

MARQUETTE UNIVERSITY

explorer challenge



MARQUETTE
UNIVERSITY

**BE THE
DIFFERENCE.**

MARQUETTE UNIVERSITY

explorer challenge

Named for an explorer. Inspired by a saint.

It's no wonder that the spirit of innovation is foundational to Marquette University as a Catholic, Jesuit institution. The earliest members of the Society of Jesus, including founder St. Ignatius of Loyola himself, were pioneers — truth seekers who weren't afraid to ask hard questions and go out into the world to find the answers.

Marquette is named for Rev. Jacques Marquette, S.J., a French Jesuit explorer whose 17th-century travels are an integral part of the history of Milwaukee, Wisconsin, and the Midwest.

It is no coincidence then that Marquette faculty, students and staff continually look for new frontiers across their many disciplines, driven by the directive of St. Ignatius to "go forth and set the world on fire."

To honor that spirit of discovery, the **Explorer Challenge** invites Marquette students, faculty and staff to submit proposals for seed money for innovative projects that promote Marquette's Catholic, Jesuit mission, and advance *Beyond Boundaries*, Marquette's strategic plan.

In its first three years, the **Explorer Challenge** has awarded more than **\$7 million to 72 initiatives**, which, in turn, have garnered more than **\$10.5 million** in external grants and other revenue, **returning Marquette's investment by 45 percent.**

To learn more, visit marquette.edu/innovation/the-explorer-challenge.php.

Exploration is who we are.

DR. JEANNE M. HOSSENLOPP

VICE PRESIDENT FOR RESEARCH AND INNOVATION



Perhaps the greatest asset each of us has is our imagination — that remarkable ability to take a spark of an idea and grow it in our minds. It is my great privilege to work every day at Marquette University to find new ways to encourage our faculty, students and staff to not only dream, but also to turn those dreams into something real that has the potential to change the world.

As a Catholic, Jesuit university, it is not enough for us to promote innovation for innovation's sake, nor can we pursue patents and commercialize research for the sole purpose of advancing our bottom line. At Marquette, innovation is a means to a greater end: making a difference.

As an institution, it is incumbent upon us to provide the infrastructure and incentives necessary to advance these noble endeavors. The Explorer Challenge is one of many ways that we as a university are promoting a campuswide culture of innovation fueled by entrepreneurial thinking, cross-campus participation, interdisciplinary collaboration and external partnerships.

In the coming pages, you will encounter impressive, inspirational examples of how our faculty, students and staff have used Explorer Challenge seed funding to tap into their imaginations and turn seemingly impossible ideas into real-world solutions that better the world around them.

I hope you enjoy this, our inaugural annual report, as much as I do.

“Ingenuity rests on the conviction that most problems have solutions, and that imagination, perseverance and openness to new ideas will uncover them.”

Chris Lowney

DR. MICHAEL R. LOVELL

PRESIDENT



Several years ago, former Jesuit Chris Lowney wrote that one of the leadership secrets of the Jesuits is ingenuity: “Ingenuity rests on the conviction that most problems have solutions, and that imagination, perseverance and openness to new ideas will uncover them.”

Ingenuity most certainly applies to the innovative work being done across Marquette University, and which you’ll learn much more about on the pages that follow. In fact, the concept of ingenuity would fit well among the four pillars of a Marquette education: excellence, faith, leadership and service. It’s also worth considering Marquette’s Guiding Values and how they relate to ingenuity and innovation. The Guiding Values define standards and behaviors in our lives and our work to serve the greater glory of God. Specifically, they call on us to: “Embody a spirit of interdisciplinary curiosity, research, innovation, entrepreneurship and application to change and improve ourselves, our community and our world,” and “Nurture an inclusive, diverse community that fosters new opportunities, partnerships, collaboration and vigorous yet respectful debate.”

The remarkable part about Marquette’s foundational documents is they call on students, past, present and future; faculty; and staff to go well beyond the classroom to Be The Difference in the world through means that require frequent innovation. The concepts are steeped in centuries-old Catholic, Jesuit traditions, yet are absolutely applicable to day-to-day life at our 21st-century university.





