

CONFLUENCE

THE COLLEGE OF LETTERS AND SCIENCE • MONTANA STATE UNIVERSITY • 2007 - 2008 • VOLUME 4



Interdisciplinarity: Stitching knowledge together in a patchwork world

Dear friends and colleagues,

As a newcomer to MSU, it can be challenging to name all fifteen departments that make up the College of Letters and Science, much less to describe the bond that unifies them. But coming from the small College of Arts and Sciences at a large engineering-oriented university, I am well versed in the important role that the liberal arts disciplines play—individually and as a group.

L&S's fifteen disciplines share a commitment to critical thinking, clear communication, and, most importantly, active engagement with ideas. These are academic priorities that do not stop at the department door, but intermingle throughout the sciences, humanities, and social sciences. The result is a profusion of interdisciplinary research and teaching.

In this issue of *Confluence*, you'll read about economists and biologists working together, English professors exploring anthropology, physicists teaming up with chemists, and many more collaborations that lead to new insights, inventions, and innovative scholarship.

I have been on campus for less than six months, but it's clear what makes MSU special: the excellent mentoring of students that takes place here on our Bozeman campus, the hands-on research opportunities available to undergraduate and graduate students, the diverse accomplishments of our alumni, and the enthusiastic support of parents, friends, and donors.

As you read this issue of *Confluence*, and enjoy these glimpses of faculty, staff, student, and alumni achievements, we hope you'll be inspired to learn more about what is happening across the college. Log onto our website—www.montana.edu/lettersandscience—for frequently updated news, join us for any of our public lectures, discussion groups, and learning opportunities, or visit us on campus to meet our faculty and students.

Best regards,



Paula M. Lutz
Dean



MSU News

Paula M. Lutz joined the College of Letters and Science as dean on July 1, 2007. Lutz was dean of the University of Missouri-Rolla (UMR) College of Arts and Sciences since 2002, when she became the first woman dean in that university's history. Lutz received her doctorate from the Duke University Medical Center's Department of Microbiology and Immunology. She has been a successful researcher, receiving nearly \$2 million in grant funding for her work on the effects of lead on children's immune systems. At UMR, she helped to create a Women's Leadership Institute, worked with her university's chapter of Women in Science and Engineering, and helped start UMR's Expanding Your Horizons program to encourage interest in science and math in junior high-aged girls.



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Interdisciplinarity:

by Sarah Alexander

Stitching knowledge together
in a patchwork world

What do you get when you cross a physics professor with a microbiologist? The question may sound like the beginning of a riddle, but the answer—a possible cure for cancer—is no joke.

In fact, the effort—one of several interdisciplinary projects ongoing within the College of Letters and Science—has resulted in a newly-patented therapeutic drug that has the potential to reduce cancer tumors with photodynamic therapy (see sidebar page 4).

Another recent L&S discovery, a 68-million-year-old protein found in the thigh bone of a Tyrannosaurus rex, was not solely a paleontology success. In addition to well-known paleontologists Mary Higby Schweitzer and Jack Horner, research team members from MSU's physics and chemistry departments contributed the imaging and analysis technology that made the protein extraction possible.

Interdisciplinary research and teaching combine the strengths of two or more academic disciplines to explore and solve problems. These collaborations, which stitch together the arts, sciences, social sciences, and humanities, often yield fresh and possibly unexpected discoveries.

Letters and Science, according to Dean Paula Lutz, is a particularly rich environment for these collaborations. "We have such a wide variety of disciplines and perspectives working side by side," she said. "New insights are nearly inevitable."

This may explain why the majority of MSU's newly established research centers combine faculty and resources drawn from numerous departments. Examples include the Center for Computational Biology (neuroscience, math, physics, computer science, and engineering); the Thermal Biology Institute (chemistry, biology, earth sciences, and plant sciences); and the Big Sky Institute (ecology, earth sciences, biology, microbiology, math, and history).

