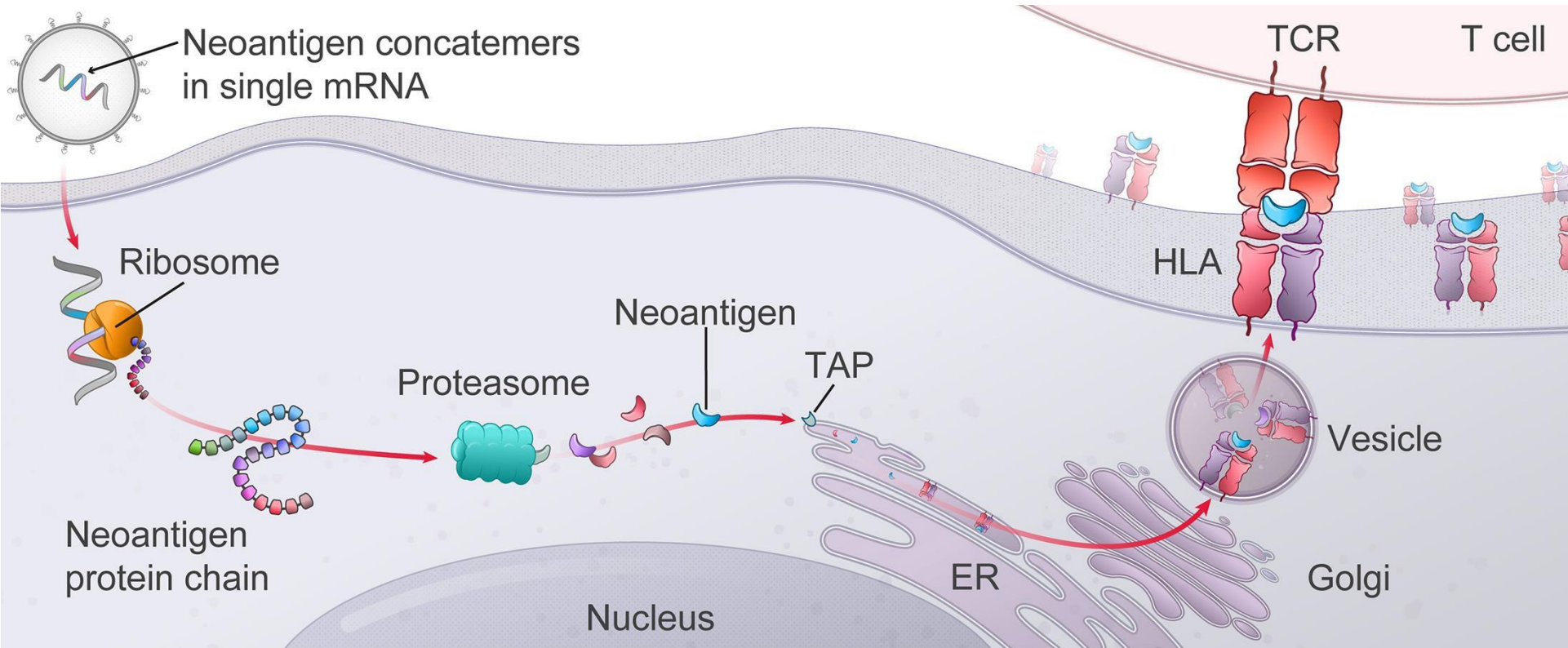


Moderna's therapeutics: KRAS vaccine (mRNA-5671)

