

UW-MILWAUKEE RESEARCH FOUNDATION

2020 ANNUAL REPORT

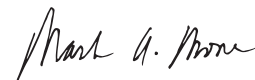




Chancellor's Welcome

During this past year, we were greatly humbled and encouraged by the outpouring of support from the community in their efforts to support UWM and our research initiatives. UWM researchers and faculty continue to build on UWM's designation as a top-tier research institution even under these unprecedented circumstances. The UWM Research Foundation and Lubar Entrepreneurship Center play a vital role in supporting faculty, staff and students. With their assistance and programming, the UWM community is able to expand its research efforts, build successful startup enterprises, and develop skills in innovation and entrepreneurship.

Thank you for your continued support of UWM and the UWM Research Foundation.



Mark A. Mone
Chancellor, University of Wisconsin-Milwaukee

Welcome from the UWM Research Foundation Board of Directors

The UWM Research Foundation Board of Directors is proud of the unflagging dedication and the continued efforts of UWM research faculty. While 2020 proved to be a challenging year for everyone, UWM's faculty and staff did not waver in their efforts toward research, discovery and innovation. The UWM Research Foundation was able to build on their impressive work, assisting with new commercial partnerships, negotiating licensing agreements and issuing new patents. Through innovative programming, the UWM Research Foundation has been able to expand its impact on campus, and we invite you to celebrate these successes.



Jacquelyn Fredrick
UWMRF Board Chair



- Chat
- Tasks
- Calendar
- Calls
- Files

Mentors available to chat now ▾

- Jude Anders
- Scott Bolte
- Garrett Butrym
- Kyle Crum
- Karl Fiasca
- Mary Hannes
- John Heinen
- Kyle Jansson
- Scott Johannes
- Matthew McNeill
- Joseph Miotke
- Michael Oldani
- Jason Parry
- Michael Reilly
- D.R. Salerno
- Calvin Schmidt
- Peter Skanavis
- James Symanski
- AkkeNeel Talsma
- Steven Visuri
- Lucy Waldhuetter
- Adam Wickersham
- Dave Zachman

UWMRF: Ingenuity at work

The UWM Research Foundation manages the university's intellectual property and delivers programs that cultivate innovation, which helps UWM play an important role in strengthening the Milwaukee economy.

New in 2020 are the UWMRF **ENGAGE mentors**, a group of experienced business leaders and entrepreneurs who provide UWM innovators with useful feedback and advice to grow their enterprises. Currently, 23 volunteer mentors are coaching 22 entrepreneurial teams.

Also this year, the UWMRF received a \$200,000 Capital Catalyst matching grant from the Wisconsin Economic Development Corporation to support startups involving UWM faculty, students or staff who have licensed intellectual property through the foundation. This new Bridge Grant compensates for the shortage of capital for university-based innovations. Already, the UWMRF has raised \$103,000 through the generosity of individual donors, Bader Philanthropies, and Clarios. The goal for the initial phase is five awards of up to \$25,000.

