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OFFICE OF THE VICE PRESIDENT – RESEARCH AND INNOVATION

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December 23, 2025

Stacy Murphy
U.S. Federal Deputy Chief Operations Officer and Security Officer
Office of Science and Technology Policy
1650 Pennsylvania Avenue
Washington, D.C. 20504

RE: University of California Response to Office of Science and Technology Policy (OSTP) Request for Information on Accelerating the American Scientific Enterprise (Docket ID No. OSTP-TECH-2025-0100)

Dear Deputy Chief Murphy:

I write on behalf of the University of California (UC) system responding to the OSTP Request for Information (RFI) on Accelerating the American Scientific Enterprise.

The UC system is comprised of ten campuses, six academic health centers, a Division of Agriculture and Natural Resources, and three affiliated U.S. Department of Energy national laboratories. UC is a leader in technology transfer and was granted more U.S. utility patents last year than any other university in the world. UC enrolls over 25,000 graduate students annually, with graduation rates averaging over 90% for six-year graduate and professional programs.

UC appreciates the opportunity to respond to this RFI. We strongly support OSTP's goal of strengthening U.S. competitiveness by sustaining and expanding a robust national research enterprise. Our comments emphasize the importance of stable, predictable federal research funding; consistent intellectual property policies; and targeted investments that bridge the gap between basic research and commercialization. Several of our recommendations apply across multiple questions in the RFI, reflecting the interconnected nature of funding, policy, and innovation ecosystems. A strong and enforceable U.S. patent system, anchored in the Bayh-Dole Act, is essential to attracting private investment, strengthening public-private collaboration, and translating federally funded research into broad societal and economic benefit. Our responses are provided below.

(i) What policy changes to Federal funding mechanisms, procurement processes, or partnership authorities would enable stronger public-private collaboration and allow

America to tap into its vast private sector to better drive use-inspired basic and early stage applied research?

Maintain Strong Federal Support of Academic-Based Research: The seminal report, "*Science, The Endless Frontier*," was presented to President Truman by Office of Scientific Research and Development Director Vannevar Bush in 1945. *The Endless Frontier* proposed an important roadmap for the United States to advance its remarkable economic growth based on fundamental research conducted in academia and supported by the federal government. Since then, the partnership between the federal government and academia has powered decades of economic growth, improved health outcomes, led to breakthrough discoveries, and enhanced national security. This robust partnership is a model replicated all over the world. However, despite these demonstrated benefits, federal funding has declined as a share of GDP for more than 60 years even as global competitors increase investment.[1] U.S. leadership is eroding quickly, and economic and national security are at risk. Federal fundamental research investments should align to meet the moment with strategic annual increases. Federal agencies should be expected to leverage their resources and align their expectations – i.e., interagency collaboration and co-funding of projects – around national initiatives, such as artificial intelligence (AI) and quantum information science. Currently, the burden is primarily on universities to seek federal funding from different agencies with different requirements to achieve a critical mass of resources for implementing these large-scale efforts. Stable and predictable annual appropriations and grant award patterns are essential to maintaining research continuity, workforce training, and institutional planning. Predictable funding also enables American universities to develop, as well as to retain, exceptional scientific talent in the U.S. Equipping such talent with federal and private investments will secure the country's global leadership in critically important fields such as AI, cybersecurity, and biotechnology.

Revisit the Peer Review Process: The Government Performance and Results Act (GPRA) was enacted in 1993 to improve program management across the federal government. The follow-on GPRA Modernization Act of 2010 was enacted to update performance assessment goals of agencies. The peer review process falls under GPRA. However, the review process of submitted proposals from universities still takes an extraordinary amount of time at most agencies before a final decision is made. These lengthy review processes are disruptive to important ongoing research programs. Federal agencies should explore how to reduce the time used for review processes and subsequent contracts and grants administration processes, while still preserving rigor in assessing innovative research ideas.

