From the lab to the field: K-12 teachers and students do science in Outreach summer programs

Summer 2002 professional development programs incorporated genetics, water quality, and imaginary creatures. Thanks to all who participated — enjoy your fall! We hope to see you at other Outreach opportunities in the coming year.

Chris Mohr, lab assistant (center) helps Jennifer Berendzen (left); and Susie Murray, DeSmet High School (right), prepare for an experiment in the Modern Genetics course, August 5-9.

Alicia Jackson, a student in the Grace United Methodist Teen Action Group, creates a marshmallow and toothpick Reebop to learn how genetic inheritance works. Chris Mohr and Amy O’Brien led science activities for the group at the church and on the WU campus.

From left, Andrea Ratner, Our Lady of Lourdes; Mary Harter, North Jefferson Intermediate (Northwest); and Anne Marie Robinson, Andrews Academy, test pond water quality at Tyson Research Center. They joined Lindsay Schwartz and Jill Lemon, Delmar-Harvard (University City); Deborah Huff, Rockwood Gifted School; and Phyllis Balcerzak, Tyson Field Science Program director during August. The group devised outdoor field experiences which meet the Missouri ecology standards.

Funds for this project were provided by a grant from the Eisenhower Professional Development Program administered by the Missouri Coordinating Board for Higher Education. The total costs of the project were financed with $37,433 (69%) in federal funds and $16,538 (31%) from non-governmental sources.
2002-03 OPPORTUNITIES FOR TEACHERS

Get your preK-12 students’ hands on nature with Tyson’s Field Science Program

Fall and winter are wonderful times to study ecology. These Tyson Field Science Program outdoor courses are available for school groups on a scheduled basis. To find out about fees or to schedule a visit, call Marty Galganski, (314) 935-8437, or visit www.biology.wustl.edu/tyson/educ.html.

PreK-Kindergarten outdoor classes
- Bats
- Insects and Spiders
- Moves and Clues
- Pond Animals

Grades 1-12 outdoor classes
- Animals
- Bats
- Discovering Nature through the Arts
- Forest Ecology
- Geology
- Insects and other Arthropods
- Predator/Prey Relations and Adaptations

WU science majors will travel!

Teaching Teams are WU science undergraduates who volunteer their time to bring interactive science activities to grades 2-8 classrooms. The following teams are available for fall 2002. Call Kristin Sobotka, coordinator, (314) 935-7170 or e-mail kristin@biology2.wustl.edu for information or to schedule a visit. Or return the form on page 7. This service is available at no charge through support from the Howard Hughes Medical Institute.

Grades 2-8
- Matter: Physical and Chemical Changes
- Plant Propagation
- The Water Cycle
- Dissection
- Heart Smart
- Physics
- This is Your Brain

Grades 5-8
- Doing a Good Science Fair Project
- Chemistry
- Simple Genetics
- Biomedical Ethics (also appropriate for grades 9-12)

New Education 6000 course for spring ’03

For spring 2003, Science Outreach will offer two courses in the Hands-On Science K-8 series:

- Edu 6004 Hands-On Science K-8 Biological Form and Function

For information or to sign up, contact Amy O’Brien, (314) 935-6846 or obrien@biology.2.wustl.edu. This program is supported by the Howard Hughes Medical Institute.

Teach students about healthy choices and the human body using teacher-developed curriculum and resources at the St. Louis Science Center.

Health and the Human Body for teachers of grades 3-5

- Dates: Thursdays, Jan. 16-Feb. 27, 4:30-7 p.m.
- Location: St. Louis Science Center
- Cost: $75 registration fee; optional three hours of graduate credit with implementation project and follow up meetings
- Topics include major body systems, nutrition, exercise, skin, first aid, germs, immune system, and careers in health.
- To register, return form on page 7 or call Amy O’Brien, (314) 935-6846, obrien@biology.2.wustl.edu. This program is part of the Outreach Partnership, sponsored by a Science Education Partnership Award from the National Institutes of Health.
Take your Education 6000 courses to the next level…

**Earn a Graduate Certificate in Science Education**

Are you interested in earning a graduate degree in education? A first step for many teachers is the graduate certificate in science education, offered through Science Outreach and the WU education department. This 15-credit hour certificate may be completed with courses in the Education 6000 series, and/or through independent study.

This selective program accepts teachers on the basis of grades in their first Education 6000 Hands-On Science K-8 classes and an application. A major advantage of the program is a reduction in registration fees, allowing fellows to take courses for only $75 each. **Support by the Howard Hughes Medical Institute allows Washington University to make this program available at low cost to area teachers.** Teachers who earn the certificate may apply the 15 credits toward a master of arts in education at WU.

Deadlines for admission are Nov. 15 for spring semester acceptance and April 15 for fall semester acceptance.

