

# BioBriefs 2012

Department of Biological Sciences  
Eastern Illinois University



EIU's Renewable Energy Center

In response to the energy needs of Eastern Illinois University combined with the efforts to reduce carbon dioxide emissions, EIU has constructed a state-of-the-art Renewable Energy Center to power the university.

This eco-friendly power plant, designed around a special gasification process, utilizes woodchips as a clean-burning fuel source. BIO faculty are designing projects to test a variety of alternative fuel sources, including corn stover, switchgrass, and other renewable plant material to replace woodchips. This center, along with a robust recycling program and other efforts in sustainability, resulted in the Princeton Review listing EIU as one of the most environmentally responsible colleges in the United States and Canada.

In support of this sustainability effort, several BIO faculty are developing sustainability projects (see articles in this issue) that will not only advance this field of renewable energy, but also train both undergraduate and graduate students.

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# Letter From the Department Chair

Dr. Karen Gaines



Greetings,

On behalf of the faculty of the Department of Biological Sciences, I would like to share with you our achievements in academic excellence and scholarly activity. After considerable time and effort by students, faculty, and administrators, the botanical jewel known as the Whiteside Garden was officially donated to the University and approved by the Board of Trustees. The Whiteside Garden is already a benefit to the Department, University, and community and we are honored to be the future caretakers of this facility. I am also pleased to share that Center for Geographic Information Sciences (GISci) as well as the Professional Science Master's (PSM) program in GISci are continuing to flourish. The GISci Center was also officially recognized by the EIU Board of Trustees and the interdisciplinary PSM in GISci officially launched this fall attracting students from a variety of disciplines locally, nationally, and internationally. The Department also recently received approval to offer our own graduate certificate in Geographic Information Systems allowing our students to be formally recognized for acquiring these highly technical skills that better prepare them for the job market or going on for their PhD.

The Department continues its commitment to providing high impact experiences for our students through innovative coursework and mentoring student researchers. As a result, Biological Sciences' students are successful at securing departmental and honors research grants and winning Undergraduate Research Scholars Awards. Eight of our faculty received Achievement and Contribution awards as well as other accolades for teaching excellence. Our external grants were up this year totaling over \$1M. This is particularly noteworthy, as funding for scientific research has gone down nationally due

to struggles in the economy.

These research dollars allow EIU faculty to contribute to their disciplines, while engaging and funding both undergraduate and graduate students.

Not only have our faculty been successful in securing prominent local, state and federal grants, but they have gained the trust of industry to invest in our programs. Most recently, Dr. Michael Menze has facilitated a donation from Novartis Consumer Health, Inc. The company is restructuring their global product development and assessed that it doesn't require use of a high-resolution calorimeter at the facility anymore. To our benefit, they approved donation of the instrument to a nonprofit organization in the Midwest. Dr. Menze actively publishes in the field of calorimetry and was approached about the possibility of donating the instrument to Eastern. The 'TAM' is a high-sensitivity Thermal Activity Monitor that is capable of recording minute changes in heat output from an experimental sample. This allows physiologists to assess the amount of metabolic activity that is not due to cellular combustion of oxygen (respiration). Dr. Menze is extremely excited about integrating the instrument in his research and teaching efforts here at Eastern.

As always, our alums are creating opportunities for our students through donations and experiences. For example, through the generosity of Dr. Gordon Grado ('74), over 10 undergraduate students have been given the opportunity to participate in our newly established internship at the Southwest Oncology Centers in Arizona. Dr. Grado is the Founder and Medical Director of the Southwest Oncology Centers and the Grado Radiation Center of Excellence. We highlighted this opportunity in our last newsletter showing the one-

on-one mentoring that Dr. Grado and his wife, Mary, provide. We are extremely grateful to the Grado's for this mentorship. Dr. Grado continues to encourage other EIU alums to help us expand these internship and mentoring opportunities.

The Department continues its leadership in bioenergy integrative student learning opportunities through the Renewable Energy Center (REC), and the Center for Clean Energy Research and Education (CENCERE). Our two new faculty (Dr. Tom Canam and Dr. Jill Deppe) have hit the ground running establishing research programs in sustainability. Dr. Canam has planted biofuel test plots outside the REC and Dr. Deppe is looking at the impacts that biofuel plantings have on wildlife communities. The Department has always been a leader of sustainability at EIU with our campus composting and waste/cooking oil biodiesel conversion programs. These programs directly help the University to reach their goal of becoming an energy neutral campus while attracting students interested in pursuing emerging careers in bioenergy.

