MAY 2025

The mRNA Innovation Ecosystem:

A National Assessment of Economic Impact, Therapeutic Potential and Policy Implications

mrnamedicines.org

Alliance for mRNA Medicines

A National Assessment of Economic Impact, Therapeutic Potential and Policy Implications

- The Alliance for mRNA Medicines conducted (in partnership with USERCUE) a survey of the field in late March and early April 2025 to better assess & quantify those impacts (much of the survey done before recent changes at FDA)

- **106 senior life science professionals** in pharmaceutical and biotechnology organizations responded

- "The mRNA Innovation Ecosystem (U.S.): 2025 Assessment of Economic Impact, Therapeutic Potential & Policy Implications" report will be released on May 8th, 2025

Current and potential U.S. government policies, including funding cuts to mRNA research, represent a critical threat to America's biomedical leadership, as they would:

- Cause U.S. research and manufacturing jobs to move to Europe and Asia
- Delay therapeutic advances in cancer, rare diseases, and other diseases
- Forfeit billions in potential healthcare savings
- Surrender U.S. biomedical leadership to Europe and Asia
- Place U.S. National Security in the hands of other countries

Transformational Benefits of mRNA over the Next 5-10 Years

Personalized Cancer Immunotherapies: The most promising near-term benefit with late- stage trials for melanoma, colorectal, pancreatic, and triple-negative breast cancers.

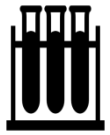
"Upcoming late-Phase 3 global clinical trial on the new antigen vaccine for melanoma. They're already recruiting over one thousand subjects."

Rare Genetic Disease Treatments: Protein replacement and gene-editing approaches for underserved conditions such as cystic fibrosis, muscular dystrophy, and various metabolic and rare diseases.

"18% of patients in the U.S. with cystic fibrosis (CF) either are not eligible or do not qualify for currently approved CF treatments"

Manufacturing Innovation: Simplifying traditional complex biologics production, enabling small-scale personalized interventions and creating viable economics for ultra-rare disease therapies.

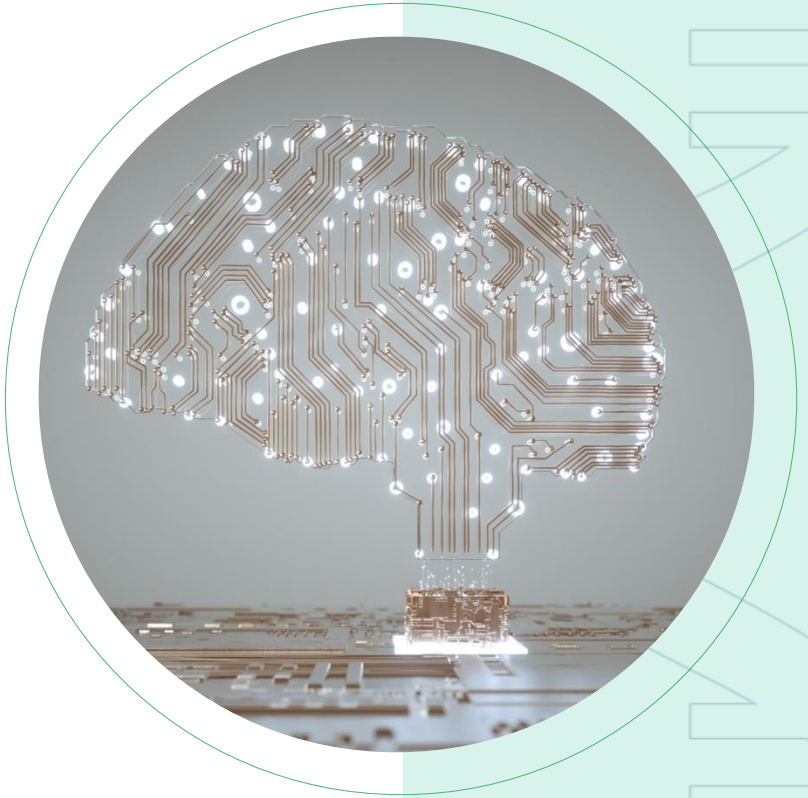
Expanded Longevity and Quality of Life: Showing **potential for one-time treatments to replace lifelong management of chronic disease**, more targeted approaches with fewer side effects and using advanced delivery systems to expand the range of treatable conditions to neurological and other conditions.



