

2013



UNIVERSITY OF WISCONSIN-MILWAUKEE
RESEARCH FOUNDATION
annual report



UWM Research Partnering

UWM

Map showing research locations and partner connections.

UWMRF Intellectual Property

Issued Patents: 2 (FY 10), 2 (FY 11), 7 (FY 12), 7 (FY 13), 1 (FY 14)

Patent Filings: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Provisional App's: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Utility Filings: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

In Prosecution: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Issued (Allowed): 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Startups: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Prospects: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

UWM Startup Company: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Annual License Options: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Marketing: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Copyright Matters: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

Disclosures: 11 (FY 10), 14 (FY 11), 13 (FY 12), 13 (FY 13), 10 (FY 14)

UWMRF

POWERFUL IDEAS | PROVEN RESULTS®

chancellor's message



November 21, 2013

Our vision for the University of Wisconsin-Milwaukee is to be a top-tier research university that is the best place to learn and work for our students, faculty and staff, and that is a leading driver for sustainable economic prosperity. Our success is connected to the progress of Milwaukee and Wisconsin in the same way that the success of our region's economy is connected to a strong UWM.

This report focuses on UWM's innovation pathways, and the work of the UWM Research Foundation and our partners to strengthen UWM's capacity to be a vital source of ideas and talent. These innovation pathways are helping to foster the creation of high-tech companies, produce new jobs, and fill the pipeline of entrepreneurial talent who will drive economic development in Wisconsin.

This work builds on a strong tradition of research, scholarship and education at UWM made possible by our dedicated faculty, staff and students. It would not be possible without the commitment and trust of many partners – including corporations, foundations, investors, and community organizations. I thank each and every one of them for helping UWM move toward its compelling vision.

A handwritten signature in black ink, appearing to read "M. Lovell". The signature is fluid and cursive.

Michael R. Lovell

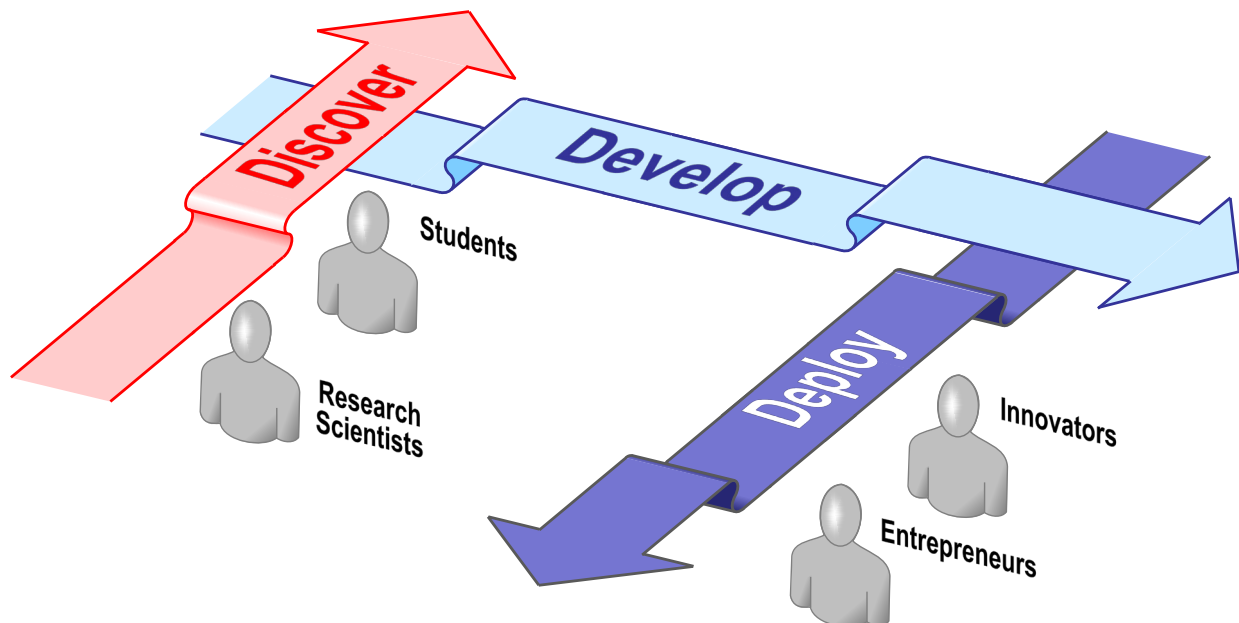
Chancellor
University of Wisconsin-Milwaukee

innovation pathways

Helping Transform UWM

UWM is a changing institution. Building on fundamentals that have made the institution successful for more than a century, UWM is pursuing new pathways to propel discovery, development and deployment of ideas and talent. These innovation pathways will help keep UWM strong and viable for the next century.

The UWM Research Foundation is working closely with UWM thought-leaders to accelerate the pace of discovery and deployment of ideas, helping create innovators and entrepreneurs, and making it easier for research scientists and students to bring ideas to market through licensing agreements and new ventures.



Strength in Partnerships

Innovation pathways touch all aspects of UWM's campus, and they include a broad network of community partners. As you will see throughout this report, these partners are the cornerstone of our success, helping drive the process at each step, providing important resources and market-driven needs, bringing ideas to market and providing jobs for innovators and entrepreneurs.





The UWM Research Foundation - fostering research, innovation and entrepreneurship at the University of Wisconsin-Milwaukee

UWM Research Foundation - Building for the Future

Launched in 2006, the UWM Research Foundation provides UWM a locally focused organization to support partnerships and commercialization of ideas. UWMRF has built infrastructure to manage intellectual property and maximize its value through marketing and licensing efforts. The Catalyst Grant Program has been a key driver in

developing new ideas and talent. Moving forward, the UWMRF is partnering with UWM to develop student entrepreneurship, strengthen resources for faculty innovators and provide greater linkages to a network of support in the community to help advance new enterprises.

