Greetings from the Division of Biological Sciences!

Our lead article this issue describes MU’s new interdisciplinary Conservation Biology Program. One of our own faculty members, Ray Semlitsch, was the driving force behind the development of this unique multi-departmental program. Another of our faculty members, John Faaborg, is the current Chair of the Program. Biological Sciences faculty also play key roles in several other interdisciplinary programs including the Genetics Area Program, the Interdisciplinary Neuroscience Program, the Interdisciplinary Plant Program and the Molecular Biology Program.

In this issue we introduce three new feature sections: "Star Alumni," "Feature Scholar" and "Focus on Faculty." Nancy Moen's "Focus on Faculty" article on Fred vom Saal's research into the effects of plastics on early development was first published in Mosaic magazine. It is a must read.

Heidi Stallman contributed articles on alumna Sharyn Parks (“Star Alumni” .. the Evolution of a Scientist) and one of our current students, Lejla Mutapcic (“Feature Scholar”; MU: One Student’s Land of Opportunity). I know both of these delightful young women and really admire their drive and dedication.

In our next issue we will profile Dr. Gary Williams, this year's recipient of an Arts & Science Distinguished Alumni Award, and we'll take a look at construction progress on the new Life Sciences Center.

As always, we are very interested in what is happening to you. Please take a minute to fill out the enclosed self-addressed, postage-paid form. If you prefer, write to us at Alumni News, 105 Tucker Hall, Columbia, MO 65211-7400, or e-mail me at David@missour.edu. Better yet, stop by and visit when you are in the vicinity.

Biological Sciences Alumni News

Editor
John David
Design
Ramona Fairchild
Writers
Heidi Stallman, Nancy Moen

Spring 2002

Publication costs provided by
the Division of Biological Sciences
105 Tucker Hall — 105 Lefevre Hall
Columbia, Missouri 65211-7400
(573) 882-6650
www.biology.missouri.edu

Cover photo: Banded juvenile Galapagos Hawk. See story on page 2.
MU’s Conservation Biology Program —
Building Bridges Between Disciplines
by Heidi Stallman

On a cool, spring morning a chorus of
spring peepers and southern leopard frogs
call to each other across the marsh. A moist,
earthy smell perfumes the wind, and a sedge
wren announces the new day.

Most people would complete this picture
with a flock of Canada geese, a marsh hawk
circling above, or a muskrat building its
den, envisioning a large federally protected
wetland. But the wetlands that MU professor,
Ray Semlitsch, and his graduate student,
Russ Bodie, are interested in are closer to
the size of your yard and are in danger of
being managed out of existence.

“Large wetlands are beautiful and need
to be protected, but for some animal species
such as frogs, toads and salamanders, it is
small wetlands that support greater species
diversity,” said Semlitsch, who along with
Bodie recently published their research in
Conservation Biology. “These smaller, tem-
porary wetlands—because they are dry at
certain times during the year—are much
closer to appreciate than vast marsh areas. But without these
smaller wetlands, it is very possible that much of the animal and
plant life that make wetlands rich, productive habitats would not
survive. We need to worry about the conservation of smaller
wetlands as well as the larger ones.”

Conservation research such as Semlitsch and Bodie’s is what MU’s
new Conservation Biology Program is all about. The graduate
studies program is designed to answer basic biological questions
with an emphasis on conservation and hopes not only to bridge
the gaps between traditional theoretical ecology and wildlife
management, but to also include such diverse disciplines as chem-
istry, agriculture, rural sociology, and toxicology.

“Traditionally, researchers in each discipline worked independen-
tly,” says program director, Semlitsch. “They came to the
boundaries of their discipline and stopped. But this hinders the
educational process. The Conservation Biology Program bridges
these gaps.”

Bridging gaps between disciplines is especially important in
conservation biology, a field that is interdisciplinary by nature.
The chemistry of a stream affects what fish communities will live
there. The opinions of rural communities affect farming practices
and how remnant prairies and wetlands are managed on private
land. And the genetic variation of a plant species determines how
well the species might handle catastrophic events, such as habitat
loss, in key areas of its range.

Even Semlitsch’s own research interests began in traditional
evolutionary ecology, although he soon branched out to address
conservation issues because that’s what his students wanted. After
an outside review team noted that several other diverse campus
departments had an emphasis in conservation biology, the pieces
for the MU Conservation Biology Program quickly fell into place.

“It was something we were doing already. This program just
gives us a chance to put a name and a formal commitment to it,”
says Semlitsch.

MU’s new Conservation Biology Program officially kicked off
in May 1998 by granting four summer research fellowships to
current graduate students, by recruiting its first graduate student
specifically for the program, and by initiating a monthly seminar
series that has already brought many distinguished conservation
biologists to campus.

Ray Semlitsch describes the program as being in a “rapid stage of
growth” and is excited about its potential. Future plans include de-
veloping a two day symposium of lectures and workshops featuring
the top conservation biologists in the world, finding more financial

continued on next page
support for graduate students, and developing a certificate program that will assure broad training in conservation biology across the disciplines.

Although Semlitsch says students and faculty alike will benefit from the chance to bring expertise together from many different departments, he believes that students will benefit most from the new funding and mentoring opportunities.

“There’s a lot of crossing disciplines in conservation biology, making it especially important for students to find a mentor and a supportive, interested committee,” Semlitsch says.

Conservation biology graduate students agree with Semlitsch. Although still in the infant stages, the MU Conservation Biology Program has already had a profound effect on four PhD students’ careers, the winners of the competitive 1998 summer research fellowships.

Michelle Boone is using her fellowship to study the affects of pesticides on the different stages of frogs’ life cycles. Gordon Burleigh is studying how species distribution affects genetic variation in two closely related plant species. Jeff Parks is studying the population demographics of the endangered Puerto Rican Vireo. And Mike Baltz is studying avian nest predation in the subtropical pine forests of the Bahamas.

All four students say the MU Conservation Biology Program’s research fellowships are what made their research possible.

“Molecular genetics is very expensive, but the fellowship pushed me over the hill,” says Burleigh. “You can do a lot with $3,000.”

