The Vision DMD Project. Development of an Innovative Steroid-like Intervention on Duchenne Muscular Dystrophy

R.Head, C. Olsen (Ceratium); E. Hoffman (Reveragen); K. Bushby, R Davis, M. Guglieri (University of Newcastle); E. Vroom, D. Athanasiou (UPPMD); L. Morgenroth (CINRG); J. Haberlova (Fakultni Nemocnice V Motole).

Presenter Contact:
ritchie.head@ceratium.eu

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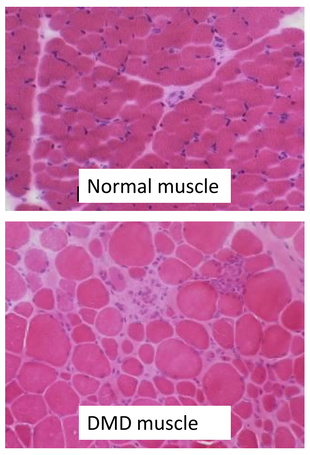
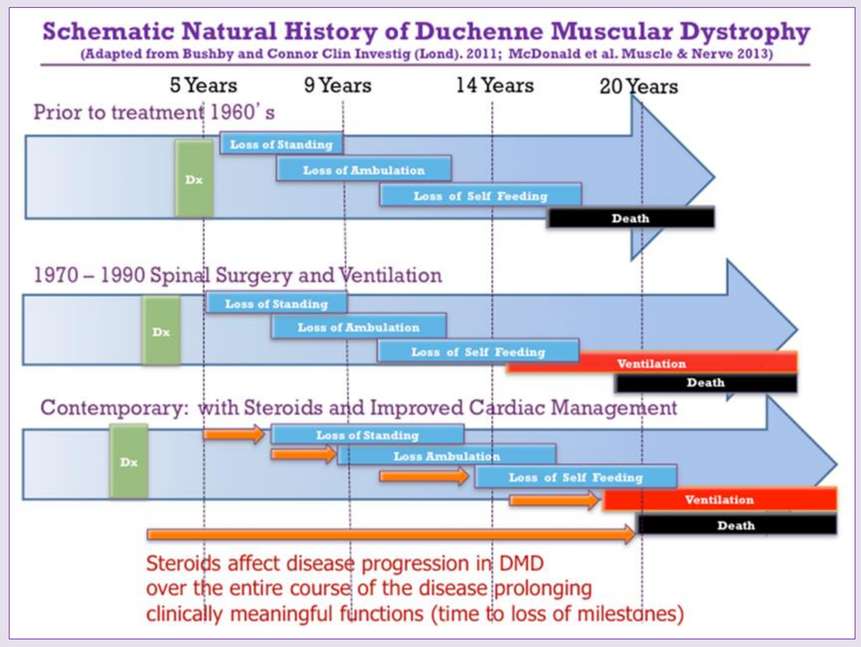
The Disease: Duchenne Muscular Dystrophy

- A very severe rare disease
- Affects 1 in 3500-5000 male births
- Affects very few girls
- Diagnosis is usually between 4 and 6 years of age
- A genetic change in a persons DNA causes a defect resulting in a lack of dystrophin - an essential protein for the muscles
- Muscles progressively deteriorate turning to fat and scar tissue
- Muscles become weaker as they deteriorate and eventually stop working





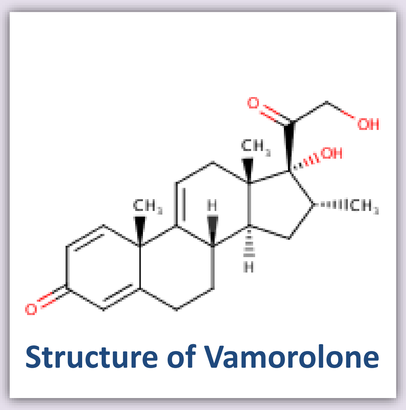
VISION-DMD aims to advance clinical development of the orphan drug vamorolone (VBP15), through Phase 2 trials, as a new therapy to REVOLUTIONISE care for patients with Duchenne muscular dystrophy (DMD)

Corticosteroids – Standard of Care for DMD

- Corticosteroids are the only treatment currently available to delay the natural course of the disease [off label];
- Corticosteroids improve muscle strength, prolong ambulation, delay respiratory and orthopaedic complications and prolong survival;
- Corticosteroids are a treatment option for all DMD patients regardless of the mutation causing the disease.

