

WiSys announces a one million dollar grant to stimulate R & D at UW System campuses



Kevin Reilly



Carl Gulbrandsen

MADISON — The WiSys Technology Advancement Grant (WiTAG), aimed at stimulating inventions from faculty at UW System campuses, was approved recently by the Board of Directors for WiSys and Wisconsin Alumni Research Foundation (WARF). UW System President Kevin P. Reilly and Carl Gulbrandsen, managing director of the Wisconsin Alumni Research Foundation, made the announcement June 19.

The WiTAG program will allow researchers to collect early, quality data to support federal grant applications by hiring post-doctoral fellows and research assistants, and provide other support for faculty to conduct research and development. The grant is expected to provide a competitive advantage to UW System faculty as they compete for federal, state and private funding for long-term research that will drive economic development throughout the state.

“UW System campuses are well known as centers of teaching excellence and innovation. Now the challenge is to enhance their capacity for the next generation of academic research and development,” Reilly said. “WiSys and WiTAG are important components of that transition.”

The objectives of the program include developing high-value intellectual property and marketable products or processes, and collecting validation data to support extramural funding.

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WiTAG Initiative

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The grants to faculty will be for three years and their research must be targeted for commercialization. Interdisciplinary projects, joint applications from UW System campuses, and collaborations with industry are encouraged.

“We want to harness the incredible creativity of UW researchers across the state and use it to improve quality of life and strengthen Wisconsin’s economy,” Gulbrandsen said.

WiSys is working with UW System Administration to further add value to WiTAG and also formulate a common, long-term R&D strategy. Discussions about how to connect WiTAG and UW System research grant programs to further add value and

benefit System campuses are ongoing.

WiSys will initiate the program in July. All UW System faculty and staff are welcome to submit pre-proposals, from which a limited number will be invited to submit full proposals. Faculty and staff must assign the technology and intellectual property to WiSys to be eligible for WiTAG. Full proposals will be evaluated by internal and external experts. The grant process will be open throughout the year and will not entail an application deadline.

For additional information about the WiTAG program, contact Maliyakal John at 608-265-2135 or Maliyakal@wisys.org.

Making the Connection: Collaborative Opportunities Gathering

Research scientists and faculty from throughout the UW System gathered last month at the UW Milwaukee Great Lakes WATER Institute for a day-long event focused on facilitating inter-campus and interdisciplinary research. Scientific fields represented included biotechnology, chemical compound synthesis and testing of their biological efficacy, proteomics, functional genomics, stem cell research, cellular imaging and analysis, and microbiology. Through a series of introductions, presentations and networking, participants shared their fields of expertise, collaboration interests, and information regarding research equipment or facilities available to those within the UW System (See page 4 for a list of participants). Numerous possible collaborations were discussed, and many participants expressed their excitement about the connections that were made.

Presenters included the representatives of the core research facilities listed in the table on page 3. In addition, Aaron Monte, Professor and Chair of the Department of Chemistry at UW-La Crosse, discussed his collaborative research experience; Susan Carlson, Director of Operations at WiCell Research Foundation, gave an update on stem cell research; Maliyakal John, General Manager

of WiSys, gave participants a preview of WiTAG (see WiSys newsletter cover page for more information); and Kris Andrews, Assistant Vice President for Federal Relations, UW System,



closed the event underscoring the importance of regional development.

In addition to the Great Lakes Wisconsin Aquatic Technology and Environmental Research Institute (WATER) Institute, the program was sponsored by the UW System, Whyte Hirschboeck Dudeck, S.C., a patent law firm, and WiSys Technology Foundation.

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Making the Connection: Collaborative Opportunities Gathering

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The UW System is home to a wealth of truly outstanding research. An emphasis on collaboration is of great importance to minimize existing geographical boundaries and maximize communication. Interdisciplinary collaboration improves the chances of success at federal, state and system levels, and scientific journals often give preference to studies that have interdisciplinary representations.

If you're interested in exploring the collaborative opportunities available to you through the UW System, or if you've faced challenges when attempting collaborative research in the past, WiSys can help. Please call 608-265-2135 or 608-263-2819 or email maliyakal@wisys.org or lmurray@wisys.org.

