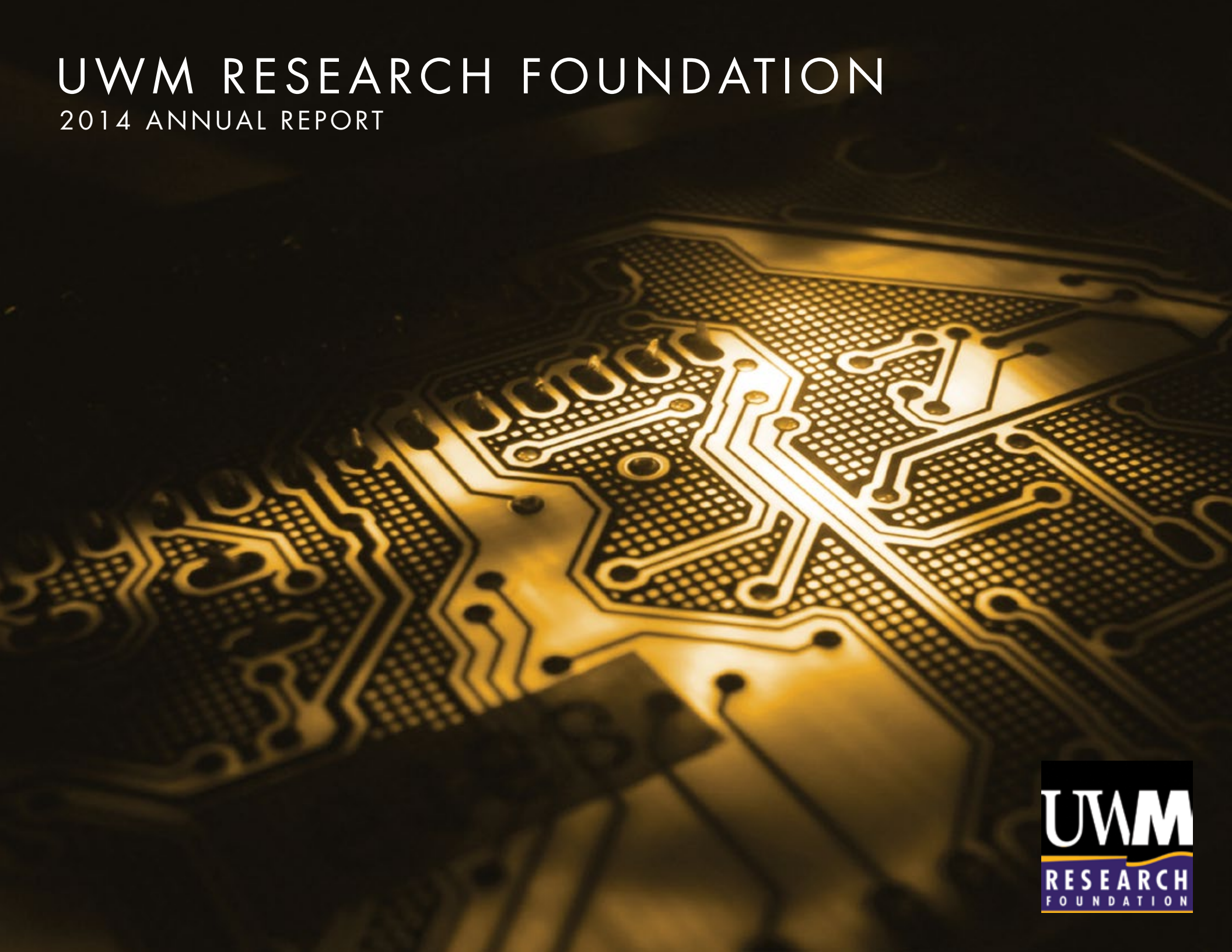


# UWM RESEARCH FOUNDATION

2014 ANNUAL REPORT



# LEADERSHIP



## TO STRENGTHEN UWM'S IMPACT ON WISCONSIN

### Chancellor's Message

The University of Wisconsin-Milwaukee is moving forward boldly. UWM is responsible for \$1.5 billion in impact to the Wisconsin economy, and we are working to increase that impact by strengthening our research, reinforcing our engagement with community partners, and ensuring success for our students today and after they graduate.