Building on Strengths

UWM has a broad portfolio of strengths in the arts, humanities, sciences, and engineering. Annual research spending of approximately \$60 million includes research in water, energy and healthcare, and builds on expertise in

advanced materials, sensing platforms, nanotechnology, software, healthcare informatics, and many other areas. These strengths span UWM schools and colleges and are closely linked to the needs of regional partners.

~30,000
students

1,600
faculty and instructors

180
degree programs

\$60 million
research expenditures



Water



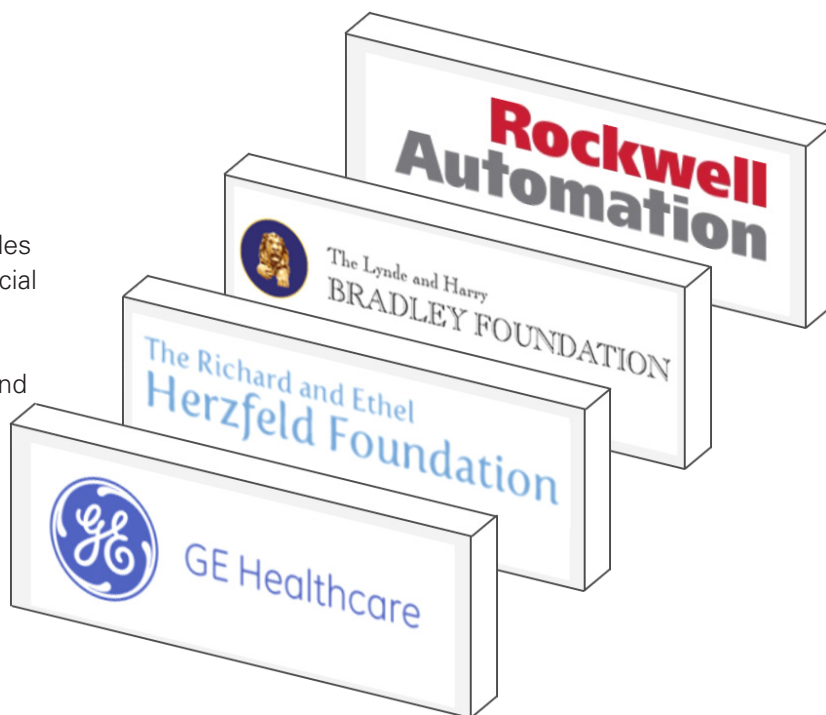
Energy



Health

catalyst

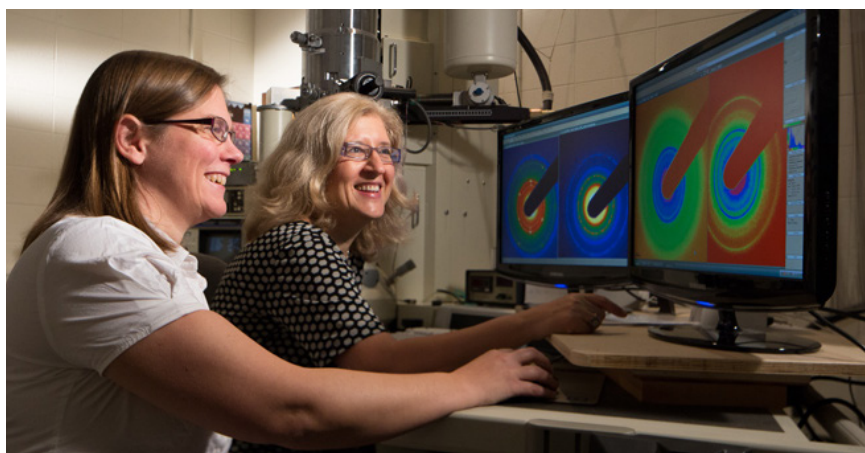
The UWMRF Catalyst Grant Program provides seed funding for ideas with strong commercial potential. It is helping create a culture of innovation at UWM with a unique focus on commercial outcomes that goes hand-in-hand with the traditional university roles of discovery and education.



Sustained Support and New Catalyst Partners

The Catalyst Grant Program was created in 2007 as part of a \$1 million gift from the Rockwell Automation Charitable Corporation. The Lynde and Harry Bradley Foundation's commitment of more than \$2 million over six years has allowed the program to grow and have a sustained impact on discovery and commercialization at UWM.

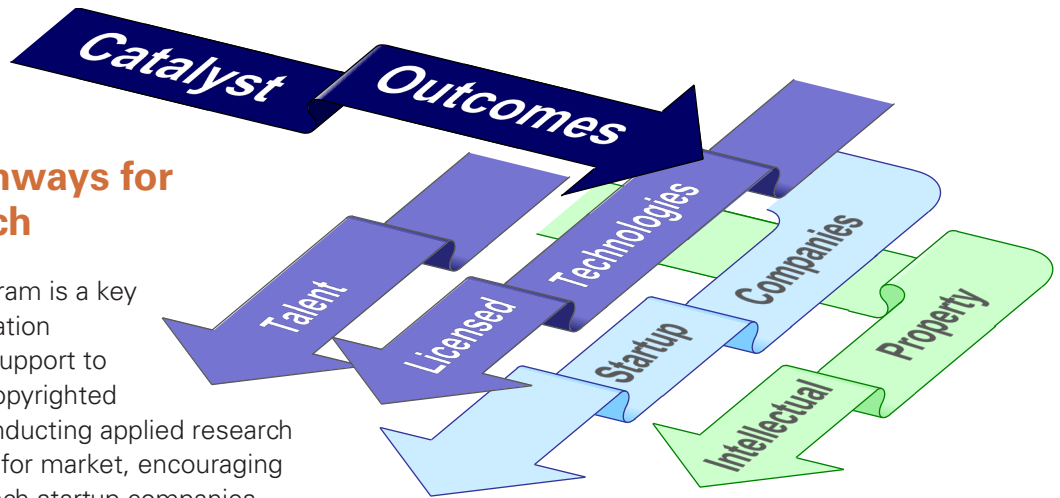
The Richard and Ethel Herzfeld Foundation added their support to the Catalyst Grant Program starting in 2010. And in 2012, GE Healthcare announced a four-year commitment to the program as part of a \$1 million gift to the UWM Research Foundation.



