

**American Society for Microbiology Response to  
White House OSTP Joint Committee on the Research Environment (JCORE)  
Request for Information (RFI)**

***Request for Information on the American Research Environment, 84 Fed. Reg. 175: 65194-97,  
November 26, 2019***

The American Society for Microbiology (ASM) is one of the oldest and largest life sciences societies, with more than 30,000 members in the United States and around the globe, and its mission is to promote and advance the microbial sciences. ASM advances the microbial sciences through conferences, publications, certifications, educational opportunities and advocacy. We enhance laboratory capacity around the globe through training and resources, and we provide a network for scientists in academia, industry and clinical settings. Additionally, ASM promotes a deeper understanding of the microbial sciences to diverse audiences.

ASM thanks the White House National Science and Technology Council's Joint Committee on the Research Environment (JCORE) for providing this opportunity to weigh in on actions the federal government, in partnership with stakeholders, can take to maximize the quality and effectiveness of the American research environment. As a global and diverse scientific society, and a leading publisher of microbial research with sixteen peer-reviewed journals, ASM recognizes the important role that scientific societies play in ensuring a safe and inclusive research environment, and in promoting rigor and integrity in the research process. Our comments below focus on three areas of the RFI: (1) ensuring rigor and integrity in research; (2) fostering a safe, inclusive, and equitable research environment; and, (3) strengthening the security of America's S&T enterprise.

**Ensure Rigor and Integrity in Research**

The American Society for Microbiology is fully invested in the highest standards of rigor and reproducibility in experimental design, interpretation, and reporting. ASM's honorific branch, the American Academy of Microbiology, addressed this topic in a colloquium published in 2016 in which participants considered issues related to reproducibility, the ethical conduct of scientific research, and good practices.<sup>1</sup> The Academy colloquium's discussions focused on, for example, how publication standards can be upheld globally, how procedures can be implemented in the laboratory to promote ethical practices, and the appropriate consequences for data mishandling. Reproducibility is a current problem in science that has been

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<sup>1</sup> American Academy of Microbiology. *Promoting Responsible Scientific Research*. 2016

acknowledged by leaders in our community. Scientific advancement is incremental and requires a solid foundation of rigorous and reproducible information to translate fundamental discoveries into real world applications. Sloppy science, reporting bias, and misconduct all contribute to the publication of erroneous and non-reproducible information, and this ultimately hinders forward movement of legitimate and beneficial lines of scientific inquiry. However, it is also important to ensure we are not conflating lack of reproducibility with ethical transgressions because there are scientifically valid reasons in some instances that findings are unable to be reproduced, or are difficult to reproduce.

**Q.1 What actions can Federal agencies take to facilitate the reproducibility, replicability, and quality of research?**

**Q2. How can federal agencies best work with the academic community, professional societies, and the private sector to enhance research quality reproducibility, and replicability? What are current impediments and how can institutions, other stakeholders, and Federal Agencies collaboratively address them?**

All stakeholders, including funding agencies, research and academic institutions, journals, professional associations, individual investigators, and research groups, have a role to play in ensuring rigor and integrity in scientific practice. This premise is supported by the San Francisco Declaration on Research Assessment (DORA), which set forth recommendations to improve the ways in which the output of scientific research is evaluated by funding agencies, academic institutions, and other parties to avoid incentives that inadvertently undermine rigor and integrity.<sup>2</sup> ASM has endorsed the DORA recommendations.

ASM commends federal agencies for taking numerous steps to enhance reproducibility and transparency over the past several years. These efforts include creating a clearinghouse for information and training modules through an NIH Reproducibility website. NIH Institutes also have included rigor training in T32 grants and other mechanisms focused on early-career scientists.<sup>3</sup> ASM was pleased to see NIH put forth a draft policy for data management and sharing in November and to seek public input on this new policy.

Data availability and sharing are critical to ASM’s mission to advance the microbial sciences. In October, we expanded our own data policy to be more comprehensive and to apply across all

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<sup>2</sup> San Francisco Declaration on Research Assessment, 2013. <http://sfdora.org>

<sup>3</sup> Lauer, Mike. “Rigorous Resources for Rigorous Research” <https://nexus.od.nih.gov/all/2018/07/02/rigorous-resources-for-rigorous-research/>

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of our journals, not just those that are open access.<sup>4</sup> As of October 2019, to publish in any ASM journal authors will need to make their data publicly available (except in rare circumstances), preferably by depositing it in publicly-accessible, curated and sustainable data repositories. While our new policy is not without challenges, we believe the open data policy benefits both authors and readers in the long run. Data will receive persistent, unique identifiers when they are deposited in these repositories, making them findable and citable. Readers will have access to the original underlying data described in a paper, enabling the reuse of that data either for reproducibility purposes or for entirely new analyses. In return, the original data generators (i.e. the authors) will receive credit for their work in the form of data citations. Formal data citations promote reproducibility and help identify how data are reused.

