

# Phenylketonuria (PKU) (mRNA-3283)

Last program update: May 7, 2020

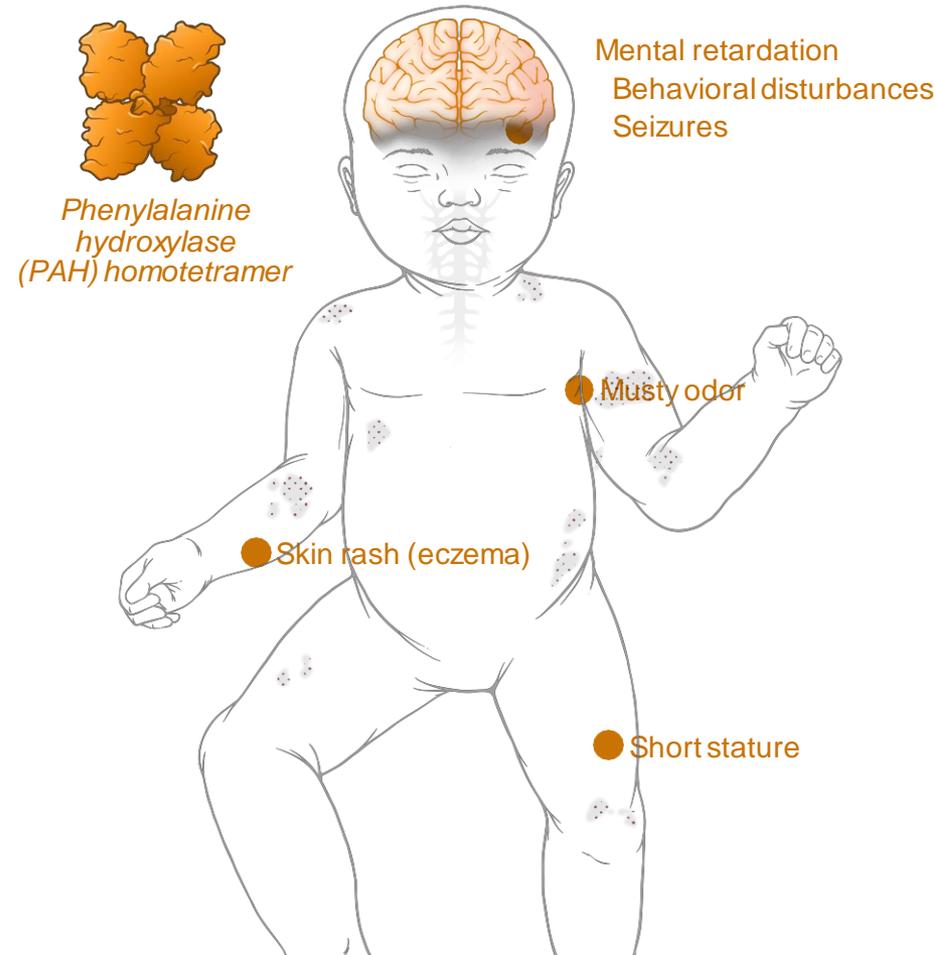
Modality	ID #	Program Indication	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
 Systemic intracellular therapeutics	mRNA-3704	MUT Methylmalonic acidemia, MMA					Worldwide
	mRNA-3927	PCCA/PCCB Propionic acidemia, PA					Worldwide
	<b>mRNA-3283</b>	<b>PAH</b> <b>Phenylketonuria, PKU</b>					Worldwide
	mRNA-3745	G6Pase Glycogen storage disease type 1a, GSD1a					Worldwide

**mRNA-3283 is in IND-enabling GLP toxicology studies**

# Phenylketonuria (PKU) overview

## Opportunity to address unmet need

- PKU is a rare inherited metabolic disease resulting from a deficiency in the metabolism of phenylalanine, or PHE, due to mutations within the enzyme phenylalanine hydroxylase, PAH
- **Disease burden:** Progressive mental disability from tyrosine deprivation
- **Target population:** Incidence of ~1:10K-15K live births in the US
  - ~21,000-32,000 patients in the US
- Approved therapies include:
  - 20-56% of patients respond favorably to BioMarin's Kuvan
  - Non responsive patients treated with restricted diet
  - Biomarin's Palynziq was approved in May 2018