As you'll see from this report, the UWM Research Foundation is key to those efforts. Through programs that develop ideas, commercialize technologies, connect with industry and cultivate entrepreneurial talent, the UWM Research Foundation is accelerating UWM's role as a key driver for economic prosperity.

Mark Mone  
Chancellor, University of Wisconsin-Milwaukee

### A Message From The UWMRF Board

We are pleased to share this update on the UWM Research Foundation and our efforts to promote research, innovation and entrepreneurship at the University of Wisconsin-Milwaukee (UWM).

By building on its strengths, UWM is a powerful source for ideas and talent needed for transformative change that drives Wisconsin's prosperity. The UWM Research Foundation (UWMRF) supports this with programs that foster research, innovation and entrepreneurship. UWMRF helps partners connect with the great work done at UWM – through strategic partnering efforts in energy, water and health care – and helps UWM faculty and students bring their ideas to the world – through licensing and entrepreneurship.

We are grateful to the many partners who are joining with UWMRF and UWM to achieve great things and honored to support the work of talented faculty and students at University of Wisconsin-Milwaukee.

Thank you,

William Berezowitz  
Chair, UWM Research Foundation

MaryAnn Wright  
Vice Chair, UWM Research Foundation



# PROGRAMS

**\$3.7 million** awarded in catalyst grants



Brent Aussprung,  
Student Startup Challenge

## Innovation Focused Programming

The UWM Research Foundation brings together UWM's thought-leaders to accelerate the pace of discovery and deployment of ideas, molding innovators and entrepreneurs, and making it easier for research scientists and students to bring the fruits of their labor to market through licensing agreements and new ventures.

### Catalyst Grant Program

This program provides seed funding for promising ideas with strong potential for commercialization and helps to stimulate a culture of innovation.

### Student Startup Challenge

Created in partnership with engineering and arts, this program helps students develop prototype products and business plans, turning out creative thinkers and leaders using the startup process.

### Startup Support

UWMRF helps faculty and student entrepreneurs in defining and launching their businesses with business-model coaching, investor forums, and educational seminars.

### Intellectual Property Management and Licensing

UWMRF manages a growing portfolio of intellectual property based on UWM discoveries and employs a structured marketing and licensing process to move these discoveries to market.

### Technology Entrepreneur Intern Program

UWMRF student interns support the technology transfer process while learning to assess intellectual property and markets.

### Corporate Partnering

UWMRF works closely with the University in developing strategic partnerships with industry clusters that include water, energy and health care.