Parks and Baltz agree. Parks was able to fly himself and a field assistant to Puerto Rico and still have funds to enroll in a course with the Organization for Tropical Studies, an intense experience designed to build better tropical research biologists. And Baltz used some of his funds to develop a mascot conservation program for MU called Mizzou Tigers for Tigers. The mascot program is designed to educate and to foster awareness of the conservation of wild tigers, and Baltz hopes that eventually there will be money to fund collaborative research projects with the host countries in tiger range.

Although Parks was especially excited to receive the fellowship – he’d never done his own research project before and it’s often difficult for first-time researchers to receive grants – he was also excited to see other graduate students, who might not have ordinarily done projects in conservation biology, submit proposals.

“The easier you make it for people to do conservation biology, the more interested they’ll be in doing it,” Parks says.

Graduate students not only credit the fellowships with attracting more students to conservation biology, but with giving them extra confidence in their chosen field.

“The program acknowledges the importance of conservation and gives validity to grad students’ interest in conservation biology,” says Baltz.

“Just to know there was a little money available for ecology and conservation biology issues was a big morale booster for me,” adds Burleigh.

Students also believe that bringing well-known conservation biologists to campus for seminars will greatly enhance their education, as will the increased potential for recruiting other graduate students.
interested in conservation issues and the opportunity to communicate with faculty from diverse backgrounds working toward common goals.

"I'm very excited to have a new interdisciplinary program on campus," says Burleigh. "It's really helped me to talk to people with different view points. There's a lot of energy going into the conservation program right now."

This energy is not only good for MU's graduate students, faculty, and staff, it's also good for the animals, plants, and natural communities that may benefit from the research.

Recently, the Army Corps of Engineers, which manages wetlands of all sizes throughout the United States, agreed to put off proposed changes in their wetland management regulations until April. These proposed changes involve new ways of monitoring wetlands and could manage small wetlands out of existence if ever put into practice.

"Right now we can't detect losses of small wetlands by satellite imagery, a technique used to assess environmental change," Bodie said. "We lose thousands of acres each year in wetlands and these smaller ones are not even taken into account. Yet, they play a vital role in the ecosystem and support a great variety of organisms."

Semlitsch says it was the combined effort of research scientists from many different disciplines that drove the Army Corps of Engineers to rethink their wetland management policies. "They got lots of back from lots of scientists," says Semlitsch. "So they pushed back their deadline to reconsider. We're happy our research may have played a small part in that."

So are the frogs.

Banded juvenile Galapagos Hawk.

Dr. Ed Little and students radio-track fish in the Missouri River.
Protecting the Public
by Nancy Moen

Packing a lunch for your noon break, you pour some soup into a container to heat in the microwave at work. Because a glass container is heavier and breakable, you use an old, plastic dish. Surely, you made the right decision.

The safety of using that shatterproof container, and heating the food in it, may seem less apparent after you read about Professor Fred vom Saal’s research on plastics. Vom Saal studies the chemicals in plastics and other products, specifically bisphenol A, also known as BPA.

In research with mice that were fed traces of bisphenol A, vom Saal has found reproductive and developmental problems. He has concluded that similar effects can occur in humans using normal levels of the contaminants.

Small amounts
A developmental biologist/endocrinologist, vom Saal is a nationally respected expert on the potential health effects of chemicals in the home and environment.

He sees convincing evidence of links between chemicals and the reproductive and developmental problems occurring in animals and humans: alligators with malformed reproductive systems, female fish with male sex organs and chemically neutered seagulls exhibiting gay behavior; in humans, rising rates of asthma, hyperacitivity, impaired learning, cancer of the breast, testes and prostate, decreased sperm counts and decreasing numbers of male babies.

Because of research like vom Saal’s, the chemical industry is now admitting the possibility of a health risk after denying for years that any connection existed between the chemicals and escalating health problems.

Numerous tests have led researchers to believe that reproductive system problems are related to chemicals that mimic the female hormone estrogen.

Vom Saal studies these pseudo-estrogens, chemicals such as BPA that function like estrogen in the body. His experiments show that BPA disturbs the normal physiology of mice during fetal life and causes permanent damage.

Male mouse fetuses exposed to the chemicals suffered enlarged prostates, malfunctioning reproductive systems and decreased sperm counts. Female mouse fetuses experienced early puberty. Soon, vom Saal’s team will present findings that show uterine changes in female mice.

Low doses
There are no exotic products in vom Saal’s research. His team is examining the effects of chemicals found in common items: soaps, hand creams, flame-retardant fabrics and plastics used in the production of food containers, baby bottles and toys, and automobiles.

The research relies strongly on animal tests. “Animals are good predictors of what’s going on in people because we share almost identical hormone mechanisms with them,” he says.

In fact, the results of chemical damage to humans were predicted by mouse studies as early as the 1950s when experiments with DES produced dysfunctional reproductive systems in the rodents’ offspring.

In the 1950s and 1960s, women with pregnancy problems were treated with DES to help them deliver healthy babies. Instead, women who took the drug gave birth to children who now are experiencing serious reproductive and other health problems, including vaginal cancer at a very young age.

“That answers without question that animals can be sensors of human health effects,” vom Saal says.

What is so astonishing about vom Saal’s research is that the results are defining how sensitive mice are to chemicals at doses that normally had been considered too small to make a difference. The chemical
industry has acknowledged that large amounts of chemicals can
damage human reproduction, but the amounts vom Saal is studying
are minute: one part per billion or one billion part of a gram of
chemicals per gram of body weight.

Even that small amount permanently damaged the mice fetuses.
“And we think humans are just as susceptible,” he says.

That’s why vom Saal’s phone is ringing off the hook and his
e-mail messages are jammed. His research is cited in trade journals
and the popular press, most recently in Consumer Reports, Science
News, USA Today and Newday.

“We recognize the political and economic consequences of these
results,” vom Saal says. “I’m not an advocate of big government,
but industry itself cannot be left to protect the public health.”

Knowing his research would be questioned, vom Saal asked
an outside group to reanalyze the tissue. Those scientists found
identical conclusions. In another study, the National Institutes
of Health reproduced the findings.