49

The number of startups
and social enterprises
established since the
707 Hub's inception

Student Entrepreneurship and Social Innovation

STUDENT ENTREPRENEURSHIP AND SOCIAL INNOVATION

Marquette strives to infuse entrepreneurship and innovation throughout every corner of campus — and that begins with students. Through the Explorer Challenge and other funding sources, the university provides ample opportunities for students to ideate, create and commercialize whatever they may dream, big or small.

Game-changers, fearless leaders, spirited dreamers

THE 707 HUB

The 707 Hub is Marquette's innovation incubator that serves as a central place to foster entrepreneurial mindsets by providing the resources to turn ideas into actions.



Initial funding for the hub supported a planning process, facilitated by the Kohler Center for Entrepreneurship, which supports entrepreneurship and innovation activities, and the Social Innovation Initiative, which works with campus and community members for just and sustainable solutions to social problems.

Additional money created the hub's own space in an underutilized but very visible location near the eastern gateway to campus on Wisconsin Avenue. The hub houses the Kohler Center for Entrepreneurship and the Social Innovation Initiative, and provides an array of spaces and the latest technology for students, faculty and staff with entrepreneurial mindsets: flexible meeting areas, a pitch stage to present ideas and workshop spaces that feature computers, design software, 3D printers, sewing machines, hand tools, GoPro cameras, virtual reality headsets and prototyping materials. Besides offering a series of entrepreneurial workshops and talks over the year, the hub also offers business, design, nonprofit and legal mentoring.

Since its inception, the 707 Hub has helped create 49 startups and social enterprises, and it annually houses 27.

Groups supported by the hub include the **Dorm Fund**, a student-run venture capital firm that invests in undergraduate startups; the **Grocery Challenge**, a program that brings more fresh foods to Marquette's neighbors in the Near West Side; and the **Brewed Ideas Challenge**, a *Shark Tank*-style competition, with support from the Brady Corporation Foundation.

LEARN ABOUT THE INNOVATORS BEHIND THIS PROJECT ON PAGE 6.

STUDENT ENTREPRENEURSHIP AND SOCIAL INNOVATION

SKILLS ACCELERATOR LINKS MILWAUKEE ENTREPRENEURS

Explorer Challenge funding provided early support for the Greater Milwaukee Committee's The Commons, an entrepreneurial skills accelerator that provides a strategic link among 35 Wisconsin colleges and universities, the business community and startup ventures. President Michael R. Lovell was an early champion of the project, and during The Commons' first two years, Marquette supplied the most student participants (64), while seven students started new businesses.

CENTER FOR ASSISTIVE TECHNOLOGIES HELPS PEOPLE WITH DISABILITIES

Engineering students have the opportunity to create assistive technologies for people with disabilities, such as a custom basketball wheelchair for an 11-year-old with cerebral palsy. Legal and business support are provided for projects that have the greatest potential for commercialization. The first two years of Explorer Challenge funding saw 11 projects completed, with two invention disclosures filed.

NEW SYSTEM MAKES FRESH WATER MORE EFFICIENTLY

A three-student team developed a new water desalination system that is expected to use significantly less energy than methods used today. Explorer Challenge funding allowed the team to build and test a prototype. This system has been granted provisional patent status, which will enhance commercialization efforts, thus bringing a new and lower-cost way to create drinkable water for more populations.

HONORS COURSE HELPS STRENGTHEN COMMUNITY BONDS

In collaboration with the University Honors Program, a project team developed a course, Narrating Freedom: Gender and Mass Incarceration, which provides Marquette professors and students the opportunity to teach and study with women at the Milwaukee Women's Correctional Center to strengthen community bonds and develop solutions to issues of social justice. The course was so popular that the team reworked it into a replicable model that can be used by other departments in their work with community organizations.

INNOVATOR PROFILES

MEGAN CARVER

Associate Director, Kohler Center for Entrepreneurship



Megan Carver's appetite for entrepreneurship was whetted during a college course in which she and her classmates were able to apply their academic work to the real world by advising someone purchasing a steak-house franchise. Now, she parcels out advice and creates the infrastructure for hundreds of young entrepreneurs through the many programs offered through the 707 Hub.