Interdisciplinary collaborations can also lead to combined academic experiences for students. The "Conception to Consumption" course (also fondly known as "Follow the Beef"), offered by the Department of Economics, is one example. Designed to provide students with an integrated view of the science, technology, production practices, product marketing systems, and end uses for cattle and beef, the course draws on experts in a wide variety of disciplines. Faculty and guest lecturers from across the university provide a complete view of the



Confluence College of Letters & Science 2007-2008



“Some of the most innovative and exciting advances in human knowledge are occurring at the intersections of traditional academic disciplines.”

- David Cherry

interactions between science, technology, and economics that are required to understand this major agricultural industry.

In other cases, collaborations lead to new fields of study, creating “hybrid” disciplines that widen the scope of investigation. The new Latin American and Latino Studies (LALS) minor, for instance, brings together the study of Spanish language and literature, Latin American history,

race and immigration issues, economics, and more. Designed to prepare students for the close cultural, political, and economic relationships developing between Latin America and United States, the program involves faculty from at least five L&S departments. “National boundaries are becoming increasingly porous,” said Bridget Kevane, program director and professor of Spanish. “This interdisciplinary minor gives students the language skills as well as the cultural and historical knowledge they need.”

(Cont’d on next page)

PREHISTORIC MYTHMAKING

Most scholars who study mythmaking begin with the 5,000-year-old stories of Mesopotamia and Egypt. Not Paul Trout. The professor of English believes our ancestors used sounds, facial expressions, and body language to tell stories about their environment as far back as two million years ago.

Since there are no written records from that time, Trout uses evidence from disciplines as diverse as archaeology, ethology, primatology, anthropology, and evolutionary psychology to make the case that storytelling likely emerged in Paleolithic times. To describe his unique area of research, he has invented the term paleomythology.

So what would these prehistoric people have created myths about? Probably the one thing they feared more than anything else—predators. “Before we became effective hunters, we were the hunted,” said Trout. “To survive, people had to tell stories about predators.”



Through paleomythology, Trout hopes to explain why so many myths and stories to this day are preoccupied with predators in one guise or another. Earlier this year, he introduced the concept to fellow scholars at the 5th annual meeting of the Hawaii International Conference on Arts and Humanities, and after three years of paleomythology research, he has started working on a book preliminarily called *Deadly Powers: Tracks of the Predator in World Mythology*.

by Linda McGurk

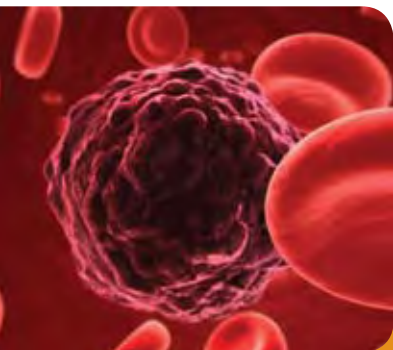




Interdisciplinarity ...continued

Other interdisciplinary programs of study are proliferating throughout the College. A Japan Studies minor, an American Studies major, and a graduate degree in Ecological and Environmental Statistics are just some of the academic options that have been approved by the Montana Board of Regents in the past few years. Additionally, Montana State University now offers a Liberal Studies degree, which combines arts, humanities, and science coursework with specifically interdisciplinary seminars.

“Some of the most innovative and exciting advances in human knowledge are occurring at the intersections of traditional academic disciplines,” said David Cherry, director of the university’s Liberal Studies program. In addition, he adds, “interdisciplinary study helps students to deal effectively with complexity and ambiguity, and to succeed in an increasingly patchwork world.”



(PHOTO)DYNAMIC COLLABORATION

When physicist Aleksander Rebane and chemist Charles Spangler worked on an engineering project for the U.S. Air Force seven years ago, they accidentally stumbled upon a new chemical compound. As it turns out, that substance holds great promise in the fight against cancer.

