



SUMMARY OF THE 2019 WHITE HOUSE SUMMIT ON AMERICA'S BIOECONOMY

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Background

On October 7, 2019, The White House hosted the Summit on America's Bioeconomy. The Summit marked the first gathering at The White House of our Nation's foremost bioeconomy experts, Federal officials, and industry leaders to discuss U.S. bioeconomy leadership, challenges, and opportunities.

The bioeconomy represents the infrastructure, innovation, products, technology, and data derived from biologically-related processes and science that drive economic growth, improve public health, agricultural, and security benefits. Bioeconomy outputs are incredibly diverse, and future applications limitless in terms of both application and value, including new ways to treat cancer; enable novel manufacturing methodologies for medicines, plastics, materials, and consumer products; create pest and disease resistant crops; and support DNA-based information systems that can store exponentially more data than ever before.

Advances realized over the past two decades have resulted from the unique U.S. innovation ecosystem and the convergence between biology and other disciplines and sectors, such as nanotechnology and computer science.

The U.S. bioeconomy – spanning health care, information systems, agriculture, manufacturing, national defense, and beyond – is growing rapidly with increasing impact on our Nation's vitality and our citizens' lives. Biotechnology represents 2% of the U.S. GDP, or \$388 billion. To remain a world leader in the bioeconomy, the U.S. must foster an ecosystem that puts innovative research first in addition to promoting a strong infrastructure, workforce, and data access framework.

The Trump Administration understands that the bioeconomy has a critical role in the Industries of the Future. In August 2019, the Administration's [FY2021 Research and Development Priorities Memorandum](#) identified the bioeconomy as a key area for Federal agencies to focus R&D efforts.

Additionally, in September 2019, The White House Office of Science and Technology Policy (OSTP) issued a [Request for Information](#) seeking input from the public and stakeholders on what the Federal government should do to promote and protect the U.S. bioeconomy.

As The White House turns to the bioeconomy as an Administration science and technology priority, we look forward to continued engagement across the Federal government, the private sector, and the academic community to inform our policies on bioeconomy leadership and advancement for the American people.

Event Summary

The Summit kicked off with a welcome from OSTP Director Kelvin Droegemeier, who discussed the importance of the bioeconomy as a national strategic R&D priority. Michael Kratsios, Chief Technology Officer of the United States, then took the stage to deliver keynote remarks, highlighting the Administration's broad recognition that the bioeconomy is a key Industry of the Future that will increase prosperity, security, and quality of life for all Americans. (See Kratsios's complete remarks on page 6.)

Attendees also heard from senior Administration officials on various aspects of U.S. bioeconomy leadership. Eric Hargan, Deputy Secretary, Department of Health and Human Services (HHS), provided insight on the role of bioeconomy in the health care sector, and Stephen Censky, Deputy Secretary, Department of Agriculture, discussed the bioeconomy's potential for agriculture.

The Summit also convened multiple panel sessions to provide a wide range of perspectives from the academic community and private sector. The first panel, moderated by Dr. Drew Endy, a leading bioengineer at Stanford University, featured representatives from Federal agencies to provide perspective on the bioeconomy as a national priority across agriculture, health care, defense, homeland security, and economic growth. The discussion included Dr. Dimitri Kusnezov, Department of Energy, Dr. Lisa Porter, Department of Defense, Dr. Bob Kadlec, HHS, Andrew Olmen, White House National Economic Council, and Thomas Feddo, Department of Treasury.

The second panel was moderated by Dr. Marc Salit, a top scientist at the SLAC National Accelerator Laboratory, and showcased industry and academic perspectives on the opportunities and challenges to U.S. leadership in the bioeconomy. The panel included Dr. Alexa Dembek, DuPont, Dr. Rob Carlson, Bioeconomy Capital, Dr. Susan Martinis, University of Illinois-Champaign Urbana, Ken Hansen, Semiconductor Research Corporation, and Dr. Jason Kelly, Gingko Bioworks.

The Summit concluded with a number of breakout sessions which allowed the over 100 participants to discuss specific topics in smaller groups. The breakout sessions addressed how the bioeconomy can support broad U.S. national interests, as well as the key challenges the American bioeconomy faces with regard to workforce, Federal policy and regulation, and critical infrastructure and data.

Key Takeaways

Key takeaways from breakout discussions include:

- **Build the bioeconomy workforce of the future.** U.S. leadership in the bioeconomy depends upon our greatest asset – the American workforce. It is critical we support an education and training pipeline for the next generation of bioeconomy scientists, engineers, and innovators. Summit participants also recognized the importance of ensuring our country's great research and academic institutions have the resources and protection they need to thrive.

- **Promote and safeguard critical bioeconomy infrastructure and data.** Secure infrastructure and data will underpin our success in the bioeconomy and ensure this emerging field is for the benefit of all Americans. As discussed at the Summit, security must be coupled with innovation and flexibility. Participants elaborated on approaches to protect genetic and biological infrastructure and data while at the same time promote a robust and growing bioeconomy.
- **Leverage the entire U.S. innovation ecosystem.** Collaboration and partnership across sectors remained a strong theme throughout the Summit. Participants recognized the Federal government alone cannot ensure U.S. bioeconomy leadership, and discussed potential opportunities for collaboration across our Nation's innovation ecosystem with industry and academia. They also identified potential impediments to cross-sector collaboration and areas for improvement.
- **Identify regulatory opportunities and challenges.** Advancements in the bioeconomy require a regulatory framework that drives innovation and allows the next great breakthroughs to happen here in the United States. Participants from the private sector and academic community provided Federal officials perspective on regulatory approaches that support or stifle technological and scientific advances in this emerging field.