KELSEY OTERO

Associate Director, Social Innovation



While working for many years with the Olympics, Kelsey Otero felt herself especially drawn to the Special Olympics and Paralympics. These experiences made her realize that sports could be a catalyst for social change and inspired her to dedicate herself to social innovation pursuits. During those "Olympian" years, she learned about the value of establishing partnerships and building foundations of trust — skills quite valuable for her work at Marquette where she forms partnerships with both campus groups and community organizations.

DOWNLOADING A DINING COMPANION

To strengthen Marquette's sense of community, a student team built MUnchMates — an app that uses the free guest meals on students' meal plans to connect freshmen and sophomores with juniors, seniors, faculty and Jesuits for a meal. Although MUnchMates went online just one month before the end of the reporting period, the app was downloaded more than 500 times.



\$4M+

in water-related
research funds awarded to
Marquette between
FY16 and FY18

Water and the Environment

Dr. Kyana Young (left) engages with students from Milwaukee Marshall High School. Eighty students work with Young at the Global Water Center labs as part of her Explorer Challenge-funded project, which targets the increase of underrepresented student research in the field of environmental engineering.

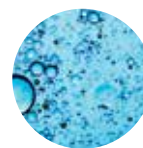
WATER AND THE ENVIRONMENT

With its home near the shores of Lake Michigan and the banks of nearby rivers, Marquette has a unique responsibility to address the future of fresh water, the world's most important natural resource. Faculty and student researchers are immersed in a broad disciplinary array of projects to help ensure clean water for generations to come.

Solving the world's water problems

MARQUETTE AT THE GLOBAL WATER CENTER

Over the past decade, Milwaukee has transformed itself into an international hub for water research and technology. Much of this activity takes place at Milwaukee's



Global Water Center, which houses water-related research and education facilities for universities, existing water-related companies and accelerator space for emerging companies. In addition to Marquette, some of the 45 other tenants include Badger Meter, Veolia Water, Rexnord and UW–Milwaukee's School of Freshwater Science.

On the GWC's sixth floor, Marquette researchers occupy approximately 8,000 of the seven-story facility's 100,000 square feet. During Marquette's first year in the GWC, six of the 13 inaugural projects received funding from the Explorer Challenge.

Managing Marquette's presence at GWC is the Water Quality Center, funded initially by the Explorer Challenge. The Water Quality Center also has lab space on the Marquette campus where researchers specialize in solving municipal and industrial wastewater, stormwater runoff and drinking water problems. Research is typically multidisciplinary and is performed by experts from engineering; biological sciences; mathematics, statistics and computer science; and other disciplines.

LEARN ABOUT THE INNOVATOR IN CONNECTION WITH THIS PROJECT ON PAGE 10.

The Explorer Challenge has supported several other interdisciplinary and collaborative projects, as well as other environmentally focused projects led by students, faculty and staff.

The Explorer Challenge has helped expand **Marquette Law School's Water Law and Policy Initiative**; created partnerships with local **water technology companies and startups**; supported student and faculty **research, art and educational projects**; and created opportunities for economically disadvantaged high school students to engage in water-related curricula, research and **mentoring**.

WATER AND THE ENVIRONMENT

WATER LAW ON THE DOCKET

The Marquette University Law School Water Law and Policy Initiative assesses the legal aspects of water policy, pursues opportunities for interdisciplinary and collaborative projects within and outside the university, and informs the public on legal and policy aspects of water-related issues. **The initiative has garnered nearly \$100,000 in grants**, and the director has collaborated with other Marquette departments and outside agencies on many successful grants.

IMPROVING DIVERSITY IN ENVIRONMENTAL ENGINEERING

This environmental sustainability program trains high school students who are historically underrepresented in environmental engineering to research ways to reduce contamination levels of drinking water. Since many of these students live in communities that are disproportionately affected by environmental problems, this program raises water quality awareness while it creates a pipeline for students pursuing water technical careers.

NEW SENSORS DETECT TRACE CONTAMINANTS IN WATER

A project team assembled from engineering, chemistry and biology is researching new types of coatings for sensors that quickly detect micropollutants, such as antibiotics, in both wastewater and fresh water. With its industrial partners, the team is looking into commercialization possibilities.

ACADEMIA, PRIVATE INDUSTRY AND PUBLIC UTILITIES COLLABORATE ON CLEAN WATER

Marquette leveraged its existing research into biochars — an activated carbon-like product that removes chemicals from wastewater — to create a demonstration project at the Global Water Center that highlights the benefits of collaboration between academic research, private industry and public utilities. This collaborative project helped inaugurate Marquette's space and encouraged other similar collaborations to set up base at the Global Water Center.