I can speak for all of us in the Department of Biological Sciences that we are excited by the many opportunities and challenges ahead of us in the upcoming year. Our faculty continues to provide an atmosphere of excellence that maintains the highest quality classroom instruction and outstanding research for our students. I want to thank you for maintaining contact with us. We would very much like to hear from you to update us on your personal and professional accomplishments. Check us out on Facebook!!! <https://www.facebook.com/groups/EIUBIO/>

Best regards,

*Dr. Karen F. Gaines, Chair*

## Dr. Thomas Canam – Poplars as a Biofuel Source



Dr. Karen Gaines, President Perry, and Dr. Thomas Canam during the poplar planting

On April 24, 2012, two acres of the Renewable Energy Center's research field were planted with approximately 1400 hybrid poplar trees that were donated by Green-Wood Resources of Portland, OR. The trees were planted as 12" cuttings (i.e. sticks) by 15 student volunteers, Ryan Siegel and Chris Childress (Facilities, Planning and Management), and Karen Gaines, Scott Meiners, Nancy Coutant and Steve Malehorn (Biological Sciences). EIU president Dr. William Perry also planted several trees in support of

this effort. As of today, the young poplar trees are about 40 cm (15") tall despite the season's dry conditions. With decent rainfall, these trees could reach heights of 150 cm (5 feet) by the end of summer. Dr. Canam and undergraduate student Matt Marunde (Biological Sciences) are monitoring the growth and development of the poplar throughout the summer thanks to a Summer CFR award and the

Presidential Research Fund. The physiology and bio-energy potential of these trees



will be examined over the next several years. A video of the poplar planting is available on YouTube: <http://www.youtube.com/watch?>

## Sustainability Efforts and Outreach

A few years ago, Dan Johnson, faculty member in Biological Sciences, began a small-scale biodiesel project involving undergraduate students. Dan has expanded his renewable energy studies to include the collection of all spent cooking oil from EIUs dormitory cafeteria's to convert to biodiesel. Pilson Automotive in Charleston generously donated a diesel truck to support the sustainable energy initiatives and community outreach efforts, which includes presentations to area schools.



Dan Pilson and EIU President Bill Perry with the diesel truck donated by Pilson Auto Center

## Algal Studies at Wastewater Treatment Plant



Dan Johnson, BIO Instructor

Over the last 12 months EIU has developed an active research and internship program in conjunction with the Charleston waste water treatment facility and Algae-wheel Inc. The project builds on existing research showing waste water to be an excellent medium for microbial and algal growth and results in reduced nutrient pollution in the waste water discharge.

Two EIU students are interning at the Charleston waste water facility and by doing so will be eligible to test for their operator's licenses. Several other students are participating in research regarding metal and organic pollutant remediation using algal cultures as well as measuring the effects of nutrient pollution on the receiving stream systems. Future students

will have the opportunity to intern at the waste water facility and possibly at the drinking water facility. Under the direction of BIO Instructor Dan Johnson, the program has also recently produced algal biodiesel from algae grown in waste water and is working to test the possibility of cellulosic ethanol production from algae grown in the system.

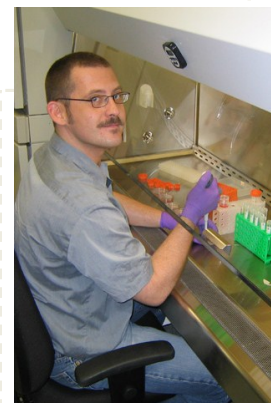
**Biological Sciences at EIU**



Dr. Ruth Chesnut, Hanner Teaching Excellence Award recipient

## Faculty Recognition

Several BIO faculty were recognized for teaching, research, and/or service with Achievement and Contribution (ACA) awards (8 total). Notably, Ruth Chesnut (left) was the recipient of the 2011-2012 COS Hanner Teaching Excellence Award. Several faculty, including Barbara Carlsward, Steve Daniel, Holly Dust, Dan Johnson, Scott Meiners, Karen Gaines, Michael Menze, and Kristin Yager received Redden Fund teaching grants for improvement of undergraduate instruction. Also, Michael Menze (right) was the recipient of the 2011-2012 COS Advisory Board's Teaching Excellence Award.



Dr. Michael Menze, COS Teaching Excellence Award recipient



Dr. Wes Whiteside, Emeritus Faculty

## Whiteside Garden donated to EIU

During Spring 2012 Wes Whiteside, emeritus faculty of the Botany Department at Eastern Illinois University (1960-1987), donated his garden (located east of Charleston) to EIU. The Whiteside garden is a showpiece for the university, with a large number of unique plant specimens (some quite exotic) from around the world.

Dr. Whiteside has been cultivating and expanding this garden for over 25 years. This 5 acre garden will continue to be used as a resource for stu-

dents, faculty, and local organizations for research efforts or to simply enjoy the diversity of plant life.

