



Biotechnology Innovation Organization
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May 24, 2022

The Honorable Kathy Castor
Select Committee on the Climate Crisis
Chair
H2-359 Ford House Office Building
U.S. House of Representatives
Washington, DC 20515

The Honorable Garret Graves
Select Committee on the Climate Crisis
Ranking Member
H2-361 Ford House Office Building
U.S. House of Representatives
Washington, DC 20515

Dear Chair Castor, Ranking Member Graves, and Members of the Committee:

The Biotechnology Innovation Organization (BIO) is pleased to submit a statement for the record to the United States House of Representatives Select Committee on the Climate Crisis hearing entitled, "Climate Smart From Farm to Fork: Building an Affordable and Resilient Food Supply Chain."

Introduction

BIO¹ represents 1,000 members in a biotech ecosystem with a central mission – to advance public policy that supports a wide range of companies and academic research centers that are working to apply biology and technology in the energy, agriculture, manufacturing, and health sectors to improve the lives of people and the health of the planet. BIO is committed to speaking up for the millions of families around the globe who depend upon our success. We will drive a revolution that aims to cure patients, protect our climate, and nourish humanity.

Addressing Climate Change with Innovation

BIO applauds the select Committee for exploring how to create a sustainable food system that is resilient in the face of climate change. As many have rightly noted in recent weeks, the impact Russia's invasion of Ukraine has had on global food prices, pales in comparison to the impact climate change will have on food supplies in the future².

¹ <https://www.bio.org/>

² <https://www.scientificamerican.com/article/war-in-ukraine-and-climate-change-could-combine-to-create-a-food-crisis/>



Climate change is already impacting agricultural production. According to research by *Nature Climate Change*³ 21 percent of global agriculture production, including livestock, tree farming, and traditional crops such as corn and soybeans, has been negatively impacted by climate change. A slowdown that is equivalent to losing the last seven years of productivity growth.⁴

To meet the challenge of climate change, and foster resiliency and sustainability throughout the agricultural value chain, it is crucial to lead with science and U.S. innovation.

Biotechnology in plants, animals and microbes continues to develop and now includes more targeted and precise tools, which are the subject of significant agricultural research and development efforts, as they offer exciting potential to address growing challenges in agriculture and society generally. Innovation in agriculture has the potential to provide solutions and tools that can increase crop yields, improve crop quality, nutritional value, and food safety; increase resistance to pests and diseases; reduce water use; improve carbon sequestration; enhance tolerance to changes in climate and other environmental conditions; reduce food waste; improve health and wellness; decrease reliance on costly crop inputs; and bolster animal welfare. For additional information on these technologies and their benefits, please see the attached op-ed by BIO President and CEO, Dr. Michelle McMurry-Heath in *STAT* entitled, “To help solve climate change, look to the biosciences.”⁵

We must incentivize the adoption of innovative, sustainable technologies and practices; and streamline and expedite regulatory pathways for breakthrough technology solutions. Investment in and deployment of cutting-edge technologies will be crucial to ensure farmers, ranchers, sustainable fuel producers, and manufacturers are able to respond to climate change and maintain the U.S.’s global leadership in agriculture. This includes removing barriers and assisting beginning and socially disadvantaged farmers and ranchers to access and utilize these technologies, so all producers can adapt to the challenges ahead.

³ <https://www.nature.com/articles/s41558-021-01000-1>

⁴ <https://www.ehn.org/climate-change-and-agriculture-2651320768.html>

⁵ <https://www.statnews.com/2021/05/21/climate-change-solutions-from-biosciences/>



Supporting Innovation

BIO supports administrative and legislative action on climate change that catalyzes resilient and sustainable biobased economies. Policies centered on innovation stand to incentivize the adoption of cutting-edge technologies and practices, resulting in benefits to the environment and rural economies.

