



# INDIANA UNIVERSITY

OFFICE OF THE VICE PRESIDENT  
FOR RESEARCH

## Grand Challenges Program

### Request for Proposals

**Overview:** The Bicentennial Strategic Plan calls for Indiana University to invest significant resources over the next decade to catalyze research. This investment will be particularly focused on Grand Challenges—“major and large-scale problems” facing humanity that can “only be addressed by multidisciplinary teams of the best researchers.”

The university anticipates funding three to five comprehensive initiatives to address Grand Challenges by the conclusion of IU’s Bicentennial in 2020. The resources to be invested are substantial and have been assembled from multiple sources over a number of years. Over the next five years, the university anticipates investing \$300 million, including base funding for as many as 175 new faculty lines. In the words of President Michael A. McRobbie, Grand Challenge Initiatives will be “few, large, focused, and measured by their impact.”

The development, proposal, and selection process in 2015–16 will facilitate the creation of a diverse array of initial proposals during the fall semester, select approximately five for further development during spring semester 2016, and ultimately select two as initial Grand Challenge Initiatives in time for implementation to begin by fall 2016. It is anticipated that each Grand Challenge Initiative will comprise a number of specific projects and hires. Other Grand Challenge Initiatives will be selected in future years. Proposals not selected in 2015–16 may be revised and resubmitted in future years, or may be considered for other types of research funding if appropriate.

Accordingly, IU invites proposals for the first round of Grand Challenge Initiatives, and in this document describes the goals, criteria, and application and review process.

**Goals:** IU’s investments in Grand Challenges are intended to serve six critical goals:

1. To improve in tangible ways the quality of life of the people of Indiana and the world and to improve the economic vitality of the State of Indiana.
2. To transform Indiana University through strategic hires and by significantly enhancing the volume, quality, impact, and reputation of research at IU.
3. To provide critical, strategic investment in the research infrastructure of IU.
4. To improve IU’s ability to compete successfully for more ambitious and diverse external research support.
5. To facilitate collaboration that enables IU to leverage its extensive and diverse resources in pursuit of common goals.

6. To create valuable intellectual property, make it available to the public through appropriate commercialization, and create new sources of revenue for IU.

**Criteria:** To achieve these ambitious goals, Grand Challenge Initiatives will differ in scope, scale, and complexity from other important research programs. They must be sufficiently broad to have the potential to make a difference in local communities, the state, the nation, and the world. This will require an interdisciplinary approach that works across disciplinary and institutional boundaries. At the same time, they must be sufficiently focused to draw strategically on IU's existing strengths and new Grand Challenges funding, have an impact that is measurable, and compete effectively for additional external funding. A proposal with the goal of "improving public health" or "enhancing national security" would likely be considered too broad, while a focus on "health education in K-12 schools" or "improved data encryption" would likely be considered too narrow.

The focus on tangible external impact is not intended to discourage proposals with bold scientific or other goals relevant to one or more fields of inquiry, but those goals should be articulated in a way that emphasizes benefits to the people of Indiana and beyond and each proposal should include translational elements that demonstrate the benefits of the research for the public.

Identifying proposals of appropriate scope and focus is not easy. The following criteria are intended to provide guidance. A Grand Challenge Initiative:

1. *Addresses a compelling problem or challenge*, the resolution of which would significantly affect the people of Indiana and beyond.
2. *Has defined, achievable goals that deliver tangible benefits* to the people of Indiana and beyond.
3. *Strategically leverages IU strengths* and existing resources.
4. *Requires a multidisciplinary team* that reaches across departments, schools, and, in most cases, campuses.
5. *Can attract the external competitive, philanthropic, corporate, and/or government funding necessary to sustain the work* to successful completion.

**Initiative Funding and Themes:** Funding for Grand Challenge Initiatives will come from a combination of campus, school, and university sources, and will include support for up to 30 new faculty lines (across multiple units) for each Grand Challenge Initiative, as well as faculty startup packages, graduate students, postdoctoral fellows, equipment, facilities, travel, and other expenses necessary for the research. Funding generally will be available for up to five years, although support for faculty lines will be base funding and will continue indefinitely.

Proposals that involve the close cooperation of more than one campus are especially encouraged and will be eligible for additional university funding. Similarly, proposals that involve collaboration between IU and Purdue will be eligible for additional university funding.