Janice Coons and Nancy Coutant, faculty members of the Department of Biological Sciences, received a grant from the Lumpkin Family Foundation to identify and map the location of each plant species in the garden as well as record how each is maintained. The generous donation of the Whiteside Garden to EIU will provide a tremendous resource to the

university and the surrounding community.

An endowment has been created by Dr. Whiteside to help maintain the garden in perpetuity and a board has been established to oversee the wise use of the property as well as to secure a firm financial future. If you are interested in finding out more about Whiteside program or donating to this effort, please contact Dr. Karen Gaines, Chair of Biological Sciences at EIU or utilize the donation form below.



### Donation for Whiteside Garden Project

\_\_\_\_\_ \$10      \_\_\_\_\_ \$20      \_\_\_\_\_ \$50      \_\_\_\_\_ \$100      \_\_\_\_\_ other

**Make checks payable to: EIU Foundation. Include on the memo line: Whiteside Garden Gift Fund**

Credit Card number: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

Name: \_\_\_\_\_

Billing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email Address: \_\_\_\_\_

## External Grant Funding in BIO

External funding has remained strong with new and current grants totaling ~\$1.0M, with three grants from the National Science Foundation, one from the National Geographic Society, nine from the Illinois Department of Natural Resources, two from the Illinois Department of Public Health and two from the Missouri Department of Conservation, as well as grants from Ameren and the Decatur Sanitation District.



## Other notes....

### Graduate Education Award

Biological Sciences, in conjunction with the Department of Geology/Geography, was awarded the 2012 Graduate Education Leadership Award from the Graduate School for development of a GIS interdisciplinary minor under the leadership of Karen Gaines and Michael Comebise.

### Summer Science Stars program for Youth

The Biological Sciences Graduate Student Association (BSGSA) has initiated community outreach this year with the Summer Science Stars program. Emily McCallen led this effort to expose students grades 3<sup>rd</sup> through 5<sup>th</sup> to science in a 10-week program. The first program was held at Monroe Elementary School in the Casey/Westfield school district and enrolled 24 students.

### Titan Arum Blooms Again

For the third time in 6 years, the Titan Arum, or “corpse flower,” bloomed. As usual, this rare plant attracted a large number of visitors. Steve Malehorn, our greenhouse manager, orchestrated a live video feed, a blog, public viewing hours and ‘tweet-friendly’ updates.

### Darwin Days

Darwin Days celebrations continued this year, with a series of speakers and presentations for both the EIU community and the community at large. Dr. Eric Meikle from the National Center for Science Education was one of the guest lecturers.

## Bryan Miller Retirement



Dr. Bryan G. Miller has been a faculty member in Department of Biological Sciences since 1987. During these 25 years, Dr. Miller has taught anatomy and histology to literally thousands of students in biology, kinesiology, and a multitude of pre-health professions. Upon obtaining his Ph.D. from Indiana University Medical Center in 1984, Dr. Miller conducted postdoctoral research: vascular smooth muscle cells in rat microcirculation. He then came to Eastern and has continued his research interests.

Dr. Miller has used the scanning electron microscope to examine both the vascular smooth muscle cells on the exterior vessel as well as the endothelial cells lining them. He served as a reviewer for Scanning Microscopy, INC. From a general interest in an anatomy and histology, he has researched and developed orthopedic rehabilitation and repair devices. He has four papers dealing with various aspects of his work in the circulatory system, three abstracts and one paper from orthopedic work, and two rehabilitation devices in clinical use.

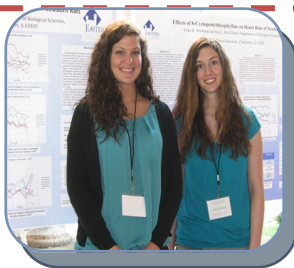
The Department of Biological Sciences honors Dr. Miller for his commitment to the university, our department and, most importantly, to our students.

## Graduate Student Research

Research conducted by students in Biological Sciences has been robust over this past year. Graduate students presented oral and/or poster presentations at a wide range of regional and national conferences. Awards supporting these efforts included receipt of 10 William's Travel Awards from the Graduate School, 7 College of Sciences Graduate Student Investigator awards, 7 EIU Graduate School Research Awards, a Larimore Student Research Grant from the Illinois Chapter of the American Fisheries Society, and an Illinois Graduate Scholarship from the Illinois Lakes Management Association. In addition, Emily McCallen received the Distinguished Graduate Teacher Award from EIU. Biological Sciences currently has 27 research active faculty members that train students in a broad range of disciplines.



