University of Wisconsin-Milwaukee Research Foundation

2011 Progress Report

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September 30, 2011

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Message to Stakeholders

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The University of Wisconsin-Milwaukee continues to grow and evolve to meet the needs of our region. Our vision is to be a top-tier research university and a leading driver for sustainable economic prosperity. The UWM Research Foundation plays a key role in helping UWM achieve that vision by fostering research in key areas and helping bring UWM innovations to market.

The UWM Research Foundation's growing intellectual property portfolio shows that we are a source for powerful ideas. Our success in bringing technologies to market and our growing partnerships with regional industry and research partners show that we are achieving results. In short, our Research Foundation mirrors Powerful Ideas Proven Results – the University's new approach to celebrating its ambitions and accomplishments.

We could not do this without you – the supporters, researchers, inventors, entrepreneurs, business leaders and innovators who make up our community. We are pleased to bring this report on the progress of the UWM Research Foundation to our stakeholders, and we are deeply grateful for your help in making this work possible.

Sincerely,

Michael R. Lovell

Chancellor,
University of Wisconsin-Milwaukee

Daniel J. Bader

Chairman, UWM Research Foundation
President, Helen Bader Foundation, Inc.

UWM Research Foundation

The UWM Research Foundation (UWMRF), Inc. is a private, nonprofit corporation organized in support of the University of Wisconsin-Milwaukee (UWM). The UWM Research Foundation is controlled by the UWM Foundation, Inc. and was created in 2006 as part of the UWM Foundation's strategy of expanding its support for the University through public/private partnerships.

Mission – Research and Innovation

The mission of the UWM Research Foundation is to foster research and innovation at the University of Wisconsin-Milwaukee. Research, the process of creating knowledge, is at the heart of UWM's mission as one of Wisconsin's only two public research institutions. Innovation, bringing that knowledge to a broad audience – primarily through commercialization efforts, helps maximize the impact that these discoveries have on the world.

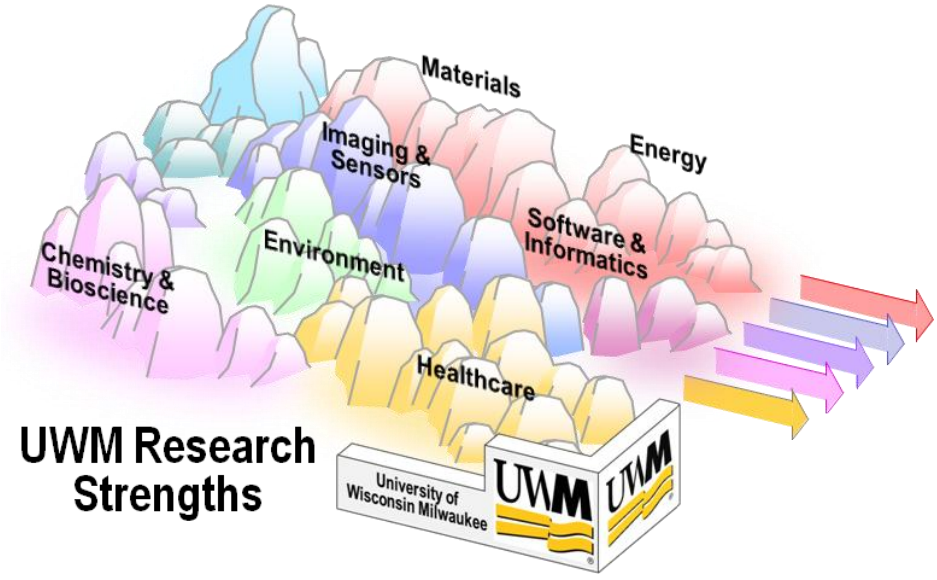
UWM – New Leadership – Continued Commitment to Innovation

In May of 2011, Dr. Michael R. Lovell was named the eighth Chancellor of the University of Wisconsin-Milwaukee. Chancellor Lovell brings a continued commitment to research and innovation at UWM. As Dean of UWM's College of Engineering and Applied Science, Lovell was instrumental in the launch of centers in water and energy research. Chancellor Lovell also brings a deep appreciation for the importance of the UWM Research Foundation's mission; he holds multiple patents and has a history of building research collaborations.

UWM Chancellor Michael Lovell

UWM's Collaborative Research Strengths

Research expenditures at UWM have doubled from ten years ago and grew to nearly $62 million in fiscal year 2011. The University continues to build on its research strengths and develop research partnerships in areas that include water, healthcare and energy with both industry and academic research centers.



UWM recently announced a significant partnership with Johnson Controls, Inc. (JCI) for development of battery technology. The partnership includes JCI researchers working side by side with UWM faculty in state-of-the-art facilities built at UWM with support from JCI. The University is also taking significant steps toward increasing its ties to healthcare research conducted at the Milwaukee County Regional Medical Center through new facilities and partnership in regional research collaborations. UWM is also instrumental in research partnerships with water industry companies seeking to leverage the University's research strengths into their business of serving residential, commercial and municipal customers. At the core of all of these collaborations are core research strengths of the University of Wisconsin-Milwaukee. *Exhibit A – Regional Research Partners* shows a summary of UWM Research Strengths and highlights regional research strengths and key collaborations.

Linking UWM Strengths to Economic Development

Economic development is built on talent, ideas and capital. Building on a broad base of research strengths in the arts, humanities, sciences and engineering, UWM is developing the talent and ideas that underlie sustainable economic development. UWMRF programs such as the Catalyst Grant Program are targeted toward fostering ideas with the highest potential for commercialization. The UWM Research Foundation is also working to develop entrepreneurial talent by coaching faculty on launching companies and working with undergraduate engineering students to develop business plans based on UWM technologies. Strong ideas and talent will ultimately draw capital investment; together these elements will drive economic development.

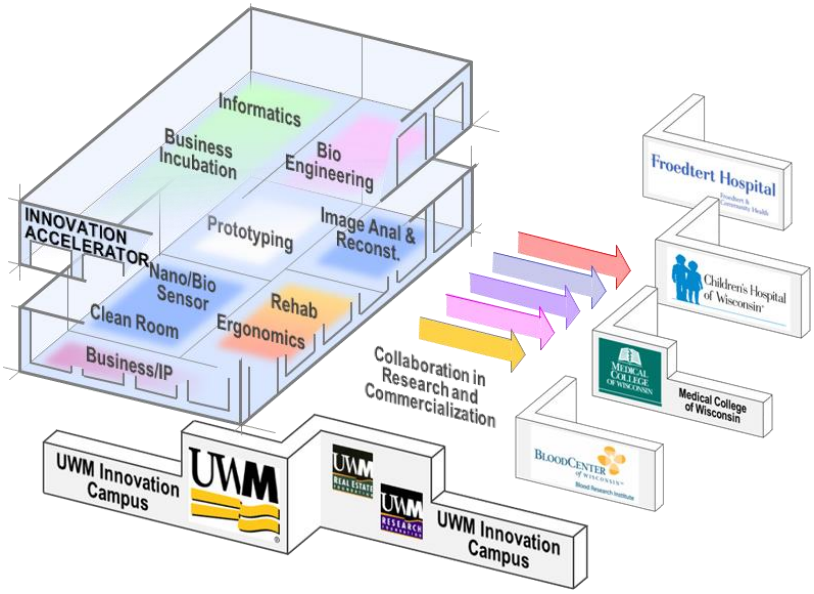
The UWM Foundations – Partners in Growth

The UWM Foundation, Inc. has served UWM for over 35 years, helping UWM manage support from donors. The UWM Real Estate Foundation was created in 2005 to develop and hold real estate in support of UWM; holdings include two student residence halls and land that will be the home for UWM's Innovation Campus. Together with the UWM Research Foundation, these organizations leverage the best aspects of public/private partnerships to help UWM achieve its goals.

The UWM Research Foundation complements the UWM Foundation and UWM Real Estate Foundation by managing intellectual property and fostering research and commercialization. Grants that foster collaboration with industry are helping create a culture of innovation at UWM along with educational programs that create awareness of the commercialization process among the faculty, graduate students and undergraduates. Outreach to investors and business leaders is bringing their expertise to inform work conducted at UWM.

Innovation Campus – a Bridge to Business and Research Partners

The UWM Real Estate Foundation is leading efforts to launch the UWM Innovation Campus on 72 acres adjacent to the Milwaukee County Research Grounds. With the support of a federal Economic Development Authority (EDA) grant, the Real Estate Foundation broke ground in August, 2011 on the first building on that campus, an innovation accelerator. This facility will help form a bridge to research partners, including the Medical College of Wisconsin (MCW), Children's Hospital of Wisconsin, Froedtert Hospital and the BloodCenter of Wisconsin. Work conducted in this facility will set the stage for new research collaborations.



