

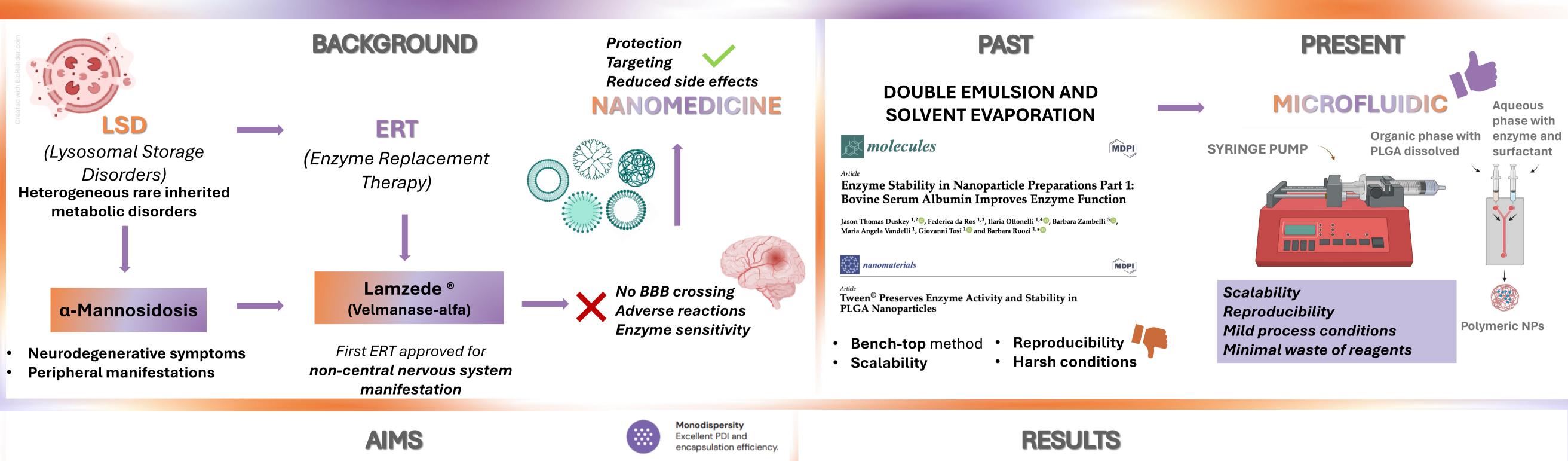
FROM ACADEMIC TO INDUSTRIAL DEVELOPMENT: A NANOMEDICINE PLATFORM FOR THE DELIVERY OF THERAPEUTIC PROTEINS AGAINST RARE **NEUROMETABOLIC DISEASES**

