

CU DENVER GRAND CHALLENGES INITIATIVE: REQUEST FOR PROPOSALS

Cross disciplinary teams of CU Denver faculty from across the campus are invited to submit proposals for funding to support planning, team formation, and proposal development around research and creative work (RCW) "Grand Challenges" (GC). The goal of this program is to kickstart efforts that can bring national and international recognition to CU Denver in RCW. Research teams can include any fields and must contribute to CU Denver's [2030 Strategic Plan Goal 3](#) of elevating the University's reputation as an innovative, urban, research institution.

In seeking to cultivate a rich environment of discovery, the GC initiative places emphasis on high-risk/high-payoff research, projects with larger societal impact, convergent research approaches, engagement of broad stakeholder communities, and the adoption of innovative team science formations. The GC initiative supports the creation of collaborative RCW support leading to new convergent team formation from existing disciplinary capacity on the campus. This solicitation is designed to foster and facilitate the University community's thinking about how to form convergent research collaborations rising to the breadth of expertise and sophistication necessary to address issues both pressing and having the potential for significant societal impact.

In year two of the GC initiative, teams are asked to identify important challenges, ones taking a wider range of skills and expertise to be successful than more traditional research projects. This initiative will provide funding and resources to build effective relationships with partner groups, institutions, and stakeholder communities. To offset the additional complexity of these types of challenges, funds can be used to plan and execute outreach events, support team formation activities (e.g., filling expertise gaps), develop and nurture relationships with stakeholder communities, as well as provide access to specialized frameworks or resources necessary to address the proposed challenge. It is expected that several of the teams awarded funding will organize an institute, center, or consortium of note. The complexity of convergent, cross-disciplinary endeavors of this kind having a broad impact underscores the importance of purposeful team formation, including effective leadership/management, as well as the early engagement of stakeholder communities. The GC initiative is designed to potentially provide administrative support, travel, and event funding that will specifically strengthen the following types of activities:

Ideas with a wide-ranging societal impact: The GC initiative seeks to support opportunities and challenges that may be addressed through advances in collaborative research and innovation for the benefit of society at large. The potential impact explored should be relevant, pressing, complex, and not limited to any specific discipline or field.

Growing convergence research across campus: As defined by the National Science Foundation: Convergent research is an approach to problem-solving that transcends traditional disciplinary boundaries. It seeks to deeply integrate knowledge, tools, and ways of thinking from a variety of disciplines such as health, and the physical, mathematical, computational sciences as well as the humanities, arts, (and beyond) to form a comprehensive synthetic framework for tackling societal challenges existing at the interfaces of multiple fields. Convergent research explicitly carries with it the strong potential to lead to transformative solutions or new fields of study. However, it takes time and extra support to gather the expertise necessary to undertake this kind of research. The GC initiative is conceived an institution-wide means of support to encourage the formation of these types of teams and frameworks that can potentially increase the research portfolio and reputation of CU Denver.

Stakeholder community outreach: The GC initiative is designed to support network-building, planning and strategy actions with all parties that can contribute to a sustainable research structure through capacity-building and value creation responsibilities. Stakeholders can include relevant researchers across CU Denver or partner institutions (though no funding may be directed to a partner institution in the form of travel stipends, salaries, etc.) with complementary research and education expertise; academic and industry leaders who can guide the innovation effort; partners for innovation, education, workforce development, and diversity; and beneficiaries of research products or outcomes (community members, users, customers, patients, watchdog organizations, and policy-makers).

Building lasting collaborative networks: The GC initiative supports collaborative RCW where all necessary disciplines, skills, perspectives, and capabilities are brought together to address a broad issue. Successful teams are seen to be interdependent, inclusive, multidisciplinary, and diverse. Teams should be able to work and communicate effectively even when team members are from across academic disciplines. GC resources can support team formation activities including strategies to overcome barriers to effective, dynamic teaming. These types of activities can include, but are not limited to: the integration of members with differing areas of expertise, vocabularies, ways of approaching problems, understanding the problems/issues to be addressed, and differing disciplinary communication styles.