Infectious Disease Prevention and Pandemic Preparedness: mRNA technology is advancing infectious disease management by reducing development timelines from years to months. Applications extend beyond respiratory viruses to include vaccines for HIV, malaria, and tuberculosis.

Nearly All Industry Leaders (95%) Emphasized Artificial Intelligence's Importance for Unlocking mRNA Medicines

As the U.S. accelerates investments in AI across sectors, it is seen as **'critical' that mRNA innovation advances in parallel with Artificial Intelligence**. These technologies are deeply complementary; AI can radically accelerate mRNA drug design, optimization, and personalization. Experts note that investing in both AI and mRNA together over the next 5-10 years will be key to unlocking their full therapeutic potential and maintaining global leadership in biotech innovation.



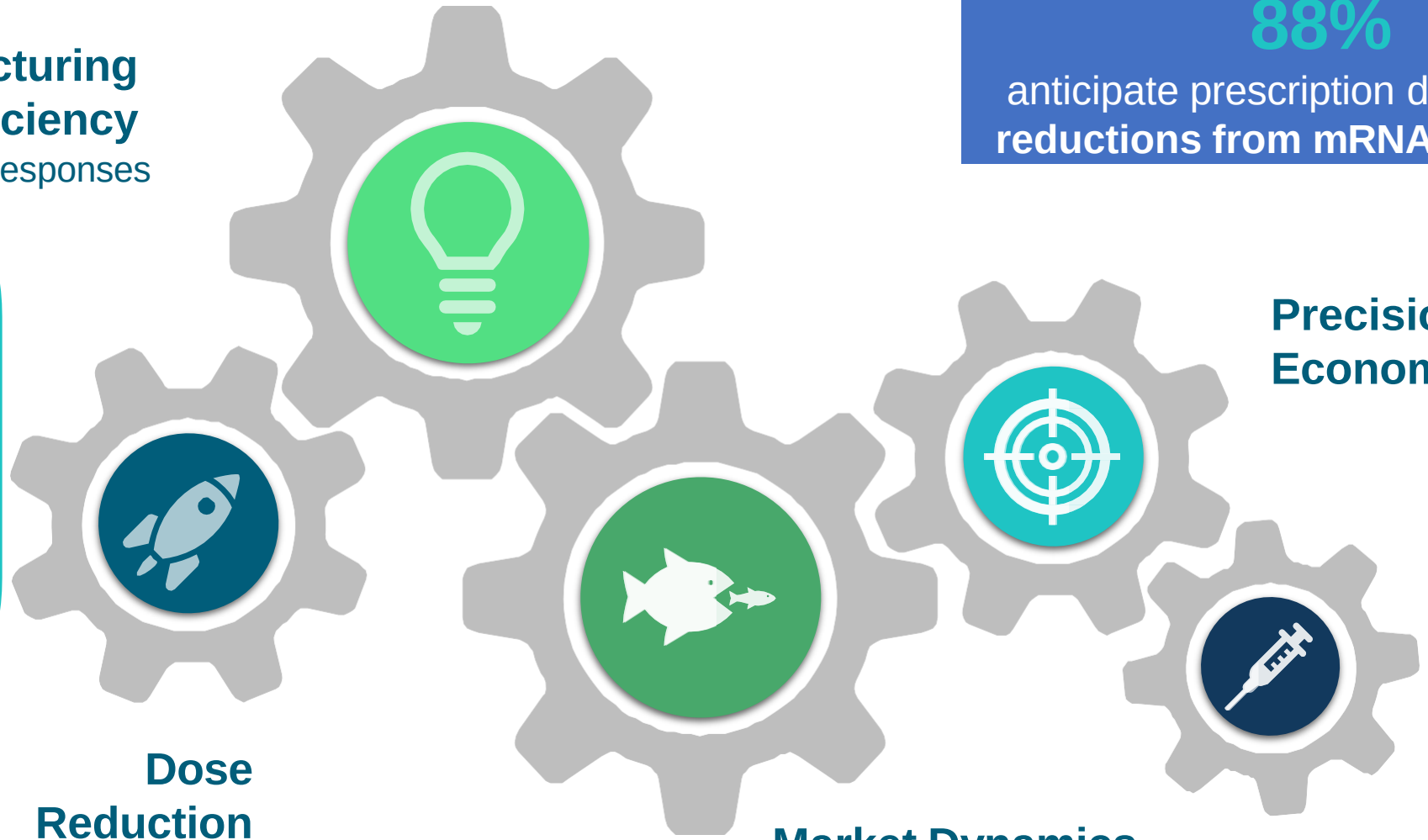
"AI significantly would enhance the development of mRNA technology by improving design, optimizing processes, personalizing treatment, and accelerating clinical trials. The integration of AI and mRNA technology has great potential to bring more effective and safer therapies to patients more quickly and efficiently."