INNOVATOR PROFILE

DR. KYANA YOUNG

Postdoctoral Fellow, Office of Research and Innovation



Dr. Kyana Young's reach is vast, touching on academic research, management and community engagement. As a postdoctoral fellow, she is researching ways to guarantee safe water to improve global and public health. She is also both part of an Explorer Challenge grant and an awardee of one. As part of an Explorer Challenge grant, she was hired to manage Marquette's space in the Global Water Center. She also received her own award, one that made it possible for her to mentor underrepresented high school students via hands-on research at the GWC.



CLEAN WATER PROTECTION IN THE DAIRY STATE

Marquette faculty and students are investigating the political, social and technological ramifications of the agricultural runoff that is contaminating water in rural Kewaunee, Wisconsin. Under the direction of Marquette faculty, "citizen scientists" are monitoring water quality over time, and new technology used to treat manure has been tested and proven to be effective.



\$2M

The lab has secured over \$2 million in external grant funding and generated more than \$42,000 in revenue.

Advanced Visualization

The Marquette Visualization Laboratory is a 1,700-square-foot space where advanced technology produces three-dimensional, immersive virtual reality environments.

ADVANCED VISUALIZATION

Once a thing of science fiction, virtual reality is now critical to understanding and improving the world around us. Marquette researchers are using advanced visualization technologies to simulate everything from environments to experiments to clinical interventions.

Expanding possibilities through immersive technology

MARQUETTE VISUALIZATION LABORATORY

Experiences that allow for motion within a realistic environment promote active learning, critical thinking, decision-making and improved performance. This is the basis for the Marquette Visualization Laboratory, also known as MARVL.



The lab is a state-of-the-art 1,700-square-foot space with computers, software, projectors, surround sound and other components that produce three-dimensional, immersive (greater than 180-degree field of view) virtual reality environments. The lab also has head-mounted virtual reality devices to deliver portable versions of MARVL-generated content.

MARVL was created using alumni donations, but it did not have annual operating or maintenance budgets. Explorer Challenge funding was crucial to its startup phase, allowing the group to develop partnerships and secure funding through public institutions and private industry. The MARVL team identified key commercial and industrial sectors to which their content could be tailored: architecture, computational fluid dynamics, hazard and risk resilience, health care simulation, performance arts, visual arts, infrastructure visualization, and wellness and athletics.

During its first few years, the lab has **generated more than \$42,000 in revenue** and licensed its technology to a startup that specializes in providing immersive experiences to fitness centers and corporate wellness programs. Moreover, the lab has **secured over \$2 million in external grant funding**, primarily through medical and health care agencies.

LEARN ABOUT THE INNOVATOR BEHIND THIS PROJECT ON PAGE 14.

The lab has provided significant educational opportunities for Marquette students.

During MARVL's first two years, more than **1,500 students** in **17 different classes** from **12 academic disciplines** used the space; a graduate class in immersive visualization of **biomedical data** was taught; and **three plays** and a **dance concert** were performed in the facility.

ADVANCED VISUALIZATION

SCIENCE IN FOCUS

The purchase of an ultra-high resolution confocal imaging microscope has allowed faculty in biomedical sciences and dentistry to advance multiple bioimaging projects that would not have been possible without it, such as finding better ways to repair damaged nerves in spinal cord injuries.

ILLUMINATING DEFECTIVE CELLS

Defective flagella — the tails of cells — can result in congenital problems such as heart and kidney diseases. This project team has engineered specific flagella that function as a standard by which abnormal flagella can be compared under fluorescent microscopy. Working with The Commons (see page 6), the team is creating a sustainable business model to market the standards to hospitals and research centers; the project currently has one patent pending.

SENIORS ON THE MOVE

To help senior citizens be more active, this student-led project developed an immersive, virtual environment with an integrated stationary bicycle that can easily be transported to assisted living facilities. After three prototypes and field testing, the project team created a functioning virtual environment and is looking into commercialization possibilities.