Priming Innovation

The Catalyst Grant Program has made 58 awards totaling more than \$3.4 million since its inception. 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.





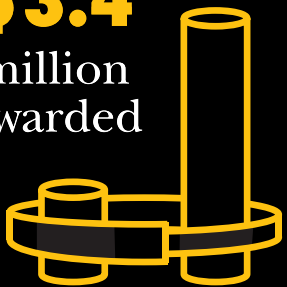
Innovation Pathways for Faculty Research

The Catalyst Grant Program is a key element of UWM innovation pathways by providing support to develop patented and copyrighted intellectual property, conducting applied research to validate technologies for market, encouraging faculty members to launch startup companies, fostering research in strategic areas, and cultivating talented UWM faculty and students.

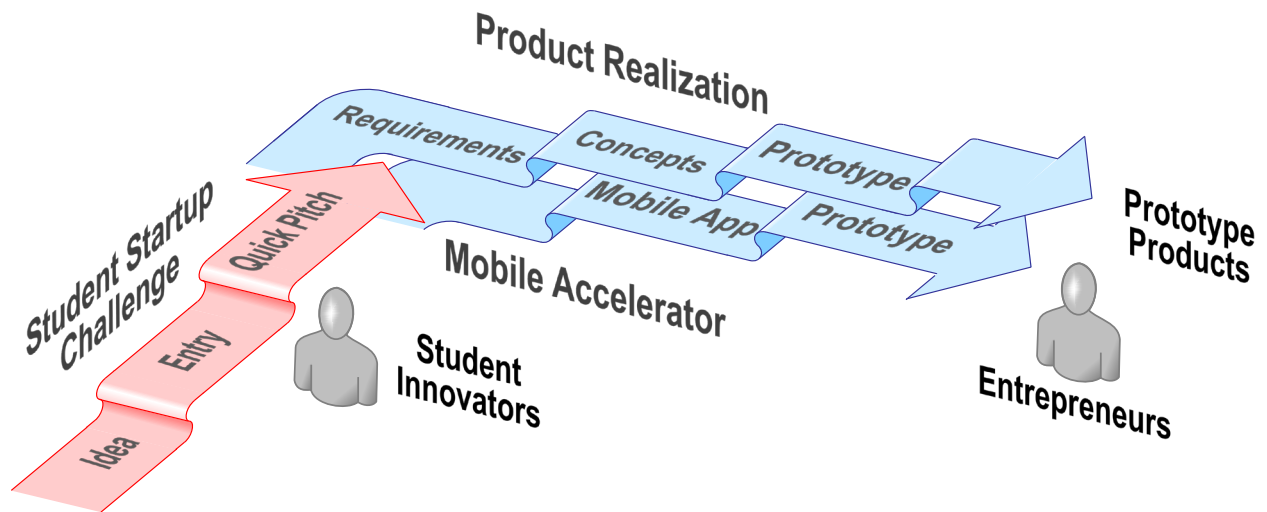
Producing Results

The Catalyst Grant Program is producing ideas, including more than 150 publications and invention disclosures. These ideas have contributed to 42 provisional and utility patent applications that have so far resulted in 11 issued patents. Students have benefited from support from catalyst projects, working with faculty researchers to obtain data, publish papers and complete thesis research. The program is producing results.

Awards of \$3.4 million have produced \$10 million in follow-on investments in UWM technologies. Fifteen license and option agreements based on catalyst projects are moving ideas to the marketplace. Three UWM startup companies were formed based on catalyst projects, and a dozen SBIR grant applications have resulted in four funded grants that are helping build UWM enterprises and small businesses.