Scientific advances are predicated upon the principle that experiments and conclusions drawn from published information can be repeated and further advanced by others. Taking thoughtful steps toward open data, with input from stakeholders, will ensure that historical barriers to scientific progress are not perpetuated.

**Q3. How can we ensure that researchers, including students, are aware of the ethical principles of integrity that are fundamental to research?**

Research misconduct occupies space at the most severe end of the ethics spectrum that impacts the scientific community. The scientific community has become increasingly aware of problems relating to the integrity of the research in submitted and published papers. Scientific errors and incorrect interpretations inevitably occur in the published literature, but authors who knowingly commit fraud or other research misconduct seriously compromise the integrity of the scientific record and the success of future scientific research. All stakeholders, including federal science agencies, academic institutions, and professional societies, have a role to play in ensuring grantees, students and employees, and members are aware of the ethical standards for conducting research and reporting and publishing findings.

Professional scientific societies have a key role to play in ensuring students and researchers at all levels are aware of ethical principles of integrity, and where possible, collaborations with federal agencies can be helpful. ASM provides training for its members through webinars, special sessions at our annual meeting and other scientific conferences on scientific rigor and ethics. We also provide online science writing courses for trainees.

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<sup>4</sup> [https://journals.asm.org/content/open-data-policy?\\_ga=2.31103164.223548841.1577910900-1577609744.1550589292](https://journals.asm.org/content/open-data-policy?_ga=2.31103164.223548841.1577910900-1577609744.1550589292)

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In our role as a scientific publisher, ASM is committed to minimizing the impact of ethical transgressions on the scientific record by promoting best practices, seeking out potential problems prior to publication, correcting errors detected after publication, and complying with institutional and governmental investigations and regulations. We publish resources and publication guides for scientists submitting papers to our journals on our website, including an Ethics portal on our journals website.

An important way to instill principles of integrity in the research enterprise is to strengthen oversight and training. This can be done by establishing a comprehensive, consistent, and transparent system to detect and report problems to both research institutions and the federal oversight entities (e.g. NIH's Office of Research Integrity (ORI)) to enforce integrity at all levels. This is certainly an area where collaboration will be needed between federal science funding agencies and the stakeholder community. We appreciate that ORI offers grants that are open to scientific societies. We also support the requirement that every four years, NIH grantees must participate in a Responsible Conduct in Research training, and that such training also is required of NIH intramural scientists.

Another way Congress and the federal government can support researchers is by providing consistent funding levels for scientific research. The members of the American Academy of Microbiology who participated in our 2016 colloquium noted that scarcity of funding can fuel sloppy and dishonest science where it exists. Sustainable funding for research and training, as noted above, is a means by which many of these problems can be addressed.

**Q4. What incentives can Federal agencies provide to encourage reporting of null or negative research findings? How can agencies best work with publishers to facilitate reporting of null or negative results and refutations, constraints on reporting of experimental methods, failure to fully report caveats and limitations of published research, and other issues that compromise reproducibility and replicability?**

It has long been established that rigorously executed, hypothesis-driven experiments often result in "negative" data that does not support the hypothesis. Members of the ASM Academy believe a case can be made that both positive and negative data are valuable to the scientific community and that the reporting of negative data should be encouraged in respected venues. Our published colloquium participants suggested that a formal mechanism for the publication of negative data could be established, with the proper peer review safeguards in place.

ASM is exploring ways to provide an outlet for the publication of sound, scientific information that is important to the overall body of research, even if it includes null or negative data and

results. ASM also provides forums for scientists to discuss these challenges, including but not limited to, sessions at our annual Microbe conference.

### **Foster a Safe, Inclusive, and Equitable Research Environment**

As a global and diverse professional scientific society, ASM recognizes the important role that we can play in ensuring a safe and inclusive environment. We are committed to promoting an environment that both allows for the free expression and exchange of scientific ideas, and promotes equal opportunities and respectful treatment for all. The best science is conducted when research environments are diverse and inclusive, regardless of gender, race or ethnicity, religious affiliation or sexual orientation. Harassment in any form or for any reason undermines the facilitation of good science.

#### **Q1. What policies and practices are most beneficial in fostering a culture of safe and inclusive research environments?**

Policies must be clear and support an environment that, as stated above, encourages free expression and exchange of scientific ideas and promotes equal opportunities and respectful treatment of all participants. For example, ASM has established a strong code of ethics in our Policies and Procedures Manual for our members, and we enforce policies governing professional conduct at our meetings and events.<sup>5</sup> We expressly prohibit and outline a zero tolerance policy for harassment or bullying of any kind, and we have established an anonymous reporting mechanism through which complaints can be reported and responses made.