As vom Saal seeks some regulation, he points out that the risk
in using plastics is not the same for everyone. His greatest concern
is for the next generation because fetuses, babies and children who
have not reached puberty are most susceptible, in that order.

“I’m not saying not to use plastics,” he says. He stores and freezes
food in plastic but never uses it in the microwave. “You can taste
plastic when you heat food in it. You’re taking a drug when you
do that.”

And although it’s probably not harmful for an adult to drink soda
from a plastic container, vom Saal says, he wouldn’t give it to a
two-year-old. (See accompanying box on health precautions.)

Concern about the effects of bisphenol A is not confined to
American researchers. The European community is discussing a ban
on plastic toys for very young children, including teethers, pacifiers
and oral toys that release larger quantities of BPA and other chemicals
known as phalathates. Japan began removing plastic dishes from
its schools when research showed that plastics disintegrate faster
and release more chemicals as they age, usually after 50 washings.

**Now what?**

“I have faith in the free market to correct this,” vom Saal says.

He believes entrepreneurs will find products to replace the
dangerous chemicals and that consumers will demand the same
information on chemicals that they requested on food.

On the regulatory side, the Environmental Protection Agency
is suggesting that industry examine the safety of chemicals having
the greatest use, much as the Food and Drug Administration checks
the safety of food additives and preservatives.

Meanwhile, vom Saal’s research is moving to a new level. In
studies for the EPA and the FDA, he is collaborating with a core

---

**Living safely with chemicals**

by Fred vom Saal

* Open car doors and windows to let trapped air escape
  before entering. Be especially cautious with sun-warmed
  vehicles.

* Periodically wipe off the chemical-induced haze on
  interior car windows.

* Avoid frequent use of plastic dishes and utensils, and be
  cautious of plastic toys that infants may suck.

* When possible, use food and beverages stored in glass
  containers rather than plastic or cans, which are lined
  with plastic.

* Do not microwave foods in plastic containers.

* Use pesticides sparingly and not around children or pregnant
  women. Chemicals sprayed on lawns travel on shoes to
  carpets and floors. Protect crawling infants and toddlers
  from these health risks.

* Avoid dental sealants for children younger than seven
  who do not have permanent teeth, and request sealants
  that are least likely to release BPA.

* If pregnant, avoid excessive consumption of natural estrogens
  such as soy, particularly tofu, alfalfa sprouts and soy oil.

* Limit servings of freshwater fish to one a month and none
  during pregnancy. Virtually all freshwater fish contain PCBs.

---

of MU scientists involved in Food for the 21st Century: Wade
Welshons, associate professor of veterinary biological science;
Dennis Lubahn, associate professor of molecular biology, bio-
chemistry and pediatrics; Kathy Sharp Timms, associate professor
of obstetrics-gynecology; and Shanna Swan, professor of family
and community medicine.

The group is preparing an integrated animal and human study.

“We have the potential of becoming a world center of health on
this issue,” vom Saal says. “Missouri is an agricultural state where
we can study the effects of pesticides on animals.” He also foresees
studies of farm families and of people who do pesticide spraying.

A dozen undergraduate students have been working with
vom Saal on the project. “It’s why you come to a place like
Mizzou,” he says. “This is an experience you can only get at
a research university.”
Survival of the fittest has new meaning for Sharyn Parks, one of the MU’s most recent graduates (B.S., Biology, Dec. ’99).

After packing more varied experiences into her high school and undergraduate careers than many scientists pack into their entire professional lives, Parks’ process-of-elimination strategy for choosing a career has finally paid off.

“I guess you could look at it negatively, that I was never completely fulfilled with any of my research experiences,” says Parks. “But I think of it as a process of elimination, which was really positive for me.”

After research positions in academia and industry, ranging from wildlife ecology to analytical chemistry, the winner of Parks’ career race for survival is epidemiology, the study of disease control and prevention.

“Right now, I’m most interested in STD (sexually transmitted disease) prevention, tropical diseases, and emerging pathogens (new pathogens that we had no previous knowledge of, or pathogens that were once a problem in one species and are now moving on to new species),” says Parks. Then she laughs, acknowledging that the process of elimination is probably starting all over within the field of epidemiology. “There are lots of fascinating options,” she agrees.

Although Parks grew up in a family of nonscientists, this St. Louis native got an early start researching her scientific career. “I’d be outside playing by myself and I’d do little miniature science experiments,” says Parks. “What would happen if I put a bug in a jar with a couple of leaves and leave it there for a week? What would happen if I mixed ketchup and milk? I’ve have always been interested in how things work.”

Parks’ enthusiasm for science was noticed by her seventh grade teacher who referred Parks to a program for minority girls sponsored by the St. Louis chapter of The Society of Women Engineers. Program leaders tracked the girls through high school, providing them with seminars, scientific and career workshops, mentors, facility tours, and the opportunity to talk with scientists in many different fields. During this time, Parks became interested in a medical career and started to pursue options in biomedical engineering. She talked to engineers and toured many facilities, but after long deliberation decided engineering wasn’t right for her.

“It sounded really interesting,” says Parks. “But the day-to-day work just wasn’t what I was looking for.”

Psychobiology was next. Through the Engelman Program at the University of Missouri-St. Louis, an internship program for high school students interested in scientific careers, Parks was matched with a psychobiology lab studying the effects of new anti-schizophrenic drugs on rats’ behavior. Although Parks describes the experience as “fun,” she admits that she wasn’t used to having her hands bit by rats and that psychobiology didn’t capture her interest.

“I was really unfocused then,” Parks says.

Although Parks enjoyed many unique and stimulating opportunities in science, she still wasn’t sure she wanted a scientific career. She spent most of her high school years pursuing her first love, the violin, and when she entered MU with both academic and music scholarships, she still hadn’t decided which direction to go.

“I just couldn’t decide if I loved one or the other more,” Parks says. The battle raged on through her sophomore year until Parks finally chose science, the option she considered more feasible. “Music will always be there throughout my life,” says Parks. “When I have a bad day at the lab I can come home and play for three hours, but I couldn’t necessarily do that with science.”

