

European LGMDR9 Community Conference

SATURDAY 25<sup>TH</sup> MAY 2024

# Overview of FORTIFY: Phase 3 study of BBP-418 by ML Bio Solutions

Professor John Vissing





## **ML Bio is developing BBP-418 as a potential treatment option for patients with Limb Girdle Muscular Dystrophy 2I (LGMD2I/R9)**

**May 25, 2024**



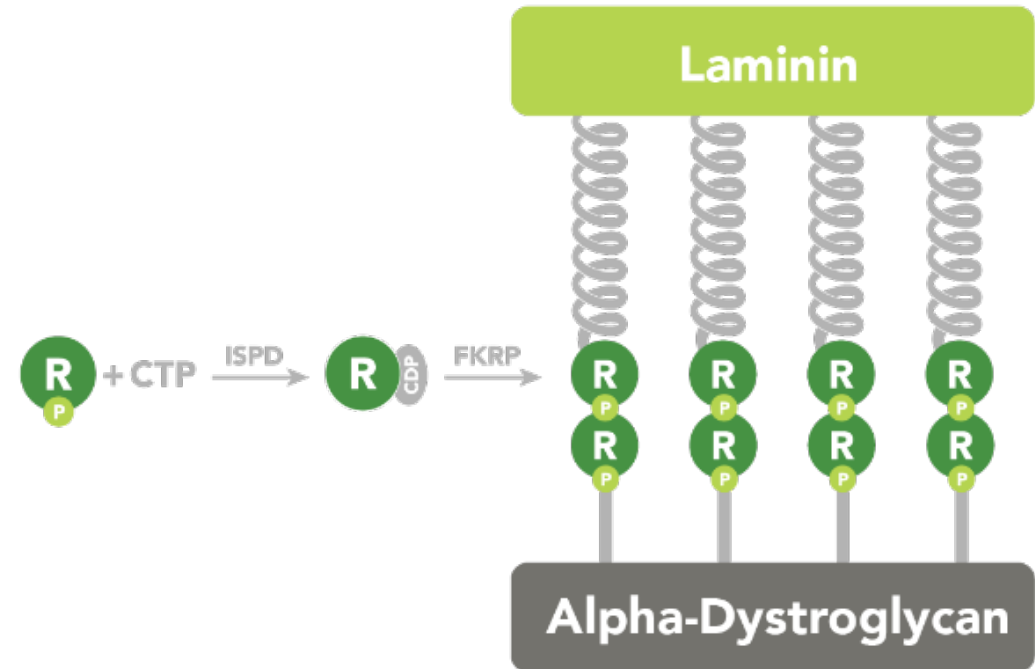
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- Dr. Vissing is not an employee of ML Bio Solutions
  - Dr. Vissing is an investigator in ML Bio Solutions' Phase 3 FORTIFY study.
  - Dr. Vissing is or has been a consultant for:
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# Fukutin-Related Protein (FKRP) plays a critical role in priming alpha-dystroglycan ( $\alpha$ DG) for glycosylation

- In healthy muscles, the fukutin-related protein (**FKRP**) enzyme is responsible for an important step in a process called **glycosylation**.
- During glycosylation, sugar chains attach to the backbone of a protein called  $\alpha$ -dystroglycan ( $\alpha$ DG).
- Glycosylation is critical for the normal function of  $\alpha$ DG. Once glycosylated,  $\alpha$ DG stabilizes muscle cells by acting as a “**shock absorber**” for muscle fibers during contractions.



