**Testimony of Dr. Michelle Rozo**
**Vice Chair, National Security Commission on Emerging Biotechnology**
**Before the House Armed Services Committee**
**Subcommittee on Cyber, Information Technologies, and Innovation**
**To be delivered: April 8, 2025**

Thank you, Chairman Bacon and my fellow Commissioner, Ranking Member Khanna. Thank you to our Commissioner, Congresswoman Bice for her warm introduction.

Our Chairman, Senator Young, just laid out the stakes: emerging biotechnology is the next battlefield in the great-power competition with China. The race for biotechnology dominance is on. China is catching up and in some key areas, already overtaking us.

Today I would like to take a step back and talk about how we got here and what we can do to ensure America wins the biotechnology race.

I come to my role as Vice Chair of the National Security Commission on Emerging Biotechnology as a molecular biologist by training.

I know firsthand that modern biotechnology has existed as a field of study for less than a century, ever since Watson and Crick began unraveling the DNA helix. But biology is complex. This has previously limited our ability to fully harness its potential.

Now this is changing, thanks to advances in artificial intelligence (AI) and engineering biology. Today, cutting-edge AI foundation models are predicting protein structures and designing drugs. This would have previously taken hundreds of millions of researcher-years using conventional methods.

We are arriving at the "ChatGPT moment" for biotechnology, which will be both a technological leap and its wide-spread public embrace. We are about to see decades of breakthroughs happen seemingly overnight.

Biotechnology is reaching beyond medicine to touch nearly every aspect of our lives – agriculture, industry, energy, defense and national security.

That includes the battlefield. Biotechnology will be a game changer for major problems facing our military today. It can solve for logistics on demand, secure supply chains, and enhance operational readiness and military medicine.

Imagine if soldiers in combat could quickly brew chemicals, medicines, and supplies on the front line – not unlike how we brew beer from yeast. This is not science fiction.

One example. The golden hour is the critical period following trauma during which treatment significantly improves a patient's chance of survival. Access to blood saves lives. But blood is not always available in combat – or in remote areas in the U.S. With technology under development at the Defense Advanced Research Projects Agency (DARPA), we can mix dried red blood cells, platelets, and plasma in a vial, crack it like a glowstick, and make field-deployable blood. This turns the "golden hour" into a "golden day."

Biotechnology holds so much promise for our national security. But we need to get these innovations out of the lab and into the hands of the consumer and the warfighter.

America should dominate this technology. Modern biotechnology is an American invention.

But just because you invent the future… doesn't mean you get to control it.

Our Commission found that America's biotechnology strengths are atrophying – dangerously. We lack a federal strategy to direct biotechnology development, and federal funding for R&D has stagnated. We do not treat biological data as the precious strategic resource it is. Our biotech infrastructure and ability to attract and retain talent is second-rate. And while American innovations are extraordinary, we fail to sufficiently commercialize them.

Above all: the U.S. market is not currently supporting all the diverse applications of biotechnology. There is a well-established group of biotech investors that fund therapeutic product development, but companies exploring biotech products or platforms for health security, agriculture, industrial manufacturing, energy, and defense – all critical to America's national security – are being largely ignored.

America is struggling to take advantage of this "ChatGPT moment" in biotechnology… just as China is having a "DeepSeek moment" showing that they can out-innovate us in this key technology. They are making pharmaceuticals more cheaply and quickly. This is not just "fast following." These are first-in-class drugs. Multinational pharmaceutical companies are seeking out Chinese biotechnology for innovative intellectual property and licensing deals.

The "DeepSeek moment" in pharma could soon be coming in agriculture. China is outspending the U.S. and the European Union in agriculture R&D. In 2019, for the first time in history, China applied for more international patents than the United States, and many of these Chinese applications were

for agricultural patents that use CRISPR. From there, China could outpace us in industrial applications… and then even in defense. China has more widely cited papers in synthetic biology than we do. They stand to lead at every aspect of the value chain, from research and innovation to manufacturing and the underlying supply chain.

We need to get our house in order, unless we want to forfeit our global leadership.

Our report sets out an action plan for how the U.S. government can avoid that future.

Critically, we need to mobilize the private sector. That means simplifying pathways to market, exempting certain products from unnecessary regulation, investing in technology start-ups and making the government a better customer for biotech products to smooth the market challenges, all while pushing back against China's brute force economic tactics.

If put into action, these recommendations will give America a fighting chance in the biotechnology race. But we must act now, while we still have time to compete.

Thank you, and I look forward to answering your questions.