The cultivation of effective leadership/management skills: The GC initiative seeks to support building the skills necessary for principal investigators (PIs) and co-PIs who have intellectual vision and leadership intuition to provide effective management of centers or consortium. The process encourages faculty with a history of delivering results on research funding and the ability to communicate clearly and effectively with diverse audiences including team members, sponsors, partners, host institutions, stakeholders, press and media, as well as the general public to apply. Leaders on convergence research projects must empower all team members to contribute regardless of academic status or rank. They must seek to establish a culture of deep collaboration and inclusion; build consensus around goals and problem definition; and facilitate communication to ensure a common understanding. At times, their activities may involve pragmatic activities resolving specific conflicts as well as building an atmosphere of trust.

It is rare for a single person to have all of these attributes. Therefore, a strong leader will need to assemble a leadership team that covers this broad spectrum of skills. Effective PIs must understand their strengths and limitations to effectively assemble a research leadership team that can fill any “management” gaps. It is this type of collaborative research framework that the GC initiative funding and support encourages, in any form that is sustainable, be it a center, institute, loosely structured consortium or research network of like-minded individuals.

To reach this goal of building a broader campus-wide research support network, we anticipate funding up to (2) proposals at the \$250K level and up to two (2) proposals at the \$150K to be expended within 18 months of the award date. Awarding of funds will depend on the quality and compelling nature of the proposals within the submission pool.

Though attendance is highly encouraged, individual and teams do not need to have participated in the Research Symposium held during the fall 2022 semester to be eligible to submit a proposal. Proposal submission consists of two steps: submission of a letter of intent followed by submission of a full proposal. All teams who submit a letter of intent are invited to submit a full proposal. Award announcements will be made no later than May 15, 2023 with work to begin on June 1, 2023.

University support may be provided in the form of project management and administration, external proposal management, writing/editing, DEI expertise, and the identification of research opportunities/connections to relevant program managers in federal agencies, foundations, etc. Teams will also receive support to communicate their accomplishments. Schools and colleges are encouraged to integrate the selected research programs into their strategic planning, and to develop opportunities for college faculty to access and leverage resources to this end.

Award Information

Number of Awards: 4

The final number of awards will be dependent upon the quality of proposals received and the degree to which the proposals meet the solicitation goals, and merit review criteria. The award period is for 18 months and proposals defined as follows.

Type I Proposals, funded up to \$250K, are appropriate for teams in mid- and later stages of planning or organizing RCW activities, whose members have established research and funding records, and whose members have or belong to existing collaborative networks. These teams should have existing internal collaborations with some team members as evidenced by published or creative works, grant proposals under active development, and/or external funding opportunities identified in order to begin larger grant submission proposals within the award period. Stakeholder identification and outreach strategies should be outlined clearly enough to begin these activities early in the award period. Initial planning stages involving schedule, budget justification, and the potential entity, center, institute, or similar that will emerge should be underway.

Type II Proposals, funded up to \$150K, are appropriate for teams whose members are in the early stages of planning or organizing RCW activities. Type II proposals support newly formed and/or early-stage development of RCW collaborations. The funding for this level can be used to hold outreach events seeking to identify interested participants and sessions to outline shared interests and synergies, overlapping expertise, and methodological connections. After initial strategies are outlined, potential funding sources should be identified and stakeholder/participant relationships solidified. It is expected that resulting collaborations will pursue external funding and begin establishing a collaborative publication or creative works record within the award period.

Anticipated Program Funding Amount: \$800K

Subject to the quality of proposals received and availability of funds.

Eligibility Information

Who May Submit Proposals:

Proposals may be submitted by the following teams of individuals:

Research Teams comprised of CU Denver faculty are eligible to submit. All faculty ranks are eligible to be involved with a submission as a team member, but each collaboration must identify a PI that holds a full-time tenure/tenure-track faculty position. During the award period, the PI will be considered the liaison between the research team and the Office of Research Services (ORS). The PI will be expected to represent the collaboration in required meetings and presentations with

campus leadership, ORS, or stake-holder communities involving strategy, potential support, and other related research and creative activities.