Support Proof-of-Concept Funding: Federal agencies should establish or expand dedicated Proof-of-Concept (POC) funding programs to bridge the gap between basic research (TRL 1-3) and commercial readiness (TRL 6+). Currently, neither federal grants nor private capital adequately fund the TRL 3-6 range, where promising discoveries are stalled and often abandoned. The TRL 3-6 range is where technologies are still nascent,

[1] Gibbons, MT; National Center for Science and Engineering Statistics (NCSES). 2024. Higher Education R&D Expenditures Increased 11.2%, Exceeded $108 Billion in FY 2023. NSF 25-313. Alexandria, VA: U.S. National Science Foundation. Available at https://ncses.nsf.gov/pubs/nsf25313.

and prototypes need to be tested and evaluated for scale. Therefore, the risk is often still too high to attract private capital and licensing opportunities. Programs modeled on successful university POC funds that provide small awards ($50-250k) for prototype development, market validation, and IP positioning could be administered through NSF TIP, DOE, or NIH with streamlined application processes and rapid (<90-day) award timelines.

Simplify Partnership Authorities: Harmonizing federal terms across agreements and agencies (including consistent requirements regarding procurement) will promote innovation and economic development and reduce tremendous administrative burden and time. Agreements issued under Other Transaction Authority (OTAs) or over application of Determinations of Exceptional Circumstances (DECs) result in inefficiencies, delays, and increased administrative costs to both sides of the transaction. Standardized, pre-negotiated partnership templates across agencies would reduce these transaction costs and accelerate collaboration. The Defense Innovation Unit (DIU) model should be adopted across the federal agencies, and it should include small- and medium-sized businesses.

Maintain Stable IP Expectations: Stability, clarity, and consistency in federal IP rules are essential to encouraging private-sector investment in innovations arising from federally funded research. Industry partners and investors are far less willing to engage with universities when intellectual property frameworks are subject to shifting interpretations or policy uncertainty. Clear and consistent IP rules, particularly those grounded in the Bayh-Dole Act, provide the confidence needed for private entities to commit the substantial capital, time, and risk required to translate early-stage academic discoveries into commercial products and societal benefit.

Strengthen U.S. Patents: Reliable patent rights are necessary to incentivize the investment required to bring new, patent-dependent products to market. UC agrees with the United States Patent and Trademark Office (USPTO) that "even extremely strong patents depend on a presumption of validity for their survival" and that serial [inter-partes reviews] can lead to strong, valid patents being unfairly canceled.[2] UC supports new USPTO rules that help protect "quiet title" for strong patents. So called "born strong patents" reduce the inherent risk associated with the long, expensive, and sometimes unpredictable process of product testing and development.[3] To this end, UC supports the USPTO's hiring and training of new patent examiners. In addition to improving patent quality, a strong USPTO workforce could reduce the current 22.5 month "time-to-first-action.[4]

UC acknowledges that the USPTO is unique among federal agencies because it operates solely on fees and not taxpayer dollars. In 2025, USPTO fees increased about 7.5%. Fiscal efficiency is critical to increasing patent quality while resisting excessive fee hikes for

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[2] Department of Commerce Notice of Proposed Rulemaking at https://www.federalregister.gov/documents/2025/10/17/2025-19580/revision-to-rules-of-practice-before-the-patent-trial-and-appeal-board

[3] Remarks by Director Squires at the 2025 AIPLA Annual Meeting. October 31, 2025

[4] 35 U.S.C. §154 sets a goal of 14 months from time of filing to the first office action.

applicants. UC supports limiting USPTO fees for patent applications filed by universities on subject inventions.[5] Such expenses are not an allowable cost under federal grant rules. Technology Transfer Office (TTO) operational budgets are universally slim and unsupported by federal sources. Limiting USPTO fees on patent applications that cover subject inventions would support the protection of such inventions, which in turn attracts investment.

