

2018

ANNUAL REPORT

UW-MILWAUKEE
RESEARCH FOUNDATION





Welcome from the UWMRF Board



The UWM Research Foundation helps UWM researchers build rewarding commercial partnerships and so much more. Since UWMRF was formed in 2006, it has built core capabilities in patenting and licensing, fostered promising ideas through the Catalyst Grant Program and helped students and faculty achieve their fullest potential through the Startup Challenge and the National Science Foundation's Innovation Corps (I-Corps) program.

As you will see, these programs are having an impact. Please join me and the UWM Research Foundation Board in celebrating these successes.

Gregg Tushaus
Chair, UWM Research Foundation

Chancellor's Message



The University of Wisconsin-Milwaukee has, once again, earned a "Research 1" designation from the Carnegie Classification of Institutions of Higher Education, placing it among top research institutions nationwide. In Wisconsin, only UWM and UW-Madison have received this rating.

This important designation builds on the work of exceptional faculty, staff, doctoral students and researchers at UWM.

The UWM Research Foundation and the Lubar Entrepreneurship Center are helping us make the most of UWM's research strengths – connecting UWM discoveries with startup enterprises and established companies, while helping students and faculty develop skills in innovation and entrepreneurship. We are proud of the research at UWM and the pipeline of talent that we provide to drive our economy.

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

Mark A. Mone
Chancellor, University of Wisconsin - Milwaukee



Technology Commercialization

UWMRF programs build on the strength of UWM's research enterprise. Patent protection for UWM's discoveries has led to 81 issued patents with more than 50 additional pending applications. Our support of the university's intellectual property has translated into 40 active license and option agreements – proof of investment by companies and startups in UWM ideas and innovations.

81 ISSUED PATENTS

40 ACTIVE LICENSES & PATENTS

An example of those promising ideas is a patent-pending material for removal of phosphorus in agricultural storm water runoff. Created by UWM researcher Marcia Silva (below), this zeolite-based material can remove 98 percent of phosphorus in minutes and allows both the zeolite material and captured phosphorus to be recycled. Silva, who conducts research with the UWM School of Freshwater Sciences and the Water Technology Accelerator, has received \$450,000 in support from the Great Lakes Protection Fund, which is helping test the technology on farms throughout the Midwest.



Catalyst Grants

The Catalyst Grant Program has accelerated the pace of commercializing UWM ideas. Thanks to support from the Lynde and Harry Bradley Foundation, the Richard and Ethel Herzfeld Foundation, GE Healthcare and the Rockwell Automation Charitable Corporation, the program has awarded nearly \$5 million in the last 12 years to advance promising research. That support has led to more than \$19 million in subsequent funding and helped UWM faculty researchers, like Alexander "Leggy" Arnold, advance their science and create new companies. Arnold is involved in Pantherics, one of 15 UWM startup companies that have grown from Catalyst Grants and other UWMRF support.

\$5 MILLION CATALYST AWARDS

\$19 MILLION FOLLOW-ON FUNDS

15 STARTUP COMPANIES



Faculty Innovators

Hanjoo Lee – Diagnostic Tools for Psychiatric Assessment

Hanjoo Lee (above) and his team are developing new tools for psychiatric assessment with the help of a recent Catalyst Grant. Their diagnostic interview software allows psychiatric patients to assess themselves before visiting their doctor. Health care providers often skip structured diagnostic interviews, even though they provide valuable patient information, because the interviews are time-intensive and costly to administer. Lee's software tool is a cost-effective alternative. The Catalyst Grant will allow the research team to complete the development of the self-assessment tool and test it in patients. Researchers hope it eventually will be useful in a variety of clinical settings and ultimately improve patient treatment and outcomes.

Carol Hirschmugl and Marija Gajdardziska-Josifovska – SafeLi, LLC

Physics Professors Carol Hirschmugl and Marija Gajdardziska-Josifovska's startup company, SafeLi, was recently awarded a Small Business Innovative Research (SBIR) grant from the National Science Foundation. This support builds on their Catalyst Grants and a previous SBIR award from the Department of Energy, which are helping them apply their patented material, graphene monoxide, for use in lithium ion batteries. The physicists continue to build their team and they were recently voted "most likely to be viable" in the SEEDSPOT pitch event in Washington, D.C.



