

Marshfield Clinic and UW-Eau Claire Collaboration on Rational Design of Drugs: Program Offers Model for System and Industry Statewide



Michael Caldwell

WiSys Technology Foundation is spearheading collaborations among researchers in diverse disciplines across the state to develop new programs at UW System campuses. Marshfield Clinic and WiSys announced a partnership earlier this year to strengthen research collaborations and technology transfer efforts between the two institutions, allowing for the addition of clinical sciences expertise to these efforts. In a first-of-its kind study, clinicians at Marshfield are now working with chemists at UW-Eau Claire to develop safer, more effective anticoagulants (blood thinners).



David Lewis

“Our assessment was that the identified genetic basis of drug metabolism and interaction was a key knowledge base of Marshfield,” says WiSys Director Maliyakal John. “Similarly, we identified design and synthesis of novel chemical compounds as a key expertise of UW System. Based on this, we approached Dr. Michael Caldwell, a renowned clinical researcher at the Marshfield Clinic, and professor David Lewis of UW-Eau Claire, a rational drug design expert, to brainstorm on a collaborative project.”

The two scientists came up with some innovative ideas about designing molecules that may lead to safer and more effective anticoagulants. The project exemplifies how inter-institutional collaborations can benefit both parties and the public at large.

“Marshfield Clinic has 90 years of institutional knowledge and data on human genetics, clinical manifestation of diseases and drug efficacy,” says John. “They have the technology and infrastructure to analyze DNA and proteins to monitor the clinical progression of disease and the effect of therapeutics, and they have treatment and treatment outcomes recorded for tens of thousands of patients.”

See "Marshfield Clinic and UW-Eau Claire Collaboration" page 2

In This Issue

Page 2

- Marshfield Clinic and UW-Eau Claire Collaboration

Page 3

- Partnership Agreement Signed for Universal Lab Station Development
- UW-River Falls Partners with BioDiagnostics and Brownseed Genetics

Page 4

- Ongoing Collaborations
- WiSys Technology Catalog

Page 5

- WiSys Innovation Scholar Award

Page 6

- WiSys, UW System Select Applied Research Grant Recipients
- UW-Platteville Student Wins National Science Competition
- Extramural Grant Applications

Page 7

- Campus Invention Disclosures

Page 8

- Meet the WiSys Trustees

Page 9

- WEN corner

Page 10

- UW System Corner

Page 11

- Marshfield Corner: Center for Human Genetics

Marshfield Clinic and UW-Eau Claire Collaboration

Continued from page 1

What the clinic didn't have, according to John, was knowledge of rational drug design and development, and synthetic chemistry. Lewis, professor of chemistry and a synthetic chemist at UW-Eau Claire brought that intelligence to the table.

The initial meeting between Caldwell and Lewis went so well that Michael invited the participants to his home for a barbeque on a recent Saturday afternoon to continue their discussion. "Mike and I got along like a house on-fire," says Lewis. "It was obvious that our scientific strengths and weaknesses complement each other."

The two scientists are bringing their complementary strengths to bear on problems surrounding the use of anticoagulants. These blood thinning drugs are some of the most commonly prescribed medications in the world, but their side effects are complicated to predict, making them quite dangerous.

Caldwell, former director of the Marshfield Clinic Research Foundation and founder of the clinic's personalized medicine research project, says developing an improved, safer, more effective anticoagulant would be a good example of how personalized medicine can be used to treat a very common health problem, like thrombosis (clot formation).

"Anticoagulants are dangerous because you can't predict the stable therapeutic dosage," he says. "Some people are genetically predetermined to be very sensitive to warfarin (the most frequently used oral anticoagulant) and they can develop bleeding with a standard dose. Among others, we discovered that if you use the patient's genotypes for the metabolism of warfarin and Vitamin K, you can better predict the patient's therapeutic dose."

"There are several sub-populations of patients," Lewis explains, "some of whom take warfarin and it's extremely effective in extremely small doses. Others have a minimal reaction to the drug. We're looking to design molecules that will allow us to make a much safer and more predictable anticoagulant for all the patients who need the drug."

"Warfarin is a drug where we are beginning to understand the role genetic variants play in an individual's response to the drug," Caldwell says.

"Consequently, we can use genotyping proactively. What we're conducting is the first federally funded study to use genotyping prospectively for warfarin dosage," says Caldwell.

