treatment-related TEAEs reported in >1 participant were nausea, vomiting and hypomagnesemia
- Asymptomatic hypomagnesemia (two 10 mg/kg participants) resolved with low-dose oral magnesium supplementation
  - Dose interruption due to low eGFR in 1 of the 2 participants which is resolving; the participant remains on study. Nuclear scan showed eGFR is in normal range
- No sustained elevation in kidney biomarkers
- No hypokalemia, anemia or thrombocytopenia

1. As of January 23, 2025

SAE: serious adverse event; eGFR: estimated glomerular filtration rate

PGN-EDO51 Showed High Levels of Mean Exon Skipping[1]

Exon Skipping

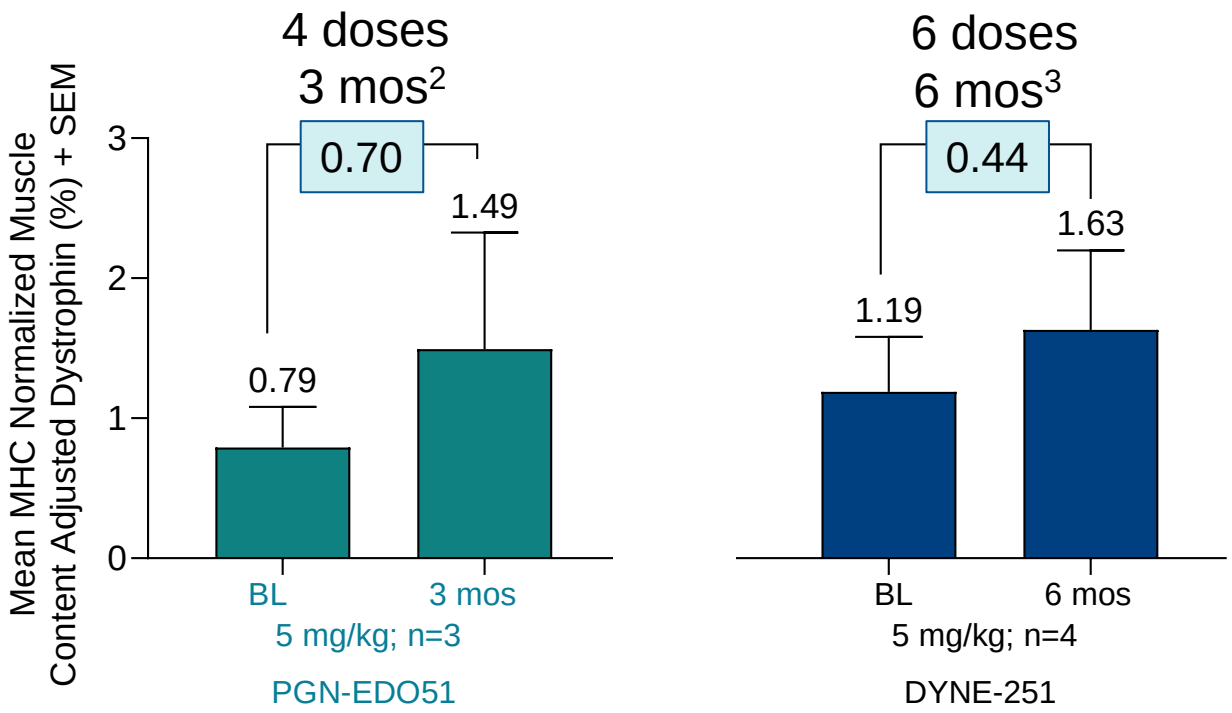


2. PGN-EDO51 muscle biopsy taken approximately 7 days after last dose
3. DYNE-251 muscle biopsy taken approximately 28 days after last dose

1. No head-to-head trials have been conducted comparing PGN-EDO51 to DYNE-251. Data from studies of these clinical candidates may not be directly comparable due to differences in molecule composition, trial protocols, dosing regimens, and patient populations and characteristics. Accordingly, cross-trial comparisons may not be reliable. DYNE-251 DELIVER clinical data update, May 20, 2024. Note: DYNE-251 error bars estimated based on public presentations.

PGN-EDO51 Produced Greater Muscle Content Adjusted Dystrophin Increase in Half the Treatment Duration and Fewer Doses[1]