Parks has never looked back. After many long and invaluable talks with Linda Blockus, the Division of Biological Sciences’ academic advisor, Parks focused on her love of the outdoors and found a position as a student assistant in Dr. Carl Gerhardt’s grey tree frog lab. When she discovered “mucking around on the swamps at night” wasn’t for her, Parks went back to Blockus and was placed in Dr. Abe Eisenstark’s cancer research lab.

Microbiology proved more to her liking, and Parks spent a year studying mutations in cultures of E. coli and Salmonella as a part of a larger ongoing project. While studying with Dr. Eisenstark, however, Parks received a call from Sigma Chemical Corporation in St. Louis. They had received her résumé from the directors of the Engelman Project and were interested in interviewing her for a student cooperative position.

“Of course, I was flattered,” says Parks. “But chemistry is not my thing.”

Parks decided to find out more about the position before turning it down, however, and before she knew it, she was leaving MU for her first full-time job as an analytical chemist.
"The way I approached it was that it was a new research setting," says Parks. "Up until then most of my experience had been in academia at campus labs, and I was thinking it could be a totally different experience being in industry."

Parks’ decision paid off. After a slow beginning, Parks ended up in a biochemistry lab, researching more time-efficient ways to prepare substrates for DNase enzyme analysis than current methods. She enjoyed having her own research project and learning the workings of the company so much that she became interested in returning after graduation. Her only problem was she still didn’t know what career path was right for her.

That changed the following year after spending a week in Bethesda, Maryland at the National Institutes of Health’s Introduction to Biomedical Research Program. Parks attended a lecture about how epidemiologists tracked down the origin of a new, mystery disease, and she was instantly hooked.

“When I was in high school I read the book, The Hot Zone, by Richard Preston, about an outbreak of the Ebola Virus at a West Virginia research facility, and I was fascinated. I thought, I want to do that. But I didn’t know what they (the researchers) were called or how to get there,” says Parks. After years of searching, Parks has finally found out.

She recently received the U.S. Center for Disease Control’s Eliminating Health Disparities Fellowship, one of only two given, and entered St. Louis University’s graduate program in public health last fall while working full-time for Sigma Chemical Corporation. She’s fascinated with most aspects of epidemiology, and although she’s not sure whether she wants to eventually work for the Center for Disease Control or the Environmental Protection Agency, she’s excited about either possibility.

“One part of me wants to approach it (epidemiology) from the hard science side — we need to control these organisms and control the diseases they cause. But part of me sees it as if we weren’t disturbing their environment, the bacteria and viruses wouldn’t be a problem. So who really needs to be controlled?”

Whichever career path Park finally chooses, she credits her inquisitive nature and the support of her professors and advisors in the Division of Biological Sciences for helping her this far.

“I think the most valuable thing anyone can do is focus on something you’re interested in and go out and make it happen,” says Parks. “If I hadn’t gotten involved with Linda Blockus my freshman year, who knows if I’d have gotten into any of the labs I did, and I might not have figured out what I really wanted to do.”

Parks further advises young scientists to explore anything that interests them and not to worry that they’ll have to commit to that activity or career path in the future.

“I think we’re here (in college) not only to learn in the classroom, but to explore and discover what it is we want to do,” says Parks. “And everyone should do that to the fullest.”

Parks has shown us the way.

Sharyn Parks returned to MU last fall to share her own experiences with current MU undergraduates as a part of CareerQuest 2001.
MU: One Student’s Land of Opportunity

by Heidi Stallman

August 21, 1996 is a day Lejla Mutapcic (junior, biological sciences) will never forget. While most American teenagers celebrate their sixteenth birthday surrounded by family or friends, anticipating the freedom of driving their first car, Mutapcic spent her sixteenth birthday seeking a different kind of freedom, the freedom to follow her dreams and to seek an education in the field of her choice.

Mutapcic grew up in Zenica, Bosnia. She fondly recalls “a pleasant childhood with loving and caring parents,” weekend ski trips to the mountains, and a strong emphasis placed on her education. Surrounded by a family of medical doctors and scientists, Mutapcic had high hopes for a college education in one of the medical fields. In 1992, however, her dreams were shattered as war erupted in Bosnia.

“Most public services such as schools, electricity, water, food, and medical supplies were totally discontinued by the war,” says Mutapcic. “Public schools were closed much of the time, but whenever they opened I would attend in spite of bombing, shelling, or other war activities.”

Mutapcic also received some schooling in English, German, Latin, and computers through special programs offered by international humanitarian organizations. She eventually volunteered for one of these organizations, Ruhama, which provided medical assistance, food, and clothing to traumatized and sick war victims. Although still a young teenager, Mutapcic visited older patients who had been handicapped by their war injuries, helping them with medicines, taking blood pressures, and talking to them when they were scared or lonely.

“During that time I really realized what I wanted to do with my life. I want to be a doctor and help people,” says Mutapcic. “Helping people, especially the sick and disabled, provides me with a great sense of satisfaction.”

Mutapcic’s experiences during the war cemented her decision to become a medical doctor, but when the war was over her chances to go to medical school looked grim.

“After the war, there weren’t many opportunities in Bosnia to get your education. There were few universities and if you were interested in a specialty like medicine, you didn’t have much chance to choose. Considering the state of the economy and the few remaining universities, I decided to get my education somewhere else,” says Mutapcic.

Mutapcic’s opportunity came when her brother, Almir’s, host family in America invited Lejla to live with them. Almir was an exchange student in Owensville, Missouri when the war broke out and received Political Asylum in the United States. His host family, Renate Hawkinberry and children, opened their home and hearts to Almir, so when they offered Lejla the same opportunity, Lejla eagerly accepted. On her sixteenth birthday, Mutapcic left her parents and her country to make a fresh start.
“I think if he (Almir) wasn’t here I would never have come, because it’s so hard on a person to live so far away from your parents. If I didn’t have him and the family I lived with, I don’t think I could have done it. They just gave me so much support and I am extremely thankful for that.”