"With the information gained by our colleagues at Marshfield, we now have an excellent starting point to help us design a molecule that gets around genetic variation," says Lewis.

Lewis adds that the work with Marshfield is also a boon to undergraduate students at UW-Eau Claire, who will have the opportunity to get hands-on training in the field of synthetic chemistry.

Dr. Robert Carlson, director of the Applied Science Program at Marshfield Clinic, agrees that the collaboration is groundbreaking and potentially beneficial to people around the world. And he says this type of collaboration falls within the historic mission of the clinic.

"Marshfield is a patient-care organization; that's where our heart is," Carlson says. "What we hope to accomplish is to improve doctors' ability to get the right drug in the right dosage to the right patient, either by way of understanding the variance metabolism with traditional medications or to assist in developing a new drug that isn't affected by that variant."

Carlson and Maliyakal John expect this to be the first of many inter-institutional research collaborations, and that this will present a model for other efforts. "This is just the beginning," says Carlson. "This is one of several initiatives that are strengthening this partnership between Marshfield and the UW System."

By Jill Ladwig

WiSys Technology Foundation, Inc.

Managing Director: Maliyakal John
608-265-2135 or maliyakal@wisys.org

Web site: www.wisys.org

Fax: 608-262-6104

For Newsletter information, contact:
Lisa Murray at 608-263-2819 or lmurray@wisys.org

Partnership Agreement Signed for **Universal Lab Station**

On June 22nd, UW-Stout, WiSys Technology Foundation, Spectrum Industries, Inc. and UW-Madison signed a partnership agreement for development of a “Universal Design: Accessible Science Lab Station.” The signing ceremony, which took place at UW-Stout, marked a new chapter in collaboration efforts between Wisconsin university and industry.



Front row (left to right): UW-Stout Chancellor Chuck Sorensen, Spectrum Industries President Dave Hancock, UW-Madison NSF Midwest Alliance-Amy Fruchtman, WiSys Managing Director Maliyakal John. Back (left to right) Al Noll, Jeff Annis, Jim Hubbard-Stout Vocational Rehabilitation Institute.

The project, which seeks to develop a lab station utilizing input from various science faculty and students, will focus on novel design, testing, prototyping and fabrication. The resulting

product will enhance sensory and physical access to individuals with a variety of disabilities in university and secondary school science labs.

Of the collaboration, Chancellor Charles W. Sorensen said “UW-Stout’s work on the lab station will strengthen science education and even support the growing need for scientists by reaching populations that perhaps otherwise could not be served.”

Funded in part by a \$20,000 grant from the National Science Foundation through the Midwest Alliance in Science Technology, Engineering and Mathematics at UW-Madison, the project—expected to cost approximately \$60,000—will receive funding from a number of additional sources, including UW-System and in-kind support from Spectrum Industries.

WiSys will further contribute to the project by facilitating additional funding, protecting the potential intellectual property and marketing.

Prototype development is slated to begin in December, led by Spectrum Industries. The Chippewa Falls company is a prominent manufacturer of computer and office furniture, with products in over 10,000 facilities across the United States.

By Bethany Billman

UW River Falls Partners with **BioDiagnostics and Brownseed Genetics to Develop Super High-Oil Corn Development**

In another example of breakthrough collaboration, Steve Carlson, professor of agronomy at UW-River Falls; Chandra-Shekara, Research and Development Scientist at BioDiagnostics; and Charles Brown, president of Brownseed Genetics are working to create a cost-effective, eco-friendly oil for use in food, animal feed and fuels. The team is investigating and identifying molecular markers associated with producing a high-oil corn stock. WiSys will manage the intellectual property developed by the partners and facilitate funding.

According to Bill Campbell, director of grants and research at UW-River Falls, the project came to the university by way of BioDiagnostics, a leading genetic seed-testing company. It builds on collaborative efforts already in play.

“UWRF works with BioDiagnostics in a number of ways,” Campbell says. “They hire our students, and our faculty members consult with them.”

Another company in the region, Brownseed Genetics, had already developed a high-oil corn, and according to Campbell, approached BioDiagnostics about developing genetic markers that could aid in assisted breeding of the high-oil trait. Regular corn contains 3-5 percent oil.

“What we’re doing is trying to generate markers that allow us to detect the particular regions in the corn genome that are needed for that high-oil trait,” says Mike Thompson, manager of the DNA Technologies group at BioDiagnostics. “This will give us a foothold into the genome, and show us the positions of loci responsible for the super-high-oil trait.”

