FASEB
Federation of American Societies for Experimental Biology

Representing Over 110,000 Researchers

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June 19, 2025

The Honorable Mike Rounds
716 Hart Senate Office Building
Washington, DC 20510

The Honorable Martin Heinrich
709 Hart Senate Office Building
Washington, DC 20510

Submitted Via Email to ASAP@rounds.senate.gov and ASAP@heinrich.senate.gov

Dear Senators Rounds and Heinrich:

The Federation of American Societies for Experimental Biology (FASEB) represents 22 member societies and over 110,000 biological and biomedical researchers. We appreciate the opportunity to respond to your request for information (RFI) on the American Science Acceleration Project. Our response is based on our expertise working with Congress, federal scientific agencies, academic institution leaders, and the Office of Science and Technology Policy, on a myriad of issues impacting America's research ecosystem. Below are answers to selected questions from your RFI.

Executive Summary:
FASEB focused on these four areas of the RFI in priority order:

- ASAP Pillars – FASEB focused on increasing the speed and scale of scientific collaboration by requiring federal agencies strengthen existing resource programs and explore strategies that promote resource efficiency. On the question of how to cut the time from discovery to deployment by a factor of 10, we focus on stable funding of federal research agencies by Congress, supporting the biomedical research, additional funding mechanisms for early-career investigators, and improving data collection efforts by trainees.
- Data - FASEB focused on the standards and protocols that should be established to ensure interoperability of scientific datasets and characteristics for all data repositories. Additionally, we outline the biggest blockers to prevent researchers from sharing data which is due to a lack of resources for data management and clear planning among other issues.
  Interoperability of datasets across disciplines will require unique identifiers, interoperable data management practices, long term data stewardship, research reproducibility and free and easy access and reuse.
- AI - FASEB focused on how and where AI can accelerate the generation of new scientific hypotheses and areas of use such as in drug discovery, prediction, sequencing, and workflow.
  On the topic of a democratic AI research ecosystem, there is a need for cohesive guidelines and transparent reporting in federally funded research, policymakers developing regulations requiring transparency for AI tools, improving data privacy and security, identifying use cases where misinterpreting and reusing data have elevated harm, a need for updated data management and security protocols, removal of inequities and bias in AI and improving workforce training and education.
  AI deployment should also take into account sustainable development goals as a foundational innovation for AI which can involve organizations weighing the impact of AI on such goals for example. There is also a need to set standards to verify data and research findings.

- Process - FASEB considered the foundational changes needed in how funding agencies sponsor research focusing in on improved financial support for doctoral students. On the topic of Improving peer revie, that would require simplification and removing expansion of the reviewer workload beyond assessment of scientific merit. NIH is used as a good example.
  Also in the healthcare domain we look at how AI can be used to accelerate processes within federal agencies by developing uniform coordinated standards through an interagency effort and improving AI reproducibility.

ASAP Pillar Question. How can we radically increase the scale, speed, and impact of scientific collaboration across disciplines, institutions, and sectors?

After conducting a survey to collect perspectives of shared resource users and providers, FASEB issued recommendations to maximize shared research resources in October 2017 which still apply today. Shared research resources make efficient use of research funds and broaden access to advanced technologies. Through shared resource facilities, the research community can promote rigorous research practices, quality technical training, and collaborative research. Shared resource facilities—such as cores, stock centers, and user facilities at the National Laboratories—generate further benefits by offering specialized expertise, leading technology development, acting as a nexus for collaboration and team science, and providing technical training. However, shared resource providers face a variety of challenges that limit their ability to consistently offer cutting-edge services to scientists.

To maximize the federal investment in research, federal agencies should strengthen existing resource programs and explore strategies that promote resource efficiency by:

- Reviewing and realigning shared resource funding mechanisms with investigator demand and existing facility infrastructure;
- Determining under what sets of circumstances regional cores can more effectively and efficiently meet research needs beyond institutional facilities and establishing funding mechanisms for these cases;
- Ensuring support for the maintenance of sponsored equipment (i.e., a service contract or a dedicated account for repairs), whether through direct funding, institutional matches, or other approaches;
- Identifying ways to encourage research grant recipients to use shared resources, such as budgeting for facility use in grant applications; and
- Coordinating support with other sponsors (inter- and intra-agency as well as nongovernmental organizations) to avoid unnecessary duplication and promote broader access.