Since arriving in the United States, Mutapcic has made the most out of her opportunity. She graduated with honors from high school in Owensville, Missouri, and earned full academic scholarships to the University of Missouri. After five semesters of pre-med coursework, she holds a 4.0 GPA and recently won the 2000 Hesburgh Award for Excellence in Undergraduate Education. She’s been an active member of the Tri-Beta Biology Honors Club, the geography club, the international club, the karate club and a social fraternity, and she’s held the offices of president and secretary for the pre-med club, her favorite activity.

“I’ve gotten really close to Dr. Tom Phillips (the pre-med club advisor),” says Mutapcic about her experience with the pre-med club. “He’s given me really great advice and is always there to help when I have questions. I was really glad that, through the club, I was able to get in touch with some professors and get to know them better.”

Mutapcic has also continued to make volunteer work a central part of her life. She’s volunteered in the University of Missouri Hospitals and Clinics Emergency Room, written letters for Amnesty International, coordinated a campus-wide blood drive, and helped other Bosnian refugees in St. Louis to adjust to their new lives in the United States. This summer she hopes to combine her interests in world travel and medicine and to volunteer for Cross Roads of Africa, an intense eight-week program where she will educate African children in health issues and volunteer in a hospital.

“I hope I get accepted, because I’m really looking forward to it,” says Mutapcic.

She’s excited about the prospect of working with children and is thrilled at the chance to travel. “I love traveling,” says Mutapcic. “My dream is to go around the world one day, to travel everywhere. I just love traveling.”

When Mutapcic isn’t studying or planning new volunteer activities, she can be found in Dr. Karen Bennett’s molecular microbiology lab. Mutapcic joined Dr. Bennett’s research team in the fall of 1999 and has her own research project involving the interactions of RNA helicases with other proteins in germ line development. She continued her research last summer through a grant from the Life Sciences Undergraduate Research Opportunity Program and hopes to work for Dr. Bennett throughout her undergraduate career. She loves the research itself and her relationship with Dr. Bennett, but doesn’t like the way research is funded and says she would never consider a career in research.

“It’s just so competitive and you never know what is going to happen.” says Mutapcic. “It’s like a lot of hard work that could mean nothing at the end.”

Instead, Mutapcic wants to be an eye surgeon. She is fascinated by the human eye and by the precision it takes to operate on one. Although her decision isn’t final, Mutapcic isn’t worried about her interests changing.

“It’s what I want right now, but it’s not set in stone,” says Mutapcic. “I’m sure by the time I get to where I have to decide, I’ll have seen more rotations and had more experiences and I’ll know what I want to specialize in. Right now, I just know I want to be a doctor.”

Mutapcic estimates it will take another ten years to become an ophthalmologist and isn’t sure whether she will practice in the United States or return to Bosnia. Although she misses her family and the mountains of her home land, Mutapcic plans to apply for American citizenship next year and believes that by the time she finishes her education, she may be so used to life in the United States that she will want to stay here.

“It’s too early to decide if I’m going back (to Bosnia),” says Mutapcic. “My parents would like me to come back to be with them, but I never know. And it’s up to me. My parents are so wonderful. They let me decide what I want to do with my life. It’s always been my choice.”

Right now, Mutapcic is happy with her choice to come to the United States. She feels fortunate to be a pre-med biology major at MU and claims that her “life is a rainbow.” MU has given Mutapcic the opportunity to pursue her dreams, an opportunity she might not have had in Bosnia, and she isn’t looking back.
Passing the Torch from One Goldwater to Another

The Barry F. Goldwater Scholarship is one of the most competitive and prestigious awards that an undergraduate can earn. Only 100 recipients are selected nationwide each year. Steve Danzer (AB ’93, Biological Sciences) was a Goldwater Scholar in 1992. Justin Gerke, an MU junior majoring in biological sciences, learned that he will be a Goldwater Scholar in his senior year (2001–02).

It was highly fitting therefore that Steve Danzer was a featured speaker at the 2001 Life Sciences Undergraduate Spring Research Symposium, the same symposium at which Justin Gerke was presenting the results of his own research project.

Steve was a Howard Hughes Undergraduate Research Intern at MU with Dr. Mark Kirk. He then earned his PhD in Neurosciences from the University of Arizona, and is currently completing a postdoctoral fellowship at Duke University Medical Center. His seminar described his exciting postdoctoral research in the role of neurotrophins in the development of epilepsy.

Justin has been conducting maize genetics research under the guidance of Associate Professor Michael McMullen. Justin cloned and characterized the p2 gene in maize (corn). The p2 gene is responsible for enhanced production of maysin, a derivative of the flavinoid pathway that contributes to corn earworm resistance.

Steve Danzer and Justin Gerke visit at Justin’s poster during the Life Sciences Undergraduate Spring Symposium.

MU Pre-Meds Top National Acceptance Rate

Fifty percent of all MU undergraduates who applied to medical schools across the nation during the past year have been accepted and will begin their medical training this fall. According to the American Association of Medical Colleges, which released the figures, the MU pre-med acceptance rate is eleven percentage points higher than the national average of 39 percent.

Awards!

Josh Alpers, Jessica Cuba, Stephanie Ingram and Michael Wunsch were named 2000 Division of Biological Sciences Outstanding Undergraduate Students, Frank Burks and Mfon Ekong were awarded 2000 Cancer Federation Scholarships and Robert Lopez received the 2000 Professor Stanley Zimmering Prize.

Allison Welch won a 2000 Outstanding Graduate Teaching Assistant Award and Associate Professor Mark Kirk won an Arts & Science Student Government Purple Chalk Award for Excellence in Faculty Teaching.

Congratulations to all of our award winners!
Help keep your fellow alumni informed. Please fill out this page and mail it back to us.

Name ________________________________________________

Address ________________________________________________

______________________________________________________

Degrees & dates __________________________________________

Department(s) ____________________________________________

I continued my education at...

Institution(s) ____________________________________________ Degree(s) and dates __________________________________________

Department(s) ____________________________________________

I accepted employment in the private sector/academia...

Company/institution(s) ____________________________________ Department/division(s) ________________________________

Position(s) ______________________________________________ Dates ________________________________

I received awards/honors ...

________________________________________________________________________

________________________________________________________________________

I have done these other interesting things ...