# In LGMD2I/R9, the FKRPs enzyme does not work properly, which leads to reduced levels of glycosylated $\alpha$ DG

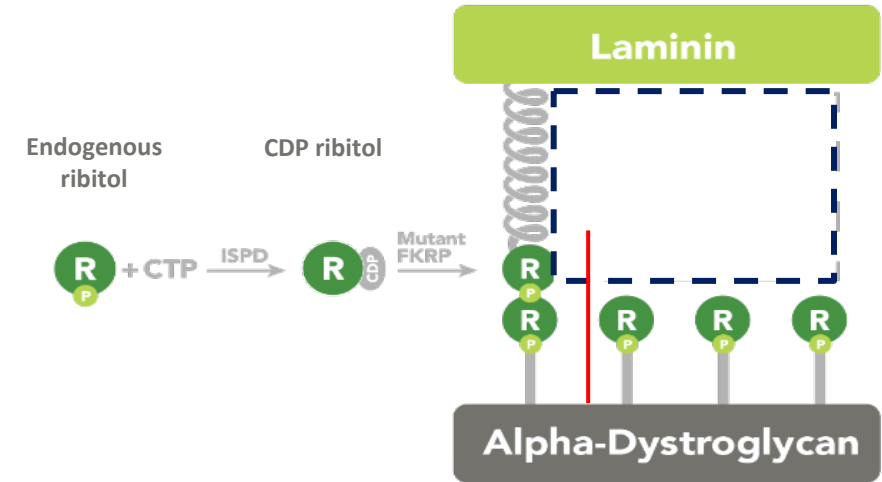
## LGMD2I/R9 Disease Mechanism



Functional FKRPs glycosylates alpha-dystroglycan ( $\alpha$ DG) which stabilizes myocytes by binding extracellular ligands to act as a “shock absorber” for muscle fibers



Partial loss of function mutation in FKRPs results in dysfunctional, hypo-glycosylated  $\alpha$ DG in myocytes which increases susceptibility to damage



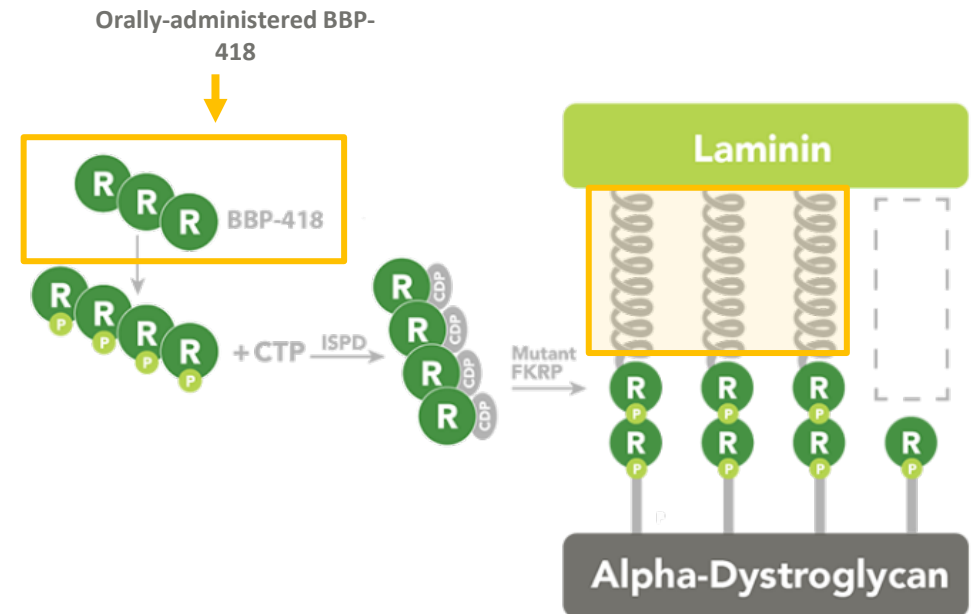
**Mutations in FKRPs prevent addition of ribitol-5-P to alpha-dystroglycan (hypo-glycosylated  $\alpha$ DG) limiting  $\alpha$ DG’s ability to function as a “shock absorber” for muscle fibers**

# Substrate supplementation with BBP-418\* has potential to help the defective FKRP enzyme work well enough to glycosylate $\alpha$ DG in LGMD2I/R9

## Proposed BBP-418 Therapeutic Approach



Supply supraphysiological levels of synthesized pharmaceutical substrate upstream aiming to drive residual activity of mutant FKRP enzyme and increase  $\alpha$ DG glycosylation levels



Potential partial restoration of  $\alpha$ DG glycosylation

\*BBP 418 is an investigational agent that is not approved for use by any regulatory authority as its efficacy and safety have not been established.