mRNA is Cost-Effective and Could Lower Pricing for Prescription Drugs

88%
anticipate prescription drug **pricing reductions from mRNA innovation**

Manufacturing Processing Efficiency
included in 49% of responses

"mRNA could reduce the cost in therapies and prescription drugs just because of the sheer volume of doses you can produce per batch"



Precision Medicine Economics

Platform Flexibility

Dose Reduction

Market Dynamics and Competition

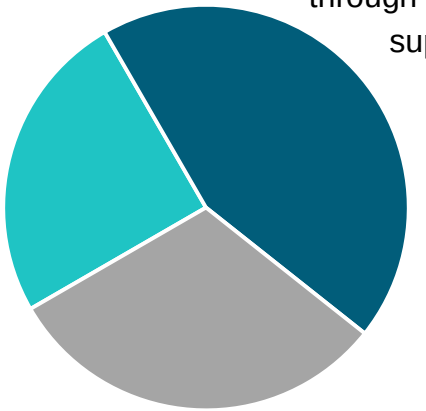
Public Funding is Necessary for mRNA Research and to Encourage Private Investment

69%

of mRNA organizations are affected by federal grant funding

44%
report indirect impact through partnerships and supply chains

25%
of organizations receive direct federal funding



Of those direct recipients, on average only

24%

of mRNA research budgets come from federal funding grants

But those grants are estimated to have supported over

60%

of preclinical mRNA therapeutic and vaccine development

This represents a small government investment that creates a critical catalyst for higher-risk innovation and is necessary to encourage private investment

mRNA Workforce and Potential Job Losses from Federal Policy Changes

66%

of mRNA jobs are **U.S.-based**

36%

of organizations responded that currently **ALL** of their mRNA-related jobs are **based in the United States**