Research conducted at the innovation accelerator will include work in bioengineering, image analysis, nano/bio- sensor development, healthcare informatics, rehabilitation and ergonomics. This work will be complemented by core facilities including a clean room and prototyping equipment, and core capabilities, including intellectual property management and business development support provided by the UWM Research Foundation.

Catalyst Grant Program

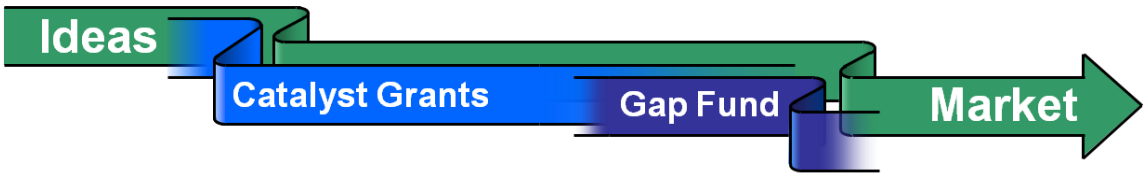
The UWM Research Foundation's Catalyst Grant Program is designed to seed promising early-stage research and foster commercialization in key areas. Supporters of this important program include the Lynde and Harry Bradley Foundation, the Rockwell Automation Charitable Corporation and the Richard and Ethel Herzfeld Foundation. Within the framework of the Catalyst Grant Program, the UWM Research Foundation has tailored the program to meet the desires of each supporting organization, while employing a proven model to identify the best opportunities and measure success of the program.

$2.7 Million Invested in Innovative Ideas

The program has invested $2.7 million in 46 projects since the launch of the program in 2007. These investments are paying off in the generation of ideas, the validation and development of technologies, and the commercialization of products. Scholarly publications and a growing pipeline of intellectual property demonstrate that the program is helping generate ideas. Catalyst Grants are leading to technology evaluations by industry partners, and University participation in small business innovative research (SBIR) grants is increasing. The program is also putting technology into the hands of companies that can bring products to market through license agreements.

Catalyst Grants and Gap Fund Awards Foster Ideas with Commercial Potential

The Catalyst Grant Program moves ideas to market. A competitive process is used to select the projects with the highest potential for success based on strong science and commercial potential.

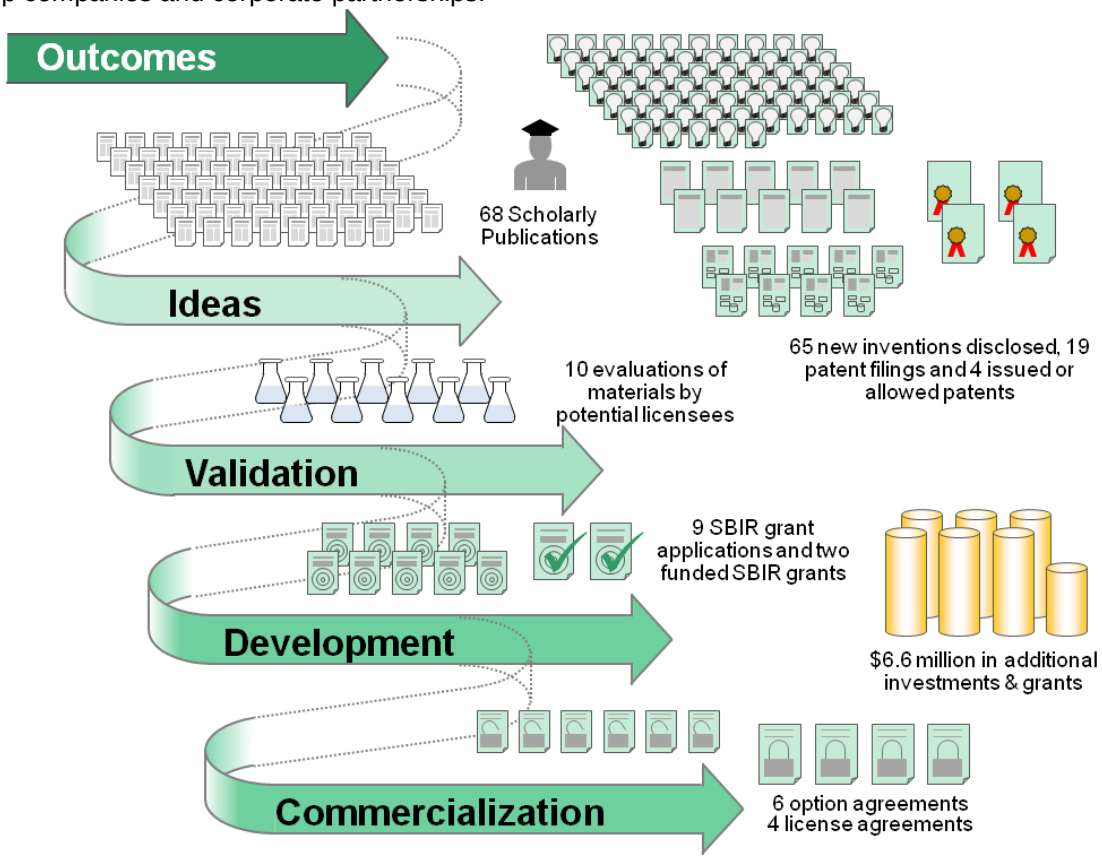


For Catalyst Grants, external reviewers from leading institutions around the country are recruited to review proposals for their scientific quality. Commercial potential is assessed based on existing or potential intellectual property, corporate partnerships and the potential for startup companies. The scientific and commercial assessments are combined to select the best projects for funding. Final selections are made by a committee that includes representatives from industry, the University and the UWM Research Foundation Board of Directors.

This year, Gap Fund Awards were added to advance ideas further along the commercialization continuum. These awards are based on strengthening existing intellectual property and achieving specific commercial milestones. Investors and entrepreneurs help judge Gap Fund applications and bring their expertise and influence toward selecting the most promising projects while also providing feedback to strengthen future proposals.

Catalyst Grant Outcomes

Measuring success is a key element of the Catalyst Grant Program. Grants help foster research and scholarship, which are central to the University's mission, as well as development of intellectual property, startup companies and corporate partnerships.



Commercial outcomes are built on moving ideas through validation and development. Throughout that process, leading indicators continue to show significant impact from Catalyst Grants on the commercialization process. These outcomes include:

- ***Idea Generation*** – the program has generated 68 scholarly publications, 65 new invention disclosures, 19 patent filings and four issued or allowed patents;
- ***Validation*** – 10 different commercial partners are helping validation technologies through material transfer agreements and software development licenses;
- ***Development*** – small companies are leveraging small business innovative research (SBIR) grants to help develop technology, with nine applications and two funded awards tied to catalyst projects; in addition, the $2.7 million invested in Catalyst Grants and gap funds awards has resulted in over $6.6 million in additional investment in technology development in the form of sponsored research projects, federal grants, corporate investments, SBIR grants and angel investment; and
- ***Commercialization*** – six option agreements and four license agreements related to catalyst projects have been completed – including licenses to UWM startup companies NanoAffix Sciences and Aurora Spectral Technologies.

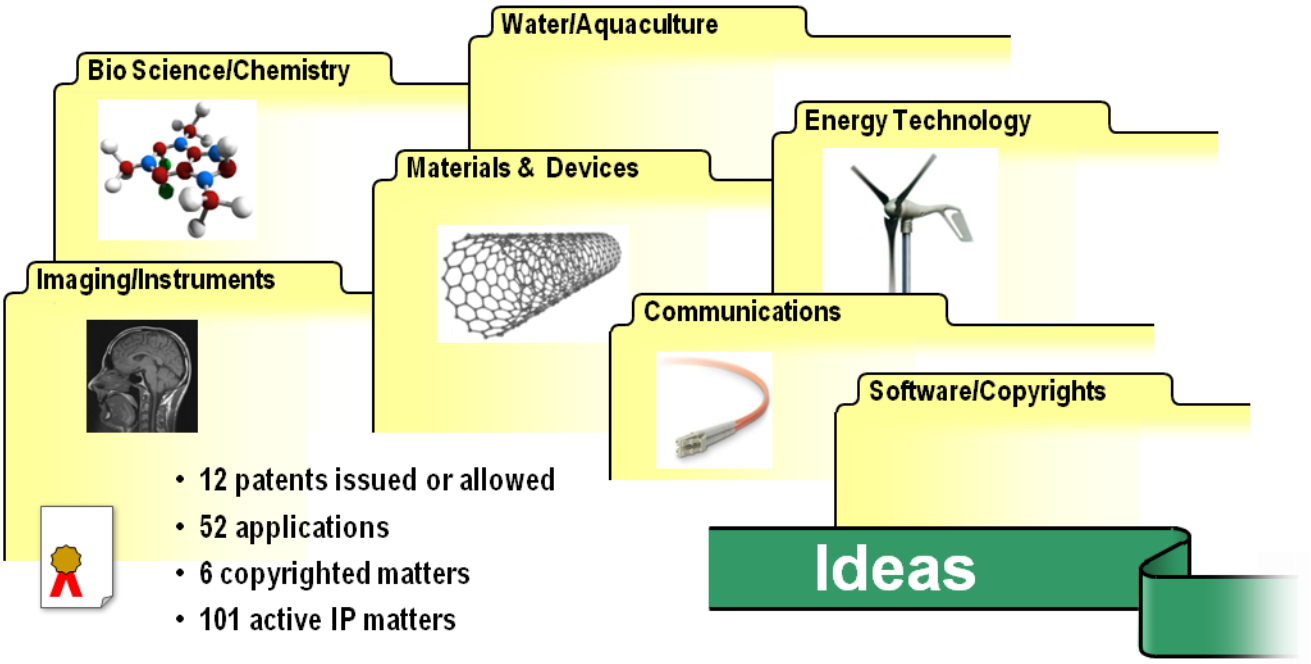
Further details of the Catalyst Grant Program are shown in *Exhibit B – Catalyst Projects*.