47
license/option
agreements

121
issued
patents

20
UWM
startups

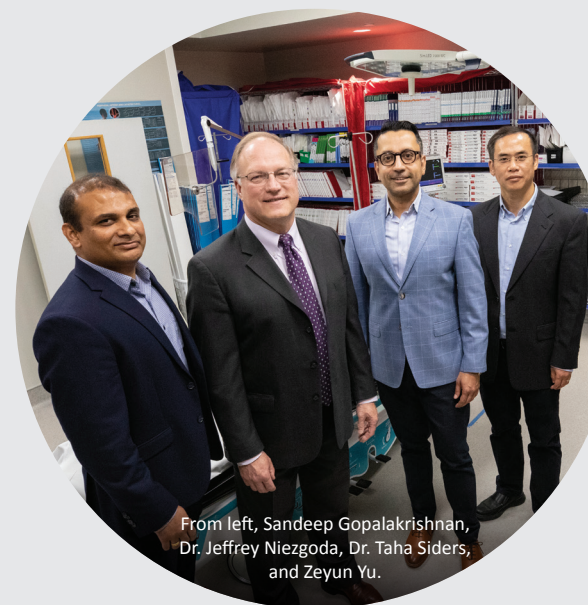
Catalyst Grant Program

To grow new ideas, the Catalyst Grant Program funds UWM research with commercial potential. In 2020, the foundation completed its 13th round of the grants, supported by the Lynde and Harry Bradley Foundation, and the Richard and Ethel Herzfeld Foundation, for a total of \$200,000. Established in 2007, the program's economic payoff is evident: Most of UWM's startup companies benefited from this early-stage investment.

98
total grants
awarded

\$5.3 mil.
total amount
awarded

\$23 mil.
follow-on
investment



From left, Sandeep Gopalakrishnan, Dr. Jeffrey Niezgod, Dr. Taha Siders, and Zeyun Yu.

Tracking how wounds heal

Zeyun Yu, professor of computer science and biomedical engineering, and **Sandeep Gopalakrishnan**, assistant professor of nursing, are working on a smartphone system for intelligent diagnosis of wound healing that includes an app patients can use to capture wound images. Based on the photos, the app provides AI-enabled data to doctors so they can precisely monitor the healing progress. The pair are co-founders of the startup MegaPerceptron and are training the AI with their partners, Milwaukee physicians Dr. Jeffrey Niezgod and Dr. Taha Siders, using clinical patient data.

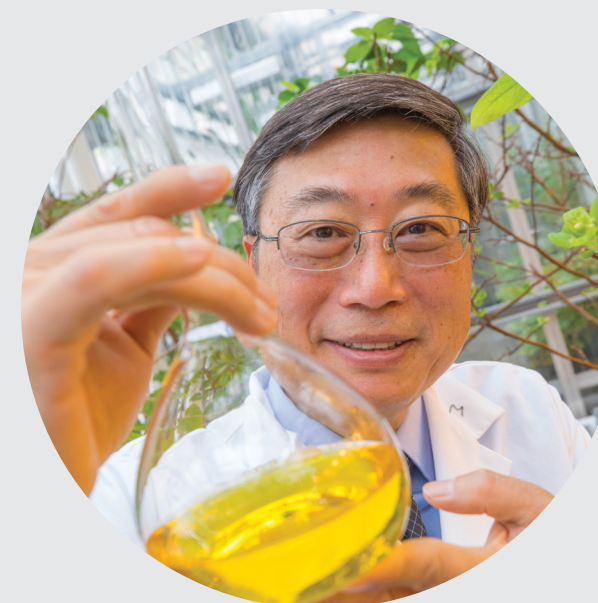
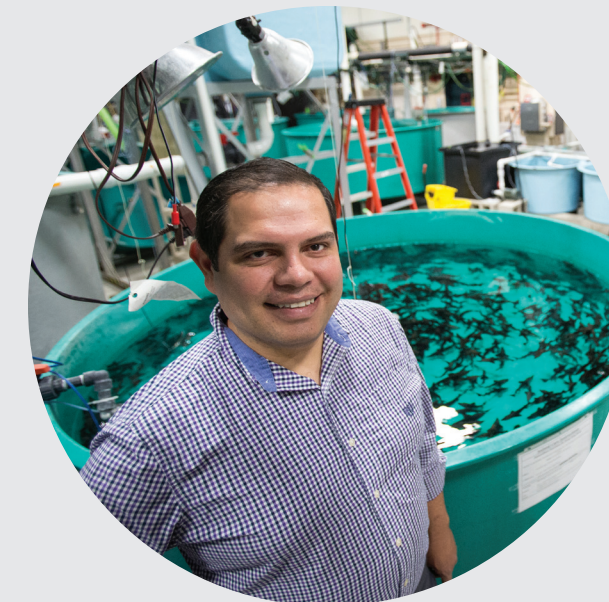
New ways to purify water

Yin Wang and **Xiaoli Ma**, faculty members in the College of Engineering & Applied Science, have partnered to create cost-effective materials that aid in cleaning contaminated water sources. They received Catalyst Grant funding for work on adsorbent powders that eliminate perfluoroalkyl and polyfluoroalkyl substances (PFAS), organic chemical pollutants widely found in the environment that are extremely difficult to remove. PFAS has seeped into water resources from products, such as Teflon coatings or firefighting foams. Together, the researchers are fine-tuning a scalable solution.