To maximize shared resources, investigators must be able to easily discover and access them. Several survey respondents struggled to find a facility that met their needs. Many indicated that their institution provides limited support to help researchers locate internal resources. Access is also a challenge; just under half of survey respondents indicated that, within the past five years, they had wanted to utilize a facility but were unable to do so. The most common reason provided was an inability to afford facility fees. Federal agencies should support the creation of a national database of facilities and similar shared resources. To further raise awareness, research sponsors can provide or support opportunities for grantees and trainees to learn about the latest technologies and how to apply them to their research projects. Research sponsors should also consider establishing funding mechanisms that defray costs for unfunded investigators, scientists at less research-intensive institutions, and other researchers who would otherwise be unable to utilize a facility.

For a facility to be of value to its users, it must evolve to meet changing needs. Directors bear great responsibility for keeping their facilities current and relevant, but many reported struggles to secure funding for that purpose. Survey respondents called for greater coordination among federal agencies to improve the allocation of resource support, thereby increasing the efficacy of the federal investment in research. Research agencies should develop a joint national strategy to optimally support shared resources. Most of these resources are used in multiple fields of research, so coordination makes sense and would lead to more efficient use of shared resource dollars.

ASAP Pillar Question: In order to cut the time from discovery to deployment by a factor of 10, what changes are needed in the process of scientific innovation, such as in the regulatory ecosystem, scientific funding models, education and workforce pipelines, and the resources that constitute the scientific supply chain?

FASEB submitted comments in August 2024 to a request for information for the next generation 21st Century Cures legislation at the request of Representatives Diana DeGette and Larry Bucshon, MD, which can apply to the scientific enterprise generally. Extracting from this response FASEB has the following ideas:

- Stable funding and operational support – Robust and consistent funding for science is needed to advance scientific research which in turn will support our country's global competitiveness, build our STEM workforce, and improve our national security and the health of our nation. There must be sustained political will to achieve stable and predictable funding for our federal scientific agencies which will in turn sustain the critical infrastructure to do the work and support the research workforce. FASEB recommends ensuring the base agency budget keeps pace inflation plus an additional five percent for growth. Adopting a funding strategy that allows for real growth can address emerging research priorities and help investigators plan projects effectively. For example, in congressional testimony, former NIH Director Francis Collins also called for "a stable trajectory of inflation plus five percent for multiple years in a row" to optimally support the medical research enterprise in advancing discovery and improving health. Using the Biomedical Research and Development Price Index or BRDPI index plus five percent is consistent with prior bills related to biomedical research, including, the American Cures Act in 2014, which acknowledges that even flat funding creates challenges for the biomedical research enterprise.

- Supporting the biomedical research workforce – FASEB strongly supports the postdoctoral research workforce and believes federal scientific agencies can enhance the postdoctoral training ecosystem. This can be achieved, in part, by implementing recent recommendations from the NIH Advisory Committee to the Director (ACD) Working Group on Re-envisioning NIH-Supported Postdoctoral Training. FASEB reaffirms that postdoctoral positions should be short-term, well-defined, and lead to independence in the chosen career. Additionally, we encourage Congress to urge federal scientific agencies to find creative solutions that ensure all postdoctoral scholars, regardless of pay mechanism, have access to standard employee benefits and increasing pay levels for pre- and postdoctoral scholars at grantee institutions. To recruit and