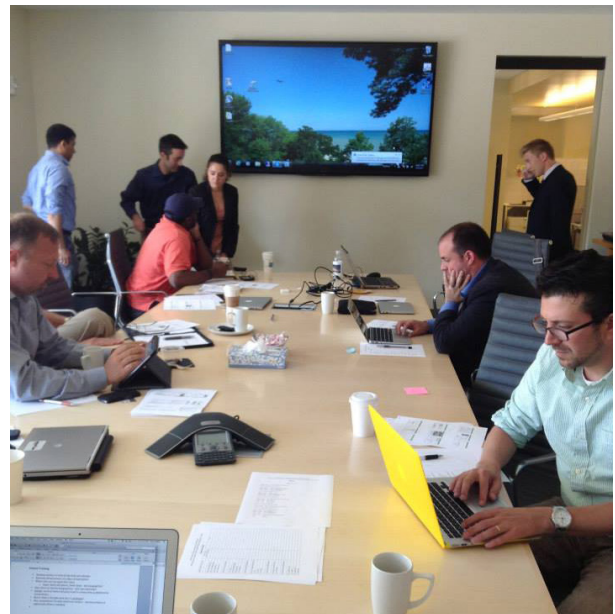
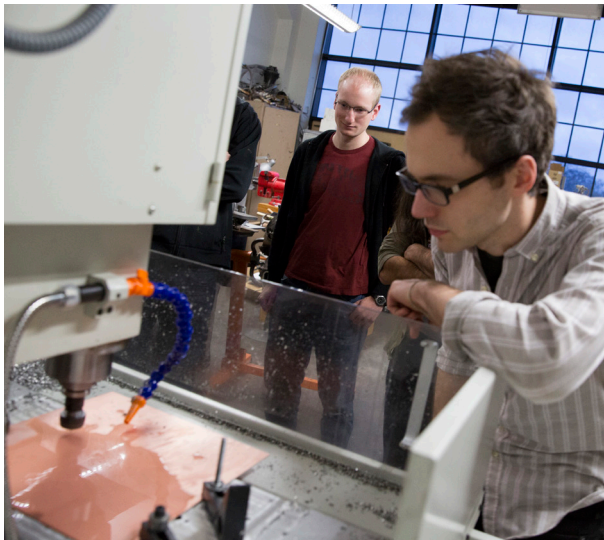
<p>58 catalyst projects</p>  <hr/> <p>3 catalyst startup companies</p>	<p>15 license and option agreements</p> <hr/> <p>>150 publications & disclosures</p> 	<p>\$10 million follow-up funds</p> <hr/> <p>\$3.4 million awarded</p> 
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student entrepreneurs



Creating Innovators and Entrepreneurs

A steady stream of talent is among the most important outputs that UWM provides to our region's economy, and UWM is increasingly working to equip students with innovative thinking and entrepreneurial skills. Not only will these skills help students launch new ventures, but they also will better prepare them for careers in existing industries where rapidly changing markets demand new skills to remain competitive.



Integrating innovation and entrepreneurship across the university is also critical to attracting and retaining students. UWRF is playing a role in that important objective by supporting initiatives such as the Student Startup Challenge and by providing coaching to help students refine their business ideas and connect with resources.



The mission of the UWM Student Startup Challenge is to create innovators and leaders through the entrepreneurial startup process.

Startup Challenge - A Pathway for Student Innovators

The Student Startup Challenge (SSC) is one of the ways that UWM is creating innovation pathways for students. The interdisciplinary program combines engineering, arts, business and sciences to help student develop their ideas, creating not just a business plan, but also a prototype of their idea. Teams from across the campus pitch their ideas, and the winning concepts receive up to \$10,000 in support to turn their ideas into products. The program leverages existing classes to engage more students in the process while building hardware and software prototypes.



The Student Startup Challenge has expanded from three to eight teams in its second year. More than 100 ideas proposed in the two years of the competition have yielded winning teams comprised of students from diverse disciplines, such as health sciences, engineering, arts, business, and freshwater sciences.

The program has received support from the National Collegiate Innovators and Inventors Alliance (NCIIA), the University of Wisconsin System and private donors. This support has helped to expand the program to support both hardware and software ideas.