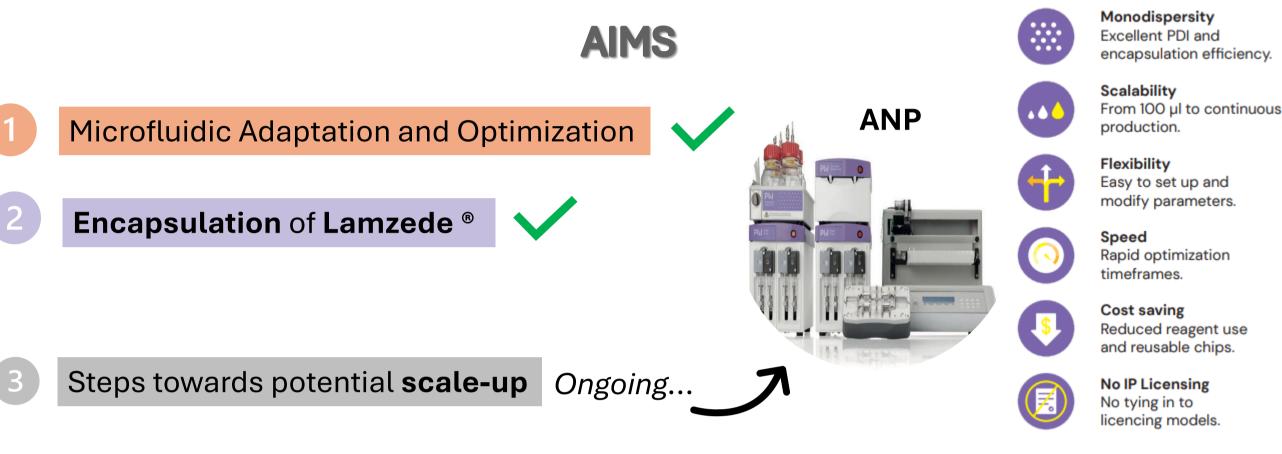
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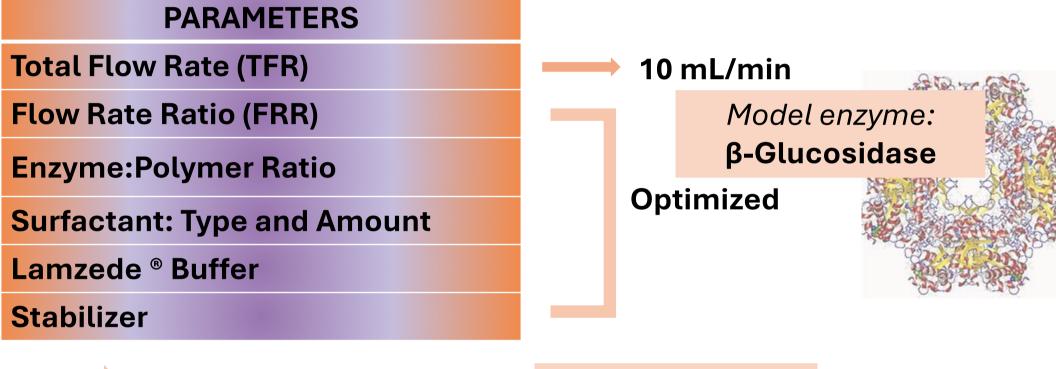
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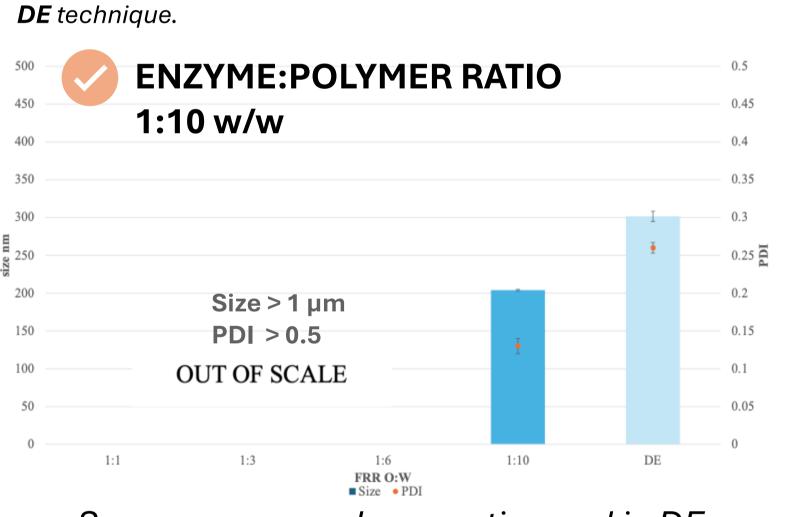
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MICROFLUIDIC ADAPTATION AND OPTIMIZATION **PARAMETERS Total Flow Rate (TFR)** 10 mL/min