retain a strong, diverse research workforce, FASEB recommends grant making agencies such as the NIH be given the authority to create and expand support mechanisms for international graduate and postdoctoral scholars. The U.S. research workforce relies on a diverse population of graduate students and postdoctoral scholars, including international researchers who comprise a significant portion and are essential to U.S. research excellence, economic growth, and national security. According to the 2022 National Science Foundation (NSF) Survey of Earned Doctorates, 34.1 percent of doctoral students hold temporary visas. Additionally, the 2021 Federally Funded Research and Development Centers Survey of Postdocs revealed that 51.1 percent of all postdocs held temporary visas. NSF's data indicate that the U.S. relies on international doctorate recipients to fill critical science and technology jobs, and a recent National Science Board policy brief also highlights the importance of attracting and retaining global talent while strengthening our domestic biomedical research workforce. FASEB recommends providing stability to postdoctoral positions through contract extensions because one-year contracts create unnecessary hurdles, especially for postdocs on temporary visas. Additionally, we encourage Congress to allow federal scientific agencies to establish dedicated funding opportunities for international postdocs where legally and programmatically possible. Additionally, we encourage efforts that would permit federal scientific agencies to create and widely disseminate a training module for immigration education, with resources aimed at international scholars, their mentors, and institutional offices. These initiatives will lower barriers for temporary visa holders pursuing education and research opportunities in the U.S.

- Establish additional funding mechanisms for early-career investigators – FASEB encourages Congress to give federal scientific agencies the authority to establish additional funding mechanisms dedicated to early-career investigators that prioritize flexibility and research independence. These investigators experience intense competition for funding, which creates various challenges when beginning and sustaining an independent research career. For example, as noted in our previous comments, FASEB strongly supports NIH's goal to develop programs and funding mechanisms for early-career investigators, particularly those that enhance career development and foster a diverse, inclusive, and representative biomedical research workforce. The Stephen I. Katz Early Investigator Research Project Grant Program and Maximizing Investigators' Research Award are excellent examples of providing flexibility for early career investigators to pursue new research directions with stability and support for transitioning to independent careers. Moreover, these mechanisms offer distinct advantages for new investigators, such as longer award length and a strict prohibition on submitting preliminary data. Additional funding mechanisms with similar features can reinforce support for early-career investigators at a critical point in their careers, thereby enhancing scientific productivity and the potential for important breakthroughs.

- Strengthening data collection efforts on trainees – FASEB concurs with the findings of the NIH ACD Working Group on Re-envisioning NIH-Supported Postdoctoral Training final report which highlighted the need for NIH to collaborate with NSF and NCSES on data collection, analysis, and dissemination efforts. NIH could also consider partnering with institutions to monitor and report career outcomes for graduate students and postdoctoral scholars, ensuring this data is publicly available.

DATA Question: What are the biggest blockers preventing researchers from sharing high-value scientific data today?

The lack of resources to advance data management, clear planning on how to collect and manage the data and making it accessible in a format other researchers can easily find and use. See FASEB's full statement on Data Management and Access for additional information.

DATA Question. What standards and protocols should be established to ensure interoperability of scientific datasets across disciplines?

Desirable Characteristics for All Data Repositories are:

- Persistent Unique Identifiers: To ensure that large volumes of data are of the greatest potential utility to researchers, clinicians, and the public, FASEB supports the use of unique identifiers. Consistent with the FAIR principles (Wilkinson et al., 2016), identifiers such as digital object identifier (DOI), accession numbers, or ORCID ID will aid in researchers' ability to identify and access data even if the metadata URL has changed since its publication. Potential efforts OSTP may want to consider include: (1) developing tools to improve search functions and the aggregation of data, and (2) creating formatted citations associated with each dataset, preferably including a DOI. These improvements can also incentivize researchers to share quality data. Greater reuse and citation of datasets will encourage investigators to optimize the formatting and organization of their data and metadata for reuse by others, rather than merely fulfilling minimal reporting requirements.

  Successful implementation of interoperable data management practices will require training for all research team members. Institutions should also foster an atmosphere where quality data management and appropriate data sharing are standard practice. To establish and maintain such an environment, institutions should encourage investigators to collaborate on improving data practices within their discipline and ensure data management resources can be easily identified and utilized.

- Long-term sustainability: Responsible data stewardship requires a long-term plan. Data management plans (DMPs) are an important tool for promoting quality data management and appropriate data access. Consideration of potential opportunities for data reuse at project initiation also ensures retention of all appropriate data. Inclusion of DMPs as a component of grant applications clarifies expectations between investigators and research sponsors. Flexibility and adaptability can be achieved by having individual investigators develop a DMP specific to their research area, data types used, and resources available. Research sponsors may also enlist DMPs for secondary uses of benefit to the research community, such as identifying common resource needs and other barriers.

