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## **RE: RFI on Federal Priorities for Information Integrity Research and Development**

The American Society for Biochemistry and Molecular Biology is an international nonprofit scientific and educational organization that represents more than 12,000 students, researchers, educators and industry professionals. The ASBMB strongly advocates for strengthening the science, technology, engineering and mathematics (STEM) workforce, supporting sustainable funding for the American research enterprise, and ensuring diversity, equity and inclusion in STEM.

ASBMB members receive funding from federal agencies to conduct their scientific research. The three federal agencies that fund most ASBMB members are the National Institutes of Health, the National Science Foundation and the Department of Energy. It's through this lens of representing researchers funded by these agencies that the ASBMB provides the below recommendations to improve the [U.S. Global Change Research Program's](#) 2022–2031 strategic plan.

USGCRP's draft strategic plan contains the correct strategic pillars needed to address climate and global changes and to improve federal agency coordination. In particular, the ASBMB supports the following outlined in the draft strategic plan:

1. Commitment to “open science, timely data access and advanced online search capabilities”
2. Incorporating transdisciplinary research approaches
3. Efforts to increase understanding of community-level needs, impacts and responses as it relates to climate and global change risks
4. Dedication to an open, inclusive and transparent process for creating scientific knowledge

The ASBMB strongly recommends including the following issues and topics in the strategic plan to expand on the principles mentioned above and to advance scientific research that will be needed to mitigate and address problems caused by climate change.

### **Recommendation 1: Building a stronger research infrastructure network to monitor, track and research emerging infectious diseases.**

While new infectious diseases always will emerge and old threats can appear again, there is [significant evidence indicating](#) that climate change is accelerating the emergence of infectious diseases. The spillover of infectious diseases (i.e. when a [virus overcomes barriers](#) and infects another species) into the global human population has consequences for the health of Americans. The COVID-19 pandemic is a prime example of how devastating a virus can be to the lives and livelihoods of people around the world. To prevent history from repeating itself, the federal government, and in particular USGCRP, must ensure that all federal agencies have the funding, talent, infrastructure and technologies needed to conduct research, surveillance and analysis.

USGCRP’s strategic plan must include the creation of a research infrastructure network that will align federal agencies’ responses to emerging infectious diseases. The ASBMB urges USGCRP to refer to the National Institute of Allergies and Infectious Disease’s [Pandemic Preparedness Plan](#), the goals of which are to:

1. Systematically **characterize pathogens of concern** and increase research and surveillance to identify threats before they emerge
2. **Shorten timelines** between pathogen emergence or outbreak onset and authorization/approval of candidate diagnostics and medical countermeasures, such as therapeutics and vaccines
3. **Bridge or eliminate existing gaps** in research, infrastructure and technology and expand clinical and clinical testing capacity.

A research infrastructure network connecting all relevant federal agencies will need a set of shared goals if it is to ensure cooperation, information sharing and synergy. We recommend adoption of the NIAID Pandemic Preparedness Plan goals. Doing so will ensure a speedier response to emerging infectious diseases and will position the U.S. to better handle emerging threats.

**Recommendation 2: Apply the One Health approach to scientific research, including basic research.**

[Research has demonstrated](#) the negative impacts that climate change has on the environmental factors that determine human health, such as clean air, food security and safety, water quality and pathogens.

The One Health approach is [defined by the Centers for Disease Control and Prevention](#) as “a collaborative, multisectoral and transdisciplinary approach — working at the local, regional, national and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants and their shared environment.” The One Health approach has been adopted by the CDC to create public health interventions that prevent viruses from mutating and diseases spreading from one species to the next. As J. Lebov et al. [wrote](#) in 2017: “While the need for multidisciplinary research is not new, the concept of (One Health) has gained momentum as researchers from human medicine, public health, veterinary medicine, urban planning, and environmental science increasingly focus on holistic, integrated approaches to complex questions that address human health in conjunction with animal and environmental health.” By approaching scientific research through this multidisciplinary lens, experts are able to generate far more information across different disciplines and help policymakers come to evidence-based decisions.

The One Health approach must also be applied to biomedical research. It provides “a more comprehensive understanding of the problem and potential solutions than would be possible with siloed approaches,” Lebov et al. wrote. As the leader of biomedical scientific research in the U.S., the NIH must encourage researchers to apply One Health approach to their own work when research projects are relevant to climate-related crises. The approach pushes scientists to work collaboratively with other experts, including veterinarians, ecologists, structural and environmental engineers, climatologists, etc. Breaking down silos will lead to more innovative solutions and problem-solving skills, ultimately protecting the U.S. from climate-related threats.

### **Recommendation 3: Improve science literacy about climate change specifically.**

Science literacy is [defined by the National Academies](#) as “knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs and economic productivity.” According to the Pew Research Center, [40% of Americans](#) still don’t believe climate change is a major threat. Improving science literacy among the American public will not only rally support for efforts undertaken by the federal government to mitigate the impacts of climate change–related crises, but it also will build trust in scientific research and help avoid science-related misinformation.

Science literacy must be included in USGCRP’s strategic plan under pillar 3, “Engaging the Nation.” [Building science literacy into the digital world](#) is a key and promising practice; this essentially means teaching individuals how to access, understand and critically assess scientific information that they come across. The ability to question why specific viewpoints or information are included or left out in media is very important in determining its credibility. Another important component to this issue is acknowledging and working to remove digital divides. USGCRP should include these components within its strategic plan.

### **Recommendation 4: Build public trust in science and improve scientific communication**

Alarming, public confidence in scientists and medical scientists has significantly decreased since the emergence of SARS-CoV-2 in 2019. [According to a Pew study](#), only 29% of U.S. adults say they have a great deal of confidence in medical scientists to act in the public’s best interests. Without public trust in science, medical scientists and other science-related professionals, any efforts to handle global crises, such as food and water insecurity, emerging infectious diseases and energy crises, will fail.

Federal agencies must encourage and incentivize scientists to communicate scientific research to the American public. Doing so will help [counter misinformation and disinformation](#), which have been rampant since the [beginning of the COVID-19 pandemic](#). Significant progress has been made in this area already — federal agencies, in particular [the National Science Foundation](#), have solicited proposals to conduct nonmedical, nonclinical research that can be used to inform and educate the U.S. populace about the science of virus transmission and prevention to combat misinformation. [These efforts](#) have helped build trust between medical experts and individuals who are skeptical of vaccines or other treatment options. Adding a component about building public trust in science to USGCRP’s strategic plan will be important if we are to mitigate some of this distrust and implement science-based policymaking that is needed to address climate change–related challenges.