Congratulations to the 2006 Graduates!

Shannon Bell (double major and double option: BRR-Applied Genetics and Biotechnology options and Bioengineering with Chemistry minor) thesis title: Studies on a transgenic approach to decrease gliadin content in wheat, mentors: Dr. Oscar Riera-Lizarazu and Dr. Andrew Ross, Crop and Soil Science Dept., currently attending Michigan State U. in biochemistry Ph.D. program.

Doug Heckart (double major: BRR-Applied Genetics option and Crop Science) thesis title: Vernalization gene architecture as a predictor of growth habit in barley, mentors: Dr. Pat Hayes and Dr. Thomas Chastain, Crop and Soil Science Dept. Doug is currently attending graduate school at University of Georgia in agronomy and applied genetics/breeding program.

Julie Ream (Honors BRR-Sustainable Ecosystems and Natural Resource and Environmental Law and Policy minor) thesis title: Production and Invasion by Butterfly Bush (Buddleja davidii) in Oregon, mentors: Dr. James Altland, North Willamette Research and Extension Center and Dr. Mark Wilson, Botany and Plant Pathology. Julie is completing an environmental education internship with Sound Experience and lives in Seattle.

Peter Stocking (double major: BRR-Sustainable Ecosystems and Botany) thesis title: In search of ecological advantages: mycorrhizal facilitation of big huckleberry Vaccinium membranaceum (Doug), mentors: Dr. Steve Radosevich, Forest Science Dept. and Dr. Jane E. Smith, Research Botanist Ecosystems Processes Program PNW Research Station, USDA Forest Service. Peter has traveled to Mexico and now works at the EPA facility in Corvallis as a microcosm engineer. He additionally writes papers regarding prairie succession, plant competition, and fungal symbiosis in prairies.

Masa Safic (BRR-Toxicology option and Chemistry minor) thesis title: Proteomic analysis of lipid raft fractions derived from mouse, mentors: Dr. Jane Ishmael, College of Pharmacy, and Dr. Claudia Maier, Chemistry Dept. Masa works at OSU for the National Pesticide Information Center providing objective, science-based information http://www.npic.orst.edu/.

Pachida Lo (Honors BRR-Toxicology option and Chemistry minor) thesis title: Determination of the flavin-containing monoxygenase (FMO) distribution in mouse lung and liver, mentors: Dr. David Williams and Dr. Sharon Kruger, Environmental and Molecular Toxicology Dept. She attends graduate school at PSU in Health Care Administration.

Grants:
Among the students supported by the Research Office's Undergraduate Research, Innovation, Scholarship and Creativity [URISC] program each year, several are in the Honors College. Update offers these snapshots of those who graduated in Spring '06. We asked how the funds enhanced the pursuit of their interests and helped them create their senior thesis.

Staying Community-Minded

As Pachida Lo concentrates on an academic path in the health sciences, she has kept her community of Hmong immigrants in mind. “I want to help them, especially people who may not be getting the health care they need.”

Lo recently earned her Bachelors degree in Bioresource Research Interdisciplinary Sciences, with a Toxicology option. She is now entering the PSU Masters program in Public Health for Health Management Policy, and she will be applying for medical school.

“I’d like to go into primary care — that’s where I think I can do the most good,” she says. “Some Hmong people won’t go to a specialist; they don’t understand this system. I want to be able to help persuade them.”

She says that her Honors College senior thesis, titled Determination of Flavin-containing Monoxygenase Message Levels and Distribution in Mouse Lung and Liver, is related to that long-term goal. “It concerns racial and ethnic minorities and health disparities.” She adds, “It involved a wide array of techniques. And it was fun.”

Lo’s project was supported by a URISC grant in the winter of 2005, when she was a junior. “The funding purchased the mice I needed, and some of the chemicals. And the grant application process gave me insights and experience with applying. Also, like in real-life research, I was expected to give progress reports. URISC helped me quite a bit.”