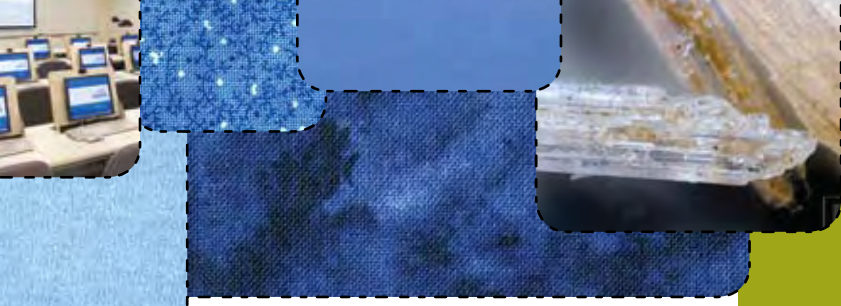
Rebane and his research team, which also includes microbiologist and prominent cancer researcher Jean Starkey, study the compound through a technique called photodynamic therapy. Only a few compounds have so far been approved for this treatment, in which a tumor-killing substance is ingested by the patient and activated by laser light outside the body. What sets Rebane’s compound apart from the rest is that it can absorb light with longer

wavelengths and therefore treat tumors deeper underneath the skin. “We have shown that we can do it at a depth of two centimeters and I think that’s the record right now,” Rebane said.

Studies on mice have shown a definite regression in cancer tumors and in some cases full recovery. For some cancer patients, that could mean a non-invasive alternative to surgery.

An optics specialist with no previous experience in cancer research, Rebane said the breakthrough technology is the result of several scientists from the physics, chemistry and microbiology departments working together. “One of the strengths on our campus is that people are willing to collaborate. That’s not necessarily true of bigger schools.”

by Linda McGurk



THE ECONOMICS OF GLOBAL WARMING

From an economic point of view, the issue of global warming has some elements of a perfect storm. It's a long-term problem, it's global in scope, and it has the potential to pit the interests of rich countries against those of the developing world.

Susan Capalbo has studied the economics of climate change for the past 15 years, long before drowning polar bears and Al Gore's "An Inconvenient Truth" brought it to the American public's attention. "Global warming is probably the biggest issue we'll face during the 21st century," the professor of agricultural economics said.



Many of the technical fixes needed to reduce our emissions of greenhouse gases already exist; the problem is they don't always make economic sense. Capalbo is hoping to close this gap by bringing together the social, physical, and biological sciences in her quest to find affordable ways of capturing carbon emissions from coal-burning power plants.

But she doesn't believe research, voluntary initiatives, and increased public awareness alone are enough to solve the climate crisis. "We need a political solution and we have to put a lot of funding into it. The problem is politicians get elected for four years, but this issue needs to be addressed by somebody who has the foresight to look 20 to 30 years from now," Capalbo said.

by Linda McGurk



MSU News

"One of the strengths on our campus is that people are willing to collaborate. That's not necessarily true of bigger schools."

-Aleksander Rebane

MAKING CONNECTIONS: CLS 101 PROVIDES A FOUNDATION FOR LEARNING

by Linda McGurk

Imagine a freshman course that asks questions instead of providing answers. A course that emphasizes critical thinking rather than note taking, favors lively discussion over faculty-led lectures, and draws on texts from a wide variety of disciplines. At MSU, that course is called CLS 101, one of seven options that enable students to fulfill the University Seminar component of the core curriculum.

“When I look back, it was probably my favorite class as a freshman,” said Crystal Zomer, a biomedical sciences major now in her junior year. “I thought it was really unconventional.”

The University Seminar was created in 1996 as an intellectually challenging first-year course that would help freshmen become more active learners and succeed with the rest of their college careers. After starting out with just seven sections, CLS 101 has grown to over 50 sections today and is taught by faculty from every college on campus. Centered on three central themes—knowledge, identity, and society—the course engages topics as diverse as ancient political philosophy, social activism, and natural history.

According to Adele Pittendrigh, associate dean of the College of Letters and Science and a founder of CLS 101, the thought-provoking course readings—which span

everything from Plato’s classic *Apology* to contemporary titles like Juliet Schor’s *Born to Buy*—encourage students to apply similar thought processes to disparate subjects. Students are urged to explore questions they develop themselves, as well as questions drawn from course themes, such as “How do we know what’s true?” and “Who are we as human beings?” By critically evaluating questions and answers from different perspectives, Pittendrigh explained, they make connections between the texts that might not otherwise be apparent. In addition, by testing their arguments in discussion with fellow students, they improve their ability to explain their thoughts in speaking as well as writing.