Better water quality for fish farming

Assistant professor **Jhonatan Sepulveda Villet** (right) and scientist **Marcia Silva**, both in the School of Freshwater Sciences, are working with Amglo to provide cleaner recycling of water for commercial aquaculture that can support the growth of larger numbers of fish. They are combining Amglo's high-energy, pulsed light disinfection system with UWM's new biological filter material. This new technology could help to fill the demand for domestic seafood production.



Disease prevention for fruit crops

Ching-Hong Yang is testing a biopesticide that has potential to protect crops from a large number of pathogens while eliminating the use of antibiotics. With Catalyst funding, Yang, a professor of biological sciences, is further investigating how to use beneficial bacteria to control pathogens and to collect safety data for EPA approval. Products of his startup, T3 BioScience, will fill a need in the next few years, as companies and customers are moving toward the use of organic biopesticides.

Licensing & Option Agreements

Despite the pandemic, UWMRF continued to execute licenses in the past year. Most of the licenses were related to the health care industry, including medical devices and new pharmaceutical development.



A sound idea

Ascending Hearing Technologies LLC took an exclusive license for a personal sound amplification device created by co-founders **Yi Hu**, UWM electrical engineer, and clinician **Christina Runge** of the Medical College of Wisconsin. The device, which is easy to use with a smartphone, provides an alternative to expensive hearing aids. In 2019, the company was awarded a \$263,000 Small Business Technology Transfer federal grant.



A unique drug for epilepsy

RespireRx Pharmaceuticals Inc. has licensed compounds that show promise for treatment of epilepsy and other convulsant disorders. The compounds, developed by **James Cook**, distinguished professor emeritus of chemistry, are important because available anticonvulsants are often not effective. The New Jersey-based startup closed a \$2 million funding round in 2020.



Managing medical tubing

Lindsey Roddy, an RN and founder and CEO of RoddyMedical LLC, has executed an exclusive license for the medical tubing organizer she created while a UWM graduate student. The device solves the problem of vital medical lines being mistakenly pulled out when patients move or are moved. The team has received \$75,000 from the Ideadvance Seed Fund.



Fixing phosphorus pollution

Agricultural runoff and chemical fertilizers are a serious threat to Lake Michigan's water quality. **Marcia Silva**, scientist and facility manager of UWM's water technology accelerator, has a solution in the form of filtration material that removes 90% of phosphorus from contaminated water sources in minutes. Zeolite Australia Pty Ltd licensed the patent on the product, which contains a natural material called zeolite, engineered with metal oxides to attract phosphorus. An added benefit is the zeolite can be recycled and the filters reused.

Replacing asthma inhalers

The drug development startup Pantherics has taken an exclusive license for novel drug compounds created by UWM chemists and a medical researcher at Columbia University. The compounds will allow asthma to be treated with a pill rather than with steroid inhalers. The company was founded by **Douglas Stafford**, director of the Milwaukee Institute for Drug Discovery, and **Alexander Arnold**, professor of chemistry, and it recently merged with a California startup.



Light therapy for eye diseases

Janis Eells' research has uncovered how light in the visible to near-infrared wavelengths can potentially improve cellular function and prevent certain eye diseases when delivered at select intensities for a specific amount of time. Eells, a professor of biomedical sciences, and faculty associate **Elizabeth Liedhegner** have partnered with medical device company LumiThera to turn photobiomodulation into treatments for diabetic retinopathy and macular edema. LumiThera has optioned the inventions and supported the researchers through the first phase of a grant from the National Institutes of Health.