Alternatively, federal policies that further reduce TTO operational budgets, such as "innovation dividends" or "patent taxes" will reduce the volume of patent applications filed to cover subject inventions and will subsequently discourage private investment necessary to develop and commercialize such subject inventions. *(This UC's response is also relevant to and should be considered in connection with Questions (ii), (iv), and (vi).)*

(ii) How can the Federal government better support the translation of scientific discoveries from academia, national laboratories, and other research institutions into practical applications? Specifically, what changes to technology transfer policies, translational programs, or commercial incentives would accelerate the path from laboratory to market?

Preserve Bayh Dole: The federal government can most effectively support the translation of scientific discoveries into practical applications by preserving and reinforcing the Bayh-Dole Act. Since its enactment in 1980, Bayh-Dole has been instrumental in enabling universities to translate federally funded discoveries into new medicines, technologies, and startup companies that deliver substantial public benefit and drive economic growth. Federal policy should preserve and reinforce the Bayh-Dole framework. Proposals to tax university patent licensing revenue will weaken incentives for industry to collaborate with universities, diminish resources available to support technology transfer functions at the universities, hamper university-driven research outcomes from reaching the market and creating new industries, and erode U.S. global competitiveness, ultimately reducing, rather than increasing, federal revenue.

Streamline Manufacturing Requirements: UC supports the strengthening of U.S. fabrication capabilities and proliferation of U.S. manufacturing facilities. For products where the U.S. has yet to build or enhance sufficient manufacturing capabilities, offshore manufacturing may be the only avenue for companies seeking to commercialize new products. U.S. manufacturing requirements that are consistent across agencies and agreements, and that include an efficient and clear waiver process to be reliably applied, when necessary, will accelerate the path of innovations from laboratory to market. (*This response is also relevant to and should be considered in connection with Question (ix).)*

Reform Export Control: The government should renew the Export Control Reform Initiative to transfer appropriate items from the State Department U.S. Munitions List

[5] "Subject Inventions" is defined at 35 U.S.C. 201(e).

(USML) to the Commerce Department Commerce Control List (CCL), facilitating easier development and commercialization of non-military uses for items that do not require greater control. Current classifications may capture items with predominantly commercial or scientific applications.

For example, carboranes are cage-like molecular structures that are used in heat resistant materials and hydrocarbon processing. They are listed on the USML, which subjects them to stringent International Traffic in Arms Regulations (ITAR) controls. However, carboranes are also used in medical therapies, such as Boron Neutron Capture Therapy (BNCT) for targeted cancer treatment. Not being able to move carboranes to the CCL effectively stalls life-saving medical treatment due to restrictions intended for military munitions. Moving such items to the CCL would facilitate easier export and collaboration with these low-risk, high-benefit technologies.

Expand SBIR/STTR: UC supports the renewal of SBIR/STTR funding as important vehicles for partnerships between universities and industry. UC recommends the development and deployment of a "Phase 0" pre-submission support program within SBIR/STTR to help university spinouts develop competitive applications. Many promising technologies fail to secure SBIR funding due to lack of grant-writing capacity at early-stage startups.

Boost I-Corps Training: UC supports the expansion of I-Corps at NSF and across the federal government. I-Corps teaches university researchers the art of customer discovery, allowing teams to quickly assess their inventions' market potential before starting a company or further developing a technology. After I-Corps, researchers often are successful in winning SBIR/STTR awards, demonstrating the value of structured entrepreneurial training prior to funding applications.

