Advancing Research and Scholarship at the University of Wyoming: A Focus on Society’s Grand Challenges

Ed Synakowski
Vice President, Research and Economic Development

Kate Miller
Provost and Vice President for Academic Affairs

Research Planning Council Meeting
February 12, 2019
Thank you for stepping up to participate in this research planning activity

- Purpose
- Charge to the Research Planning Council for this semester
- Examples, to illustrate intended scope and breadth
- Deliverables
- Vision for how the Research Planning Council will engage faculty
- Next steps
- Activities starting Fall 2019: detailed planning for selected areas
• **Purpose**: deeply engage the campus communities in identifying and planning for UW’s pursuit of transdisciplinary grand research challenges

• **Assert leadership**: Pursuing such transdisciplinary challenges will enable the University of Wyoming to assert leadership and be among leaders in select areas as it serves the state, region, nation, and globe

• **This activity needs to identify:**
  
  • What are the **transdisciplinary research opportunities** that address Grand Challenges of high societal and economic importance to Wyoming, the nation, and the world?
  
  • What **foundational disciplinary research investments** are needed to enable such transdisciplinary research?
  
  • What **inter-institutional research partnerships** for UW need to be strengthened or initiated in order to fully lever the University’s capacity to lead in this research?

• **Requirement**: Grand Challenge subjects should serve as a powerful platform for student education, and for educational outreach to citizens of Wyoming and the Mountain West
The charge to the Research Planning Council has three elements, to be carried out this semester

**Element 1:** Identify up to six to eight transdisciplinary Grand Challenge research themes that will strongly inform UW future investments in research infrastructure and faculty hiring

**Element 2:** Identify single-discipline research areas at the foundation of Grand Challenges that require investment in faculty or UW infrastructure

**Element 3:** Identify institutional partnerships to develop or strengthen in order to create new transdisciplinary research opportunities to create strong teams capable of confronting high priority transdisciplinary Grand Challenges. Partners may include other universities, national labs, industry, community colleges, Native American sovereign nations, international research organizations, and foundations
Examples of potential subjects and scope of Transdisciplinary Grand Challenges

1. Harnessing data for science, policy, and economic development
2. Water: predictive capability, management, and policy
3. Energy, transition to sustainability, and data-driven natural resource stewardship
4. Health care inequities driven by socio-economics and distance: Wyoming solutions and global application
5. Education inequities driven by socio-economics and distance: Wyoming delivery, and global application
6. Artificial intelligence: preparing educational institutions and citizens for disruption
7. Agriculture’s future: the interface of economics with life, water, and evolving climate
8. Biodiversity, ecosystem evolution, and economics: Wyoming as a test bed for prediction, policy, and stewardship
9. The role of the arts in strengthening sense of community and supporting mental health and well-being in rural areas
10. Genetic manipulation: impacts and ethics for health and national security
• Deliverables of the Research Planning Council

By the end of this semester:

1. **Summary high level descriptions of up to six to eight transdisciplinary research themes recommended for further development** - Include the following:
   i. an overview of each theme, with a description of the challenge to be addressed;
   ii. assessment of the potential of this theme of using Wyoming as a research and economic development platform in order to serve the following:
      ✓ economic and societal interests of Wyoming
      ✓ economic and societal national interests
      ✓ economic and societal global interests;
   iii. identification of the disciplines likely to be involved;
   iv. a description of the unique role of Wyoming in supporting this research, if any; and
   v. potential as a platform for student education through research
• Deliverables (con’t)

2. *Strengths and gaps analysis* - The report shall identify existing strengths at UW that will support pursuit of each theme, including faculty who have demonstrated success in acquiring sponsor support, faculty success in partnering across campus and outside, and infrastructure at UW that can be used in support of the pursuit of the theme.

The report shall identify gaps that need to be filled to enable UW to lead or be among leaders, including faculty and post-doc needs, partnerships that would enable UW to join regional and national leaders in this area, as well as UW infrastructure needs.

3. *Assessment of investment requirements in specific disciplines needed to address high priority Grand Challenges* – Building on the strengths and gaps analysis, describe needed investments in foundational disciplines. This can include investments in new faculty, UW research infrastructure, and partnership needed to credibly advance high priority Grand Challenge research needed and sponsor interest.

4. *Description of the potential for using this research as a platform for student education* – Research at the foundation of some of society’s deepest challenges can enlarge and undergraduate’s view of what they are capable of in today’s complex society.
• Deliverables (con’t)

5. Preliminary assessment of sponsor and policy maker interest – Considerations will include interest of federal and state funding agencies, as well as private industry. Resources for assessment may include studies of the National Academies, federal agency strategic plans, and studies and statements from the Office of Science and Technology Policy. Engagement with Congressional committee staff can also be revealing. Sponsor plans, National Academies programs, and state and federal policies provide measure of potential research vitality; also, together with private donations, it is a required if a Grand Challenge research enterprise is going to be partially or completely self-sustaining.