Core Research Facilities of the UW System

Facility/Representative	Facility Features/Research Focus
Keck-UWCCC Small Molecule Screening Facility Michael Hoffmann, Professor of Oncology and Medical Genetics Program Leader	<ul style="list-style-type: none"> • Provide UW scientists and outside organizations cost-effective access to high throughput screening of structurally diverse, drug-like chemicals in biological assays • Provides mechanism of action assays of small molecules in cancer cells to analyze the effects of small molecules
Cellular Imaging and Analysis Center UW-River Falls Timothy Lyden, Asst. Professor of Anatomy & Physiology, Dept. of Biology	<ul style="list-style-type: none"> • Advanced microscopy facility for labeling, time-lapse microscopy, and flow cytometry approaches in cell biology • Research into apoptosis inducing agents and cell division • Focus also on tissue engineering, including modeling placental trophoblast tissues, and developmental processes
Chemical and Functional Genomics Facility UW-Stout Michael Pickart, Dept. of Biology	<ul style="list-style-type: none"> • Provide UW scientists and students access to zebrafish for genomics research • Research the bioactivity, mechanisms of action, and potential gene targets of investigational chemical agents using functional genomics tools in zebrafish, including antisense morpholinos • Focus on models of disease and development using engineered tissues, stem cells, and transgenic zebrafish
Proteomics and Functional Genomics Core Facility UW-Oshkosh Todd Sandrin, Assistant Professor of Microbial Physiology, Biology and Microbiology	<ul style="list-style-type: none"> • Collaboration encouraged, with instrumentation aimed at microbial fingerprinting, chloroplast proteomics, yeast cell cycle, photobiochemistry, metal toxicity, and nanotoxicology • Funded by the National Science Foundation to foster interdisciplinary research in Northeastern WI • Facility provides affordable access to the instrumentation required to conduct experiments in proteomics and genomics, including software developed for analysis
Great Lakes Wisconsin Aquatic Technology and Environmental Research Institute UW-Milwaukee Michael Carvan, Assistant Scientist	<ul style="list-style-type: none"> • Focus on the complex physical, chemical and biological processes that occur in lakes and oceans, including biological and biogeochemical research, hydrogeology and geophysical studies, oceanography, and water resources management • Aquaculture research is targeted to contribute significantly to WI economic development • Collaborative efforts are encouraged for the use of genomics and microarray facilities.
Center for Genomics and Biotechnology UW-Milwaukee Raymond Hovey, Biotechnology Instrumentation Specialist	<ul style="list-style-type: none"> • Provides UW scientists microarray production and large-scale transcriptional analysis, advanced imaging tools, real-time high throughput PCR and DNA sequencing, biomolecule purification, and product development • Open to research collaborations and training services

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Making the Connection: Collaborative Opportunities Gathering