See “UW River Falls Partners with BioDiagnostics and Brownseed Genetics” Page 4

Additional Ongoing Collaborations

- Dana Vaughan of UW-Oshkosh is collaborating with UW-La Crosse for her ARG grant project, “Bringing Ground Squirrel Captive Breeding Technology to NIH Standards.” Vaughan has established the first captive breeding colony of the 13-lined ground squirrel, and Amy Cooper, UW-La Crosse’s Lab Animal Facility manager, will serve as an expert consultant while UW-Oshkosh seeks AAALAC—Association for Assessment and Accreditation of Laboratory Animal Care— accreditation of their own facility. UW-La Crosse will document colony health and conduct pilot studies. The species is an attractive research alternative to mice and rats in studies of therapeutic hibernation and degenerative eye diseases.
- Aaron Monte, Marc Rott, William Schwann and Leah Defoe of UW-La Crosse along with James Cook and M. Shahjahan Kabir of UW-Milwaukee are participating in the joint development of “Anti-Infective Agents and Methods of Use.” The invention presents new compounds and methods of use for the treatment and prevention of various infections, as well as the growth of microbes.
- WiSys is assisting the Ashland Economic Development team to select bioenergy-related industrial development. As their tech advisor, WiSys participated in discussions between the Ashland team and ARDISAM Industries, Inc. in Cumberland, WI—manufacturers of outdoor lawn, garden and sporting goods—who plan to start biodiesel production in Cumberland and Ashland.
- As a direct result of the “Collaborative Symposium” series hosted by WiSys, the UW System Office of Federal Relations and the law firm Whyte Hirshboeck Dudek, the “Integrated Solutions Consortium” between UW-Stout, UW-Eau Claire, UW-River Falls and Chippewa Valley Technical College was formed. The symposium brought together faculty, students and other research experts, and gave all four institutions an opportunity to collaborate, share resources and expertise, and become knowledgeable about research at surrounding campuses.
- Charles Gibson of UW-Oshkosh, Mike Zach of UW-Stevens Point and Hisham Abdel-Aal of UW-Platteville are discussing nanotechnology collaborations.

By Bethany Billman

UW River Falls Partners with BioDiagnostics and Brownseed Genetics

Continued from page 3

Normally, the breeding process would entail study of the plant’s entire life cycle, according to Thompson. “But with a marker, we can identify progeny that have the loci that would give us that trait, and we can find out when the plant is still a seedling,” he says.

The project offers benefits for all parties involved. “For the university, it’s a chance for us to strengthen our ties with BioDiagnostics, and to help our faculty and students apply classroom knowledge to a real-world case,” Campbell says.

“One of the benefits of the high-oil corn is that it’s good for the production of biodiesel, and it could compete with soybeans and make production of biodiesel more economical. That would have an implication for Wisconsin farmers and farmers everywhere,” he adds.

Plus, Campbell and others say high-oil corn could be used in livestock feed, making it a useful agricultural product, as well as an alternative energy fuel. This could be an economic windfall to farmers everywhere.

By Jill Ladwig



UW Systems Technology Innovations for Wisconsin Businesses

A catalog of selected UW System Campus technologies currently being marketed by WiSys can be accessed on our website at <http://wisys.org/aboutus>. To request hard copies to display in your office or distribute, contact Lisa Murray at (608) 263-2917 or lmurray@wisys.org

UW-Stevens Point's Ring Named Innovation Scholar

The WiSys Innovation Scholar Award is an initiative to recognize and honor UW system faculty, staff and students who disclose to WiSys outstanding discoveries that benefit society. Selection for the award is based on the innovative concept, broad use, value and industrial applications of the technology. In consultation with each system campus, WiSys selects monthly inventors.



Professor Gerry Ring of UW-Stevens Point has been selected by WiSys to receive a 2007 Innovation Scholar award. Ring is the chair of UW-SP's Department of Paper Science and Engineering, and his technology stands out from the crowd.

As the number one paper-manufacturing state, Wisconsin is known for leading the pack in terms of production. With influence ranging from loggers to manufacturers to printers, the \$12.4 billion-per-year industry does much to further Wisconsin's economy and provide for its people. Now, an innovation from the University of Wisconsin-Stevens Point may streamline papermaking for people here in the state and around the world.

