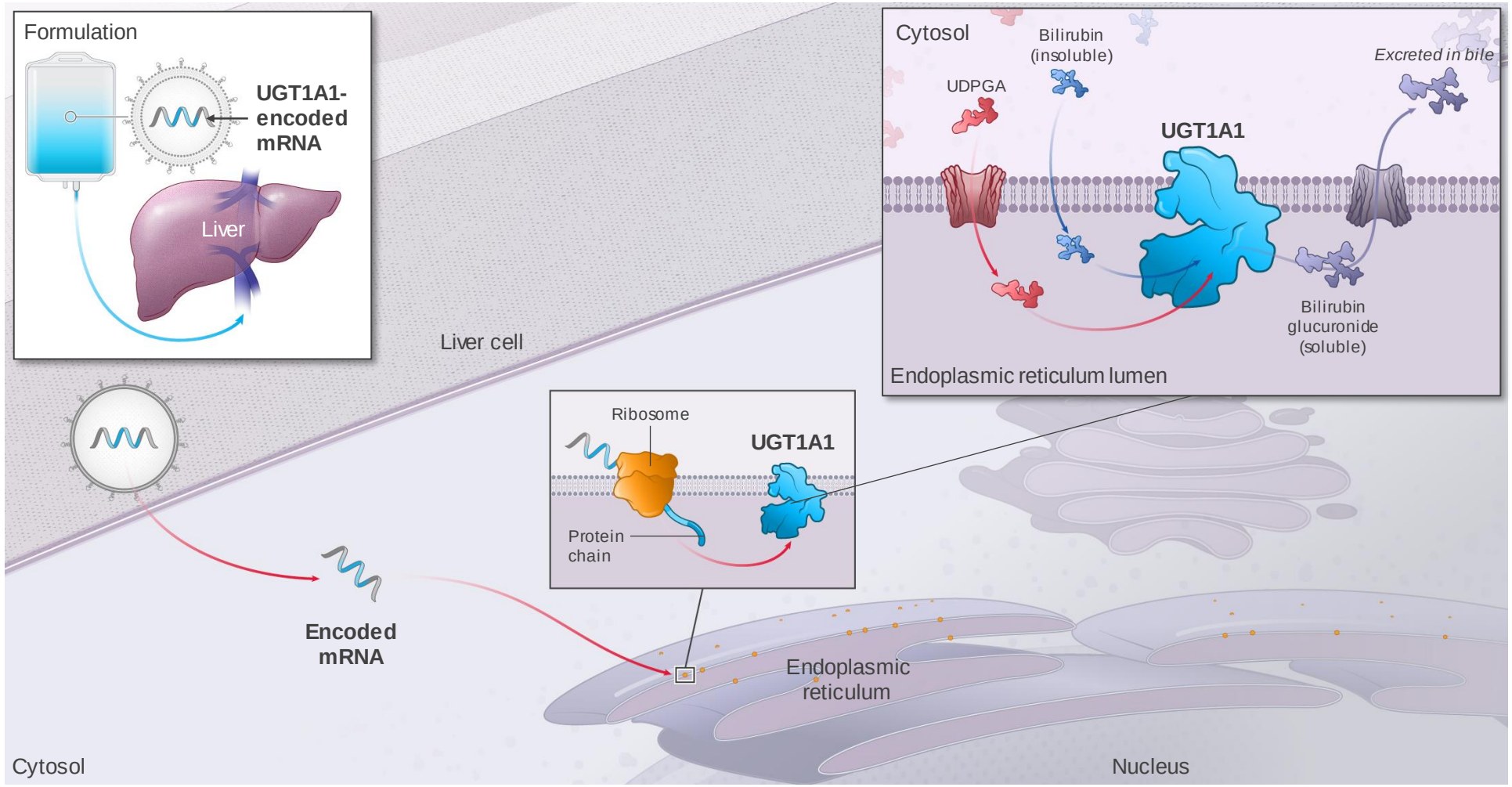
Moderna's therapeutics: Crigler-Najjar Syndrome Type 1 (CN-1)