To learn more, visit [http://www.so.wustl.edu](http://www.so.wustl.edu) or contact Amy O’Brien, (314) 935-6846, obrien@biology2.wustl.edu.

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**Keeping Busy**

- Congratulations to three St. Louis Public teachers: **Marsha Blaine**, Sumner; **Betty Buchanan**, Roosevelt; and **Rona Robinson-Hill**, McKinley, who completed the Summer Research and Curriculum Enrichment Program, sponsored by the Young Scientist Program at WU School of Medicine. Best wishes to all for a successful school year, and thank you for your hard work and dedication!

- **Janet Crews**, Wydown Middle (Clayton), choreographed the musical “Fiddler on the Roof” at the Maryland Heights Community Theater in July.

- **Quinn Curran**, Parkway West Middle (Parkway), **Pat Fredriksen**, Immacolata (Archdiocese) and **Ellen McCallie**, Missouri Botanical Garden, have been accepted as fellows in the graduate science education certificate program.

- **Michelle Dodds**, Pattonville Heights Middle (Pattonville), completed her master of arts in education at Washington University in May 2002.

- **Ellen McCallie**, exhibit and interpretation coordinator at the Missouri Botanical Garden, will appear on the BBC’s Rough Science series, broadcast on Channel 9, Sundays at 10, Oct. 6-Nov. 7.

- **Kathie Reuter**, Kratz Elementary (Ritenour), completed her graduate science education certificate from Washington University in May 2002.

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The Modern Genetics program held its first workshop for individual high school biology teachers this summer, August 5-9. They were: **Hazel Jensen**, John Burroughs; **Katie Lodes**, Incarnate Word; **Susan Nolkemper**, St. Joseph’s; **Bob Pelc**, Affton; **Doug Pardieck**, Lafayette (Rockwood); **Laura Bradford** and **Susan Murray**, DeSmet; **Gail Perlman**, Francis Howell; and **Jennifer Berenzien**.

The group got an overview of the Modern Genetics curriculum, available online at [http://www.so.wustl.edu](http://www.so.wustl.edu). They also learned how to prepare the lab supplies needed to do the lab investigations, and visited WU’s Genome Sequencing Center. Gary Corbin, former Modern Genetics coordinator, led the class. He was assisted by Sarah Elgin, professor of biology; Martin Israel, professor of physics; Mark Johnston, professor of genetics; and Michael Neff, associate professor of biology.

Modern Genetics will continue its partnership with University City, Jennings, Washington, Webster Groves, Parkway Central, all St. Louis Public high schools, Pacific, Crystal City, Hazelwood East, Maplewood-Richmond Heights and Wellston during 2002-03. To order lab supplies, contact Chris Mohr or Susan Flowers at (314) 935-8271.

**Support for Modern Genetics is provided by the Dana Brown Foundation, Monsanto Company, and the Howard Hughes Medical Institute.**
For the past seven years at Science Outreach, Elaine Alexander has coordinated the Teaching Teams. Under Alexander’s leadership, this dedicated group of students has done more than just volunteer in schools — they’ve identified needs and created solutions to meet them.

In 2000, several Teaching Team volunteers decided they wanted to do more with students than single visits allowed. They became sponsors of elementary school science clubs, meeting once a month with the students, providing hands-on activities and guiding them through science fair projects. Another student, Arash Sabet, realized he could transport the leftover food in his dining hall to a homeless shelter, and has enlisted other students to help. Some of this group have extended their visits at the shelter to offer tutoring to the children there.

“Elaine is a creative, dedicated individual who can empower volunteers and connect them with others,” says Victoria May, Science Outreach director. Starting this fall, Alexander will retire from Science Outreach, but not from volunteering. She is already planning to extend her visits at the shelter to offer tutoring to the children there.

Alexander feels a personal connection to Alzheimer’s. “My father had it, and my aunt probably died of it,” she explains. So Alexander joined an ADRC study five years ago. She takes tests once a year to track her brain function.

Alexander’s familiarity with the ADRC program as one of its study subjects has turned into a part-time opportunity for her. “I had to get special permission to work there because I’m part of the study,” she laughs. Alexander will work with the center staff to organize and promote a symposium for Alzheimer’s researchers each year. She’s looking forward to the work, because she says, “I feel it’s the place I was meant to be, and if I can help, that’s what I’ll do.”

Before she came to WU to coordinate the Teaching Teams, Alexander taught science at Mary Institute. When she left Mary I. in 1992, she formed a non-profit agency, Slyce, that connected students in University City and other districts with volunteer opportunities.

This fall, in addition to working at the ADRC, Alexander will have more time for her other hobbies: tennis, kayaking and golf. “I’m looking forward to doing active things that will not have me in front of a computer all day,” she says. And of course volunteering is still on her list. Alexander will continue to volunteer through her church, and with the Community in Partnership homeless shelter. She will be missed at WU, but we are pleased to know that Elaine will be enjoying her time to the fullest. Congratulations, Elaine!