Given that the IUPUI campus and IU School of Medicine have previously identified particular themes toward which their funding will be directed, proposals from teams led by faculty members within those units *must* relate to those themes.

- Grand Challenge Initiative proposals led by IUPUI faculty must fit within the overarching theme of “Urban Health and Well Being.”
- Proposals led by IU School of Medicine faculty will be developed through selected work groups within the following overarching themes: “Precision Medicine,” “Population Health,” and “Improving Health at Life’s Transitions.” The process for initiating these Grand Challenges within the School of Medicine is still being determined and will be announced separately.

Faculty members from these units may participate in Grand Challenge projects in other areas led by colleagues at IU Bloomington, where overarching themes have not been selected. Conversely, faculty members from any campus may participate in Grand Challenge Initiatives led by IUPUI and IU School of Medicine faculty.

**Eligibility:** Lead PIs must be tenured IU faculty members with a history of external funding. Non-tenured faculty members and research scientists may participate as team members on proposals led by eligible PIs. Proposals including participation by women and members of underrepresented groups as PIs and team members are especially encouraged. There is no limit on the number of proposals on which faculty and research scientists may participate.

**Process:** The solicitation and review of proposals for Grand Challenge Initiatives in 2015-16 will proceed with a two-stage process:

1. Preliminary Proposals, due **November 9, 2015**, with teams notified no later than January 8, 2016 as to whether they are being invited to submit a full proposal.
2. Invited Full Proposals, due **April 18, 2016**, with a final decision by mid-June 2016 so that implementation can begin in the fall of 2016.

All proposals—preliminary and full—will be made public.

**Requirements for Preliminary Proposals:** The preliminary proposal process is intended to help bring together groups of faculty interested in working to develop Grand Challenge Initiative proposals, while at the same time providing reviewers with a sufficient basis for determining which Grand Challenge proposals are most likely to succeed in addressing the goals set out above.

**Preliminary proposals must be submitted as Word or Adobe Acrobat documents to [grandchallenges@iu.edu](mailto:grandchallenges@iu.edu) before 5:00 p.m. (EST) on Monday, November 9, 2015.**

A successful pre-proposal will be **no more than 4,000 words** (approximately eight pages), excluding the cover page and biosketches, and must address:

1. The Grand Challenge (1 paragraph): The nature and significance of the need(s) the research will address.
2. Goals (<1 page): The defined, achievable goals on which the proposed Grand Challenge Initiative will focus.

3. Proposed research and its impact (3–4 pages): The broad contours of the proposed research, including major components or projects that make up the research; the way in which the proposed research will address the problem or challenge and achieve the Grand Challenge goals; and a brief explanation of other work addressing the problem or challenge and how the proposed research is different or likely to be more effective. Successful proposals must demonstrate great potential for significant impact within the university, the state, and beyond. This requires a well-crafted research plan and practical mechanisms (e.g., clinics, demonstration projects, partnerships with practitioners) for ensuring impact in the real world.
4. Resources (1 page): The IU strengths and resources on which the proposal would build; the types and magnitude of the additional resources requested (e.g., strategic hires, post-docs, graduate students, equipment, etc.); and a brief explanation as to why they are needed.
5. Team (1 page): List: (1) the point of contact for the proposed Grand Challenge Initiative and (2) team leaders who will be responsible for shepherding and, if selected, providing intellectual leadership for this Grand Challenge initiative. Briefly outline the relevance to the problem of the areas of expertise represented and summarize the past successes of team leaders in collaborating on complex projects. (*As an appendix*, please list other team members and their areas of expertise [name, title, department, school, campus, and relevant expertise – for instance, “Fred H. Cate, Distinguished Professor, Maurer School of Law, IU Bloomington, Cybersecurity”. Please attach biosketches for *team leaders* in [NIH](#), [NSF](#), or similar format, not to exceed 5 pages each.)
6. Sustainability (1 page): The sustainability of the proposed research, including the potential for, and likely sources of, external funding necessary to sustain the work to successful completion. This section should address not only traditional sources of funding such as NSF and NIH, but other government agencies, foundations, companies, and private philanthropic support.
7. Partners (<1 page): External organizations and individuals necessary to the guidance, implementation, and funding of the research and its translation into practical benefits for the people of Indiana and elsewhere, including past experience with, and plans for, engaging with these partners.
8. Metrics (<1 page): Metrics for assessment describing how impact will be measured and how and when the people of Indiana and elsewhere will benefit from the work.

