BIO-FEEDBACK

DEPARTMENT OF BIOLOGY

Summer, 2005 Newsletter Volume 5

FROM THE CHAIR

Karen Klyczek

Greetings! We are anticipating many changes on campus in the next year. Our new chancellor, Donald Betz, arrives in July, and we look forward to the energy and enthusiasm he will bring to the job. We are grateful to Virgil Nylander for stepping in and carrying out the Chancellor's duties during this past year. Another change is that the Dean of the College of Arts and Sciences, Gorden Hedahl, is stepping down after seven years as Dean. Dr. Hedahl has been very supportive of the Biology Department's efforts to obtain new equipment and develop research opportunities for students. The search for his successor will continue next year; in the meantime, Terry Brown, Associate Dean and Professor of English, will serve as interim Dean.

Something that did not change this year is that, for the first time in four years, we did not hire a new faculty member. The faculty hired since 2000 have continued to be very active and you will read about some of their activities in the newsletter. One exciting new addition to the Department is the Cellular Imaging and Analysis Center. The microscopy and flow cytometry equipment will enhance several courses and research projects. A grant from the UWRF Foundation funded this equipment, as well as the Aquatic Learning Center described in the last newsletter. Thanks to all of you who have contributed to the Foundation!

Construction of the new Student Center also is underway. Unfortunately, planning for new space for the Biology Department, either remodeling Rodli Commons or constructing a new building, has been delayed due to state budget cuts. It now appears that the 2011-13 biennium is the earliest we might be able to request funding for this project. We will keep you posted on the progress. Thank you and keep in touch!

DR. MOGEN TRAVELS TO CENTRAL AMERICA

An Overseas Biome Experience

By **Brad Mogen**

For many years, the Biology faculty at UW-RF offered what was affectionately referred to as the "biome trip". Each summer or spring break—depending upon the faculty members who taught it—students were offered the opportunity to visit different areas of the United States and to experience first hand the unique ecosystems a region had to offer. Over the years, students visited the Florida Everglades, the Louisiana bayou region, Big Bend National Park in Texas, Organ Pipe National Park in Arizona, tundra/boreal forests in Colorado along with several other areas.

Many of our older alumni may have participated in these trips and remember those faculty who led them: Jim Richardson, Clarke Garry, Bob Callentine, Mark Bergland, and probably others. Unfortunately, the last biome trip was offered in the late 1980's. I arrived on campus in 1992 and after hearing about these trips, thought they were a great idea and was interested in reestablishing this former tradition.

UW-RF strongly encourages students to integrate an overseas travel experience into their undergraduate education and has recently expanded the J-term (January) session to accommodate these opportunities. So it seemed ideal to link the goals of the University to a revival of the biome trip as an overseas adventure to make it more attractive and meaningful for science majors.

Sea canoeing near Las Bailas National Park, Costa Rica

continue on next page

CENTRAL AMERICA continued

Lunch and group discussion on sustainability in Santa Rosa National Park, Costa Rica

I chose to focus my trip on the Central American country of Costa Rica. This was done for several reasons: it is a premiere and internationally recognized ecotourism destination, the country is very safe, English is spoken by most of the residents, transportation costs are quite reasonable, and there is an amazing amount of ecological and biodiversity ranging from true cloud forests to tropical beaches. In October of 2002, I made a brief preliminary "fact-finding" trip to Costa Rica and came away convinced I would be comfortable leading a group of undergraduates to a foreign country. However, while planning the inaugural trip, I spoke with Dr. Kelly Cain from the UW-RF Plant and Earth Science Department and discovered he was developing a new Wildlife Recreation & Nature Tourism (WRNT) Graduate Certificate Program (http://www.uwrf.edu/ogs/wrnt/) in collaboration with Watchable Wildlife, Inc. The objective of his new program is to train students to identify and develop nature-related economic opportunities. It quickly became apparent that my interest in Biology and Kelly's interest in ecotourism and sustainable development were extremely compatible for developing and offering an interdepartmental/intercollege overseas travel experience. Kelly had been collaborating with a faculty member from the Universidad Nacional Agraria located in Nicaragua and so we decided to expand the trip to include both Costa Rica and Nicaragua. It turned out to be a very good decision. Costa Rica is an extremely modern country with all of the usual amenities, whereas Nicaragua is far less developed and is still struggling to recover from years of civil strife. Both countries offer amazing tropical ecological experiences, but the differences in their level of tourist support and infrastructure istremendous: Nicaragua is ten to fifteen years behind that of Costa Rica.