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Please fold so return address shows, tape shut and mail.
The most frequent suggestion for future issues of Alumni News is “tell us more about our fellow alumni.” We’d love to. Of course, we’re dependent on each of you to keep us informed. Please take a minute to write us and tell us anything and everything you’d like about either yourself or one of your fellow alums: weddings, children, new jobs, promotions, awards, articles or books, retirement, special achievements, or special events. This page folds into a self-addressed, prepaid postcard. If you’d like to send a letter, address it to...

Alumni News
105 Tucker Hall
University of Missouri—Columbia
Columbia, Mo. 65211-7400
1940s

Eugene A. Jaeger (AB, 1948; MD, Thomas Jefferson University, 1953) has a private practice in psychiatry in Devon, PA. He and Penny, his wife of 50 years, have three children and five grandchildren. Eugene is past president of the Chester County Neuro-Psychiatric Society, a Fellow of the College of Physics and Surgeons and a member of the Medical Club and Union League of Philadelphia.

1960s

Jerry Berlin (BS, education, 1960; MA, botany, 1961; PhD, Iowa State University, 1965) is retired and enjoys golfing, sailing and volunteer work in Sweetwater, Texas.

W. Daniel Svedarsky (BS, education, 1967; MA, botany, 1969; PhD, wildlife biology, University of North Dakota, 1979) is program leader, Natural Resources and Wildlife Research Biology with the Northwest Experiment Station at the University of Minnesota in Crookston, Minn. He conducts research with his students on the use of fire and grazing on the management of tallgrass prairie and birds, especially the greater prairie chicken, in the Northern Great Plains. A strong proponent of the field approach to studying ecology and natural history, Daniel was inducted into the Academy of Distinguished Teachers of the University of Minnesota in 1999. He is the only Crookston recipient of the systemwide Morse Alumni Award for Outstanding Contributors to Undergraduate Education.

Donald (BA, 1967; MD, 1971) and Pat Wehmeyer (BA, 1968) recently celebrated their 31st wedding anniversary with their three children Michael, Wendy and Jeff.

1970s

Don Sipes (BA, 1972; MA, healthcare administration, 1984; medical technologist, 1978) is vice president for regional services at Saint Luke’s – Shawnee Mission Health System. He is responsible for outreach services, physician recruitment/retention, telemedicine and CEO of Saint Luke’s Northland Hospital – Smithville Campus.

Hermonimo Paz (AB, 1975; MA, 1977; DDS, 1981) is the owner of a private dentistry practice in Warrenton, Mo.

Jeffery L. Ulner (BA, 1975; BS, healthcare sciences, University of Texas Health Science Center Southwestern Medical School, 1978) has been a physician’s assistant in Mena, Ark., for 22 years. He married MU alumna Julie Helm in 1976. Their 19-year-old son Jarvis is a sophomore pre-journalism major at MU.

Virgil W. Brack, Jr. (BS, forestry, fisheries, and wildlife, 1975; MA, 1979; PhD, wildlife ecology, 1983; MBA, 1998) is the principle scientist with Environmental Solutions and Innovations, L.L.C.

Nadine Bopp (AB, 1975; MLA, landscape architecture, Louisiana State University, 1994) teaches botany, urban geography and environmental science at the Art Institute of Chicago and ecology and human affairs at Columbia College – Chicago. She was nominated for excellence in teaching at Columbia College – Chicago in Spring 1999. Nadine is developing a “Green Map” for the city of Chicago (www.greenmap.org).


Richard A. Lester (AB, 1977; DDS, Northwestern Univ., 1981) is a self-employed dentist in Florissant, Mo.

S. Chris Beever (BA, 1977; MD, 1982) is a family practice resident and faculty physician at Health Midwest in Leawood, Kan.

Randall C. Haddock (MA, 1979; PhD, Cornell, 1984) is field director of the Caaba River Society in Birmingham, Ala.

1980s

Michael Edgar (BA, 1980; DDS, UMKC School of Dentistry, 1984) is a self-employed dentist in Bonne Terre, Mo.

Blaine E. Thompson (BA, 1980; BS, food science and nutrition, Utah State, 1990) is a food and dairy compliance officer for the Utah Department of Agriculture and Food.

George M. Tucker (BS, microbiology, 1982; MA, animal and food science, Texas Tech University, 1986) worked as a food scientist for PET, Inc., Old El Paso, Durkee French Foods, Williams Chili and Mid-America Dairymen. He is now a technical sales representative for International Dehydrated Foods in Springfield, Mo.

George received several Army commendation medals while in the service.

Don Scott (AB, 1982; MA, 1990; PhD, Vanderbilt University, 1991) is an assistant professor of biochemistry at the LSU Health Services Center. His research area is the metabolic regulation of gene expression.

Kim (Kixmiller) Smith (BA, Honors, 1985; MD, 1990) is a family physician with St. Luke’s Shawnee Medical Center in Kansas City, Mo. She has four children and is very active in Scouts and school activities.

James K. McLemore (AB, 1986; DO, University of Health Sciences – College of Osteopathic Medicine, 1990) is practicing pediatrics as the owner/founder of Preferred Pediatrics, L.L.C. in Lee’s Summit, Mo.

Michael N. Fine (AB, 1988; DPM, 1992) is a podiatrist in private practice in Kansas City, Mo.

Michael S. Grotegut (AB, 1988; PhD, 1995 pharmacology, Vanderbilt Univ., 1996) is an assistant professor of zoology at Michigan State University. He teaches undergraduate genetics and studies the genes involved in learning and memory in fruit flies.
1990s

Thomas C. Ashburn (BA, 1990) is a strategic account manager at Johnson and Johnson.

Julie Bloss Kelsey (BS, 1990) worked eight years for the Missouri Department of Natural Resources. She is currently completing the senior professional graduate program at Duke University’s Nicholas School of the Environment.

Tracy L. Thomas (BA, 1990; MA health administration) is a healthcare management consultant with TLT Solutions in Silver Springs, Md.

Elizabeth Ostermeyer (BS, 1990; PhD, nuclear and cellular biology, Univ. of California--Berkley, 1995) is a postdoctoral fellow with Dr. Matt Thayer, Vollum Institute, at Oregon Health Sciences University. She is using somatic cell hybrids to identify chromosomal alterations and ultimately genes involved in bladder cancer.