Her faculty mentors were David E. Williams and Sharon K. Krueger. http://oregonstate.edu/research/news/index.htm
Grants (continued)
Winter and Spring ’06 URISC (Undergraduate Research Innovation, Scholarship and Creativity) award recipient: Bryan Danielson, BRR-Biotechnology option (mentor: Mahfuzur Sarker, Microbiology): "Characterization of a Sporulation-Specific Kinase in Clostridium perfringens"
For more info: http://oregonstate.edu/research/incentive/urisc.htm
National Institute Environmental Health Sciences Training Grants awarded to:
Lalee Lo, BRR-Toxicology and Food Quality options (mentor: Dr. David Williams, Environmental and Molecular Toxicology) for their work involving cancer chemoprevention and drug metabolism.
For more info: http://www.ehsc.orst.edu/training.htm
Howard Hughes Medical Institute Grant recipients, summer ’06
Jeff Rockey, Microbiology Dept.) Production of plasmid-encoded chlamydial proteins in host cells
For more info: http://oregonstate.edu/dept/biochem/hhmi/summerresearch.html
Additional Grant and Support opportunities for students interested in:
• Oceanography and Atmospheric Sciences? Ernest F. Hollings Undergraduate Scholarship Program http://www.orau.gov/noaa/HollingsScholarship/
• Environmental Sciences?
EPA announces the NNEMS Fellowship Program for 2007 - We are pleased to invite you to participate in the U.S. Environmental Protection Agency’s (EPA) National Network for Environmental Management Studies (NNEMS) Fellowship program for 2007. The NNEMS program is managed by EPA’s Office of Environmental Education (OEE) in the Office of Public Affairs. The purpose of the NNEMS program is to:
• Provide students with practical research opportunities and experiences in EPA’s program and regional offices and in its laboratories
• Increase public awareness of and involvement in environmental issues
• Encourage qualified individuals to pursue environmental careers.
To apply: http://www.epa.gov/enviroed/students.html
Wanda Crannell, OSU NNEMS Campus Coordinator

Need internship support?
BRR students received support for their research projects from the E.R. Jackman Internship support program for their work in the Animal sciences Dept., Microbiology Dept. and Crop and Soil Sciences Dept. (respectively):
Ryan Scholz, Jee Lee, and Lauren Osborn.
http://agsci.oregonstate.edu/jobs/cas_isp.html
International opportunities:
Jacob Huber returned from Germany on the Baden-Wurttemburg exchange. Has since started his research with Dr. Kerkvliet, Environmental and Molecular Toxicology Dept.
Lauren Osborn returned from Spain where she completed an internship at the University of Lleida working with a faculty on barley genetics and plant physiology. As an International Degree student, this project along with her BRR-applied genetics option research with Dr. Pat Hayes, Crop and Soil Sciences Dept. and Dr. Tony Chen, Horticulture Dept. will be included in her BRR and ID collaborative research thesis: barley Genetics as a model for international collaborative research. Lauren was awarded URISC, ER Jackman internship and Mary Alice Wartman scholarship support.

http://oregonstate.edu/international/study_abroad/
Office of International Education & Outreach
444 Snell Hall; 541-737-3006
Nicholas Johnson returned to his home institute Macquarie University in Australia. We enjoyed him immensely and thank BRR mentor Dr. Jan Spitsbergen, Center for Fish Disease Research, for providing him a welcoming lab and valuable research experience during his studies at OSU: Differences in tumor formation in zebrafish exposed to gut nematode, Pseudocapillaria tomentosa, using malondialdehyde and proliferating nuclear cell antigen as marker.

Students interested in New Zealand, Australia or other CAS sponsored study abroad programs visit:
http://agsci.oregonstate.edu/students/international.html

Awards:
National FFA announced finalists for its four most prestigious awards, the American Star in Agribusiness, American Star in Agriscience, American Star in Agricultural Placement and the American Star Farmer.
National finalists will each receive a plaque and a $2000 check. Competition to be named the national winner of each award area will be on Thursday, October 26th at the national FFA convention in Indianapolis, Indiana. The national winner selected will receive an additional $2000 check and plaque.