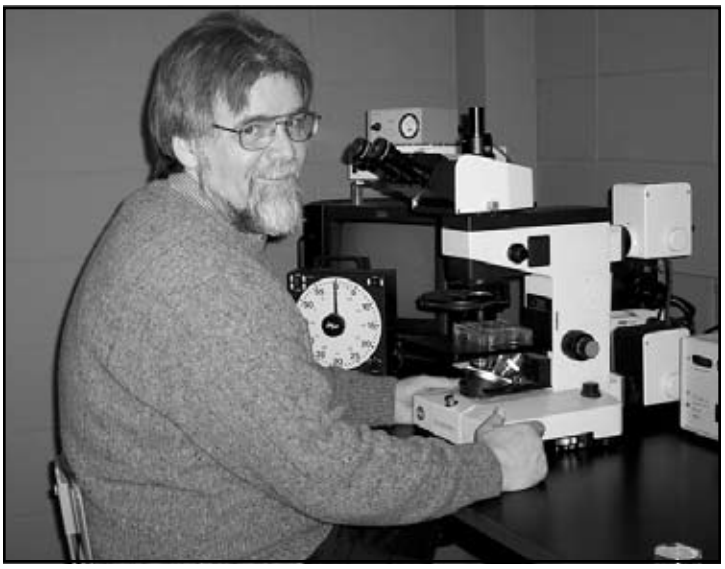
Our first trip involved fifteen undergraduate/graduate students from UW-RF and my son, a sophomore at River Falls Sr. High School. Our group, chaperoned by excellent local guides, visited destinations such as Monteverde and Santa Rosa National Parks, Mombacho Volcano, Tamarindo Wildlife Refuge as well as shade-grown coffee plantations. Students experienced zip-lines, sea canoeing, snorkeling, eco/agro-tourism, biodiversity, hiking mountain trails, visiting with the "locals" as well as seeing monkeys, crocodiles, macaws, leather back sea turtles, iguanas, bat caves and of course, poverty. Between the outstanding group of students we had and excellent guides, our maiden trip turned out to be a real joy. Everyone felt the trip was extremely successful and a couple of our participants returned to Costa Rica within a few weeks of our return to try and establish internship opportunities.

Some of our group posing with local shade-grown coffee growers and eating raw sugar cane, Nicaragua

If all goes well, Kelly and I will be leading our second tour this coming January. We learned so much from our first experience that will enhance upcoming trips. Our primary regret was that we only had two weeks to experience just a sampling of what both countries have to offer. To learn a bit more about our trip, please log onto the University News Bureau web site archives at http://www.uwrf.edu/pa/2005/0504/0408052.htm

A group portrait taken at the front door of San Fancisco church in Granada, Nicaragua

THE NEW CELLULAR IMAGING AND ANALYSIS CENTER IS HERE!



Dr Lyden uses the newly acquired Leitz Fluorvert microscope in the custom designed gray microscope room of the UWRF Cellular Imaging and Analysis Center.

During the past year a new campus-wide biology resource has taken physical form. The UWRF Cellular Imaging and Analysis Center has finally found a home and new equipment. Although the "Center" has been a functional reality since 2001 when Dr. Tim Lyden joined the Biology department, the past 2 years have seen major new commitments to this facility in the form of significant grants and funding assistance. The first of these was a joint lab-modernization proposal between Dr. Lyden in CAS and Dr. BonnieWalters in CAFES to remodel a suite of labs on the second floor of the Ag/Science Building. The first phase of this project lead to the creation of a physical home for the "Center" in a custom designed mini-suite that now houses microscopy and will eventually also be the location of our "new" flow cytometer. Although the second phase of that renovation project is still ongoing, we moved into the microscopy suite in December and have been using it ever since. The second grant to be received was a major UWRF Foundation Grant in summer of 2004 for the purchase of equipment; an additional microscope, new low-light CCD camera and the flow cytometer. By years end, the Dean of CAS had also provided additional support to ensure the purchase of a quality flow cytometer. Hopefully by late Fall 2005 "the Center" will be fully functional.