- Metadata: Research reproducibility depends upon rigorous experimental design and appropriate analysis of resulting data. Metadata provide essential information for determining appropriate use. Unfortunately, robust, consensus-based metadata standards do not exist for many fields or many data types. Furthermore, minimal metadata standards have not been

established or deployed across all scientific agency databases. Therefore, FASEB encourages OSTP to support the development of community-based metadata standards. Scientific societies can support these efforts by identifying and convening subject matter experts and disseminating consensus standards. We also urge OSTP to foster trans-agency development of automated tools for assigning metadata to files and datasets. Development of these tools can begin before or in parallel with the establishment of consensus standards. Automation would streamline efforts associated with tracking and updating metadata to meet current standards, accelerating adoption of new standards and changes to existing standards reducing investigator burden.

Repository tools are also indispensable for promoting data citation and attribution to investigators responsible for generating datasets. Data citation enhances the findability and accessibility of datasets and incentivizes data sharing. Currently, tools supporting citation of journal articles are more robust and readily available than tools for data citation. If researchers must look up a new citation format and manually assemble citation information, they will cite the associated journal article because it is simpler and more expedient. Tools that export dataset information, similar to what is provided for articles indexed in PubMed, lower the "activation energy" for data citation and provide a visible reminder to do so. To further promote such recognition, OSTP may want to consider collaborating with scientific journals to develop manuscript submission tools that prompt, facilitate, and standardize reporting of repository use.

- Free & Easy Access and Reuse: FASEB understands and supports the development of an IT ecosystem that facilitates access to large, high-value datasets, as this will ensure these datasets are consistent with FAIR principles. To effect positive change, research sponsors must carefully balance the costs and benefits of data access when developing and amending policies. Making datasets accessible – including the skilled human labor necessary to prepare and maintain data and metadata, technological infrastructure, and continued development of effective search platforms – is costly. Some datasets have little value for reuse or a short "shelf-life"; requirements to share and preserve such data could create inefficiencies in research funding and resource distribution. Therefore, FASEB recommends that sponsors ensure data access policies prioritize data with the highest potential for reuse

- Reuse: The diversity of data types, research areas, and resources available make it challenging to identify data accessibility strategies that are practical and relevant for all fields of research, challenges that are further amplified within the biological sciences. Regular assessment of data utilization will allow investigators and federal agencies to evaluate usage and outcomes in the context of past performance and project future needs. Such utilization assessments would be further enhanced by the creation of time series data, when feasible. Analysis of user communities may also reveal patterns in how usage expands to new disciplines, thus informing scientific programs at federal agencies.

- Common Format: Data standards are necessary to ensure adherence to the FAIR principles; without standards, large volumes of data cannot be reused or even reassessed. Several issues that may hinder user from submitting data include limited data formats, heavy reliance on manual entry, and insufficient tools available to export and import data and metadata. To encourage deployment of user-friendly platforms FASEB recommends coordinating with funding agencies such as NIH and NSF to develop metrics that evaluate and offer guidance about such barriers. Additionally, FASEB encourages OSTP and colleagues to measure the extent to which automation is incorporated in the submission process. Automated features such as autofillable

fields and saved templates can enhance the submission experience and circumvent several sources of data corruption and loss.