Intellectual Property Management and Licensing

Management of UWM's intellectual property is central to the role of the UWM Research Foundation. This function includes protecting intellectual property through patents and copyrights, marketing technology and licensing technology.

Intellectual Property Portfolio

Scientific discovery at the University of Wisconsin-Milwaukee has led to a growing portfolio of intellectual property that now includes 38 issued or applied-for patents and additional copyrighted matters. This intellectual property spans a range of disciplines that includes biological sciences, materials, imaging, water, energy and communications.



Improving Process and Infrastructure to Increase Successes

In 2010, the UWM Research Foundation launched an online inventor portal to allow inventors to submit their ideas for evaluation and to provide a secure tool through which they could interact with the UWM Research Foundation to evaluate, protect and commercialize their ideas. This system is linked with UWMRF's Inteum CS system for tracking and managing intellectual property.

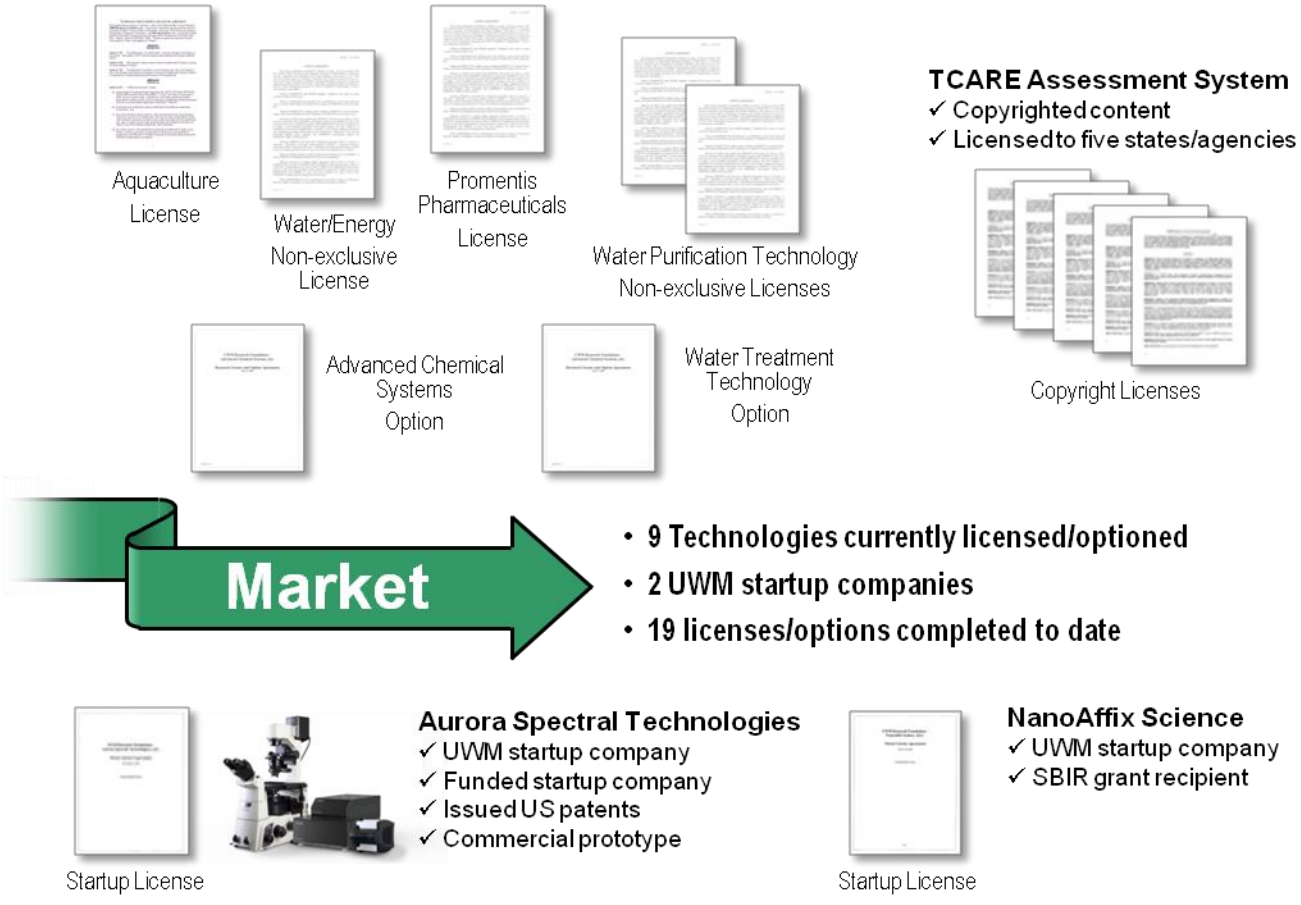
UWMRF is currently managing over 100 active intellectual property matters. This includes licensed technologies, issued and applied-for patents, and copyrighted materials. The UWMRF team uses the system to manage prosecution of intellectual property (including patent applications, disclosure statements and office action responses), manage the marketing process (prospect lists, managing contacts, confidentiality agreements), and complete and track license agreements.

UWMRF is actively marketing an array of technologies that include innovations in imaging, sensors and devices, fundamental and applied materials, biomedical devices, healthcare tools, chemistry, biological science, freshwater science, and informatics and computer science. The UWMRF website's technologies section shows details of nearly 40 technologies including nonconfidential marketing summaries. UWM also leverages intellectual property aggregator sites such as iBridge to ensure the broadest possible view for UWM opportunities.

TCARE Assessment System

Dr. Rhonda Montgomery developed the TCARE Assessment System to match caregivers with the appropriate services in their communities. The copyrighted system has been licensed to five state agencies.

UWMRF also actively participates in the local industrial and investment community to develop ties between entrepreneurs and investors who may help develop startup companies.



Licensing Activities and Successes

Licensing agreements are a clear measure of the success of a technology transfer effort, including licenses to established companies, licenses to startups and option agreements that give partners rights during a period of evaluation or development. Licensing activities continue to increase. UWM startup companies NanoAffix Science and Aurora Spectral Technologies have completed licenses, and UWMRF has had recent success licensing a copyrighted assessment system developed in the Helen Bader School of Social Welfare by Dr. Rhonda Montgomery.

Innovation Programs

The UWM Research Foundation's programs are designed to help bridge the gap between research and commercialization. In addition to the Catalyst Grant Program, the UWM Research Foundation also supports the Research Fellows Program and Technology Transfer Intern Program, which help bring talent at the graduate and undergraduate level. The UWM Research Foundation is also working to facilitate programs that include the Madison-Milwaukee Incentive Grant program.

Research Fellows Program

The UWM Research Foundation's Research Fellows Program is designed to help UWM researchers attract and retain the best and brightest talent to improve the productivity of their research programs. The program makes awards of $7,500 to $10,000 directly to research assistants and post-doctoral researchers working in the laboratories of faculty members in the sciences, engineering and business. These "kicker grants" are over and above base support, so they can help faculty members recruit the best talent. Support for the program includes $80,000 committed by the UWM Foundation and UWM Research Foundation Board Directors.

Dr. Sandra McLellan of the UWM School of Freshwater Sciences.

Twenty-one Research Fellow awards have been made in three rounds of the program since 2008, for a total of $200,000 in committed funds. Research Fellows have spanned disciplines in science and engineering, including: atmospheric sciences, energy production, freshwater sciences, biomedical imaging, gravity wave physics, nanomaterial and surface chemistry.

Associate Professor and Senior Scientist Sandra McLellan of the UWM School of Freshwater Sciences used her Research Fellow award to help recruit Ryan Newton as a post-doctoral researcher for her program. Dr. Newton brought experience in natural freshwater bacterial communities and novel ecological statistics. That expertise helped Newton and McLellan to secure a significant award from the National Institutes of Health.