The National Science Foundation's Innovation Corps (I-Corps)

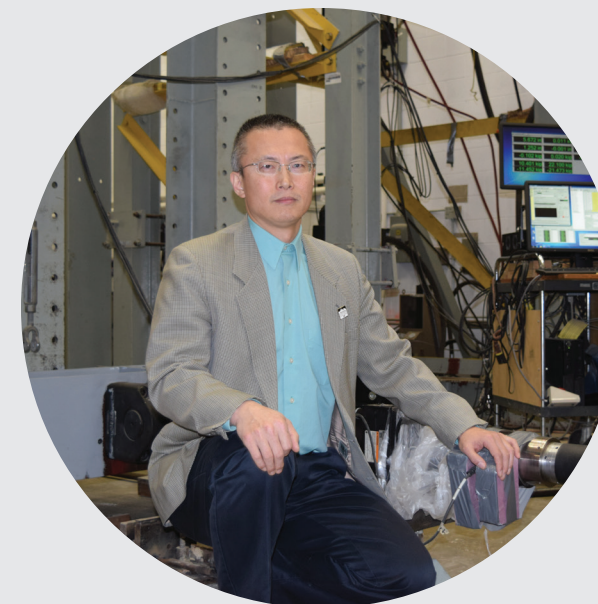
With renewed financial support from the National Science Foundation, the UWM-administered I-Corps program is embarking on its seventh year. The program, which attracts participants from five area universities, teaches academics how to convert their research discoveries into products and startups. Since spring of 2020, the program has been successfully operating in an online format, making it easy for teams to conduct interviews and include people from across the country and overseas. This year, the local program will investigate joining the Midwest I-Corps hub, which includes the University of Michigan, the University of Illinois and Purdue University.

5,000
customer
discovery
interviews

146
teams
trained

\$14 mil.
in follow-on
funding

32
companies
incorporated



A safety boost for concrete

During their I-Corps training, **Jian Zhao** and **Hua Liu** explored the potential of a patent-pending concrete adhesive anchor tool that provides a stronger and safer interface between adhesives and concrete, which could prevent concrete panels from falling. The experience led Zhao, an associate professor of civil and environmental engineering, to form WisAnchor LLC to develop products for the construction industry.

Improving women's experience in labor

Mary Ejiwale, a graduate student in the College of Engineering & Applied Science, is exploring a cost-effective and safe device that supports pregnant women during induced labor. Ejiwale, who began her career as a registered nurse and midwife, found that her idea held the interest of both mothers and clinical staff who were interviewed during her I-Corps experience.