For decades, papermakers have struggled to perfect the fiber composition of their pulpy product. They mix long, strength-building fibers with short, surface-smoothing ones in hopes of creating a sturdy, high quality sheet. Recycled fibers often make their way into the mix, as well. To blend these in the correct proportions, papermakers need to analyze the size of fibers going into their paper, which means embarking on a long process of drying, separating and examining.

Gerry Ring, chair of the paper science department at UW-Stevens Point, has developed a way to measure and control the flow of fiber into a paper-making machine, providing a more uniform composition, and thus a more perfect piece of paper.

"The concept here is that keeping the right ratio of the different fiber lengths is important for virtually all paper properties," Ring said.

"When you combine small things and large things they tend not to fit together very well, and with papermaking, we're beginning to understand that fitting together is an important thing."

Getting those fibers to fit together and do so more uniformly, is the purpose of Ring's invention. Ring says this provides more consistent paper quality, superior strength and an opportunity to add a higher percentage of recycled fibers to the mix. The benefit of using more recycled fibers is two-fold: reused fibers cost less than virgin fibers and they are easier on the environment.

Ring says that when adjusting the flows of the different types of fibers into the machine, papermakers currently rely on data calculated from average fiber length, but there is a better way.

"An average is an okay descriptor of a population, but when you want to make sure that the number of long versus short fibers is the same time and time again, an average doesn't allow you to do that," he said.

Ring's system relies on an advanced statistical alternative to averages called "moments" to keep a uniform distribution of fiber lengths providing a more reliable quality in the product. The only problem is that people in the industry haven't adapted to Ring's theory just yet.

"The industry doesn't have people that think in terms of distributions, they think in terms of averages," Ring said. "Another issue is that people don't really understand that strength comes from a uniform distribution of fibers. The current thinking in the industry is that a uniform distribution is just something that looks pretty."

His next task is to prove the connection between fiber length distribution and paper quality in the laboratory, and then he plans to join forces with an instrument manufacturer to put together a system for implementing the invention. Despite some future hurdles, Ring is optimistic.

"Ultimately some equipment manufacturer is going to say 'Aha! This is beautiful and we're going to put together a process control mechanism with it,'" he said. "The technology is definitely there to put it all together within five years."

By Brian Sweeney

WiSys, UW-System Select Applied Research Grant Recipients

Dr. Lei Ying of UW-Milwaukee has been allocated ARG funding for “High-speed Parallel Magnetic Resonance Imaging: Development, Implementation, and Applications.” Ying seeks to develop new image reconstruction algorithms for parallel magnetic resonance imaging (MRI). Traditionally a low-speed imaging modality, the new algorithms for parallel imaging which uses a multi-channel phased array coil to acquire data simultaneously are expected to improve MRI imaging speed by a significant margin, freezing motion and increasing efficiency.

Dr. James Hamilton will receive ARG funding for “Nano Composite Polymer Strip Coatings, Protectants, Electrodes and Decontamination Films.” Hamilton’s lab has developed a class of inert polymers with continuously turnable surface adhesion that nearly atomically clean traditionally “uncleanable” surfaces such as telescope mirrors and high power laser optics. Results have been confirmed by use at NASA’s Goddard Space Flight Center, and on the University of Iowa’s Ultra High Resolution Scanning Electron Microscope (SEM). The allocated funds will be used to conduct detailed polymer characterization and continued study of the chemistry and physics at the interface.

Dr. Adel Nasiri of UW-Milwaukee will receive ARG funds for “Techniques for Efficient Transcutaneous Power/Signal Transmission for Left Ventricular Assist Devices”. Given the extensive waiting list for transplants, there is a great need for more efficient mechanical aids to prolong patient lives until a donor is found. This project proposes a novel integrated wireless transcutaneous power transfer and motor control system that can safely and efficiently recharge an implantable battery that supplies an LVAD motor. Such a system would be an attractive alternative to current invasive methods that are both hard to clean and susceptible to infection.

Dr. Steve Carlson of UW-River Falls will receive funds for “Capturing Commercial Value of Super High-Oil Corn through Molecular Marker Assisted Breeding” The project seeks to identify DNA markers linked to high-oil traits in order to maximize the commercial value of a high-oil corn inbred. Both genetic linkage and molecular analysis will be conducted using polymerase chain reaction-based markers at BioDiagnostics Inc. The project seeks to increase financial returns to corn growers, reduce grain dust in feed and animal production and potentially benefit developing countries by easing energy-protein malnutrition.