Technology Transfer Intern Program

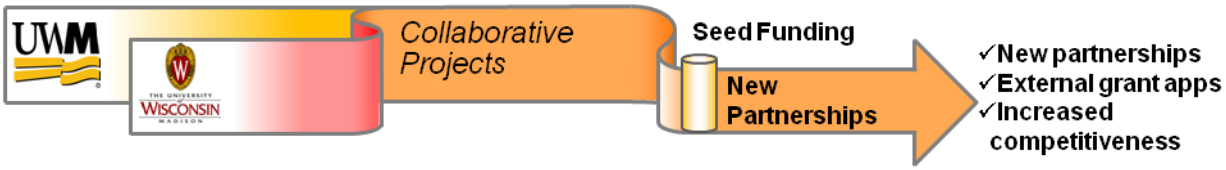
The Technology Transfer Intern Program employs student interns to support a continuum of intellectual property management activities that includes: identification and assessment of intellectual property, management of patent prosecution, and marketing and licensing of technology. In addition, interns also support managing programs such as the Catalyst Grant Program. The program has received $40,000 in support from the Helen Bader Foundation. Since the launch of the program in 2008, the program has employed five undergraduate students.

Market analysis conducted by UWMRF Tech Transfer Interns has already led to the launch of one startup company.

Building Partnerships with UW-Madison

The UW-Madison/UW-Milwaukee Intercampus Research Incentive Grant Program was designed to foster collaborative research between faculty at the two Ph.D.-granting research institutions in the University of Wisconsin System, UW-Madison and UWM. The UWM Research Foundation has been instrumental in creating and running the program for UWM and provided $150,000 to support the program.

Now in its second year, the program has awarded a total of $1 million to collaborative teams at UWM and UW-Madison. In 2010, eight project teams shared $400,000 in grants. In 2011, support was expanded to fund 12 project teams with a total of $600,000 in grants. These projects will explore the testing of new materials for improved lithium-ion batteries, investigate whether Lake Michigan is a sink or source for carbon dioxide, help develop new cancer therapeutics and search for new markers for toxicity related to nano-materials.

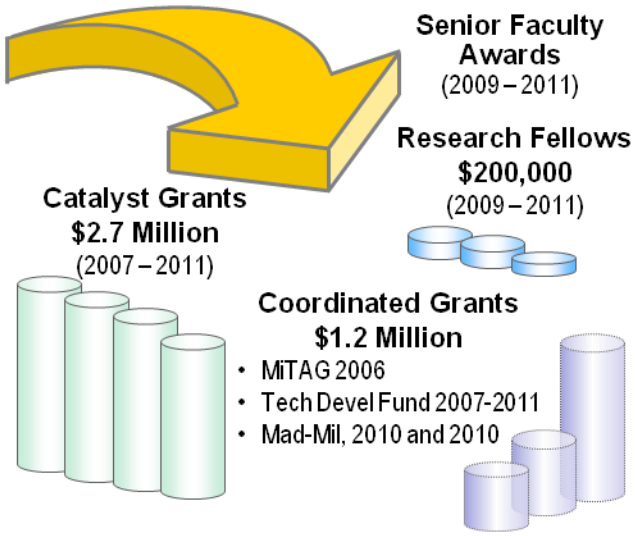


Fostering Entrepreneurship and Startup Companies

The Research Foundation is working to move technology into area startup companies and assist UWM faculty members in launching their own companies that can grow in the region. This support includes coaching for faculty members, support for business plan writing and linking UWM faculty with other resources such as BizStarts, a Milwaukee-based initiative to foster high-growth companies. The Research Foundation also provides support for faculty members pursuing small business innovative research grants. This includes helping identify partner companies and coaching on university policies and procedures as well as support for grant writers.

Innovation Support

Since its creation in 2006, the UWM Research Foundation has provided over $3 million in direct support to UWM research and innovation through the Catalyst Grant Program, the Research Fellows Program, the Senior Faculty Awards Program and support for the Madison-Milwaukee Incentive Seed Grant Program. In addition, UWMRF has helped coordinate over $1 million in additional grants to support research through the Technology Development Fund and Milwaukee Technical Assistance Grant (MiTAG) programs, programs made possible in large part by the Uihlein Trust Fund established to support Research at UWM.



UWM Research Foundation Leadership

The UWM Research Foundation Board brings a complementary mix of experience from for-profit and not-for-profit organizations and includes expertise in technology development, research management and industry leadership. The Board is led by Chairman Daniel J. Bader, President, Helen Bader Foundation and Sujeet Chand, Sr. Vice President and Chief Technical Officer, Rockwell Automation.

Board of Directors

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Jessica Silvaggi, Ph.D.
Licensing Manager

Joseph Pfannes
Technology Licensing
Associate

Key Facts and Accomplishments *(since formation in 2006)*

Key Donor Support

- ***We Energies, $1 million*** – The Wisconsin Energy Foundation committed $1 million in 2006 to help launch the UWM Research Foundation.
- ***Harley-Davidson, $1 million*** – The Harley-Davidson Foundation committed $1 million in 2006 to help launch the UWM Research Foundation. Funds were provided for a combination of operating and endowment support.
- ***Rockwell Automation, $850,000*** – The Rockwell Automation Charitable Corporation has contributed $850,000 over a period of five years to support the Rockwell Catalyst Grant Program in Advanced Automation and energy center grants.
- ***Bradley Foundation, $1.8 million*** – The Lynde and Harry Bradley Foundation has provided nearly $1.8 million in support for the Bradley Catalyst Grant program.
- ***KBS Construction, $300,000*** – KBS Construction has provided $300,000 to help support operations of the UWM Research Foundation.
- ***Bader Foundation, $40,000*** – The Helen Bader Foundation has supported the UWM Research Foundation's Technology Transfer Intern Program with grants totaling $40,000.
- ***Herzfeld Foundation, $200,000*** – The Richard and Ethel Herzfeld Foundation contributed $200,000 in 2009 in support of the Catalyst Grant Program and operations.
- ***Research Fellowship Support, $80,000*** – Directors of the UWM Research Foundation Board and the UWM Foundation Board have committed $80,000 to support the Research Fellows Program to help UWM faculty attract and retain the best and brightest graduate students.

Research Foundation Programs

- ***$2.7 Million in Catalyst Grant Awards*** – Over $2.7 million in funds have been awarded to date to support 46 promising projects in the sciences and engineering through Catalyst Grants supported by Rockwell Automation, the Bradley Foundation and the Herzfeld Foundation.
- ***$200,000 in Research Fellowship Awards*** – The UWMRF Research Fellows program has made awards to 21 graduate students and post-doctoral researchers with a program designed to help UWM researchers attract and retain the best and brightest talent for their research programs.
- ***$150,000 in support for Madison-Milwaukee Grants*** – The UWM Research Foundation has coordinated the Madison-Milwaukee Intercampus Research Incentive Grants to foster collaborations between UW-Madison and UW-Milwaukee. Support of $150,000 from UWMRF has helped support $200,000 in awards to UWM faculty in 2010; an additional $300,000 was awarded in 2011.

Licensing and Startups

- ***Eight Technology License Agreements*** – The UWM Research Foundation has completed eight technology license agreements based on UWM technologies.
- ***Two Funded UWM Startup Companies*** – License Agreements include exclusive licenses to UWM startup companies NanoAffix Sciences and Aurora Spectral Technologies. NanoAffix Sciences has received two SBIR grant awards, and Aurora Spectral Technologies has received funding in two rounds of angel investment.
- ***Five Copyright Licenses*** – The copyrighted assessment tool, TCARE, has been licensed by UWMRF to agencies in five states.
- ***Five Option Agreements*** – Corporate partners have completed five option agreements for rights to UWMRF technologies during joint development and validation.