- Provenance: Understanding the context by which data is obtained, processed, and analyzed is essential to its appropriate interpretation and application. Because datasets are often reformatted to pursue new research inquiries, data provenance allows researchers to trace newly designed or repurposed data back to their original settings. Implementation of strong data provenance ensures data creators are held accountable for their work and enables systematic data tracking for a wide range of scenarios that utilize and apply research data. For example, researchers frequently share and adapt data for their individual purposes when collaborating with fellow investigators on research projects. With clear data provenance guidelines, end-users will be able to visualize how a specific dataset was derived and thus more appropriately employ the information that is suitable for their research. FASEB supports responsible data management and encourages OSTP to engage with the stakeholder community to incorporate data provenance best practices across federal agencies. The emergence of "big data" is allowing investigators to pursue more lines of inquiry that could ultimately lead to transformative discoveries. However, as larger quantities and more types of data can be combined in new ways, we must also be cautious of spurious correlations and "overmining" of datasets. The Federation is concerned that analytical methods and tools do not always keep pace with research opportunities. Rigorous research practices will depend on coordinated efforts among federal agencies, and research stakeholders, ranging from single investigators to large institutions, to generate and support "big data" analytical methods and best practices. FASEB encourages OSTP to take the lead in coordinating these efforts to ensure parity across agencies and scientific disciplines.

AI Question. What should a democratic AI research ecosystem look like? What lessons can we learn from earlier American-led efforts such as the development of the internet?

The elements of a democratic AI research ecosystem should have the following components related to the following themes and recommendations in the FASEB Gen AI Report: Theme 1: Policy and Regulation, Theme 2: Scientific Integrity and Intellectual Property, Theme 3: Data Privacy and Security, and Theme 4: Diversity, Equity, Accessibility and Inclusion and Theme 5: Workforce Impact, Training, and Education

Theme 1: Policy and Regulation
Recommendation 1.2 l Federal agencies are recommended to collaborate and develop cohesive guidelines for Gen AI use and transparent reporting in federally funded research. Scholarly societies are encouraged to support agency efforts through engaging with member scientists and inclusion of federal guidelines in society programs.

A democratic AI research ecosystem as it relates to federally funded research should involve all stakeholders engaging with federal funding agencies to develop a cohesive set of guidelines for the use

and transparent reporting of Gen AI in federally funded research. This could be coordinated by the National Artificial Intelligence Advisory Committee or the Office of Science and Technology Policy, which should be familiar with funding agency efforts around the globe. Currently, US federal agencies have released policies that are not yet fully aligned in their approach causing confusion for researchers. Cohesive guidelines between US federal agencies should include:

- Transparency and reporting requirements for AI and Gen AI use in grant applications and research outputs (e.g., publications, data sets, software, and other reports). Given the broad use and integration of AI and Gen AI, it is expected to become impractical to request users divulge all use cases. Certain use cases will be important for disclosure (e.g., data processing and visualization) while other use cases (e.g., writing assistance) may not be important for disclosure. Gaining clarity on relevant use cases for reporting will support all stakeholders in ensuring appropriateness, accuracy, and transparency in reporting. Citation styles for Gen AI are already in place, see also MLA and APA style guides.
- The use or limitations on use of AI and Gen AI by reviewers, program officers, and other stakeholders who have access to confidentially submitted research proposals during the grant application and review.
- Standards for management of AI and Gen AI data sets and software. A set of comprehensive standards for how data sets and software should be managed in AI and Gen AI-assisted research in the biological and biomedical sciences will be valuable and avoid further confounding the data management and sharing environment.
- Research integrity considerations. Protocols should be developed for ensuring rigor and reproducibility of biological and biomedical research involving AI and Gen AI. This is particularly important for Gen AI given the continuous ongoing evolution of the tools and capabilities, presenting challenges for transparency, explainability, and reproducibility.

Recommendation 1.3 l Policy makers are recommended to develop and implement regulations requiring transparency for Gen AI tools. Software developers are recommended to be transparent and provide credit to underlying publications and datasets used in creating the tool to foster trust, allow proper use case application, and enable monitoring by stakeholders.

Regulations should require full transparency on how the tool is created, how it works, and the underlying source information, including references to all underlying data and publications used to create the tool. Versioning should be developed and clearly noted. This is particularly important for Gen AI given the continuous ongoing evolution of the tools and capabilities, presenting challenges for transparency, explainability, and reproducibility. Stakeholders can only trust and use the tools when they can also build in processes to monitor for bias, address fairness and equity, and ensure scientific integrity is upheld.