In addition, each preliminary proposal must have a cover sheet that provides:

1. The title of the proposal;
2. The name, department, school, campus address, email address, and telephone number of the point of contact;
3. A one-sentence summary of the Grand Challenge; and
4. An abstract of no more than 250 words that describes: (a) the Grand Challenge; (b) why it is a Grand Challenge; (c) why it is appropriate for IU to address this Grand Challenge; and (d) what defined, achievable goals are the focus of the proposed Grand Challenge Initiative.

Teams working on Preliminary Proposals are strongly encouraged to work closely with the Office of the Vice President for Research and (as appropriate) the Office of the Vice Provost for Research (IU

Bloomington), the Office of the Vice Chancellor for Research (IUPUI), and the Office of the Executive Associate Dean for Research (IU School of Medicine). This is intended to be a collaborative, transparent process; the resources of these offices are available to all faculty members interested in submitting proposals.

**Requirements for Full Proposals:** A successful full proposal will be **no more than 20,000 words** (approximately 40 pages) and must address similar points as a preliminary proposal, but in greater detail. In addition, a budget and letters of support will be required. Detailed information about the full proposals and supporting documents will be provided by December 1, 2015.

Teams invited to submit a full proposal will work closely with the offices identified above, as well as the Offices of the Vice President for Engagement, the Vice President for Information Technology, and the Vice President for Public Affairs and Government Relations, and the IU Foundation. Modest financial support and other resources will be available to aid in the development of full proposals.

**Full Proposals must be submitted no later than 5:00 p.m. (EDT) on Monday, April 18, 2016.**

**Review Process:** President McRobbie has appointed a Grand Challenges Steering Committee that will supervise the review process. Members of this committee are:

Fred H. Cate, Vice President for Research (chair)  
John Applegate, Executive Vice President for University Academic Affairs  
Jay Hess, Vice President for University Clinical Affairs  
Nasser Paydar, Executive Vice President and Chancellor  
Lauren Robel, Executive Vice President and Provost  
Daniel C. Smith, President and CEO of the IU Foundation  
William B. Stephan, Vice President for Engagement  
Brad Wheeler, Vice President for Information Technology and CIO

The Steering Committee, in consultation with appropriate Faculty Councils and academic leaders, will appoint a Grand Challenges Review Committee that will review both pre-proposals and full proposals and make recommendations to the Steering Committee. The Review Committee will have nine members, who will be selected for their distinguished research record and reputation, experience in attracting research funding, broad disciplinary diversity, and representation of key units including the School of Medicine, the College of Arts & Sciences, and at least one regional campus. The Review Committee may supplement its assessment of proposals with additional external or internal reviews as necessary, before making recommendations to the Steering Committee.

The President also will appoint a Community Advisory Board, comprising leaders from industry, government, and not-for-profit organizations throughout Indiana. The members of the Community Advisory Board will provide guidance for IU's Grand Challenges program and the selection, implementation, and review of specific initiatives.

Each team submitting a proposal for a Grand Challenge Initiative will receive comments on its proposal. The review process also may result in adjustments to proposed budgets, requests for revisions, and/or recommendations to merge or otherwise combine elements of proposals.

The Steering Committee will make recommendations to President McRobbie, who will make final decisions.

**Administration of Grand Challenges Program:** Development and implementation of a Grand Challenges Initiative requires faculty members to approach broad and challenging problems in new ways. The program similarly requires the university to make every effort to administer the program in such a way as to minimize the burden on all participants. To that end, key principles will guide the administration of the Grand Challenges program:

1. A commitment to being nimble and flexible in the implementation of Grand Challenges.
2. A commitment to being strategic in the investment of Grand Challenges funding.
3. A commitment to administrative efficiency and cost-effectiveness.
4. No shifting of funds between campuses without the explicit consent of campus leadership involved.
5. A concerted effort to reduce and, if possible, eliminate internal administrative barriers to collaboration and effective implementation.

**For further information or with questions please email: [grandchallenges@iu.edu](mailto:grandchallenges@iu.edu) or contact:**

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