

BIO-FEEDBACK

DEPARTMENT OF BIOLOGY

Summer 2007 Newsletter • Volume 7



FROM THE CHAIR

Karen Klyczek

Greetings! The theme for this year's newsletter is "collaboration". This was not necessarily an intentional theme as we put the newsletter together, but as you read through these pages you will see several examples of productive collaborations between faculty, students, departments, institutions, and community members. These collaborative relationships have expanded the opportunities available for Biology students and faculty, and they reflect the increasing importance of collaborative and interdisciplinary approaches to teaching and research in the sciences.

Other changes are taking place in the department. We are currently in the process of searching for a new

faculty member for the position vacated by Clarke Garry when he retired last year. Although Clarke cannot be replaced, we are hoping to find someone with a similar background and interest in insect identification and the role of invertebrates in local ecosystems.

We are still working on getting new space and facilities for the department. We have severely outgrown our space on the top floors of the Ag-Science Building, in terms of student numbers, teaching strategies, and faculty/student research activities. This fall we brought in a team of science curriculum consultants to help us determine the type of space we need to support our curricular goals. Now that the new University Center is open and Rodli Commons is vacant, there is ongoing discussion about remodeling that space for Biology. But we are also continuing to explore the possibility of a new science building that would bring the science departments together and further enhance interdisciplinary opportunities. We hope that in the next newsletter we will be able to report some progress on this front.

INTEGRATIVE SOLUTIONS CONSORTIUM PROMOTES REGIONAL COLLABORATION

By Timothy Lyden

In June of 2006, a new faculty-initiated, organized and administered organization was established between UW River Falls, UW Stout, and UW Eau Claire along with Chippewa Valley Technical College (CVTC). This new group, called the Integrative Solutions Consortium or ISC, has as its mission to foster interactive collaborative research relationships between faculty and staff of the various institutions as well as to encourage participation of industrial partners with the campuses.

The ISC came into existence as a result of Dr. Tim Lyden's participation in June at a conference in Milwaukee where he highlighted the new UWRF Cellular Imaging and Analysis Center. At the conference, Dr. Michael Pickart from UW Stout and other faculty from UW Eau Claire generated the idea of working collectively to develop and enhance resources and efforts at all our campuses.



UW-System President Dr. Kevin Reilly presents keynote address to 1st annual ISC Symposium

continued on next page



INTEGRATED SOLUTIONS continued



Symposium participants discuss grant opportunities

Basically, it was realized that as a group, we have a better chance of leveraging major grants and enhancing the scholarship at all the institutions in the area. In addition, the later involvement of CVTC Nanotechnology Center in this effort will greatly enhance interaction with the business community as well.

Planning meetings took place throughout the summer and in August the first joint meeting was held at UW-Stout. This was attended by about 45 people from all of the institutions, including faculty, staff and administrators. This was followed in September by a meeting at the CVTC Nanotechnology Center with a tour of that new facility. In October, UWRF hosted a meeting here on our campus and between these various meetings it was decided to hold a regional Symposium in January. By this time the first meetings were already producing results as Dr. Scott Ballantyne of the UWRF Biology department began collaborating with faculty at UWEC on a project involving

DNA sequencing for his Molecular Biology class. In addition, the co-organizers, Dr. Lyden and Dr. Pickart had also begun collaborating on a potential future research grant proposal to NIH as well as working toward establishing a regional cell bank to provide storage capacity for all participants and access to various cell lines.

In January, the first Annual ISC Symposium was hosted at UW Stout with about 60 faculty, administrators, and staff attending. This meeting was very significant for several reasons, but perhaps the most important aspect was that participants included administrators all the way to the level of Chancellors and Provosts as well as Chris Andrews, the UW-System Vice President for Federal Relations and Malyakal John from WiSys (the UW-System Intellectual Property Management resource). Also significant at this year's Symposium was the presentation by UW System President, Dr. Kevin Reilly, as keynote speaker. Dr.'s Scott Ballantyne, Kim Mogen and Karen Klyczek, along with co-organizer Dr. Tim Lyden attended this meeting from the UWRF Biology Department. Additionally, faculty from UWRF College of Agriculture, Food and Environmental Science and the Chemistry Department also participated in this major event.