Star in Agriscience Finalist
• Paul A. Ruddle II - Lowndes County FFA - Georgia
• Ryan Scholz - Newberg FFA - Oregon
• Stephen Fuchs - Cameron Yoe FFA - Texas
• Dale A. Miemietz - Independence FFA – Wisconsin

Congratulations to Ryan Scholz, BRR senior Animal Reproduction and Development option and we wish you luck at the national convention!

Wanda Crannell, BRR Advisor/Instructor, received the 2005 FE Price/Agricultural Research Foundation Award for excellence in student advising and counseling in Nov. at the CAS awards ceremony.
Publications:
Eric M. Johnson (BRR-Sustainable Ecosystems ‘02 graduate) and his research mentor Dr. Daniel K. Rosenberg, FW Dept. have manuscript accepted in NW Science from Eric’s thesis work: Granary-site selection by Acorn woodpeckers in the Willamette Valley. Eric works for the Bureau of Land Management in Klamath Falls.

Eryn Cramer (BRR-Pest Biology and Management ’05 graduate) and her research mentor Dr. James Altland, North Willamette and Extension Center published their work in the Journal of Environmental Horticulture Sept. 2006 Issue. Eryn is in her second year of Pharmacy School in Vallejo, Ca.

Jason Graves (BRR-Toxicology ’01 graduate) published work from his graduate studies at Wake Forest U. in The Journal of Neuroscience, October 19, 2005 * 25(42):9735-9745

Welcome New Students!
Katie Alderman  
Jennifer Boaz  
Nichole Cespedes  
Christopher Jensen  
Lea Larson  
Van Anh Nguyen  
Aisling Sabin  
Britnee Southland  
Jeremy Taylor  
Travis Van Warmerdam

Glad to have you here!

NEW Options approved!
BioResource Research "the research major" announces two new options leading to a B.S. degree:

Water Resources Option (29 credits):
Water Resources- Issues of water quality and quantity are of vital importance in the world today, impacting human health, the food supply, and the environment. This option brings together diverse fields such as ecology, hydrology, microbiology, toxicology, chemistry, oceanography, resource policy and management to provide students with the knowledge and research skills needed to make a difference.

Along with a mentored research project, students take courses in the following areas:
- Water Sciences
- Watersheds and Hydrology
- Water Resources Environmental Analysis
- Water Resources Policy and Management

Genomics/Bioinformatics Option (29 credits):
Genomics/Bioinformatics- High throughput DNA and protein sequencing have led to a virtual explosion of genomic and proteomic data. Genomics/Bioinformatics concerns the computer-aided analysis of these data, to develop computational capabilities to understand complex biological systems. This new field has the potential to transform almost every area of research in natural resources, agriculture and medicine.

NEW Options approved! (continued)
Genomics/Bioinformatics Option (29 credits): (continued)
Along with a mentored research project, students take courses in the following areas:
- Biochemistry/Molecular Biology
- Genetics/Organismal Biology
- Computer Science
- Statistics/Modeling.
and complete an internship in biocomputing with the Center for Gene Research and Biotechnology.

Scholarships:
BRR students recognized with CAS Scholarships!
Michael Bell  
Karen Haraldson  
Shanna Bernal-Fields  
Jess Holcomb  
Jennifer Boaz  
Jee Lee  
Lance Hansen  
Lauren Osborn

CAS scholarship applications for new and continuing students are due in Feb. See http://agsci.oregonstate.edu/students/schol.html

Congratulations to Doug Heckart and Shannon Bell for their Oregon Seed Trade Association Scholarships for the 05/06 school year. For info. Contact Peggy Mullett, Crop and Soil Sciences Dept. peggy.mullett@oregonstate.edu.