>100
ideas
proposed

11
student
startup teams



>100
students
engaged

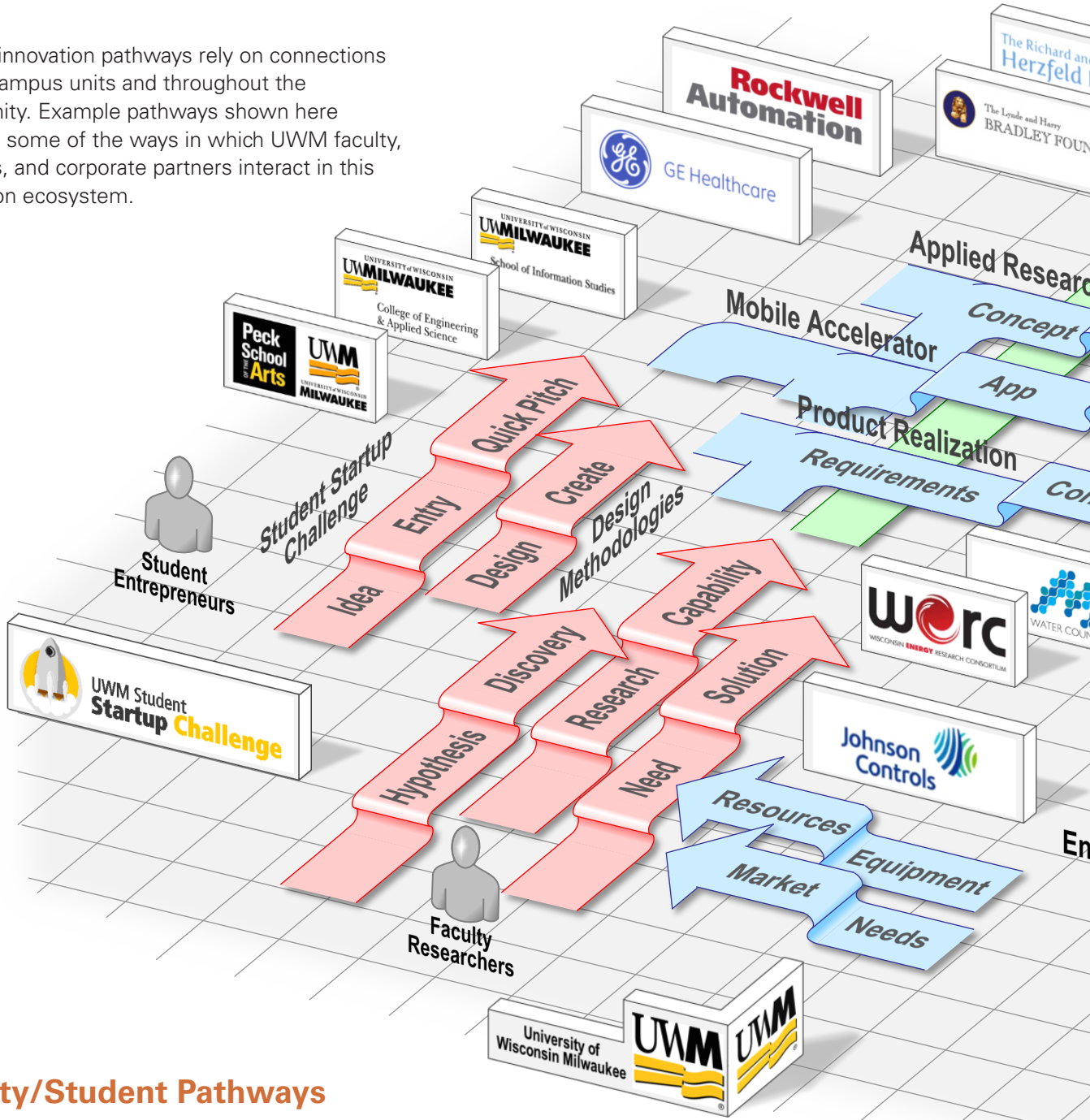


\$110k
in support
for student
startups



UWM innovation ecosystem

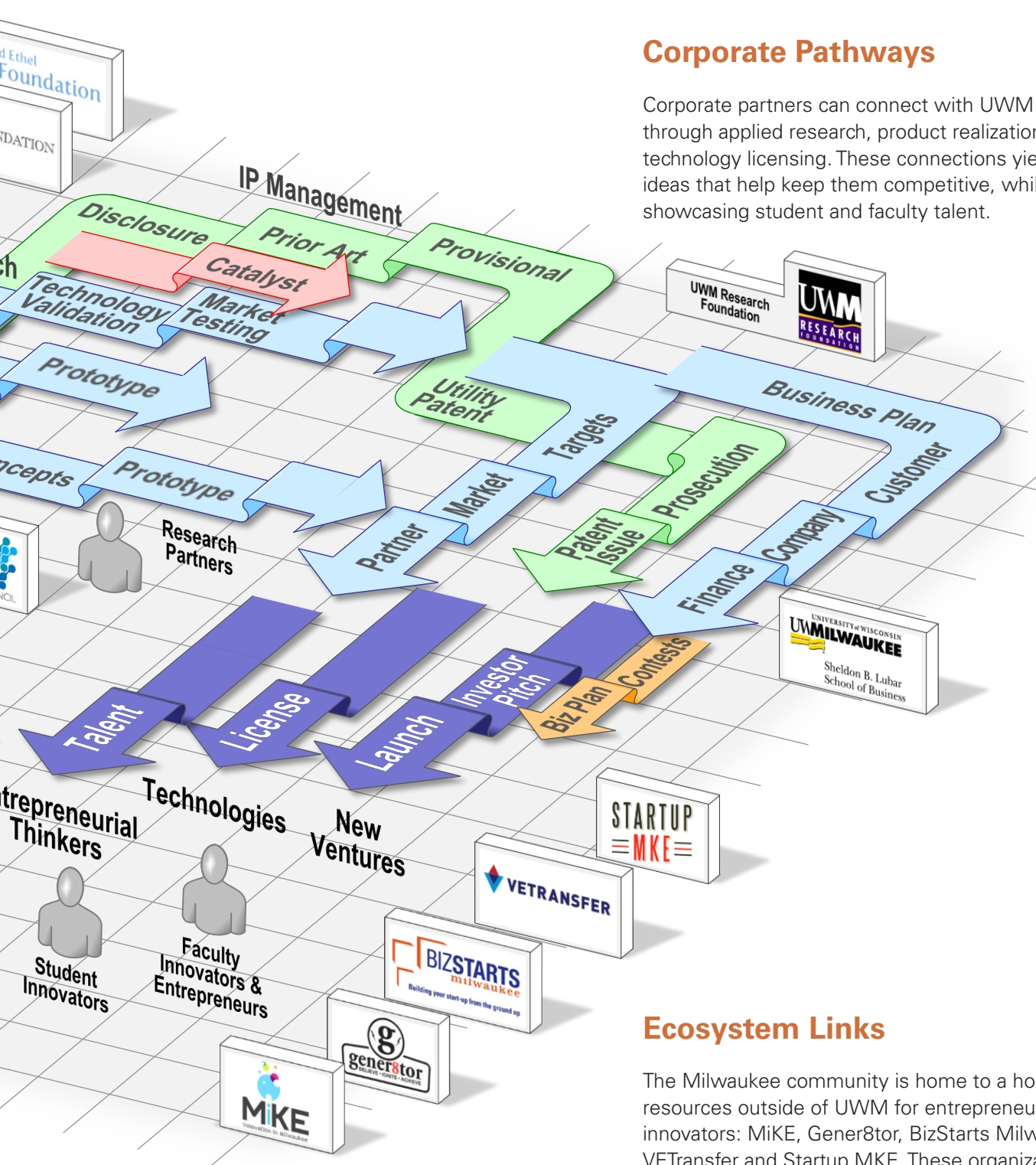
UWM’s innovation pathways rely on connections across campus units and throughout the community. Example pathways shown here highlight some of the ways in which UWM faculty, students, and corporate partners interact in this innovation ecosystem.



Faculty/Student Pathways

In UWM’s innovation ecosystem, basic hypothesis-driven research advances alongside market-driven developments in water, energy, imaging, and other areas. UWM students can leverage some of the same innovation pathways that are used by

corporate and community partners through hands-on learning opportunities in one of the “experiential labs,” such as the Product Realization course, the Mobile Innovation Lab, and the Design and Visual Communication courses.