Reduce Technology Transfer Capacity Disparities: Data from the Association of University Technology Managers (AUTM) illustrates that a small number of institutions produce a disproportionate number of commercialization outcomes.[6] The federal government could better support the translation of scientific discoveries from academia, national laboratories, and other research institutions by supporting shared-service models or regional technology transfer consortia that allow smaller institutions to access experienced licensing professionals, legal support, market analysis capability, and training. (*This UC's response is also relevant to and should be considered in connection with Question (iii).)*

Support TTO Operations: Technology transfer offices have the expertise to find the partners for testing and development of federally-funded inventions, and that the government receives the benefits of the TTOs' expertise and efforts. Federal funding

[6] Weis J, Bashyam A, Ekchian GJ, Paisner K, Vanderford NL. Evaluating disparities in the U.S. technology transfer ecosystem to improve bench to business translation. F1000Res. 2018 Mar 15;7:329. doi: 10.12688/f1000research.14210.1. PMID: 29721313; PMCID: PMC5897786.

support for technology transfer operations will translate into economic activities (start-ups, new jobs, federal tax revenue), and it is consistent with congressional intent. For example, The CHIPS Act, Section 10394 states “The NSF shall make awards to establish collaborative innovation resource centers that promote regional technology transfer and technology development activities available to more than one institution of higher education and to other entities in a region.” UC welcomes federal support to strengthen technology transfer programs, especially in innovation deserts that offer tremendous potential through its universities. (*This UC’s response is also relevant to and should be considered in connection with Question (iii).)*

(iii) What policies would encourage the formation and scaling of regional innovation ecosystems that connect local businesses, universities, educational institutions, and the local workforce—particularly in areas where the Federal government has existing research assets like national laboratories or federally-funded research centers?

As noted above in Questions (i) and (ii), strong, reliable U.S. patent rights are essential to attracting the private investment required to commercialize university discoveries. Policies that reduce uncertainty in patent protection and lower the cost of securing patents for federally funded subject inventions would encourage industry engagement and lower the risk on the path from laboratory to market.

Equally important is sustained federal support for TTOs, which play a critical role in identifying partners, protecting intellectual property, offering training programs, and advancing federally funded inventions into startups, jobs, and economic growth. Programs, such as the CHIPS Act-authorized collaborative innovation resource centers, provide a promising model for strengthening regional technology transfer capacity, and they should be expanded to support scalable innovation ecosystems nationwide.

(iv) How can Federal policies strengthen the role played by small- and medium-sized businesses as both drivers of innovation and as early adopters of emerging technologies?

Sustain Place-Based Programs: Universities often partner with start-ups to move university inventions out of the lab. In addition to licensing patent rights to start-up companies, many universities, including UC campuses, provide crucial early-stage resources such as mentoring, technology incubators, entrepreneur-in-residence programs, and workforce training and education. Divestments from university technology transfer operations and infrastructure (such as revenue sharing or innovation dividends) will reduce the services and support that universities can provide to start-ups and small businesses. UC encourages federal policies that protect universities and small businesses’ roles in driving innovation. For example, the NSF Regional Innovation Engines and EDA Tech Hubs represent the most significant federal investments in regional innovation ecosystems in decades. Congress should fund these programs at authorized levels and ensure multi-year predictability so regional coalitions can make sustained commitments.

Increase Cross-Agency Coordination: The 2024 NSF-EDA MOU provides a model for coordination on regional innovation. This approach should be expanded to include DOE, DOD, and other mission agencies with regional research assets, allowing a single regional strategy to draw on multiple agency resources without duplicative applications.

Establish and Support Shared Facilities / Equipment Programs: Universities house major equipment (e.g., microscopy, mass spectrometry, etc.) and shared facilities (e.g., cleanrooms for semiconductor fabrication, characterization, and prototyping) that could be made available to startup companies. Such programs would enable small- and medium-sized startups to prototype and characterize their technologies – i.e., derisk their technologies and prepare them for scaling – without having to make major investments in capital equipment facilities and their technical support staff. A model program is CalTestBed, which makes available over 80 laboratories and facilities from the 10 UC campuses and UC-managed Lawrence Berkeley National Laboratory. Another example is the now expired NSF National Nanotechnology Infrastructure Network (NNIN), a national network of university-based user facilities accessed by academia and industry to advance their new nanotechnologies. The NNIN also supported education programs.