Dr. Dana Vaughan of UW-Oshkosh will receive ARG funds for “Bringing Ground Squirrel Captive Breeding Technology to NIH Standards.” The 13-lined ground squirrel is an attractive research alternative to mice and rats in studies of therapeutic hibernation and degenerative eye diseases. Vaughan has established the first captive breeding colony of this species at UW-Oshkosh, additionally collaborating with UW-La Crosse faculty to document colony health and conduct pilot studies. Funds will be used to further streamline the technology to more fully accommodate NIH-funded investigators.

Drs. David Hollenberg, Michael Zorn and Franklin Chen of UW-Green Bay will receive funds for “Investigation of Ultrasonic Stimulation of Supercritical and Near Supercritical Carbon Dioxide Treatment of Wood for the Extraction of Hemicelluloses”. There is a great global interest in processes converting cellulosic materials to chemicals and energy, specifically fuel ethanol. The investigators seek efficient and high yield removal of hemicellulose sugars from the ultrasonic stimulation on supercritical and near supercritical carbon dioxide treatment of wood during the pulping process. This could provide a transitional step for converting a pulp and paper operation into a refinery, and produce sugars readily fermentable to ethanol.

By Bethany Billman

Release Time Funding Opportunity for Development of Extramural Grant Applications

Funds are available through the UW System and WiSys to assist UW System faculty develop and submit extramural grant applications. The grant money will be used for release time to allow faculty to prepare grant applications. The total grant amount may be up to \$7,000 per campus, provided the campus administration contributes \$1,000 of the total.

Please contact Lisa Murray at lmurray@wisys.org or 608-263-2819 for more information or a copy of a Release Time Grant application. The application can also be accessed on our website at: <http://wisys.org/forresearchers/>. (Click on “Release Time Grants”.)

Campus Invention Disclosures

TOTAL NUMBER OF INVENTIONS DISCLOSED TO WISYS FROM EACH UW SYSTEM CAMPUS AS OF APRIL 2007

Campus	Number of Disclosures*	Patents Issued**	Licensed Technologies
Eau Claire	12		1
Green Bay	3		
La Crosse	10	1	
Milwaukee	112	10	2
Oshkosh	8	2	
Parkside	9		
Platteville	12		
River Falls	9	1	
Stevens Point	15	1	
Stout	37	1	1
Superior	1		
Whitewater	5		
Total	233	16	4

* Total number of disclosures

** Includes issued and allowed cases

UW-Platteville Student Wins \$50,000 Scholarship at National Science Competition

Philip Streich is 16, and is a member of his local 4-H club. Home-schooled in Belmont, WI, he takes classes at UW-Platteville, where chemistry professor and WiSys inventor James Hamilton mentors his work with nanotubes. Some may say that this is already quite an accomplishment for a sophomore.

But it looks like this is only the beginning for Streich, who walked away a winner at the Intel International Science and Engineering Fair in Albuquerque, New Mexico on May 18th, taking home \$70,000 in prizes, including a \$50,000 scholarship.

Streich's project, "Determining Carbon Nanotubes' Thermodynamic Solubility: The Missing Link to a Practical Supermaterial?" provided the first evidence that carbon nanotubes are thermodynamically soluble.

Among the strongest and most conductive materials in the world, carbon nanotubes are approximately 50,000 times smaller than a strand of hair.

Streich used static light scattering to measure a parameter called the second virial coefficient B, further quantifying the limits of the nanotubes, and perhaps finally providing the key to realizing the potential of nanotubes as supermaterial.

In his US Physics team biography, Streich writes that, "As far back as I can remember I've loved science, and living on a farm has been like owning a huge laboratory."

"Phillip is very independent, extremely productive and also has the best pair of 'lab hands' we've ever seen- he can figure out and operate almost any piece of lab equipment" said Hamilton.

This scarcely does justice to the growing list of Streich's accomplishments. The treasurer of the Democratic Party of Grant County, he founded "Kids Against Global Warming", was the National Physics Bowl Division 1 First Place Winner in 2006, currently interns in the State Capitol for an assemblyman, takes online courses at Stanford University, and plays piano and guitar.

Streich's prizes from the competition also include the MIT Lincoln Laboratory naming a planet after him, and a trip to China's Adolescent Science and Technology Innovation Contest in August.

The Intel International Science and Engineering Fair (Intel ISEF) is the world's largest pre-college science competition.