# TO SUPPORT RESEARCH AND INNOVATION

## Catalyst Grant Program

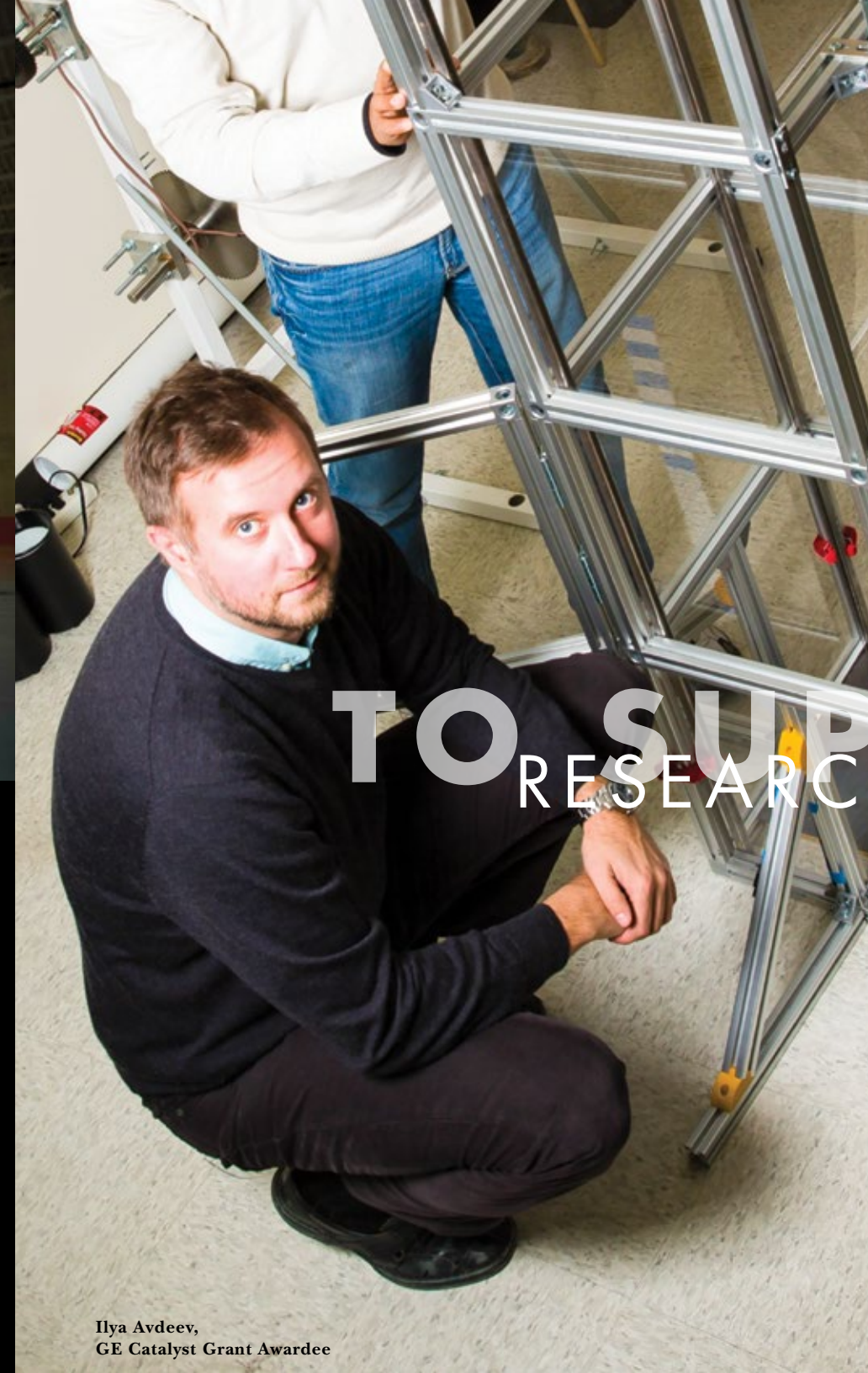
The UWMRF Catalyst Grant Program invests in the most promising early-stage research that also has strong commercial potential, a focus that goes hand-in-hand with the traditional university roles of discovery and education.

The Rockwell Automation Charitable Corporation launched the Catalyst Grant Program in 2007 with a \$1 million gift. Soon afterward the Lynde and Harry Bradley Foundation contributed more than \$2 million over six years, growing the program and giving it a sustained impact on commercialization at UWM.

The Richard and Ethel Herzfeld Foundation added their support to the Catalyst Grant Program starting in 2010. And in 2012, GE Healthcare announced a four-year commitment to the program as part of a \$1 million gift to the UWMRF.

Since its inception the Catalyst Grant Program has made 67 awards totaling more than \$3.7 million. The selection process focuses on both strong science (judged by external reviewers) and high commercialization potential (including intellectual property, partnerships and potential for startup companies). The sustained support for the program is having immediate impact on the ability of UWMRF to cultivate researchers and opportunities.

**\$13 million** in follow-on funding



Ilya Avdeev,  
GE Catalyst Grant Awardee

# STUDENT ENTREPRENEURSHIP



Nicole Green,  
Student Startup Challenge

## Student Startup Challenge

The Student Startup Challenge is a unique co-curricular program that pairs student entrepreneurs who have a promising idea with a larger group of students enrolled in various interdisciplinary courses. This "ripple effect" brings together a broad group to build prototypes and develop a business model within the structure of academic classes. The student entrepreneur can either be enrolled in the class or act as an external sponsor. This structure has made it possible to attract input from many disciplines on campus.

# TO CREATE INNOVATORS AND LEADERS

The program is distinct from a business plan competition because it awards support on the strength of an idea. Funding comes with "strings attached" to provide a structure for entrepreneurs to refine proposed products and develop their go-to-market strategy. Now in its third year, the program has expanded to support more students and different types of enterprises through the addition of different "tracks" that include hardware, mobile applications and a new social innovation track.



Erika Pliner,  
Student Startup Challenge

## Entrepreneurship Curriculum

The experience of developing an idea to the point of building a prototype or creating a new venture gives students skills that make them valuable to Wisconsin companies and to the startup economy. UWM is building on strong existing programs in creative and leveraged ways to offer these experiences broadly to all UWM students.