Leverage Existing Federal Assets: Regions with national labs, Federally Funded Research and Development Centers (FFRDCs), or major existing federal investments in shared research facilities should receive priority consideration for regional ecosystem investments. Policies should encourage laboratory-university-industry partnerships through expanded Agreements for Commercializing Technology (ACT) and streamlined access to laboratory user facilities for regional startups.

Limit USPTO Fees: UC appreciates the USPTO's small and micro entity fee structures, which help reduce barriers to patent protection for universities and small businesses. Maintaining these fee levels, and avoiding significant increases, will enable more federally funded "subject inventions" to be protected, thereby encouraging private investment and accelerating domestic product development and commercialization.

(v) What empirically grounded findings from metascience research and progress studies could inform Federal grantmaking processes to maximize scientific productivity and increase total return on investment? Please provide specific examples of evidence-based reforms that could improve funding allocation, peer review, or grant evaluation.

Small and Medium-sized Businesses (SMBs) as Technology Licensees: Small and medium-sized businesses are often the most effective commercialization partners for early-stage university technologies. However, they often lack resources to navigate complex licensing negotiations. Agencies should encourage standardized SMB-friendly licensing templates and support programs (like NSF I-Corps) that connect university inventors

directly with potential SMB adopters.

Leverage SBIR/STTR to strengthen the University-SMB Bridge: The SBIR/STTR programs are the primary federal mechanism for connecting small businesses to emerging university research. These programs should be enhanced by increasing funding for the STTR program, which requires university partnerships, simplifying subcontracting rules that currently discourage SMB-university collaborations, and allowing SBIR Phase I awardees to license university IP on favorable terms when the technology originates from federally funded research.

Establish Federal Agency Innovation Units: The Defense Innovation Unit (DIU) is a model to adapt to other federal agencies, especially those that are mission-driven such as NASA and DOE. The DIU has streamlined and expedited evaluation and award processes, supported by contracting templates and other resources. A path to work deliberately with small- and medium-sized companies, and not just well-established companies, would open the aperture of technology transfer opportunities.

(vi) What reforms will enable the American scientific enterprise to pursue more high-risk, high-reward research that could transform our scientific understanding and unlock new technologies, while sustaining the incremental science essential for cumulative production of knowledge?

Maintain Stability and Predictability to Incentivize Talent Retention: Universities are uniquely positioned to lead high-risk, high-reward research because their work is driven by scientific curiosity and long-term discovery rather than short-term commercial gains. As a result, universities across the U.S., including UC, are producing breakthrough advances in fields such as artificial intelligence, cybersecurity, and biotechnology at an unprecedented pace. Sustaining this momentum requires the ability to attract and retain top scientific talent. However, instability in federal research funding undermines this ability and incentivizes researchers to seek more predictable research environments abroad, often in Europe or Asia. Federal policies that promote stability and predictability in federal award funding, IP management and domestic manufacturing, and enforceable U.S. patents help to retain such talent to the benefit of the American people.

Expand Advanced Research Projects Agency for Health (ARPA)-Model Programs: The ARPA model, characterized by empowered program managers, milestone-based funding, and a high tolerance for failure, has proven effective at DARPA, ARPA-E, and ARPA-H in advancing transformational research. To enable more high-risk, high-reward science while sustaining steady progress in foundational research, federal agencies should expand the use of ARPA-style approaches, including creating dedicated ARPA-like tracks or divisions within existing agencies (such as NSF). Providing these programs with flexible

funding mechanisms authorities would allow agencies to pursue ambitious research agendas, manage risk at the portfolio level, and complement traditional grant programs that support incremental knowledge development.