EASING ANXIETY FOR CHILDREN WITH AUTISM

Children with autistic spectrum disorders often face anxiety when having to undergo medical imaging, such as X-rays and MRIs. The project team created an iPad application that calms the children by delivering a social script of pictures and words that help them know what to expect and how to react during a procedure. The team is looking into selling institutional licenses.

INNOVATOR PROFILE



DR. JOHN LADISA

Associate Professor, Biomedical Engineering

Dr. John LaDisa, the brainchild of the Marquette Visualization Laboratory, applies his immersive technology knowledge across many different academic, medical, commercial and industrial sectors. He recently received a four-year \$1.5 million grant from the National Institutes of Health to define the types and extent of vascular changes that occur in patients with coarctation of the aorta, a congenital disease characterized by a severe stenosis of the main artery delivering blood from the heart to the body.



WATERMARKS: AN ATLAS OF WATER AND THE CITY OF MILWAUKEE

A collaborative team of national and local artists, teachers, and water-related nonprofits and public utilities is using art to promote water literacy in Milwaukee. The project will place visually distinctive markers around the city that each tell part of Milwaukee's "water story." The markers will be enhanced by a digital app, and will serve as destinations in educational walks led by environmental engineers, teachers and artists.



This rendering shows one design proposal for using the watermarks at the Jones Island water treatment plant in Milwaukee.

166

stroke survivors who have consented to participate in research studies during the Explorer Challenge's first three years



Dr. Brian Schmit (far right) observes a student volunteer test the Human Performance Lab's dual-belt treadmill that allows investigators to study human motor control, reflex networks and sensory-motor interplay, especially in subjects with neurological disorders.

Health and Wellness

HEALTH AND WELLNESS

Marquette faculty and student researchers across a variety of disciplines are committed to and passionate about advancing human health and wellness. Motivated by the Jesuit tenet of *cura personalis*, or "care for the whole person," Marquette scientists are called to drive research that has a positive impact on humankind.

Improving stroke recovery through research

STROKE REHABILITATION CENTER OF SOUTHEASTERN WISCONSIN

Explorer Challenge funding was instrumental in the formation of the Stroke Rehabilitation Center of Southeastern Wisconsin, a collaboration between Marquette and the Medical College of Wisconsin. Funding was used to start up the center's core research program, in which the first two studies saw researchers demonstrate the feasibility of combined electroencephalography and functional magnetic resonance imaging for predicting movement function in stroke survivors, and conduct a longitudinal imaging study that compared brain MRIs of survivors at one week and six months poststroke. The results of the study showed that the brain connectivity measured from the MRI at one week can predict the actual clinical outcome.

The establishment of this core research program served as a starting point for realizing a large grant awarded from A Healthier Wisconsin that is supporting the center for another five years. The Explorer Challenge funding, combined with the grant, served as a catalyst for the official formation of the center.

LEARN ABOUT THE INNOVATORS BEHIND THIS PROJECT ON PAGE 18.

The center includes research staff, a faculty hire through MCW, the establishment of additional research space at Froedtert Hospital, and the development of a database for screening stroke subjects for research studies.

The goal of the center is to improve the functional recovery of stroke survivors, to support their families, and to provide a better quality of care through translational research.

HEALTH AND WELLNESS

A REASON TO SMILE

Through advances in bioactive 3D printing, this project team has created a new method of creating customized implants that must be put into place before surgeons can work on orofacial deformities, such as cleft lips and palates in children — the fourth most common birth defect in the United States. The team has received a provisional patent for their device.

ADDRESSING CONCUSSIONS IN STUDENT-ATHLETES

Marquette and the Medical College of Wisconsin are collaborating to understand how athletes recover from concussions. The project team has developed a robotic test of implicit motor memories that is sensitive to lapses in memory and concentration after concussions. Although preliminary, the tests show that people with concussions use memories to plan future movements quite differently from people without concussions.

INNOVATOR PROFILES

DR. BRIAN SCHMIT

Professor, Biomedical Engineering



As a Marquette graduate, Dr. Brian Schmit, Eng '88, has made a quite spectacular return home. Instrumental in establishing the Stroke Rehabilitation Center, he is currently the center's co-director, and he serves as the director of Marquette's Integrative Neural Engineering and Rehabilitation Laboratory. For his contributions to spinal cord injury and stroke rehabilitation research, in 2018 Schmit was inducted into the American Institute for Medical and Biological Engineering College of Fellows, one of the highest professional distinctions accorded to a medical and biological engineer.