Although far from complete, the center now boasts two upright research grade epi-fluorescent microscopes and an inverted fluorescent microscope with advanced contrast modulation optics. For data acquisition and analysis there are two lower resolution digital cameras, a high-resolution low light digital camera as well as an extreme low-light video camera along with three standard 35 mm cameras and a slide scanner. Data generated by these instruments can then be handled and processed on one of four computers in the center which are all equipped with the dynamic image analysis software developed by the NIH called "Image J". Soon to be added will be a 4-color flow cytometer which is able to evaluate 10-100,000 cells in a period of about 1-5 minutes. This instrument provides five distinct pieces of information for every single cell in the sample including the size, internal complexity and intensities for three different fluorescent labels. This extremely powerful technology allows quantitative analysis of otherwise qualitative observations. Future plans call for the addition of cell culture and handling equipment to facilitate the development of live-cell microscopy and eventually the addition of a laser confocal microscope.

It is expected that the "Center" will contribute to enhancement of several courses throughout the Biology Department curriculum, including Animal Cell Culture, Immunology, Cell Biology, Virology, Image Analysis and others. It is also expected that exposure of our students to such technology in their undergraduate education will enhance their competitive edge for placement into professional or graduate school programs, as well as biotechnology positions in industry. Please feel free to direct any questions about the Cellular Imaging and Analysis Center to Dr. Tim Lyden (timothy.lyden@uwrf.edu).

Senior Nicole Salwasser employs the new low-light CCD camera purchased with funds from the UWRF Foundation to document induced cell death (or apoptosis) for her NCUR 2005 presentation.

STUDENT RESEARCH

By Colin Searls Anderson

I'm Colin Searls Anderson. I was born and raised on the hard streets of Minneapolis. I was mischievous child throughout middle school. For example, I once hid empty liquor bottles in my teacher's bag. Biology was one of the few classes that kept my attention. This was in large part due to my biology instructor, Ted. Ted was an enthusiastic and humorous teacher who was struck by a school bus (he's ok). By high school, I was convinced that I wanted to pursue a career in biology. I became particularly interested in the small stuff – that is the minute details of cell function.

My best friend, Elias, heard about the UW-RF biotech program at a college fair. We both began our education at UW-RF in the fall of 2001. By the fall of 2002, Elias left and began a lucrative career in the martial arts. I stayed. I began working on an independent research project with Dr. Scott Ballantyne. We worked on a candidate translational regulator of embryonic heart development. This project gave me the opportunity to learn many new techniques that I would otherwise not have experienced. I presented my work and socialized with scientists from across the world at the 9th annual meeting of the RNA Society in Madison this past summer. This research opportunity has convinced me that I want to continue with my education and pursue an advanced degree. I will be graduating in December and plan to begin my graduate work the following fall. I hope to spend my spring in Belize.

By Lyzanne de Bruin

My research project is "Culture and Identification of Freshwater Bacteria Capable of Degrading Complex Plant Material Found in the Form of Dissolved Organic Matter (DOM)

Bacterial populations in the aquatic community are known to degrade dissolved organic matter (DOM). The objective of my study was to characterize and tentatively identify DOM-degrading bacteria found in sediment and water samples collected from the South Fork of the Kinnickinnic River. This project incorporated a two-fold approach 1) the culture of naturally occurring freshwater bacteria capable of degrading DOM, and 2) their biochemical and molecular characterization. Two of four sequenced bacterial isolates were related to the g-Proteobacteria and had sequences similar to species in the genus Strenotrophomonas. The other two had sequences similar to Burkholderia sp. and grouped with the b-Proteobacteria. (commonly found in terrestrial and aquatic environments).

"NEW" MEDICAL EXAMINER INTERNSHIP

"This internship was a very educational and rewarding experience. Going on scene visits involved collecting as much information as possible from the body and the residence in order to get a glimpse into the decedent's life, and to understand the circumstances surrounding their death. I also realized just how fragile life is, and how it can be taken away in an instant."

In the last newsletter, we asked for your help in establishing new internships for our biology majors. The St. Croix County Medical Examiners office responded and an internship was put into place. Logan Baker was selected for the internship. She was called to make scene visits, where she made observations and investigated the scene, examined evidence to ascertain the circumstances surrounding a death and collected samples and specimens for laboratory analysis. She also spent time learning how to do the paperwork necessary for such a position. Logan plans to pursue a career in the health care area perhaps by working in emergency medicine.