Corporate Pathways

Corporate partners can connect with UWM through applied research, product realization or technology licensing. These connections yield ideas that help keep them competitive, while also showcasing student and faculty talent.

Ecosystem Links

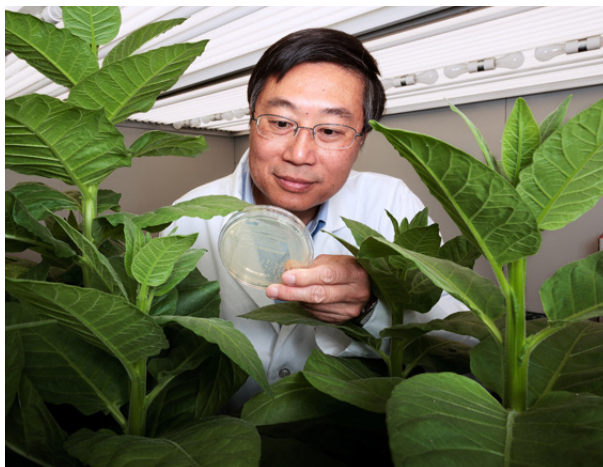
The Milwaukee community is home to a host of resources outside of UWM for entrepreneurs and innovators: MiKE, Gener8tor, BizStarts Milwaukee, VETTransfer and Startup MKE. These organizations share the goal of incubating startups and growing young companies.

faculty innovators

UWM faculty members provide a rich source for discovery. They are finding new ways to bring their work to the world through startup companies, research partnerships, and technology licensing, activities that are enhancing their roles in education and innovation.

Faculty Enterprises

Not all technologies are feasible for a startup company, and not all faculty members are interested in creating a new venture. But when opportunity and interest align, the UWMRF provides focused support. This “concierge service” begins with the same business model of support offered to students. For faculty entrepreneurs, UWMRF offers additional services, including: navigating the university conflict management process, working with university leadership in the departments and colleges to understand how launching a company can help support the fundamental research mission, helping identify community partners and leadership for the company through First Look Forums that showcase UWM innovators, and helping to structure relationships where university-based research can advance the commercialization of technologies.



TCARE Navigator

In August 2012, Dr. Rhonda Montgomery launched TCARE Navigator LLC, based on a system that she developed to match caregivers for aging individuals with the appropriate services in their community. The system was piloted through UWM with agencies in various states. Now the company will seek new markets that include private insurers, accountable care organizations, self-insured employers and U.S. government agencies.

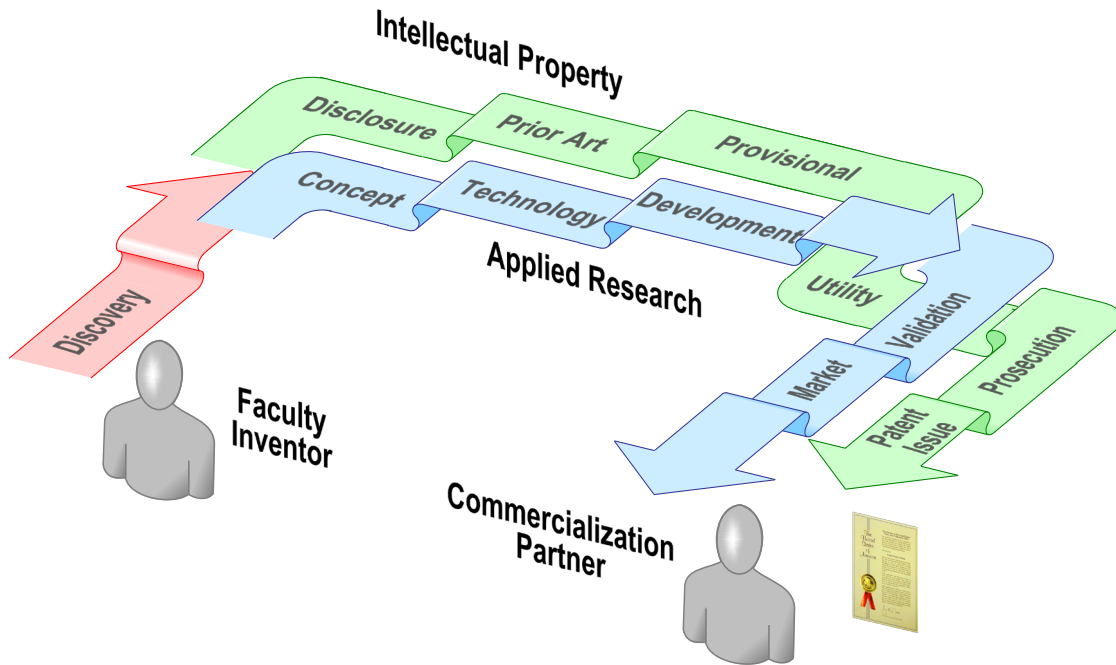
T3 Biosciences

Dr. Ching-Hong Yang benefited from the Catalyst Grant Program to develop his antibiotic compounds which can be used in plants and humans. In May of 2013, Dr. Yang completed a license agreement for his startup company, T3 Biosciences. He has worked with the UWMRF during the last several years to develop the business plan for the company and make linkages with partners in the agricultural and human therapeutic fields. The company has already attracted outside investment to help create and test a library of new compounds.

Intellectual Property Assets

Now in its eighth year of operation, the UWMRF has built an efficient and professional organization for technology transfer and intellectual property management that is among the best for organizations its size. The intellectual property management process focuses on key metrics, including leading indicators and success outcomes.

