University of Maine System R&D Plan Grand Challenge Pilot Initiative
Request for Applications
Due Date for Concept Papers: November 14, 2019 at 11:59 pm

Introduction:
The University of Maine System (UMS) Research & Development Plan provides a roadmap for research and development at the state’s public universities to promote industry, business, and community growth in Maine. Advancing the goals articulated in the UMS R&D plan will require enhanced cooperation among System campuses and strong collaborative partnerships with external organizations and stakeholders. Long-term outcomes of the UMS R&D plan include attracting new people and financial resources to the state of Maine, addressing the current and future workforce needs of Maine, and elevating R&D activities across the System. These outcomes are very much in line with the State of Maine’s Department of Economic and Community Development (DECD) economic development plan that will be finalized this fall.

The UMS R&D Plan recommends that the System launch a series of grand challenges over the next decade as a central part of the plan’s implementation. Grand challenges are problems of global, national, and regional significance that require interdisciplinary teams to work together to develop and implement innovative solutions. Such initiatives are ambitious in scope, long-term in scale, and convergent in design. Research universities across the country are engaging in grand challenges focusing their research, education, and outreach efforts to promote discovery, develop the workforce, and engage the public in solving intractable societal problems.

With one-time funds available for FY 2020 through the Research Reinvestment Fund (RRF), the UMS will launch a Grand Challenge Pilot Initiative. The R&D plan provides several examples of Grand Challenges that could be addressed by the System over time. The RRF Grand Challenge Pilot Initiative integrates previously established competitive funding programs within RRF in an effort to focus investment, unify activities, promote convergence, and leverage established R&D strengths within the System. The RRF Grand Challenge Pilot Initiative will be a first key step to addressing Goal 1 of the UMS R&D Plan, “Make Maine the best state in the nation in which to live, work, and learn by 2030.”

The UMS has identified the central theme of “Rural Health and Wellbeing” for the FY 2020 RRF Grand Challenge Pilot Initiative to demonstrate this approach and build future grand challenge initiatives. The theme of Rural Health and Wellbeing will: 1. Address the demographic call to action articulated in the Board of Trustees Declaration of Strategic Priorities to Address Critical State Needs; 2. Bring together the R&D strengths that exist across the System; and 3. Aid in shaping the rural focus of the State of Maine’s Economic Development Strategic Plan.

If the pilot is successful, the Rural Health and Wellbeing initiative will be grown and supported in subsequent years. As resources are identified to further implement the UMS R&D plan, additional grand challenges will be evaluated based on lessons learned from the FY 2020 RRF Grand Challenge Pilot as well as best practices nationally.
**Definition:** The Rural Health and Wellbeing Grand Challenge encompasses a wide range of social, educational, health, cultural and economic factors that impact prosperity for people of all ages and the communities in which they live. The state of Maine is an ideal living laboratory through which the University of Maine System, by leveraging assets, expertise, and resources that exist across all universities, will demonstrate an integrated research and development agenda aimed at improving the state’s rural health and wellbeing. This will be accomplished through research approaches that utilize a wide variety of novel interventions, policies, programs, workforce development, and technical assistance activities that, in turn, can be replicated and scaled up in other rural states. This pilot initiative is an opportunity for the state’s public university system and its collaborative partners to positively impact Maine’s economic future through innovation and responsive research and development.

The Outcomes of the Rural Health and Wellbeing Grand Challenge include:

- Demonstrate positive impacts on one or more rural health and wellbeing economic, social, educational, health and cultural indicators. Such indicators are provided by the state’s Economic Development Strategic Plan, Focus Maine, Educate Maine, the Maine Economic Growth Council’s Measures of Growth, the Maine Innovation Economy Advisory Board, the Greater Portland United Way’s Thrive 2027, the Maine Arts Commission, and the New England Foundation for the Arts, as well as national indicators. Collectively, impacts will address improvements in educational and skills attainment; entrepreneurial capacity; health and social justice; civic and cultural vitality; and the state’s R&D capacity.
- The University of Maine System improves the state’s rural health and wellbeing by collaboratively using assets, expertise and resources across all universities.

**Example activities that align with the Rural Health and Wellbeing Grand Challenge:**

- **Capitalize on Maine’s rural nature as both a challenge and an opportunity,** necessitating the availability of education, employment, and community services, regardless of location. Expanded broadband and transportation infrastructure are critical to enabling Maine people to study and work anywhere and to help close the income and opportunity gap between urban and rural Maine through access to expanding high-tech jobs. System institutions can contribute to achieving these objectives through research on broadband technology, autonomous transportation, access to high-quality public education, new technologies for effective distance education and collaboration, rural health care, aging in place, and the social dynamics of thriving rural communities.

- **Focus on Maine’s quality of place, arts and cultural breadth, and our annual attraction of visitors through tourism, outdoor recreation, and seasonal residencies for further study in the context of economic development and rural sustainability.** It is well known that Maine is a vacation destination and that there is a robust community of seasonal residents coming back to our state year after year. Research within these broad areas could help inform strategies for the future of the state.