We would like to have more internship offerings. If you have an idea, please contact Dr. Kim Mogen (kim.l.mogen@uwrf.edu). Our biology majors are eager to get biology-related work experiences of several kinds, whether in the field, lab, or in the clinic. Some students can work during the school year as well as in the summer. Students can earn between 3-6 credits for their work. Internships are easy to set up and can provide a wonderful learning experience for the student and benefit the employer as well.

STUDENTS PRESENT RESEARCH AT NATIONAL CONFERENCE ON UNDERGRADUATE RESEARCH IN APRIL

Seventeen biology and biotechnology students presented their research at the 19th National Conference on Undergraduate Research (NCUR). The conference was held in Lexington, Virginia in April. Dr. Lyden and Dr. Klyczek accompanied the students.

Andrew Gunderson - "Establishment of GFP-tubulin Expressing Stable Epithelial Cell Lines"

Lyzanne DeBruin- "Culture and Identification of Freshwater Bacteria Capable of Degrading Complex Plant Material Found in the Form of Dissolved Organic Matter"

Andrew Riggle - "A Novel Hermes Isoform Binds to the Polyadenylate Binding Proteins Present in Xenophs Laevis Embryos"

Sarah Schimmel - "Efforts to Establish a GFP-ERV env Expression Vector Using Trophoblast Cell Cultures as the Target Gene Source"

Kendra Scudder - "A Multi-Generation Sublethal Assay of Estrogenic Compounds Using the him-5 Strain of the Nematode Caenorhabditis elegans"

Maria Caruso - "A Model System to Test Capsaicin Analogs on Receptor-mediated Calcium Influx"

Alexander Johnson - "Phylogeography of the Bryophyte Oxymitra Incrassata in North America & Portugal"

Tracy Nelson - "Development of a 3-dimensional Cell Culture System for the Growth and Study of Epithelial "pseudo-tissues"

Abigail Olson - "Evaluating Irradiated Barley For Susceptibility to Stem Rust"

Eric Olson - "Analysis of the Protein Content of Trichome Cells in Arabidopsis thaliana"

Michael Salmela - "Using FRET to Locate Active N-WASP"

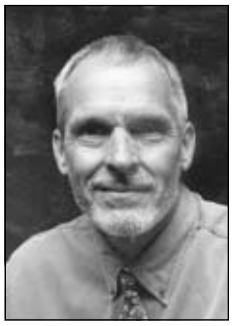
Melissa Schmitt - "Growth of Streptomycetes on Various Nutrients"

Megan Theede - "Worms Are What They Eat: Disrupting the sia-1 gene in C.elegans"

Bwarenaba Kautu - "Investigating Chemotaxis and Formaldehyde Induced Fluorescence in the Neurons of C.elegans"

Spandon Shah - "Cytoplasmic Polyadenylation of Hermes MRNA'"

FACULTY AWARDS AND APPOINTMENTS



CLARK GARRY received the 2004 Outstanding Teaching Award for the College of Arts & Sciences (Division of Science & Math). In selecting faculty for the award, ballots were sent to all UW-RF graduates in the College from 2-4 years ago. Graduates were asked to nominate two faculty members in each division, focusing on excellence in teaching, understanding and helpfulness as mentors, and ability to motivate students. A large number of the faculty were remembered favorably by these students who nominated them for this award. Some of the alum comments were "Dr. Garry is very active with students." "Dr. Garry is very easy to approach, to ask questions!" and "Dr. Garry prepared me more for medical school than any other professor."

TIM LYDEN received the 2004 Advisor of the Year Award for the College of Arts & Sciences. The award was selected by members of the Dean's Student Advisory committee from nominations submitted by current students. This year more than 40 students took time to nominate advisors. Dr. Lyden has played a major role in the Society for Scholarly Undergraduate Research and Scholarly and Creative Actives (SURSCA) which helps students and staff present their research for recognition. One student comment, "He's always in a good mood, and cheerfully talks to students about his latest projects, and encourages them to go above and beyond regular lab classes."

DOUG JOHNSON, after serving in an interim capacity this year, was appointed Director of Graduate Studies in March 2005. Doug was chair of the Biology Department from 1988-99, and since then he has had full time administrative responsibilities, including Associate Dean of the College of Arts and Sciences, Coordinator of the MSE-Science program, and Chair of the UW-System Office of Professional and Instructional Development Board.