Gary H. Simmons, III (BA, 1990; MD, Uniformed Services University of Health Sciences, 1995) is a radiology resident at Balboa Naval Hospital in San Diego, Calif.

Christopher P. Dougherty (BA, 1991; DO, 1995) is the senior resident physician in orthopedic surgery at Hillcrest Medical/Tulsa Regional Medical Center/Oklahoma State University College of Osteopathic Medicine.

Elisabeth (English) Curry (BS, 1992) is a research associate/technology consultant in antisense technology with Sequitur, Inc. Elisabeth and her husband Mark (BA, Economics, 1992) had a beautiful son, Calvin Andrew in March 1999.

Courtney Birkel (BS, 1992; MS, environmental engineering, 1994) is a sales representative with Eli Lilly and Company in Chesterfield, Mo.

Sajid Ansari (BS, 1992; MD, 1996) is a fellow in gastroenterology at the University of Nebraska Medical Center.

John Linder (BS, 1992; MD, Washington University, 1996) is an emergency physician in Maricopa County.

Brent W. Krugh (MA, 1993) is a senior research specialist in the MU Department of Biochemistry.

Joy J. Morrison (BS, 1993; DO, University of Health Sciences College of Osteopathic Medicine) graduated magna cum laude from medical school as a member of the Psi Sigma Alpha Osteopathic Honor Society and the Sigma Sigma Phi Honor/Service Fraternity. Joy is a junior resident in family practice at Oklahoma State University.

Reinae Feldman passed away on December 21, 2000, from complications of pneumonia. Reinae had just finished her first semester in the University of Cincinnati’s genetic counseling Master’s program, on full scholarship. Reinae graduated from MU with a degree in biology in December 1998. As an undergraduate, she participated in research as a Hughes and McNair Intern under the guidance of Associate Professor Miriam Golomb. She was an undergraduate teaching assistant in the Eukaryotic Genetics Laboratory, worked with our High School Teachers’ Van Program and worked in the biology undergraduate advising office during Summer Welcome. Most recently she worked full-time with Professor Jim Carrel to enhance the laboratory exercises in our Introductory Biology course. Reinae received the 1998–99 Division of Biological Sciences “Outstanding Senior Award.”

Carl Mazzola (BS, 1994) is completing his radiology residency at the Medical University of South Carolina prior to entering St. Louis University Medical School.

Michael Nelson (BA, 1994; MD, 1998) is neurology resident at the University of Washington Health Sciences Center.

Justin Hudson (AB, 1994; DPM, William Scholl College of Podiatric Medicine, 1999) is completing his second-year residency specializing in foot and ankle reconstructive surgery at St. Vincent Charity Hospital, North Olmsted, Ohio.

Jeffery Pendino (BS, 1995) is a group sales manager for Surgical Services, Inc. in St. Louis.

Mindy L. Jahn (AB, 1996; AAS Culinary Arts) is catering sous chef with University Catering at MU. She is chairperson of the Chef and Child Foundation of the Columbia Chapter of the American Culinary Federation.

Rebecca Miller (BS, 1996) is working at Monsanto.

Wendy Woodward (PhD, 1996) is a full-time mom and a part-time literacy coordinator for SERVE. She screens, supervises and trains volunteer peer tutors at correctional facilities.

Darren (Robinett) Davis (BS, Honors, 1996; MD, 2000) is an intern in the pedi-atric and adolescent medicine program at the Mayo Clinic.

David Devitre (BS, honors, 1997) has been accepted to the University of Health Sciences in Kansas City.

Amy (Winkeler) Genta (BS, 1997) is a sixth grade geography and science teacher in O’Fallon, Mo.

Keith Hamm (BA, 1997) is a third-year optometry student at Southern College of Optometry in Memphis, Tenn.

John McHugh (BS, 1997; MA, 1998) is a second year medical student at the University of Nebraska.

Dawn Spellerberg Peck (BS, 1997; MS, genetic counseling, Beaver College, 2000) is the metabolic clinic coordinator in Child Health/Genetics at MU Hospital and Clinics. She also staffs general genetics and prenatal clinics and is a member of the Missouri State Newborn Screening Committee.

Barbara Bapat (BS, 1998) is studying to become a dental hygienist.

Joe Fessler (BS, 1998) is a staff software engineer with Allied/Signal FM&T in Kansas City, Mo.

Martha Hufford (BA, 1998) is a DNA analyst at the Kansas City Police Crime Lab. She is engaged to Tim McMann who just started dental school at UMKC.
Jason Laramie (BS, 1998) is working as a research assistant in internal medicine at Washington University while he completes his MS in computer science (computational molecular biology) at Washington Univ. School of Engineering and Applied Science.

Amy Sandler (BS, 1998) is a pharmaceutical sales representative with Carter-Wallace in Chesterfield, Mo.

Stacey Becker (BA, 1999) is a substitute teacher in South Callaway Schools.

Andrew Cleaves (BA, 1999) is an ensign at the U.S. Navy Surface Warfare Officer School.

Melanie (Nelson) Linderer (BS, 1999) is a first year student at Univ. of Missouri-St. Louis School of Optometry.

George Lindh, III (BA, 1999) is a sales associate with Aventis Pharmaceuticals in Manchester, Mo.

Christine Otis (BS, 1999) is a senior research technician with Professor Mike Sturek at MU. She entered Medical School at MU in Fall 2001.

Zachary S. Rogers (BS, 1999) is the Ecuador project coordinator with the Missouri Botanical Gardens.

2000s

Amy Breen Carroll (MA, 2000) is a research technician for the Toolik Lake Field Station site of the ITEX (International Tundra Experiment) project/boreal ecology cooperative research unit/University of Alaska. The ITEX project seeks to understand and quantify the effect of global warming on arctic and alpine vegetation.

Christian Dornhoefer (BS, 2000) is a chemist for Safety Kleen, a company that recycles waste fuels.

Brooke Wackerman (BS, 2000) is a research assistant in health communication research and a Master's student in the St. Louis Univ. School of Public Health.