In March, the ISC executive committee, in collaboration with several campus and system administrators, began a major push for federal funding to support our efforts to enhance research, teaching, and the economic environment of our region. In June, the executive committee and various administrators will also visit our congressional representatives in Washington to introduce them to this exciting new concept. A new system of video conferencing is in the works for the summer/fall 2007 monthly meetings, as is a new website and a listserv to connect the participants.

BIOLOGY-CHEMISTRY RESEARCH COLLABORATION

By **Karen Klyczek**

The third and final year of a grant to support collaborative research between Biology and Chemistry is nearing completion. A Merck/AAAS Undergraduate Research Grant was awarded to the two departments in 2004 and funded two research projects. Both projects involve the synthesis of potential pharmaceuticals in the Chemistry department, and the biological testing of those substances in the Biology department. David Rusterholz and students in Chemistry synthesized analogs of the hot pepper chemical capsaicin for use as a potential analgesic drug; Karen Klyczek and students in Biology are testing these analogs for their ability to block the capsaicin receptor in cultured cells. The goal is to find a compound that numbs like capsaicin, but without the burning

sensation, and a few candidates have been identified.

The second project involved Tim Lyden in Biology and Karl Peterson in Chemistry, and focused on the natural plant compound incarvillateine, a potential anti-cancer drug. Peterson and students in Chemistry synthesized the compound and analogs, and Tim Lyden and students in Biology tested whether the compounds induce cell death through various pathways in cultured cells. The grant provided \$60,000 over three years for student stipends, supplies, guest speakers, and travel to NCUR to present posters. Biology students who worked on these projects include Maria Caruso, Krista Demuth, Tracy Nelson, Caroline Martin, Amanda Miller, Sarah Schimmel, Julie Carrell, Nicole Wellnitz, Karen Pedersen, and Lee VanderMarliere.



MOLECULAR CLASS DOES DNA TESTING

By **Scott Ballantyne**

Who's the father? That's a question on the minds of many UWRF biology majors. For the past several semesters, students taking Biology 295, Laboratory Research Experience, have been conducting DNA paternity testing. The suspect dads are canine, not human. The paternity issues are real and began with an unplanned litter of sled dogs owned by UWRF assistant professor and dog musher Scott Ballantyne. Students isolate dog DNA from cheek swabs that have been collected from the pups, mom, and suspect fathers. Polymorphic regions in the dog DNA are amplified using the polymerase chain reaction and separated according to their size by electrophoresis. The length of these DNA fragments varies between dogs and so can be used to follow inheritance. Students deduce the DNA pattern of the father by comparing the patterns obtained for the pups and mom. Using this approach, students were able to solve the initial paternity question by eliminating all but one candidate father. The project has flourished and UWRF students have now conducted similar tests for some high-ranking sled dog kennels. Last semester UWRF students solved a paternity case for the owners of an Iditarod racing kennel in northern Michigan (www.natureskennel.com) and this semester they are focusing on dogs from a kennel in central Alaska. Students learn to use many of the same tools and technologies used for paternity and forensic DNA testing in humans. One limitation in these investigations has been the ability to separate DNA fragments that are very similar in size. This challenge was overcome as a result of the recently developed Integrative Solutions Consortium (ISC, see article by Dr. Tim Lyden). Thanks to Dr. Julie Andersen and the UW Eau Claire Biology Department, UWRF students can now analyze their dog DNA using the DNA sequencer at UW Eau Claire. This is the first of what is sure to be many exciting and productive ISC collaborations that greatly expand the opportunities available to UWRF students.