Collaborative Opportunities: Researcher Contact Information

Name	Dept./Campus	E-Mail	Research Interest
Mike Abler	Dept. of Biology, UW-La Crosse	abler.mich@uwlax.edu	Genomics, plant genetics and molecular biology
Mohamed Ayoub	Chemistry, UW-Washington County	mohamed.ayoub@uwc.edu	Chemical kinetics synthesis and computational chemistry and water quality
Rob Barber	Dept. of Biological Sciences, UW-Parkside	barber@uwp.edu	Genomics and bioinformatics; metal sensing and homeostasis; methanogenesis
Michael Carvan	Great Lakes WATER Institute - UW-Milwaukee	carvanmj@uwm.edu	The power of the zebrafish genetic model system to explore the mechanisms by which xenobiotics (e.g. environmental chemicals, pesticides, pharmaceuticals) induce disease in both fish and humans, and to identify genes that influence sensitivity and resistance to chemical exposure.
Eric Cheng	Dept. of Biological Sciences, UW-Milwaukee	ycheng@uwm.edu	Discovery and engineering of microbial natural products
Scott Cooper	Dept. of Biology, UW-La Crosse	cooper.scot@uwlax.edu	Molecular biology and biochemistry of blood clotting.
Steve Deckelman	Dept. of Mathematics, Statistics & Computer Science, UW-Stout	deckelmanS@uwstout.edu	Mathematical applications to biology and medicine
Steven Forst	Dept. of Biological Sciences, UW-Milwaukee	sforst@uwm.edu	Genetic and genomic studies on <i>Xenorhabdus nematophila</i> .
Anne Galbraith	UW-La Crosse	galbrait.anne@uwlax.edu	Molecular control of meiosis and the role of cell cycle genes in yeast
Teresa Gonya	Biological Sciences, UW-Fox Valley	teresa.gonya@uwc.edu	Water quality monitoring
Scott Hartsel	Dept. of Chemistry, UW-Eau Claire	hartsesc@uwec.edu	Chemistry research, including nanoparticle drug delivery systems, structure vs. function analysis, cytokine/chemokine cell responses, fluorescent probes in cell biology, stop-flow spectrometry, and material sciences and biomaterials
David Higgs	Dept. of Biological Sciences, UW-Parkside	higgs@uwp.edu	Plant molecular biology, bioinformatics, genomics, and gene expression
Michael Hoffmann	Keck-UWCCC Small Molecule Screening Facility, UW-Madison	fmhoffma@facstaff.wisc.edu	Providing UW investigators and outside organizations with cost-effective access to high throughput screening of structurally-diverse, drug-like chemicals in biological assays provided by the investigators
Raymond Hovey	Dept. of Biology; Center for Genomics and Biotechnology, UW-Milwaukee	rhowey@uwm.edu	Core facility and the equipment for transcriptomics.
Julie Kinzelman	Dept. of Health Sciences (UW-M) & City of Racine Health Dept.	julielk3@uwm.edu; julie.kinzelman@cityofracine.org	Great Lakes water quality; public health microbiology
Hephzibah Kumpaty	Dept. of Chemistry, UW-Whitewater	kumpatyh@uww.edu	Organic chemistry, spectroscopy, and molecule/drug research
Juan Lozano	Dept. of Chemistry, UW-Washington County	jlozano@uwc.edu	Environmental research, including PCB's in the Great Lakes
Timothy Lyden	Dept. of Biology; Cellular Imaging and Analysis Center, UW-River Falls	timothy.lyden@uwrfl.edu	Microscopy, apoptosis-inducing agents, tissue engineering, developmental modeling, and stem cells
Maria MacWilliams	Bioscience, UW-Parkside	macwilli@uwp.edu	DNA-protein interactions. Bacteriophages and bacterial defense strategies. Interested in becoming involved in environmental research
Aaron Monte	Dept. of Chemistry, UW-La Crosse	monte.aaro@uwlax.edu	Synthetic organic and medicinal chemistry, pharmacology and drug design and discovery.
Aric Opdahl	Dept. of Chemistry, UW-La Crosse	opdahl.aric@uwlax.edu	Surface chemistry and the attachment of biomolecules to surfaces.
Michael Pickart	Dept. of Biology; Chemical and Functional Genomics Facility, UW-Stout	pickartm@uwstout.edu	Comparative and functional genomics, biological databases, antisense oligonucleotides, skin and pigment biology, oral cancer biology and teaching and learning research.
John Plude	Dept. of Chemistry, UW-Oshkosh	plude@uwosh.edu	Analytical chemistry, including absorption instrumentation and HPLC
Todd Sandrin	Dept. of Biology and Microbiology; Proteomics and Functional Genomics Core Facility, UW-Oshkosh	sandrin@uwosh.edu	Physiology of microorganisms, in particular the Impact of toxic metals on the physiologies of bacteria.
Bill Schwan	Dept. of Microbiology, UW-La Crosse	schwan.will@uwlax.edu	Proline transport systems of <i>Staphylococcus aureus</i>
John Skalbeck	Dept. of Geosciences, UW-Parkside	skalbeck@uwp.edu	E-coli in beach sands.
Scott Thomson	Dept. of Biology, UW-Parkside	thomson@uwp.edu	Genomics, developmental genetics, and genetic mapping
Dana Vaughan	Dept. of Biology, UW-Oshkosh	vaughan@uwosh.edu	Degenerative retinal diseases; ground squirrel breeding as unique animal model system for color vision, brain injury recovery and hibernation research.

Collaborative Opportunities: Additional Contact Information

Name	Campus/Org	E-mail
Kris Andrews	Federal Relations, UW System	kandrews@uwsa.edu
Susan Carlson	WiCell Research Institute	susan@wicell.org
Linda Freed	Grants & Faculty Development, UW-Oshkosh	freed@uwosh.edu
Jonathan Fritz	Whyte Hirschboeck Dudek S.C., Patent Law	jfritz@whdlaw.com
Maliyakal John	WiSys Technology Foundation	maliyakal@wisys.org
Kathleen Rinehart	Whyte Hirschboeck Dudek S.C., Patent Law	krinehart@whdlaw.com
Brian Thompson	Research & Strategic Initiatives, UW-Milwaukee Foundation	briandthompson@sbcglobal.net

UW System News Corner

New WiSys Initiative: WiSys Technology Advancement Grant (WiTAG)

Members of a renewed University of Wisconsin System Federal Relations Council are excited about the potential of a newly announced WiSys initiative – WiTAG: WiSys Technology Advancement Grant – to support research in the UW System.

The Federal Relations Council is composed of members from all UW System institutions and works with the Office of Federal Relations to communicate with Wisconsin's federal delegation, assist campuses in their relationships with the federal government, raise UW System visibility, and position campuses to increase federal funding.

At the Council's meeting last month, Maliyakal John, WiSys General Manager, talked about the WiSys mission to support scientific research in the UW System. He discussed the assets of the UW System, including 200 faculty who generate intellectual property, more than 600 scientists with intellectual property potential in research and development, the availability of core research facilities, federal and state grants,

and several low- and medium- market intellectual properties.