President Bush’s No Child Left Behind Act provided funding for projects designed to help all students achieve. Science Outreach and a team of local institutions and school districts have received part of this funding through a $6.5 million grant from the National Science Foundation. The St. Louis Inner Ring Cooperative (SIRC) project brings together five districts: Ferguson-Florissant, Maplewood-Richmond Heights, Riverview Gardens, University City and Webster Groves. The St. Louis Science Center and the Saint Louis Zoo are also major partners in the effort.

The project’s major goal is to increase the capacity of schools to provide challenging math and science curricula to all students. Over the next five years, it will provide for:

- Funding for teacher and administrator teams to attend national planning institutes for science and math reform
- Implementation support in using hands-on curriculum
- A community resource center with science and math supplies for teachers and parents
- Support for new teachers in their first years of teaching
- Professional development institutes for teachers of grades 4-8 on using inquiry based science and math curriculum
- Additional graduate education courses in science and math for K-12 teachers
- A mini-grant program for districts and individual teachers to apply toward creative solutions

“This is an exciting project, because we will be able to help school districts as they determine their own needs and develop strategies for meeting them,” said Victoria May, Director of Science Outreach, and one of SIRC’s project directors. Joint planning work will take place during the coming school year, with implementation beginning during summer 2003. This project will complement the work of the St. Louis Center for Inquiry in Science Teaching and Learning (CISL), recently funded by NSF through the Washington University Department of Education.
New Outreach staff renew old ties to Washington University

Kristin Sobotka and Susan Flowers are new Science Outreach staff members as of September, but they have ties to Outreach and WU that go back several years. Sobotka is the new coordinator for the Teaching Teams and Prefreshmen Summer Scholars programs, taking over from Elaine Alexander. She taught chemistry at University City for seven years, and was part of the team that wrote and piloted the Outreach curriculum “Ozone: Does it Affect Me?” Before teaching, she worked as a chemist at Monsanto and at Ethyl. Her master’s degree is from University of California-Berkeley, in environmental health sciences and public health. As a graduate student, she worked in a lab that studied indoor air pollution.

Sobotka recently finished her second year as a member of the University City school board, and so is very informed about the various University City-WU partnerships in progress. “We’re really hoping to continue partnering with WU on the new NSF grant,” she says. Sobotka’s husband, Lee, is a professor of chemistry at WU. The couple are University City residents, and their three daughters attend U. City schools. The oldest, Molly, got her first university lab experience in Michael Neff’s lab this summer.

“I’m looking forward to enhancing the Teaching Teams program by getting more students from other departments involved,” says Sobotka. “I’ve been very impressed by the number of students who continue volunteering from year to year. It speaks a lot about the program.”

Flowers will work with Outreach in the newly created position of genetics/bioinformatics director. She will coordinate a new on campus lab program for high school students, and develop genomics and bioinformatics explorations geared toward high school students. She will also coordinate the Modern Genetics program.

Flowers received her master of arts in biology from WU in 1998, during which time she was a technician in Eric Richards’ lab. During her graduate study, she also began volunteering as an instructor for the Tyson Field Science Program, of which she became director in 2000-01. Flowers is back at Science Outreach after working at Monsanto for the past year as a research support scientist in information technology.

Flowers’ ties to WU go back still farther. She is the fourth generation in her family to work for the university. “My great-grandfather was a member of the grounds crew,” she says. “He used to mow Francis Field with a horse-drawn mower!” Flowers’ grandfather was a university caretaker, and lived in a house on the north side of the Hilltop campus. Her father worked part time for his father during school vacations. “Grandma told me she’d kill me if I didn’t come back and work for the university,” jokes Flowers. Flowers is looking forward to being involved with the Tyson Field Science Program again, and she says, “It’s good to be back!”

Gary Corbin, formerly the Modern Genetics coordinator with Science Outreach, is teaching biology at Hazelwood Central starting this fall. Corbin lent his 30 years of classroom experience to the Modern Genetics program, helping it to grow from seven schools in 1999 to 21 schools in 2001. We will miss his unique outlook and sense of humor, but look forward to hearing him play with his two bands, All Over the Road and the Satellites, at Off Broadway and other local venues.

New Science Outreach staff members, left to right, Susan Flowers and Kristin Sobotka

Corbin tackles new challenges

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Outreach thanks faculty and staff partners

These individuals have made invaluable contributions to Science Outreach graduate courses and programs over the past year. Thanks to all for your efforts to help K-12 teachers and the prefreshmen students.