- **Establish Maine as the healthiest state in the nation by squarely facing the many challenges arising from its aging population, stressed health care system, and lack of**
sufficient awareness of healthy choices. Strategies developed in Maine could be national models to transform how we address health challenges, especially in rural settings. System institutions can contribute through research into new opioid addiction therapies, a cure for dementia, new biopharma solutions, precision health methods, models for delivering high-quality low-cost preventative health care, data discovery to support improved health, methods for creating transportation networks embedded within the healthcare system, models for understanding the human and animal health and their connections, technologies for helping control vector-borne diseases, collaborative networks that assist with healthy aging, sociological approaches to addressing mental and behavioral health issues, and media strategies for raising health awareness and encouraging healthy life choices.

○ Create educational pathways to employment from high schools to community colleges and universities. Help educators, communities, and employers identify employment priorities through the use of data (such as Burning Glass) and develop strategies that link the 3 educational systems and help focus and integrate educational outcomes and systems in Maine.

○ Convene community stakeholders, policymakers, and academics to select statistical indicators that would measure outcomes critical to Maine’s success. The inventory could be a comprehensive amalgam that would include indicators from Measures of Growth, Thrive 2027, etc. –economic, social, educational, health and cultural indicators that measure life in our state. The university representatives would collect, analyze, and disseminate this information annually in formats useful to municipalities, legislators, businesses, non-profits and the public at large.

The preceding list of examples is not prescriptive or exhaustive. Research teams can focus on many other areas that align with the theme of Rural Health and Wellbeing.

Request for Concept Papers
The University of Maine System invites teams of UMS faculty/staff/students to submit concept papers addressing the central theme of Rural Health and Wellbeing. Concept papers are due on November 14, 2019 at 11:59pm. A single pdf that includes all of the concept paper’s elements listed below must be uploaded into the InfoReady grant review portal. In-person and Zoom information sessions will be conducted in the month of October (dates TBA).

Concept Papers must meet the following minimum requirements
1. Include at least five team members from at least three academic disciplines and two UMS campuses, as well as an external partner (or partners) from the private sector, nonprofit sector, community colleges, or public school districts.
2. State the research question or issue to be addressed.
3. Describe the data collection plan and methodology.
4. Describe the research to be carried out and how the team will integrate two or more of the following activities: education, outreach, workforce development, technical assistance, training, commercialization, and economic development.
5. Explain why the concept is innovative, novel, and builds upon existing assets and expertise across the University of Maine System.
6. Include realistic and measurable outcomes and an evaluation plan driven by a logic model. Demonstrate how the concepts will contribute to the major outcomes of the Rural Health and Wellbeing Grand Challenge. The approach must be data-driven, targeted on outcomes, and responsive to documented needs.
7. Explain how the research will be sustained with growth and potential for scaling up to other rural states. Articulate a detailed plan to attract new funding to the System, such as follow-on grants, philanthropic gifts, industrial partnerships, and commercialization revenue, as applicable.
8. Integrate student research experiences, course based undergraduate research, and workforce development into projects.
9. Include clear pathways and strategies to the translation of products and services that support Maine’s economic development goals. Include deliverables such as products, services, technical assistance or training programs that have high potential for commercialization or revenue generation.
10. Articulate alignment with the goals and recommendations of the UMS R&D Plan.

2. Concept Paper Format and Outline
   Concept papers shall be limited to 7 pages, single spaced, and shall use standard size 8 1/2” x 11” paper with at least an 11-point font with a minimum 1” margin on all sides of each page. Concept papers shall use an easily readable font such as Times New Roman, Calibri, Arial, Helvetica, Georgia or Garamond. Illustrations, tables and charts shall not be smaller than an 8-point font. A single pdf that includes all of the concept paper’s elements listed below must be uploaded into the InfoReady grant review portal.

   Concept Paper Outline:
   o Cover Page: Include concept title and names and affiliations of Co-PIs and all partners (one page)
   o Abstract: Summarize the concept, needs to be addressed, approach and outcomes (250 words and one page). This may be used as a publicly facing summary)
   o A Narrative that is no longer than 5 pages and includes:

   I. Description & justification for proposed Rural Health and Wellbeing Goal
      • State the research question or issue to be addressed.
      • Describe the data collection plan and methodology.
      • A description of the desired change or future state that will result from the proposed project.
      • The strategy for achieving and sustaining the desired change. Strategies should describe the strengths and sources of support that the team must build on as well as the challenges and barriers it will need to address.
The scope of the project, specifying who is expected to benefit from the project in terms of population, geographic region, and the target audience or systems component (e.g., workforce) to be impacted by project activities.

The anticipated benefit or improved outcomes for families and communities in Maine.