# ML Bio is developing BBP-418\* as a potential treatment option for individuals with LGMD2I/R9 based on three key design principles

## Objectives



**Provide small molecule potentially disease-modifying therapy**

For individuals with LGMD2I/R9



**Harnesses existing FKRPs function**

Avoid potential for overexpression of FKRPs



**Convenient daily-dose oral medicine**

To reduce burden for patients

## Design principles

**Targets root cause of disease (impaired glycosylation of  $\alpha$ DG)**

**Pharmaceutical version of a naturally occurring compound with encouraging preliminary safety profile**

**Provide an oral treatment option**

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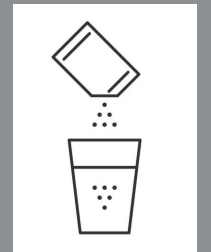
# Overview of BBP-418\*

## BBP-418

BBP-418 is being developed as a substrate supplementation therapy, **designed to treat LGMD2I/R9 at its source\***



BBP-418 is provided in the form of granules that are dissolved in water for **convenient oral dosing** twice daily



BBP-418 has been well-tolerated to date; there have been no dose limiting toxicities, discontinuations, or serious adverse events related to BBP-418 observed








Early clinical studies in a limited number of individuals with LGMD2I/R9 dosed with BBP-418 show **encouraging biomarker results and positive trends in functional outcomes**



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# ML Bio Solutions has investigated BBP-418\* in multiple studies; A multi-site, international Phase 3 study is ongoing

Study	Phase	Description	Summary & Links to More Information***
 <b>MLB-01-002,-004</b>	Phase 1 (N= 109)	<ul style="list-style-type: none"> <li>Two Phase 1 studies in volunteers unaffected by LGMD2I/R9 to evaluate safety and pharmacokinetics** of BBP-418</li> </ul>	<ul style="list-style-type: none"> <li>No serious adverse events or discontinuations due to adverse events related to BBP-418 in healthy volunteers</li> <li>Pharmacokinetics of BBP-418 with and without food defined</li> </ul>
 <b>MLB-01-003</b>	Phase 2 (N=14)	<ul style="list-style-type: none"> <li>Open label, dose-finding study to evaluate safety and tolerability of BBP-418 in LGMD2I/R9</li> <li>Encouraging safety and preliminary clinical data in LGMD2I/R9 patients</li> </ul>	<ul style="list-style-type: none"> <li>Link to Phase 2 results presented at MDA 2023 →</li> </ul> 
 <b>MLB-01-005</b> <b>Fortify</b>	Phase 3 (N=80–100)	<ul style="list-style-type: none"> <li>Placebo-controlled study to evaluate efficacy and safety of BBP-418 in LGMD2I/R9</li> <li>Goal to evaluate clinical efficacy &amp; long-term safety</li> </ul>	<ul style="list-style-type: none"> <li>Link to Phase 3 clinicaltrials.gov website →</li> </ul> 

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\*\*Pharmacokinetics is the study of how the body interacts with an administered substance for the duration of exposure.

\*\*\* ML Bio does not take any responsibility for any third-party content, which may not represent the most current regulatory situation.

# The FORTIFY Phase 3 study of BBP-418 in LGMD2I/R9 is open to enrollment



The study, known as \*Fortify, will evaluate the safety and efficacy of long-term administration of BBP-418 in individuals with genetically confirmed LGMD2I/R9.