Longer Grant Durations: High-risk research requires longer time horizons than typical three-year grant cycles permit. Transformative discoveries frequently require sustained exploration, iterative experimentation, and flexibility to pursue unexpected findings as the research evolves. In the past major industry R&D firms, such as AT&T Bell Laboratories and Texas Instruments, benefited from sustained internal funding that enabled them to develop some of the most important and transformative innovations (e.g., the transistor, the integrated circuit, and cellular communications) in collaborative, interdisciplinary environments. However, many of these firms have closed their R&D branches. Federal agencies should therefore expand the availability of longer-duration grant mechanisms at universities, on the order of five to seven years, for projects designed to pursue transformational outcomes. These awards should be paired with streamlined reporting requirements and a greater tolerance for mid-course pivots in research direction, allowing investigators to respond to emerging insights without penalty.

Develop Programs in Support of Major and Mid-Scale Research Infrastructure: Along with sustained research funding, there is an urgent need for more programs that enable researchers to procure, maintain, and/or construct major and mid-scale research infrastructure, equipment, and shared facilities in a timely fashion. Indefinite decision-making by federal agencies has damaged the planning and costs of important major projects. An example is the construction of extremely large telescopes, which were highlighted in the 2020 Decadal Survey, Pathways to Discovery in for Astronomy and Astrophysics.

(vii) How can the Federal government support novel institutional models for research that complement traditional university structures and enable projects that require vast resources, interdisciplinary coordination, or extended timelines?

Support University-Affiliated Research Parks and Innovation Districts: Federal programs should provide planning grants and infrastructure support for university-affiliated innovation facilities that co-house startups, industry R&D, and academic researchers. These facilities bridge the gap between laboratory discovery and commercial development but require capital, such as prototyping facilities, that neither university nor private developers typically provide. In addition, these facilities can offer education and training programs.

Multi-institutional Collaboration Support: Large-scale research challenges increasingly require collaboration across multiple universities, laboratories, and companies. Federal programs should provide support for consortium coordination, shared infrastructure, and IP management. These coordination costs are essential for effective and productive collaboration but difficult to fund through traditional project grants.

R&D Tax Credit Boost for Academic Collaboration: The R&D tax credit specifically encourages industry to partner with universities and non-profit research institutions to fund and perform research. The financial incentive works by allowing companies to deduct a percentage of the research expenses paid to these external organizations from their corporate income taxes. Examples of this incentive being successful have been highlighted by the Tax Foundation and by American Association of Universities.

(viii) How can the Federal government leverage and prepare for advances in AI systems that may transform scientific research—including automated hypothesis generation, experimental design, literature synthesis, and autonomous experimentation? What infrastructure investments, organizational models, and workforce development strategies are needed to realize these capabilities while maintaining scientific rigor and research integrity?

AI can and will increase the speed of innovations, emphasizing the importance of streamlining research-related policies and research administration processes as discussed in other responses to questions in this RFI. Universities are properly positioned to make AI breakthroughs and to train the American workforce that will use AI in new ways. UC supports the recent USPTO rules ensuring that AI-enabled innovations are patentable under the same rules that apply to other inventions made with the assistance of technological and computational tools.[7] The U.S. is fortunate to have some existing infrastructure investments, organizational models, and workforce development strategies to realize AI capabilities within current university innovation drivers, but more is needed. Retaining top scientific talent at U.S. universities, supporting early-stage innovations and start-up companies, and strengthening U.S. patents will all aid the country's preparation for transformative AI systems. Without immediate federal investment to support AI research and education at universities, the U.S. will lose this talent (e.g., faculty and other experts) to industry and to other countries.

Prepare for Emerging Technologies: Policies governing emerging technologies such as AI, hypersonics, and semiconductors, should evolve alongside the science, while maintaining a strong emphasis on scientific rigor, transparency, and research integrity. Ongoing engagement with the academic research community is essential to ensure that

[7] See Ex.parte.Guillaume.Desjardins, in which Director Squires warned that "[c]ategorically excluding AI innovations from patent protection in the United States jeopardizes America's leadership in this critical emerging technology."

these technologies are developed and deployed in ways that reinforce core scientific principles, accelerate discovery, and sustain U.S. leadership in innovation.

