

CONFLUENCE

THE COLLEGE OF LETTERS AND SCIENCE • MONTANA STATE UNIVERSITY • 2009-2010 • VOLUME 6



Hands-on

LEARNING BY DOING



Dear friends and colleagues,

As you know, our nation has suffered in the throes of the global financial crisis during the past year. Nationwide, companies are laying-off workers and leaving job vacancies unfilled. The result was that our graduating students faced the toughest job market in years. Nationwide the May unemployment rate hit 8.9 percent with 13.7 million Americans unemployed. According to a survey from the National Association of Colleges and Employers, just 19.7 percent of 2009 graduates who applied for a job actually had one when they graduated. In comparison, 51 percent of those graduating in 2007 had jobs lined up upon graduation.

The harsh realities of the current job market for new graduates has led me to think about the ways that the College of Letters and Science tries to improve the competitiveness of our graduates. I believe that the many and varied opportunities our students have for hands-on, active learning give them a considerable advantage over peers graduating from other institutions. In L&S, we are committed to providing a research experience for all our undergraduate majors. Undergraduate students benefit from outstanding opportunities to work side-by-side with top faculty on original research and scholarship, an experience found elsewhere most often in small, private liberal arts colleges.

In this issue of *Confluence*, you'll read about physics students involved in designing, building and testing a satellite, and an English class who created a service learning project to restore MSU's Danforth Park. You'll learn about economics students who traveled to Greece to experience firsthand the birthplace of democracy, students who participated in an archeological excavation of a cave in southeast Montana, and a microbiology student who conducted an analysis of air quality in the Gallatin Valley and presented her findings around the state.

Students in L&S are provided with these and many other opportunities to apply the knowledge they obtain in the classroom. The wisdom, skills and experience gained from these opportunities undoubtedly improve their chances of gainful employment or acceptance into graduate or professional programs. Thank you for your support in helping to make these opportunities possible.

As you read this issue of *Confluence* focused on active learning, and enjoy these highlights of faculty, staff, student, and alumni accomplishments, we hope you'll be inspired to learn more about what is happening across the college. You can visit our website at www.montana.edu/lettersandscience for frequently updated news. We cordially invite you to join us for any of our public events, discussion groups and learning opportunities, or visit us on campus to meet our faculty and students.

Best regards,

Paula M. Lutz
Dean



Paula Lutz





TABLE OF CONTENTS

2 HANDS-ON LEARNING

- 4 MICROBIOLOGY STUDENT'S RESEARCH
A BREATH OF FRESH AIR
- 5 TOUCHING ON THE ORIGINS OF DEMOCRACY
- 5 STUDENTS GET THEIR HANDS DIRTY
- 6 ENGLISH CLASS PAYS IT FORWARD
- 8 SATELLITE PROJECT LAUNCHES OPPORTUNITIES



10 STUDENT HIGHLIGHTS

- 10 LIFE AS A LOBBYIST
- 10 THE SWEET SOUND OF SUCCESS
- 11 SCORING ON THE COURT...AND IN
THE CLASSROOM
- 11 CHEMISTRY STUDENTS WIN
GOLDWATER SCHOLARSHIPS



12 FACULTY HIGHLIGHTS

- 12 HISTORIAN BECOMES MSU'S
NEWEST REGENTS' PROFESSOR
- 12 FOR SOLAR PHYSICIST, THE FUTURE
LOOKS BRIGHT
- 13 IN MEMORIAM: WILLIAM HISCOCK
- 13 AWARDS, RETIREES AND EMERITI FACULTY



14 RESEARCH

- 14 SECRETS TO ECOLOGICAL CHANGE
LIE IN LAKE SEDIMENT
- 14 HELPING MONTANA FAMILIES FIGHT
OBESITY
- 15 USING MATH TO FIGHT DISEASE
- 15 PRESENCE OF WOLVES IMPACTS ELK
FORAGING HABITS



16 OUTREACH

- 16 VIRUSES, MAGNETS AND
BIOMATERIALS, OH MY!
- 17 JENNIFER LUEBECK RECEIVES UNIVERSITY
AWARD FOR OUTREACH
- 17 STUDENT SERVES AS NASA AMBASSADOR



18 DEPARTMENT HIGHLIGHTS

27 ALUMNI

28 PHILANTHROPY



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Children read a book by Friends of African Libraries.

Hands-on

by Jody Sanford

LEARNING

I recently did a Google™ search for “hands-on learning” and was somewhat surprised when the Montana State University website was listed in the top 10 search results. In many ways this is indicative of MSU’s unique commitment to providing experiential learning opportunities for students. This commitment is best illustrated by MSU’s innovative inquiry and research-based core curriculum, which was created to provide all students the best possible learning environment, including an undergraduate research experience.

The College of Letters and Science (L&S) embraces the university-wide dedication to hands-on, active learning, with all L&S departments providing opportunities for students to apply the knowledge they’ve gained in the classroom. Students are encouraged to pursue their specific interests by immersing themselves in creative and/or research experiences. Talented professors work closely with students to help them focus their work and develop their ideas.

Historically, the term “hands-on learning” has been associated with the sciences and science curriculums, and the science programs in L&S do offer many active learning opportunities. For example, this issue of *Confluence* highlights a microbiology student who analyzed air quality around the Gallatin Valley to evaluate health risks for Bozeman area residents (page 4), and physics students who were involved in every phase of preparing a satellite for space (page 8).

In mathematical sciences, students in Methods of Teaching Middle School, in the mathematics teaching option, were offered several hands-on learning



KELLY GORHAM

A student working in the Montana microfabrication cleanroom facility.

Adjunct English instructor Jill Davis, and students Alexey Kalinin and James Freeborn, work on Danforth Park. See page 6.



ALEXEY KALININ



OLINT GARRETT

Students working inside the excavation grid at Horseshoe Cave. See page 5.



Explorer-1 Prime was designed and built by students in the Space Science and Engineering Lab. See page 8.



Faculty and students work together to assemble *Corona*. See page 22.

experiences. They participated in three unique classroom observation research experiences, which included observing teacher-student discourse, observing small group inquiry, and conducting task-based interviews with students as they solved mathematics problems. The students went on an all-day field trip to Townsend's K-8 school to observe mathematics inquiry at three grade levels and interview teachers. Finally, students were asked to complete a "lesson study" with a team of middle school teachers. This included attendance at a series of after-school meetings, research in mathematics topics, observed instruction of the lesson and debriefing with the teachers in a half-day workshop. "We received very positive feedback about the course," said associate professor Jennifer Luebeck who teaches the course along with assistant professor Elizabeth Burroughs. "Our students were enthused and able participants in the professional practice of teachers."

L&S also offers many experiential learning opportunities in the other disciplines within the college – the social sciences and the humanities. For the social sciences, this issue of *Confluence* contains articles about economics students who traveled to Greece to enhance their studies of economic institutions and economic performance in a global context (page 5), and anthropology students who searched for artifacts in a cave in southeast Montana (page 5).

Examples from the humanities are also plentiful, including an English class that volunteered countless hours to a campus sustainability service learning project (page 6). Ada Giusti, associate professor of French, provided hands-on learning experiences for students enrolled in Advanced French Grammar and Composition – an intensive review of French grammar designed to increase proficiency in various forms of written expression. The students are providing important services to rural African communities by creating a French website for Women against Malaria, a Malian business enterprise that was founded in 2008 through the collaboration

of women farmers, MSU students and faculty. The class is also developing a French-language version of the website of Friends of African Libraries. "The students are enthusiastically and directly using their translation and writing skills to support a grassroots women's enterprise in Mali and to promote the creation of village libraries as well as literacy in Burkina Faso," said Giusti.



Chelsea Sheffield's research project found that smoke from forest fires impacts air quality in the Gallatin Valley. See page 4.

The 2009 publishing of *Corona*, a journal of arts and ideas based at MSU, is another example of a wonderful student-centered, hands-on learning opportunity in the humanities. History and religious studies students participated in the crafting of a book that challenges the definition of a "book." It's a great example of professors collaborating with students to participate in artistic and intellectual

creativity. "*Corona* productions has been the defining project of my undergraduate experience," said recent graduate Sadie Tynes. "Being awarded an editorial position with *Corona* has not only opened the doorway to invaluable experiences in publishing – evaluating submissions and handcrafting beautiful works of art with the editorial team – but has deepened my understanding of academic themes that run throughout my studies of history, literature and religion." To read more about *Corona*, please see page 22.



Economics students in Greece with a statue of King Leonidas of Sparta. See page 5.

In keeping with the hands-on learning theme of this issue of *Confluence*, several of the articles contained in the magazine were prepared by student reporters (see the articles on pages 4, 6 and 10). Three students from English 221 (Intermediate Technical Writing) received their assignments, developed interview questions, conducted interviews and wrote excellent articles.

"It's simply a different definition of what constitutes a well-rounded undergraduate education," said Paula Lutz, Dean of the College of Letters and Science. "In L&S, we view scholarly or creative activity as a critical component of the undergraduate curriculum for all, rather than an optional element reserved for an elite few."

MICROBIOLOGY STUDENT'S RESEARCH A BREATH OF

Fresh Air

by Alexis Wainwright

Hikers, joggers, mountain bikers, sportsman and skiers — we all breathe it. The invigorating fresh air of the Rockies is something most Gallatin Valley residents take for granted in their day-to-day lives. MSU microbiology student, Chelsea Sheffield, however, saw her environmental science class as an opportunity to examine air quality around the valley in light of its effects on the health of many Bozemanites.

Small air particles, particularly those under 2.5 micrometers (μm), can present a variety of respiratory risks. These particles are minute enough to penetrate the lung, contributing to asthma, chronic bronchitis and other related health problems. Sheffield, together with Kelsy Broadaway, now an epidemiology graduate student, took air quality samples from various areas in the Gallatin Valley in order to assess the

potential for human health impacts. The students traveled from site to site, hitting on areas of high influence to Gallatin residents such as schools, gravel pits and congested intersections. Using sophisticated instruments like the TSI DustTrak 8520 and P-Trak

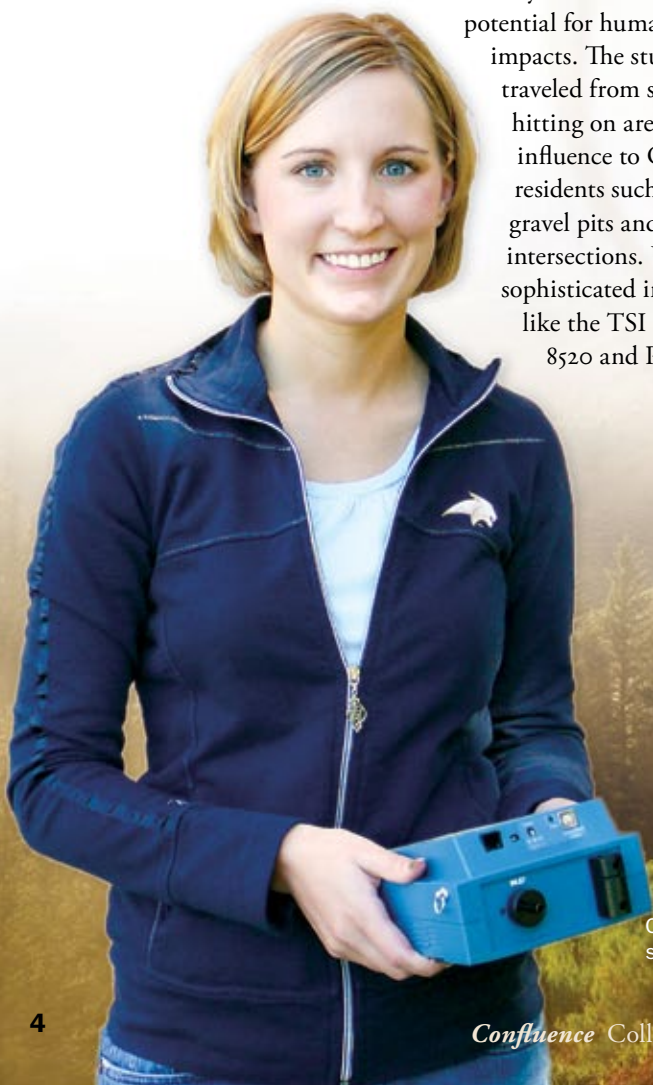
8525 to detect potentially hazardous dust particles of 10 μm , 2.5 μm , and under 1.0 μm , Sheffield undertook an extensive research project to test and tabulate air quality findings over the course of two months. The verdict? Air quality in the Gallatin Valley is as pure as it tastes, with some slight deviations towards higher concentrations of particles during fire season.