Intellectual Property

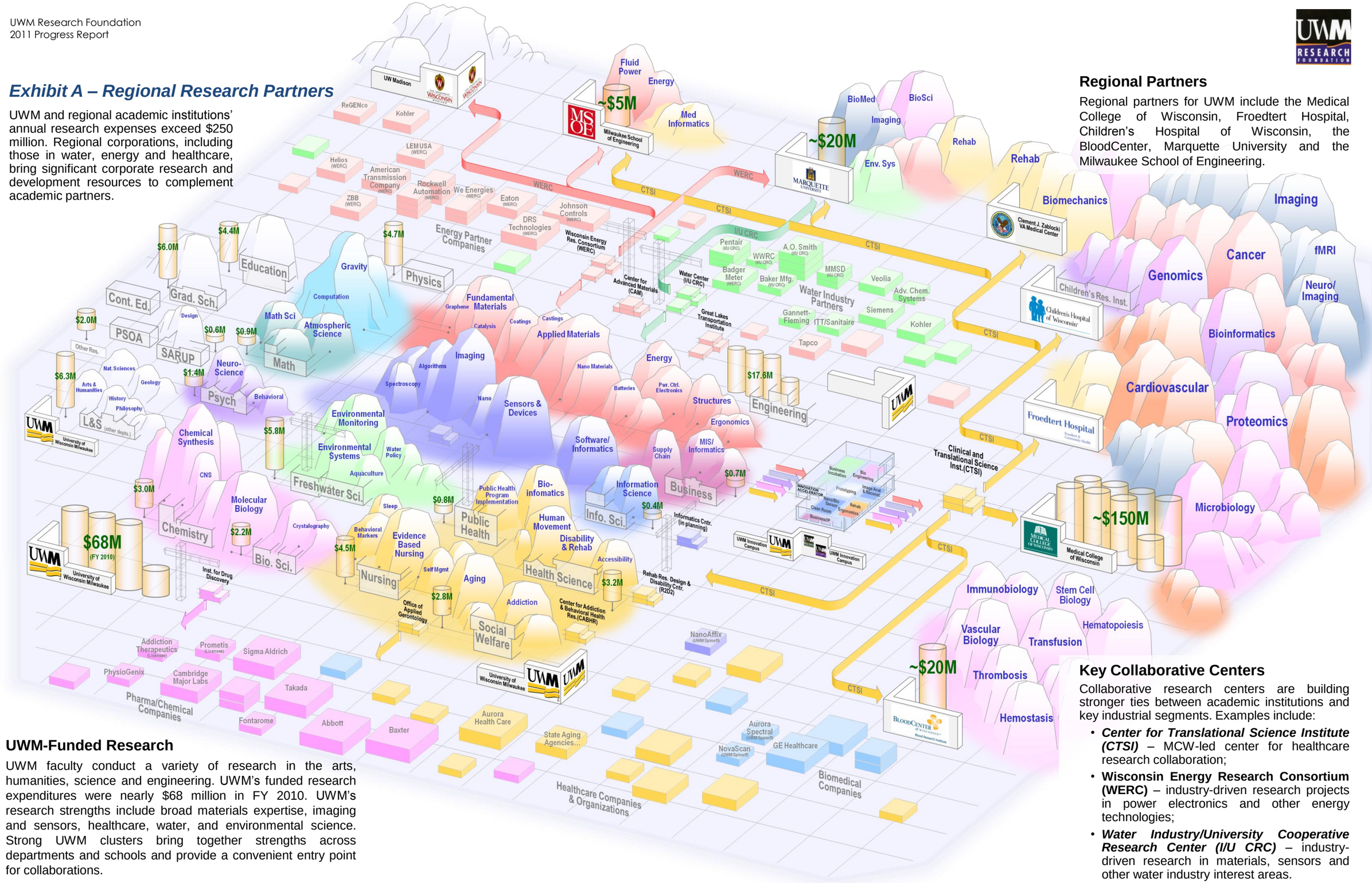
- ***12 Issued or Allowed Patents*** – The UWMRF portfolio now includes 12 issued or allowed US patents.
- ***Over 50 Patent Applications*** – As of October 2011, the UWM Research Foundation has over 50 active patent applications, including provisional and utility patent applications in the United States and overseas through Patent Cooperation Treaty (PCT) applications.
- ***Over 100 Active IP Matters*** – UWMRF is currently managing over 100 active intellectual property matters in various stages of development.

Corporate Partnering

- ***Water I/U CRC*** – UWMRF continues to be an active participant in the UWM-Marquette Industrial Cooperative Research Center for Water Equipment and Policy and is helping to develop a technology roadmap for the organization. UWMRF has filed one patent application and completed two license agreements with members.
- ***Energy Center*** – The Wisconsin Energy Research Consortium continues to grow and develop new members and programs. UWMRF has directed $200,000 in Catalyst Grants toward four projects conducted by researchers in the energy center.
- ***Developing Drug Discovery Institute*** – UWMRF is working with UWM's newly launched Milwaukee Drug Discovery Institute to advance basic research in chemistry and biosciences toward clinical practice.

Exhibit A – Regional Research Partners

UWM and regional academic institutions' annual research expenses exceed $250 million. Regional corporations, including those in water, energy and healthcare, bring significant corporate research and development resources to complement academic partners.



Regional Partners

Regional partners for UWM include the Medical College of Wisconsin, Froedtert Hospital, Children's Hospital of Wisconsin, the BloodCenter, Marquette University and the Milwaukee School of Engineering.

UWM-Funded Research

UWM faculty conduct a variety of research in the arts, humanities, science and engineering. UWM's funded research expenditures were nearly $68 million in FY 2010. UWM's research strengths include broad materials expertise, imaging and sensors, healthcare, water, and environmental science. Strong UWM clusters bring together strengths across departments and schools and provide a convenient entry point for collaborations.

Key Collaborative Centers

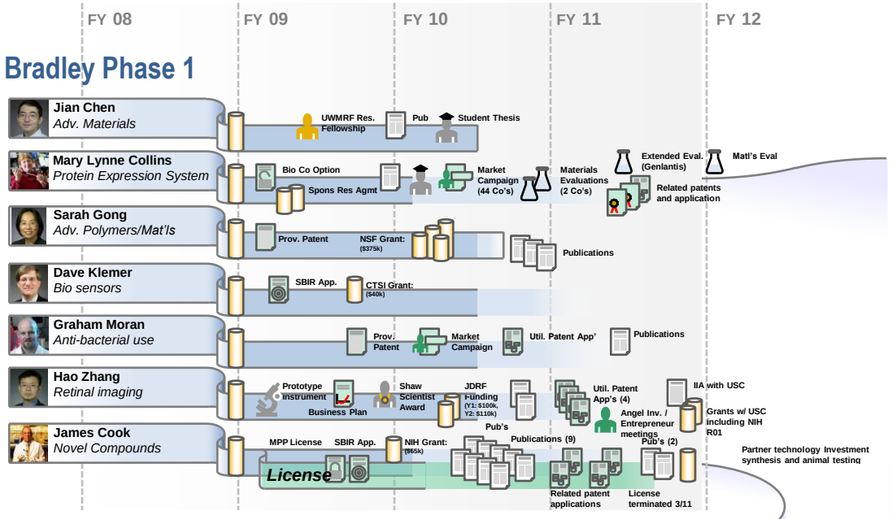
Collaborative research centers are building stronger ties between academic institutions and key industrial segments. Examples include:

- ***Center for Translational Science Institute (CTSI)*** – MCW-led center for healthcare research collaboration;
- **Wisconsin Energy Research Consortium (WERC)** – industry-driven research projects in power electronics and other energy technologies;
- ***Water Industry/University Cooperative Research Center (I/U CRC)*** – industry-driven research in materials, sensors and other water industry interest areas.

Exhibit B – Catalyst Projects

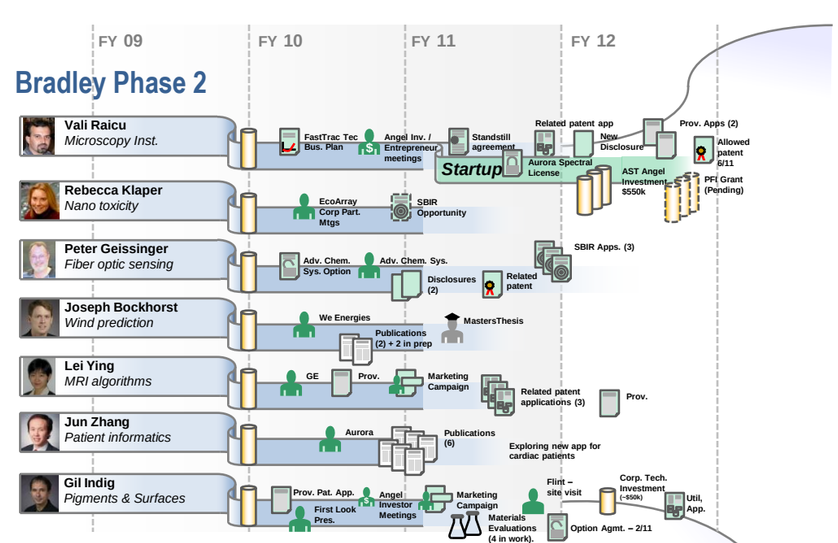
The UWM Research Foundation (UWMRF) Catalyst Grant Program continues to seed promising early-stage research and foster commercialization of technology in key areas. The program has been made possible by the generous support of the Lynde and Harry Bradley Foundation, the Rockwell Automation Charitable Corporation, and the Richard and Ethel Herzfeld Foundation.