Examples of potential research issues and emphases that could be pursued across multiple disciplines

II. Research Team and Network

- Description of relevant UMS expertise in relation to the state of research on the proposed concept and related major initiatives elsewhere
- Evidence that the project leader has previous experience leading successful multi-disciplinary projects and engaging with community members.
- Evidence that the team is multidisciplinary in nature. Roles and responsibilities are discussed and a justification for the team’s compositions is provided in the context of addressing the overall project goal.
- List of UMS researchers who have expressed interest in participating in multi-disciplinary research related to your Rural Health and Wellbeing Goal
- List of non-UMS researchers and stakeholders who have expressed an interest in participating in multi-disciplinary research related to your Rural Health and Wellbeing Goal
- List of other UMS researchers, external partners and stakeholders who you could reach out to later to include in the project, if funded
- Explain why the concept is innovative, novel, and builds upon existing assets and expertise across the University of Maine System.

III. Evaluation

- Include realistic and measurable outcomes and an evaluation plan driven by a logic model. Demonstrate how the concepts will contribute to the major outcomes of the Rural Health and Wellbeing Grand Challenge. The approach must be data-driven, targeted on outcomes, and responsive to documented needs.

IV. Education, Workforce Development, and Outreach

- Describe your ideas for leveraging your Rural Health and Wellbeing Goal to engage undergraduate and graduate students, and to connect with external partners (community colleges, high school districts, private and nonprofit employers). Discuss implications for workforce development.

V. Commercialization, Revenue Generation and Economic Development

- Describe clear pathways and strategies for commercializing and/or generating revenue from products, services, technical assistance and training programs that support Maine’s economic development goals

VI. Sustainability

- Identification of external funding sources that will be pursued during and after the performance period
Biographical Sketches (not included in page limit): Include a 2-page bio sketch for PI and co-PIs prepared in accordance with standard NSF formatting guidelines.

Please DO NOT include any budget information in the concept papers

Submit concept papers through the InfoReady Grant Review Portal by November 14, 2019 at 11:59pm. Concept papers do not require approval of the campus research administration or sponsored program offices.

Down Selection Process
Through this concept paper process, a selection committee will review all concept papers based on the desired outcomes and minimum requirements articulated above. The committee will invite teams to attend a full day, Ideas Lab (see below) meeting to present their Rural Health and Wellbeing concept, identify opportunities to merge aspects of the various selected projects together, and identify additional partners to include, as appropriate. The Ideas Lab meeting will take place on Wednesday December 11, 2019 (location TBA).

Ideas Lab Meeting
The all-day meeting of invited projects will utilize the Ideas Lab model used by the National Science Foundation (NSF). An Ideas Lab is an interactive gathering on a focused problem; it typically involves 10-30 participants from diverse technical communities that have not previously had significant interaction. Ideas coming out of Ideas Lab meetings are typically high-risk/high-impact, as they represent new and unproven ideas, approaches, and/or technologies. This Ideas Lab aims to stimulate and facilitate creative thinking and approaches for conceptualizing and formulating promising new research, education, and outreach approaches addressing Rural Health and Wellbeing. Participants will be expected to engage constructively in dialogue with one another, the facilitators, and the designated UMS administrators to develop collaborative research papers. Collaboration is an integral aspect of the Ideas Lab approach.

The Ideas Lab process can be broken down into several stages:
- Defining the scope of the challenges
- Evolving common languages and terminologies amongst people from a diverse range of backgrounds and disciplines
- Sharing perspectives and understanding of the scientific challenges, as well as the diverse expertise brought by the participants to the Ideas Lab
- Taking part in break-out sessions focused on the challenges, using creative thinking techniques
- Capturing the outputs in the form of highly innovative research projects
- Using "real-time" peer review to develop projects at the Ideas Lab

Invitation to Submit Full Proposal(s)
After the full day Ideas Lab meeting and any subsequent scoping sessions deemed necessary by the selection committee, up to three teams, with representation from the multiple teams invited to the full day meeting, will be brought together to write up to three full proposals, in collaboration
with the UMaine Office of Research Development and the USM Office of Research. The full proposal(s) will include a detailed two-year budget. The budget amounts will be determined at this time and will not exceed $1M in total. Allowable expenses will include student support; post-doctoral researcher support; professional staff support; faculty summer salary; laboratory fees, and research supplies. One or more teams will be selected and will present an overview of the scope and projected outcomes of the Rural Health and Wellbeing RRF Grand Challenge Pilot Initiative at the January 26 & 27, 2020 UMS Board of Trustees meeting (Orono). The project performance period will span 2/1/2020 – 1/31/2022.

Summary Timeline
- November 14, 2019 at 11:59 pm  Concept papers due
- November 25, 2019  Invitations to attend the Ideas Lab Meeting
- December 11, 2019  The Ideas Lab meeting
- January 8, 2020 at 11:59 pm  Deadline for submitting invited full proposals
- January 26 & 27, 2020  Presentation to the UMS Board of Trustees

Questions about the competition can be directed to UMS R&D Plan Implementation Director, Jason Charland at: jason.charland@maine.edu or 207-581-2461