ART AND SCIENCE IN A COLLABORATIVE BOOK

By **Clarke Garry**

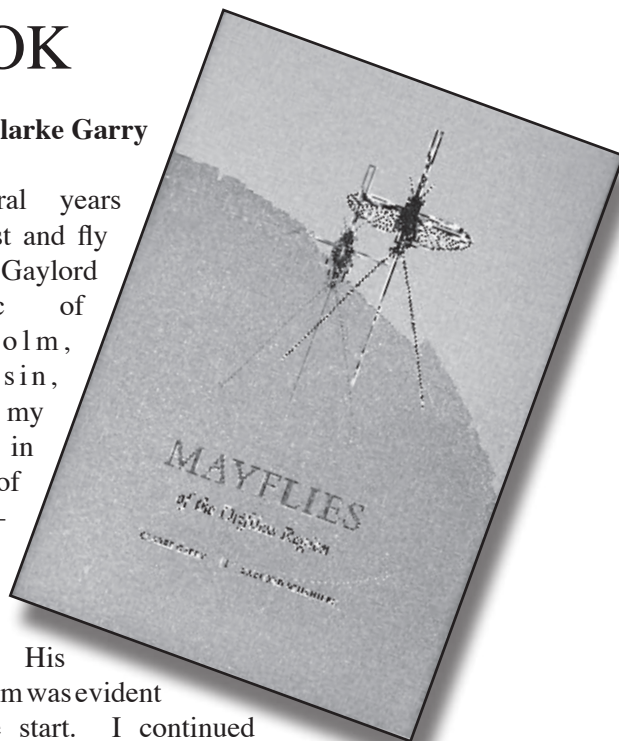
Several years ago, artist and fly fisher Gaylor Schanilec of Stockholm, Wisconsin, came to my office in search of information on a d u l t m a y - f l i e s .

His enthusiasm was evident from the start. I continued to meet with him on issues from the microscope he should acquire to strategies to use when he visited the river to find specimens.

Little did I know at the time this would develop into a four-year book project blending art and science into a single presentation. Long story short, Gaylor would bring mayfly specimens to me that he captured during "hatches" on his local rivers. I would apply my best technical identification efforts to put a name on them.

Gaylor would then illustrate the same insects using a traditional woodcut technique known as wood engraving. He also typeset my records by hand, including character choices from the particular dichotomous key along with my anecdotal notes, attempting to capture the flavor of the technical identification.

Gaylor's book has been well received. It has won recognition from a variety of sources, including the tenth Carl Hertzog Award for Excellence in Book Design (out of 79 entries). John Russell in Fine Press News commented, "The judges commended *Mayflies of the Driftless Region* for its complexity of material and its consistency of presentation, and said that it was surprisingly beautiful for a scientific book."



Dr. Clarke Garry



Dr. Clarke Garry

CAS OUTSTANDING FACULTY SCHOLARSHIP AWARD

At the CAS faculty meeting, Fall, 2006, I was presented the CAS Outstanding Faculty Scholarship Award in the Sciences and Mathematics Division. The description of the award includes these qualifications: "This is intended to be an award for sustained achievement . . ." and "The award will recognize a body of work that has had a positive impact on the individual's academic discipline . . . indicated by work that has been peer-reviewed and evaluated by professionals in the field off-campus."

I was fortunate to have previously received CAS Outstanding Teacher Awards in the Sciences and Mathematics Division in 1993 and 2004. As I expressed to Dean Brown regarding this recent honor, "I am extremely grateful to you and the committee for support and recognition of something I believe is important to the College, in addition to dedicated teaching." Many thanks to Karen for her work on the nomination.

Announcing the Clarke Garry Scholarship

In honor of Dr. Clarke Garry's 30-year career in the UWRF Biology Department.

To be awarded each year to a biology major pursuing a career in field biology.

To contribute to this scholarship fund, send a check payable to the UWRF Foundation to:

UWRF Office of University Advancement
310 South Hall, 410 South Third St.
River Falls, WI 54022

Include "Clarke Garry scholarship" in the memo line.

IN MEMORIAM

Robert L. Calentine

Professor Emeritus Dr. Robert (Bob) Calentine passed away at his home in River Falls in May, 2007. Bob was a member of the Biology Department faculty from 1963-1991, and served as department chair for several years. He taught many different courses, including Zoology, Histology, Parasitology, Animal Identification, and Electron Microscopy. Bob was equally at home in the lab and in the field, and many students benefited from the hands-on experience he provided.

DR. ELAINE HARDWICK HONORED WITH CAS ADVISING AWARD



Dr. Elaine Hardwick

Dr. Hardwick was surprised that she was honored with the award. Her approach to advising is to become familiar with the students on a personal level and make an effort to remember and associate names and faces as soon as possible. When she meets with her advisees, which is usually two times per academic year, in addition to class scheduling, she tries to provide suggestions for internships, course options, etc. In other words, she tries to develop a "future plan" for their tenure at UW-River Falls. Dr. Hardwick always has an open-door policy and is very prompt with response to email and phone calls, as well as completing letters of recommendation and contacting the Registrar or other departments in a timely fashion.