Graduate Student: Arnold Estanda



Undergraduate students Christine Albers and Erika Workman presenting posters at the 2012 Illinois State Academy of Science conference at Knox College

## Undergraduate Research

Undergraduate research increased substantially this year, with an all-time high of nearly 50 students engaged in faculty-mentored research projects each semester of the academic year. Students gave a large number of both oral and poster presentations at regional and national conferences. Undergraduate research awards included 4 Undergraduate Research and Creative Activities Grant from the Honors college, an M3S student achievement award, the undergraduate Women in Science and Mathematics (WISM) Research Award, 6 COS Scholars in Undergraduate Research at Eastern (SURE) awards, 27 BIO undergraduate research awards, and two Young Botanist Awards from the Botanical Society of America.

## Dr. Gordon Grado Pre-Medicine Internship

### Internship Opportunities Increasing

Dr. Gordon Grado is the founder and medical director of the Southwest Oncology Centers and the Grado Radiation Center of Excellence. This is the second year that Biological Sciences sent BIO students to the Arizona cancer facility to interact with physicians and other healthcare providers. Two pre-medical degree students participated in this internship this year.



Grado Intern: William Fernandez

## New Science Building planning

Gary Bulla, Associate Chair of Biological Sciences, along with Chairs of Physics and Chemistry, Steve Shrake (EIU Director of Design and Construction) and Interim Dean Godson Obia attended a conference on new science building planning in Scottsdale, AZ in the fall of 2011.

Current planning for the new facility includes housing of the departments of Chemistry and Biological Sciences as well as College of Sciences offices. The projected location for the new building is on the "tundra" south of the Tarble Arts building at a projected cost of \$87M.



## Student Scholarships



Approximately \$48K in scholarships were provided to 30 students (see below) in Biological Sciences at the annual Tri-Beta Honors Awards banquet. These scholarships are provided through endowments by generous individuals that are keen on encouraging students in their career pursuits. The Department of Biological Sciences is grateful to these donors that place a high priority on undergraduate education at EIU.



## Congratulations to our 2012 Scholarship Winners!

Gayle Hutton Adkins Award	Lena Elmuti
Altamont Lions Club/Ernie C. Ballard Scholarship	Marci Gallagher
Burgner Memorial Scholarship	Brittany Fonner, Jennifer O'Brien, Nicolas Thomas, Cody Gass, Charles Jaques, Ashlyn Sweeney, Austin Jenkins
Kenneth and Donelda Damann Aquatic Ecology Embarras Valley Quail Unlimited	Megan Krick
Barrie & Shirley Hunt EVB Award	Brian Tucker
Health Sports and Medicine Scholarship	Megan Krick
Eugene B. Krehbiel Scholarship	Abby Wood
Walter Merritt Scruggs Scholarship	Jennifer Kim
Hugh C. Rawls Award	William Fernandez
Ernest L. Stover Scholarship	Matthew Marunde
H.F. Thut Award	Jennifer O'Brien
William B. Tym Scholarship	Anna Herzberger
Leonard & Olga Durham EVB Fund	Cody Gass
Dr. Robert H. Griffiths Award	Kathryn Alber
Charles E. & Ferne Tingley Compton Botany Scholarship	Jessica Kline
Charles B. Arzeni Tropical Biology Fund	Charles Jaques
Robert Edwin Witters Scholarship	David Delaney
Rosemary Bevis Knezovich Scholarship	Jennifer O'Brien
Verne B. and Edna M. Kniskern Scholarship	Teresa Cooper
Errett/Mazie Warner Award in Botany	Lena Elmuti
E. Warner /L. Durham Award in EVB	Marci Gallagher, Michelle Hartnett, Jenna Annis
Errett Warner/P. Hinz Pre-Med Award	Jennifer Kennedy, Megan Krick, Jamie Herget
Errett/Mazie Warner Award in Zoology	Kimberly Simon, Minh Nguyen, Jacob Moore
Murray and Sallie Walters Memorial Scholarship	David Delaney, Megan Krick, Avril Harder
Harold Cavins Scholarship	Teresa Cooper
Carolyn Shores Cook/Allyn Cook Memorial Scholarship	Jill Bierman
Frommel Award	Megan Miller
Dudley award	Megan Miller
Lowell Scholarship	Avril Harder
Gould Writing Award in Evolutionary Biology	Minh Nguyen
	Emily McCallen

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**Got news???**

Email us at:

[biosci@eiu.edu](mailto:biosci@eiu.edu)

**Make Plans to Be Here in 2013!!!!**

# Spring

**2nd Annual Biological Sciences**

**Spring Alumni Picnic**

Saturday, April 27, 2013

*Tentative Date*

11 a.m. - 1 p.m.

Watch our websites for detailed information!

Find us on

**facebook**

<http://www.facebook.com/groups/EIUBIO/>