Muscle Content Adjusted Dystrophin

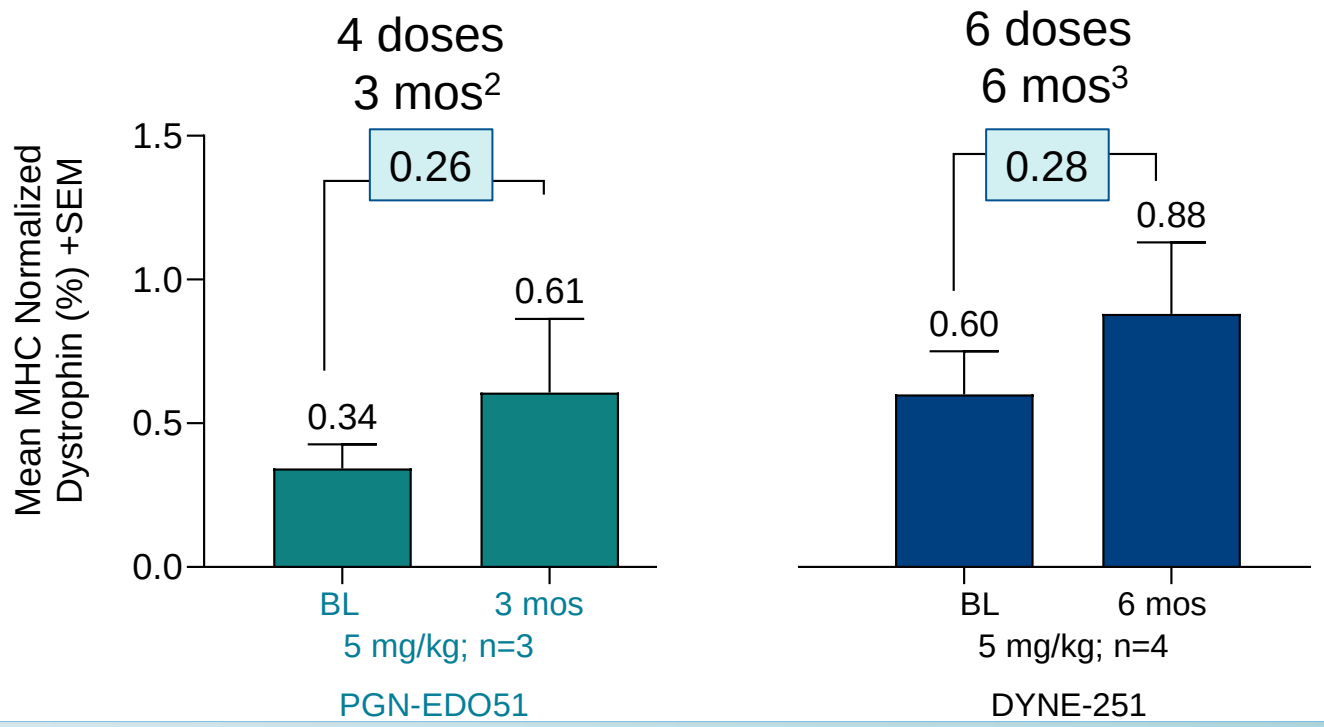


2. PGN-EDO51 muscle biopsy taken approximately 7 days after last dose
3. DYNE-251 muscle biopsy taken approximately 28 days after last dose

1. No head-to-head trials have been conducted comparing PGN-EDO51 to DYNE-251. Data from studies of these clinical candidates may not be directly comparable due to differences in molecule composition, trial protocols, methodologies for calculating muscle content adjusted dystrophin, dosing regimens, and patient populations and characteristics. Accordingly, cross-trial comparisons may not be reliable. DYNE-251 DELIVER clinical data update, May 20, 2024. Note: Dyne-251 error bars estimated based on public presentations.

PGN-EDO51 Produced Similar Dystrophin Increase in Half the Treatment Duration[1]

Total (Unadjusted) Dystrophin



2. PGN-EDO51 muscle biopsy taken approximately 7 days after last dose
3. DYNE-251 muscle biopsy taken approximately 28 days after last dose

1. No head-to-head trials have been conducted comparing PGN-EDO51 to DYNE-251. Data from studies of these clinical candidates may not be directly comparable due to differences in molecule composition, trial protocols, dosing regimens, and patient populations and characteristics. Accordingly, cross-trial comparisons may not be reliable.DYNE-251 DELIVER clinical data update, May 20, 2024. Note: Dyne-251 error bars estimated based on public presentations.

CONNECT1 Key Preliminary Takeaways

- Observed favorable emerging safety profile[1]
- All patients dosed at 5 mg/kg demonstrated increased exon skipping and dystrophin production and have continued into the long-term extension study
- PGN-EDO51 generated encouraging levels of muscle adjusted dystrophin production (0.70%) and total dystrophin production (0.26%) after just 3 months and 4 doses at 5 mg/kg
- PGN-EDO51 produced high levels of mean exon 51 skipping (2.15%) after just 3 months and 4 doses at 5 mg/kg
- Initial results support that our EDO technology has the potential to deliver high levels of oligonucleotides to the nucleus

We believe potentially higher levels of dystrophin production are expected with higher doses of PGN-EDO51 over longer treatment periods

1. For the 5 mg/kg and 10 mg/kg cohorts, as of January 23, 2025

Conclusions

Key Anticipated Milestones Ahead

Key Expected Data Readouts/ Milestones

Freedom

- **2H 2025:** FREEDOM 15 mg/kg clinical results
- **Q1 2026**: FREEDOM2 5 mg/kg clinical results

Connect

- **Q3 2025:** CONNECT1 10 mg/kg clinical results