Theme 3: Data Privacy and Security

The White House Blueprint for an AI Bill of Rights provides a framework for data privacy and security in the U.S. Today, in practice, for individuals and researchers in the US, data protections are not the default, while in Europe, protections have been in place almost a decade, starting with the General Data Protection Regulations (GDPR). Additional information on this front can also be found in the European AI Readiness Act. In the U.S., some states are crafting specific bills related to this issue, notably California. In a Gen AI environment, the concerns about data privacy and security are escalated, and regulatory actions are warranted to protect US citizens

Recommendation 3.1 | US policy makers should create new regulations to ensure data protection, privacy, and security are the default for all individuals and researchers in the US.

FASEB recommends that data protection, privacy, and security become an integral part of regulations and become the default for individuals and researchers in the US. Additionally, the following specifics regarding data regulations for AI and Gen AI software:

- Regulations should allow only the data strictly necessary for the required functionality to be collected.
- Regulations should protect individuals from unchecked surveillance.
- Regulations should ensure there is no burden for individuals to change data privacy and security settings. Locating and understanding privacy settings should be simple. Privacy and security settings should use brief, plain descriptive language with appropriate context describing the collection, use, and reuse of data. Changing preferences should be immediately available within the tool.
- Regulations should ensure that individuals have access to reporting (where possible) to confirm their data privacy and security decisions are respected by organizations.

Recommendation 3.2 | All stakeholders employing Gen AI are recommended to identify use cases where misinterpreting and reusing data has elevated levels of potential harm and provide an enhanced level of privacy and security.

Gen AI emerging tools and technology provide an easy path for potential harm to individuals through the accidental inclusion of personally identifiable data. Notable examples include the healthcare and education fields. In medical practices, the informed consent process is well-established and serves to protect individuals. At institutions, an institutional review board (IRB) develops procedures to ensure that the appropriate steps are taken to protect the rights and welfare of humans participating as subjects in research. Similar approaches could prove useful for such high potential harm use cases of Gen AI and in the initial stages of new tool exploration.

Recommendation 3.3 | All stakeholders employing Gen AI should develop and routinely update data management and security protocols for Gen AI-generated data, including robust data governance plans. Federal agencies should include Gen AI guidance in their data management and sharing plans. Data management and governance protocols are valuable tools for managing an organization's data effectively and efficiently, and for ensuring integrity and accuracy. Many larger organizations have established data governance protocols, but smaller organizations may lag on this front and are encouraged to consider the potential benefits of developing data management and governance in a way that allows the organization to best benefit. Many resources are available to guide interested organizations, and companies that support small nonprofits in establishing data governance and applying Gen AI tools.

Theme 4: Diversity, Equity, Accessibility, and Inclusion

Gen AI tools are built on existing data and information, known to include decades of inherent and problematic biases. As Gen AI tools are developed and implemented, inequities could easily be exacerbated. There are, however, also new opportunities within the Gen AI framework for organizations to level the playing field and to ensure new inequities are not introduced. Achieving this goal will require

commitment by all stakeholders, a detailed understanding of the complexities involved in Gen AI, and transparency and thoughtful planning and implementation of Gen AI tools.

Recommendation 4.1 | All stakeholders should commit to achieving a disability, gender, racial, and resource equality perspective to ensure equitable access to tools, infrastructure, resources, and outcomes from Gen AI tools. First, it is important for organizations to acknowledge current challenges with inequitable access to Gen AI tools. This goal is acknowledged and addressed throughout the US-led UN Resolution 78/265 Seizing the opportunities of safe, secure and trustworthy artificial intelligence systems for sustainable development.

Some of the challenges for underserved populations and Gen AI today include access to:

- Infrastructure (internet, energy) disparities exist preventing underserved people from gaining access.
- Usage information, use cases, and outputs are not readily discoverable and unavailable to many stakeholders.
- Affordability in that Gen AI with higher functionality is often available only on paid versions.
- Digital literacy issues in that the use of the tools (accessing, asking appropriate queries, understanding the tool) can require specialized knowledge.
- Privacy with desired limitations, such as protected data privacy, is often available only on paid versions.
- Online safety can be a challenge for underserved people.