11 BIOLOGY STUDENTS PRESENT RESEARCH AT NATIONAL MEETING

Once again, UWRF biology majors made a strong showing at the National Conference on Undergraduate Research, held in March 2007 at Dominican University of California in San Rafael. See the biology web site (www.uwrf.edu/biology) for the names of presenters.



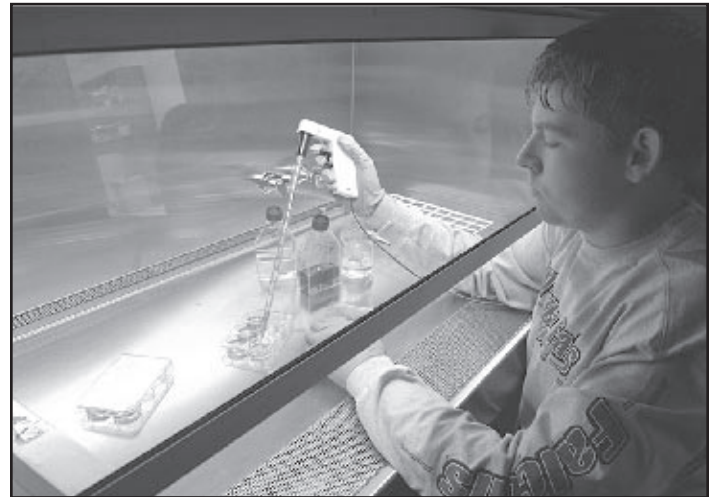
DR. TIMOTHY LYDEN RECEIVES SCHOLARSHIP AND GRANTS FOR STEM CELL RESEARCH & TISSUE ENGINEERING

Dr. Lyden was awarded a special scholarship from WiSys, the UW System Intellectual Property Organization, in collaboration with WiCell, the National Stem Cell Center at UW Madison. This scholarship included about \$2000 in training at WiCell as well as a \$500 vial of Human Embryonic Stem Cells (HES) to establish a stem cell research and teaching program here at UWRP. Dr. Lyden attended the first of these training courses in October and will attend the second one this June. Following that course, he will establish an HES Minibank at UWRP and begin a series of research projects with HES. However, prior to the arrival of the WiCell HES cells, he has also added a commercially available HES cell line to the Cell Culture course this semester.

In addition, Dr. Lyden was awarded a UWRP Foundation Grant to consolidate and enhance the recently established UWRP Cellular Imaging and Analysis Center. This grant also seeks to improve resources for the Animal Cell Culture course that is offered within the biotechnology curriculum as well as the Immunology and Virology courses. This grant for \$11,000 will significantly improve the infrastructure of the "Center" with additions of new digital documentation systems as well as enhancements to our existing microscopes. In the Cell Culture course, this grant will provide additional inverted phase contrast microscopes, which, along with enhancements to the Center, will certainly improve the

quality of student research projects done in that class.

The Biology Department also received a significant infrastructure donation from the Aurora Pharmacy Company, which was facilitated by current Biotechnology students, Robert and Jamie Hoock. This donation was a much needed cell culture hood. The hood has already seen significant use by students in Cell Culture, Immunology and Virology as well as for independent research projects.



Travis Cordie working on artificial tissues in Dr. Lyden's lab.

Dr. Lyden was also awarded a major research grant from the UW System Intellectual Property organization, WiSys. The grant will cover aspects of Dr. Lyden's research, which focuses on the development of artificial tissues in 3-D cell culture systems. Dr. Lyden has been working on this tissue engineering question since 2004 and has developed some very novel approaches for producing significant tissue-like cultures from various cell lines as well as primary avian embryonic tissues. The grant will run for three years and is funded for the initial 18 months at approximately \$78,000. Pending successful completion of several milestones, this project will eventually be an award of approximately \$150-200,000 for a 3-year period. In addition, this project will potentially produce several patent disclosures that may result in marketable processes for pharmaceutical manufacturing of bioactive substances.