TIMELINE FOR GRANT PROPOSAL SUBMISSION (GRAND CHALLENGES CYCLE 02)

Research Symposium: November 18, 2022

Letter of Intent Due Date: January 27, 2023 at 5:00 PM

Full Proposal Due Date: March 17, 2022 at 5:00 PM

Announcement of Awards and Negotiation of Terms: May 15, 2023

Anticipated Start Date: June 1, 2023

GC PROPOSAL SUBMISSION AND REVIEW PROCESS

Proposals will be selected for funding through a review process undertaken by a diverse cross-disciplinary group of external and internal experts that will evaluate proposals on their intellectual merit, potential for successful implementation and the possibility of having a broad impact. While these terms have been borrowed from the National Science Foundation, the general concepts they describe are universal to most research sponsors. In addition, proposals will be reviewed for their potential to contribute to CU Denver's strategic goal of being recognized internationally for its research and creative works enterprise. They will also be assessed on the strength of the collaborations and their potential to achieve the proposed goals; the potential of the organization and management of the effort to lead to the proposed outcomes; and the alignment of the effort to the [Strategic Plan](#) (Goal 3) and the attributes described in the companion document: [Vision Team report](#).

Reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they have succeeded, and what benefits could accrue if the project is successful. These issues apply both to the technical and creative aspects of the proposal as well as the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two overarching criteria:

Intellectual Merit: encompasses the potential to advance knowledge; and

Broader Impacts: encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
 - a. Advance knowledge and understanding across different fields (Intellectual Merit); and
 - b. Benefit society or advance desired societal outcomes (Broader Impacts)
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified are the individuals involved in the collaboration, and how well thought out is the organizational structure supporting the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out leadership activities supporting the proposed cross-disciplinary activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research/creative projects, or through activities that are supported by, but complementary to the collaboration. The program values the advancement of all forms of knowledge and creative activities that contribute to achievement of societally relevant outcomes.

The review process will include the following steps:

Administrative Review: Applications will be screened to determine whether they are complete, adhere to the formatting requirements, and meet basic relevance and eligibility criteria.

Innovation Review: Eligible applications will be evaluated by at least three external reviewers. These reviewers include experts from across many disciplines (e.g., arts, humanities, health, built environment, social sciences, engineering, computer and data science, and more). Reviewers will have a history of thinking "outside the box" and conducting innovative work.

Selection Committee Review: A final selection panel will review the applications for scientific merit and feasibility as well as considering the external reviewers' assessment of innovation and creativity. The committee will seek to identify innovative, novel, and potentially groundbreaking collaborations with the highest potential for impact and success.

General criteria for a strong proposal include:

- *Innovation:* The extent to which the proposed idea challenges existing paradigms and employs new methodologies or concepts.
- *Quality:* The extent to which the proposed idea and planned research development phase are clearly explained, and the application includes compelling and well-defined outcome metrics.
- *Potential for Impact:* The extent to which the proposed research/creative activities may have potential resulting in a significant societal impact, including external funding opportunities that can build the reputation of CU Denver.
- *Scope:* The extent to which the proposed idea addresses a challenge that while broad and impactful is still clearly articulated in its goals, benchmarks, schedule, budget justification, and success measures.

SUBMITTING LETTERS OF INTENT

Letters of Intent due by 5:00 p.m. on January 27, 2023

Send e-mail to Office of Research Services (ORS@UCDENVER.EDU, copied to Carie Carroll (Carie.Carroll@ucdenver.edu)) with "Letter of Intent" as the subject heading. Include the following in the body of the email:

- Proposed title (this can be changed prior to submitting full proposal)
- List of faculty leaders and participants and their affiliation (also can change before proposal submission)
- Abstract/synopsis of project (500-word limit)
- Identify which level (Type I or II) will be pursued.

SUBMITTING GRAND CHALLENGES PROPOSALS

Grand Challenge Proposal due by 5:00 p.m. on March 17, 2023

Proposals should be submitted through the [portal on the RCW Strategic Plan website](#).

