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Eight faculty-led projects funded by Seeding Excellence Initiative

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The pilot funding is intended to seed growth of the research enterprise

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Funding and Initiatives ~

The Research Development Office (RDO) within the Office of the Vice President for Research has selected the winners of eight pilot grants intended to sustain the continued growth of the campus research enterprise by providing competitive seed funding in strategic areas.

The Seeding Excellence Initiative is made possible through funding from the public-private partnership (P3) Year 1 funding cycle. The awards range from \$25,000 - \$50,000.

"The Seeding Excellence projects, many of which involve partnerships with community organizations, seek to address real-world challenges facing Iowans," said Aaron Kline, director of the Research Development Office. "From examining infrastructure challenges in small communities, to developing solutions for increasing civic participation among new residents, these innovative and often-interdisciplinary projects are responsive to 21st century challenges."

Understanding civic participation for rural lowans

Carolyn Colvin, associate professor, Department of Teaching and Learning in the College of Education, and Melissa Lehan-Mackin, associate professor, College of Nursing, will join with community members in West Liberty, Iowa, to explore how a partnership program that pairs new and established citizens can create investments in civic participation and engagement.

"Rural communities rely on civic participation to ensure their economic well-being and survival," said Colvin. "Civic participation can also lead to the creation of positive pathways to develop tolerance, deepen community knowledge, and create lasting attachments to people and place."

An advisory board comprised of West Liberty citizens, including city council members, community and school administrators will oversee the project from start to finish, including recruiting participants and in the design of the project activities and events. Community partners on the project include: West Liberty City Council members Cara Mcferren and Omar Martinez; Bill Koellner, former chair of the Muscatine County Board of Health and former Rotary president in West Liberty; and Brenda Arthur-Miller, principal, West Liberty High School; and a local high school student.

Language supports for multilingual immigrant children

Philip Combiths, assistant professor, Department of Communication Sciences and Disorders, College of Liberal Arts and Sciences (CLAS), will lead a project in partnership with community members through the Neighborhood Centers of Johnson County. Together they will examine effectiveness of supports for speech, language, and literacy development for children in multilingual immigrant households in Iowa City.

literacy development. Together with the Neighborhood Centers, our goal is to address this by providing dynamic and culturally responsive supports to children and their families," said Combiths. Through a unique and reciprocal collaboration with community members, the research team will implement and examine the effectiveness of a system of

support in culturally and linguistically diverse classrooms in Iowa City. Ultimately, the project will deliver enriched classroom activities and generate rich

"Children in immigrant communities who speak a language other than English at home often do not receive equitable support for speech, language, and

longitudinal data on multilingual preschool language development and school readiness. Christine Shea, associate professor, Department of Spanish and Portuguese, and David Johnson, associate professor of education, are UI collaborators on the project along with Jana Garrelts, early childhood director and Andrew Coghill-Behrends, family support director, at the Neighborhood Centers.

A digital twin framework for civic and environmental analysis of railways

<u>Ibrahim Demir</u>, associate professor, Department of Civil and Environmental Engineering in the College of Engineering, will lead a project to advance digital twin research – virtual mirrors of real-life counterparts – for Iowa communities.

UI researchers Caglar Koylu, associate professor, Department of Geographical and Sustainability Sciences, Yusuf Sermet, assistant research scientist, and Ozlem Baydaroglu, postdoctoral researcher, IIHR - Hydroscience and Engineering, will collaborate on the project.

"Digital twin technology holds great promise for smart city advancement," said Demir. "Being able to construct a living testbed within a virtual twin can help decision-makers address urban challenges by optimizing resources and enhancing networks."

This project will examine the infrastructure impacts of increased train traffic through small lowa communities. The researchers will also analyze the potential consequences of future flooding events on railway operations. Pilot studies will be conducted for the cities of Iowa Falls, Camanche, and Fort Dodge, Iowa.

Building political voice for Latinx/o/a health

Julianna Pacheco, associate professor in the Department of Political Science in CLAS, will lead an interdisciplinary team to explore voter turnout and civic engagement for Latinos across Iowa's 99 counties.