Next Steps and Conclusion

Following the Summit on America's Bioeconomy, The White House will continue to seek government and non-government perspectives on maintaining and strengthening U.S. leadership in the bioeconomy. We will work alongside Federal agency partners to improve interagency cooperation and ensure the bioeconomy is prioritized in key R&D budgets to drive basic research in this field. Much work remains to ensure we tap into the talents of the entire innovation ecosystem, take advantage of opportunities to promote innovation, and remove obstacles to growth and advancement.

Through collaboration across the Federal government, the private sector, and academia, we will discuss and consider ways to address the collective challenges to ensuring America leads the world in bioeconomy innovation. As the Trump Administration continues to support the bioeconomy, The White House looks forward to continued engagement in this critical field.

Remarks by Michael Kratsios, Chief Technology Officer of the United States

Good morning everyone. I want to wish you all a very warm welcome to the White House Summit on America's Bioeconomy.

Under the direction of this Administration, the United States Federal government is committed to ensuring American leadership in emerging technologies. We want to leverage the government's unique resources and capabilities to build the future right here in America. Whether that's supporting our unparalleled R&D ecosystem or developing the American workforce or reforming the regulatory barriers that prevent new discoveries, our goal is to keep America as the innovation capital of the world.

We have issued a national strategy on artificial intelligence. We have launched the National Quantum Initiative. We are advancing our 5G infrastructure. And, we are developing a modern STEM workforce. Along with each of these particular fields, let me make one thing very clear: This Administration considers biotechnology one of the critical industries of the future.

The bioeconomy is already an integral part of the general economy. In 2017, revenues from engineered biological systems reached nearly \$400 billion. As calculated by our friends at SynBioBeta, in 2018 the private sector alone invested more than \$3.7 billion in early stage biological engineering and manufacturing technology companies.

But we are not only here because of what biotechnology has done—we are also invested in what biotechnology is going to do.

Take, for example, CAR-T—an amazing new way that we are able to treat cancer. Traditionally, the only way to battle cancer was surgery, chemotherapy, and radiation. With CAR-T, we can develop a biologically engineered and individually tailored treatment from the patient's own immune cells.

Under the Trump Administration, the FDA approved for the first time CAR-T cells to help treat children with acute leukemia and adults with advanced lymphomas. We still have a long way to go, but this therapy is brimming with potential and bringing hope to patients.

We are also developing biotechnology for the military. In the Air Force there is a team called "Project Medusa" that is developing a prototype to biomanufacture runways. This will allow us to build airstrips where we want and when we want in a fraction of the time. By eliminating the need to ship asphalt and concrete to build runways, we will increase our military's mobility, efficiency, and strength.

We all recognize the incredible opportunity of biotechnology. That is why we in the federal government have already committed to supporting the bioeconomy.

We labelled research and development in the biological sciences and biotechnology as a top priority for federal investment in the administration's FY 2021 R&D Budget Priorities Memo. The Department of Defense also identified biotechnology as a modernization priority supporting the National Defense Strategy.

In 2018, the President signed the National Biodefense Strategy to strengthen our national defense against the biological threats to our health and safety. And earlier this year, the President signed an executive order modernizing how we regulate agricultural biotechnology products. By speeding up the approval process for biotechnology, we will reduce the costs to review biotech plants by millions of dollars and bring new products to the market faster.

We are also investing heavily in STEM education so that all of our Industries of the Future can grow with the help of a capable and strong American workforce.

The National Science Foundation has joined in this training effort by supporting the International Genetically Engineered Machine Competition—or iGEM. Over 6,000 students from around the world participate in iGEM where they think of novel ways we can use synthetic biology to solve the world's problems.

We are very proud to have one of these remarkable students here with us today who serves as Team Captain for her school's award winning iGem team—Abby Bell. Abby, congratulations and thank you so much for joining today's summit.

As we look to the future, this Administration is focusing in on three of the core issues that will affect the future of the Bioeconomy: infrastructure, talent, and data.

First, infrastructure. We need to identify what the most critical infrastructure is in the bioeconomy, what we do well, what we don't do well enough, and where there are bottlenecks that impede our innovation or put our security at risk.

Second is talent. We must not only train future innovators, but also determine how we can most successfully support our great research institutions and talent producers so that they have the resources and protection they need to thrive.

And third, we should explore how we can best protect our genetic and biological data while safeguarding the freedom necessary for a robust and growing bioeconomy. As the bioeconomy develops, we need to ensure it is rooted in American values and is always used for the benefit of the American people.

As we approach these and other critical issue areas, we must decide how the federal government can best leverage our resources and our capabilities to support our common goals.

That is part of the reason why all of you are here today. We need your help to get this right.

So please, let us know: What regulations are standing in the way of your success? What guidance or rules of the road might the government help create to spur innovation in America? What critical infrastructure do we need to identify, invest in, and safeguard?

Less than a month ago, the White House Office of Science and Technology Policy issued a request for information, or RFI, on the bioeconomy. I urge all of you not only to share your wisdom here today, but to also submit comments to that RFI.

We have a lot of work ahead of us today and in the weeks, months, and years to come. I want to thank all of you for joining us today at this vitally important White House summit. With your help, America will continue to be the most innovative nation in human history and will lead the way in the bioeconomy.

Thank you.

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