Entrepreneurship curriculum offered in the Lubar School of Business is blending with innovation and design education in engineering and the arts. A new entrepreneurship experience course piloted in the fall of 2014 is helping pave the way for programs that can be offered campus wide and as part of the experience for all incoming students.

Co-curricular programs like the Student Startup Challenge and extra-curricular activities including business plan contests and student organizations are helping connect more students to the growing entrepreneurial movement at UWM.

619 customer discovery interviews



2014 Student Startup Challenge Teams

# ENTREPRENEUR PROGRAMS



**127** student entrepreneurs  
pursuing new ventures

Amin Mojtahedi and Tahereh A. Hosseini,  
Student Startup Challenge

## Entrepreneurial-Focused Programming

The UWMRF team is helping to bring entrepreneurial-focused programming to UWM by delivering innovation content and courses in engineering, business, and the arts. In addition, UWMRF is working with Lubar School of Business faculty to pilot a campus-wide freshman entrepreneurship experience course.

These programs build on “lean startup” methodologies, which focus on a deep understanding of customer needs. These same methodologies are also being brought to students in the Student Startup Challenge through interactive workshops including the Innovation Pathways Workshop Series, a collaboration between the UWMRF and Discovery World.

## Entrepreneur In Residence

Carlton Reeves joined the UWM Research Foundation as Entrepreneur-in-Residence in January of 2014 after completing his Ph.D. at UWM. His role is part of UWMRF’s increasing focus on entrepreneurship.

Reeves, a burgeoning entrepreneur, is the founder of startup company, Tali Payments, a cloud-based mobile payment service for enterprise systems. This experience informs his work helping faculty and students to launch new businesses.

# TO EDUCATE STUDENT ENTREPRENEURS

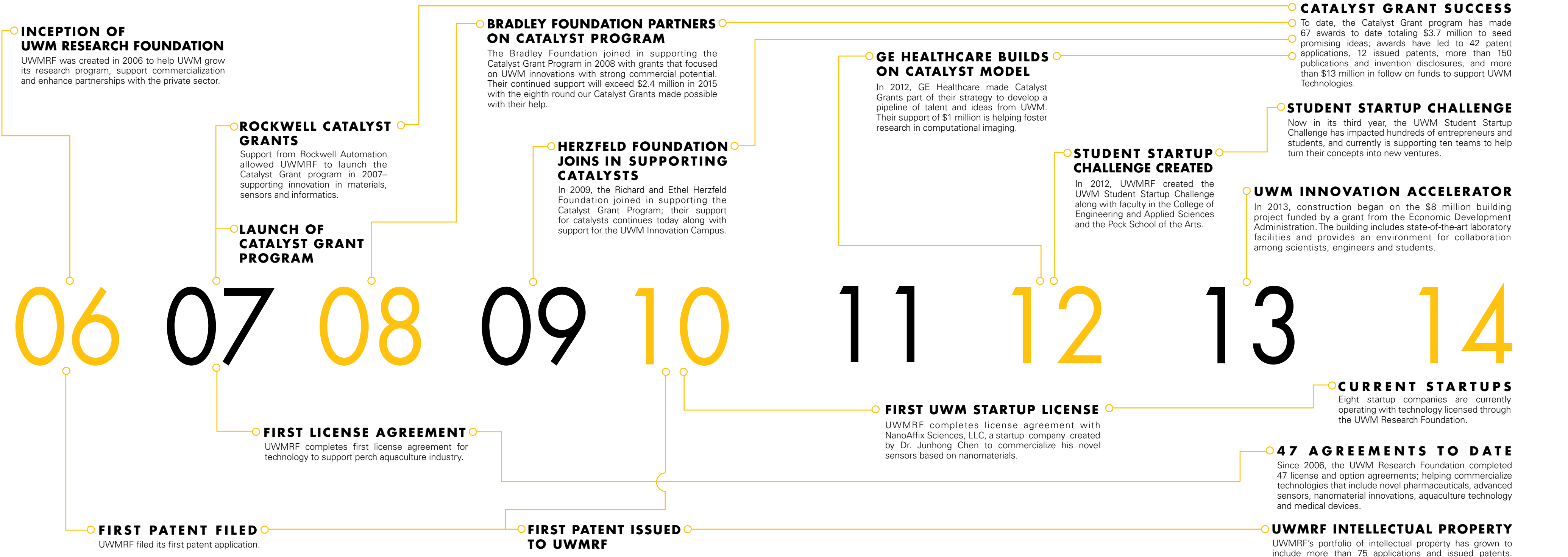
Reeves created “Entrepreneur Office Hours” held weekly in the newly renovated Alan Kulwicki Pit Stop, an ideation space designed to nurture innovation and entrepreneurship. The office hours allow students to explore and develop their ideas. In addition, Reeves publishes a weekly e-newsletter with all of the exciting events around UWM for entrepreneurs to network, collaborate, and work on their ideas.