Not surprisingly, the course is often a learning experience for faculty as well as students, observed Sue Monahan, head of the Department of Sociology and longtime CLS 101 instructor. “I’ve begun to understand that the things that make the biggest difference to the students are the things they have figured out themselves,” she said. “And in this model of education, students do not get all the answers from their teachers.”

The course attracts students and faculty from departments and colleges across campus, said Pittendrigh, and added,



Library of Congress, Warren K. Leffler





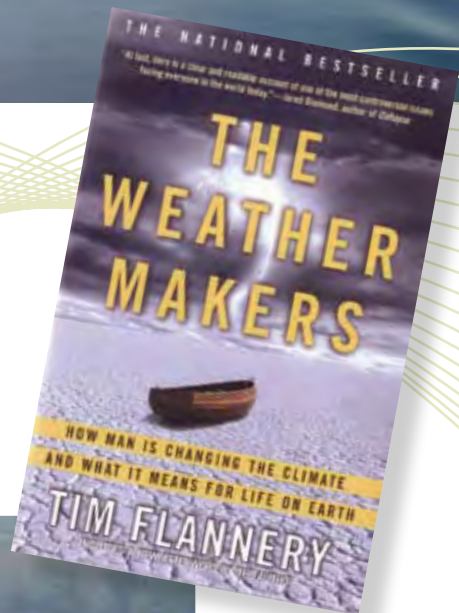
“The class really is designed to help students who don’t have a lot of opinions form some of their own.”

- Kevin Volkening,
Chemical Engineering, '10

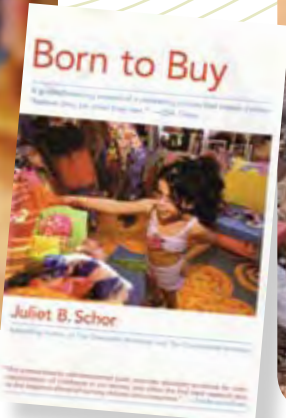
“These diverse perspectives can lead to lively discussions.” Furthermore, it allows students to form relationships with faculty and students from different departments.

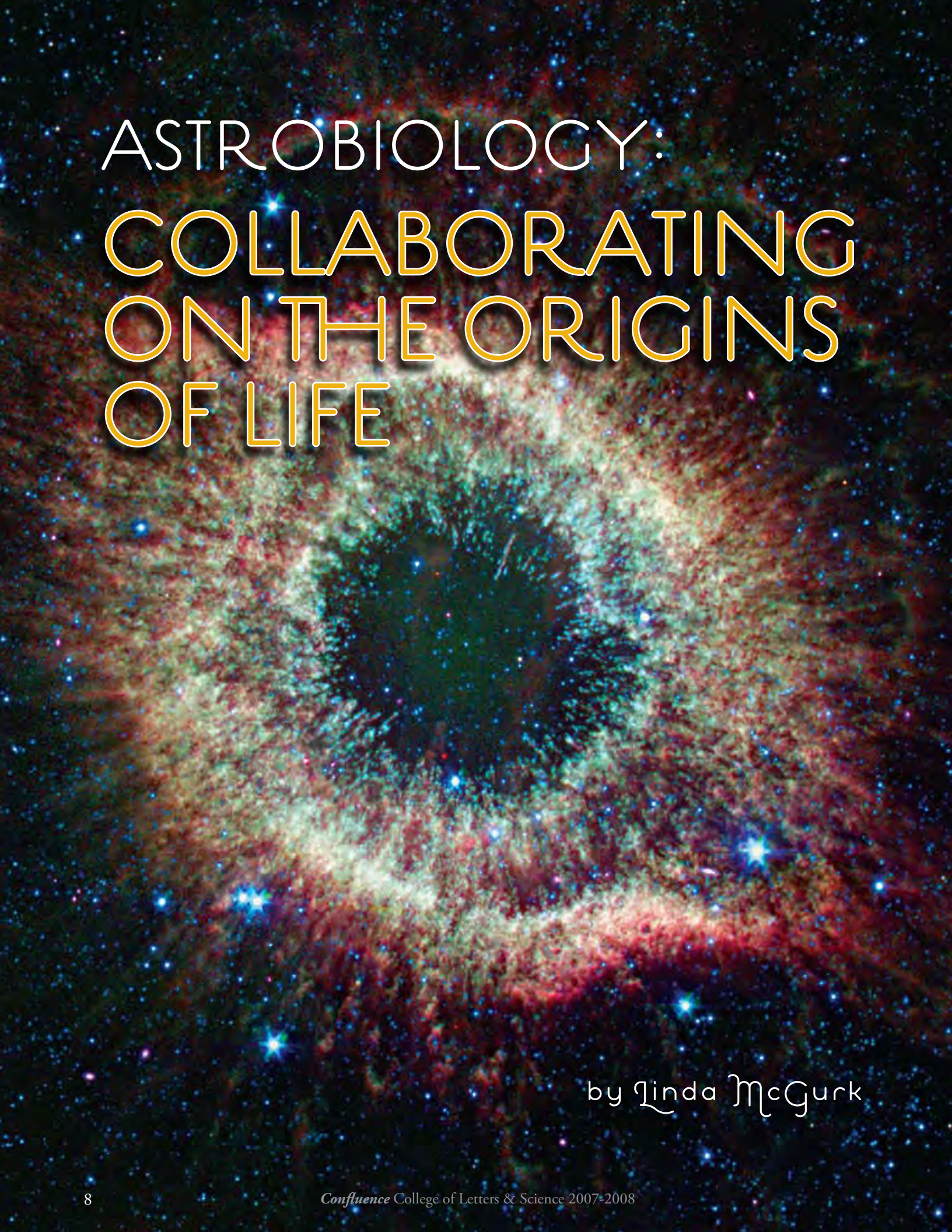
“At first I thought it was just going to be another typical core class,” said chemical engineering major Kevin Volkening, “but it ended up being a lot more interesting than that.”