Formatting Instructions: (adapted from NSF guidelines – except for margin size and footer requirement) apply to all sections of the proposal including appendices:

- Font type and Size: Use Arial or similar at a font size of 10 points or larger.
- Paper size must be no larger than 8 ½ inches by 11 inches
- Figures, including text in figures, should be easily readable

Cover page – See template at provided below (not counted in the page limit)

Sections of Proposal – (Note items 1-6 below should be clearly addressed within the project narrative)

1. Project Summary — (1 page limit) — This summary must be in "lay" terms using language and graphics accessible to non-specialists. It should be a concise description of the particular grand challenge your team proposes to address and the methodology that will be implemented to address it. In addition, please include the total amount of seed funding requested.
2. The Grand Challenge — In this section, please provide a detailed description of the "grand challenge" to be addressed. Please include all relevant background information, any "gaps" in knowledge or practice that will be directly addressed by the research, as well as the importance of the challenge to society in general, and the Colorado and Denver urban corridor, in particular. Please be specific regarding what new knowledge will be created with the proposed research and which population segments will be directly impacted. How will this research have a broad impact: locally, regionally, and globally?
3. Research Methodology/Collaborative Team Dynamics – In this section, please describe your collaborative team, its relevant expertise, and its structure in addressing the grand challenge.

Please explain team management structures and the research methodologies that will be implemented during the grant award period. Describe anticipated partnerships, collaborations, and stakeholder communities that will be involved. Letters of support from potential institutional and/or community partners are not required, but are encouraged. Describe the intention of the methodology that the team will utilize: How will new knowledge be created and then translated into an actionable agenda with a clearly articulated impact? Describe how this approach aligns with elements articulated in the strategic plan and vision team report.

4. Why CU Denver, Why Now? – Envision and describe why this research proposal could be important to the CU Denver Research enterprise now and how it could potentially strengthen particular competitive advantages that already exist on the campus. Identify the institutions and research groups that are currently the strongest competitors in your proposed area and describe how the proposed research can have a distinct and differing impact from their work. Outline any areas of existing research momentum on campus in terms of research programs, funding and external partners that the team can build upon in the near future.
5. Impact and Success – Describe the project's potential for societal impact at the regional, national, and international scale. Clearly articulate current knowledge gaps and needs that should be addressed to become internationally recognized. Outline anticipated opportunities for external support that this seed funding can leverage to make the proposed research program sustainable. Describe what success will look like in 3, 5, and 10 years, including your estimate of the scale of the effort, e.g., numbers of faculty/students involved, potential funding secured, and publications produced.
6. Implementation Plan – Provide a detailed description of how the seed funding and research support will be utilized in the development of new ideas, the formulation of innovative research strategies, the establishment of new interdisciplinary collaborations, new avenues for external funding and potential venues for peer-reviewed publications or similar. In addition, describe specific tasks associated with deliverables that will be accomplished within the award period along with a detailed schedule for completion of research tasks.

APPLICATION PACKET CHECKLIST

Grant Overview

1. Project Summary (1 page max)
2. Project Description (6 pages max)

Template Cover Page (does not count towards the six pages)

- a. Project Summary (Innovation, Impact, and Scope)
- b. Narrative identifying and addressing Grand Challenge (GC)
- c. Description of Methodology or approach
- d. Partnerships and collaborations (including team member roles and responsibilities)
- e. Potential External Research Support and venues for dissemination /publication of research/creative activities
- f. Deliverables and Timeline (Quality)
3. Supplemental Material
 - a. References Cited
 - b. Template Budget and Budget Justification (two pages max)

- c. Facilities, Equipment, and Other Resources (one page max)
- d. Data Management Plan (if relevant)

SUBMISSION

The complete application, including all the required components, should be submitted to Carie Carroll (Carie.Carroll@ucdenver.edu) prior to the deadline.

Send e-mail with the attached proposal (PODF format) to Office or Research Services (ORS@UCDENVER.EDU, copied to Carie Carroll (Carie.Carroll@ucdenver.edu) with "Grand Challenge Proposal" as the subject heading.