Now in its fourth year, the Catalyst Grant Program has made 46 awards totaling over $2.7 million in funds. The catalyst model, built on strong science coupled with strong commercial potential, is developing a growing list of successes in terms of follow-on funding, intellectual property development and licensing of technology. All of these successes underscore the importance of the program as a tool for growing UWM's research program and making UWM an engine for economic development.



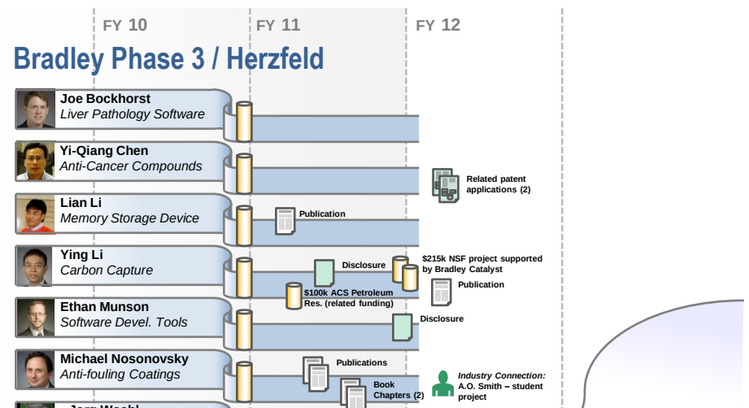
Drug Development – A High-Risk Venture

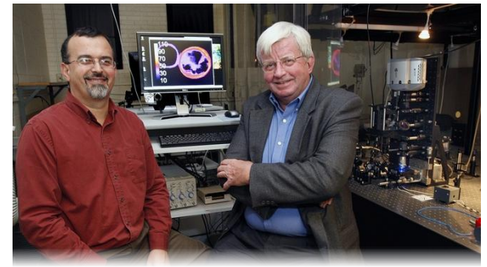
Dr. James Cook (Bradley Phase 1) continues to pursue development of therapeutics to treat anxiety disorders. This Catalyst Grant helped support the development of hundreds of molecular structures that may be useful in treating alcohol addiction. The compounds were initially licensed to a local startup company that invested in the technology by synthesizing and testing four lead compounds; unfortunately, the company was not able to raise venture funding to continue this work, and the license agreement has been terminated. But their work informs the ongoing development of this technology, and UWMRF will pursue other development opportunities for this important work .



Exploring Proteins for Treatment of Diabetes

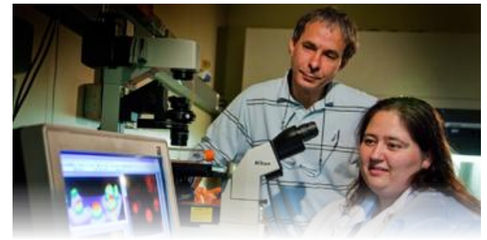
Dr. Mary Lynne Collins (Bradley Phase 1) has developed a patented system for producing a particular class of proteins, membrane proteins, which are important to many drug interactions at the boundaries of cells. Currently a U.S.-based pharmaceutical company is evaluating whether or not this system can be used to produce proteins for the treatment of diabetes.





Funded Startup Company

Dr. Valerica Raicu's Catalyst Grant (Bradley Phase 2) helped provide key validation data for a new system for imaging proteins. Working with the UWM Research Foundation to develop a business plan, Raicu eventually partnered with Dr. Tom Mozer to launch Aurora Spectral Technologies, LLC. The company has so far raised funding in two angel investment rounds. The US Patent and Trademark Office has issued two patents related to the work.



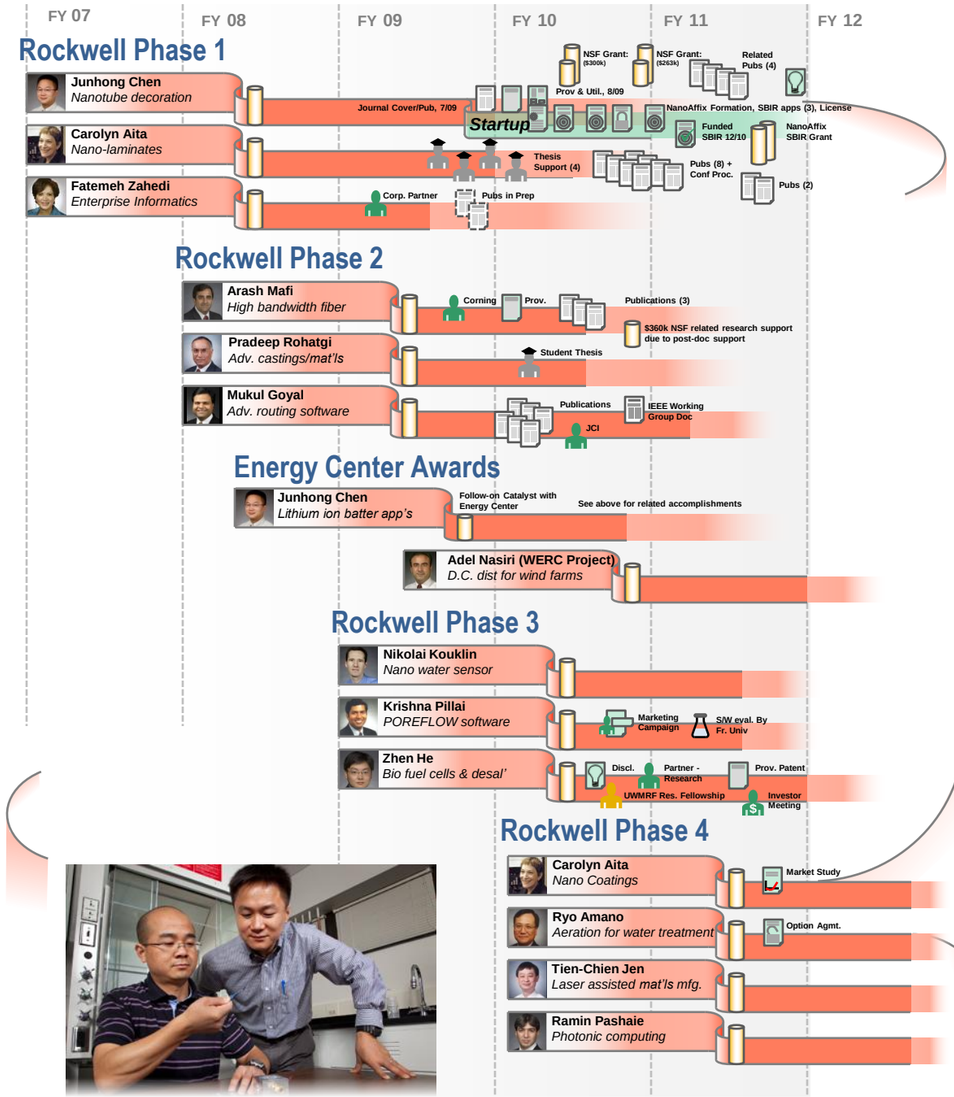
Joint Development for Green Inks

Dr. Gil Indig (Bradley Phase 2) partnered with an international maker of pigments and inks to explore commercial applications for his environmentally friendly method of making pigments based on clay. Indig's Catalyst Grant helped him test out the idea, and the partner company has assigned an internal development team to explore different potential commercial products using the technology.

Human and Agricultural Development

Dr. Ching-Hong Yang's Catalyst Grant (Bradley Phase 3) helped lead to partnerships with an agricultural company and a human life sciences company that are both exploring Yang's new antibiotic compounds. Yang received a Gap Fund award to help optimize the compounds, and he continues to explore partnerships to help bring this technology to market.

Exhibit B – Catalyst Projects (continued)



NanoAffix Startup Company

Dr. Junhong Chen (Rockwell Phase 1 and Bradley/Herzfeld Phase 4) has launched startup company NanoAffix based on his materials research. The company was awarded a phase 1 SBIR grant to pursue gas sensing applications for Chen's innovative nano-structures. The recent Catalyst Award will allow Dr. Chen to pursue a new and promising area for the technology, biosensing.

Biomedical Coatings Opportunity

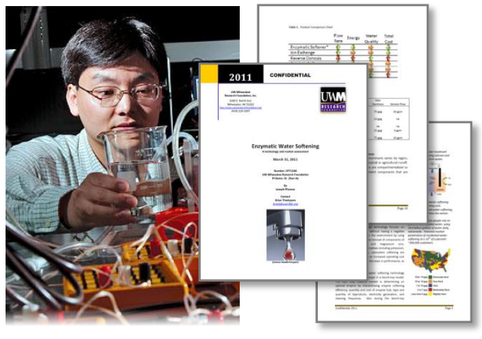
Dr. Carolyn Aita has a long history of helping industry design better coatings. Her Catalyst Award (Rockwell Phase 4) will help her explore the biomedical applications, including orthopedic devices such as replacement knees and hip joints, for her innovative, wear-resistant coatings. UWMRF and Dr. Aita are exploring market opportunities for a possible startup company. A UWMRF market analysis has helped identify key players in the industry, and a local orthopedic surgeon has helped identify key validation tests.