Dean Metter

Dean Metter, known as “Doc” by his many devoted students, passed away June 23, 2001. He is survived by his wife, son, two daughters and two grandchildren.

Dean earned his BA from Eastern Illinois, his MA from Washington State and his PhD from the University of Idaho. He came to MU in 1964 and stayed until his retirement in 1994. He and his wife stayed in Columbia after retirement, enjoying the extra time for fishing and trips to the Ozarks.

Dean published over 30 research articles on variation and divergence in populations of amphibians and reptiles. His research in herpetology was widely respected and he was frequently asked to review papers for the Journal of Herpetology, Copeia and American Midland Naturalist and grants for the NSF.

Much as he loved to study his “herps,” Dean enjoyed teaching even more. His Comparative Anatomy of Vertebrates course was legendary. Many pre-medical students considered that course to be the single most valuable one they took in preparation for the rigors of medical school. Dean’s favorite course was Herpetology, in which he led regular weekend field trips to the Ozarks so that his students could see and really understand herps in their natural habitat.

Dean cofounded the Bobby Witcher Society for the study and appreciation of herpetology. To enable others to share his wonder of the variety in the animal kingdom, Dean developed the live reptile and amphibian exhibit in Stewart Hall. He collected specimens for the exhibit and gave over 80 talks to over 5,000 visitors each year, many of them elementary school children. He was always delighted to identify animals brought in by the general public.

Memorials may be sent to the American Heart Association, P.O. Box 30638, Columbia, MO 65205, or to the Bobby Witcher Society, 204 Russell Blvd., Columbia, MO 65203.
Grandmothers Honored for Education Legacy

by Nancy Moen

The college-educated daughter of a St. Louis corporate president and an orphan with a third-grade education have been honored in the Division of Biological Sciences.

Although Frances Blackburn and Wilhelmina Hesemann never met and their lifestyles were vastly different, they are united through the legacies they left their families—a respect for education and a love of nature.

Biology Professor Jim Carrel and his wife, Jan Weaver, recently pledged $40,000 to create a scholarship endowment to assist MU students whose family earnings are below the median income for Boone County residents. Weaver, a Research Assistant Professor in biology, is director of the MU Environmental Studies Initiative and is investigating biodiversity in the Missouri Ozark forests. Carrel, whose research focus is chemical ecology, is an award-winning teacher of general biology and evolution.

The Blackburn-Hesemann Scholarship, which carries the grandmothers’ maiden names, will be offered annually to a Boone County high school graduate majoring in biological sciences or a related field. The renewable tuition scholarship will give preference to historically disadvantaged minority students from low-income families. Scholarship recipients must have a 3.0 cumulative grade point average and must be planning a career in the life sciences or medicine.

“We are targeting African-American students for this scholarship. There are very low numbers of minority students in medicine and even lower numbers in other areas of science,” Carrel says. “We would like this scholarship to have an effect on the local community.”

Although both grandmothers stressed education for their children and grandchildren, they lived in two different worlds.

Civic leader

College-educated Frances Blackburn, Weaver’s paternal grandmother, grew up in a family with active, successful parents. Born in 1907, she graduated from Stephens College and attended Washington University in St. Louis. Her father, a prolific inventor of metal components for the electric power industry, was president of Jasper Blackburn Corp. in St. Louis, and her mother was an active civic volunteer.

Frances cofounded the St. Louis chapter of the Herb Society of America, was active in church and garden clubs and was a member of the Missouri Historical Society. For 23 years she served on the board of directors of Jasper Blackburn Company, now ITT Blackburn.

She married twice, traveled widely, published three books of family history and several poems and maintained an active correspondence with her children and grandchildren. After moving to Fort Lauderdale, Fla., she continued her civic involvement and was named Broward County’s Outstanding Citizen in 1962.

“I admired her sense of adventure and her determination to master new ideas...” Weaver says, “…traits I hope the scholarship will foster in its recipients.”

An orphan at four

Wilhelmina Hesemann, Carrel’s maternal grandmother, experienced a difficult childhood and settled in the West as a homesteader. “Minnie” was born in 1884 in the rural community of Drake, Mo., which was formed by German immigrants.

Her mother died in childbirth, and her father, who soon remarried, died four years later. Shortly thereafter Minnie’s stepmother remarried, so the orphan was raised by stepparents, who eked out a modest living on a farm. At age 16 she left home to escape her life of “hardships and unpleasantries.”

Armed with a third-grade education, she entered domestic service in St. Louis and later joined her brother, John, who had promised his father on his deathbed that he would look after his sisters, Minnie and Emmie. Minnie followed her brother to Brighton, Colo., where he served as pastor of a Lutheran church. In Colorado, she met and married Edward Schaefer.

“Their life together was a remarkable partnership,” Carrel says. After the wedding, the couple moved into a log cabin on 70 acres of prairie. In four decades they turned that property into one of the most productive, irrigated farms on the eastern slope of the Rocky Mountains.

I didn’t see my grandmother very often, but she was a pillar of the family,” Carrel says. “Jan and I wanted to establish this scholarship and name it for our grandmothers because they were so influential in our lives.”
Special Thanks...

The divisional faculty, staff and students sincerely appreciate the unsolicited gifts to the Biological Sciences Development Gift Fund in 1999 and 2000 made by the following individuals. These contributions are used to support undergraduate scholarships, internships and the development of innovative teaching methods.

Aaron Balanoff  Herbert J. Fisher  Leigh Moser
Richard A. Cohn  William Giles  Gary L. Mueller
Melvin Conrad  Sara Green  Milo E. Richmond
Sheldon Cook  Kim Hahn  Coral L. Rigney
Neal Von Dawson  M. Crew Hall  Brian Ritter
Vincent DeGeare  Stephen D. Maus  Kathleen P. Shoor
Anne Feind  Margaret McCarthy  Millie Smith
William E. Fennell, III  Marsha A. McLaughlin  Carolyn H. Stern

We’re Collecting Cards

Biology graduates are our favorite players. We’ve got a business card display that we’d like to expand with your contribution.

Send your business card to:
  Tara Warne
  Div. of Biological Sciences
  106 Tucker Hall
  Columbia, MO 65211-7400