6. Alignment with UW initiatives and programs – How will research in this theme lever investments made in other UW initiatives and programs? Will it capture the investment of more than one? Initiatives include the Science Initiative, Tier 1 Engineering, and the Trustees Education Initiative. Federally funded programs that provide leverage opportunities include EPSCoR program supported by NSF, and the COBRE and INBRE programs supported by NIH.

7. Preliminary assessment of potential donor interest – Engagement of the UW Foundation will be critical for this. Colleges already have fundraising efforts underway with the Foundation. Of high value will be assessing how these plans and activities intersect with the Grand Challenges, and how building upon them might add value to the proposed research activity.
• **Deliverables (con’t)**

8. *Preliminary assessment of existing, required, and highly desirable institutional partnerships* – Describe partnerships with universities, national labs, international research organizations, and industry that are in hand that make this Grand Challenge endeavor particularly compelling. Comment on potential partnerships that would fill gaps identified in the strengths and gaps analysis. Comment on investments required to enable new partnerships to be formed.

9. *Broader impacts potential* - The report shall identify the broader impacts beyond progress in the specific area of interest that will likely be afforded by addressing this Grand Challenge. For example

   a. regarding on-campus impact, describe how taking on this Grand Challenge will enhance UW’s research and educational infrastructure
   b. describe the opportunities for citizen engagement in this area of research
   c. describe how will it impact the strength and viability of industries in Wyoming
   d. outline the potential economic benefit for the state and the nation
• Deliverables (con’t)

10. Summary evaluation of the themes - Rank the research themes into the following categories:

- Tier 1: Essential for UW to pursue-a “must do,” considering societal and economic needs measured at the statewide, national, and global levels
- Tier 2: Important for UW to pursue-an important current or emerging area where we should consider realigning resources to pursue
- Tier 3: Areas UW should pursue if resources are available, but not a priority for resource realignment
• The Research Planning Council will be at the center of this activity
  
  o The RPC will be comprised of about 30 individuals, associate deans and directors, research-intensive faculty, Faculty Senate and Global Engagement representation, UW Foundation. You will engage the faculty

• Broad faculty engagement will be key. This will take place in at least four venues
  
  o Discussions among the RPC
  o The RPC will host each College to discuss its perspective on Grand Challenges
  o Further, pairs of RPC members will be asked to visit each department
  o Town Hall meetings, open to campus
• You will be asked to serve on one of two RPC sub-groups

  • Each will have two co-chairs: Danny Dale, Isa Helfgott, John Kaszuba, Scott Henkel have agreed to serve

  • Kate and I will meet next week with co-chairs to pair up, identify individual group membership, and discuss next steps

  • Anticipate sub-groups meeting soon afterwards

  • Support for administrative logistics will be identified and provided as needed
Outline of next steps

• Inaugural Research Planning Council Meeting: now

• Kate and I will meet with co-chairs of two sub-groups, to finalize how two subgroups of the RPC will be constituted, and to discuss next steps, concerns, and so on

• The sub groups will also be tasked to gather data, including assessing where our strengths and weaknesses reside, potential for attracting sponsor and donor support, and so forth.

• Some aspects of next-steps may be modeled on the institutional strategic planning that led to “Breaking Through.”

• You are asked to seek views of the colleges: the RPC will invite college representatives to discuss their perspectives on transdisciplinary grand challenges

• You are asked to seek views of the departments: go out to each department in pairs and understand their views on transdisciplinary research possibilities, gaps, and so forth
Following this semester’s activities of the RPC:

- **Fall 2019: Down-select to topics for further detailed planning** will be made by the Office of Research and Economic Development and Academic Affairs, advised by the deans and directors.

- **Fall 2019: detailed planning around these selections commences next fall:** goal is a plan for standing up new transdisciplinary centers or institutes.
  - **Financial viability will be an important metric:** Long-term goals for such centers include developing business models that engage federal and state sponsors, foundations and donors, private industry, and the state in supporting transdisciplinary research enterprises that are financially viable.

- **Resources** for detailed planning and potentially initial investments in research capacity in the fall of 2019 will be enabled through ORED reserves.
• **The aim is to support a vision for a UW future** enabled by
  
  o the nimbleness that comes with UW’s modest size
  o the university’s Land Grant mandate to serve the state across a wide range of disciplines
  o UW’s culture of partnership on campus, and its faculty’s strong sense of Wyoming patriotism.

• **Create opportunities**: This activity is meant to set the stage for faculty and students to lead and be among leaders in addressing questions of great societal importance, and for its citizens to benefit from this engagement.

• **Impact** will arise by generating ideas that contribute to solutions to problems of practical importance, and that yield intellectual property that will be at the foundation of new businesses in Wyoming.

• **UW research will become known for its unusually strong combination of scholarship and practical import**. UW will do this while creating unparalleled opportunities for education through research.