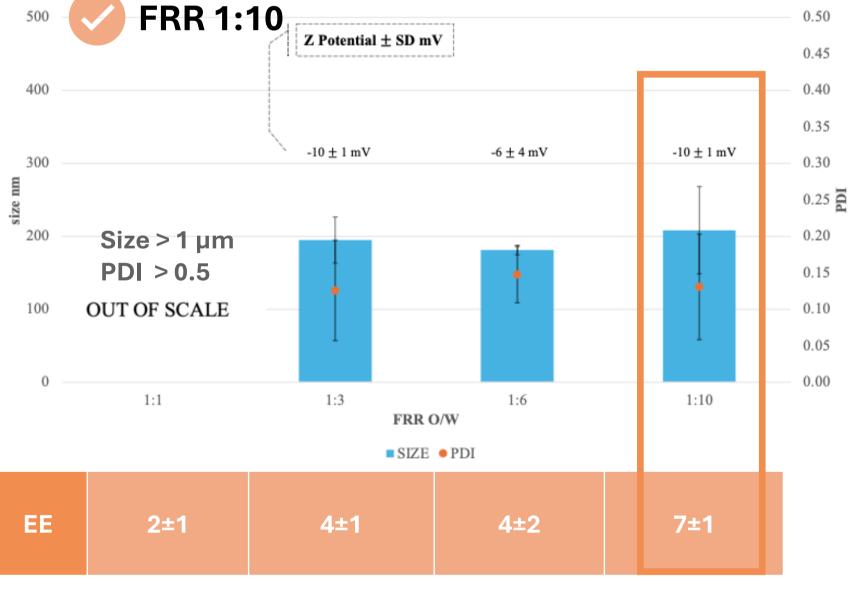


Enzyme:Polymer Ratio

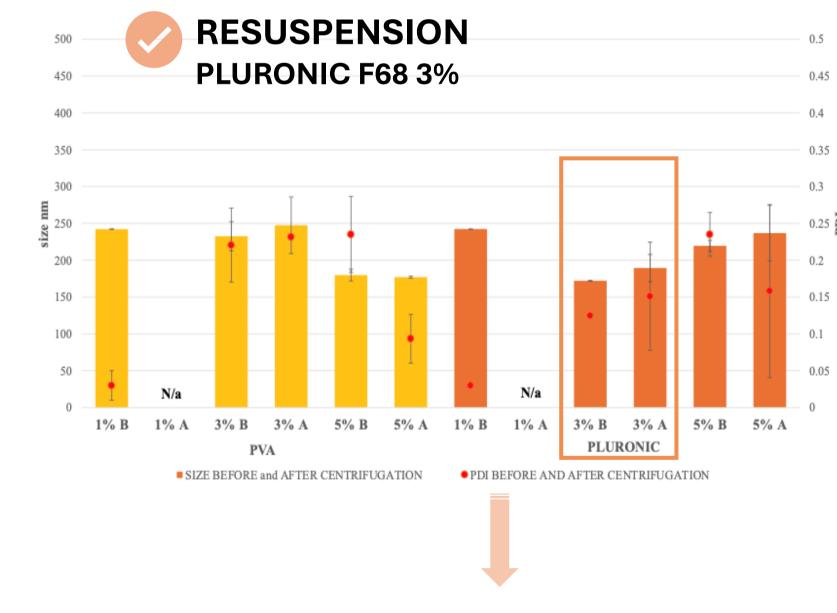
NPs formulated with the same amount of β -Glucosidase used in

Same enzyme:polymer ratio used in DE

PLGA NPs at different % of **PVA** and **Pluronic** before (B) and NPs formulated with 1:10 w/w enzyme-to-polymer ratio. after (A) centrifugation. The **FRR** was **1:1**, **1:3**, **1:6**, and **1:10**.



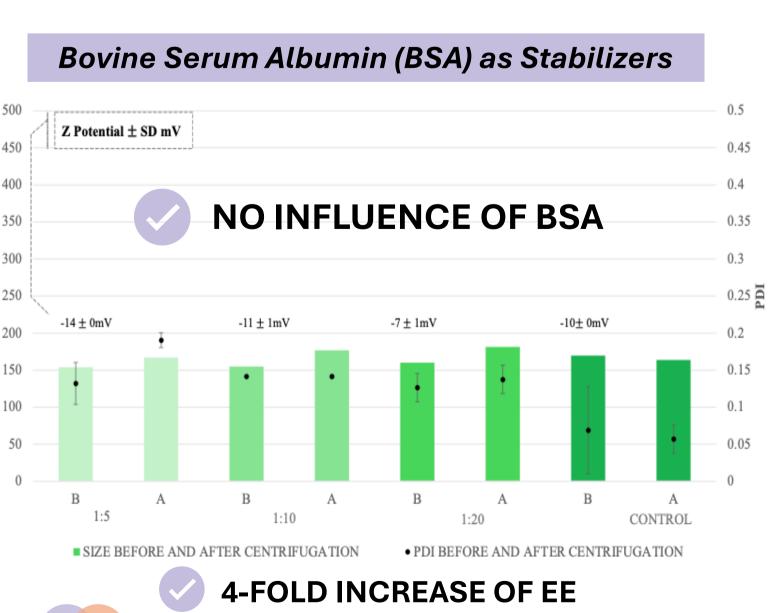
FRR



Surfactants

ENCAPSULATION OF LAMZEDE ®

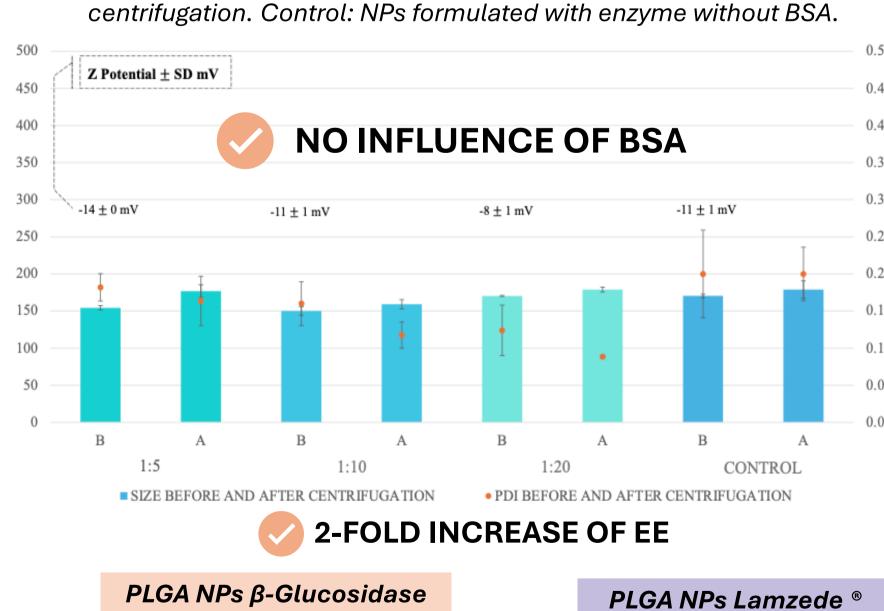
TFR 10 mL/min – FRR 1:10 Enzyme:Polymer ratio 1:10 w/w		
SIZE	PDI	EE
169.7±3.5	0.069±0.019	≈ 1