ASM commends the NIH leadership for establishing a Working Group, which has now issued a report making recommendations for changing the culture to end sexual harassment.<sup>6</sup> The report includes recommendations for scientific societies regarding conferences, meetings and events. ASM also commends the leadership of the National Science Foundation (NSF) for efforts to directly address harassment among grantees. The efforts of these two agencies are critical to changing the culture and should be emulated by all federal science agencies.

Congress also has made an effort to address harassment through legislation. ASM supported H.R. 36, the Combatting Sexual Harassment in Science Act of 2019, which passed the House in last July and now awaits action in the Senate. If enacted, this legislation would clarify and strengthen the federal government's role in addressing this by convening stakeholders,

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<sup>5</sup> American Society for Microbiology. ASM Policies and Procedures Manual. October 2018. Accessed at <https://www.asm.org/ASM/media/AM-Governance/ASM-PPM-October-2018v3.pdf>

<sup>6</sup> [https://acd.od.nih.gov/documents/presentations/12122019ChangingCulture\\_Report.pdf](https://acd.od.nih.gov/documents/presentations/12122019ChangingCulture_Report.pdf)

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authorizing data collection, and funding research to better understand the factors that contribute to sexual harassment. We encourage JCORE to consider what it can do to serve as a convener, to harmonize policies across science agencies, and to collect data to inform these policies. Federal support also is needed for the development of infrastructural resources, such as training programs to address harassment in science.

**a. Organizational leadership actions that create a culture of inclusivity**

While creating a culture of inclusivity goes beyond what scientific societies alone can do, ASM is contributing to this effort through a number of initiatives. First, in early 2019, ASM joined with more than 125 other scientific organizations to launch the Societies Consortium on Sexual Harassment in STEMM (science, technology, engineering, mathematics and medicine). Together, the members of this Consortium will do our part to advance professional and ethical conduct, climate, and culture across our respective fields. ASM is a member of the Consortium's Leadership Council.

Second, last fall ASM launched a Diversity, Equity and Inclusion (DEI) project to ensure inclusivity in the microbial sciences. As part of our ongoing efforts to recruit and recognize underrepresented minorities in the microbial sciences through a number of mechanisms, including fellowships and travel awards, ASM is working to ensure that diversity exists across our editorial boards and reviewers, scientific and clinical achievement awardees, conference speakers, and in our governance. The ASM Board of Directors convened an external task force to review practices in the microbial sciences and develop a plan to holistically integrate diversity and ensure inclusive standards of practice exist across the discipline.

Third, ASM administers the Annual Biomedical Research Conference for Minority Students (ABRCMS) through a grants from the National Institute of General Medical Sciences. The ABRCMS was founded by ASM to encourage minority, first-generation, veteran, and disabled students to pursue higher education in STEM. Today, ABRCMS is one of the largest professional conferences for underrepresented students, and it is growing each year. The speakers at the conference also are becoming more reflective of the diverse population the conference represents. This sends an important message to both attendees and the larger scientific community about the scientific value of a diverse research workforce.

**Strengthen the Security of America's S&T Research Enterprise**

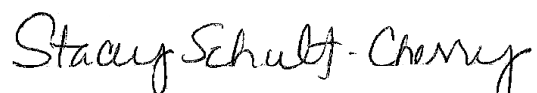
Scientific advancement is a global pursuit, and it is critical that public policies allow and encourage formal and informal scientific collaboration regardless of national boundaries. At the same time, ASM recognizes the integrity of publicly-funded research enterprise must be protected against misuse, and that vigilance is required. We urge JCORE to continue an open dialogue with the scientific community and research institutions, with the goal of finding an

appropriate balance between our nation's security and an open, collaborative, scientific environment.

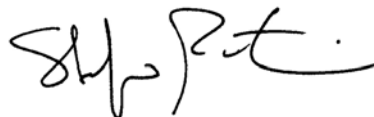
### **Conclusion**

The American Society for Microbiology thanks the White House Office of Science and Technology Policy and JCORE for making research and development a key priority. ASM and its members look forward to next steps in this endeavor and stand ready to assist you. For more information, please contact Allen Segal, ASM Director of Public Policy and Advocacy, at [asegal@asmusa.org](mailto:asegal@asmusa.org) or 202-942-9294.

Sincerely,



Stacey L. Schultz-Cherry, PhD  
Chair, ASM Public and Scientific Affairs Committee



Stefano Bertuzzi, PhD  
ASM Chief Executive Officer