(ix) What specific Federal statutes, regulations, or policies create unnecessary barriers to scientific research or the deployment of research outcomes? Please describe the barrier, its impact on scientific progress, and potential remedies that would preserve legitimate policy objectives while enabling innovation.

UC agrees with and strongly supports the comments submitted by COGR in response to this question. As COGR noted, it has previously provided a comprehensive and well-documented analysis of specific federal regulations, policies, and requirements that impose significant administrative burden on the research enterprise without delivering commensurate benefits. COGR's May 7, 2025, response to the Office of Management and Budget includes a detailed table identifying each requirement, its statutory or regulatory source, its intended purpose, and an explanation of why it is duplicative, outdated, or overly burdensome, along with practical recommendations for improving efficiency. UC endorses COGR's analysis and recommendations and supports their inclusion as Appendix B for OSTP's consideration in evaluating which federal requirements should be modified or eliminated to better enable scientific progress.

Streamline NEPA requirements and processes: The National Environmental Policy Act of 1970 (NEPA) requires federal agencies to have environmental impact assessments done for major funded projects that include construction. However, the national framework for environmental protection, which includes procedural review, permitting, and standards, often creates extraordinary delays in project implementation. A comprehensive review of the framework would help expedite major project implementations and technology transfer.

(x) How can Federal programs better identify and develop scientific talent across the country, particularly leveraging digital tools and distributed research models to engage researchers outside traditional academic centers?

Avoid Broad Restrictions on Foreign Talent: Research universities are the primary engines of STEM workforce development and regional innovation and sustained federal support and strong partnerships are essential to building and maintaining a strong national workforce. This workforce includes foreign nationals. Many of these individuals have stayed in the U.S. and contributed to a vibrant economy including as CEOs of major corporations. Consistent with findings from the 2019 JASON report (Fundamental Research Security), policies that broadly restrict foreign national students or researchers from the U.S. enterprise would likely do "more harm to the United States than good." The U.S. must maintain its competitiveness for top global talent. Security measures to protect U.S. economy and national security should focus on individual behavior and disclosure rather than broad nationality-based exclusions.

(xi) How can the Federal government foster closer collaboration among scientists, engineers, and skilled technical workers, and better integrate training pathways, recognizing that breakthrough research often requires deep collaboration between theoretical and applied expertise?

Require Interdisciplinary Team Science: The national discussion on interdisciplinary research, interdisciplinary research training, and team science has been ongoing for many years. Industry R&D laboratories, such as AT&T Bell Laboratories, and mission-driven agencies, such as NASA, have had important successes because of interdisciplinary team science. However, academia still struggles with this culture, as reflected in faculty promotion and tenure (P&T) criteria and department culture. NSF launched the Integrative Graduate Education and Research Traineeship (IGERT) in FY99. It was replaced by the NSF Research Traineeship (NRT) program after FY11. However, often program officers did not guide review panels, primarily from academia, on how to evaluate proposals with an interdisciplinary lens. Even if graduate students were trained in interdisciplinary research, they often went into academia where they were subjected to P&T criteria that focused on individual performance and discouraged collaborations. The National Academies explored team science and published a consensus study, "The Science of Team Science," in 2015. The study included cross-sectoral interdisciplinary team dynamics (academia, industry, government, etc.), communication strategies, policies, incentive structures, and other questions. The federal government could help strengthen collaborations by requiring grant recipients to abide by documented best practices for team effectiveness and project success as a condition for continued funding.

Reduce Barriers to Talent Recruitment: Laws, regulations, and policies that make it difficult to work with international collaborators, both abroad and here in the U.S., result in less collaboration. Similarly, uncertainty regarding whether awarded federal grants will be truncated or terminated makes it difficult to recruit scientific talent from the U.S. and from other countries.