Now in his sophomore year, Volkening is a CLS 101 student fellow, acting as a mentor for the students and helping the instructor generate discussion in the class. So far, it’s been a rewarding experience. Volkening has especially enjoyed seeing many of the students who initially “don’t care, don’t have any opinions or think they’re too cool for the class” get more involved over the course of the semester and eventually get drawn into spirited debates on topics like consumerism, climate change, and racial issues. “The class really is designed to help students who don’t have a lot of opinions form some of their own,” he said.



For more information about the University Seminar, go to: <http://cls.wilson.montana.edu/cls101/>.





ASTROBIOLOGY:
COLLABORATING
ON THE ORIGINS
OF LIFE

by Linda McGurk

HOW DID LIFE COME ABOUT ON EARTH? WHAT CAN THE ORIGIN OF LIFE HERE TELL US ABOUT LIFE ON OTHER PLANETS?

And what do we know about the future of life? When scientists are faced with complex and multidimensional questions like these, the answers aren't necessarily found within one single discipline or academic department. But if you bring together a team of biochemists, virologists, geochemists, biomaterials experts, physical chemists, and philosophers, powerful things begin to happen. Just ask the members of the newly created NASA Astrobiology Institute Node at MSU.

"Once you start to go across disciplines you naturally tend to look at the bigger questions instead of focusing only on the nitty-gritty details," said Trevor Douglas, head of MSU's Center for Bio-Inspired Nanomaterials and member of the institute. "Collaborating scientifically is an incredibly difficult thing to do. It takes a high level of trust and requires collaborators to be open to sharing ideas."

Astrobiology is a multidisciplinary area of research focusing on the origin of life and life in extreme environments. MSU astrobiologists will try to find a link between iron-sulfide compounds in geology and biology. These compounds occur naturally on rocks and minerals and within living things and scientists believe they may be a key to explaining the transition from non-living minerals to living biological organisms when life first occurred on Earth.