## Key study details:

- 80–100 individuals with confirmed LGMD2I/R9, aged 12 to 60 years in US, UK and Australia and aged 18 to 60 years in EU
- Multi-center international study
- Double-blind randomized placebo-controlled trial
- 36-month blinded interval

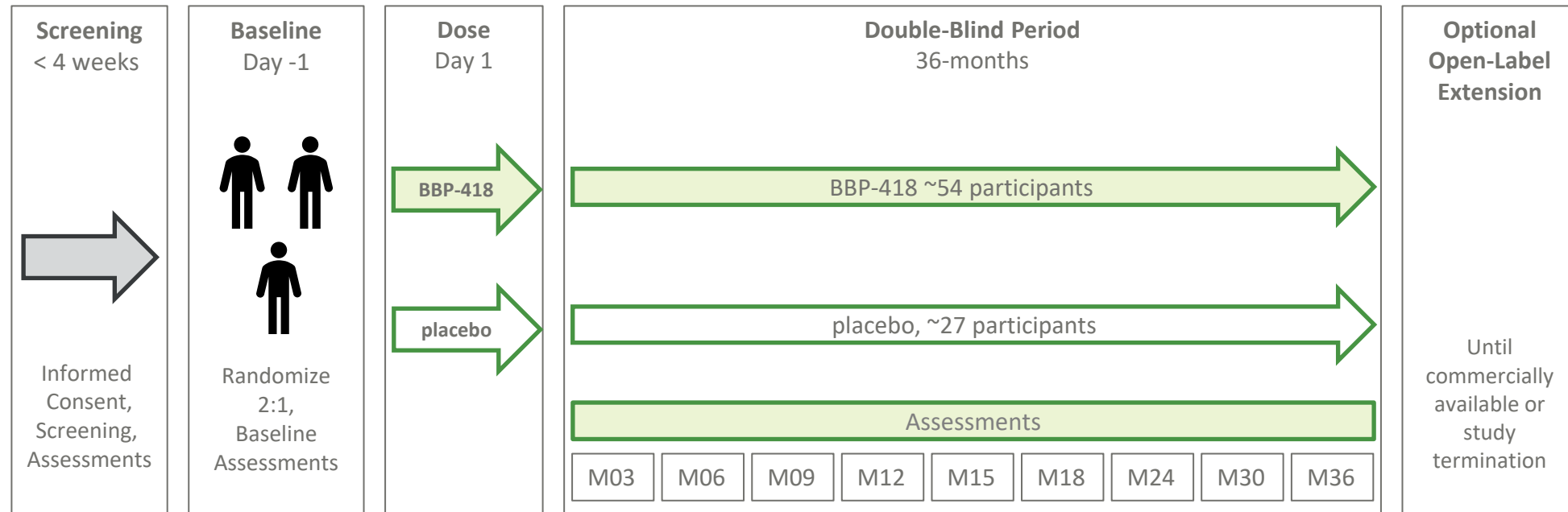
Participants may be offered the opportunity to enroll in a separate open-label extension (OLE) with access to BBP-418 upon successful completion of the Phase 3 study.

## Key Endpoints:

- NSAD (primary)
- 100-meter timed test (s)
- 10-meter walk test (m/s)
- biomarkers:
  - glycosylated  $\alpha$ DG
  - serum CK
- pulmonary function (FVC)
- PUL 2.0

\*[ClinicalTrials.gov Identifier: NCT05775848](https://clinicaltrials.gov/ct2/show/study/NCT05775848)

# Overview of the design of ML Bio's Phase 3 FORTIFY study



- During **screening**, a determination is made if participants meet the requirements of the study.
- Participants will be randomly assigned to 2 groups with 2 out of every 3 participants randomized to the investigational drug BBP-418 and 1 out of every 3 participants randomized to placebo. Doctors and participants will not know if they are receiving BBP-418 or placebo.
- **Double blind** means that neither participants nor study investigators know which participants are taking BBP-418 or placebo.
- Participants dosed with BBP-418 or placebo for 36-months with assessments, including biopsies, throughout.



## **ML Bio is dedicated to individuals living with LGMD2I/R9**

For more information, please visit our website:  
<https://mlbiosolutions.com/>

Or, email us: [info@mlbiosolutions.com](mailto:info@mlbiosolutions.com)





THANK YOU

*ML Bio would like to thank all of the patients and their families who have been a part of our clinical studies or supported us in other ways. We would also like to thank our patient advocacy partners for their collaboration and support.*

# WITH THANKS

