Overview:

The University of Oklahoma intends to be at the forefront of addressing global challenges and is launching the **OU Big Idea Challenge (BIC)**. The BIC is intended to incentivize the formation of transdisciplinary, convergent research teams focused on grand challenges, and will provide seed funding as a way to incubate ideas with the potential for future extramural support.

Background:

As a flagship public institution that is keenly focused on societal impact through research and creative activity, the University of Oklahoma is uniquely positioned to bring disparate academic disciplines together to foster innovative, comprehensive solutions to global challenges. Pillar 5 of the Lead On Strategic Plan for the University defines four strategic themes that focus on grand challenges in aerospace, defense and global security; energy and environmental sustainability; the future of health; and social and community transformation. In our vision for research and creative activity, researchers move beyond and across traditional academic boundaries, collaborating across disciplines and globally with other universities, policy makers, economists, artists and designers, and business leaders to create solutions for a better world. Our goal is to transcend academic disciplines and bring all of OU's institutional strengths together to tackle global challenges and accelerate the delivery of practical solutions that impact society in direct and tangible ways.

To address global challenges (e.g., The Millennium Project and World Economic Forum) and positively impact society at the global, national, and regional scales, innovative approaches and new methodologies that converge the perspectives from science, engineering, social sciences, arts, design, and the humanities are needed. Transdisciplinarity occurs when two or more discipline perspectives transcend each other to form a new holistic approach. The outcome will be completely different from what one would expect from the addition of the parts. Transdisciplinary Research is defined as research efforts conducted by investigators from different disciplines working jointly to create new conceptual, theoretical, methodological, and translational innovations that integrate and move beyond discipline-specific approaches to address a common problem.

The BIC Program will provide resources to transdisciplinary teams of OU faculty, students, post docs and research staff pursuing bold proposals that go well beyond traditional inter- and multidisciplinary efforts. The BIC is intended to disrupt our current research frameworks and approaches, which are often siloed and too dependent upon department- and college-centric thinking. These projects will position the University as a leader in generating new insights and game-changing contributions to solving regional, national and global challenges in security, sustainability, health and communities

The transdisciplinary teams supported by the BIC will pursue system-level projects that integrate social, political, ethical and design and creative arts considerations with advanced science and engineering ideas to generate new holistic impacts and outcomes. Integrating

science, engineering and design and creative arts thinking with the deepest analysis of societal impacts and risks and keeping the "big picture" in mind will ensure that the great idea your team will bring to life will be truly transformative. **We welcome proposals for projects that advance social justice goals of diversity, equity, and inclusion in research and public impact.**

Scope and Themes:

The program will fund **three to four teams**. Project periods will last **up to two years** (depending on scope of the proposal). The BIC is **not intended to provide the full resources** required to create the ultimate solution to a global challenge, or to fund a center or an institute. Rather, the purpose of the program is to **help nucleate teams and ideas** and create opportunities for new and significant external funding—both public and private—that will position OU as a national and global leader in the selected areas. At the same time, it will chart new pathways to discoveries, innovations, and social and policy solutions, while training the next generation of future interdisciplinary talent.

The themes for the Big Ideas Challenge align with OU's Lead On, University strategic plan, and with the specific [strategic framework for research](#). In addressing these themes, successful proposals will be cross-cutting and multi-faceted, involving integrated **equal-foot contribution**s to the overall project from faculty in the **fine arts, humanities, social sciences, professional programs and STEM** disciplines.

The four strategic themes of the OU strategic research plan serve as a guide to think about OU initiatives in the context of global challenges. Examples of potential topics (or combination of topics) are given below. **Proposals that cut across these topics (within or even preferably across themes) and bring multiple areas together in the pursuit of a big idea are highly encouraged and will be given priority**.

- **Aerospace, Defense and Global Security**:
    - Geopolitical instability drivers and international security policy
    - Ethics, advanced technology and the future of war and security
    - The global race for military technological supremacy in the 21st century and its impact on open academic research
    - Advancing AI, quantum technology, autonomy, hypersonics, software systems, advanced materials and manufacturing, and other advanced technologies for the future of defense and national security

- **Environment, Energy and Sustainability**
    - Social adaptation and design strategies to combat all aspects of climate change at the regional, national and global level
    - Advanced technology developments to reduce greenhouse gases in the atmosphere – from advanced nuclear energy, to batteries and electrification, to CO2 capture, storage and use, etc.
    - Advanced methods and technologies for efficient and environmentally sound exploration, production and utilization of fossil fuels

- o Developing resilient, sustainable communities through equitable policies and technological innovations

- **The Future of Health**
  - o Accelerating drug discovery to fight emerging diseases and pandemics
  - o Policies and mechanisms for effective regional, national and global health monitoring networks and response to emerging diseases
  - o Combating social inequities in health care, including those arising from the spread of global pandemics today and in the future
  - o Big Data, Artificial Intelligence, robotics and the future of health –the convergence of technology, engineering, data, science, privacy and ethics to improve health outcomes

- **Society and Community Transformation**
  - o Big Data and other digital approaches and solutions to promote the humanities, arts and social sciences
  - o The human-machine interface and the design of cyber and physical infrastructure and technologies with human applications
  - o The intersection of art, design, science and technology
  - o Advanced technologies, social media, and the future of democracy
  - o Innovative approaches and solutions to eliminating inequities in the academic research and creative activity enterprise
  - o The future of work – from universal income to the design of future social and living structures to the future of education and beyond
  - o Rethinking early childhood to higher education models for the 21st century

It is understood that these topics often overlap and do not exist as isolated silos, and as such should only be interpreted as examples and a guide. For example, emerging diseases related to climate change, global security, the future of health, and greatly affect the dynamics of communities. As another example, MIT's center for arts, science and technology (CAST) brings together faculty from multiple disciplines and connects the worlds of art, science, and technology to thrive as interrelated, mutually informing modes of exploration, knowledge, and discovery. Additionally, exponential advances in digital technologies are, today more than ever, impacting the ways in which we live, learn and work in ways that are not fully understood; the ethical, legal and societal implications of this digital transformation are complex and in need of deep scholarly thought and innovative approaches and solutions. Other examples of successful projects along these lines can found here.