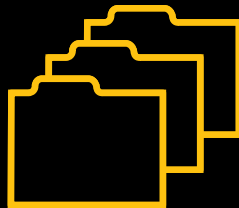
The foundation has logged more than 250 invention disclosures since 2006, filed over 125 patent applications, and has received 25 issued patents. The value of these assets depends on connecting them to partners – including licensees and UWM startup companies.



>250
inventions
disclosed

125

patent
filings



25

issued
patents



6

faculty
startups



partnerships



Collaborative Research and Education

GE Healthcare and UWM have launched a new partnership focused on computational imaging technology. The company's commitment of more than \$3 million for the Advanced Computational Imaging Center at UWM includes \$1 million to support Catalyst Grants targeted at imaging technologies. The Catalyst Grants are part of a strategy that also includes educating GE's employees and developing a pipeline of new talent for GE Healthcare and other companies. UWM's College of Engineering & Applied Science will develop new courses that will be offered to both GE's workforce and UWM students.

Johnson Controls has invested millions of dollars in building two facilities – one of them a state-of-the-art dry room – within UWM's College of Engineering & Applied Science where the company's researchers work beside UWM students and faculty to develop and test new materials for lithium ion batteries. The partnership is winning major federal grants and has also brought Johnson Controls together with some of the best and brightest UWM students.

Eliminating Barriers

The UWMRF views intellectual property as a mechanism for commercialization, and aims to eliminate the barriers that sometimes arise when partnering with universities. This approach is making it easier for faculty to start companies and for established companies to invest in UWM research.

Making Connections

Developing partnerships is about making connections, and last year, the UWMRF reached out to more than 1,000 marketing contacts. These important connections led to partner meetings, evaluation of UWM technologies, collaborative research projects, and technology licenses.



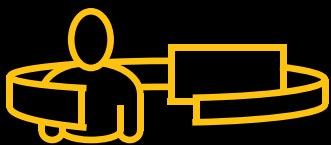
Courtesy of Milwaukee Journal Sentinel, Mike De Sisti

Technology Partnerships

The UWM Research Foundation has completed 34 license or option agreements to date. This includes a recently announced license agreement with

Snap-on Incorporated for an ergonomic wrench designed by Dr. Naira Campbell-Kyureghyan and her colleagues.

>1000
marketing
contacts



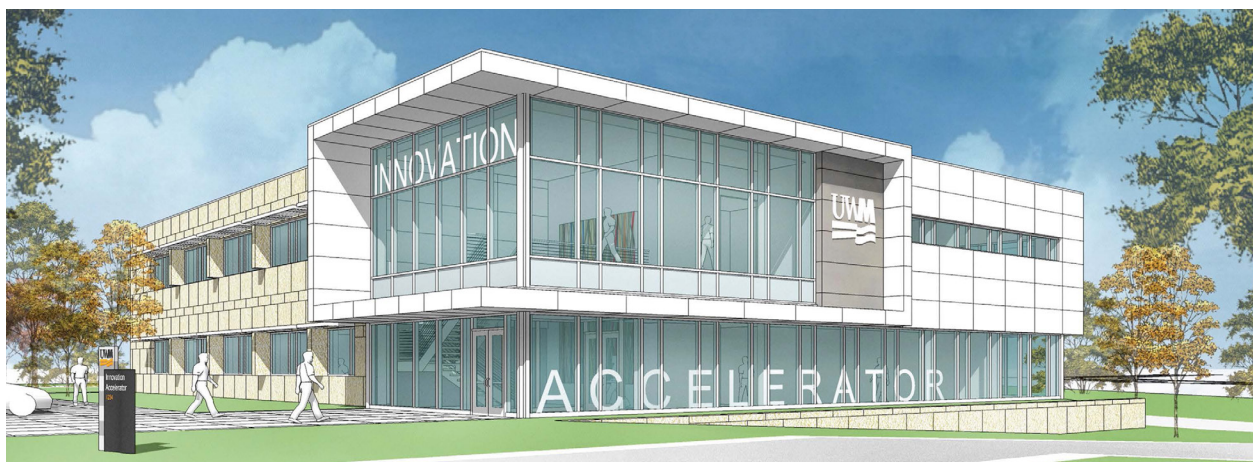
>100
partner
agreements

34
license/option
agreements to date



innovation campus

The UWM Innovation Campus occupies 72 acres adjacent to the Milwaukee Regional Medical Center in Wauwatosa. This project of the UWM Real Estate Foundation represents the forward-looking partnerships that characterize UWM's ambitious growth plans. The site will serve as a hub for collaborative research with industry, and regional academic and clinical partners.



Innovation Accelerator

The Innovation Accelerator, funded with the support of the Federal Economic Development Authority, will be ready for occupancy in early 2014. This facility will house UWM researchers working in areas that include bioengineering, transistor biosensors, and rehabilitation technology. It will also include a state-of-the-art prototyping center. Other occupants will include Pel-Freez Diagnostics, a vaccine development company; Brooks Stevens, an industrial design and product development company; and the new pharmaceutical and chemical product development curriculum of Concordia University-Wisconsin.

Partners

ABB Inc., a global leader in power and automation technologies, will open their new facility at Innovation Campus in 2014. More than 100 ABB engineers and scientists will work in close proximity to UWM researchers as well as other companies and institutions.



UWMRF

The UWM Research Foundation, Inc. is a private, non-profit 501(c)(3) corporation organized in support of the University of Wisconsin-Milwaukee (UWM). The UWMRF was created in 2006 by the UWM Foundation Inc., in order to expand support for the university through public/private partnerships.

The mission of the UWMRF is to support research, innovation and entrepreneurship at UWM by fostering high-potential research, leveraging intellectual property, facilitating private-sector partnerships and helping spin off technology.