Water Industry Development Partnership

Dr. Ryo Amano (Rockwell Phase 4) has partnered with an international water equipment company to improve aeration in water treatment systems. Amano and his team have used computational fluid dynamics to analyze and improve the aeration process; these improvements have the potential to decrease a significant source of energy consumption in aeration for waste-water treatment systems.

Recent Bradley/Herzfeld Awards

Eight new awards were recently made thanks to the support of the Bradley and Herzfeld foundations. For the first time, two Gap Fund awards were included. These Gap Fund awards are strengthening previous catalyst investments and helping move technologies to market.



Partnership with Entrepreneur

Dr. Zhen He continues to leverage close ties to industry as he grows his research program. The Catalyst Award (Bradley/Herzfeld Phase 4) will help validate a new water-softening concept. UWMRF helped create a draft business plan for the technology that helped convince a local entrepreneur/investor to match catalyst funds.

Gap Fund Strengthens SBIR Pursuit

Dr. Peter Geissinger (Bradley Phase 2, Gap Fund) partnered with Advanced Chemical Systems (ACS) in 2009 to adapt his fiber optic sensing technology for an industrial market served by ACS. The Catalyst Grant helped Geissinger and his team to prove that low-cost electronics could work in a practical device. Working with Geissinger and UWMRF, ACS has applied for three separate small business innovative research (SBIR) grants to advance the technology. The project was just awarded a Gap Fund award to help refine the prototype.

Exhibit C – UWM Research Foundation in the News

http://www.jsonline.com/business/106491608.html
By Kathleen Gallagher of the Journal Sentinel
November 1, 2010

AST gets a boost

Start-up receives $450,000 from investors

A Milwaukee start-up that is developing tools to help researchers capture images of proteins in living cells has raised $450,000 from individual investors.

Aurora Spectral Technologies LLC is aiming to bring products to market that will help researchers and drug developers look more closely at proteins and better analyze them.

That could help researchers develop new drugs and diagnostic tests, and might eventually help provide more insight into cancer and other diseases, said Brian Thompson, the UWM foundation's president.

Aurora Spectral's technology comes out of the lab of Valerica Raicu, an associate professor in the University of Wisconsin-Milwaukee physics department. Thomas Mozer is the new company's chief executive officer. Mozer founded Nerites Corp. and also previously ran Promega Corp.'s forensic business.

"We're going to know within the next 12 to 18 months if we have an add-on to microscopes that is of interest to researchers in pharma labs around the world," said Jeff Rusinow, the lead investor in the funding round.

Rusinow was also a key investor in Buycostumes.com, Neurognostics Inc. and ModernMed Inc., and is the founder of the Silicon Pastures angel investing group.

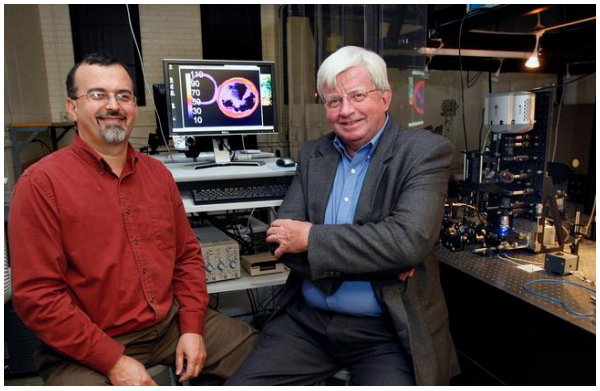
Rusinow said he was attracted to the company because its product has potential to be brought to market relatively quickly without enormous sums of money or a long wait for regulatory approval.

Aurora Spectral, which has no relation to Aurora Health Care, is the second company spun out from UWM since the UWM Research Foundation started in 2006.

The company represents "all the pieces coming together" in terms of the foundation's efforts to transfer more UWM research into the commercial marketplace, Thompson said.

Raicu has received a Bradley Foundation-funded catalyst grant to further his research, and attended a "First Look Forum," where the foundation puts UWM researchers in front of potential investors, Thompson said. Raicu also took a BizStarts business plan class and met with Thompson four times to work on that plan, he said.

Aurora Spectral's first product would be an add-on for laser-scanning microscopes that would allow rapid screening of proteins, which means researchers could essentially watch them in real time. As many as 60% of all drugs in use today target proteins, Thompson said.



Benny Sieu

A company formed by Valerica Raicu (left), associate professor of physics at the University of Wisconsin-Milwaukee, and Thomas Mozer, a local entrepreneur and investor, has been aided by the UWM Research Foundation.

"This is an opportunity to rapidly look at the interaction of proteins in a way that's much faster than the way it's now being done," Rusinow said.

The technology also has potential to rapidly screen cells for abnormalities, which could have applications in cancer and other areas, Mozer said.

Raicu said he developed the technology because he wanted equipment that would help him answer theoretical questions about certain proteins, such as whether they associate with each other and how long such associations might last. The proteins are too small to see under regular microscopes, but researchers use fluorescent tags and laser microscopes to study their behavior. However, laser microscopes can only see one color of fluorescent tag at a time, he said.

Raicu's technology allows laser microscopes to see in one image many colors of fluorescent tags.

"Brian (Thompson) encouraged me to disclose the invention, get a patent, and take the entrepreneurs' class, which I took reluctantly," Raicu said.

Raicu is the perfect scientist to be involved in a start-up company, Rusinow said.

"He will let Tom run the show, but he's a very bright guy who's always thinking about taking the science to the next level," he said.

http://www.jsonline.com/business/110944584.html
By Kathleen Gallagher of the Journal Sentinel
November 28, 2010

Schools create research collaboration

Goal is to help bring scientific discoveries to market

Southeastern Wisconsin's two biggest academic research institutions have formed an alliance to develop and commercialize new technologies.

The Medical College of Wisconsin and the University of Wisconsin-Milwaukee say the new agreement will help them jointly market and license technologies, with the potential to contribute to the region's economic growth.

Such an agreement would have been unlikely a decade ago when the two institutions often competed for limited local resources.

But pressure from federal grant-giving agencies for greater cooperation among research institutions and the arrival at each school of leaders who were deeply involved in economic development efforts elsewhere have helped spur collaboration, said Dan Steininger, vice president of BizStarts Milwaukee and co-director of the Successful Entrepreneur Investors angel network.

"Suddenly, we have on the scene two leaders - (Medical College President and CEO) John Raymond and (UWM Interim Chancellor) Mike Lovell - who have experience taking research and turning it into an economic engine for regional development," Steininger said.

"This is a signal to the community that they're serious about seeing these two institutions become engines of change," he said.

The technology transfer agreement has the potential to produce more young, high-potential companies for local angel investors to fund, which would help drive commercial growth here, Steininger said.

The schools are southeastern Wisconsin's two largest academic research institutions.

The Medical College ranked 102nd in the country, with $176.2 million of research spending in fiscal 2009, according to the most recent National Science Foundation report. UWM ranked 183rd, with $44.1 million, the report says.

The combination of the Medical College's pure research with UWM's expertise in engineering, information technology and other areas, could help form a "mini Madison" in this region, said Michael Major, president and chief executive of Cambridge Major Laboratories in Germantown and a member of the UWM Research Foundation board.

The alliance won't structurally combine the Medical College's technology development office with its UWM counterpart,

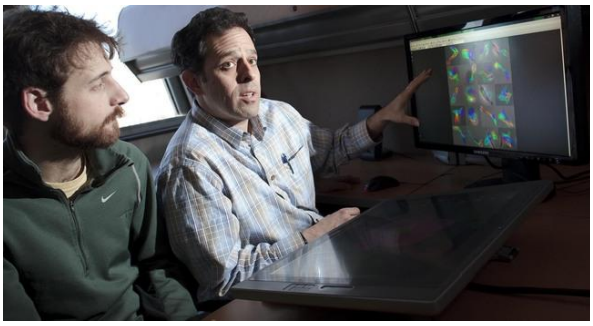


Photo courtesy of Peter Jakubowski / University of Wisconsin-Milwaukee

Doctoral student Mark Winter (left) and Andrew Cohen, an assistant professor of electrical engineering.

said Brian Thompson, president of the UWM Research Foundation.

But the two are looking at additional ways they can work together, including ideas for bundling and further marketing technologies, Thompson said.

First Look Forums

The alliance will build on two First Look Forums the schools have held that featured presentations by researchers to local investors, Thompson said.

The forums provided opportunities for researchers such as UWM's Andrew Cohen, an assistant professor of electrical engineering who is creating software that tracks live stem cell behaviors, to discuss their work with scientists from the other institution and business people.