Marija Gajdardziska-Josifovska

Carol Hirschmugl

Rhonda Montgomery – TCARE®, Inc.

TCARE's® evidence-based process for effective interventions to prevent family caregiver burnout grew from decades of aging research by Rhonda Montgomery, UWM emerita professor. Montgomery piloted the system while at UWM by working with various state agencies in Washington, Georgia and Minnesota. She has gone on to create TCARE® Inc. to help this important work reach the broadest possible audience. The company has built a management team of health care industry veterans, completed the Gener8tor, Village Capital and Mass Challenge Accelerator programs, and closed on \$2 million in venture funding, contracts and other awards.



Ching-Hong Yang – T3 BioScience, LLC

Ching-Hong Yang's startup company, T3 BioScience, completed a third year of successful field tests of a non-antibiotic compound that protects against fire blight disease in apple crops, and the company is leveraging UWM's state-of-the-art greenhouse to continue this testing on blooming apple trees year-round. The effort received early help from the Catalyst Grant Program. Since then, the company has received significant investment to continue field trials, hire a team, and develop a second product for biocontrol of apple crop infection as they explore distribution partnership with agricultural crop-protection companies.





Research Partnerships

Through strong industry partnerships, UWM is helping to find solutions to real-world problems and furthering economic development in the process. With faculty research partners on two Industry/University Cooperative Research Centers, funded by NSF, UWM can connect directly with industry members on developing new technologies in the water and energy, power and controls industries. Also, UWM is part of the coming digital transformation of the state with two major collaborative initiatives:

Connected Systems Institute

The term “connected systems” refers to use of big data that machines and devices stream over the “internet of things” to optimize processes. Inspired by discussions with executives at Rockwell Automation and Microsoft, UWM established the Connected Systems Institute (CSI) where researchers and industry partners conduct advanced research aimed at advancing digital manufacturing and preparing a skilled workforce of the future. CSI is building a state-of-the-art facility at UWM, which will offer unique testing platforms to CSI manufacturing partners.

Northwestern Mutual Data Sciences Institute

The Northwestern Mutual Data Sciences Institute is an unprecedented partnership among Northwestern Mutual, Marquette University and UWM. Data science blends statistical analysis, big data and computer processing. It provides computational techniques that give researchers a tool for modeling complex processes. Formed in 2018, the institute aims to leverage UWM research in business, engineering, health sciences and social sciences to help solve some of society’s biggest problems while supporting ethical use of data.

Chad Henneberry – Hydracore Performance, LLC

Chad Henneberry, a UWM assistant athletic trainer, works with student athletes to improve strength and balance after lower-body injuries. That experience led him to develop a rehab vest utilizing water movement. Henneberry joined the I-Corps program to better understand the market before he launched his startup, Hydracore Performance LLC. He is working with Kyle Ebersole, associate professor of kinesiology to test prototypes. Early testing suggests a higher degree of muscle activation than available fitness vests. Further studies are planned to measure improvement in balance rehabilitation.

Alexander Arnold and Douglas Stafford – Pantherics, Inc.

Pantherics, Inc. is addressing unmet needs in the treatment of inflammatory disorders including asthma. The company’s lead drug, MIDD0301, was invented by researchers Alexander “Leggy” Arnold, Douglas Stafford and James Cook at UWM’s Milwaukee Institute for Drug Discovery, in collaboration with scientists at Columbia University in New York.

Pantherics has licensed joint patents through the UWMRF and Columbia and was recently awarded a Small Business Technology Transfer (STTR) grant from the National Institutes of Health. The funding will help the team complete the final stage before initial human clinical trials: establishing dosage for a pill. The company recently combined with Bio33 Degrees, Inc., based in San Diego, Calif., to expand its commercial development resources and product development pipeline.