Last program update: November 4, 2021

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	[Progress bar]					Worldwide
	Relaxin Heart failure	mRNA-0184	[Progress bar]					Worldwide
	PD-L1 Autoimmune hepatitis	mRNA-6981	[Progress bar]					Worldwide
Cancer vaccines	Personalized cancer vaccine (PCV)	mRNA-4157	[Progress bar]					50-50 global profit sharing with Merck
	KRAS vaccine	mRNA-5671	[Progress bar]					50-50 global profit sharing with Merck
Intratumoral Immunology	OX40L/IL-23/IL-36γ (Triplet) Solid tumors/lymphoma	mRNA-2752	[Progress bar]					Worldwide
	IL-12 Solid tumors	MEDI1191	[Progress bar]					50-50 U.S. profit sharing; AZ to pay royalties on ex-U.S. sales
Localized Regenerative Therapeutics	VEGF-A Myocardial ischemia	AZD8601	[Progress bar]					AZ to pay milestones and royalties
	Propionic acidemia (PA)	mRNA-3927	[Progress bar]					Worldwide
	Methylmalonic acidemia (MMA)	mRNA-3705	[Progress bar]					Worldwide
Systemic Intracellular Therapeutics	Glycogen storage disease type 1a (GSD1a)	mRNA-3745	Open IND					Worldwide
	Phenylketonuria (PKU)	mRNA-3283	[Progress bar]					Worldwide
Inhaled Pulmonary Therapeutics	Crigler-Najjar syndrome type 1 (CN-1)	mRNA-3351	[Progress bar]					Provided to ILCM free of charge
	Cystic fibrosis (CF)	VXc-522	[Progress bar]					Vertex to pay milestones and royalties

Moderna's mRNA vaccines elicit T cells required for curative cancer therapy



KRAS opportunity

Mutation is present in >20% of human cancers

- KRAS is a key regulator of cell proliferation and survival; mutations cause dysregulated cell proliferation
- One of the most frequently mutated oncogenes in human cancers
- Mutations found principally in pancreatic cancer, lung cancer, and colorectal cancer
- The four most prevalent KRAS mutations associated with these malignancies are G12D, G12V, G13D, and G12C (80% to 90% of KRAS mutations)

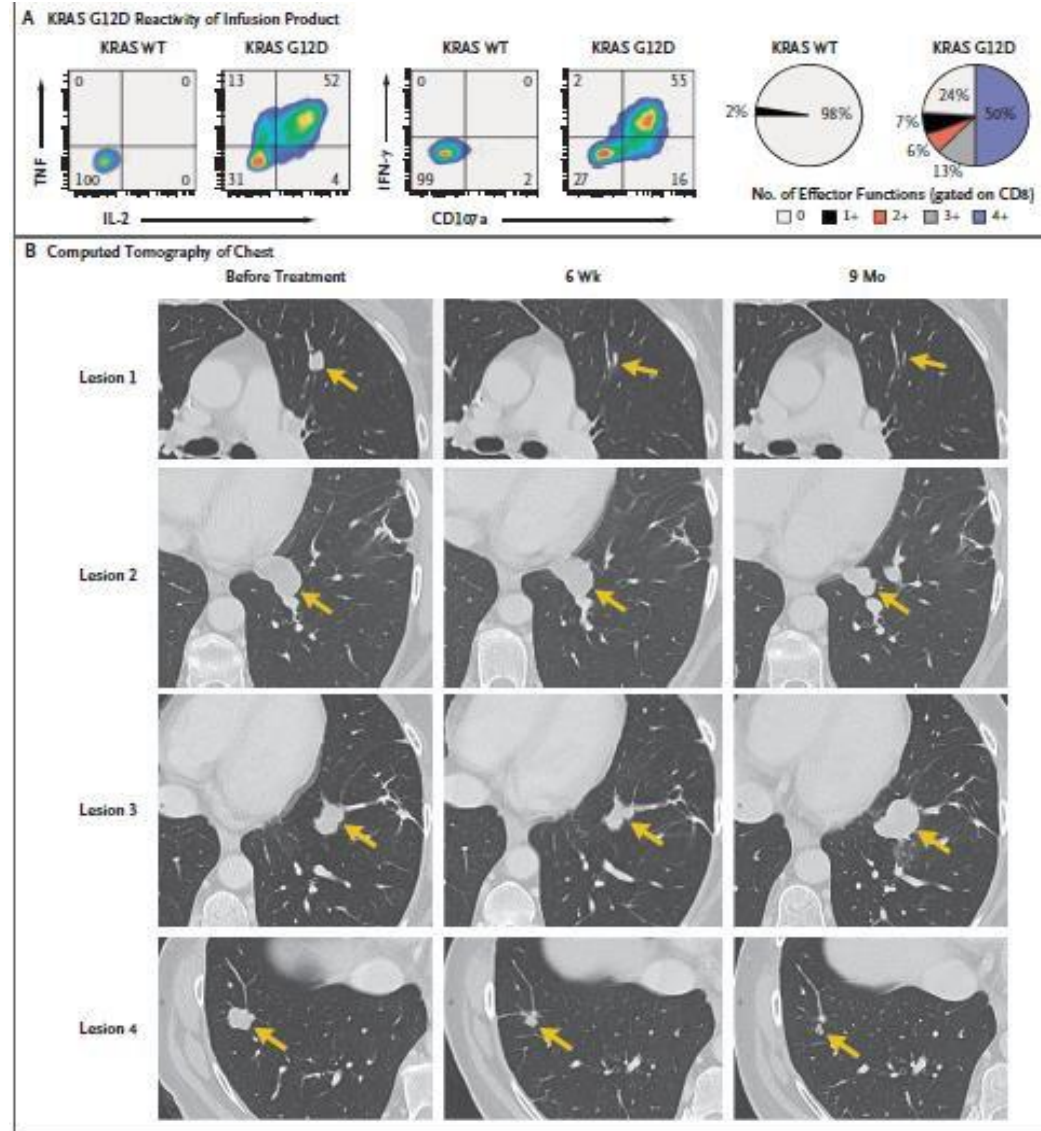
Patients whose tumors harbor KRAS mutations have worse outcomes