Founded in 1950, the Intel ISEF annually hosts nearly 1,500 students from more than 40 nations to compete for a variety of prizes, including internships and scholarships.

As an organization working directly with cutting-edge innovations and discoveries, WiSys is proud of Phillip's accomplishments and wishes him the best in his scientific endeavors.

By Bethany Billman

Meet the WiSys Trustees

The WiSys Board of Trustees is made up of six members and meets twice a year. Before WiSys can finalize license and equity agreements with a company, such actions must be cleared by WiSys' internal start-up committee and then by its Board of Trustees.

Carl E. Gulbrandsen



The Managing Director of the Wisconsin Alumni Research Foundation, Carl is also President of WiCell Research Institute, President of the WiSys Board of Trustees, and Chair of the Morgridge Institute for Research. He is a member of the Association of University Technology Managers (AUTM), the Licensing Executive Society, the American Intellectual Property Law Association, the

Wisconsin State Bar, and the American Bar Association. A member of the Executive Committee of the Wisconsin Technology Council and the Patent Public Advisory Council for the United States Patent and Trademark Office, Carl previously served as General Counsel of Lunar Corporation and Bone Care International, Inc, both of which sell products based on technologies arising from UW-Madison research. Carl received his Ph.D in physiology from UW-Madison and his JD. from the UW Law School. In addition to enjoying spending time with his wife Mary, three children and one grandchild, he enjoys golfing, snow skiing and reading.

Donald Mash



Donald received his Ph.D from Ohio State University in Higher Education and Student Development and was a first generation college student. Throughout his nearly 40 years of leadership positions in higher education, Donald has been a strong advocate for student development during the college years, as well as supporting a strong public service role for regional public universities. Having previously served as Chancellor at UW-Eau Claire where he championed private fundraising efforts, Donald is presently serving as the Executive Senior Vice President of the UW System Administration, where he continues to be an advocate for public service involvement and civic awareness engagement of alumni.

Pat Brady



Pat currently serves as the General Counsel of the University of Wisconsin System. She received her undergraduate degree from the UW-Madison and her law degree from the UW Law School. Prior to her current position, Pat served as Deputy General Counsel and Senior System Legal Counsel for the UW System, practicing in the areas of diversity, employment, student affairs, public records and meetings, contracts and intellectual property.

Previously, she represented the North Carolina Department of Public Instruction and the University of North Carolina as an Assistant Attorney General. She is a regular speaker on legal issues in higher education, and has taught higher education law at the UW-Madison. Pat enjoys reading, swimming, opera and travel.

Leon Ostrowski



Leon received his M.B.A. from Central Michigan University and completed the INSEAD Human Relations Management Program in France and the MIT Strategic Management Program. He has gained 35 years of extensive business experience through his international and domestic professional and managerial assignments for a Fortune 500 company and through personal ventures and consulting assignments. Leon is Founder and Coordinator of the Central Wisconsin Business Angels, LLC, and a founding partner in the Planned Innovation Institute. Leon and his wife Pat have 3 children and 8 grandchildren.

Carol Skornicka



Carol is currently Sr. Vice President-Corporate Affairs, Secretary and General Counsel for Midwest Airlines in Milwaukee. She received all of her degrees from the University of Wisconsin-Madison, and they include a BS, MS and JD. Carol has been on the board of the UW Foundation and chair of the Board of Trustees of the Memorial Union Building Association. In addition to serving on the board for WiSys, Carol is also a trustee for WARF and has been the recipient of the Outstanding UW-Madison Alumni Award as well as the Madison Chapter of the WAA Outstanding Alumni Award. Carol has two grown children and 2 grandchildren and enjoys classical music, traveling, skiing and reading.

Burnell Roberts



Born and raised in southwest Wisconsin, Burnell received his Bachelors degree in Accounting and Finance and has a Masters in Business from Harvard. Elected in 1987, Burnell is also on the WARF Board of Trustees, and served as President for two years. As CEO and Chairman of the MEAD Corporation in Dayton, Ohio for 10 years,

he retired in 1992, but still worked for a private equity firm. Now fully retired, Burnell enjoys reading and boating. He and his wife Karen have 4 children who are scattered throughout the United States and Europe, as well as 9 grandchildren.

Business Assistance Grants Help Entrepreneurs

Over 60 small business owners from around the state have received grant funding through the Wisconsin Entrepreneurs' Network (WEN). These grant funds are being used to develop plans for business creation or growth and/or to obtain the professional services necessary to apply for federal funding.