“It is always a pleasure to work with Chelsea since she is such an independent worker and she is motivated to create an excellent product,” said Susan Broadaway, Sheffield’s microbiology advisor. “Additionally, there was a lot of interest in the results of the project in our community, and Chelsea was always willing to present the information not only at several meetings with the Gallatin Valley Health Board but also other presentations both on campus and across the state.”

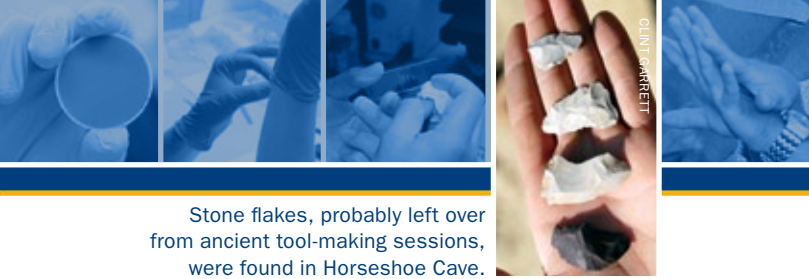
Sheffield considers her undergraduate research experiences to have been some of the most rewarding aspects of her student career at MSU. She seeks to make a tangible difference in the community. “People never really think about how dramatically the air they breathe affects their everyday lives,” Sheffield said. The good news is that with Sheffield’s findings, Bozemanites can breathe a little easier knowing air quality in the valley is up to standard.

Her future plans include a yearlong clinical laboratory science training program and pursuing work as a medical laboratory scientist.

Alexis Wainwright is a sophomore majoring in ecology in the fish and wildlife management option. In her free time she enjoys writing, hiking and hanging out with her pet sugar glider, Feverstone.



Chelsea Sheffield holding the instrument she used to collect air quality samples.



Stone flakes, probably left over from ancient tool-making sessions, were found in Horseshoe Cave.

STUDENTS GET THEIR HANDS DIRTY

A recent MSU graduate and three MSU undergraduates spent two weeks during the summer of 2008 excavating Horseshoe Cave in southeast Montana. The MSU team started excavating the cave after federal archaeologists and local ranchers asked Jack Fisher, archaeologist in the Department of Anthropology and Sociology, to continue a project that University of Montana archaeologists had conducted in 1976. On the last day of the 1976 dig, the UM team had found a spear point believed to be more than 7,500 years old.

“It was priceless,” said Eryka Thorley of Michigan. “As an undergraduate, it’s just a great experience to work one-on-one with Dr. Fisher.” Others on the MSU team were Seth Alt of Bozeman, Clint Garrett of Texas and Dallas Timms of New Mexico. Halcyon La Point and Michael Bergstrom, archaeologists with the U.S. Forest Service in Billings, provided supplemental funds and logistical support.

Garrett said the undergraduates got to do everything graduate students would have done if MSU’s Department of Sociology



Screening sediment from the cave.

and Anthropology had a graduate program. They strung a string excavation grid around the two areas they would excavate. They used trowels and bamboo probes to dig down about 10 centimeters at a time until they were almost three feet below the cave floor. They shook the dirt through screens to see what it held. They recorded anything they found and placed it in plastic bags for later study.

Fisher, back in his lab, said the team found three fire hearths, nearly 100 stone artifacts and hundreds of animal bones. He pulled out one bag that held red and grey flakes made out of porcellanite, a stone native to southeast Montana and widely used by ancient people. The flakes were apparently left over after making tools, Fisher said. Another bag held a perforating tool that looked like it could’ve been used for sewing. One bag held a bison bone. Others held tiny rodent bones.

Excerpted from Evelyn Boswell, MSU News Service

TOUCHING ON (LITERALLY!) THE ORIGINS OF DEMOCRACY

Eleven MSU students and two professors from the Department of Agricultural Economics and Economics traveled to Greece to discover the origins of democracy first hand. It was the culminating lesson for professors Rob Fleck and Andy Hanssen’s origins of democracy class, which studied economic institutions and economic performance in a global context. Fleck and Hanssen hoped that a trip to Greece would help students better understand the role of ancient Greek institutions in forming that culture.

Austin Owens, a finance and economics student from Ft. Collins, Colo. registered for the class because, “it stuck out to me as an alternate look at economics and how the past plays into how we do things today.”

The students met once a week during spring semester to read about, write about and discuss the role of



Students and professors at the Theater at Epidaurus.

institutions in a country’s economic performance. The class studied institutions from around the world, but used ancient Greece as a focal point. Fleck and Hanssen used the example of Ancient Greece to better understand the role of institutions, such as property rights and legal systems, throughout history and throughout the world.

“We do a lot of reading and are exposed to a lot of ideas,” said Owens. “Our class sessions are entirely discussion-based. It is a very engaged classroom.”

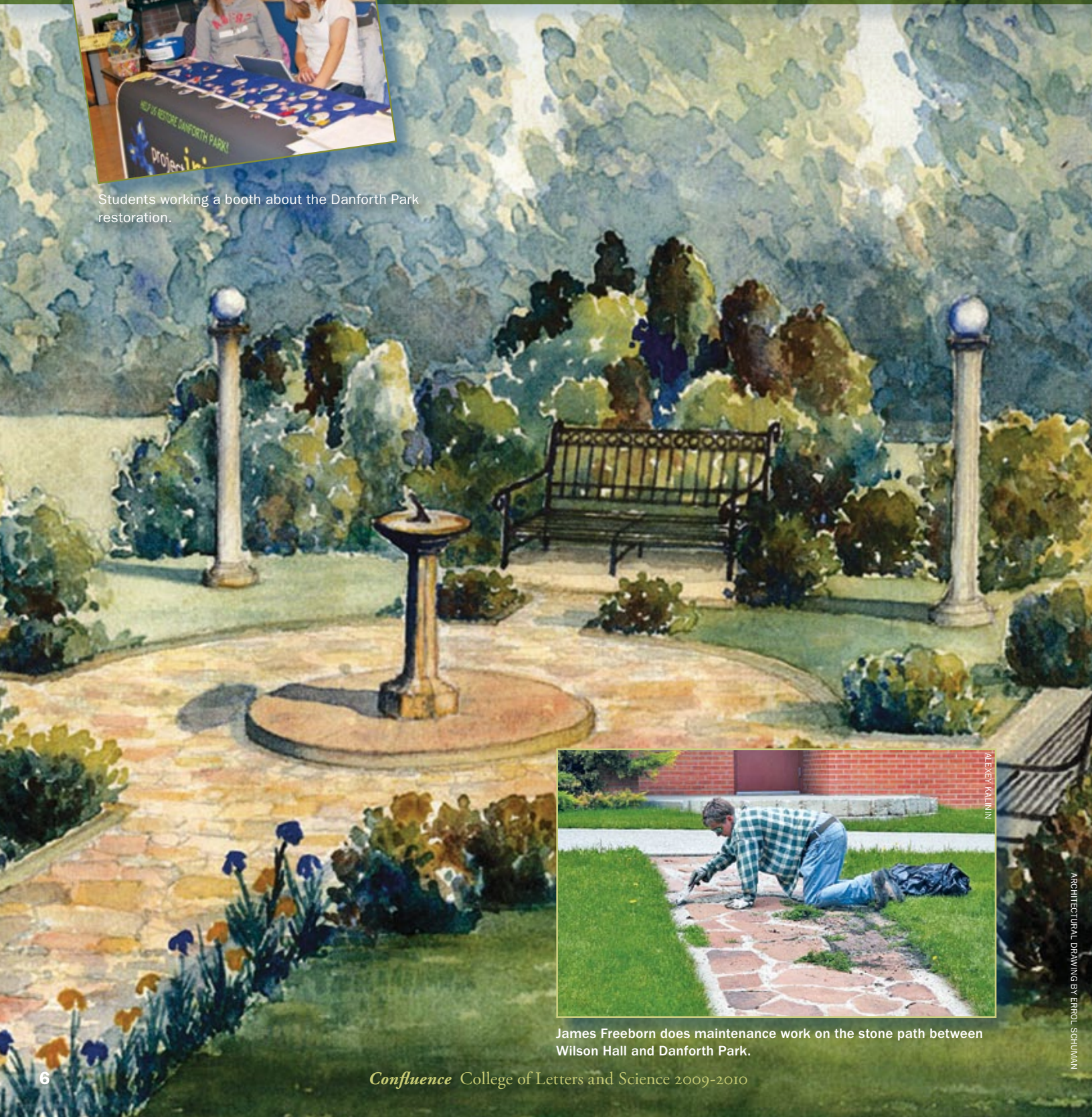
In addition to visiting Athens and Sparta, the group toured key sites from other eras of Greek history such as Mycenae, which pre-dates the ancient Greek democracies, and the Byzantine ruins at Mystras.

Excerpted from Melynda Harrison, MSU News Service.

ENGLISH CLASS PAYS IT



Students working a booth about the Danforth Park restoration.



James Freeborn does maintenance work on the stone path between Wilson Hall and Danforth Park.



KELLY GOPHMAN

Errol Schuman presents the proposed Danforth Park restoration to MSU President Geoff Gamble.

by Alexey Kalinin

Forward

In winter 2009, the idea to restore

Danforth Park resulted from a difficult period in MSU's environmental history, which included the cutting of hundreds of trees due to a pine bark beetle infestation and the building of the new Chemistry and Biochemistry Building. A coalition of students, faculty and staff from Facility Services formed to explore constructive ideas for sustainability on the MSU campus. Restoring the long neglected Danforth Park was a good starting point.

When it was built in 1929 and 1930, Danforth Park, formerly called The Iris Garden for all its irises, had a beautiful tea garden landscape. It provided a serene and beautiful space for students. With support from Una Herrick, then Dean of Women Students, every female student on campus contributed \$0.50 to the building of the beautiful garden, located south of Herrick Hall. Soon, each male student was contributing \$1.00. Building this park during the Great Depression was a grassroots, community building effort with many different groups contributing pieces of the park such as the stone work, the benches, the sundial and flowers.

Fast forward 80 years. A group of students concerned about sustainability issues were scratching their heads and wondering how to get the park project going. Fortunately, Jill Davis' English 221 (Intermediate Technical Writing) class heard about the project and selected it for their service learning project. Public relations and fundraising campaigns were developed by Davis' students after they read *The Tipping Point* by Malcolm Gladwell. The book provides a concrete framework for creating a campaign and the students put it to the test.

Students named the effort Project Iris Garden, and organized and implemented the following:

- Designing, producing and selling "Save Danforth Park" buttons and t-shirts.
- Creating an awareness campaign with posters describing the project.
- Speaking to various groups, clubs and the Greek societies.
- Gathering archival research from the Renne Library about the park's history and creating a booklet of said history.
- Creating a website and a Facebook page.
- Preparing and distributing surveys to gather information about student needs regarding open space on campus.

- Writing and submitting grant proposals to different organizations, including the Parent and Family Association, ASMSU Student Senate, Early Childhood Project, and the Bozeman Beautification Board, all of which gave partial funding or some form of support for the project.
- Networking with campus government groups.

Project Iris Garden brought the class together with a common goal and really built a sense of community. The students found that they could affect change in positive ways and that one voice matters. They could see within a month's time how, as Gladwell said, "little things make a big difference." Six months later the group had a vision and a design for restoration of the park, thanks to Errol Schuman, of New West Landscapes, who donated his design time to the project. A big fundraiser, the "Off the Wall" Art Swap, was held in September. A new student club, Students for Danforth Park, has been formed and will see this project through to completion.

