

Testimony Prepared by the American Society for Microbiology
Submitted for the record to the United States House of Representatives
Committee on Appropriations
Subcommittee on Commerce, Justice, Science, and Related Agencies
April 29, 2021

Submitted on behalf of: Allen Segal, Director of Public Policy and Advocacy
American Society for Microbiology, 1752 N Street, NW, Washington, DC 20036
(202) 737-3600; ASegal@asmusa.org

The American Society for Microbiology (ASM) appreciates the opportunity to submit outside witness testimony for the Fiscal Year 2022 Commerce, Justice, Science and Related Agencies appropriations bill in support of increased funding for the National Science Foundation (NSF) and increased coordination of microbiome research by the White House Office of Science and Technology Policy in FY2022. ASM is one of the oldest and largest life science societies with 30,000 members in the U.S. and around the world. Our mission is to promote and advance the microbial sciences, including programs and initiatives funded by the federal government departments and agencies, by virtue of the integral role microorganisms play in human health and society. Microbial science is a cross-cutting endeavor, and our members' federally funded research is fundamental to advances in human health, agriculture, energy and the environment.

ASM calls on Congress to provide at least \$10 billion for the National Science Foundation in Fiscal Year 2022.

Investments by Congress in NSF-funded discoveries have strengthened the science and technology sectors of the US economy, boosted workforce development and ensured America's global market competitiveness. For over seventy years, the NSF has invested in basic research and education at the frontiers of science and engineering, including high risk and transformative research not supported by other funding sources. NSF is the only federal agency that supports innovative basic research across all fields of science and engineering, and its support of multidisciplinary research and education is critical to promoting the next generation of scientists, improving the future of the nation's science and engineering enterprise, and maintaining our global competitive edge. NSF is divided into seven directorates that support science and engineering research and education: Biological Sciences, Computer and Information Science and Engineering, Engineering, Geosciences, Mathematical and Physical Sciences, Social, Behavioral and Economic Sciences, and Education and Human Resources.

Microbes are at the foundation of scientific discovery, and the NSF is a key supporter of microbial science research, including microbiome research, discovery of emerging pathogens, and global collaboration. ASM members around the world are working to improve lives through research on human and animal health, agriculture, energy, the environment, and biothreats. NSF-funded research advances our understanding of the 70 percent of emerging human pathogens that have non-human origins, which pose serious threats to human health and global health security, as we have recently seen with the emergence of COVID-19. Investments in NSF research over several decades facilitated the rapid sequencing and identification of the SARS-CoV-2 virus

weeks after its discovery in late 2019, which enabled infectious disease experts to begin work early on to combat the spread of the virus.

The NSF has excelled in its congressionally mandated mission “to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.” The NSF’s dedication to progress is particularly notable in the area of microbiome research. The Understanding the Rules of Life: Microbiome Interactions and Mechanisms program is one example of this innovative work. The broader NSF Rules of Life Big Idea aims to enable discoveries that will improve our understanding of interactions within different ecosystems, and to identify causal, predictive relationships across different scales (spatial, temporal, levels of biological organization and complexity) that help define the “rules” for how life functions. It also seeks to develop research tools and infrastructure to further Rules of Life research, and to provide the capacity to approach more complex research questions.

The goal of the Microbiome Interactions and Mechanisms program research within the Rules of Life Big Idea is to understand interactions and mechanisms that govern the structure and function of microbiomes. By integrating the wide range of accumulated data and information on microbiome structure and function, new causal models of interactions and interdependencies across scales and systems can be generated. To continue to achieve its goals, it is critical that the FY2022 appropriations bill robustly fund NSF.

ASM urges Congress to request an update from the Office of Science and Technology Policy on the implementation and continuation of the Interagency Strategic Plan for Microbiome Research.

Microbiome science aims to advance understanding of microbial communities (microbiomes) for applications in areas such as health care, food production, and environmental restoration to benefit individuals, communities, and the environment. Understanding of the microbiome has evolved significantly since the concept of the human microbiome emerged roughly two decades ago. Today it is understood that microbial communities exist on, in, and around people, plants, animals, soil, oceans, and the atmosphere, making the microbiome relevant to all living things. The rapid pace of discovery has led to greater technology needs and data sharing infrastructure.

Launched in 2016, the National Microbiome Initiative pledged \$121 million in funding from federal agencies and \$400 million in total cash and in-kind contributions from 100 companies, foundations and academic institutions. As part of this initiative, the Federal Microbiome Interagency Working Group developed the Interagency Strategic Plan for Microbiome Research, providing recommendations for improving coordination of microbiome research among Federal agencies and between agencies and non-Federal domestic and international microbiome research efforts. The five-year Strategic Plan envisioned coordinated microbiome research activities across 21 government agencies, set out interagency objectives, structure and operating principles, and noted several research focus areas. **As the Strategic Plan’s term ends in 2022, OSTP should evaluate the progress made, consider whether the Federal investment has been adequate to fully realize the promise of this initiative, and begin the process to develop a strategic plan for interagency collaboration in this essential research for the next five years.**

Conclusion

ASM is particularly grateful to Congress for its commitment to increased investments in the NSF in recent years. We urge Congress to revisit OSTP's past commitment to microbiome research and to increase funding for NSF in FY2022 to at least \$10 billion. We look forward to continued federal investment in microbe-powered innovation.