Prefreshmen Summer Scholars mentors
Daniel Link
Mark Johnston
Edwardo Groisman
Doug Liblin
Sarah Elgin
Douglas Chalker
Alison Goate
Stacy Huppert
Michael Lovett
Erik Herzog
Alan Shields
Tim Schedl
Kathryn Miller
Steven Brody
Tamara Doering
Steve Johnson
Victor Davila

Prefreshmen Summer Scholars seminar speakers
Danny Kohl
Sherif Latif
Paul Stein
David Ho
Ruth Lewis
Barbara Schaal
Erik Herzog
Petra Levin
Sharon Stahl

Education 6000 instructors
Gary Jensen, 6010 instructor
Connie Stocker, 6010 TA
Karen Wooley, 6009 instructor
Matt Becker, 6009 TA
C.J. Hawker, 6009 lecturer
Edward Remsen, 6009 lecturer
Mark Kalk, 6009 and 6002 instructor
Sarah Elgin, 6002 instructor
Jack Diani, 6002 instructor
Lynn Tripoli Young, 6002 TA
Erik Herzog, 6002 lecturer
George Johnson, 6002 lecturer
Mark Johnston, 6002 lecturer
Martin Israel, 6002 lecturer
Rachel Slbaugh, 6002 lecturer
David Ho, 6002 lecturer
Jonathan Losos, 6002 lecturer
Phyllis Balcerzak, 6002 lecturer
Patrick Gibbons, 6001 instructor
Jack Wiegers, 6001 instructor

Outreach Partnership volunteers
Stan Braude
Phyllis Balcerzak
David Kirk

Modern Genetics guest lecturers
Sarah Elgin
Martin Israel
Mark Johnston
Michael Neff

NSTA’s Shell Science Teaching Award

...is open to teachers of grades K-12 who have positively impacted school, students or community through exemplary science teaching. Deadline is Nov. 15, 2002. Winner receives $10,000 and expenses to attend NSTA 2003. Visit http://www.nsta.org/192.

Toshiba/NSTA Exploravision Awards

Mentor a student team, grades K-12, on an imaginative project exploring the history and future of a particular technology. First place students win four $10,000 U.S. Savings Bonds. Second place winners receive $5000 bonds. The 24 regional winning teams receive a Toshiba laptop for the school. Regional student winners each receive a Toshiba digital camera. For information, visit www.toshiba.com/tai/exploravision, call 1-800-EXPLOR-9, or e-mail exploravision@nsta.org.
**Teacher Resources**

**Young Scientist Program**
For information about the Young Scientist Program at the Washington University School of Medicine, call Jennifer Mosher, (314) 362-4841 or e-mail mosherj@dbbs.wustl.edu.

**Teacher summer internships:** The Summer Research and Curriculum Enhancement program is an eight-week summer internship for teachers of grades 6-12 science in the St. Louis Public Schools.

**Student summer internships:** The Summer Focus Program is an eight-week internship at WU School of Medicine for juniors in the St. Louis Public Schools.

*The Young Scientist Program is supported by the Howard Hughes Medical Institute.*

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**Saint Louis Zoo**
**Academy of Science of St. Louis**
**2002-03 Seminars**

All seminars are free on Wednesday evenings, 7:30-9 p.m., in the Saint Louis Zoo’s Living World. Parking is free in the North Lot.

- Oct. 23: Therapeutic Cloning, Human Stem Cells and Regenerative Medicine
- Nov. 20: From Jurassic Park to the Danforth Center
- Jan. 15: Gynecologic Cancer Screening and Treatment: From the Laboratory to Standard of Care
- Feb. 12: Global Warming: the Greenhouse Effect
- March 12: Personal Identification: the Balancing Act Between Privacy and Security
- April 9: Mad Cow Disease: the Cool Science Behind a Hot Topic

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**Teaching Teams Registration**

Yes, I would like a Teaching Team group to visit my classroom. I understand the coordinator and WU students will contact me to set a date and confirm the visit.

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Team requested – please give first two choices

Dates that could work for you

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Mail to Kristin Sobotka, Washington University Science Outreach, One Brookings Drive Campus Box 1137, St. Louis, MO 63130.
Fax to (314) 935-4432, or send an e-mail to kristin@biology2.wustl.edu.

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**Health and the Human Body Registration**

Please register me for the Health and Human Body course. Enclosed is the $75 registration fee.

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Mail to Amy O’Brien, Washington University Science Outreach, One Brookings Drive Campus Box 1137, St. Louis, MO 63130.
Inside

2002-03 courses
Tyson Field Science news
Summer highlights
$6.5 million grant award
New Outreach staff
Teacher resources

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**Summer School**

Left, Victoria May, Science Outreach director, and right, Sharon Brooks, Gateway, review high school science curriculum. Science Outreach sponsored a summer 2002 graduate course for teachers of freshman physical science in St. Louis Public Schools. Outreach staff work with St. Louis Public science teachers on a regular basis, providing graduate classes and professional development programs.