Travis Cordie observing cell cultures



BIOTECHNOLOGY ALUM RECALLS UWRF EXPERIENCE

By **Angie Stodola**

In the spring of 2001, I had no idea what biotechnology even was. It was my high school guidance counselor that first mentioned the idea of studying biotechnology to me. But still, the idea didn't stick until returning home from my UWRF summer registration. Unsatisfied with the generic class schedule I had signed up for, I contacted Dr. Michael Keenan. Dr. Keenan became my advisor and helped get my classes on track as a Biotechnology major.

As it turns out the Biotechnology program at UWRF was the perfect place for me. I thoroughly enjoyed my mix of chemistry and biology courses. Along the way I was able to take a variety of both plant and animal based classes. This allowed me to develop a very diversified skill set.

In the fall of my sophomore year I began working at BioDiagnostics, Inc. (BDI). I was able to have flexible hours scheduled around my classes. Working at BDI gave me real laboratory experience. The majority of my time at BDI was spent working in the ELISA lab. It was a learning experience considering I didn't even know what ELISA was when I started. I continued to work at BDI until I graduated.

The summer of 2004, I was accepted at the University of Iowa – Biochemistry Department as an undergraduate researcher. I spent eight weeks in Iowa City working in the lab of Dr. John Donelson studying *Trypanosoma brucei*. This opportunity gave me a glimpse into graduate school. I was also able to enhance my cloning and PCR skills.

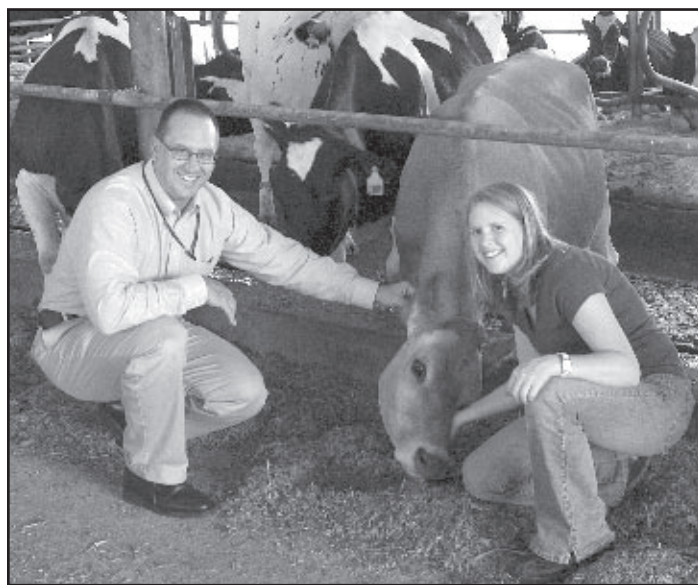
Following my graduation in the spring of 2005, I embarked on another exciting journey. With the assistance of Dr. Brad Mogen and Dr. Kurt Zuelke, I received a position working for the United States Department of Agriculture in Beltsville, MD. As part of the Biotechnology and Germplasm Laboratory, I worked with Dr. Dave Donovan. One of the highlights of the work done in this lab was the development of transgenic dairy cattle that have resistance to *S. aureus*. I worked on preparing the next wave of resistance constructs.

In the fall of 2005, I returned to Wisconsin and accepted a job with the molecular diagnostics company, Third Wave Technologies, Inc. in Madison where I continue to work today. I am an associate scientist in the Product Development department. Most recently, I have

worked on the development of the CYP2C9 and VKORC1 reagents. I am also heavily involved in the validation processes that take place prior to product launch.

In closing, I feel that the UWRF Biotechnology program did an excellent job of preparing me for my current position. The small atmosphere allowed me to form lasting relationships with my professors. As I look forward to the future, I hope to continue my education by pursuing a Master's degree.

Note: The Biotechnology major is an interdisciplinary program representing a collaboration between the Biology and Chemistry Departments in the College of Arts & Sciences, and the Animal & Food Science and Plant & Earth Science Departments in the College of Agriculture, Food & Environmental Sciences



Angie Stodola and Kurt Zuelke posing with one of the first transgenic cows at USDA facility in Beltsville, MD.