Faculty are encouraged to be broad in their approach and to create transdisciplinary teams that truly cut across these boundaries and tackle grand challenges holistically.

The Application Process: Written proposals, Oral presentations and a proposed budget

Written proposals shall not to exceed three pages (single spaced, 12-point font, Times Roman) and will be evaluated to select projects for an oral presentation. The written proposal should include:

- A brief executive summary that articulates the global grand challenge the proposal aims to impact, the proposal's Big Idea, and the potential impact of the idea.
- A brief description of the unmet need that the Big Idea tackles.
- What are the goals and expected outcomes, and impact on society of the project?
- Why now?
- A brief description of the team's approach to meeting the goals, including an articulation of the path to sustained external funding, and how the approach leverages OU resources.
- A brief description of the benefits of the proposed solution to OU and the world.
- Why OU? Including a description of the competition in the field and possible partnerships.
- A set of milestones that will be met over the period of performance (not to exceed 24 months).

Other considerations include the following:

- The proposal must clearly identify a team leader and project champion who must be an experienced (tenured or tenure track) faculty member with a significant record of success in translating new ideas to extramural research support.
- If possible, the proposal should identify **a partner** from a local or global community to strengthen the system approach and societal impact.
- The milestones should set a clear **path towards federal, private or industrial funding** after the BIC program ends. If selected for the BIC program, the team will work closely with OU's Washington DC consultants ([Lewis-Burke Associates](#)) and with OU Advancement to find and create potential funding opportunities (federal, state, foundation, private, etc.) and develop a long-term vision for the research. The Center for Faculty Excellence (CFE) will be able to assist in the preparation of extramural proposals.
- The milestones should set targets for **tangible progress** to be achieved and will be reviewed every six months for continuing funding.

Budgeting and Available Resources

A detailed budget request aligned with the milestones should also be included but will not count toward the three-page limit. It is expected that a typical project will have a budget of up to $75,000 per year for up to two years. However, final budget determinations will be made after selection based on final scope and schedule. Budget resources will be provided by the OU Office of the Vice President for Research and Partnerships.

Cost-share that reduces the overall cost to the VPRP office of a project (and therefore allows for more projects to be funded) from colleges or elsewhere is not required but is highly encouraged and valued.

Continued budget allocation to a winning project will be contingent on satisfactory progress in meeting the bi-annual milestones. Projects that do not show sufficient progress against their milestones will be terminated prior to the two-year nominal performance term. No cost extensions beyond two years will be allowed.

Proposals should be submitted to Dr. Ann West (awest@ou.edu) who is the Point of Contact for the BIC in the OVPRP. Dr. West can facilitate pre- or post-award consultation of applicants with Lewis-Burke Associates or OU's Office of University Advancement and will coordinate with the Center for Faculty Excellence as appropriate.

Timeline

• Sept. 21-25: Value Proposition Workshops (to be announced)
• Sept. 5-Oct. 9: Q & A session(s) (to be announced)
• Oct. 19: Notice of Intent due with project title, lead PI and coPIs
• Nov. 2: Written proposals are due by 5:00 pm Central Time
• Nov. 23: Notification for selection to present oral presentation
• Dec. 14-18: Oral presentations
• Dec. 21: Notification of selected proposals for awards
• Jan. 1, 2021: Earliest project start date

Proposal Evaluation

Proposals will be evaluated by a team of selected OU academic leaders and external advisors representing the broad interests and capabilities of the campus. Care will be exercised to ensure diversity (intellectual and otherwise) in the evaluation team, and that there is no conflict of interest in the proposal evaluation process. The proposals will be scored based on the following weighed criteria:

- 40% - Is the team truly interdisciplinary, integrating multiple academic disciplines into a transdisciplinary approach that is bigger than the sum of the parts? To what degree is this truly a new collaborative research endeavor? What will be the potential societal impact of the project?
- 20% - How compelling is the Value Proposition? What intellectual value or contribution is represented by the idea? How strong is the scholarship/research base for the proposal? Will the project catalyze or enable new areas of research or new collaborations? Does the project aim to create solutions that are oriented toward diversity, equity, and inclusion?
- 40% - How likely is it that the big idea challenge funding will result in new federal, corporate, donor and/or foundation funding at significant scale? Identify likely funding

sources as specifically as possible. Why is this team, and why is OU, the right place to lead this effort?

Teams whose written proposals are selected for oral presentation will be invited to pitch their Big Idea in an oral presentation to the evaluation committee. The teams will compete in a public process akin to an entrepreneur's pitch to venture capitalists. Presentations will be strictly limited to 8 minutes, with an additional 7 minutes for questions, and are expected to succinctly, but clearly address all elements of the project, as well as describe the project team leadership qualifications, milestones and the budget. Details on presentation framework will be shared with the selected teams.