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ATT: APLU's Response to the *Request for Information on the CHIPS and Science Act Section 10343. Research Ethics*

In response to the U.S. National Science Foundation's *Request for Information on the CHIPS and Science Act Section 10343*, APLU submitted the following public comments to address the Agency's questions on how to incorporate "ethical, social, safety, and security considerations into the research design and review process". The views expressed below were informed through a series of focus group sessions with senior research officers (e.g., Vice Presidents of Research) at APLU member institutions and were submitted via NSF's online questionnaire.

If you have any questions regarding the following response, please contact Dr. Kevin Cooke, Director, Research Policy at kcooke@aplu.org.

Question 1: Describe ethical, social, safety, and/or security risks from current or emerging research activities that you believe might be of concern to the community, profession, or organization with which you are connected.

On behalf of the Association of Public and Land-grant Universities (APLU), thank you for the opportunity to provide input on the draft interagency framework shared in the *Request for Information on the CHIPS and Science Act Section 10343. Research Ethics*.

APLU is a membership organization that fosters a community of university leaders collectively working to advance the mission of public research universities. The association's U.S membership consists of more than 230 public research universities, land-grant institutions, state university systems, and affiliated organizations spanning across all 50 states, the District of Columbia, and six U.S. territories.

To address this RFI, APLU convened a small group of senior research offices (SRO) to provide feedback. APLU also supports the analyses and comments submitted by the Council on Governmental Relations (COGR) and the Association of American Universities (AAU).

Across the responses to each question below, SRO focus group members communicated that NSF should 1) communicate clear definitions of risk across the four risk categories, 2) recognize that each profile has unique needs and should not be combined, and 3) use information from existing review processes to encourage ethical considerations to avoid duplication or overburdening the peer review process.

Focus group members identified AI and geoen지니어ing as two key fields currently raising ethical, social, safety, and/or security discussions across the academic community. Both technologies must be safeguarded for the leadership of the nation and the safety and prosperity of its citizens.

Generative AI, and all forms of AI driven tools, continue to have a tremendous effect as entire sectors of the economy and academia adapt. Currently, many academics are investigating how AI use will affect pedagogy and research, while maintaining the security of both. AI driven tools have the opportunity to improve efficiency in many rote aspects of research administration and the ability to propel new collaborations through identifying previously unknown connections. However, AI has the potential to unintentionally disseminate controlled information, whether this is student, health, or research data. AI driven tools also prompt serious questions regarding academic and research integrity, as the ability to generate profound amounts of data (accurate or not) is now available to all. As NSF supports the next generation of AI research and innovation through NAIRR, CISE, and TIP programs, it should consider how these tools can be built in a way that protects the integrity of the research enterprise that the Administration and agency aspire to create.

Advances in geoen지니어ing should be approached cautiously to ensure the safety of local communities. Many APLU members have a long history of working to improve the agricultural community mission across the United States. Land-grant institutions specifically manage research and extension sites across all counties of their state, bridging the divide between academia and community. Potential modifications to the local environment through geoen지니어ing have important ramifications for national food security and the livelihoods of local communities. This discipline can benefit from the input of community leaders and environmental systems experts as they consider how minor changes can induce substantial impacts. A recent example of disciplinary leaders starting this process is the American Geophysical Union's release of its *Ethical Framework Principles for Climate Intervention Research* Report, which stresses the importance of public participation and informed governance.

Finally, all APLU institutions work to ensure a safe workplace, not only on campus, but off campus. Fieldwork is an important component of many disciplines, and it is important that NSF continue its work in enhancing the safety of remote research sites. The series of risk profiles raised in this RFI provides a framework for NSF to continue to implement new recommendations to enhance off campus research.

Question 2: Which products, technologies, and/or other outcomes from research do you think could cause significant harm to the public in the foreseeable future?

Any feedback on risks presented by emerging technologies is described in the response to Question 1.

Question 3: Describe one or more approaches for identifying ethical, social, safety, and/or security risks from research activities and balancing such risks against potential benefits.

NSF should work across federal agencies to develop consistent definitions of concepts such as “safety” and “potential benefits.” NSF should also consider approaches to assessing the probability and magnitude of risks, as well as benefits, when using uncertain information. Due to the wide range of disciplines that NSF funds, these concepts and approaches can take many forms. For example, biological risk and benefits are clearly tied to the continuation and enhancement of living forms, where balancing risks and benefits involves value judgements, while geological risks and benefits may delve into housing or economic development concerns. Providing examples or benchmarks for these concepts and approaches would assist the community in providing useful feedback.

Research leaders in APLU’s focus group stressed that each of the four risk profiles listed in the RFI (ethical, social, safety, and/or security) have unique needs and operate in a specific framework and should not be combined in one type of review. Research security was a topic identified as best treated separately from the other three profiles. Social, ethical, and safety considerations may be considered and ameliorated as part of the original proposal using public information. Research security is a continuously evolving and complex field that required NSF to create the Office of the Chief of Research Security Strategy and Policy (OCRSSP). Research security considerations have profound implications for the management of investigators and funding and should not be conflated with the remaining, also important, risk profiles. NSF should continue to fine tune its existing research security responsibilities and requirements and not add research security review to the general peer review process.