Douglas and John Peters, director of MSU's astrobiology team and head of

MSU's Thermal Biology Institute, surrounded by a team of investigators that are leaders in their respective fields, laid the foundation for astrobiology research at MSU. As

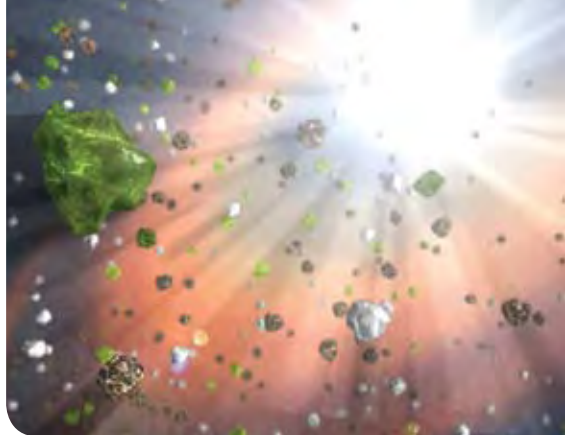
a result, MSU was selected as one of four new members of the NASA Astrobiology Institute in May 2007, along with the University of Wisconsin-Madison, the California Institute of Technology-Pasadena and the Massachusetts Institute of Technology. During the five-year term of the grant, astrobiology research at MSU will receive approximately \$6 million.

...if you bring together a team of biochemists, virologists, geochemists, biomaterials experts, physical chemists, and philosophers, powerful things begin to happen...

"Truly the grant is further validation that science at the highest and most competitive level is occurring at MSU," said Peters. "The involvement in the center will bring additional attention to research at MSU as a whole and gives MSU the opportunity to lead astrobiology research and education nationwide."

Joan Broderick, a team member who specializes in bioinorganic chemistry, said MSU's reputation for interdisciplinary research is part of what attracted her to the university in 2005. Previously a self-described "traditional" scientist who focused on narrow research questions, she now finds herself taking a broader approach to science. "I think the most interesting aspect of this project is that we're pulling together all these people who otherwise never would've met or spoken to each other in a scientific setting," Broderick said about the collaboration. "I'm really excited about contributing knowledge in one of the most exciting areas of science right now. We're really pushing the boundaries of what can be understood about the origin of life."

The NASA grant will not only put MSU on the map and advance research in the area of astrobiology, it will benefit students as well, said Douglas. "Showing that we can draw scientifically valid threads between biology and geology is the key goal. In the process we're hoping to educate a lot of students in thinking multidisciplinary and thinking outside the box."



Photos courtesy of NASA/JPL - Caltech





HISTORY STUDENT WINS NATIONAL FELLOWSHIP

Brad Hall, an L&S student from Browning, Montana, was named a 2007 Rockefeller Brothers Fund Teaching Fellow.

The Rockefeller Brothers Fund awards fellowships to minority students who are majoring in the arts and sciences who wish to pursue a profession in teaching. Only 25 fellows nationwide are selected on the basis of qualities that indicate their potential to become good teachers. Fellows receive up to \$22,100 over a five-year period in order to pursue a master's degree program in education and begin a teaching career in the public schools.

Hall, a Blackfeet and Cree, is a history-teaching major and has been active in MSU's American Indian Council. He said he was encouraged and mentored by good teachers while he attended Browning High School and he would like to do the same for other students one day.

"I continue to believe that teaching joins nursing and engineering as the top three most important careers in Indian Country, but students going into education have less financial support and fewer specialized Native programs than the other two," Hall said. "As a result, I think Indian schools are in red alert at this point because of a lack of teachers."

According to the National Center for Education Statistics, by 2014, an estimated 50 million children will be enrolled in public schools across the nation. More than half of them are expected to be students of color. Yet, today, only 10 percent of U.S. public school teachers are people of color.

"We Native students need Native role models. I want to teach in a Native community because that's where I can do the most good."

Excerpted from Carol Schmidt, MSU News

FOR THE LOVE OF MEDICINE

Madeline Turner has spent plenty of time in hospitals and plans to continue. A 2007 MSU graduate and current WWAMI medical student, Madeline Turner was a maintenance worker and nurses' aide at the Rosebud Health Care Center when she lived with her parents in Forsyth. After enrolling at MSU, she became a scrub technician and helped deliver babies at Bozeman Deaconess Hospital. During her summers, she volunteered at hospitals in Costa Rica, Panama, and the African country of Malawi.

"When I was 14, I knew that was what I wanted to do," said Turner, who graduated with a degree in cell biology and neuroscience.