The United States must employ a science-based regulatory system that evaluates products based on human health and safety and potential benefits and risks to the environment. Such a system must both foster public confidence in biotechnology and avoid undue regulatory burdens. A regulatory climate that fosters innovation in agricultural biotechnology will be an important component in meeting that goal and ensuring development of a set of precise yet flexible tools for meeting the challenges facing U.S. farmers today and into the future.

Practical, workable regulations are key to harnessing the resources necessary to address these challenges, and to providing opportunities for economic growth, job creation, and environmental benefits. BIO is committed to maintaining a strong partnership with the federal government to ensure the development and implementation of risk-proportionate regulations that underpin a workable, predictable, legally defensible, durable, and science-based regulatory system that facilitates innovation for all innovative biology-based products.

Legislatively, we urge the House of Representatives to take immediate action and pass the bipartisan *Growing Climate Solutions Act*, H.R. 2820⁶. This legislation will help producers solve the technical entry barriers to participating in carbon credit markets and incentivize the adoption of modern agricultural techniques and innovative technologies. This bicameral, bipartisan bill passed the U.S. Senate last summer by a vote of 92-8,⁷ but is still awaiting consideration in the House.

The next farm bill also offers a timely opportunity to examine innovation's influence on the resiliency of our economy in the face of global climate challenges. As Congress examines how U.S. Department of Agriculture (USDA) programs can address climate change, it will be critical to ensure USDA and other federal programs keep pace and

⁶ <https://www.congress.gov/bill/117th-congress/house-bill/2820>

⁷ <https://www.congress.gov/bill/117th-congress/senate-bill/1251/actions>



continue to foster acceptance for new technologies, thereby protecting the stability of the agricultural supply chain.

Finally, BIO recognizes that long-term innovation successes are driven by more than just sound regulatory policy. Public and marketplace support matter a great deal in the successful introduction of new products. BIO is committed to proactive transparency measures, including driving authentic dialogues with producers, stakeholders, and consumers to identify shared values and energize public understanding about innovation in food and agriculture.

Conclusion

The agricultural innovations that BIO's member companies are developing will allow producers to sustainably provide the food, feed, fuel, and fiber needed for a growing world. The development and deployment of these technologies will be crucial to helping farmers and ranchers be a part of the solution to climate change and provide them with the tools to be self-sustaining and resilient to a volatile climate.

BIO is committed to working with the Select Committee toward developing policies to address the climate crisis and support innovation in agriculture.

Sincerely,

A handwritten signature in black ink, appearing to read "Sarah Gallo".

Sarah Gallo
Vice President, Agriculture and Environment
Biotechnology Innovation Organization

Attachment: *Stat*, "To help solve climate change, look to the biosciences"

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STAT

To help solve climate change, look to the biosciences

By Michelle McMurry-Heath May 21, 2021



PHILIPPE HUGUEN/AFP/Getty Images

President Biden's pledge to cut U.S. greenhouse gas emissions in half by 2030 is an admirable and ambitious undertaking. It's nearly double the goal set by President Obama in 2015. And it establishes the United States as a world leader in battling climate change.

But reaching the president's target in just under 10 years is a monumental task. It's so big, in fact, that we'll never get there by government action alone. No amount of vehicle efficiency standards, forest conservation efforts, or gas taxes can [fully solve the problem](#)².

We have to science our way out of it.

The biosciences, including biotechnology, will play a pivotal role in the fight against climate change. It is already leading the way on several fronts. According to a [report from BIO](#)³, the organization I work for, the biotech industry's green initiatives could mitigate the equivalent of 3 billion tons of carbon dioxide every year by 2030, or [about half](#)⁴ of the country's annual CO₂ emissions.

First Opinion Podcast: ⁵STAT's weekly podcast covers the people, issues, and ideas shaping the life sciences writ large. Subscribe today.⁵

Take food, for example.