"Our project team, which also has funding from the Robert Wood Johnson Foundation Interdisciplinary Research Leaders program, will partner with Nicholas Salazar of the League of United Latin American Citizens (LULAC) to examine barriers to voter turnout," said Pacheco.

The team will use a mixed methods approach, combining quantitative analyses of administrative voting data and qualitative analyses of focus groups across Iowa, to explore disparities in voter turnout between Latinx/o/a and white Iowans.

Nicole Novak, research assistant professor, Department of Community and Behavioral Health in the College of Public Health, will explore the intersections between civic participation and community health for Iowans from Central America. "The results of this sub-project, which was co-developed with a Community Advisory Board of LULAC members, will inform strategies to promote inclusive, healthy communities with equitable political power and voice," said Novak.

Funding for these projects will support one graduate student and five undergraduate students, whose efforts will be primarily focused on promoting community engagement. Together with their research mentors, the students develop a community survey to understand the needs, experiences, and diversity of Latinos in their communities, and to inform the research team's efforts to promote civic engagement and political voice.

Therapeutic applications for alcohol use disorder

Matthew Potthoff, associate professor in the Department of Neuroscience and Pharmacology in the Carver College of Medicine, will advance his research on the role of Fibroblast Growth Factor 21 (FGF21). Misty Perez, graduate student in the Department of Neuroscience and Pharmacology, will collaborate on the project.

FGF21 is a hormone produced in the liver that travels throughout the body and regulates energy metabolism. Potthoff's lab is particularly interested in FGF21 for its role in alcohol intake, and potential therapeutic applications.

Alcohol Use Disorder (AUD) is one of the most common psychiatric disorders, which is characterized by heavy alcohol use and loss of control over alcohol intake. Nearly one-third of American adults have experienced the disorder at some point in their lives.

"Despite the high prevalence, there is not a great understanding of the mechanisms of this disease," said Potthoff. "With a greater understanding of the neurobiological mechanisms of how FGF21 impacts brain regions that influence alcohol intake, we can work towards treatment of AUD."

The Future is Indigenous

Kay Ramey, assistant professor of Learning Sciences and Educational Psychology, College of Education, will partner with Margaret Beck, professor, Department of Anthropology, and two community partners, Alicia Velasquez, local Native American Artist and Owner of The House of DOTLIZHI, and Kirk Cheyney, Director of Operations for the Iowa City Fab Lab, to broaden participation in STEAM (science, technology, engineering, arts, and mathematics) learning among local youth.

The project, which is co-led by Velasquez, will create a learning environment for local Native American youth that empowers them to integrate STEAM tools with Native cultural practices. At the four-week workshop, held at the Iowa City Fab Lab, participants will learn about natural pigments, Native American textiles practices, and how to integrate LED lights, conductive thread, and microcontrollers with Native American art forms, including ribbon skirt and ribbon shirt making.

"The workshop will culminate in a fashion show to showcase the young people's work and engage the broader community in discussion around Native American art, Native American people, and Native American culture as living and evolving," said Ramey.

Cultivating Responsive and Inclusive City Governance Structures at North Liberty

Sherry Watt, professor, Department of Educational Policy and Leadership Studies in the College of Education, will establish a reciprocal and mutually beneficial partnership with the City of North Liberty, Iowa, to build stamina for engaging across difference.

stakeholders are increasingly diverse across race, ethnicity, immigration status, and linguistic and cultural traditions," said Watt.

"The goal of this project is to humanize governing structures and foster responsive and inclusive processes in municipal governments whose

Together with partners at the City of North Liberty, Angela McConville and Micah Ariel James, the UI researchers will provide skill-based trainings for engaging productively in difficult dialogues. Data gathered from the project will advance scholarship on difficult dialogues for community transformation and volunteer engagement in public libraries.

Micah Bateman, assistant professor, School of Library and Information Science, and Milad Mohebali, postdoctoral scholar in the College of Education, will collaborate on the project.

RESEARCH NAVIGATION

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