Faculty currently serving as BRR Mentors:
Animal Sciences:
- Fred Menino  
- Gary Merrill  
- Howard Meyer

Biology:
- Deborah Clark

Chemical Engineering
- Goran Jovanovic

Crop and Soil Science
- Maria Dragila
- Patrick Hayes
- Elizabeth Sulzman

Environmental and Molecular Toxicology
- Kim Anderson
- Doug Barofsky
- John Hays
- Jeff Jenkins
- Nancy Kerkvliet
- Robert Tanguay
- David Williams

Horticulture
- Tony Chen

Microbiology
- Claudia Hase
- Dan Rockey
- Walt Ream
- Martin Schuster

Veterinary Medicine
- Scott Gustafson
- Stuart Helfand
- Michelle Kutzler
- John Mata
Thanks to faculty for sharing their research programs in the BRR 100 Great Experiments course presentations:

Fall 2005:
Machteld Mok, Horticulture
Jennifer Field, Environmental & Molecular Toxicology
Sujaya Rao, Crop and Soil Science
Steve Strauss, Forest Science
Sue Tornquist, Veterinary Medicine

Upcoming presentations for Fall 2006:
Yannis Tzanetakis, Microbiology Dept.
Michelle Kutzler, College of Veterinary Medicine
Dee Denver, Zoology Dept
Kate Lajtha, Botany and Plant Pathology Dept
Ed Peachey, Hort. and Greg Fitzpatrick, The Nature Conservancy

Spring term Dean’s List:
Shannon Bell
Nichole Cespedes
Andrew Colburn
Bryan Danielson
Karen Haraldson
Jess Holcomb
Lea Larson
Pachida Lo
Jessica Puccetti
Julie Ream
Shanna Bernal-Fields
Danielle Trummel

Wow, nice work!

Student Leaders:
Aly Mohamed BRR-Toxicology option senior served as President of the Muslim Student Association
Kendall Dutcher BRR-Environmental Chemistry option senior has been elected President of the OSU-MANRRS Chapter.
Jee Lee BRR-Toxicology option senior is the region VI MANRRS undergraduate Vice President.

BRR alumni - What are they doing now news:
Rachael Pecore, BRR-Sustainable Ecosystems ’01, has found a spot to land, following her travels that have included New Zealand, Oregon Coast, Mexico, Guatemala, and England. She is currently working in Hood River, Oregon for the nonprofit Columbia Riverkeeper as a Water Quality Coordinator.
Michelle Zipperman, BRR-Toxicology ’09, is studying at Loma Linda Medical School in California.
Brandon Reich, BRR-Sustainable Ecosystems ’96, is a hard working land-use planner for Marion, County living in Salem. He is approaching a 10 year wedding anniversary, has four cats and enjoys his volunteer work with the local youth group, gardening, reading and baking.
Mike Peoples, BRR-Animal Reproduction and Development, Applied Genetics, and Biotechnology ’03, following his work at Oregon Health Sciences University will be attending graduate school at Texas A and M.
Debbie Hicks, BRR-Biotechnology ’96, will be attending graduate school at Portland State University in bioremediation/environmental engineering.
Dannelle Aleshire, BRR-Sustainable Ecosystems ’00, following her work in Portland at the DEQ, worked for Washington Co. as an Environmental Health Specialist. She then worked for three years as an Onsite Wastewater Specialist for Marion Co. Her new home and position in Yakima, Washington working as a Soil Conservationist for the Natural Resource Conservation Service allows her room for her 2 horses.
Jason Graves, BRR-Toxicology ’01, begins his third year at Wake Forest University School of Medicine in physiology and pharmacology. They had another baby in 2003 named Kallie, and their oldest daughter, Emily, begins second grade.

Joshua Owens, BRR-Biosystems Modeling and Environmental Chemistry ’02, and his wife, Cory, have returned from their Peace Corps service in Senegal, West Africa. Welcome home!

Exit Interview statements from a few BRR graduates ’06
“I am very happy that I added this major/program as I am going straight on to my PhD in graduate school, I feel much more confident and better prepared.”
“Being in this major placed me well above other undergraduates. Even before graduation I had job opportunities that I was well-qualified for. Overall, this was a great experience.”
“I liked best about the program was the awesome advising and the clear structure/path to follow for research and thesis.”