Last program update: May 4, 2022

Modality	Program	ID #	Preclinical development	Phase 1	Phase 2	Phase 3	Commercial	Moderna rights
Systemic secreted & cell surface therapeutics	IL-2 *Autoimmune disorders*	mRNA-6231						Worldwide
	Relaxin *Heart failure*	mRNA-0184						Worldwide
	PD-L1 *Autoimmune hepatitis*	mRNA-6981						Worldwide
Cancer vaccines	Personalized cancer vaccine (PCV)	mRNA-4157						50-50 global profit sharing with **Merck**
	KRAS vaccine	mRNA-4671						Worldwide
	Checkpoint vaccine	mRNA-4359						Worldwide
Intratumoral Immuno-oncology	OX40L/IL-23/IL-36γ (Triplet) *Solid tumors/lymphoma*	mRNA-2752						Worldwide
	IL-12 *Solid tumors*	MEDI1191						50-50 U.S. profit sharing; **AZ** to pay royalties on ex-U.S. sales
Localized Regenerative Therapeutics	VEGF-A *Myocardial ischemia*	AZD8601						**AZ** to pay milestones and royalties
	Propionic acidemia (PA)	mRNA-3927						Worldwide
	Methylmalonic acidemia (MMA)	mRNA-3705						Worldwide
Systemic Intracellular Therapeutics	Glycogen storage disease type 1a (GSD1a)	mRNA-3745	Open IND					Worldwide
	Phenylketonuria (PKU)	mRNA-3283						Worldwide
Inhaled Pulmonary Therapeutics	Crigler-Najjar syndrome type 1 (CN-1)	mRNA-3351						Provided to **ILCM** free of charge
	Cystic fibrosis (CF)	VXc-522						**Vertex** to pay milestones and royalties

moderna

mRNA-3351 encodes for the human UGTA1A1: Designed to restore the missing or dysfunctional proteins that causes Crigler-Najjar Syndrome Type 1



moderna

Crigler-Najjar Syndrome Type 1 (CN-1) overview

- **Crigler-Najjar syndrome is a severe condition** characterized by high levels of a toxic substance called bilirubin in the blood (hyperbilirubinemia)
  - Caused by the mutations in the UGT1A1 gene in which bilirubin, a substance made by the liver, cannot be broken down
  - Without this enzyme, bilirubin can build up in the body and lead to jaundice and damage to the brain, muscles and nerves. The symptoms become apparent shortly after birth and can be life-threatening

- It is estimated that there **are only approximately 70-100 known cases of CN-1 in the world**
  - Current standard of care treatments rely on phototherapy treatments of up to 12 hours a day throughout life. The only definitive treatment is liver transplant that is associated with its own set of side effects and risk of death

CN-1 Sequelae
Kernicterus (potentially life-threatening neurological condition)
Lethargy
Moro reflex
Muscle spasms
Spasticity (uncontrolled involuntary muscle movements)

Source: https://rarediseases.org/rare-diseases/crigler-najjar-syndrome/

moderna

Moderna-ILCM collaboration

- The goal of the collaboration is to make an mRNA therapy for the **treatment of CN-1 available at no cost to patients**
- Under the terms of the agreement, **Moderna will license mRNA-3351 to ILCM with no upfront fees, and without any downstream payments**
- **ILCM will be responsible for the clinical development of mRNA-3351**

THE INSTITUTE FOR
Life Changing Medicines

https://www.lifechangingmedicines.org/

moderna

Forward-looking statements

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including, but not limited to, statements concerning the Company's collaboration with the Institute for Life Changing Medicines on the development of an mRNA therapeutic (mRNA-3351) for Crigler-Najjar Syndrome Type 1, potential development candidate applications, development candidate activities, preclinical and clinical studies, regulatory submissions and approvals, risk management and estimates, including with respect to the potential market associated with commercial medicines, and forward-looking projections with respect to Moderna or its anticipated future performance or events. In some cases, forward-looking statements can be identified by terminology such as "may," "should," "expects," "intends," "plans," "aims," "anticipates," "believes," "estimates," "predicts," "potential," "continue," or the negative of these terms or other comparable terminology, although not all forward -looking statements contain these words. The forward-looking statements in this presentation are neither promises nor guarantees, and you should not place undue reliance on these forward-looking statements because they involve known and unknown risks, uncertainties and other factors, many of which are beyond Moderna's control and which could cause actual results to differ materially from those expressed or implied by these forward-looking statements. These risks, uncertainties and other factors include, among others: preclinical and clinical development is lengthy and uncertain, especially for a new category of medicines such as mRNA, and therefore Moderna's preclinical programs or development candidates may be delayed, terminated, or may never advance to or in the clinic; mRNA drug development has substantial clinical development and regulatory r isks due to the novel and unprecedented nature of this new category of medicines; and those described in Moderna's most recent Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission (SEC) and in subsequent filings made by Moderna with SEC, which are available on the SEC's website at www.sec.gov. Except as required by law, Moderna disclaims any intention or responsibility for updating or revising any forward-looking statements in this presentation in the event of new information, future developments or otherwise. These forward-looking statements are based on Moderna's current expectations and speak only as of the date referenced on the first page.