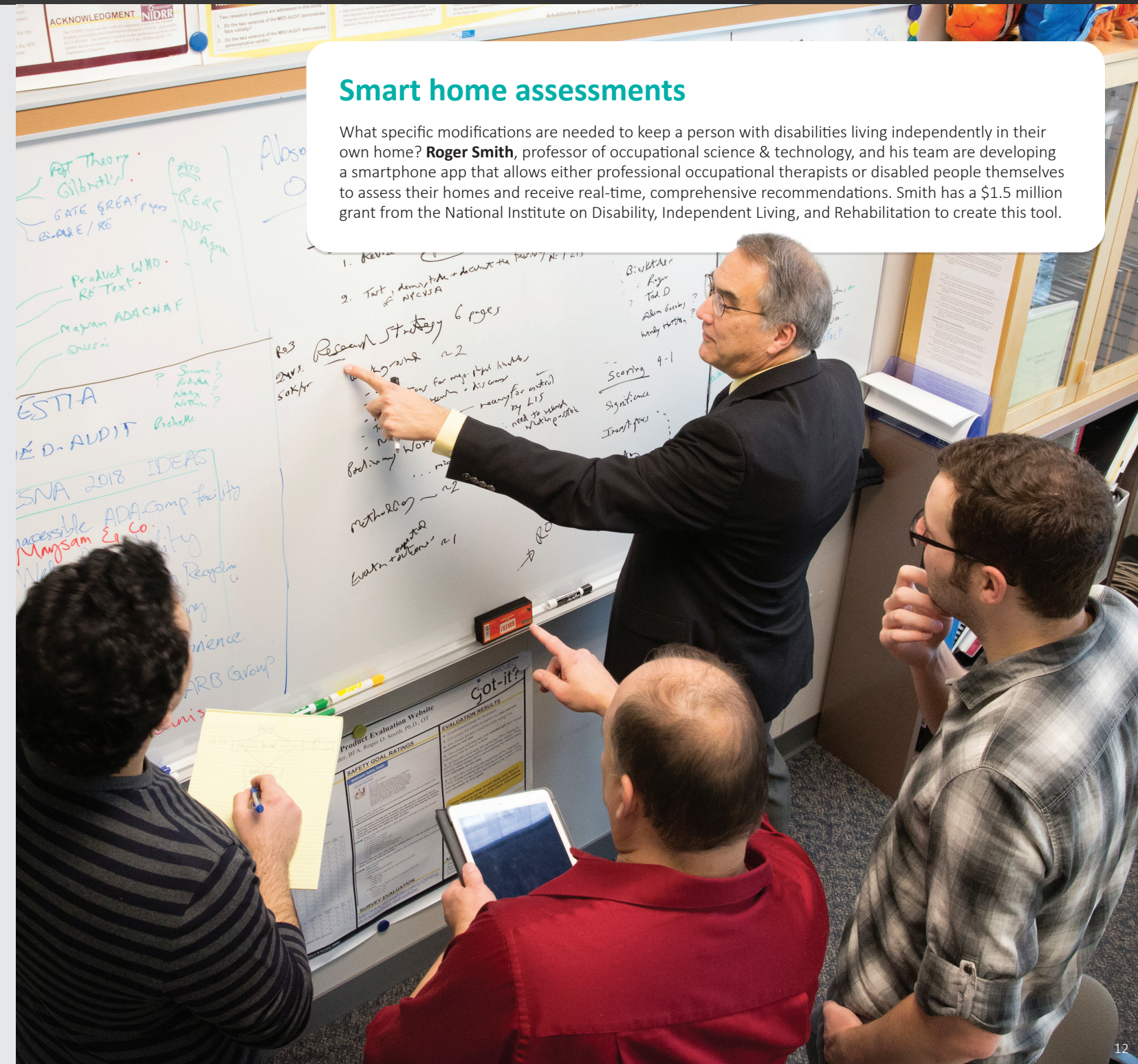
Next-gen battery performance

Prasenjit Neel Guptasarma (left), professor of physics, has designed a sodium-ion rechargeable battery technology using materials that can store energy and cycle charge with nearly 90% of the efficiency of present-day lithium-ion technology. He and Nathaniel Stern, professor of art & design and mechanical engineering, participated in I-Corps training under the banner of WISTA. The product offers less-expensive components and a stronger supply chain because it works without lithium and cobalt, which are sourced from around the world at great political and social cost.



Smart home assessments

What specific modifications are needed to keep a person with disabilities living independently in their own home? **Roger Smith**, professor of occupational science & technology, and his team are developing a smartphone app that allows either professional occupational therapists or disabled people themselves to assess their homes and receive real-time, comprehensive recommendations. Smith has a \$1.5 million grant from the National Institute on Disability, Independent Living, and Rehabilitation to create this tool.



UWM's entrepreneurial hub

The Lubar Entrepreneurship Center (LEC) offers a wide array of programming for students and faculty across disciplines and serves as a resource for growing businesses across Milwaukee. In the fall of 2020, the LEC launched two new programs that support UWM faculty and instructors who want to integrate design, innovation and entrepreneurial thinking into their courses.