Supporters

The UWM Research Foundation is grateful for the support of local organizations and foundations that make our work possible, including: the Helen Bader Foundation, the Lynde and Harry Bradley Foundation, GE Healthcare, the Harley-Davidson Foundation, the Rockwell Automation Charitable Corporation, the Richard and Ethel Herzfeld Foundation, the Wisconsin Energy Foundation, the Wisconsin Preservation Fund and other local foundations. These supporters have helped UWMRF deliver nearly \$5 million in support to activates at UWM.



UWMRF Programs

The UWM Research Foundation continues to deliver and help administer a range of programs to UWM.

- **Catalyst Grant Program** – seeding promising ideas with strong potential for commercialization
- **Intellectual Property Management** – patenting and licensing of UWM innovations
- **Technology Entrepreneur Intern Program** – employing students in the technology transfer process
- **Senior Faculty Awards** – recognizing achievements of UWM senior faculty
- **Corporate Partnering** – helping companies identify and connect with resources at the university and helping faculty identify corporate partners who align with faculty research directions
- **Student Startup Challenge** – helping students create prototype products and business plans
- **Startup Support** – supporting faculty and student entrepreneurs in defining and launching their businesses

leadership message

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Innovation Power Solutions
Johnson Controls, Inc.

UWMRF Team

Brian Thompson

President

Jessica Silvaggi

Licensing Manager

Joseph Pfannes

Technology Licensing Associate

To our Stakeholders, Supporters, and Partners,

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.



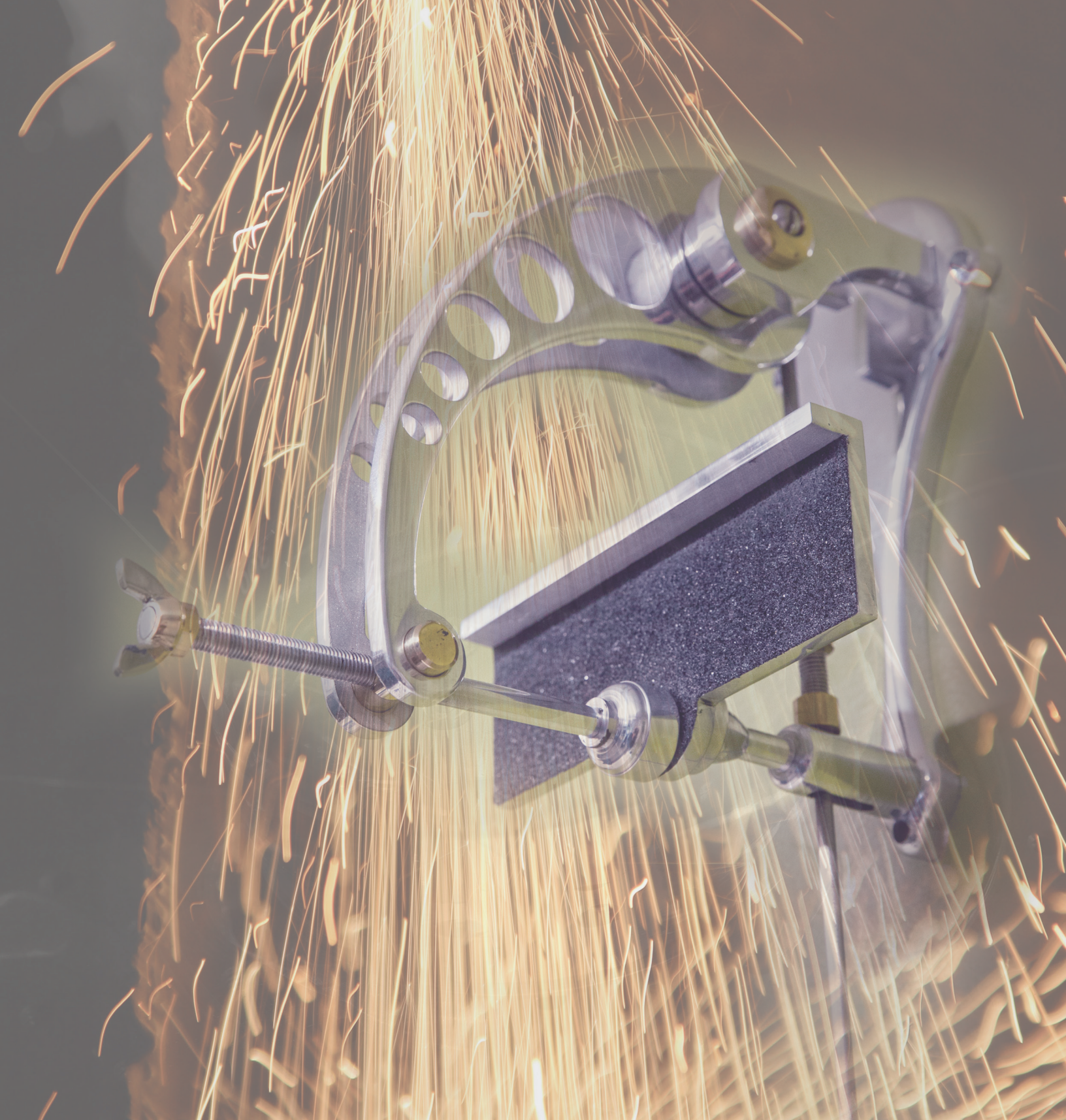
A handwritten signature in black ink that reads "Sujeet Chand".

Sujeet Chand
Chair, UWM Research Foundation



A handwritten signature in black ink that reads "Brian Thompson".

Brian Thompson
President



POWERFUL IDEAS | **PROVEN RESULTS** |[®]



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