Anti-KRAS Tcell transfer shows human efficacy (Rosenberg, NIH)



T-Cell Transfer Therapy Targeting Mutant KRAS in Cancer

Eric Tran, Ph.D., Paul F. Robbins, Ph.D., Yong-Chen Lu, Ph.D.,
 Todd D. Prickett, Ph.D., Jared J. Gartner, M.Sc., Li Jia, M.Sc., Anna Pasetto, Ph.D.,
 Zhili Zheng, Ph.D., Satyajit Ray, Ph.D., Eric M. Groh, M.D., Isaac R. Kriley, M.D.,
 and Steven A. Rosenberg, M.D., Ph.D.

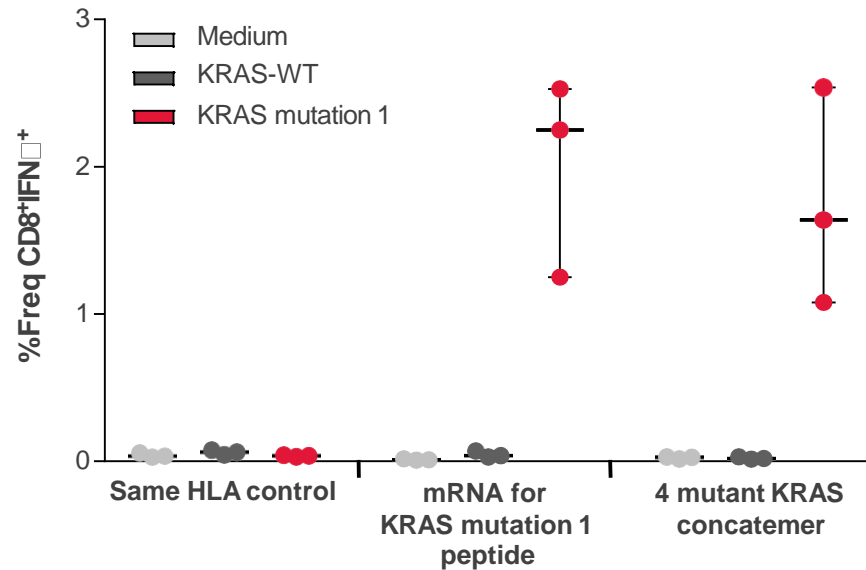


KRAS vaccine (mRNA-5671)

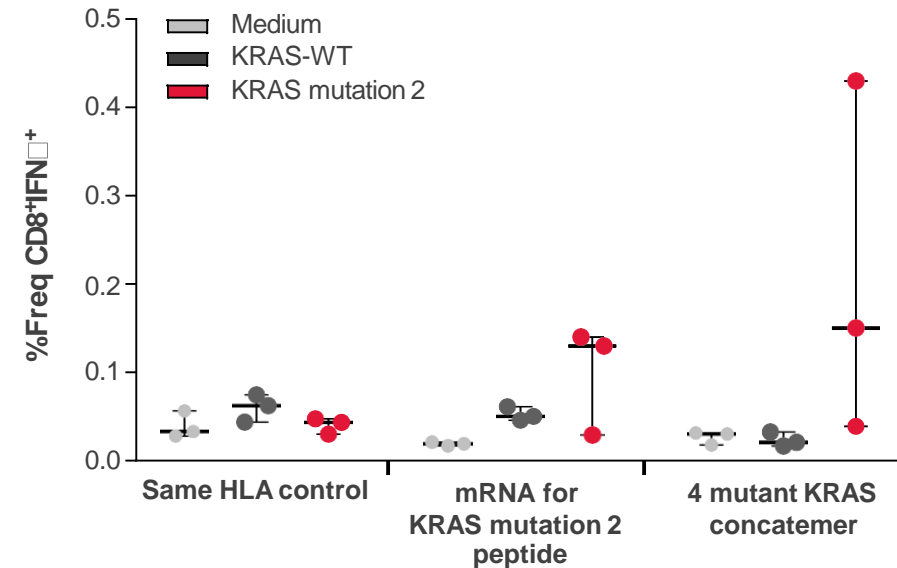
Preclinical data – Tcell responses after KRAS mRNA vaccination