Mark Westfall, owner and founder of SirkPath, Inc., an electronic health records company, successfully applied for an Early Planning Grant (EPG) in 2006. The EPG program is for entrepreneurs looking to hire a consultant to evaluate the feasibility of a proposed start-up or expansion. "We found that the market for our products had significantly changed since we last wrote our business plan," explains Westfall. "The grant helped us to re-write the business plan to focus on new markets and create a presentation for investors."

WEN also administers the Technology Assistance Grant (TAG) program to assist small high-technology businesses in obtaining seed, early-stage or research and development funding. Beginning July 1, 2007, WEN will also provide grants for existing and start-up Wisconsin dairy producers for dairy herd expansion through the Dairy 2020 Early Planning Grant program.

The maximum award amount for each program is \$3,000 per business, with grant recipients responsible

for providing at least 25% of project costs from sources other than the State of Wisconsin.

WEN was established in June 2005 to create seamless access to entrepreneurial resources and expertise from across Wisconsin to both spawn new ventures and help grow existing businesses. In June 2006, WEN began administering these grants on behalf of the Wisconsin Department of Commerce.

Applications are reviewed by a team that includes the WEN Regional Directors. In addition to identifying early-stage funding opportunities, the Regional Directors evaluate growth strategies, assess technical and commercial viability of technologies and products, develop strategic business and marketing plans and create intellectual property protection strategies for entrepreneurs.

"Access to capital and knowledge are critical building blocks for entrepreneurs", explains Debra Malewicki, interim WEN managing director. "These grant programs are designed to help entrepreneurs access resources that will help them grow their businesses."

In addition to program information, applicants can find business advisors and consultants on the WEN website at: www.wenportal.org or by calling 1-800-940-7232.

"Staying Competitive Through Innovation"

SBIR Workshop August 15, 2007 at UW River Falls University Center

Got an idea for a new cutting-edge product or service? Learn how to access technology transfer opportunities and expertise at Wisconsin universities and then tap into the federal \$2.2 billion Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs to support the research and development efforts.

This workshop will help you explore federal funding sources you may not have previously considered for innovative new product development to reduce business, technical and marketing risks.

Do you:

- Have a technology-based innovative idea that requires feasibility, testing and prototype development efforts?
- Need university expertise to help you with your research efforts?

- Feel ready to take the leap into starting your technology-based business, but need high-risk capital to prove your ideas first?
- Have an existing company that needs research and development capital for future products or services?
- Have a small technology-based company seeking to commercialize technologies for civilian and military markets as prime participants in federal research and development programs?

If you answered yes to any of these questions, come and learn if federal funding is a source of capital for your technology-based project or idea!

To register, or for more information, contact Pat Dillon, Northwest Regional Director, Wisconsin Entrepreneurs' Network at 715-836-5056 or by e-mail: dillonp@uwec.edu or go to www.wenportal.org

Federal Relations Update



On Tuesday, June 26, 2007, the U.S. Department of Energy announced that the University of Wisconsin-Madison was tapped to host one of three bioenergy research centers in the United States. The federal award, approximately \$125 million over five years, establishes the Great Lakes Bioenergy Research Center (GLBRC), where scientists and engineers will conduct basic research toward a suite of new technologies to help convert cellulosic plant biomass – cornstalks, wood chips and perennial native grasses – to sources of energy for everything from cars to electrical power plants. Please read remarks by UW System President Kevin Reilly delivered at the GLBRC announcement:

On behalf of the University of Wisconsin System, I appreciate the opportunity to celebrate our university's role – and our state's role – in solving the world's long-term energy needs.

Let me echo sentiments expressed by others, in thanking the U.S. Department of Energy and Wisconsin's congressional delegation for entrusting the University of Wisconsin-Madison with this prominent role in bioenergy research.

I should also recognize Governor Jim Doyle for his leadership in this area, including his administration's efforts to promote energy efficiency and expand the state's use of alternative energy sources.

Congratulations to Dean Molly Jahn, Professor Tim Donohue and all of our academic colleagues at the College of Agricultural and Life Sciences. You should feel proud of this national recognition. By all accounts, you should also feel a bit terrified by this awesome challenge and all the hard work that lies ahead!

We have no doubt that your efforts will be very fruitful, carrying on UW's extraordinary tradition of scientific discovery and technological innovation.