"This project gave me an opportunity to care about something on the MSU campus, to write real grants, to present information to real people about our vision for restoring the park, and to see that one voice in a community can make a difference," said Raquel Peterson, a sophomore in the Department of Health and Human Development.

"What an adventure we had together in this class restoring, educating, developing, writing, researching and instructing

"This project opened up a whole new world of service for me. Project Iris Garden gave me the push I needed to make a difference and leave something positive to MSU."

– Mike Gleason, senior in the Department of History and Philosophy

others on this wonderful park on campus," said Tyler Miller, a junior in the Department of Film and Photography. "I have enjoyed so much creating a website, posters and other 'sticky' material for this 'pay it forward for MSU' class project."

To learn more about Project Iris Garden, please visit projectirisgarden.com/.

Alexey Kalinin is a senior in the Department of Land Resources and Environmental Sciences in the College of Agriculture. Alexey, who is from Lugovaya, Russia, is the student committee chair for Students for Danforth Park.

SATELLITE PROJECT

LAUNCHES STUDENT OPPORTUNITIES

A satellite made by Montana State University students to commemorate the 50th anniversary of the first U.S. satellite has moved another step closer to space. The satellite called “Explorer-1 Prime,” recently passed a “fit check” in California and has returned to MSU for pre-launch testing with a launch date planned for late 2009 or early 2010.

The MSU satellite was one of three recommended for flight on a NASA rocket. The others were made at the University of Kentucky and the University of Colorado-Boulder. All of the satellites are metal cubes measuring about four inches per side. That size, a standard adopted by several universities, allows the cubes to ride in an enclosed box that can be attached to a rocket. The satellite could join the Glory mission on its ride into orbit, one of several NASA missions related to global warming.

Dave Klumpar, director of MSU’s Space Science and Engineering Lab, said this would be the first time that NASA has agreed to carry a university satellite into space. A previous MSU satellite flew on a Russian rocket from Kazakhstan, but failed to reach orbit.

“Historically, it’s very significant,” Klumpar said.

Klumpar attributed MSU’s selection to several factors. One was the historic aspect of the satellite. The first U.S. satellite, Explorer-1, was launched in 1958 and carried a Geiger Tube radiation experiment supplied by the late James Van Allen. It led to the discovery of intense belts of hazardous radiation surrounding Earth, now called Van Allen radiation belts.

Another factor in MSU’s selection was the heavy involvement of MSU students. About 40 students have been involved since the project began. Almost all of the students were undergraduates when they started.

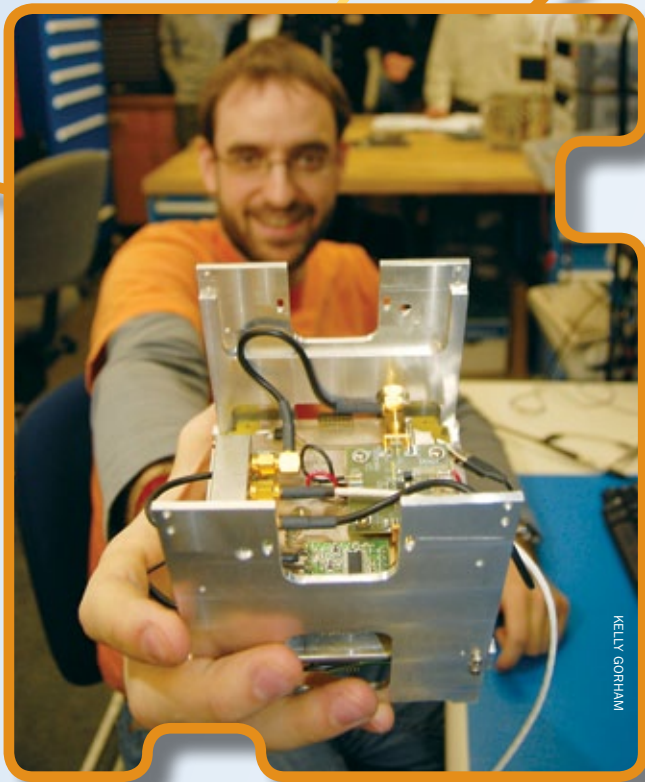
MSU may have also been successful because of the science involved in its mission and the fact that it is a Montana Space Grant Consortium project being designed and built by students in the Space Science and Engineering Lab, Klumpar said. Besides that, the team made a “tremendous” presentation to the NASA review panel. Among other things, the presentation included a short film by Andy Adkins, a student in MSU’s Science and Natural History Filmmaking Program.

“We have been pursuing activities like this for eight or nine years,” Klumpar said. “This is exactly down our alley, so to speak.”

MSU’s satellite will contain a handful of electronics built by students, a radio, computer, power supply and attitude control system. It will also contain a Geiger Tube that is believed to be a spare from the Pioneer 10 mission, the first mission to leave the solar system. Klumpar received several tubes from Van Allen.

Klumpar said MSU designed its satellite to operate at least four months, but it could orbit for up to two decades. It will send back, by radio, information about the radiation environment that is potentially hazardous to astronauts.

Excerpted from Evelyn Boswell, MSU News Service



Cory Wiltshire holds part of a satellite under construction at MSU.

KELLY GORHAM



Artist rendering of Explorer-1 Prime.



DAVID KLUMPAR

MSU's Explorer-1 Prime satellite, when ready, will be delivered to California for flight.



KELLY GORHAM

Patrick Lokken solders components to the radio that will ride in Explorer-1 Prime.

While testing the satellite, MSU graduate Scotty Kratochvil checks a parachute packed inside a canister that holds the MSU instrument.



DAVID KLUMPAR

Maureen Weiland, along with Clarissa "Ivie" English, MSU's Montana Legislative Intern, at an event in Helena.



MAUREEN WEILAND

LIFE AS A LOBBYIST

By Chris Fisher

Maureen Weiland, a 2009 MSU graduate with double majors in political science and philosophy, lobbied during the 2009 Montana State Legislative session on behalf of the Associated Students of Montana State University (ASMSU). She spent her final semester of undergraduate study in Helena, meeting legislators, speaking to committees and immersing herself in issues relevant to MSU students. Weiland was selected to represent MSU students from top MSU candidates, and worked closely with Cathy Conover, Vice President of Communications and Public Affairs.

"She has an outstanding mind. Couple that with her interpersonal skills and it's no surprise she was exceptional in representing MSU students," said Cathy Conover.

While in Helena, Weiland focused on maintaining state funding for the university and worked on student issues. Among other things, she lobbied to protect tenant rights and to ensure safe gun ownership across Montana.

"I really felt the need to give MSU students a strong voice; I wanted to represent my peers and their interests, and give them a presence in Montana's policymaking arena."

Weiland's interest in policy was first explored on the ASMSU stage as an ASMSU senator, working to fulfill the needs of the students on campus. Weiland wanted to take that interest further and found an opportunity in the ASMSU lobbyist position. It was a chance to lobby at the state level and represent the students of the MSU campus – a great way to explore the political scene and a bigger forum in which to represent her peers. "Working with policy is something I find satisfying because it is a very powerful way to directly impact the world around me. I love how tangible it is," said Weiland about her experience.

This past summer, Weiland also served as an intern for Senator Max Baucus, the senior U.S. Senator from Montana. While Weiland doesn't know what her future holds, she is currently attending the University of Denver's Sturm College of Law and plans to graduate in 2012. "I definitely want to continue exploring the world of policy, and continue to look for ways to better my community through it."

Chris Fisher is a sophomore in business management, studying both international business and writing.

THE SWEET SOUND OF Success



Shane Colvin

Shane Colvin was one of just 12 recipients of a 2008 George J. Mitchell Scholarship, often called the Irish Rhodes Scholarship. Colvin was selected for the Mitchell scholarship from more than 300 applicants from across the country.

Colvin, who graduated in May with three majors (biochemistry, music and cell biology), will use the one year of postgraduate study in

Ireland funded by the scholarship to earn a master's degree in musical therapy from the University of Limerick. Colvin hopes to one day incorporate what he learns in Ireland in a pediatric practice in Montana where he can "nourish the soul as well as the body." To that end, he has already taken the M-CAT and is applying to medical schools, with the hope that he can defer medical school until after completion of the Mitchell scholarship.

Colvin said that "it was humbling and exciting" to be among this year's Mitchell recipients, who include a National Book Award nominee and an Emmy winner. "To have something that combined all of my musical and medical interests is a dream come true," Colvin said.

Michael Miles, former director of the MSU University Honors Program, who helped guide Colvin through the application process for the Mitchell Scholarship, said Colvin will now engage renowned scholars within Ireland, but will also be invited to interact with political and cultural leaders from throughout the world.

"Shane is now in very distinguished company indeed," Miles said. "Such distinction speaks volumes both about him and Montana State University. He will soon discover that being a Mitchell Scholar opens doors of opportunity that will accompany him throughout his lifetime."

Excerpted from Carol Schmidt, MSU News Service

SCORING ON THE COURT... AND IN THE CLASSROOM

As a kid growing up in Angola, Divaldo Mbunga knew nothing about Montana, let alone Montana State University. But thanks to his athletic talents, Mbunga found his way to MSU on a basketball scholarship, where he is now a leader and the lone senior on the team.

Mbunga's route to MSU from a city of about 3 million in the south-central African country has been unusual. Initially, he earned a scholarship to play basketball for Peninsula College, a community college located in Port Angeles, Wash. At Peninsula, Mbunga also came to the attention of Ryan Orton, who at the time was an assistant MSU men's basketball coach. Orton saw Mbunga play during his freshman year, and he recruited Mbunga to play for MSU, signing him before his second season at Peninsula.

During his time at MSU, where he plays center, Mbunga has also excelled. Last year he finished first on the team in rebounding and second in scoring. He also earned honorable mention in the all-Big Sky choice, and his 79 offensive rebounds were among the most of any player in the Big Sky conference.

"Divaldo has been a tremendous ambassador for our program as he represents everything good about college athletics," said Brad Huse, MSU men's basketball coach. "He is a good, conscientious student and he gives maximum effort on the court, both in practice and in games."

Off the court, Mbunga juggles a busy schedule as a student with a major in modern languages and minor in business administration. During spring semester 2009, he took five courses in Spanish and business. He said it's tough to balance class and basketball, but his professors have helped make it work.

"They're amazing," he said. "Student athletes have to miss a lot of class, but I have great relationships with my professors. They're really flexible."

Mbunga's coach predicts he will continue to succeed. "Divaldo will be a success because of his tremendous work ethic," Huse said. "I only wish we'd had the chance to work with him longer than two years."

*Excerpted from
Anne Pettinger,
MSU News Service*

Divaldo Mbunga



Joe Azzarelli, left, and Ben Naab are the latest MSU students to receive the prestigious Goldwater Scholarship.

CHEMISTRY STUDENTS RECEIVE GOLDWATER SCHOLARSHIPS

Joe Azzarelli and Ben Naab, both undergraduate students in the Department of Chemistry and Biochemistry, received Goldwater Scholarships in 2009. It's the nation's premier scholarship for undergraduates studying math, natural sciences and engineering. It will give each recipient up to \$7,500 a year for tuition, fees, books, and room and board.

The awards are the 48th and 49th Goldwaters given to MSU students since the Goldwater Foundation was established in 1986. Montana State University is ranked 11th nationally for the number of Goldwater Scholarship recipients, which puts it just behind Yale and MIT and ahead of other distinguished institutions including Johns Hopkins, University of Washington, Purdue and the University of Minnesota.