Disclaimer: Information in this newsletter is provided by many different people. While we try to keep it accurate and up to date, we cannot guarantee that it always will be. If you see something that should be corrected or updated, please notify the newsletter editor, Lee Ann Julson: leeann.julson@oregonstate.edu

Jee Lee
UNDERGRAD RESEARCH MAJOR CATAPULTS STUDENTS TO PH.D. STUDIES
by Warren Volkmann
SOURCES: Anita Azarenko, 541-737-9877
Wanda Crannell, 541-737-2999

CORVALLIS - Undergraduate science students with an interest in original research are using Oregon State University's BioResource Research major as a springboard to Ph.D. studies, skipping the usual 2-year Master's program. Take Jason Graves for example. He graduated with a bachelor's degree from the BioResource Research program in 2001. His original research with Tory Hagen, an OSU biochemist in the Linus Pauling Institute, earned Graves a spot in the neurobiology Ph.D. program at Wake Forest University. "Students graduating from the BioResource Research program already have the experimental mindset and synthesis skills they would develop in a Master's program," said Anita Azarenko, co-director the program in OSU's College of Agricultural Sciences.

"Our first Ph.D. student, Marita Barth, was a rugby playing student from Dallas, Ore.," Azarenko recalled. Barth completed a Bachelor's degree in 1998 with a modest 3.4 GPA. However, with BioResource Research credentials and active support from her mentor, OSU cancer researcher George Bailey, she won admission to a doctoral program in toxicology at the prestigious Massachusetts Institute of Technology.

"The relationships that come out of the mentorship experience propel students to success," Azarenko explained. "The mentors know these students and advocate for them." Kendall Dutcher, a senior from Florence, Ore., double-majoring in chemistry and BioResource Research, has completed two research projects and is planning a third in preparation for a Ph.D. First she investigated the trace nutrient selenium, which, when absent, causes "white muscle disease" in livestock and humans. Next she researched the damaging effects of ultraviolet light on proteins. Her third investigation will pave the way to doctoral work in toxicology, according to Kendall, her mentor, OSU environmental and molecular toxicology professor Douglas Barofsky. "I hated chemistry in high school, but I could not be more excited by what I am learning now," Kendall said. "I have been so lucky to have the opportunities of the BioResource Research." Those opportunities included a Gilman Scholarship to study in New Zealand her sophomore year. Ryan Scholz, an Animal Science and BioResource Research major from Newberg, Ore., has his sights set on veterinary school at Cornell University, which offers research-minded veterinary students a concurrent Ph.D. Scholz hopes his research into the use of sheep to control the spread of false brome will impress Cornell's admissions committee. Inspired by his mentor, animal genetics professor Howard Meyer, Scholz has even spiked lamb's milk to help sheep acquire a taste for the invasive weedy grass. "The BRR program has given me a chance to put to practical use the things I learn in my classes," Scholz said.

Shannon Bell, a fifth-year senior double majoring in bioengineering and BioResource Research, became aware of the program while still in high school.

"I was attracted by the ability to do research right away," she said. Mentored by Oscar Riera-Lizarazu, an OSU genetics professor, Bell won third place in the oral research competition at the regional conference of the American Institute of Chemical Engineers in April. She presented findings on the genetic modification of wheat to reduce allergic reactions and aspires to a Ph.D. in plant genetics.

Bell feels her years of undergraduate research are equivalent to a Master's degree.

"I want to go directly to my Ph.D.," she said. "The BioResource Research project shows that I can research, I can write, I can be independent and think for myself. That's what the BRR program teaches."

Currently about 20 juniors and seniors in the program are engaged in research ranging from environmental toxicology to animal science, according to Wanda Crannell, BRR academic advisor. With more than 100 participating professors from 15 departments, students have a wide choice of mentors.

Yet, despite its small size, the program is not exclusive. There is no cap on the number of students who can enroll, and there is no minimum GPA to enter in the program. The only prerequisite is an interest in hands-on research.

"We don't want this program to be an exclusive club of honors students," Azarenko said. "We welcome average students. They often have the best hands for research."

BRR-Biotechnology and Animal Reproduction and Development '03 Laura Barth, completed BRR research project with Dr. Sue Tornquist, College of Veterinary Medicine. Laura is now studying at U. Penn. in their DVM graduate program.

The BRR website is located at http://agsci.oregonstate.edu/brr/

BRR contact info: Submit your newsletter information for the next issue to Wanda Crannell at: crannelw@hort.oregonstate.edu