Question 4: Describe one or more strategies for encouraging research teams to incorporate ethical, social, safety, and/or security considerations into the design of their research approach. Also, how might the strategy vary depending on research type (for example, basic vs. applied) or setting (for example, academia or industry)?

Research ethics belong in every stage of research, not just at the review stage. Focus group members highlighted the benefits that proposal teams receive if ethics considerations are built into the proposal writing phase as early as possible. Research ethicists have a rich discipline and network. Non-ethicist PIs should be encouraged to develop a network of relevant ethicists to collaborate with early in the development of their proposal and have recurring follow ups during the project. As an example, some large institutions have instituted “ethics and society

review” processes specific fields such as AI to assist interdisciplinary researchers understand their potential impact on society.

Offices of research at some member universities have created “Research Ethics Week” events to instill a culture of responsible research on their campuses. This can be done at many scales appropriate for an institution’s research scale, such individual college events or seminars hosted by an Office of Research Ethics. NSF’s history of supporting workshop and conference proposals could be used to kickstart these initiatives at more institutions.

Question 5: How might NSF work with stakeholders to promote best practices for governance of research in emerging technologies at every stage of research?

Any attempt made by NSF to use overly broad or one-size-fits-all requirements in fields that do not have a corresponding norm could erode trust in the agency.

Governance of research is often based on a given discipline, as fields from astronomy to zoology have specific norms and concepts of risk.

NSF should collaborate with stakeholders to ensure that the intended effects of the policy occur. Such collaboration requires clear communication and measurement of broader impacts implemented at funded institutions. Collecting and parsing these measurements and assessments would also require more training for program officers within the agency.

Finally, NSF should partner with disciplinary societies already dedicated to addressing safety and ethical risks to learn from their best practices (e.g. American Society of Bioethics and Humanities, Conference on Computer-Supported Cooperative Work & Social Computing). Addressing ethical, social, safety, and/or security considerations is a multidisciplinary effort, and NSF should leverage the communications and feedback networks of societies to build consensus on its next steps.

Question 6: How could ethical, social, safety, and/or security considerations be incorporated into the instructions for proposers or into NSF's merit review process? Also, what challenges could arise if the merit review process is modified to include such considerations?

Current NSF peer review procedure does not include identifying experts in any of the four risk profiles listed in the RFI, and it is not reasonable to expect subject matter experts to have as comprehensive a mastery over these risk considerations.

Therefore, any approach for the identification of risk requires corresponding experts actively participating as part of the review process alongside discipline experts. Community representatives as part of review processes have been done through medical organizations such as the Patient-Centered Outcomes Research Institute (PCORI), and NSF should assess what practices are mappable to NSF disciplines. Separate risk review boards were recommended as an option to consolidate expertise and enable disciplinary reviewers to focus on what they know best during the traditional peer review process.

NSF should also clearly describe whether these considerations represent a single item of review (such as data management plans), or a deep dive with the potential for feedback and iteration to the proposing team (such as IRB review). Each of these paths increases the administrative burden on researchers and a clear case must be made for how

this additional review benefits a proposal. This may have downstream effects such as significantly increased proposal review time.

The balance of risk versus societal benefits elicits comparison to the current Broader Impacts assessment criteria. Broader impacts are meant to inspire PIs to assess how their research connects to, and benefits, the nation and world. Current broader impact norms are to describe the general benefits to society that NSF funded research provides. Given the caveats and warnings expected as part of a risk assessment, NSF should be cautious if it attempts to combine risk assessment and the broader impacts analysis. In its current form, broader impacts can be used to measure the positive societal benefits of technology and serve as a benchmark to compare against separately written risk assessments.

Focus group members recommended checks and balances be put in place to ensure Agency review teams adequately and consistently identify risk. It was also recommended that the Agency create a mechanism for proposal teams to propose their own risk mitigation strategies.

Question 7: What other measures could NSF consider as it seeks to identify and mitigate ethical, social, safety, and/or security risks from research projects or other activities that the agency supports?

NSF should acknowledge ethics or safety reviews that already exist in the proposal process, such as institutional review board (IRB) and institutional animal care and use committee (IACUC) living subjects research, responsible conduct of research training, data management, lab safety, or the recently released OSTP policy on Dual Use Research of Concern. NSF may benefit from using prior experience with IRBs to launch pilot programs addressing different forms of risk. NSF should be incremental in adding new factors to proposal review and **consider** the model of OCRSSP's plan to pilot a new research security review system in only one discipline to better understand the impacts before full implementation.

NSF should consider providing financial support for pilot programs to implement risk assessment and mitigation procedures. Internal pilot programs could develop new review processes specific to the needs of specific projects or disciplines, similar to the Office of the Chief of Research Security Strategy and Policy (OCRSSP)'s Trusted Research Using Safeguards and Transparency (TRUST) pilot reviewing quantum-related proposals. External pilots could include support for institutions to create or expand research ethics and responsible conduct of research programs. Financial support for new training programs is especially important for emerging research institutions, as their lower staffing levels in research administration lead them to feel administrative burden more sensitively than well-staffed institutions. Pilots such as those described above would confirm NSF's support for addressing risk profiles, develop procedures tailored for each discipline, and provide resources to offset the growing efforts taking place in research centers to manage their risk profiles.