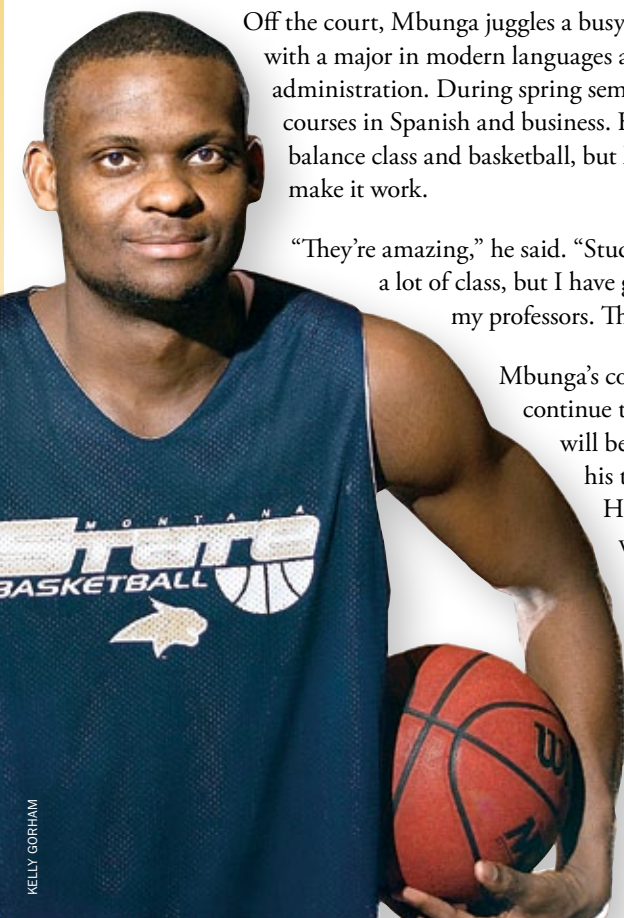
MSU President Geoff Gamble said, "I'm very proud of these students and the role that MSU faculty played in their success. I'm also proud of MSU's ability to attract outstanding students and offer them an education that helps them continue to achieve."

Azzarelli and Naab became friends while taking chemistry courses at MSU and seem to be following similar paths. Each has spent summers conducting research at other universities. Both want to be chemistry professors whose research improves public health. Naab's particular interest is cancer while Azzarelli is working on compounds that fight staph infections.

"After seeing the professors here on campus and how they interact with students, I think it would be cool to inspire another generation of chemistry students," Naab said.

"There's still a lot of room for improvement in the field of chemistry and its many applications, and this is what really drives me," Azzarelli said.

Excerpted from Evelyn Boswell, MSU News Service



HISTORIAN BECOMES MSU'S NEWEST REGENTS' PROFESSOR

Brett Walker, a world-renowned expert in Japanese environmental history, is Montana State University's newest Regents' Professor. Walker, head of the Department of History and Philosophy, was recognized for his outstanding service to MSU and his unique contribution to the field of history.

"I'm incredibly flattered by this," Walker said as he accepted the award. "I'm very much humbled by this."

Walker was born in Bozeman and spent much of his childhood on a family wheat and barley farm near Cascade, Mont. He was recommended for the Regents' award by MSU President Geoff Gamble and Commissioner of Higher Education Sheila M. Stearns. In their nomination, they wrote that MSU was fortunate to recruit Walker from Yale University in 1999. In his nine years at MSU, he has risen rapidly through the ranks to become a full professor and head of the department.

"He has gone from rising star to mature scholar in record time, making a name for himself and MSU in the fields of East Asian history, the history of science and Japanese environmental history," the officials wrote.

They added that Walker has been a prolific scholar, including the translations of his first two books into Japanese, and has received MSU's Charles and Nora L. Wiley Award for Meritorious Research.

Previously named Regents' Professors at MSU were Jack Horner, paleontology; Gordon Brittan, philosophy; John Carlsten, physics; and Paul Grieco, chemistry and biochemistry. All five of MSU's Regents' Professors are faculty members in the College of Letters and Science.

Excerpted from Evelyn Boswell, MSU News Service



Brett Walker

KELLY GORHAM

FOR SOLAR PHYSICIST, THE FUTURE LOOKS BRIGHT

Charles Kankelborg, a solar physicist at Montana State University, has received the highest award the United States government gives to outstanding scientists and engineers beginning their careers.

John H. Marburger III, Science Advisor to the President and Director of the White House Office of Science and Technology, presented the Presidential Early Career Award for Scientists and Engineers (PECASE) to Kankelborg and 66 other recipients in a ceremony at the Old Executive Building on White House grounds. Kankelborg, 41, was honored for developing novel solar instruments and mentoring undergraduate and graduate students.

"Your discoveries and intellectual leadership provide an example to your colleagues and to succeeding generations and will help shape the future. Our nation applauds your accomplishments and expectantly awaits your future



Charles Kankelborg

KELLY GORHAM

contributions," Marburger wrote Kankelborg when he notified him of his award.

"This award is a wonderful surprise," Kankelborg said. "I should have known something was coming when the Office of Science and Technology Policy wrote me several months ago, informing me that they were performing an FBI background check, but I did not expect a PECASE."

Besides the honor of receiving a White House award, the PECASE gives Kankelborg a two-year extension on one of his research grants. Nine federal departments and agencies recommended recipients for the PECASE. Kankelborg was one of three PECASE recipients who were nominated by NASA.

Kankelborg is the second MSU solar physicist to receive the PECASE and the third recipient affiliated with the MSU physics department.

Evelyn Boswell, MSU News Service



In Memorium

William Hiscock, the man who helped foster cutting edge NASA research in Montana for 18 years and a former head of the physics department, died Tuesday, April 21, from a rare illness called Light-Chain Deposition Disease.

Hiscock, 57, hadn't worked on campus since summer 2008 but continued to direct the Montana Space Grant Consortium (MSGC) from home as well as serve on President Barack Obama's transition team for NASA.

Hiscock wrote the grant that started the MSGC in 1991 and had served as its only director. A partner in a national program to help students become aerospace leaders of the future, the MSGC gives college students across the state a variety of space-related opportunities.

Hiscock was involved in several NASA missions. For example, he was a member of the LISA Mission Definition Team, headed the science team for OMEGA and served as education/outreach team member for THEMIS, or Time History of Events and Macroscale Interactions during Substorms.

Hiscock's numerous awards included some of the top faculty awards at MSU, a national service award from the EPSCoR/IDeA Foundation

“He was greatly admired in the department, within the university and in the national community of workers in space research and outreach.” – John Hermanson, head of the physics department from 1990 to 2003

and a worldwide award, called the Frank J. Malina Astronautics Medal. He published more than 100 papers on astrophysics, gravitation theory, cosmology and quantum field theory.

Colleagues described Hiscock as a wonderful person, highly intelligent and an amazing boss who was enthusiastic, supportive, decisive and wise.

“From my perspective, he succeeded beyond expectations in his contributions locally and nationally,” said Bob Swenson, head of the physics department from 1970 to 1990 and MSU's vice president for research from 1990 to 1998. “He was not only a major contributor, but a really class act. Bill was one of those people who was incredibly intellectually honest and just a genuinely nice guy. He had the respect of probably everyone he ran into.”

Excerpted from Evelyn Boswell, MSU News Service

2009 AWARDS

L&S Dean's Award for Meritorious Research

David McKenzie · Physics

Yanna Yannakakis · History and Philosophy

L&S Outstanding Teaching Awards

Steven Swinford · Sociology and Anthropology
(Tenure Track)

Don Demetriades · History & Philosophy (Adjunct)

Cassi Miller · English (Graduate Teaching Assistant)

Shane Nowack · Mathematical Sciences (Graduate Teaching Assistant)

L&S Kathy E. Griffith Employee Excellence Award

Margaret Jarrett · Physics

Deidre Manry · History and Philosophy

Meritorious Technology/Science Award

Paul Greico · Chemistry and Biochemistry

Ed Dratz · Chemistry and Biochemistry

James and Mary Ross Provost's Award for Excellence

David Mogk · Earth Sciences

Charles & Nora Wiley Award for Meritorious Research

Michael Reidy · History and Philosophy

Charles Lawrence · Chemistry and Biochemistry

Cathy Whitlock · Earth Sciences

President's Excellence in Teaching Award

Kristen Intemann · History and Philosophy

Charles McLaughlin · Chemistry and Biochemistry

Provost's Excellence in Outreach Award

Trevor Douglas · Chemistry and Biochemistry

Jennifer Luebeck · Mathematical Sciences

Provost's Award for Undergraduate Research/ Creativity Mentoring

Jack Fisher · Sociology and Anthropology

Mary Cloninger · Chemistry and Biochemistry

Betty Coffey Award

Susan Kollin · English

Retiring Faculty (and the year they joined MSU faculty)

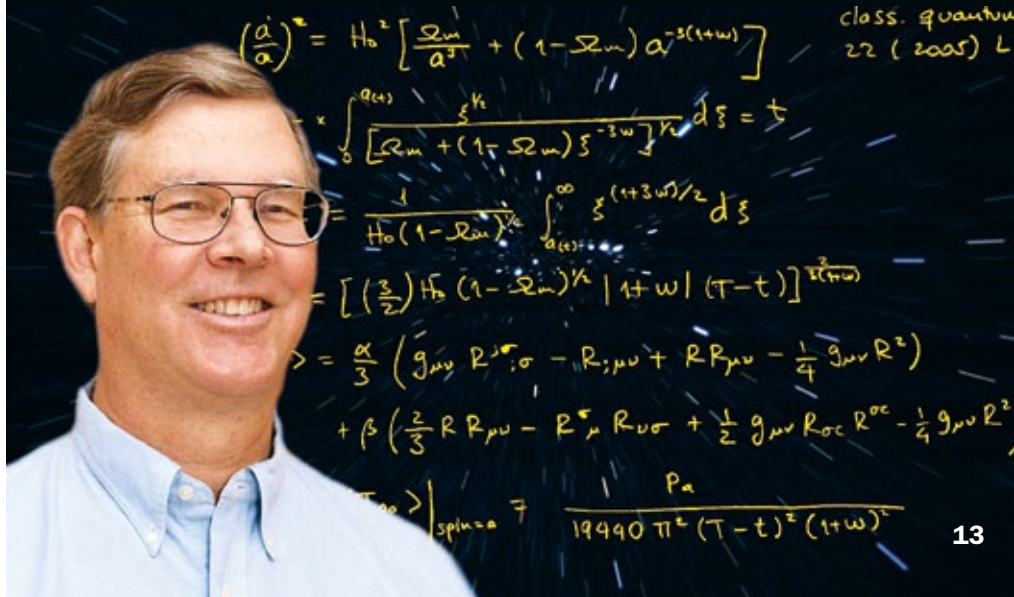
Michael Beehler · English (1985)*

Sharon Beehler · English (1985)*

Joseph Ashley · Earth Sciences (1977)

Robert Boik · Mathematical Sciences (1977)*

*Conferred with the rank of Professor Emeritus by the Montana Board of Regents.



SECRETS TO ECOLOGICAL CHANGE LIE IN LAKE SEDIMENT

Cathy Whitlock, a professor in earth sciences, is currently researching the succession of plants to colonize Yellowstone National Park after the glaciers retreated. She is studying Daily Lake, north of Yellowstone in the Paradise Valley, which may be one of the oldest lakes in the Greater Yellowstone Ecosystem. About 25,000 years ago a glacier pushed its way north from what is now Yellowstone, scraping the ground beneath it bare. As the glacier began to melt, the Daily Lake area was one of the first places to be exposed. Daily Lake would have been the first “stop” on the plants’ way south and wind would have deposited their pollen into the lake, creating a record of the environment over thousands of years.

Whitlock’s team, post-doc David McWethy, graduate student Teresa Krause and undergraduate Vincent Nagashima, retrieved cores spanning a 13.5-meter sediment column or 16,000 years of the glacial lake’s history. The pollen grains provide clues to when and what plants first arrived after ice recession and how the vegetation responded to subsequent climate change and human activities. The charcoal particles preserved in the sediment slices help identify past fires and changes in fire frequency over the millennia. Radiocarbon dating of organic material helps provide a chronology of past environmental change. By analyzing the records at many sites, Whitlock and her group can sleuth out how large and frequent fires were, how plant communities

formed and changed, and how climate affected the ecosystem.

“Every lake that I core is different – the sediments have different colors, different layers and different transitions. I know that in those subtleties lie the secrets of its past,” Whitlock said.

