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# BioScience®

## A Forum for Integrating the Life Sciences

American Institute of Biological Sciences

### COVID-19 and the Bioeconomy

**F**or members of the public and lawmakers who have doubted the importance of biology to human well-being, the SARS-CoV-2 pandemic provides overwhelming evidence that investments in the biological sciences are essential public benefits. Biologists must use the focus provided by this moment of global pain and uncertainty to remind policymakers that science, when it is marshaled and its findings are incorporated into responsible public policy, can prevent or mitigate future public health, environmental, and economic disasters.

According to a recent report in *Forbes*, the bioeconomy is estimated to account for about \$1 trillion of the United States economy each year, or roughly 5% of gross domestic product ([www.forbes.com/sites/johncumbers/2020/02/03/china-now-out-invests-america-in-the-global-bioeconomy-by-30/#2af38f3f7440](http://www.forbes.com/sites/johncumbers/2020/02/03/china-now-out-invests-america-in-the-global-bioeconomy-by-30/#2af38f3f7440)). Although definitions of *bioeconomy* vary, the White House Office of Science and Technology Policy has adopted a broad definition: “The infrastructure, innovation, products, technology, and data derived from biologically related processes and science that drive economic growth, promote health, and increase public benefit.”

As Jyotsna Pandey reported in a recent *BioScience* Washington Watch column (<https://doi.org/10.1093/biosci/biaa049>), “strengthening the bioeconomy is increasingly important, particularly given escalating ramifications of global health and environmental problems. Coordinated networks of digitized biological collections and large biological and environmental data are needed to tackle these problems.”

Pandey interviewed Diane DiEuliis, a senior research fellow at the National Defense University, who said, “It makes people realize when an outbreak like this [SARS-CoV-2] happens that so much benefit could have been derived from our collections if they had been made more accessible to researchers.” In 2016, DiEuliis—who was then in the Office of Preparedness and Response in the US Department of Health and Human Services—was the lead author of “Specimen Collections Should Have a Much Bigger Role in Infectious Disease Research and Response,” an opinion piece published in the *Proceedings of the National Academy of Sciences* ([www.pnas.org/cgi/doi/10.1073/pnas.1522680112](http://www.pnas.org/cgi/doi/10.1073/pnas.1522680112)). DiEuliis and colleagues warned of risks from disease transmission between wild or domesticated animal species and human populations. They cited studies reporting that about 60% of the 1400 known pathogenic species are zoonotic, 75% of the 175 species responsible for serious disease outbreaks are zoonotic, and about 17% of human diseases were introduced by insects or other types of vectors.

“Collections can provide shortcuts to public health responders looking for the origins and distribution of disease agents, but only if the collections are accessible and well documented,” wrote DiEuliis and colleagues. As highlighted by several articles published in *BioScience* in just the first four months of 2020, the scientific community is positioned to mobilize data held in scientific collections. Initiatives such as the Extended Specimen Network (<https://doi.org/10.1093/biosci/biz140>) integrate biodiversity collections data with data from other sources to advance research and education that increase our understanding of the world. In turn, this newly gained understanding informs the decisions that contribute to our economic growth and security by enhancing our public health, national security, and environmental sustainability and resiliency. New, coordinated, and sustained investments by science funding organizations and agencies are required to realize the full potential of initiatives such as the Extended Specimen Network.

Now is the time to act. Scientists must take an active role in advocating for the critical investments in biological sciences infrastructure, research, education, and workforce that will ensure a better tomorrow.

ROBERT E. GROPP  
Executive Director

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