

January 20, 2023

Arati Prabhakar
Director
White House Office of Science and Technology Policy
Executive Office of the President
Eisenhower Executive Office Building
1650 Pennsylvania Avenue
Washington, D.C. 20504

Re: RFI Response: Biotechnology and Biomanufacturing Initiative

Dear Dr. Prabhakar,

In representing the scientific community that describes, monitors, and studies biodiversity and all the interactions associated with living organisms at local, national, and global scales, the Natural Science Collections Alliance is grateful for the opportunity to provide input to the OSTP on the critical role our community plays in the local, national, and global bioeconomy now and into the future.

The Natural Science Collections Alliance is a non-profit association that supports natural science collections, their human resources, the institutions that house them, and their research activities for the benefit of science and society. Our membership consists of institutions that are part of an international network of museums, botanical gardens, herbaria, universities, and other institutions that contain natural science collections and use them in research, exhibitions, academic and informal science education, and outreach activities.

In order to advance national and economic security, the time has come to truly develop the nation's bioeconomy to its full potential. The federal government must invest in training and resources for biodiversity research and monitoring that goes far beyond searching for drugs that may be useful for treating human diseases. If we want **"innovative solutions in health, climate change, energy, food security, agriculture, and supply chain resilience,"** we must embrace the idea that the bioeconomy needs a strong biodiversity foundation that will provide the materials and informatics resources necessary to jumpstart and sustain this new economic sector. The traditional, piecemeal, utilitarian view of biodiversity continues to undervalue the economic potential and realized contributions of biodiversity. We urge the government to stimulate the bioeconomy by recognizing and supporting fundamental biodiversity infrastructure through new and ongoing critical research on and monitoring of biodiversity.

The global covid pandemic represents just one example of why humans can no longer focus solely on their own species for the future sustainability of the planet. The sector of the bioeconomy that addresses emerging zoonotic pathogens scientifically is largely academic in nature. Our community studies the wildlife hosts of viruses that have coevolved along with the rest of biodiversity for billions of years. Biodiversity holds the key to understanding and controlling these interactions with viruses in our species, yet until recently it has largely been taken for granted by economists, the government, and society. This is myopic at best and potentially fatal at worst. The 8 billion people on this planet depend broadly on the health of the planet's biodiversity. Therefore improving fundamental biodiversity infrastructure (e.g., biorepositories, field stations, natural resource agencies) must be reflected in funding for the nation's bioeconomy. The biodiversity research and monitoring community

is large and forms an increasingly connected network across the planet, but it needs strengthening and increased support in every facet to fulfill the promise associated with national and global bioeconomies.

The nation's biorepositories and biodiversity databases are examples of critical components of the national bioeconomy that need substantially more support. The bioeconomy will function more effectively through gathering and archiving better spatial and temporal sampling and data on biodiversity. These data, both physical and digital, must be networked, archived, and made readily available to diverse sectors of the bioeconomy. This infrastructure also allows us to understand critical trends, such as how climate change is affecting biodiversity at local, national, and international scales in our oceans, lakes, rivers, marshes, deserts, grasslands, and forests. Biorepositories, such as natural history collections, around the country have long functioned as this entity for physical specimen-based knowledge as part of the broader economy.

In an era where researchers can now gather genomic data on any organism, we have access to an unimaginable wealth of data produced by 4 billion years of biodiversity evolution that has produced an estimated 10 million species, each of which has solved particular challenges in novel ways. New advances in food and agriculture production based on genetic research are critical, but in terms of the national bioeconomy this represents only a small portion of the overall biodiversity research needed going forward.

Our community is already committing to and implementing initiatives for diversity and inclusion in our workforce. However, unless the government embraces the need to develop and support a much larger biodiversity research and monitoring workforce in the same way that it supports growing the human health or national defense workforce, major challenges such as climate change, human health, infectious disease, food security, and global pandemics will not be adequately addressed. Moreover, government action must be sustained long-term to tackle these challenges that are likely to span centuries.

To conclude, a federal government initiative truly focused on "**Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy**" must recognize and promote biodiversity research and the workforce that conducts this research as central to our nation's bioeconomy.

Thank you for your consideration.

Sincerely,



Gil Nelson, Ph.D.
President
Natural Science Collections Alliance