By looking at lake cores from places like Daily Lake and consulting with other scientists, Whitlock can reconstruct how Yellowstone went from post-ice-age nothingness to the landscape we see today. For example, her research indicates an abrupt and widespread arrival of lodgepole pine in the northern Rockies 11,000 years ago. Just prior to that, one of Yellowstone’s most common trees barely shows up in the climate record. As the present climate warms, Whitlock expects to see more lodgepole pines and at higher elevations.

“It is a great intellectual puzzle trying to figure out how an ecosystem evolves and also highly relevant for understanding ecological changes underway today and likely in the future,” Whitlock said.

Excerpted from Melynda Harrison, MSU News Service



Graduate student Teresa Krause, left, professor Cathy Whitlock and undergraduate student Vincent Nagashima study a sediment core in a soil sciences laboratory at MSU.

HELPING MONTANA FAMILIES FIGHT OBESITY



WES LYNCH

Wes Lynch

A research project at Montana State University may help shape future health programs for rural areas around the country. MSU Extension Food and Nutrition, Extension 4-H Youth Development and the Department of Psychology have received a \$1.5 million four-year grant from the USDA to design, conduct and assess a healthy-living program that offers information and opportunities for improving physical activity, nutrition and body image to parents in rural areas.

Part of the study will examine to what degree a program aimed at supporting healthy lifestyle choices in one generation influences the next generation. The program for parents will provide both hand-on experiences and information. Results will be collected from both parents and children, and will include physical measures such as heart rate, body mass index and breathing capacity, as well as factors such as how participants feel about themselves.

“It’s the assessment part of this program that you wouldn’t see in a typical ‘help people’ program,” said Wes Lynch, professor of psychology and one of the investigators on the study. “We’re trying to find out what works in rural areas, where people don’t have the resources of a nearby gym or sports club.”

One of the motivations behind the USDA funding research into what supports healthy choices is that health care costs are reduced when a person commits to living healthier, said Lynch, who will be in charge of assessment and data analysis. He hopes parents will understand that, in addition to getting a helpful experience for themselves and their family, they will be “a part of an important scientific study to determine how to slow this nationwide progression to obesity.”

Lynn Paul, an MSU Extension nutrition specialist, is the principal investigator. Jill Martz, director of MSU Extension’s 4-H Center for Youth Development, is also an investigator on the study.

Excerpted from Carol Flaberty, MSU News Service



Scott Creel

E. Coli bacteria.

USING MATH TO FIGHT DISEASE



Tomas Gedeon

Tomas Gedeon, a professor of mathematics and a member in the Center for Computational Biology at MSU, is involved in the new field of systems biology which combines computational, modeling and analytical tools with traditional experiments to understand how networks of genes and proteins function together. The human

genome project was finished in 2003 and identified all genes in our DNA. However, before it can deliver on its great promise for medicine, biologists must untangle a complicated web of interactions between genes, proteins and signaling molecules that determine the health of the cells in our bodies.

Gedeon was on sabbatical the entire 2008 and 2009 academic year and spent the fall of 2008 at the BioMaPS Institute for Quantitative Biology at Rutgers University. He worked with graduate student Kate Patterson and collaborators at Rutgers to develop a comprehensive model describing the origins of bistability in lac operon, a set of three genes in the bacterium E. Coli. This set of genes is switched off in the presence of glucose, a preferred food source for E. Coli. When glucose is replaced by lactose or a similar sugar, the three genes are switched on and their products help bring lactose into the cell and digest it. For intermediate concentrations of the sugar, some cells switch on their three genes while others do not. This bistable behavior is present in the gene regulatory circuits of many organisms, ranging from flies to mammals, and helps prevent accidental switching of the genes on or off.

The modeling work describing the origins of bistability in bacterial genes may provide insight into how cell populations in higher organisms control the effects of random cell perturbations which can lead to cancer, Gedeon said. The predictions of the new model will be tested by experimental collaborators at ETH Zurich, a Swiss science and technology university.

Dr. Gedeon's work is funded with grants from several organizations, including the National Science Foundation and the Department of Defense.

PRESENCE OF WOLVES IMPACTS ELK FORAGING HABITS

Wolves have caused elk in the Greater Yellowstone Ecosystem (GYE) to change their behavior and foraging habits so much so that herds are having fewer calves, mainly due to changes in their nutrition, according to a study published in July by MSU researchers.

During winter, nearly all elk in the GYE are losing weight, said Scott Creel, professor of ecology, and lead author on the study which appeared in the Proceedings of the National Academy of Sciences.

“Essentially, they are slowly starving,” Creel said. “Despite grazing and browsing during the winter, elk suffer a net loss of weight. If winter continued, they would all die, because dormant plants provide limited protein and energy, and snow makes it more difficult to graze efficiently.”

With the presence of wolves, elk browse more – eating woody shrubs or low tree branches in forested areas where they are safer – as opposed to grazing on grass in open meadows where they are more visible, and therefore more vulnerable to wolves. Browsing provides food of good quality, but the change in foraging habits results in elk taking in 27 percent less food than their counterparts that live without wolves, the study estimates.

“Elk regularly hunted by wolves are essentially starving faster than those not hunted by wolves,” said Creel, who shares authorship on the paper with his former doctoral students John Winnie, Jr. and David Christianson.

Creel and his current doctoral student, Paul Schuette, are seeing if the theory holds up with other prey-predator populations, with a study of lions, spotted hyenas and a diverse array of prey animals on a Maasai Community Conservation Area in the South Rift of Kenya.

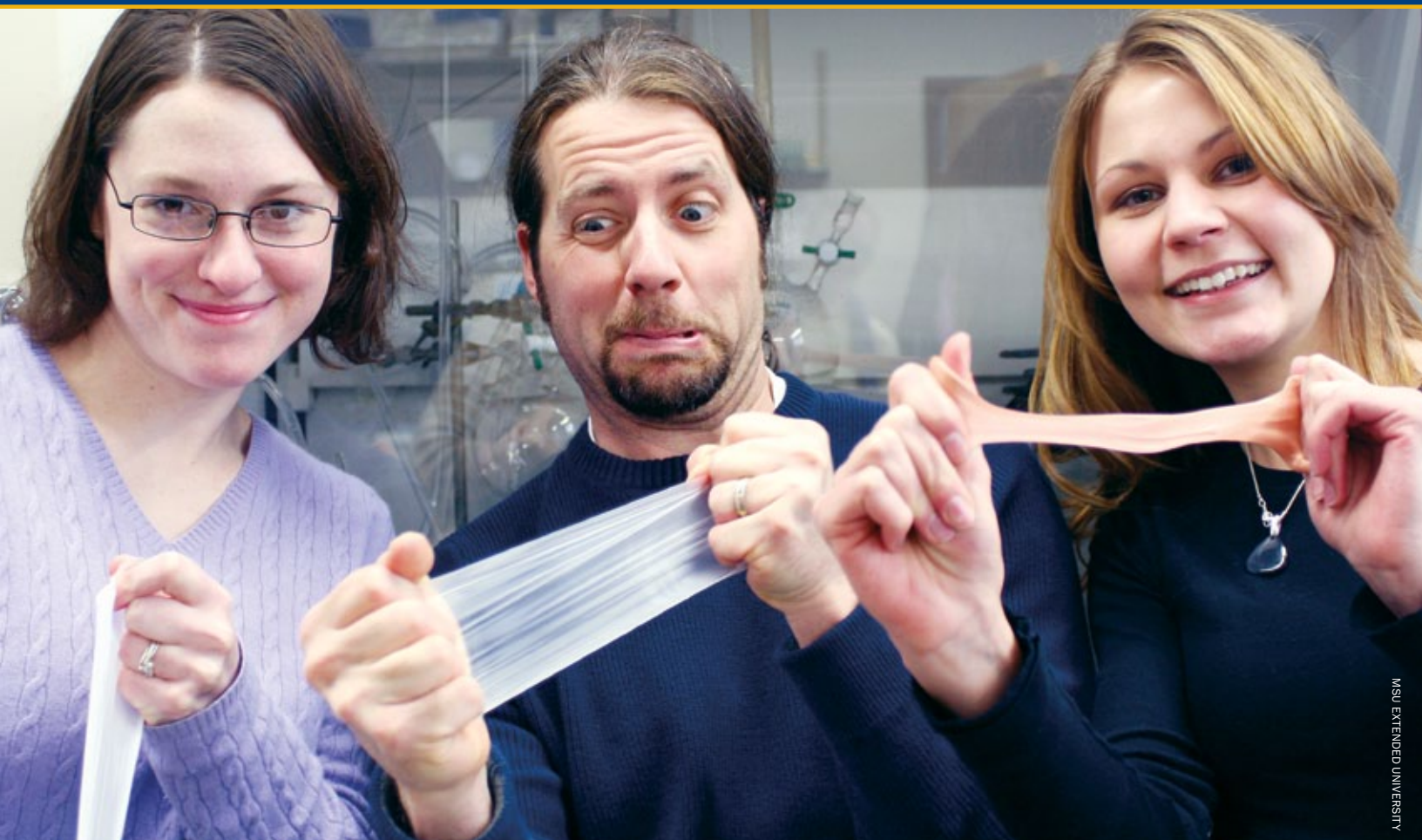
The work by Creel, Winnie and Christianson was funded by the National Science Foundation.

Excerpted from Tracy Ellig, MSU News Service

Scott Creel carrying the hide of an elk calf that was killed by wolves.



JAY THANE



Scientists such as (left to right) Janice Lucon, Chris Broomell and Emily Buckhouse, all from the Department of Chemistry and Biochemistry, helped out at the Science Saturday featuring bio-materials.

VIRUSES, MAGNETS AND BIO-MATERIALS, OH MY!

Science Saturdays, a free program to teach kids aged 10 to 15 about cool new research and technology at MSU, was launched in 2008. Kids get to participate in hands-on experiments, learn about exciting new projects, and meet the scientists and MSU students who are shaping the future in Montana. Attendees get their own MSU “SciPass” passport, which is stamped after completing activities and can be used at future Science Saturday events.

The following topics were featured at Science Saturdays during the 2008 and 2009 academic year: viruses (November 2008), magnetism (December 2008), bio-materials (January 2009), computer simulations (February 2009) and energy alternatives (March 2009).

In October of 2009, Science Saturdays went on the road conducting sessions in the towns



Chemistry undergraduate student, Kevin Harlen, makes slime.

of Crow Agency and Pryor which are both located on the Crow Indian Reservation. The kids in Crow Agency gave a unanimous show of hands when asked if they want to come to a Science Saturday at MSU!

“Science Saturdays have been a great way for MSU scientists and MSU students to interact with kids and teen-agers,” said Trevor Douglas, professor of chemistry and director of MSU’s Center for Bio-Inspired Nanomaterials, which sponsors Science Saturdays along with MSU Extended University and the Undergraduate Chemistry Society. “We hope more kids and parents will join us to see the exciting research happening right here in Bozeman.”

Excerpted from Martha Peters, Center for Bio-Inspired Nanomaterials



JENNIFER LUEBECK RECEIVES UNIVERSITY AWARD FOR OUTREACH

Jennifer Luebeck, associate professor of mathematics education, received the 2009 Provost's Excellence in Outreach Award. Luebeck is widely recognized in Montana as a leader and driving force behind K-12 math teachers' development and improvement. Over the years, she has increasingly incorporated online technologies to support outreach programs for rural K-12 mathematics educators. She has also worked with Montana's Office of Public Instruction to rewrite and extend the state's standards for K-12 mathematics.



KELLY GORHAM

Jennifer Luebeck



Joey Key

STUDENT SERVES AS A NASA AMBASSADOR

A Montana State University graduate student in physics was named a NASA Student Ambassador during the International Year of Astronomy in 2009. As an ambassador, she will give presentations around Montana on NASA programs.

Joey Key is available to give presentations to elementary and secondary schools on Indian reservations and other communities. Her presentations are intended to get youth excited about science, and particularly about NASA discoveries in astrophysics, planetary science and solar physics. Key was one of 46 undergraduate and graduate students selected for the program.

"I hope to visit the tribal colleges on all of the Montana Indian Reservations," Key said.