When Cohen presented his research at a First Look Forum this month, several Medical College professors got involved in discussions with him, Thompson said.

The technology transfer agreement could expand to other southeastern Wisconsin research organizations, said Reza Shaker, the Medical College's dean for clinical and translational research and Clinical and Translational Science Institute director.

UWM is one of seven partners with the Medical College in its CTSI, which received a five-year, $20 million grant from the National Institutes of Health in July.

The other partners are Marquette University, the Milwaukee School of Engineering, the BloodCenter of Wisconsin, Children's Hospital and Health System, Froedtert Hospital and the Clement J. Zablocki VA Medical Center.

"Our two institutions have come together to work in technology transfer," Shaker said. "We are hoping that eventually all the partner institutions will join in."

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http://www4.uwm.edu/news/stories/details.cfm?customel_datapageid_11602=3952010
By Laura L. Hunt
February 15, 2011

UWM announces latest Catalyst research grants

The Research Foundation at the University of Wisconsin-Milwaukee (UWM) has announced four new Catalyst Grants in advanced automation sponsored by the Rockwell Automation Charitable Corporation.

This is the fourth round of grants made possible by Rockwell. Including two additional awards made to UWM faculty through the Wisconsin Energy Research Consortium (WERC), Rockwell has provided $800,000 in seed funding for promising research at UWM.

The funding has led to several important results for faculty funded between 2007 and 2010, including one startup company, four provisional patents and four research partners. Some details:

- After developing a miniaturized gas/vapor sensor using the hybrid nanocarbon tubes he developed in the lab, Associate Professor Junhong Chen founded a startup company, NanoAffix Science LLC, last year. He also received a federal SBIR grant to further develop the company.
- Wisconsin and UWM Distinguished Professor Pradeep Rohatgi's work on self-healing solder has been included in the new federally funded Center for Advanced Manufacturing Materials.
- Assistant professor Jason He's work on microbial desalination cells earned him an industry research partner who joined the Milwaukee Water Council because of the association.

Results of Rockwell Catalyst Grants 2007-2010

- $800,000 contributed
- 13 UWM faculty involved
- 1 startup company
- 4 provisional patents
- 4 research partners
- 2 prototype devices

The grants support research in three areas important to advanced automation: software and informatics; sensors and devices; and materials. This group of funded projects represents applications in the energy, water, manufacturing and computing fields. New research projects include:

- **Carolyn Aita**, Wisconsin Distinguished Professor of chemistry/biochemistry
  Nano-laminate Coatings Development of new processes and coatings that can be easily scaled up for manufacturing; these coatings address environmental problems with chromate coatings typically used in galvanized steel and may be extended to high-end coatings for biomedical applications.
- **Ryo Amano,** professor of mechanical engineering
  Aeration System for Water Treatment. This project has the potential to substantially reduce the amount of energy used in municipal wastewater treatment plants to aerate water.
- **Tien-Chien Jen**, professor of mechanical engineering
  Laser-Assisted Manufacturing for Energy Components. In this project, Jen will use lasers to improve the penetration depth of a coating process called cold gas dynamic spraying. The process may prove to be an important advance in materials for fuel cells.
- **Ramin Pashaie**, assistant professor of electrical engineering & computer science
  Optical Computing. Based on use of a photo-refractive crystal, Pashaie's project will help develop a new parallel nonlinear processor, technology that could help enable the next generation of computational devices.

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http://www4.uwm.edu/news/stories/details.cfm?customel_datapageid_11602=3952955
By Laura L. Hunt
February 16, 2011

UW-Madison, UWM renew joint research program

Wisconsin's two doctoral universities will continue their partnership promoting collaborative research projects involving faculty and academic staff at both institutions.

Biddy Martin, chancellor of the University of Wisconsin-Madison, and Michael R. Lovell, interim chancellor of the University of Wisconsin-Milwaukee are renewing the Intercampus Research Incentive Grants Program, which will award funds to support research projects undertaken jointly at the two campuses.

The grants program was started in early 2010 and awarded nearly $400,000 in intercampus grants to support such efforts as the development of new materials to combat air pollution to the use of algae to clean wastewater and generate energy.

"Research across disciplines and campuses is increasingly the future of scholarly investigations," Lovell says. "This is one more way that we can take advantage of our campuses' individual strengths to the mutual benefit of our universities and regions."

"This campus-to-campus initiative has generated impressive research projects and I am eager to see what else we can accomplish by working together," Martin says. "Joining the expertise and talents of our faculty and staff will bring us closer to producing the kind of groundbreaking research that will fuel Wisconsin's economy in the years ahead."

The universities are especially looking for projects in such key areas as water/energy, health care, advanced manufacturing, biomedical engineering, K-12 education, social sciences and the humanities.

Researchers are encouraged to solve a problem within a single discipline or collaborate on cross-disciplinary projects, and successful proposals are expected to lay the groundwork for future funding from federal or state grant programs or private foundations.

Peter Jakubowski

Chancellor Michael Lovell (left) and Ilya Avdeev, assistant professor of mechanical engineering, check out a rapid prototyping machine.

The chancellors will name a group of deans, faculty and foundation staff to serve on a committee to select grant recipients; about eight grants expected to be funded. The committee's recommendations will be weighed by the chancellors, who will make the final selections.

Projects will be evaluated in part on the likelihood that the collaboration will continue beyond the grant. Proposals must also be structured in a way that reflects the participation of researchers from both campuses; at least 25% of a project's budget must be for work at the partner institution.

Projects with combined budgets of less than $50,000 will be considered. Applications must be received by April 4 and grant recipients will be notified in May for projects slated to begin July 1.

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http://www4.uwm.edu/hbssw/news_and_events/montgomery_award.cfm
By Carolyn Bucior
October 29, 2011

Dr. Rhonda Montgomery Awarded Rosalynn Carter Leadership in Caregiving Award

The nation's highest honor given in the caregiving field was awarded October 20 to Rhonda Montgomery, the Helen Bader Endowed Chair in Applied Gerontology at the University of Wisconsin-Milwaukee's Helen Bader School of Social Welfare. It is a joint award with the state of Washington Association of Area Agencies on Aging, who partnered with UWM.

The Rosalynn Carter Leadership in Caregiving Award recognizes leaders who implement community-researcher partnerships that help move evidence-based caregiver support programs out of the realm of research and to the front lines. At the award ceremony at Georgia Southwestern State University, former First Lady Rosalynn Carter, whose commitment to improving caregiver support led her to found the Rosalynn Carter Institute for Caregiving at the university, presented the titular award, a cash award of $20,000 and a statue executed by renowned sculptor Frank Eliscu, best known as the designer of the Heisman trophy. The statue will be displayed throughout Washington, including the governor's office, before coming to UWM, where it will be on display in the Office of Applied Gerontolgy.

Roy B. Walker, Chair, W4A, former First Lady Rosalynn Carter along with Dr. Rhonda Montgomery.

Montgomery and her colleagues designed a protocol in 2007 to ease the burden of people caring for relatives. The protocol – Tailored Caregiver Assessment and Referral, or TCARE® -- initially was created to guide care managers who work with family members caring for relatives with dementia. Now it appears that that application is just the beginning.

Recently, TCARE® was adapted to use with family members who care for injured soldiers. The Helen Army Soldier Family Assistance Centers, located on 27 Bader School of Social Welfare is working with U.S. bases in the United States and Europe. A pilot study began in 2010 in which HBSSW is training care managers to use TCARE® at six such centers in Georgia, North Carolina, Texas and Washington.

In addition, Montgomery and her team are working with Georgia's Department of Aging to bring TCARE® to care managers who provide services to people caregiving for the developmentally disabled.

"Caregiving for a relative is often stressful and can lead to depression," says Montgomery. "And sometimes

those of us who do it, simply cannot continue without physical and emotional support. But support services and resources for caregivers are not uniformly beneficial."

The strain of caregiving, she notes, often is related more to the emotional aspects than the actual care tasks. "Each person who becomes a caregiver undergoes a systematic process of identity change as they take on more caregiving responsibilities," she says. "As their caregiving role grows, their relationship with their relative changes in ways that are uncomfortable." The idea of training professionals who work with caregivers came to Montgomery years ago, when she grew alarmed at the general lack of training for this group nationwide.

TCARE® provides care managers with a step-by-step tool to tailor care plans for caregivers. Recent findings from a two-year, multi-site randomized control study concluded that TCARE® impacts both care managers and caregivers. Care managers who used TCARE® reported feeling better about the services they provided, more professional, and more hopeful. Caregivers reported increased positive feelings about caregiving, lower levels of stress and depression, and a diminished likelihood of moving the cared-for person out of the home.

The development of TCARE® has been funded by grants from the Helen Bader Foundation, the National Alzheimer's Association, the Jacob and Valerie Langeloth Foundation and contracts with the states of Georgia, Michigan, Minnesota and Washington.

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