***** Please let us know what you've been up to. In the next newsletter we will share as much alumni information as you give us permission to do so. You can call us, email us, mail us, or just fill out the form on the web:**

www.uwrf.edu/biology/alumniform.html

**DONALD DUSZYNSKI**

(1966) Duszynski was recently selected the 2006 Distinguished alumnus of the Department of Biology at Colorado State University, Ft. Collins, CO (M.S. & Ph.D, 1968, 1970) He was also invited as one of 25 international scientists to serve on Sloan Foundation Workshop "To resolve microorganism taxonomic & culture collection problems arising from the new bar coding initiatives." Dr. Duszynski resides in Placitas, NM. eimeria@unm.edu

DAVID ARNOLDI

(1969) After graduation, Arnoldi spent 2 years in the U.S. Army, then attended Louisiana State University and obtained an M.S. in Fisheries Science in 1974. He worked for the Louisiana Department of Wildlife & Fisheries as a fisheries biologist from 1975 until 1998, when he was promoted to an administrative position. He retired in January, 2007 and resides in Baton Rouge, LA. darnoldi@wlf.louisiana.gov

BRUCE B. HANSON

(1971) After graduation, Hanson and his wife Mary Ann, spent 7 years in Madison, completing medical school and a family practice residency. Since 1978, they have lived in New Richmond, where he enjoys his medical practice. They have two daughters, both are UWRF grads.

BRIAN BELSON

(1982) Belson was promoted to Lieutenant Colonel, Army, 2004, and is currently serving as assistant department head in OB/GYN department at Walter Reed Army Medical Center. Just returned from 7-month tour in Iraq as Chief of Surgery with 10th Combat Support Hospital element located in Tallil, Iraq. He described it as an overpowering experience, and very, very HOT. He is glad to be home safe in Columbia, MD. iraqdocflight@yahoo.com

ROBB KEECH

(1987) Keech is an Earth & Life Science teacher at Ramsey Jr. High School in St. Paul, MN. robert.keech@spps.org

DAN DRUMMER

(1987) Drummer received his MS degree in Physical Therapy from Thomas Jefferson University in Philadelphia and in 2005 completed his DPT from Temple University. Dan currently lives in San Francisco and works at San Francisco General Hospital with an emphasis in patients with neurotrauma and traumatic brain injury. Dan also provides lectures at the three regional Physical Therapist education programs on the role of PT for patients with HIV/AIDS. ddrummer@earthlink.net

CHARITY JOHNSON LUBICH

(1993) Charity currently lives in Prescott with her husband, Chad, and two sons Alex & Aaron. She is working as the Office/Human Resources Manager for General Plastic Extrusions, Inc. Her family enjoys camping, gardening, fishing, and Cub Scouts. charity@generalplastic.com

PAUL DOENIER

(1990) Dr. Doenier is a member of the Doenier Family Medicine in Waukesha, WI. ppdoenier@hotmail.com

ANDREW WINKELHAKE

(1994) Andrew is working in medical device manufacturing in the Twin Cities, mainly in Quality Assurance and Quality Systems. He has been with Zimmer Spine for 3 years. He resides in W. St. Paul and is married and has 3 children ages 4, 3, 2. andrew.winkelhake@zimmer.com

LEIGH SEERY HARRELL

(1999) Leigh recently resigned from 3M Pharmaceuticals- Drug Safety Specialist and took a new position at Boston Scientific in Maple Grove as a Post Market Regulatory Compliance Specialist working with Medical Devices in the Interventional Cardiology Division. Leigh resides in Somerset, WI and has two daughters. leigh_anna_h@yahoo.com

JEN SWEET

(2002) Jen is working at the University of Illinois at Chicago as the Resident Director for Administration and Assessment in the Campus Housing Department. She started work this year on a Ph.D in Measurement, Evaluation, Statistics and Assessment. jmsweet@uic.edu



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BIOLOGY ALUMNI INFORMATION

Visit our departmental home page: <http://www.uwrf.edu/biology/welcome.html>

Name: _____

Address: _____

Phone: _____

Email: _____

Years attended UWRF: _____

May we share this information with your fellow biology alumni? Yes No

Employment or other news: _____

May we share this information with your fellow biology alumni? Yes No



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