Harmonized Training: Disparate agency requirements for training (e.g., Responsible Conduct of Research, COI, Research Security) create barriers to entry and mobility. Agencies should accept a unified set of skills/competencies or standardized modules (like those from the SECURE Center) rather than agency-specific training.

(xii) What policy mechanisms would ensure that the benefits of federally-funded research—including access to resulting technologies, economic opportunities, and improved quality of life—reach all Americans?

The Bayh-Dole Act intended for university-driven innovations to benefit all Americans. Graduate students and faculty in universities across the country are working through the most complex questions of our time. University TTOs enable intellectual property

protection, new businesses, job creation, new technology markets, and competition. Innovations that decrease healthcare costs are an excellent example of how the existing infrastructure, if nourished, can ensure that the benefits of federally-funded research reach all Americans. Not limited to developing new treatments and procedures, this research advances digital health, robotics, telemedicine, and AI-enhanced healthcare. These innovations enable smaller healthcare providers to reach more patients, increasing competition and efficiency.

This existing infrastructure can be sustained by (i) ensuring stable and predictable rules to attract private investment, (ii) supporting university TTO operations and place-based programs, (iii) strengthening U.S. patents, (iv) retaining top scientific talent at American universities, and (v) and funding fundamental science.

(xiii) How can the Federal government strengthen research security to protect sensitive technologies and dual-use research while minimizing compliance burdens on researchers?

Seek University Partnerships: The federal government should treat academic research institutions as partners in research security design. By partnering with the organizations where the risk is located, risk is mitigated, and compliance with research security standards are maximized.

Just-in-Time Training: Requiring research security training at the proposal stage for all key personnel, regardless of whether the grant is funded, contributes to "training fatigue." Agencies should allow training to be completed at the time of award ("just-in-time"), targeting resources more effectively.

Harmonized Risk Assessment: Agencies should harmonize research risk assessment rubrics into a single matrix. Currently, divergent rubrics across DOD, DOE, and NSF hamper compliance, increase administrative burden, and make it difficult for institutions to provide clear guidance to their researchers. Research security policies across all agencies should be risk based and focused on research that presents high risk of damage to U.S. economic or national security should a breach occur.

Prevent "CUI Creep" into Fundamental Research: Agencies must adhere to NSDD-189, which establishes that fundamental research should remain unrestricted to the maximum extent possible. The creation of new "Controlled Unclassified Information" (CUI) categories for fundamental research areas (e.g., "Export Controlled Research") is confusing and counterproductive. Security should be managed through classification for high-risk projects, not by placing intermediate controls on broad areas of fundamental inquiry.

Clarify "Fundamental Research": The Administration should expand the definition of "fundamental research" to clearly include all basic and applied research at higher education institutions that are openly available.

Personal Travel Reporting: Some agencies require unique reporting of travel that extends to personal trips (e.g., vacations) for fundamental research projects. This creates an invasive requirement that does not meaningfully enhance the security of such federally funded research and could potentially lead institutions in violating state privacy laws. Agencies should limit personal travel reporting to projects that are not categorized as fundamental research.

F&A Costs: Economic growth and national security depend on strong partnerships between universities and the federal government. We are deeply concerned about the Administration's proposal to reduce facilities and administrative (F&A) cost reimbursement to 15 percent. Capping the indirect costs of university-based research at this level would have a devastating impact on our nation's research enterprise and weaken our ability to compete with China and other countries in critical technology sectors. We urge the Administration to adopt the FAIR model, which was developed with input from public and private research universities, academic medical centers, independent research institutes, hospitals, private foundations, and private companies.

We appreciate the opportunity to share the views of the University of California. As OSTP seeks meaningful changes to policy to enhance and strengthen U.S science, research, innovation and economy, please consider UC as both a resource and a partner in seeking those improved policies and programs.

Sincerely,

Deborah Motton, Ph.D.
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