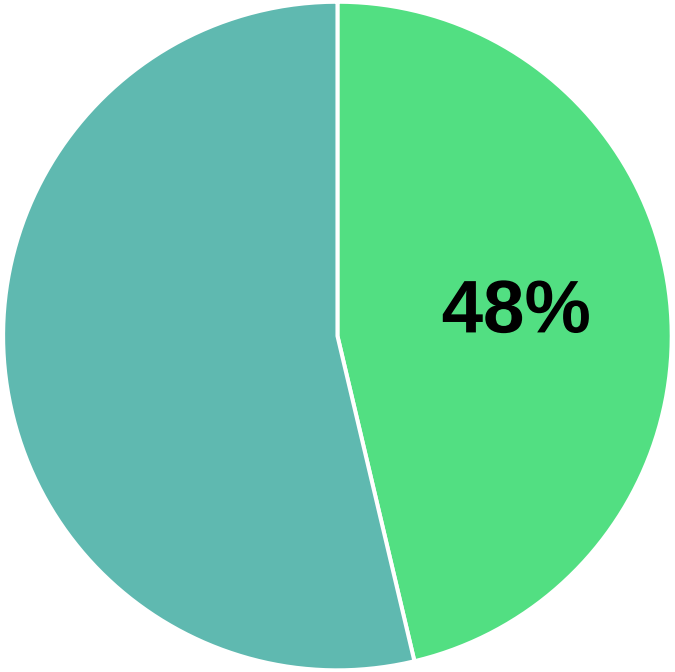
45%

anticipate **workforce reductions** if federal funding for mRNA research is cut, including

21% reporting **ALL** of their organization's **mRNA jobs would be at risk**

Real-World Impact of Recent Policy Changes

***Majority of survey done before recent changes at FDA**



Almost half
of surveyed organizations report **already experiencing direct impacts** from recent policy changes related to mRNA funding

Impacts include:
- Reduced scope of projects
- Budget reductions
- Delayed capital investments
- Partnership terminations
- Job losses or hiring freezes
- Relocation of projects or divisions

“Funding from the government really sets the tone for how the investors feel about investing in the private for-profit organizations."

Real-World Impacts of Recent Policy Changes

"Restrictions in regard to funding could actually be detrimental to a small organization like ours where quite frankly it's the difference between keeping lights on and lights going off inside the organization."

"We had a collaboration with a strategic partner and lost NIH funding recently. Our partner canceled the partnership, and all the project activities came to a stop. We have already invested a lot of money on this project (people, equipment, capital investment)."

"Our company has been forced to look overseas for manufacturing, development, and approval in order to de-risk our efforts."

Potential Consequences of Policy-Related Disruptions

If federal funding for mRNA research were significantly reduced, respondents anticipate severe consequences for their organizations:

- **53%** would need to **delay planned initiatives**
- **48%** would **reduce scope of existing programs**
- **48%** would need to **seek alternative funding sources**
- **41%** would need to **reduce workforce**
- **40%** would **terminate specific programs**
- **30%** would **pivot away from mRNA technologies**
- **30%** would consider **relocating operations to other countries**

Global Competition: The U.S. is Leading mRNA Research but Anti-mRNA Policy Could Drastically Change That

79%

of respondents indicate the **U.S. currently maintains leadership** in mRNA research and development

81%

of respondents also indicated that **anti-mRNA government policies** would likely precipitate **substantial international talent migration** of research, employment opportunities and innovation

If the U.S. loses its leadership position in mRNA technology, consequences could include:

- Economic Impacts
- Healthcare Consequences
- National Security Vulnerabilities
- Scientific Ecosystem Erosion
- Strategic Disadvantages

93% believe that mRNA is critical to America's biotech leadership on the global stage

Global Competition

"The **U.S. would lose billions of potential corporate profits and tax revenues**, many thousands of high-paying scientific jobs, and be vulnerable to the decisions of foreign governments in order to access these critical new mRNA therapies"

"There is a reason that the United States is the research and research training destination for the world... There is no question that **mRNA medicines are the new path forward in drug development, and if the U.S. does not embrace this path, the US will lose an entire generation (or more) of intellectual capital**"

"**U.S. citizens will need to travel outside the country to receive life-saving/altering therapeutics.** Other geographies will take the lead with respect to the technical know-how for the development and manufacture of this new class of medicines."

Policy Considerations and Strategic Imperatives

Industry leaders were asked to describe policy frameworks that would help advance mRNA in the U.S. Top answers include:

- **Regulatory Modernization**
- **Long-Term Investment in Research**
- **Incentives to Boost Domestic Manufacturing**
- **Workforce Investment and Development**
- **Recognition of Therapeutic Potential Beyond Vaccines**

"It's in its very early stages as a therapeutic modality. The potential for human health is enormous, but **abandoning mRNA now would be like abandoning protein-based drugs or small molecule-based drugs. It's a whole potential universe of possibilities that would be foreclosed on**."