ALUMNI NEWS

BIOLOGY ALUM NAMED UW-DISTINGUISHED ALUM

STEVE SWENSEN (1978) is the recipient of the 2005 UW-RF Distinguished Alumnus award. Swensen is a professor and head of radiology at the Mayo Medical Clinic in Rochester, MN. His research mainly focuses on lung cancer screening with Computed Tomography (CT), also known as CAT scanning, and radiologic analysis of lung nodules and masses. Swensen says he has great respect for UW-RF and believes college is a major cornerstone foundation for a productive life and high self-esteem.

JOHN BUTLER

(1961) recently published a review in Current Trends in Immunology entitled "Disparate mechanisms drive antibody diversity among mammals." He is chairman of the Comparative Immoglobulin Workshop, www.medicine.uiowa.edu/CIgW, and has recently published on the immopathology of porcine reproductive and respiratory syndrome virus in the journal Immunology 172:1916. He is also editor of a special edition of the Journal of Comparative & Developmental Immunology on the topic of "Antibody Repertoire Development."

ROBERT D. NELSON

(1962) is currently working with the Burn Center at Regions Hospital in St. Paul. His research effort is related to identification of therapies for the treatment of post-burn healing disorders, chronic itch and hypertrophic scarring. Studies involve clinical testing of novel therapies, as well as laboratory studies to identify mechanistic elements of these phenomena. Dr. Nelson resides in Marine on St. Croix, MN bobndeel@earthlink.net

BONNIE DOVENMUEHLE ILHARDT

(1972) of Brookfield, WI is currently a hydrologist with the USDA-Forest Service. She has program responsibilities for watershed improvement and riparian management in the Eastern region. She previously worked as forest hydrologist on the Superior National Forest and Chequamegon-Nicolet National Forest. She received a M.S in Forestry and Hydrology from the University of Minnesota. bilhardt@fs.fed.us

BRIAN BELSON

(1982) resides in Columbia, Maryland and is stationed at Walter Reed Army Medical Center as Chief, Gynecology Division, and recently promoted to Lieutenant Colonel. He is assistant clinical professor at the military's only medical school, the Uniformed Services University of Health Sciences, and enjoys teaching medical students and residents training in OB/GYN. docflight@yahoo.com

MARY GENSRICK KALDUNSKI

(1983) resides in Mequon, WI and is employed at the Medical College of Wisconsin, Dept. of Physiology, as a biomedical research coordinator. Mary is currently working in an NIH funded Specialized Center of Research for the molecular genetics of hypertension. mlkal@mcw.edu

ALUMNI NEWS

RUSS BRYAN

(1992) lives in Texas where he is employed at 3M at the Brownwood Texas Traffic Control Materials Plant. He was recently promoted and assigned as manufacturing operations manager for (Xin Qiao) Shanghai, China Plant. He is married and has one daughter 61/2 years old. rrbryan@mmm.com

DESIREE ZIELIEKE PHILLIPS

(1994) has worked for a number of companies and labs within the biotechnology industry, including the Medical College of Wisconsin and Pharmacia-Biotech. Desiree received her master's degree in Physi cian Assistant Studies from Marquette University and is currently employed by Midelfort Clinic as a rural physician assistant. She resides in New Auburn, WI with her husband, horse, and two springer spaniels phillips.desiree@exeau.mayo.edu

KIRSTEN BERGREN

(1998) is in graduate school at Hamline University working on her elementary/science licensure and a master's degree in teaching. kbergren202@yahoo.com

NELLIE WIRSING

(1999) is starting her second year of residency at Cascades East Family Practice Residency in Klamath Falls, OR. nelliewirsing@hotmail.com

JASON STASZKO

(2000) graduated from medical school in June 2004 and started an emergency medicine residency at National Naval Medical Center in Bethesda, where he is also a Naval Officer. Dr. Staszko will be married in June 2005. jason@staszko.com

JILLENE BEUKE

(2002) is having a blast as a second year pharmacy student at University of Minnesota on the Duluth campus. beuk0008@d.umn.edu

ELIZABETH ZUHSE

(2003) is currently a zookeeper at Utah's Hogle Zoo in Salt Lake City, UT, where she takes care of North American animals including armadillos, foxes, bald eagles, Canadian lynx and many others. She is alsworking with threatened red pandas and cotton top tamarins. bzuhse@hotmail.com

CHRIS KNOOP

(2003) is attending the University of Minnesota College of Pharmacy in Duluth. ski99bumb@hotmail.com

*** 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

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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:_____

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

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