In addition to outstanding scientific expertise, the University of Wisconsin brings other important capabilities to this groundbreaking project. We benefit from a history of strong university-business partnerships, and an abundance of potential bio-fuel sources. Most of all, we benefit from decades of prudent investments made by state leaders.

This great public university is great because of our public. All Wisconsin residents benefit from educational opportunities and scientific research because all Wisconsin taxpayers support this institution. The children and grandchildren of all Wisconsin residents will benefit from this investment. I have no doubt that our faculty members will be responsible for some exciting breakthroughs in the years to come, but it's the Wisconsin taxpayers who are responsible for putting us in a position to compete successfully for this federal grant.

Those investments in our higher education infrastructure extend far beyond the UW-Madison campus. With a total of 26 campuses and one of the finest Extension networks in the nation, the UW System can be a super-charged economic engine for the state – one that runs on alternative fuels, of course.

This grant will expand collaborations within the UW System, providing specific opportunities for UW-Milwaukee, UW-Stevens Point, UW-River Falls, UW-Green Bay and other campuses to bring their own expertise to this bioenergy project.

Wisconsin's staple industries – production agriculture, dairy, timber, paper, and manufacturing – have all benefited from new technologies nurtured in UW laboratories. With that long record of transforming knowledge into practical solutions that meet the needs of the day, it's no surprise the U.S. Department of Energy picked Wisconsin as a fitting home for one of its bioenergy centers.

Again, on behalf of the entire UW System, congratulations to everyone involved in this terrific project!



The Center for Human Genetics

Scientists in the Center for Human Genetics, established in 2004, research the structure and function of the human genome and apply that research to the development of personalized medical treatments. The Center combined two of Marshfield Clinic's internationally known research assets; The Center for Medical Genetics, founded in 1994, and the Personalized Medicine Research Center, founded in 2001. The mission of the Center for Human Genetics is to conduct translational research in medical genetics that substantially improves patient care.

The Center for Human Genetics focuses its research on discovering the structure of the human genome and the hunt for genes that influence human health disorders. The discovery at Marshfield in 1989 of short tandem repeat polymorphisms revolutionized the study of human genetics, and Marshfield maps are among the most reliable and widely used maps of the human genome in the world.

The Personalized Medicine Research Center was a logical outgrowth of initial genomic research. If doctors can understand which genes and environmental factors are involved in a disease, they may be better able to target the disease with specific medications that affect these particular pathways. This information might also enable doctors to predict the risk of disease in an individual and prescribe preventive measures. In 2002, the Center launched what is now the largest population-based genetic research project in the United States, involving more than 18,000 central Wisconsin residents.

Personalized Medicine Research Project

Researchers at Marshfield Clinic want to learn more about how genetic alterations cause diseases, how to use an individual's genetic information to predict which diseases he or she is likely to get, and which medications work best for a particular person. The Marshfield Clinic Personalized Medicine Research Center Project could lead to the development of new medications or diagnostic tests.

The goal of the Personalized Medicine Research Project is to translate genetic data into specific knowledge about disease that is clinically relevant and will enhance patient care. This will happen by helping physicians diagnose genetically influenced problems, prescribe personal preventive measures, and select the most effective medications that are least likely to cause adverse reactions.

The project has three phases:

- Completed in April 2004, the objectives of Phase I were to educate, inform and consult with the Marshfield Epidemiologic Study Area population and communities concerning potential studies, create the DNA foundation of the personalized medicine database and build the bioinformatics tools to store securely and analyze genotypic and phenotypic data. The budget for Phase I tasks was \$3,638,000, which also included operation of the ethics and security advisory board, scientific advisory board and community advisory group. More than 18,000 residents participated in Phase I.
- The objectives of Phase II are to create the phenotypic database, establish the scientific and administrative infrastructure to support genetic mapping of the DNA and the initial discovery projects and genotype a sufficient portion of the genetic material to support these discovery projects.
- The objectives of Phase III are to expand the discovery projects, complete the genotyping of the genetic database and expand physician/health care provider education and community consultation.

For UW faculty who would like to know more about the activities of the Center for Human Genetics, please contact Dr. Cathy McCarty, 1-800-782-8581, ext. 9-3120 at Marshfield Clinic. For information about collaboration or Marshfield Clinic's technology transfer program, contact Don Strobel at 1-800-782-8581, ext. 9-3712.