Stakeholder organizations positioned to help alleviate some of these challenges include Core facilities, federal agencies such as National Libraries of Medicine (NLM), research and education institutions, or scholarly societies. Specific roles that might be valuable to consult are biostatisticians, bioinformaticians, librarians with Gen AI skills, research directors, diversity, equity, accessibility, and inclusion specialists, and/or legal counsel. Stakeholders should be aware that different U.S. states may have limitations imposed around this issue and should ensure compliance within any regulations that apply at both the state and federal levels.

Theme 5: Workforce Impact, Training, and Education

The rapid pace of development of Gen AI tools and their potential applications in biological and biomedical sciences necessitates a comprehensive end-to-end workforce approach to training and education. The workforce lacks an understanding of Gen AI that would position them to identify the best use-case opportunities, effectively utilize tools, and responsibly use Gen AI tools within the complex parameters around data privacy, security, sensitive information, and intellectual property. Upholding research integrity and developing critical thinking skills are companions to the need for Gen AI training in support of a stronger workforce.

Recommendation 5.1 | Federal agencies and institutions should provide resources for, develop, and implement multi-tiered Gen AI training programs and toolkits to address the diverse needs of researchers at different career stages and roles. Institutions and other stakeholders should implement Gen AI training within the traditional undergraduate and graduate curriculum.

Along with policy development, it is critical that funding agencies and institutions, in partnership with other stakeholders, rapidly develop and map out a plan to implement Gen AI training and educational programs. The need extends beyond the traditional K-12 or undergraduate educational training, and

must include researchers at all career stages, who present with differing needs. Developing the Gen AI skillset of the US biological and biomedical sciences workforce in academic and research institutions, non-profits, and corporations, is a priority for the US workforce to thrive.
At the same time, it is important for policy makers, funding agencies, and organizational leadership to understand that taking on these needs adds to the cost and responsibilities borne by stakeholders. They should seek to develop resources and redistribute existing workloads to minimize the activation barrier. Examples of impacted stakeholders include researchers, instructors, university grant officers, agency program officers, publications, meetings, and policy staff.

Multi-tiered Gen AI training programs should be funded, developed, and implemented. CITI program trainings might be one solution, as well as scholarly society developed training programs specific to their communities.

AI Question. What foundational innovations are needed in AI, such as in areas like interpretability, energy efficiency, and uncertainty quantification?

Theme 2: Scientific Integrity and Intellectual Property
Recommendation 2.3 l Calls for organizations to weigh the impact of Gen AI on sustainable development goals and balance use cases judiciously. Gen AI requires heavier energy resources, for storage and the continuous repetitive processes employed. While energy use varies with the tool employed and the complexity of the query, the impact of higher energy requirements should not be overlooked as it relates to an organization's goals. Understanding that experimentation is important, stakeholders are encouraged to judiciously use Gen AI as part of the implementation of these tools. These considerations should not be made at the cost of introducing new disparities or limiting access to underserved communities.

Scholarly societies might look to the Sustainable Development Goals (SDG) Publishers Compact for additional guidance on this topic. Many institutions (especially those in the corporate space) have established Sustainable Development targets that need to be considered in decisions on how/when to use Gen AI, and interested readers may learn more at SME Climate Club (for small and medium organizations), or Net-zero ambition 500 - Science Based Targets Initiative.

Standards for verifying Gen AI-generated data and research findings will help build trust in the outcomes of research efforts using these tools. Resources that support stakeholders in evaluating Gen AI misconduct would similarly provide necessary infrastructure for use of Gen AI in scientific research. Federal agencies, either via National Institutes of Standards and Technology (NIST) or through another interagency effort such as OSTP, should develop and establish standards and resources.

Process Question. What foundational changes should we consider in how funding agencies sponsor research? What already works well that we should double down on?

Our fact sheet on financial support for doctoral students has interesting data that relates to the question of what is working well that we should double down on because it shows how federal funding trains the

next generation of the scientific workforce. Nearly 73 percent of federal research support for doctoral students comes from NIH. Doctoral students in biological and biomedical sciences rely more on research assistantships for funding so continuing such support is critical to the creation of this cadre for our country's domestic STEMM workforce. Similarly, almost 75 percent of federal research support for postdocs comes from NIH. Postdocs in the biological and biomedical sciences rely more on research grants for funding than other scientific disciplines**AI-Question**. How can AI accelerate the generation and testing of new scientific hypotheses? How should we construct scientific research models where AI can be used to iteratively drive simulation or experimentation to achieve a particular research goal?