\$3.3 MILLION FUNDS RAISED

350+ PARTICIPANTS TRAINED IN LEAN LAUNCH

18 COMPANIES FORMED

3,371 INTERVIEWS CONDUCTED

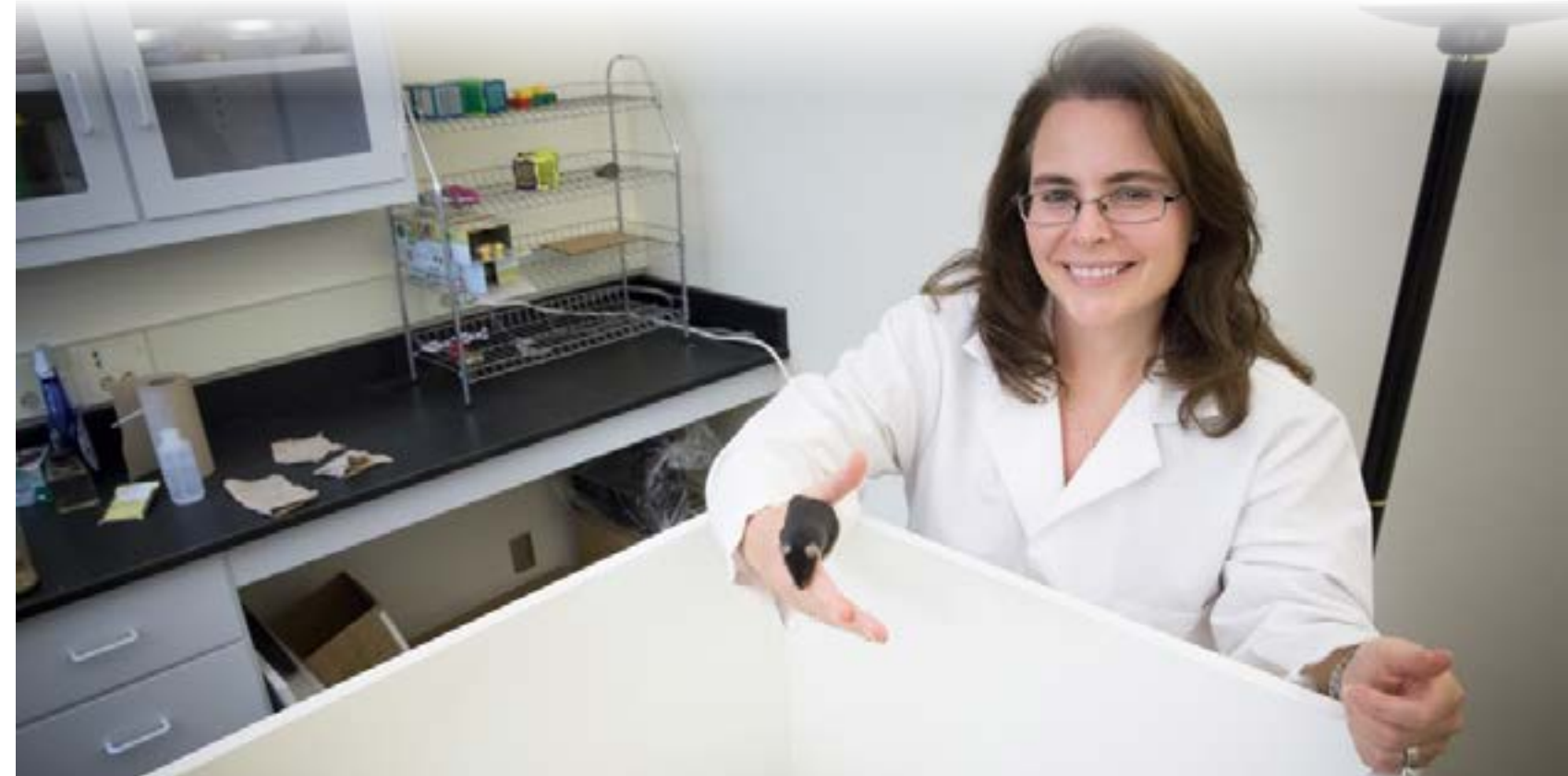
Karyn Frick – Estrigenix

Karyn Frick, professor of psychology, formed a new startup company, Estrigenix, in collaboration with Daniel Sem at Concordia University and Bill Donaldson at Marquette University. The team completed the I-Corps program in Milwaukee, where they explored commercializing new compounds for the treatment of menopausal symptoms, such as hot flashes and memory loss. Frick, a previous Catalyst Grant winner, recently won renewal of a grant from the National Institutes of Health to investigate compounds that target specific estrogen receptors in memory loss.

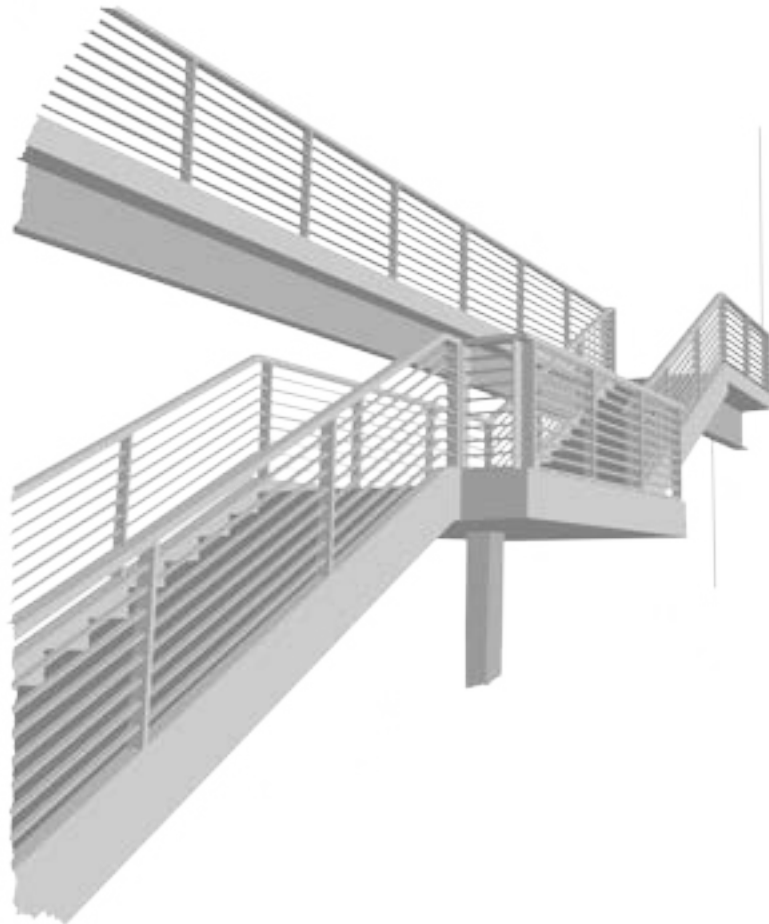
NSF I-Corps Program



The UWRF administers the Milwaukee site of the National Science Foundation's I-Corps program, which helps faculty and students explore commercial markets for their academic work. Led by UWM engineer Ilya Avdeev, who also innovation director for the Lubar Entrepreneurship Center, I-Corps has trained more than 95 teams from Milwaukee institutions (Concordia University, Milwaukee School of Engineering, Marquette University, Medical College of Wisconsin and UWM) and other institutions such as Northwestern University. I-Corps challenges participants to "get out of the lab" and talk to potential customers. The program helps validate potential new enterprises, and has resulted in the launch of 18 new companies.



Lubar Entrepreneurship Center



The new Lubar Entrepreneurship Center and UWM Welcome Center serves as a front door for incoming UWM students and a hub for campus entrepreneurial programming. This 24,000-square-foot facility houses activities designed to attract UWM students and faculty across disciplines, giving them skills that stoke innovation, creativity and entrepreneurial thinking.