Reeves was named a University Innovation Fellow, a joint venture between Stanford University’s National Center for Engineering Pathways to Innovation and VentureWell (formerly NCIIA) along with two other fellows. They have organized multiple 3 Day Startup events to bring a nationwide program to UWM, where students work on business ideas with mentors and pitch to an audience of investors, entrepreneurs, and business executives.

**28** student ventures  
with initial funding

Carlton Reeves,  
Entrepreneur in Residence





# FACULTY RESEARCH



Jennifer Doering,  
Catalyst Grant Awardee

**“If we can send astronauts up into outer space safely, then we should be able to use design and technology to protect babies when sleeping next to their parents.”** - Jennifer Doering

## Sleep Environment Innovations

Jennifer Doering, Associate Professor in the College of Nursing, designed a novel infant sleep pod called the NightOwl Sleeper ([www.sleepi.com](http://www.sleepi.com)), which maximizes parents' peace of mind when sleeping next to their baby. The design, supported by a UWMRF Catalyst Grant, keeps the baby from rolling off the bed, parents from rolling onto their baby, and blankets and pillows off the baby's face. Smart position monitoring warns parents of any unsafe infant sleeping conditions. Doering is working to bring her product to market with the help of a grant from the UW Extension Ideadvance program, which supports the customer discovery process.

## TheraBracelet

Midwest startup company TheraBracelet is developing a wearable device to improve the sensation of touch in stroke survivors who wear it. The technology stemmed from the innovative research of UWM Assistant Professor Na Jin Seo and is being developed in partnership with UWM and the UWMRF. The company has completed a license option agreement through the UWMRF and they plan to perform clinical testing on the product in early 2015.



**TO FOSTER  
IDEAS AND TALENT**

Douglas Stafford, Alexander Arnold and James Cook,  
Catalyst Grant Awardees

## Novel Asthma Treatment

Three UWM researchers are developing a new drug therapy for asthma that has the potential to reduce the side effects seen with current steroid drugs. Douglas Stafford, Director of the Milwaukee Institute for Drug Discovery (MIDD), and Chemistry & Biochemistry Professors James Cook and Alexander Arnold are pursuing compounds that target receptors in the lung in order to relax the smooth muscle, tame inflammation, and open breathing airways. The UWMRF awarded the team a Catalyst Grant to conduct animal studies and the team was recently awarded nearly \$2 million in funding by the National Institutes of Health (NIH).

**“This program links key drug discovery strengths at UWM, including Cook's large library of medicinal compounds, Arnold's compound screening and drug design expertise and MIDD's drug testing resources.”** - Douglas Stafford

## PARTNERS



Adel Nasiri,  
Catalyst Grant Awardee

### Wind Turbine Energy Storage Technology

Dynamic Blade Technologies Inc., a Texas-based startup company, executed a license with the UWMRF to develop and commercialize an energy-storage and power-conversion technology for wind turbines. The patented technology was designed by Adel Nasiri, professor of electrical engineering. The novel technology can lower maintenance costs for wind turbines and improve efficiency by using ultra-capacitors to help stabilize the system. Nasiri is helping lead energy research efforts at UWM that couple closely with regional energy companies.

**“The tests have shown that this technology can be very effective at smoothing the output power of wind turbines, and we are very excited to help wind farms improve their return on investment.”**

- Adel Nasiri

### Organic Research Corp and its Digital Liver Pathology Aid

UWMRF, in partnership with the Medical College of Wisconsin, has licensed the Digital Liver Pathology Aid software to a new Wisconsin startup company Organic Research Corp. The company was founded by Scott Vanderbeck, a computer sciences graduate, who conducted thesis work at UWM to create this software for detecting non-alcoholic fatty liver disease. The project was previously supported by the UWMRF Catalyst Grant Program and has recently received an IDeAdvance Seed Fund through UW System Extension made possible with help from the Wisconsin Economic Development Corporation.