Key has given similar presentations as part of the Space Public Outreach Team (SPOT) in Montana. She has five presentations: "Listening to the Universe," which is about gravitational wave astronomy; "Astronauts and Aliens," which is about the search for life in the solar system; "The Sun-Earth Connection," which is about space weather; "Mars 3D!" about the Mars Exploration Rovers; and "The Cassini-Huygens Mission to Saturn and Titan."

Key said she expects to complete her doctoral work at MSU in May 2010. Her thesis, "Early Universe Cosmology," focuses on gravitational wave astronomy.

The National Space Grant Foundation manages the International Year of Astronomy Student Ambassadors Program through a grant from NASA.

Excerpted from Carol Flaberty, MSU News Service



MSU EXTENDED UNIVERSITY

Robert Szilagyi,
Department of
Chemistry and
Biochemistry



MSU EXTENDED UNIVERSITY

Brian Bothner,
Department of
Chemistry and
Biochemistry.

DEPARTMENT OF AGRICULTURAL ECONOMICS AND ECONOMICS



Doug Young

Professor Doug Young was on sabbatical for the spring semester at the Indian Institute of Technology in Mumbai, India. He and a colleague, Vinish Kathuria, examined trends in regional inequality in

India. They found that overall poverty rates are declining, and the states with the highest initial poverty are making the most progress. However, gaps between rural and urban areas remain substantial. For example, the average urban dweller has almost twice the income of a rural resident. Literacy rates, school attendance, infant mortality and access to clean water also show patterns of substantial overall progress. While the gender gap in literacy is narrowing, it remains large. Young also lectured at the U.S. government's American Center, and presented 10 lectures in seven days on a speaking tour in the state of Gujarat sponsored by the U.S. Consulate in Mumbai.

The Department of Agricultural Economics and Economics (DAEE) welcomed three new assistant professors during the fall of 2009.

Anton Bekkerman received his doctoral degree in economics from North Carolina State University after graduating summa cum laude from Loyola College in Maryland with his bachelor's in business economics. Anton's professional and research interests focus on using innovative econometric and statistical techniques to examine topics in agricultural economics. His current work investigates the risks and economic impacts associated with wind-borne invasive species in the United States. He has presented his work on the effects of the soybean rust disease at the USDA Economic Research Service. Additionally, he is interested in modeling the relationship of agricultural commodity prices in spatially separated markets, which may help explain the increasing price variability in U.S. grain markets. During the fall 2009 semester, Bekkerman is teaching Economics of Agricultural Marketing as well as Principles of Macroeconomics.



Anton Bekkerman



Greg Gilpin

Gregory Gilpin joined the department as a general economist with areas of specialization in macroeconomics, public economics and applied econometrics. He received his bachelor's in mathematics from Brigham Young University - Hawaii, his master's from the University of Kansas and his doctoral degree from Indiana University. Greg enjoys researching various public economic issues with a special interest in the teacher labor market. His past research focused on the dynamical quantity-quality trade-off in the teacher labor market and on the self-selection of teachers into public/private teaching positions. His current research investigates the effect of pay-as-you-go social security on human capital accumulation, growth and welfare inequality when longevity is correlated with human capital accumulation. During the fall 2009 semester, Gilpin is teaching Money and Banking.



Dominic Parker

Dominic Parker, who studied as a master's student in the DAEE from 1999 to 2001, received his doctorate from the University of California, Santa Barbara where he was a National Science Foundation fellow. His areas of focus include environmental and resource economics, law economics and development economics. Three specific areas of Parker's research include: explaining the recent growth in land trusts and conservation easements; analyzing how reforms to commercial fisheries can improve their economic and ecological performance; and examining the effects that legal institutions have on access to credit on American Indian reservations. During the fall 2009 semester, Parker is teaching Principles of Microeconomics and Intermediate Macroeconomics with Calculus.



CHEMISTRY AND BIOCHEMISTRY



Bill McLaughlin

Faculty in the Department of Chemistry and Biochemistry received six of the university faculty awards presented in 2009.

Adjunct professor Charles (Bill) McLaughlin won an Excellence in Teaching Award. McLaughlin is known for his devotion to teaching, whether he's teaching students majoring in chemistry or other fields. His innovative classrooms incorporate real-life situations and lively demonstrations, making chemistry relevant to students no matter what their learning style. His digital, Web-hosted virtual office visits, generous office hours, podcasts and blog reflect his desire to be available to students at all times. A mentor for teaching assistants and athletes, he has made a strong effort to connect the department to Native American students.



Mary Cloninger

Mary Cloninger, associate professor of chemistry and biochemistry, was a recipient of the Provost's Award for Undergraduate Research/Creativity Mentoring. Since arriving at MSU nearly 10 years ago, Cloninger has mentored more than 28 undergraduate students – including more than a dozen women and Native Americans. Most of these students have gone on to graduate school, medical school or to jobs as professional chemists. She has also been instrumental in the ongoing success of MSU's NSF Research Experience for Undergraduates program in chemical biology, in which undergraduates from other colleges and universities visit campus each summer for a research experience.



Trevor Douglas

Trevor Douglas, professor of chemistry, was selected as a recipient of MSU's Provost's Excellence in Outreach Award. Douglas, who is also director of the Center for Bio-inspired Nanomaterials, is known nationally and internationally for his pioneering work in nanoscience. He is also known locally as the scientist behind MSU Science Saturdays, an outreach program for kids ages 6 to 15 that has attracted hundreds of area children to monthly events since it began in 2008.



Edward Dratz

Edward Dratz, a chemistry and biochemistry professor, and Paul Grieco, a Regents' professor in chemistry, jointly received the Meritorious Technology/Science Award. Dratz is a leader in analytical, structural and mechanistic biochemistry. Grieco is a world-renowned expert in the field of organic synthesis. Over the past five years the two scientists have collaborated to develop enhanced tools in the field of proteomics with the design and synthesis of a new generation of water soluble fluorescent probe molecules called Zdyes.



Paul Grieco

Associate professor Martin Lawrence won the Charles and Nora L. Wiley Faculty Awards for Meritorious Research and Creativity. Lawrence is a pioneer in archaeal virus proteins, a craftsman in the art of crystallography and a prolific contributor to scientific publications. He has distinguished himself over the past decade with his work in X-ray crystallography of biological macromolecules, especially virus proteins and proteins related to iron homeostasis.



Martin Lawrence



Janice Lucon

Graduate student Janice Lucon, whose research has the potential to make a difference in how light is harvested for alternative energy applications, won a \$90,000 fellowship from the National Science Foundation. She will receive an annual stipend from NSF for three years to fund her research at MSU. According to the NSF, she won the Graduate Research Fellowship based on her abilities, accomplishments and potential to contribute to strengthening the vitality of science and engineering in the U.S. She works in professor Trevor Douglas' laboratory and said her research involves using protein cages to analyze platinum nanoparticles. She is working to determine how many platinum atoms to include inside a protein cage for maximum efficiency. Determining which configuration and size of platinum particles to use can optimize hydrogen gas production. Lucon, who grew up, in part, in northwest Montana's Flathead Valley, did undergraduate research at Montana Tech in Butte and is working toward a doctorate in inorganic chemistry.

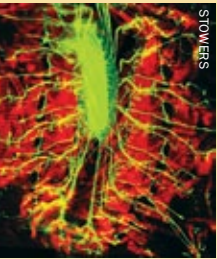
CELL BIOLOGY & NEUROSCIENCE

Steve Stowers joined the faculty of the Department of Cell Biology and Neuroscience in fall 2009. He received a bachelor's in mathematics from Southern Methodist University and a doctorate in biochemistry from Stanford University School of Medicine. Stowers completed postdoctoral training in neuroscience at Stanford and UC Berkeley during which time he developed a novel genetic method used to identify several previously unknown genes required for the neurotransmitter release process. These genes may play a role in learning and memory, as well as Huntington's disease, a debilitating neurodegenerative condition.

Stowers' current research focuses on understanding the stimulus inputs required to elicit specific behavioral outputs. He is taking advantage of the relatively simple nervous system and powerful genetics of the fruit fly, *Drosophila melanogaster*, where he is mapping and manipulating larval somatosensory circuits using optogenetic methods that allow behavior to be controlled with light.

Assistant professor Christa Merzdorf, who studies early development of the brain, received a National Science Foundation CAREER Award. The five-year grant totals \$765,677 and is the largest CAREER Award in MSU history. The CAREER Award is the NSF's most prestigious award to support early career development of teacher-scholars. Notable because it goes to a single person instead of a team, it honors outstanding scientists who haven't yet received tenure. Merzdorf plans to continue her research, develop a research-based course for advanced undergraduate students and create an educational module for middle school students around Montana. With her NSF grant, Merzdorf

will use frog embryos and focus much of her research on a gene that is involved extremely early in the formation of the brain. The gene, *Zic-1*, is needed for proper development of the central nervous system and closure of the neural tube. The neural tube gives rise to the central nervous system, including the cerebellum and other hindbrain structures at the base of the brain in the back of the head that are important for coordination and balance. "That's why it's of such huge interest," Merzdorf said. "It's early in the cascade of steps necessary for neural tube development."



STOWERS



KELLY GOBRIAN

Christa Merzdorf

EARTH SCIENCES



MSU geologist Todd Feeley maps a portion of Aucanquilcha in 2000.

Sometime next spring, a MSU geologist and his graduate student will hike to the top of two volcanoes to help answer questions about the creation of the continents. Part of an international team headed by Cornell University, geologist Todd Feeley and doctoral student Gary Michelfelder will fly to South America to investigate persistent activity below Uturuncu in southwest Bolivia and Lazufre on the Chile-Argentina border. MSU's portion of the National Science Foundation grant, \$405,000, will allow Feeley and a graduate student to spend four field seasons in the central Andes. A long-time researcher in the area, Feeley will study lava and ash from previous eruptions. Michelfelder will concentrate on rocks, especially their composition. One goal of the NSF project is to learn more about the continental crust, a feature that has been detected on no other planets in the inner solar system, Feeley said. The project could also help scientists predict large volcanic eruptions and understand processes on other planets. It will relate to active volcanic systems in other places of the world, including the Yellowstone caldera.



STEPHEN HUNTS

David Mogk

David Mogk, a geology professor and a cutting-edge researcher in geoscience teaching and mineral characterization, received the 2009 James and Mary Ross Provost's Award for Excellence, which recognizes excellence in teaching and scholarship. Mogk, who is a legend in the field of geoscience education, not only incorporates square dancing and artwork into his classes, but service learning, interactive teaching methods, research and individual training in MSU's Imaging and Chemical Analysis Laboratory. In 2007, he was one of only five geoscientists in the world to be elected a Fellow of the Mineralogical Society of America.



KELLY GOBRIAN

Cathy Whitlock

Cathy Whitlock, professor of earth sciences, won the 2009 Charles and Nora L. Wiley Faculty Awards for Meritorious Research and Creativity. Whitlock's research in climate, vegetation and fire history is world renowned and has had significant and lasting impacts on the understanding of environmental change. Her studies of ecological histories of North and South America and New Zealand have produced important insights about the controls of forest dynamics and form the foundation for new research questions. She sits on numerous national and international boards, is recognized for her grantsmanship and known for her ability to attract top-tier international and domestic students to MSU.



ECOLOGY



ISTOCK PHOTO

Ultrasound, microwaves and electroshocking are among the possible solutions for lake trout in Yellowstone National Park, says Al Zale, unit leader of the Montana Cooperative Fishery Research Unit at MSU. Lake trout, which were introduced illegally into the park, threaten native cutthroat trout in Yellowstone Lake. To find the best way to destroy lake trout eggs, Zale received a grant from the National Park Service. Zale and his collaborators are also evaluating the use of Jell-O to smother fish eggs during spawning season. They are able to locate eggs using past telemetry studies. Zale will analyze several potential solutions and recommend the best. According to Zale, if Jell-O is chosen, it would probably be unflavored.