Species:
Mouse

T cell response to restimulation with KRAS mutation 1 peptide in mouse model study



T cell response to restimulation with KRAS mutation 2 peptide in mouse model study



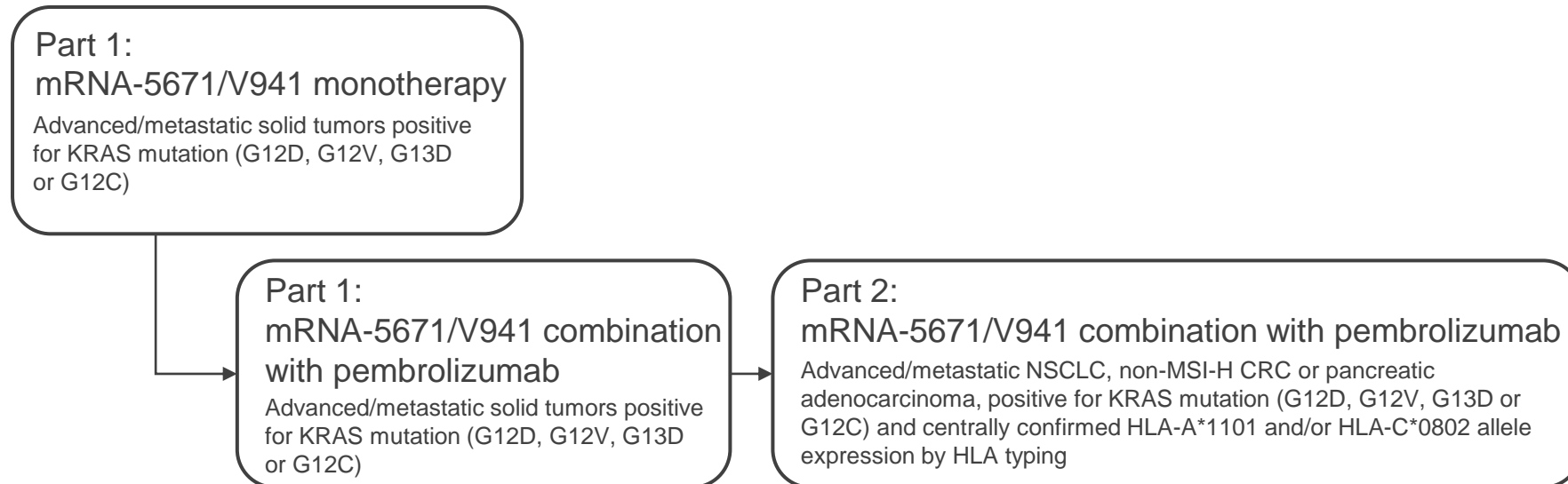
CD8 T cell responses to KRAS antigens were greatly enhanced following vaccination with mRNA encoding KRAS mutations in pre-clinical studies

KRAS vaccine (mRNA-5671)

Phase 1 study ongoing

Study Overview

- A Phase 1, Open-Label, Multicenter Study to Assess the Safety and Tolerability of mRNA-5671/Merck V941 as a Monotherapy and in Combination With Pembrolizumab in Participants With KRAS Mutant Advanced or Metastatic Non-Small Cell Lung Cancer, Colorectal Cancer or Pancreatic Adenocarcinoma
- Selecting for HLA subtypes (HLA-A*1101 and/or HLA-C*0802) most likely to respond



Forward-looking statements

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