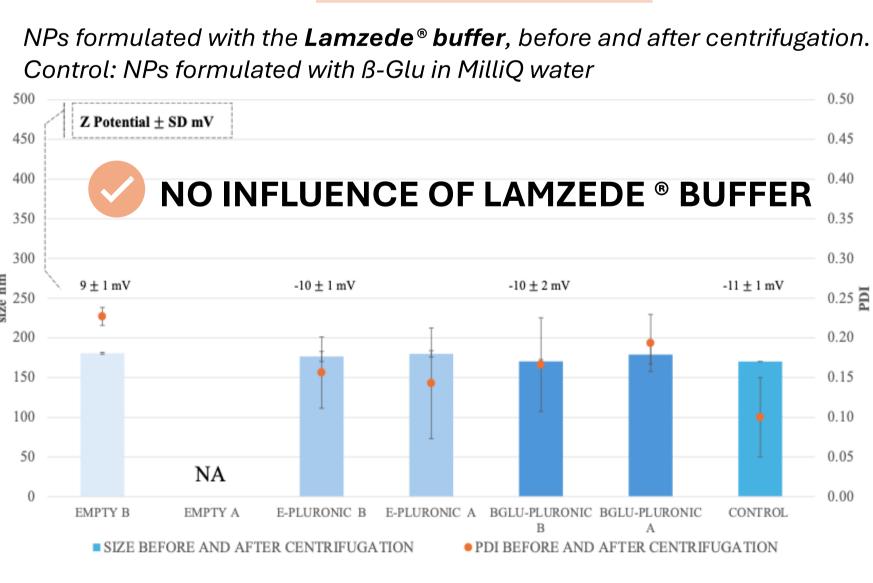
NPs obtained with 1:3, 1:6 and 1:10 FRR proved to be **stable** to **freezing-thawing**, and **storage** for one month at **4°C**, both when encapsulating **β-Glucosidase** and **Lamzede** ®

Bovine Serum Albumin (BSA) as Stabilizers

Enzyme:BSA molar ratio 1:5, 1:10 and 1:20 before (B) and after (A)

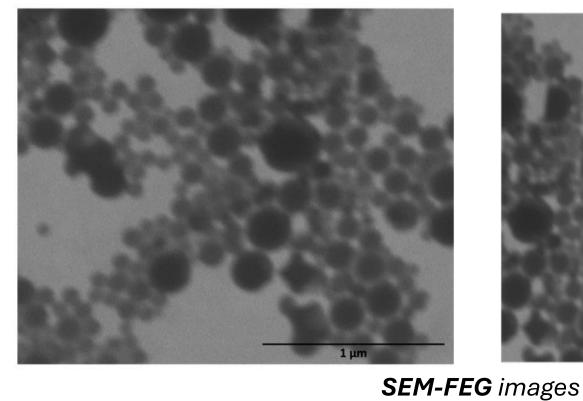


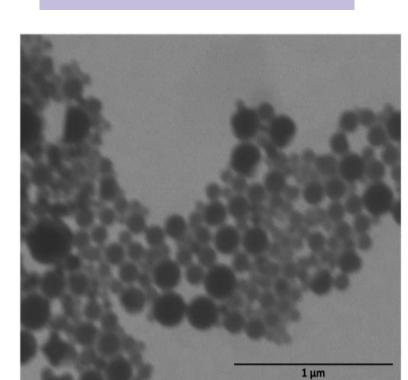




Lamzede ® Buffer

PLGA NPs β-Glucosidase





CONCLUSIONS

- Scalable and versatile nanoplatform
- **Possibility of overcoming ERT** drawbacks
- Possibility of scaling up for industrial perspective
- Targeting a wide range of diseases









STABLITY