Jesse DeVoe, a recent graduate in the Biological Sciences, Fish and Wildlife Management Option, was awarded the 2009 Wynn Freeman Scholarship from the Montana chapter of The



JESSE DEVOE

Jesse DeVoe

Wildlife Society. The scholarship was created to honor Wynn Freeman, an outstanding wildlife professional that made many important contributions to effective conservation and management of Montana's natural resources. Wynn Freeman teamed with MSU professor Don Quimby to institute a policy that all wildlife biologists hired by Montana Fish Wildlife and Parks must have a master's degree that included field research. Montana was the first state to institute such a policy, and it is credited with enhancing the credibility and effectiveness of wildlife conservation in the state that continues to this day. The scholarship is awarded annually to an undergraduate or graduate student in the Fish and Wildlife Management Program that has demonstrated academic excellence, has been motivated to gain practical field experience through internships and/or summer employment, and has been identified by faculty as a student that promises to excel in a career as a natural resource professional.

ENGLISH

This past summer, 16 elementary, junior and senior high teachers from around Montana gathered at MSU for the first Yellowstone Writing Project (YWP). Associate Professors Kirk Branch and Lisa Eckert, who co-directed YWP, had worked tirelessly to bring a writing project to the Bozeman campus and were able to join the others for the four-week institute. Part of the National Writing Project, this summer's session brought these writer-educators together with the goals of developing their own writing, sharing best practices, forming lasting partnerships and improving the overall quality of writing instruction throughout the state. Participants spent significant time each day writing on their own, and reflecting, hearing and discussing each others' writing in small groups. Encouraged to continue developing as teacher-researchers, participants also collaborated in research groups to explore relevant topics in the field of writing instruction. Becca Stevens, a 7th grade English teacher from Sacagawea Middle School in Bozeman, wrote on the YWP blog, "This has been a wonderful experience. I am excited to take all the ideas you've all shared back to my classroom."

Professor Greg Keeler's new book *Trash Fish: A Life* was published in September of 2008 by Counterpoint Press. Fishing provides the spine of the book, from Keeler's first memories



Lisa Eckert



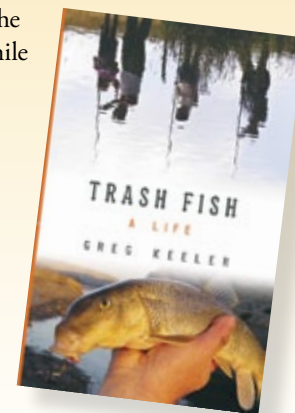
Kirk Branch



Greg Keeler

KELLY GORHAM

whiplashed to a small rowboat while his English professor father fished in Long Lake, Minn., to fishing with his family in Oklahoma as well as fishing with some of the country's most famous literary personalities, including Richard Brautigan, Gary Snyder and Richard Hugo. Yet, Keeler said, this is not just a fishing book. "It's a book about relationships," Keeler said. "Ultimately, it's a love story." Keeler wrote the book while he was on sabbatical in 2004 while writing a book of sonnets. While this is his first book to be published by a major press, Keeler has published three previous books, including a memoir of his relationship with Brautigan published by smaller Limberlost Press, as well as three chapbooks of poetry. He has also produced six plays, 10 tapes and CDs of his satirical songs, and has published many articles in popular and academic magazines and journals.





ALLISON LECAIN

Tim LeCain

Tim LeCain, associate professor of history, researches environmental history and testifies on related matters in court cases.

He has a newly published book that describes the development and effects of the technology that made large-scale open-pit mining possible. Published this summer, the book, titled *Mass Destruction: The Men and Giant Mines That Wired America and Scarred the Planet*, tells how mass production for mass consumption was fed by the mass destruction extraction of natural resources. Like weapons of mass destruction that strike civilians and soldiers alike, mines indiscriminately destroyed rivers, farmland and animals. The book also tells the story of Daniel Jackling, a young metallurgical engineer who, with his colleagues, developed the huge steam shovels and rock crushers that led to the Bingham Pit in Utah and other massive open-pit mines in the West. The book explains the swinging pendulum of public opinion toward mining. In the end, instead of condemning mining forever, LeCain encourages Montanans to develop clean technology that will allow mining to continue in a way that's helpful to the environment instead of destructive.

HISTORY AND PHILOSOPHY

A new issue of *Corona*, a journal of arts and ideas based at MSU, was published last spring. The 30-year-old periodical, which was dormant for many years after the publication of four previous issues, has now become more than a journal, even something more than a book. Lynda Sexson, a professor of religious studies in the Department of History and Philosophy, was one of the founders of the original *Corona* in 1980. Sexson remains one of three editors of the publication. Others are Carla Nappi, a professor of history who is now at the University of British Columbia, and Michael Sexson, professor of English. The publication is assembled in a box about the size of "half a pizza box," as Lynda Sexson explains it. Inside are 18 contributions from writers, poets and artists from across the country who explored the meanings of text, image and stretching the definition of books in inventive ways and demonstrating the fluidity of the borders of different types of media. For instance, a stunning essay on the map by the writer David Quammen plays with the idea of maps. A tiny haiku alphabet primer by Greg Keeler, a poet and professor of English at MSU, is cleverly bound with a piece of number two pencil in a piece designed by Stephanie Newman, professor of design at MSU. A small clay tablet explores the significance of place in a contribution by farmer, political activist and artist, Trudy Laas Skari.



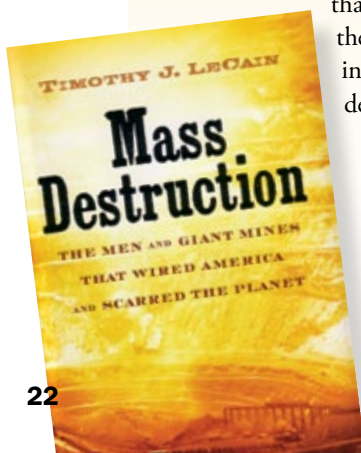
Faculty and students assemble one of the 1,000 boxes that contain *Corona*, the newly published journal of arts and ideas that is based at MSU.



KELLY GORHAM



CORONA IMAGES COURTESY OF LYNDA AND MICHAEL SEXSON





MATHEMATICAL SCIENCES

Robert Boik receiving his certificate in Washington, D.C.

Kelly Alsup

Robert Boik, a recently retired member of the statistics faculty, was selected as a 2009 Fellow of the American Statistical Association (ASA). One of 57 new fellows, Boik was honored for outstanding and important research in multivariate analysis and linear models, for promotion of sound statistical thinking in the social and behavioral sciences, for exceptional academic leadership and for service to statistical science. The 2009 fellows came from 19 states, the District of Columbia, Canada, England, Denmark, New Zealand, India and China. The ASA is a scientific and educational society that has 18,000 members serving in academia, government and industry. Fellows are nominated by other members of the association and chosen by a committee that can elect no more than one-third of one percent of the total ASA membership as fellows each year. Along with several co-authors, Boik also recently received the Robert McDonald Advancement of Organizational Research Methodology Award for a paper written in 2005. This award recognizes the best paper on organizational research methodology published in any journal or book from January 2004 to December 2008.

Kelly Alsup, who graduated in 2009 with a bachelor's degree in mathematics, spent the summer conducting research at the University of Bergen in Bergen, Norway as a participant in the Summer Research Program in Norway for Undergraduates. This is a joint undergraduate research program between MSU and the University of Bergen. The four MSU students selected annually spend eight weeks working on a research project related to global climate change and the management of carbon emissions. Alsup's research project examined how nitrogen molecules react to different temperatures and pressures. A mathematical model was created to evaluate the stability of these molecules in deep sea sediment and permafrost regions of the world. It was observed that under the right conditions nitrogen combined with carbon dioxide made an ideal mixture for carbon dioxide storage. While in Norway, she had the opportunity to explore Norwegian fjords, sightsee in Oslo and travel to the Arctic Circle to see the midnight sun. Alsup is now a graduate student in the Department of Mathematical Sciences, and plans to pursue a career in applied mathematics.

MICROBIOLOGY



KELLY GORHAM

MSU honored senior Elliott Barnhart with its 2009 Torlief Aasheim Community Involvement Award. The award, named for the late MSU alumnus Torlief "Torley" Aasheim, recognizes two senior students who, in addition to excelling academically, volunteer on campus and in the community. Elliott Barnhart, a tight

Elliott Barnhart

end for the Bobcat football team, earned numerous athletic and academic honors, including being named an ESPN Academic All-American. A native of Broadus, Mont., Barnhart has been a youth group leader at St. James Episcopal Church, a gym coordinator and Pee Wee football coach for the Gallatin Valley YMCA. He has also volunteered with Eagle Mount and the Relay for Life. As a microbiology major, Barnhart has researched microorganisms involved in water contamination and coal-bed methane generation. Barnhart has presented at the West Coast Undergraduate Biological Research Conference and has received grant funding for his studies. Barnhart also won an Award for Excellence from the MSU Alumni Association and the Bozeman Chamber of Commerce.

While at MSU, Kien Lim, a senior from Malaysia, has had the opportunity to work with Barry Pyle, a research associate in microbiology, analyzing bacteria that flew on the unmanned Soviet Foton-M3 spacecraft. Lim received \$500 from the European Space Agency to travel to France where he explained his preliminary findings to more than 100 scientists attending an international conference on "Life in Space for Life on Earth." He also learned new lab techniques at the conference, mingled with researchers and met someone from the Japanese Space Agency who said he might be able to introduce Lim to prospective employers. Lim, Pyle and research associate Susan Broadaway all flew to Angers, France in June and presented initial results from MSU experiments that flew on two space missions. The Foton-M3 was launched in September from Kazakhstan. The Space Shuttle Endeavour was launched in March from Florida. Each spacecraft carried MSU experiments that tested the effect of space flight on common bacteria that can hitch rides into space and threaten astronauts' health.



KELLY GORHAM

Kien Lim

MODERN LANGUAGES AND LITERATURE



Chris Pinet

Chris Pinet, associate professor of French, was honored at the annual meeting of the American Association of Teachers of French (AATF) held in San Jose, Calif. He was cited for his work as managing editor (1996 to 1998) and as editor in chief (1998 to 2010) of the *French Review*. Pinet also spent five years as the review editor for society and culture, and four years as the assistant editor for society and culture. The *French Review*, which was founded in 1927 and is published six times yearly, is the official journal of the AATF and has the largest

distribution of any scholarly journal of French and Francophone studies in the world. The review publishes scholarly articles on literature, society and culture, linguistics, film, pedagogy, and interviews with writers and directors. It also includes columns on the year's work in poetry and the novel, the Avignon theater festival and the Cannes Film Festival, and the political, social, economic and international francophone scene. The *French Review* publishes one special issue each year, and as editor in chief Pinet has chosen the topics, been the lead editor and written introductions for the special issues. To date, Pinet has written 66 editorials on subjects ranging from francophobia in the United States to riots in the Parisian banlieues. He will officially step down as editor in chief on July 1, 2010 after 23 years of service to the publication.

The Department of Modern Languages and Literatures

has developed a new course called Spanish for Healthcare

Professionals in conjunction with the Department of Cell Biology and Neuroscience. The course is designed to help English speaking students better serve the growing population of Spanish-speaking patients who arrive in the U.S. knowing little or no English. Relying on untrained or impromptu translators to interpret a non-English speaking patient's symptoms or medical history may lead to miscommunication during diagnosis, disease management and follow-up. The students learn basic Spanish with emphasis placed on those elements of Spanish conversation and grammar necessary to conduct interviews. In the classroom, equal emphasis is placed on cultural elements such as gender roles, family values and communication styles to provide context for understanding a Latino immigrant's healthcare experience. "Our students are being asked if they speak Spanish during medical school interviews," said Thomas Hughes, associate professor and department head in the Department of Cell Biology and Neuroscience. "In response, we developed our medical Spanish curriculum." An advanced course is also available through the study abroad program in Costa Rica, including hands-on experience working in a medical clinic.