Programming includes UWM's Startup Challenge and the NSF I-Corps programs, where students and faculty experience entrepreneurship firsthand. The LEC is also home to the University Innovation fellows and Ideas Challenge fellows, programs that help students and faculty build UWM's innovation culture.

But it doesn't end at the borders of campus. The center is engaging K-12 students and their instructors, hosting gBETA's city accelerator program, bringing together students and the business community and partnering with other groups that serve the community.

This is made possible by the Lubar family and other visionary supporters who are investing in UWM.



Sheldon Lubar

Sheldon Lubar

David Lubar

David Lubar



Kali Knutson – DoCo Domes

“Glamping,” short for “glamour camping,” is how Kali Knutson, a participant in this year’s Startup Challenge, describes the service that forms her business concept. Knutson envisions operating her business, called DoCo Domes, in Door County, where she grew up. Like many successful entrepreneurs, she’s already “pivoted” – modified her idea using skill she’s developed working with mentors and other students in the Startup Challenge.



Matthew Kemper – Light Fruit Company

Meet Matthew Kemper, a UWM entrepreneurial student leader and third-year business student. Kemper is also president of the Collegiate Entrepreneur Organization and an Innovation Intern at the Lubar Entrepreneurship Center. He and partner James Van Eerden, a UWM geology major, founded Light Fruit Company, which makes and sells dehydrated melon snacks.



Jared Judge – Dream City Music

Jared Judge is a graduate of UWM’s Peck School of the Arts. While finishing his master’s degree, he participated in the Startup Challenge and launched Dream City Music as a booking site for wedding musicians. With \$100,000 in angel investment and connections in Milwaukee’s growing entrepreneurial ecosystem, Judge has already expanded his business to seven Midwest cities and New York.

Startup Challenge

The Startup Challenge is an experiential learning program that trains students in skills such as talking to customers, defining commercial opportunities, prototyping products and business concepts, and telling their story. More than 121 teams have benefitted from working on emerging enterprises with UWM mentors, successful entrepreneurs from the community and their colleagues in this 7-year-old program, led by UWM digital artist Nathaniel Stern.



Nathaniel Stern

Ideas Challenge Fellows

Ideas Challenge Fellows like Kim Beckmann, associate professor in the Peck School of the Arts, and Michelle Silverman, clinical assistant professor in the College of Health Sciences, are part of a growing number of faculty who are working together to adapt their existing courses to include innovation and entrepreneurship themes

In Beckmann's "Design & Visual Communication" course, students develop innovative products and services around themes such as water, energy, ecology and education. Students like Damilare Tomori (below left) have gone on to join the Startup Challenge so they can transfer their ideas from the class to the UWM entrepreneurial ecosystem.



University Innovation Fellows

The University Innovation Fellows (UI Fellows) is a nationwide program run by Stanford University that turns college students into entrepreneurial change agents. Since 2013, 17 UWM students have earned UI Fellow designation. These students have worked on projects such as: helping create a "maker space" in UWM's College of Engineering & Applied Science, delivering "pop-up" classes on career and personal branding to other UWM students and establishing the Innovation Expo – an annual showcase of UWM student innovator achievement from all disciplines.

Nicole Green, a UI Fellow, has gone on to become the Lubar Entrepreneurship Center Program Manager.



Research Foundation Team

As a top-tier research institution, UWM provides a continuous source of discovery. The UWMRF works to connect those discoveries with commercial markets, while also linking companies with the capabilities of UWM researchers and their labs.

I invite you to partner with UWM and the UWM Research Foundation

Jessica Silvaggi, PhD.
Director, Technology Commercialization, UWMRF



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We are deeply grateful to the individuals and supporters who make the work of the UWMRF possible. We are honored to work with some of the best and brightest minds at UWM and in our community, and to contribute to the success of UWM students, faculty, staff and researchers.

Thank you for your trust and support.

Brian Thompson
President, UWM Research Foundation
Director, Lubar Entrepreneurship Center



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