John noted that UW System campuses face challenges and obstacles in furthering intellectual property, including no release time for faculty to conduct research and development, no post-docs or research assistants, and no funding to support research. He also indicated that quality and quantity of federal grants is mixed, and that there is a lack of interdisciplinary projects and basic research infrastructure. The Federal Relations Council concurred that long-term solutions to these challenges must include stable extramural funding.

The announcement sends a positive message that all UW System universities have a growing role to play in research and development and in creating, nurturing and deploying intellectual capital – all of which is increasingly important to Wisconsin's economy.

Kristine Andrews
Assistant Vice President for Federal Relations
UW System

Technology Catalog – First Edition



As part of our technology commercialization campaign, we've recently published a catalog of selected UW System Campus technologies that are currently being marketed by WiSys.

Please visit wisys.org/aboutus/ and scroll to the bottom of the page to view or download a copy the catalog. Contact Lisa Murray at 608-263-2917 or lmurray@wisys.org if you would like hard copies to display in your office or to distribute. The catalog, entitled UW Systems Technology Innovations for Wisconsin Businesses, will be updated quarterly.

Small Business Grant Programs Transferred to the Wisconsin Entrepreneurs' Network

Getting assistance for your small business has never been easier! The administration of three small business grant programs is now being managed by the Wisconsin Entrepreneurs' Network (WEN). In addition to the transfer of Early Planning Grant (EPG) and Technology Assistance Grant (TAG) programs from the Wisconsin Department of Commerce, WEN will continue to administer the Entrepreneurial Training Grant (ETG) business plan development program.

These grant programs help entrepreneurs start or grow their businesses by developing a stronger base of business skills, constructing a plan for creation or growth, and/or obtaining professional services necessary to apply for

federal funding. In an effort to make the process seamless, some modifications are being made to the grant application process. Applicants will now easily be able to identify the most relevant grant program(s) for their organization. In addition, a database of private sector providers is also being implemented along with a qualification process that will help applicants find the private service provider that best matches their needs.

Additional information on these entrepreneurial development programs can be found on www.wenportal.org or by calling 1-800-940-7232.

*Ashwini Rao, Statewide Coordinator
Wisconsin Entrepreneurs' Network*

Campus Invention Disclosures

TOTAL NUMBER OF INVENTIONS DISCLOSED TO WISYS FROM EACH UW SYSTEM CAMPUS AS OF JUNE 2006

Campus	Number of Disclosures*	Patents Issued**	Licensed Technologies
Eau Claire	11		1
Green Bay	2		
La Crosse	9	1	
Milwaukee	91	9	2
Oshkosh	6	2	
Parkside	8		
Platteville	5		
River Falls	6	1	
Stevens Point	12	1	
Stout	36		1
Superior	1		
Whitewater	2		
Total	189	14	4

* Total number of disclosures

** Includes issued and allowed cases

Discoveries and the People Making them

Magma and Molten Metal in the Microwave

Industrial metalwork relies on large furnaces to heat metal to melting temperature. But now, thanks to a method developed by Robert Foley, professor of physics at UW-Stout, a household microwave can do the same job much more efficiently, and can even fire clay or toast food.



Traditional furnaces take a long time to heat up, use more energy, allow more heat to escape and cannot be opened or checked on during the process. Foley's method heats quickly, heats just the products, and requires very little special equipment.

"You can go out and buy a used microwave for \$50, and that works for this," he said. "If you fire it at medium, usually at about 15 minutes or so it'll be red hot and melting."

The key to this technology is a specialized clay bowl that fits inside the microwave and acts as a crucible. It is responsible for absorbing the microwaves and heating the metal within.

Foley has safely used his microwave technique to heat contents to nearly 1500 degrees Celsius. He anticipates that it could go as high as 1650 C, at which point the ceramic crucible starts to break down.

Most modern microwaves have a safety mechanism that will cause them to shut off if the temperature gets too high, so for this process to work the inside of the microwave must be well insulated. Foley uses bricks of a lightweight, high-temperature form of insulation that is reminiscent of volcanic rock. The insulation works so well that a pair of gloves is all that is necessary to remove it and look directly at the molten metal within, he said.

One major commercial application is kits for hobbyists and artists who make metal jewelry. The kit will make in-home metalwork easier and less expensive.

The technique is not limited to metal, either. It

can be used to melt just about anything, including rock, Foley said. Artists could use it to melt substances for casts like plastic or metal, or even to make pottery more quickly.



To make the pottery, Foley developed a

special 'doped' clay. "You probably could make your pot in the morning, dry it for a few hours, and then fire it," he suggested. "You'd have your final vessel, all within a day." That process normally takes three



to seven days in a kiln. A patent application has been filed for Dr. Foley's invention and the technology is being marketed by WiSys.

By Nathan Hurst

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