**Moderna concept: IV-administered mRNA encoding PAH enzyme to restore deficient or defective intracellular enzyme activity**

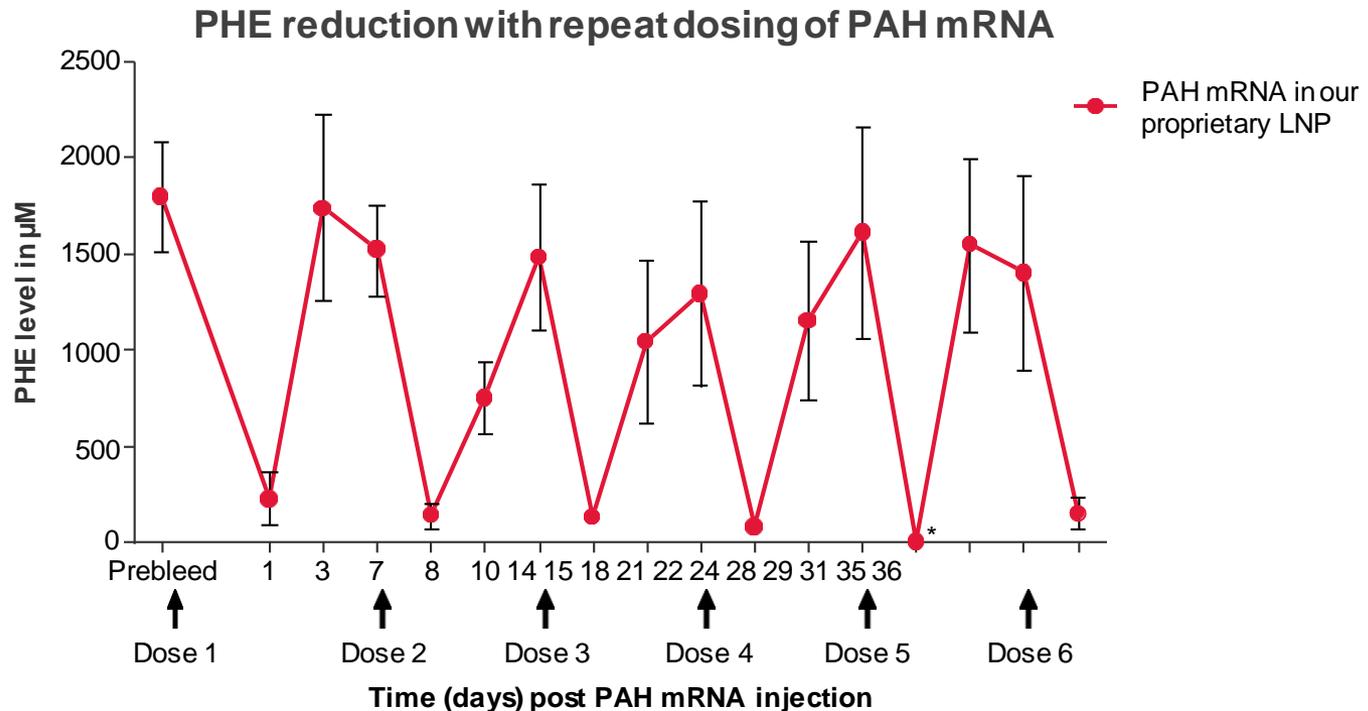
# Phenylketonuria (PKU) (mRNA-3283)

## Preclinical data – restoration of enzymatic activity

### Study Design:

Species:  
**Mouse**

- Animals: PAH-/-
- Dose: 0.5 mpk
- Dosing Schedule: weekly
- Injection Route: IV
- Sample Size: [5-6]



**We have demonstrated the ability to impact PHE levels with repeat dosing of our mRNA in pre-clinical studies**

\*Data not collected due to a snow storm

Slide 3

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# Forward-looking statements

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