Food consumption — and production — is central to human existence. Global food production accounts for [one-quarter of greenhouse gas emissions](#)⁶. A recent report from an international team of researchers concluded that even if all other fossil fuel emissions were eliminated, [emissions from food production alone](#)⁷ would prevent us from reaching a key goal of the climate change agreement signed in Paris: preventing the global temperature from [rising more than 2 degrees Celsius](#)⁸.

Halting food production isn't an option, so biotech companies are helping farmers become part of the climate solution. Take, for example, Boston-based [Joyn Bio](#)⁹. It is engineering bacteria that pull nitrogen directly from the atmosphere. These microbes then pass the nitrogen to crops like wheat and corn, reducing the need to make, transport, and apply nitrogen fertilizers, which reduces greenhouse gas emissions.

Minnesota-based Acceligen is using a technique it calls [precision breeding](#)¹⁰ that improves the health of livestock while reducing their waste, greenhouse gas emissions, and water usage.

Biotechnology can also help protect food from climate change. As fungal and bacterial infections accelerated by [human-driven environmental disturbances](#)¹¹ threaten to wipe out Cavendish bananas, [Tropic Biosciences](#)¹² in the United Kingdom is using CRISPR gene-editing technology to engineer infection-resistant bananas.

Companies are also rethinking how food is packaged to reduce plastic pollution and open high-tech paths to broader adoption of biodegradables. This would be a game-changer in the interlinked fight to modulate climate change and protect the oceans.

Globally, [100 million tons](#)¹⁴ of plastic are produced every year, [8 million of which ends up in the oceans](#)¹⁴. The production of plastic requires at least 8% of the world's petroleum. Greenhouse gas emissions from plastic production and incineration [could rise](#)¹⁴ from the current 850 million tons a year to 3 billion tons a year by 2050. And discarded plastic that ends up in the ocean slowly breaks down in sunlight, releasing greenhouse gases and toxic microplastics.

Georgia-based [Danimer Scientific](#)¹⁵ — partnering with the Mars Wrigley candy company — is working on biodegradable packaging that uses plant oils to manufacture “plastic” that dissolves in soil and water. Bioplastics and biopolymers can reduce greenhouse gas emissions reductions by up to [80%](#)³ more compared to their petroleum-based counterparts.

Fuel is another target for biotechnology. Transportation accounts for the [highest percentage](#)¹⁶ of U.S. greenhouse gas emissions. While electric cars are gaining popularity, and the \$174 billion allocated to support the transition to electrics in Biden's American Jobs Plan is important, biofuels — which are [carbon neutral](#)¹⁷ — will be needed to help reduce emissions in transportation and need comparable support.

The biotech company [Synthetic Genomics](#)¹⁸, for instance, is utilizing saltwater algae, which convert sunlight and carbon dioxide into biomass, to make sustainable auto fuel. By 2025, 10,000 barrels of the algal biofuel could be produced per day for commercial use.

Biofuels will also play an important role in air travel. While flying accounts for less than [3% of global CO2 emissions](#)¹⁹ a year, on a per-mile calculation it's the least green form of travel. With the number of air travel

passengers expected to double by 2040, the Biden administration is upping the financial incentives — through tax credits — for companies that produce sustainable aircraft fuels.

Biotech firms are already stepping up. Companies like [Neste](#)²⁰, [Gevo](#)²¹, and [World Energy](#)²² are using everything from algae to used or wasted cooking oil to create sustainable jet fuels. [LanzaTech](#)²³ recycles carbon from industrial emissions and other sources and turns it into aviation fuel — and has recently [partnered with other corporations](#)²⁴ to bring that fuel to market for commercial airline use.

With help from biotechnology, the U.S. can achieve the climate change goals outlined by the Biden administration and the Paris Agreement. Human progress and technology got us into this mess. That same ingenuity can help get us out.

Michelle McMurry-Heath is a physician-scientist and the president and CEO of the Biotechnology Innovation Organization.

About the Author

Michelle McMurry-Heath

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Links

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2. <https://www.rff.org/publications/issue-briefs/emissions-projections-for-a-trio-of-federal-climate-policies/>
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