Junhong Chen,  
Catalyst Grant Awardee

### Real Time Water Quality Sensors

Junhong Chen plays many roles at UWM – professor of Mechanical Engineering, director of the Industry/University Cooperative Research Center (I/UCRC) on Water Equipment and Policy supported by the NSF, and president/CEO of startup company NanoAffix Science, LLC. Through the I/UCRC, the UWMRF has licensed one of Chen’s heavy-metal sensing technologies to four local water and engineering companies. Chen has also received a Partnership for Innovation Grant for \$800,000 from the NSF. This support links NanoAffix with three water industry partner companies to advance research for sensors detecting levels of unsafe bacteria in water. The project highlights important work that UWM is doing in the water sector as well as the strength of partnership between UWM researchers and industry collaborators.

### Responding to Industry Needs

The Center for Advanced Computational Imaging is the latest example of an innovative partnership between UWM and industry. GE Healthcare has joined other strategic partners in helping create resources to serve healthcare, energy, water and other industries.

New curriculum in the College of Engineering & Applied Sciences offers both professional development for industry engineers and scientists and also resources to cultivate a pipeline of new talent in real-time operating systems, firmware design and computational imaging. This programming complements Catalyst Grants that support research in imaging and health care.

Center Director Ethan Munson leads the overall effort and Jun Zhang, recipient of several GE Catalyst Grant awards, is helping define research objectives in his role as Associate Director for Research Projects.

This partnership with GE Healthcare complements UWM’s partnership with Johnson Controls which has invested in state-of-the-art facilities at UWM to bring their researchers together with UWM faculty and students.

TO ADVANCE  
DISCOVERY AND COLLABORATION



# INNOVATION CAMPUS



## A Home For Collaboration

This facility anchors a growing list of future partners and facilities at Innovation Campus that will eventually include facilities for people to live, learn, work and play. The next building will be a 150,000 GSF Integrated Research Center. Plans also call for more corporate research buildings to join partners such as ABB, Inc., already on the grounds.



## A Hub for Research and Discovery

Just across the street from the Milwaukee County regional medical complex is UWM's 72-acre, next-generation technical park, where UWM researchers collaborate and share ideas with nearby medical professionals. The first building on the grounds, the Innovation Accelerator, opened in the spring of 2014 and includes space for faculty conducting research that will lead to products that solve health care problems.

Capabilities such as the Advanced Prototyping Facility and the UWM Mobile App Development Lab will help these researchers come together on a wide range of new solutions.



Jessica Silvaggi, Carlton Reeves, Brian Thompson and Joseph Pfannes

## UWMRF Team

The leadership of the UWM Research Foundation is committed to the future of the University of Wisconsin-Milwaukee. We are honored to play a role in ensuring that UWM has a place in the successful future of our region. Our work would not be possible without the students, researchers, inventors, entrepreneurs, business leaders, and innovators who make up our innovation ecosystem. We are grateful for your trust and partnership.

We are also deeply grateful to the foundations and corporations that directly support our work and programs. By supporting our mission, you are investing in Southeastern Wisconsin.

Lastly, we offer an invitation. If you haven't learned what UWM has to offer, we would welcome a chance to explore your needs and share with you the resources of this great institution.

## Board Members

### William Berezowitz

Vice President and General Manager for Imaging Subsystems  
GE Healthcare  
Chair, UWMRF

### Johannes Britz

Provost and Vice Chancellor for Academic Affairs  
UWM

### Sujeet Chand

Senior Vice President,  
Chief Technology Officer  
Rockwell Automation, Inc.  
Past Chair, UWMRF

### Christina Fiasca

Vice President Product Finance  
Northwestern Mutual  
Treasurer, UWMRF

### Jacquelyn Fredrick

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### Joseph Kerschner

Dean of the Medical School and Executive Vice President  
Medical College of Wisconsin

### Andrew Schiesl

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Secretary, UWMRF

### John Torinus

Chairman  
Serigraph, Inc.

### MaryAnn Wright

Vice President, Engineering and Product Development  
Johnson Controls, Inc.  
Vice Chair, UWMRF



David Gallegos,  
Student Startup Challenge

# TO SUPPORT UWM INNOVATORS AND ENTREPRENEURS



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POWERFUL  
IDEAS

PROVEN  
RESULTS