ISTOCK PHOTO

NATIVE AMERICAN STUDIES

The Department of Native American Studies received accreditation from the World Indigenous Nations Higher Education Consortium (WINHEC), the first mainstream non-indigenous controlled institution in the world to ever receive the designation. The WINHEC is the accreditation body for indigenous education initiatives and systems that identify common practices, criteria and principles by which indigenous people live, according to Walter Fleming, professor and department head. Fleming said the accreditation is important because it signals to students and other institutions world-wide that MSU has made Native American students and programs a priority in recruitment and retention. "By being accredited by WINHEC, potential students and indigenous communities can be assured that MSU's Native American Studies department has met both academic and cultural standards of excellence."

Assistant professor Kristin Ruppel had a new book published titled *Unearthing Indian Land: Living with the Legacies of Allotment* where she considers the complicated issues surrounding American Indian land ownership in the United States. Under the General Allotment Act of 1887, also known as the Dawes Act, individual Indians were issued title to land allotments while so-called "surplus" Indian lands were opened to non-Indian settlement. During the forty-seven years that the allotment provision of the act remained in effect, American Indians lost an estimated 90 million acres of land – about two-thirds of the land they held by treaty in 1887. Illuminated by interviews with American Indian landowners from around the country, *Unearthing Indian Land* traces the complex legacies of allotment. Aside from the initial catastrophic land loss, the resulting fractionated land ownership has disrupted native families and their descendants for more than a century.



POLITICAL SCIENCE



Sara Rushing

Assistant professor Sara Rushing hosted a three day symposium entitled “A Cross-Cultural Conversation: Aristotle, Confucius and Virtue Ethics.” The symposium, funded through the generous support of Humanities Montana, Montana NSF EPSCoR and the Department of Political Science, brought six philosophers from around the country to Bozeman to present drafts of papers to be given at an international conference in Beijing next May. The symposium also included sessions dedicated to conducting comparative philosophical research and bringing Confucius into the classroom within the typical Western philosophical canon. In the spirit of bringing research to the community, this project also involved a free lecture at the Bozeman Public Library entitled “Ethics East & West: The Challenge and Promise of Dialogue.” The lecture, which Rushing moderated, involved brief talks by three of the symposium participants, followed by an energetic discussion among the audience and panelists.

The Department of Political Science provides students at MSU with the unique opportunity to participate in the National Council on U.S.-Arab Relations’ Model Arab League (MAL). Thirteen models are held annually throughout the country, including the Northern Rockies model which is held in Missoula each spring. These include 2,000 students, 200 universities and secondary schools, hundreds of faculty advisers and are held in 11 cities each year. As representatives of the Arab League’s 22 member-states, student delegates work to achieve consensus on questions real-life diplomats wrestle with daily. They vote on resolutions they have written that seek to resolve some of the Arab countries’ most difficult challenges. The dynamics and interactive nature of the role-playing among the students stimulates critical thinking, heightens creativity, expands knowledge and cultivates understanding as no book, video or coursework ever could.

MSU MAL team in April 2009



THOMAS GOLTZ

PHYSICS



The IRIS observatory will carry an optical system developed at MSU.

Physicists at MSU are involved in a new space mission to figure out how energy is transferred through the sun’s atmosphere. As a partner on the IRIS team headed by Lockheed Martin, MSU will receive about \$3 million to develop an optical system to be launched into orbit in 2012. IRIS, short for Interface Region Imaging Spectrograph, was one of two missions that recently won NASA’s Small Explorer Competition. The other was GEMS, or Gravity and Extreme Magnetism Small Explorer. When NASA announced the winners in June, it gave the go-ahead for development teams to turn IRIS and GEMS into satellite missions for up to \$105 million each. The IRIS telescope will face the sun at all times, orbit the Earth at least three years and gather ultraviolet images and spectra of the sun’s chromosphere and transition region. The sun’s transition region is invisible from the ground. During a total eclipse of the sun, the chromosphere is seen as a thin red layer of atmosphere just above the bright yellow photosphere.

On September 1, during the first space walk of space shuttle mission STS-128, Danny Olivas and Nicole Stott spent 6 ½ hours working outside the International Space Station (ISS). One of their tasks was to remove the MISSE-6 Payload Experiment Carriers, two suitcase-sized boxes that contain, among others, experiments designed and built at MSU by a Space Science and Engineering Lab (SSEL) student team during 2004 to 2007. The carriers were successfully removed from the ISS and stowed in space shuttle Discovery’s payload bay for its trip back to Earth. Once Discovery completed its mission, the experiment carriers were transported by NASA to the Langley Research Center. SSEL students met the experiments in a Langley clean room, downloaded the data, and deintegrated the two packages to be hand carried back to MSU for detailed analysis. The SSEL experiments onboard MISSE-6 consisted of two experiments. A materials experiment, which included several varieties of sportsman’s lines and space tethers attached under tension to micro-switches, tested the durability of these lines and tethers to the effects of low earth orbit. An electronics experiment studied the operation of key small satellite electronic components and the programming routines developed by students to run them.



MSU experiments were attached to the outside of the International Space Station

LANGLEY RESEARCH CENTER

PSYCHOLOGY



Ruth Striegel-Moore

Ruth Striegel-Moore joined the Department of Psychology as the new department chair. Striegel-Moore is a clinical psychologist with research expertise in eating and weight disorders. Her interest in eating disorders traces back to her experience of growing up with an older sister who developed severe anorexia nervosa. Beyond the personal reasons for this interest, however, her fascination has been fueled by the fact that an understanding of eating and weight problems requires an interdisciplinary perspective and by her broader interest in advancing women's health and mental health. Her research has been funded by the National Institute of Mental Health, the National Heart Lung, and Blood Institute and the National Institute of Diabetes, Digestive and Kidney Disease. For her research contributions, she was awarded the Innovator Award by the Coalition for Eating Disorders. She is also a recipient of a mentoring award from the American Psychological Association's Section on Clinical Psychology of Women.

MSU honored senior Clarissa "Ivie" English with its 2009 Torlief Aasheim Community Involvement Award. The award, named for the late MSU alumnus Torlief "Torley" Aasheim, recognizes two senior students who, in addition to excelling academically, volunteer on campus and in the community. English, a Great Falls native, is double-majoring in psychological science and Spanish while double-minoring in

political science and Latino studies. She has studied abroad twice and has taught English to Mexican immigrants in the Gallatin Valley. English is the president of College Democrats and the ASMSU Exponent opinions editor. She is a member of several honor societies, a VOICE Center volunteer and a former AdvoCat student admissions representative. She has organized numerous activities and speakers at MSU. During the 2009 Montana Legislative Session she served as MSU's Montana Legislative Intern, tracking legislation affecting MSU, providing information to legislators about MSU, and acting as a liaison between campus institutions and state representatives. English also won an Award for Excellence from the MSU Alumni Association and the Bozeman Chamber of Commerce. Honored students are nominated by faculty in their college or department. Qualified seniors must have a 3.5 grade point average on a 4.0 scale as well as demonstrated campus leadership and community service.



Ivie English

SOCIOLOGY & ANTHROPOLOGY

Recent research on racial attitudes

has argued that Protestantism provides members with a cultural "toolkit" that facilitates explanations for Black-White racial inequality that highlight individual accountability. Students in MSU sociologist Tamela Eitle's fall 2008 course on race and ethnicity wondered whether the cultural "toolkit" explanation would also apply to attitudes about Native American-White racial inequality. One student from that class, Matt Steffens, who graduated in 2009 with a bachelor's degree in sociology, chose to explore this question in his senior capstone project. As part of the capstone experience in sociology, Steffens assisted in the collection, coding and analysis of survey data on religious affiliation and attitudes about racial inequality. Subsequently, Eitle and Steffens co-authored a manuscript entitled "Racial affiliation and beliefs about racial inequality: White college students' attitudes about Black-White and Native American-White inequality" that was recently published in *The Social Science Journal*.



Jack Fisher, an archaeologist who studies prehistoric hunter-gatherer peoples of Montana and southern Africa, was a 2009 recipient of the Provost's Award for Undergraduate Research/Creativity Mentoring. In recognition of the importance of undergraduate research and creativity, this award is given annually to a faculty member who



Jack Fisher

engages undergraduate students in this valuable learning process. Fisher is praised as a teacher and mentor, and has mentored more than 80 MSU undergraduates in his two decades at MSU.

Steven Swinford, associate professor in sociology and anthropology, received the College of Letters and Science's 2009 Outstanding Teaching Award for tenure track faculty. Swinford teaches required courses in research methods and statistics. While these can be difficult courses that students tend to dislike, he consistently receives high marks from his students for his ability to make the contents of these courses assessable. His courses remain among the most popular with undergraduate students, and his courses are consistently the first to fill.



Steven Swinford receiving his award from Dean Paula Lutz.

ALUMNI TEACH LANGUAGE, KEEP TRIBAL TRADITIONS ALIVE

Sean Chandler and Lynette Stein-Chandler did not grow up speaking the White Clay language, but they are devoted to preserving it on the Fort Belknap Indian Reservation in northern Montana.

Both are MSU graduates of the master's degree program in Native American Studies. Lynette is director of the White Clay Immersion School where children learn the White Clay language and culture in addition to subjects they would normally study in public school. Sean teaches the White Clay language and culture at the school, in addition to being the department head of Native American Studies and director of the Tribal History Project at Fort Belknap College where the immersion school is located.

Preserving a language is very difficult, but important, said MSU President Geoff Gamble who is working on a dictionary for the nearly-lost Wikchamni language. Gamble, who earned his doctoral degree in linguistics, said native languages are often imbedded with information about how people think and how they used to think, how they act and how they feel. Some of the best ways to preserve languages are audio and visual recordings, collecting stories and writing down as much of the language as possible, he said.

The Chandlers said they speak White Clay at home and use White Clay sign language with their young daughters. The couple learned the language largely as adults and developed their abilities by meeting with fluent tribal elders. They're recording those conversations, building a White Clay dictionary, developing interactive CDs and using keyboards with the White Clay alphabet.

Preserving a language that once was banned demonstrates that the White Clay Indians, also known as Gros Ventre, are resilient, Stein-Chandler said. The effort announces that "We held onto our ways, our language, that we are strong and will survive and our language will survive. It's a central part of our identity and way of life."

Sean Chandler said the White Clay language contains tribal philosophies as well. The word for "chief," for example, doesn't necessarily mean leader, but "generous man."

"That right there tells you what our way of thinking was," Chandler said. "It wasn't the guy who had everything, but the guy who was kind of a benefactor, who looked out for everybody."

Chandler is a White Clay Indian who lived most of his life off the reservation. Stein-Chandler – daughter of Wayne Stein, professor of Native American Studies at MSU – is an enrolled White Clay Indian who lived in Bozeman. The couple moved to the Fort Belknap Indian Reservation in 2001 to join many of their relatives.

The importance of their culture and language became increasingly evident after they had children, Stein-Chandler said. Students who study the White Clay language not only learn an important part of their heritage, but they rank high in test scores because of the discipline it takes to learn a language that's as advanced as White Clay, Stein-Chandler continued.

The White Clay Immersion School – located in the Fort Belknap College cultural center – currently has 13 students who range from ages 8 to 11 and grades 4 through 6. They will transfer to other schools after eighth grade.

Excerpted from Evelyn Boswell, MSU News Service

Lynette Stein-Chandler is director of the White Clay Immersion School where children learn the White Clay language and culture.



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The Dean's Circle recognizes alumni and friends whose cumulative lifetime gifts to the College of Letters and Science total \$10,000 or more. We are grateful to this growing group for its loyalty and tremendous support of the college.

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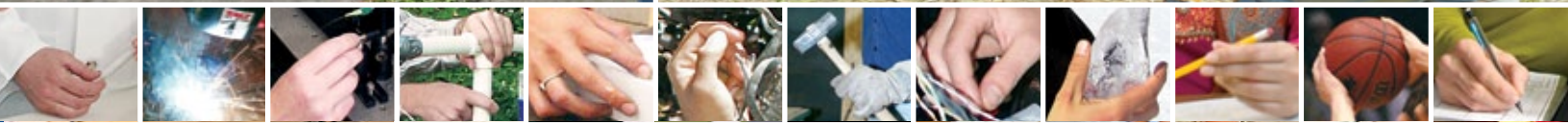
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