BUT Steroids have a problem

- **Severe side effects reduce use**
- **Restricts treatment options**
- **Global acceptance is variable**



Structure of Vamorolone

Answer: Vamorolone – a Designer Drug

- ✓ an innovative steroid-like drug
- ✓ designed to retain or improve corticosteroid efficacy
- ✓ provides increase membrane stabilization
- ✓ reduced or no side effects
- ✓ Better safety as transactivation (transcriptional activities) removed
- ✓ increase the therapeutic window to slow DMD progression and improve quality of life and lifespan for DMD boys.

Made possible by grants & Venture Philanthropy

ReveraGen BioPharma

NIH National Center for Advancing Translational Sciences NCATS Catalyzing Innovation
Congressionally Directed Medical Research Programs CDMRP Department of Defense
FDA U.S. Food and Drug Administration Protecting and Promoting Your Health
NIH National Institute of Neurological Disorders and Stroke
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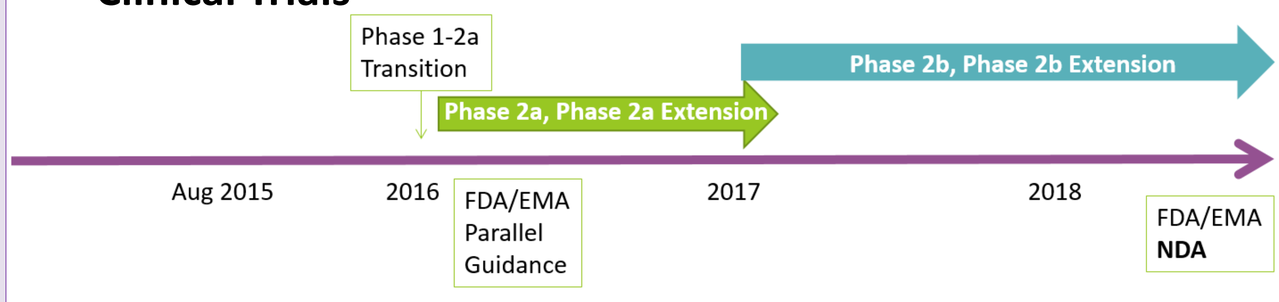
Phase 2 Clinical Trials

Time lines



Phase 2a, 2a extension: Paula Clemens and CINRG ; USA 8 US Sites (24 patients; 6 months treatment)

Phase 2b; Kate Bushby, Michaela Guglieri; trans-EU; ~30 sites (100 patients; 12 months treatment)

VISION-DMD: Primary Objectives

- ✓ Complete a Phase 2a clinical trial and extension to evaluate the **safety and tolerability** of multiple ascending oral doses of Vamorolone in ambulant boys aged 4- <7 years with DMD
- ✓ Completion of a Phase 2b clinical trial to compare the **efficacy (TTSTAND velocity)** and **safety (BMI z score)** of two doses of Vamorolone versus placebo and SOC in ambulant boys aged 4-<7 years, positioning Vamorolone for drug marketing approval and reimbursement;
- ✓ Completion of a Phase 2b extension study to evaluate the efficacy (TTSTAND velocity) and safety (BMI z score) of two doses of Vamorolone in boys aged 4-<8 years with DMD.

Main Outcomes

- ✓ Evidence base for Marketing Authorisation Application positioning Vamorolone for drug marketing approval by 2020;
- ✓ Improved guidelines on Standard of Care for DMD
- ✓ Case study of the Venture Philanthropy model for the rapid cost effective development of drugs for rare Diseases
- ✓ Advanced knowledge on steroid like drug without usual side effects
- ✓ Increase data and advance knowledge on outcome measures and pharmacodynamics biomarkers through clinical trials

VISION-DMD International Consortium

Newcastle University
United Parent Projects Muscular Dystrophy
ECRIN European Clinical Research Infrastructure Network ESFRI
CERATIUM helping research happen
FN MOTOL
ReveraGen BioPharma

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