DR. ALLISON HYNSTROM

Chair and Associate Professor, Physical Therapy



While pursuing her master's in physical therapy, Dr. Allison Hynstrom discovered her passion for working with stroke survivors and teaching a basic human action: walking. After earning a doctorate in neuroscience from Northwestern University, she held a one-year postdoctoral fellowship in Marquette's Biomedical Engineering Department with Dr. Brian Schmit. Since then, she has joined Marquette's Physical Therapy Department where she continues to work closely with Schmit in researching the mechanisms of motor impairment in the chronic stroke population.

SEEKING SNEAKY CELLS

Treating disease requires understanding pathology at the cellular level. The Marquette Cell Sorting Facility uses highly sensitive equipment, funded by the Explorer Challenge, to find pathological cells that are hard to discover among healthy cells. Available to several departments on campus, the facility greatly increases the revenue potential of research programs and technology transfer opportunities.

BRINGING OXYGEN TO RURAL GHANA

Since it is difficult to get standard oxygen equipment, such as concentrators and tanks, to poor rural areas that lack electricity, this project team is developing a new type of oxygen system driven by renewable energy sources for rural health clinics that produce and store their own oxygen. The team plans to install a pilot system at a rural clinic in Ghana, then refine the system and scale up production for use throughout Africa.



REVENUE FOR RESEARCH

The Human Performance Assessment Core provides fee-for-service testing and research services for assessing health and fitness to both the public and medical facilities. For instance, it tested Olympic ice skating hopefuls and provided research for a stroke study. Since its inception, **HPAC has generated more than \$65,000 in revenue** and is utilized by several Marquette departments to support their research and teaching.

Marquette engineering senior Emery Lehman has competed in two Olympiads as a member of Team USA's Long-track Speedskating Team and hopes to make Team USA for the 2022 Olympics in Beijing.

1,200

pounds of rice were harvested and sold at a winter farmers market in 2017. This marked the first commercial rice harvest in Wisconsin.



Kia Xiong picks rice stalks during Wisconsin's first-ever commercial rice harvest at the Fondy Farm in the Mequon Nature Preserve.

Photo courtesy of Mike De Sisti/Milwaukee Journal Sentinel.

Community Partnerships

COMMUNITY PARTNERSHIPS

Driven to realize Marquette's Catholic, Jesuit mission, students, faculty and staff strive to play an increasingly vital role in our city and our world, working with our partners to tackle pressing challenges and build hope where it's needed most.

A daring experiment yields an unlikely harvest

RICE CULTIVATION IN MILWAUKEE

Although Wisconsin's climate has never been considered ideal for cultivating rice, Marquette has succeeded in planting and harvesting Wisconsin's first commercial rice crop.



For more than seven years, Marquette had been studying the genetics of 200 varieties of cold-tolerant rice from around the globe. With U.S. rice yields diminishing because of climate change and with renewed interest in locally sourced food, Marquette applied its research to growing rice commercially.

Early rice-growing experiments started out in climate-controlled chambers, then moved to raised-bed, rooftop rice paddies. After this, small paddies were planted with community partners Alice's Garden Urban Farm and the Fondy Farm, a cooperative of small-scale urban farmers, many of whom are Hmong.

For the first commercial venture, Marquette planted a short-grain rice from southern Russia on a 1 acre parcel at the Fondy Farm. Explorer Challenge funds paid for equipment and the hiring of workers, many from the same Hmong community that grows food at the Fondy Farm. For many of the Hmong, cultivating the rice turned out to be a moving experience since they were reliving a key element of their culture they felt might remain only in the past.

LEARN ABOUT THE INNOVATOR BEHIND THIS PROJECT ON PAGE 22.

In October 2017, Wisconsin saw its first commercial rice harvest — 1,200 pounds — which was sold at a winter farmers market. Within three years, the yields should improve enough for the venture to be self-sustaining.

The Explorer Challenge also funded eight student interns, six of whom helped in the lab and field, and two from the 707 Hub who developed a business plan, conducted a market analysis and designed product labels.