3,505
Participants
in all events
(Fall 2020)

53
Pop Ups
presented in
UWM courses
(Fall 2020)

22
Curriculum
Innovation
Grants
awarded

Designing with a purpose

The Curriculum Innovation Grant Program funds professional development opportunities, such as attending national innovation conferences. The funding is helping is helping **Trudy Watt**, assistant professor of architecture, study methods like “applied compassion” to redesign the project-based studio course, a format used in architecture, to include students from many disciplines. Faculty also have access to a new workshop series, the Curriculum Innovation Lab, which helps them plan and experiment with novel methods of weaving the entrepreneurial thinking platform into coursework.



LEC partnerships & programs

The shift to virtual programming for most of 2020 did not dampen activity. The LEC not only grew its connections with campus partners this year, but also with Milwaukee community members, companies and off-campus organizations. LEC joined forces with 13 campus organizations to implement discussion series, pitch competitions and Pop Up workshops.

Activities with off-campus partners followed a similar trend. In addition to those below, collaborators included the Young Enterprise Society, Prospanica, the Medical College of Wisconsin, the Marquette 707 Hub, and Startup Wisconsin Week.



Diverse Ideas

As part of the LEC's Diverse Ideas series, **Jason Anderson**, of UWM's Accessibility Resource Center, and student Anna Bruckbauer discussed creating an inclusive and accessible university experience for all students. More than 50 people attended the virtual event that included ASL interpreters and closed captioning.



Well Entrepreneur

Amelia Coffaro partnered with the LEC to start an initiative called “Well Entrepreneur,” which explores the intersection of health, wellness and entrepreneurship through conversations and blog posts. Coffaro, now the Well Entrepreneur-in-Residence, provides holistic tools and resources for student entrepreneurs to practice wellness.



Social Innovation

The popular “Social Good Morning” series features engaging conversations with Milwaukee leaders about social innovation. The featured guest speakers for this year's series included experts such as **Ken Leinbach**, executive director of Urban Ecology Center, and **Sharlen Moore** (pictured), executive director of the Urban Underground.

Students take the Startup Challenge

The Startup Challenge is a co-curricular program that fosters an innovative and entrepreneurial culture at UWM by encouraging participants to research and develop their ideas, prototype products or services, and develop skills that come from entrepreneurial experience. Now in its ninth year, the Startup Challenge includes 42 teams.

Lëvor

By participating in the Startup Challenge in 2018, marketing major **Loren Nelson** launched her startup, Lëvor, which offers a line of affordable natural and organic hair care products. Today, after winning more than \$18,000 in pitch competitions to support her company, Nelson's products are available online and in salons in Milwaukee. Her newest enterprise, Dream Vallie, aims to support young entrepreneurs with the Success Journal, a specialized planner that helps budding entrepreneurs prioritize tasks and stay organized.



Jackson House Milwaukee

While participating in the Startup Challenge, **Crissi Bates** worked with Mark Fairbanks, the LEC's Social Entrepreneur-in-Residence, to obtain nonprofit status for her company, Jackson House Milwaukee. This local nonprofit serves the homeless community and provides various resources, including meals, hygiene bags, baby supplies and clothing.

Greenway

Teammates on the UWM men's soccer team, **Paolo Gratton** (top right) and **Andreas Soerensen** (bottom right) also share a passion for promoting environmental sustainability. Their startup, Greenway, is an app that rewards users for everyday sustainable practices. Users record their activity with cellphone images and reap points toward gift cards and product discounts. The Startup Challenge taught the pair to identify their market and modify their idea. Outside of the Startup Challenge, they came in third place in the Moonshot Pitch competition, administered through the LEC.



Board of Directors available to chat now ▾



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The UWM Research Foundation Thanks You

We are deeply grateful to our supporters who make our work at the UWM Research Foundation possible. We are proud to collaborate with and back the faculty, researchers and students who are building UWM's discovery culture and the community that surrounds them.

Brian Thompson
UWM Research Foundation President

Jessica Silvaggi
Director of Technology Commercialization

The UWM Research Foundation staff includes (from left) Brian Thompson, Jessica Silvaggi, Smruti Patil, Erin Puro and Sarah Gribble.





UWM Research Foundation

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