In January 2025 FASEB published a report entitled Recommendations for Generative AI in the Biological and Biomedical Sciences. Excerpts from this report are referenced in this response. However, FASEB encourages you to read the entire report.

Gen AI is a subset of artificial intelligence (AI) that creates novel content, including text, images, sound, and video. These tools show remarkable capabilities in tasks ranging from natural language processing to more complex biologically relevant tasks such as predicting protein structures. Gen AI tools provide time-saving paths to improve day-to-day tasks, hold potential to accelerate research, generate new hypotheses, and analyze complex datasets providing new, undiscovered connections and insights. However, their use also raises significant ethical, methodological, legal, and regulatory questions. Across biomedical and biological research, Gen AI applications are already taking shape. As these tools become widespread, it is imperative to establish guidelines and best practices to ensure their responsible use, maintain scientific integrity, and maximize their benefit while mitigating risk.

AI can be used in accelerating drug discovery, predicting protein structures, for sequence design, advanced synthetic biology, gene circuit design, medical imaging diagnostics, genomics, workflow and system optimization. Potential future applications include accelerating research and development, precision medicine, improved agricultural processes, environmental conservation, enhanced disease surveillance and management, and creating digital twins.

Process Question. How can peer review be modernized to encourage faster or more rigorous scientific validation? What role should emerging technologies play in analyzing the quality of new research?

FASEB comments on NIH's simplified peer review framework is an example to consider. NIH is in the process of implementing a proposed simplified review framework for NIH Research Project Grant applications that represents the culmination of years of outcomes assessments, review and deliberation by external and internal advisory committees, and consultation with the research community to ensure that the peer review process achieves its primary purpose of assessing scientific merit with minimal bias. The NIH framework has changes emphasizing common pain points with the current peer review process, namely expansion of the reviewer workload beyond assessment of scientific merit and growing concerns about implicit or reputational bias affecting funding outcomes. Other federal agencies should look toward the NIH as an example of how to streamline peer review while maintaining scientific integrity.

Process Question. In the healthcare domain, how can artificial intelligence be strategically leveraged to accelerate processes within federal agencies? Conversely, how might these agencies deploy AI-driven solutions to streamline operations in order to support a research community that increasingly depends on rapid technological advancements?

FASEB
Federation of American Societies for Experimental Biology

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Recommendations from our report Generative AI in Biological and Biomedical Sciences are referenced below:

Recommendation 2.4 | Federal agencies should develop uniform coordinated standards for verifying Gen AI-generated data and research findings and create resources for stakeholders to leverage regarding Gen AI misconduct evaluation. Organizations should develop processes for verifying Gen AI-generated data and research findings and maintain records.

Standards for verifying Gen AI-generated data and research findings will help build trust in the outcomes of research efforts using these tools. Resources that support stakeholders in evaluating Gen AI misconduct would similarly provide necessary infrastructure for use of Gen AI in scientific research. Federal agencies, either via National Institutes of Standards and Technology (NIST) or through another interagency effort such as OSTP, should develop and establish standards and resources.

Recommendation 2.5 | Federal agencies and organizations should develop tools and platforms for Gen AI reproducibility. The development and support of open-source tools and platforms specifically designed to enhance the reproducibility of Gen AI-assisted research. These might include:

- Solutions for creating reproducible Gen AI environments (computational).
- Platforms for sharing and reproducing, testing Gen AI-assisted research findings, and
- Paths to track the provenance of Gen AI-generated data and research findings.

Thank you for the opportunity to comment. Please do not hesitate to contact us should you have any questions related to our feedback. Our point of contact is Ellen Kuo, Associate Director of Legislative Affairs at ekuo@faseb.org.

Sincerely,

Beth Garvy, PhD
FASEB President