COMMUNITY PARTNERSHIPS

REVITALIZING A NEIGHBORHOOD

The Near West Side Partners worked to develop the PARC initiative (Promoting our Assets and Reducing Crime) to make Milwaukee's Near West Side neighborhood a better place to live, work and play. The project is a collaboration of Near West Side anchor institutions Aurora Health Care, Harley-Davidson, Marquette University, MillerCoors and Potawatomi Business Development Corporation, along with city leaders and community members.

A \$2 MILLION GRANT HELPS AT-RISK CHILDREN

Marquette's Behavior Clinic, in partnership with Penfield Children's Center, developed a training program based on their existing evidence-based treatment for preventing abuse and neglect in very young children living in poverty. The training program proved so successful that the Substance Abuse and Mental Health Services Administration provided a \$2 million grant to support the clinic's efforts over five years.

COMMUNITY DEVELOPMENT THROUGH CIVIC ENGAGEMENT

The Democracy Lab brings together faculty, students and stakeholders to evaluate local policies, programs and practices. As part of a Near West Side revitalization initiative, the lab designed and analyzed two surveys of residents and Marquette students. The lab also partnered with private industry and Milwaukee Public Schools to test a new curricular tool for tracking the health of students, and with a community organization to evaluate their get-out-the-vote campaign.

IMPROVING THE HEALTH OF MILWAUKEE'S LATINA/O POPULATION

The Latina/o Well-Being Research Initiative seeks to advance impactful, community-based scholarship about Latina/o individuals living in Milwaukee. Funds allowed the team to establish an action group with community partners and to synthesize existing reports and epidemiological data on the health of Milwaukee's Latina/o population. Moreover, LWRI conducted the first city-wide survey of mental health among the city's Latina/o citizens.

INNOVATOR PROFILE

DR. MICHAEL SCHLÄPPI

Professor, Biological Sciences



Dr. Michael Schläppi is a hands-on professor, with the greenest of thumbs. As a molecular biologist, Schläppi has been studying the genetic makeup of rice for many years, and was the force behind the cultivation of Wisconsin's first commercially grown rice crop. During those years when he was researching the right kind of cold-tolerant rice to grow in our northern climes, one could find him retrofitting a room to hold special climate-controlled growth chambers, constructing raised-bed rice paddies on the roof of the Wehr Life Sciences building, stringing fishing line and flags over a 1 acre rice paddy to deter the geese, and operating a second-hand combine from Japan during harvest.



MARKET DEMAND

Marquette's Grocery Challenge joined forces with community groups to establish the Near West Side Farmers Market, which provides healthy, fresh food to residents. On campus, the Grocery Challenge conducted a food security survey that showed 21 percent of Marquette's students are facing food insecurity; a team of faculty and students has been convened to address the problem.



BY THE NUMBERS

Explorer Challenge

FIRST THREE YEARS
FY16 FY17 FY18

ENGAGEMENT

444

Number of pre-proposals submitted

267

Number of final proposals submitted

72

The total number of Explorer Challenge grants awarded

For all current and past awardees, visit marquette.edu/innovation/the-explorer-challenge-awardees.php.

PROJECTS

28%

Students on project teams

33%

Projects led by staff and students

37%

External partners on project teams

65%

Projects involving two or more colleges or departments

67%

Projects led by faculty

300+

The number of participants in all awarded projects

ENTREPRENEURSHIP
FACULTY

5

Number of Explorer Challenge faculty involved in technology transfer activity, including patent protection, copyrights, licensing agreements, and new business startups

COMMUNITY IMPACT

72

Number of local startups and social enterprises supported by the 707 Hub through the Boost boot camp program, Rev-Up MKE mentoring, and the 707 Hub Mentor-in-Residence program

STUDENTS

\$570,000

Dollar amount of support for the 707 Hub through grants, donations and sponsorships

\$426,000

Dollar amount of grants awarded for improvements to Milwaukee's Near West Side neighborhood

FINANCIAL OUTCOMES

\$7,259,436

Total Explorer Challenge amount awarded during the first three years

\$10,535,150

Total amount of external grant monies and other revenues generated by Explorer Challenge grants

1.45x

Financial return on all Explorer Challenge investments through external grants and other revenue through June 30, 2018



FOR MORE INFORMATION

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