



## TOWARD SCIENCE WITHOUT WALLS

In an ideal world, powerful scientific discoveries would emerge from collaboratives built on expertise that crosses disciplines, that provoke audacious concepts and drive impactful applications. Bold ideas would be sought, funded, and celebrated. K-16 students of all backgrounds and life experiences would receive education that conveys the wonder of science and the power of evidence-based reasoning. Incentives and rewards during graduate and postdoctoral training, and throughout professional academic careers, would motivate and promote creative thinking and risk-taking. Our scientific culture would embrace diversity and those from underrepresented backgrounds, prioritizing the inclusion of a rich blend of perspectives that would drive innovation, and accelerate discovery and application.

Instead of this ideal, however, today's scientific enterprise is fragmented by blockades large and small, intentional and inadvertent. What would science look like if those walls came down? The 2024 AAAS Annual Meeting – *Toward Science Without Walls* – will explore the many barriers that separate and isolate the components of the science and technology enterprise, assess the scientific and social consequences of those barriers, illuminate the societal imperative to imagine science without walls, and enunciate actions needed from different stakeholders – scientists, academia, government, industry, nonprofits -- to create a seamless continuum.

Fragmentation of our science enterprise persists at a moment when the global community is confronted by existential challenges in health, energy, environment, food, and security. Those challenges will be met only by breakthrough scientific discoveries and coordinated, directed delivery of transformative technologies, unconstrained by conceptual, social, economic, or bureaucratic boundaries. Indeed, it is encouraging that despite the barriers, some revolutionary strategies and technologies that promise impacts in those challenge areas are on the horizon; we shall be stimulated in learning of some of those at this meeting. And to advance toward science without walls, we shall explore a wide range of problem areas, and aspirations and proposals for addressing them. Some potential, by no means inclusive, examples:

- incentive and reward metrics in academia and funding agencies that encourage risk-taking, and focus on collaborative teams over individuals;
- disciplines freed from the constraints of academic bureaucratic structures and isolated federal funding agencies;
- K-16 science education that conveys the mechanisms, impact and excitement of discovery, and provokes and promotes creative thinking;
- scientists trained in the public context of science, and empowered to communicate the societal and cultural significance of science to policymakers and to the public;



- scientists trained in the public context of science, and empowered to communicate the societal and cultural significance of science to policymakers and to the public;
- elimination of bias and inequities that separate underrepresented groups and lock out under-resourced individuals, institutions and countries;
- training and early career model that promotes individuals with families, especially women;
- policies and business plans of publishers that provide open access to data, utilize validated quality metrics, and eliminate inequities of access and recognition;
- rational solutions to national and economic security concerns that encourage data sharing, collaborative programs, and participation by, and funding to, non-US investigators and trainees
- immigration policies that encourage training and retention of non-US scientists
- federal policies that provide funds for applications derived from discovered knowledge, as well as for basic research-driven knowledge discovery and training future researchers;
- effective coordination and incentivization of collaboration across the federal government and the two dozen federal agencies that support science and technology;
- robust mechanisms across the federal government to establish and support public-private collaboratives focused on addressing societal challenges.