Turner said she's not sure why, but everything about the



MSU News



medical field appeals to her. Since volunteer work is another passion, she combined the two and traveled across the country as a volunteer for the American Cancer Society. She helped start MSU's Relay for Life, a fundraiser for the American Cancer Society. She volunteered at an African AIDS orphanage after her freshman year, and worked last summer as a medical volunteer with rural populations in Costa Rica and indigenous populations in Panama. She



Photo courtesy of
Erik Peterson



SCORING ON THE FIELD...AND IN THE LAB

When Elliott Barnhart caught an 8-yard touchdown pass against Texas A&M in the Bobcat's opening game this season, he probably wasn't thinking about polymerase chain reactions. Then again, maybe he was.

Barnhart, a three-time Academic All-Big Sky tight end, is a Montana INBRE-funded undergraduate researcher in Professor Tim Ford's microbiology lab. He began working in the lab the summer after his freshman year, when he needed to remain on campus for team workouts. Within a year, he was a co-author of a published research paper on bacterial gene expression in response to metal toxicity.

Currently, as part of a study on the effects on water quality from coal bed methane development, Barnhart is finding unique communities of micro-organisms that live in water samples taken from wells in Montana's Powder River Basin. Future research may show that these organisms are important in methane production, and provide a way to convert the greenhouse gas, carbon dioxide, to methane—while simultaneously producing energy.

Currently a junior, Barnhart hails from the same locale as his water samples. He grew up in Broadus, Montana, where he was a four-year starter at Powder River County High School, earning first-team all-state and all-conference honors on both offense and defense. He also averaged in double-figures scoring for Powder River's basketball team, and was MVP of his American Legion baseball squad, while graduating third in his high school class in 2004. An honor roll student at MSU, Barnhart was a 2006 recipient of the Montana Athletes in Service Award which honors student athletes engaged in community service.

This year, Barnhart is off to his best season as a Bobcat with 16 catches, 217 yards, and three touchdowns in the first seven games. This doesn't surprise his advisor, Tim Ford, who notes, "I would not be at all surprised if his love of inquiry and problem-solving is an advantage on the football field." He added, "Certainly, his team spirit translates into the ideal collaborator on a research team."

helped organized "Up 'Til Dawn," an MSU fundraiser for St. Jude Children's Research Hospital.

"I just really enjoy doing community service work. Even though it might be a Friday and I should be out doing the college thing, I really love doing that stuff," said Turner.

For those and other accomplishments, Turner was named MSU Rotary Student of the Month for May. She previously received the Torliel Aasheim Community Involvement Award and the Harold Watling Scholarship, which is given to an outstanding student who will pursue medical school. She received the MSU Mortar Board Excellence Award, the National Trow Scholarship, the Christy Foundation Scholarship, and the Cell Biology and Neuroscience Award, among others.

Only in her first year of medical school, Turner isn't sure what kind of practice she'll pursue. "I am fascinated by family practice or emergency medicine, says Turner, "but I did really enjoy my international work and would consider service of that type also."

Excerpted from Evelyn Boswell, MSU News

ENGLISH PROFESSOR TAKES WESTERN TO THE MIDDLE EAST



Susan Kollin, an English professor who specializes in the literature of the American West, is getting a Middle Eastern perspective as she spends a year as a Fulbright Faculty Scholar in Cairo. Kollin received the Fulbright Fellowship to teach at American University in Cairo.

It is not as much of a departure as might be expected for the award-winning professor who writes about the film and literature of the American West. Kollin has also worked to develop curriculum for a group of Middle Eastern students who study each summer at Montana State University. Kollin said her work as the academic co-director of the MSU Middle Eastern Partnership Initiative made her think about living and working abroad for a year.

“I’ve enjoyed teaching the (MEPI) students and (the year in Cairo) will help me learn more about how Americans in the world are perceived as well as how the literature of the American West is perceived elsewhere,” said Kollin.

Kollin said that she plans to use her one-year Middle Eastern perspective in her research about the origins of the Western novel. “Critics often think (the Western is) a genre that’s original to the U.S. but I want to challenge that assumption,” Kollin said.

“I think the experience will make me a better scholar and teacher,” she said.



ECONOMIST HONORED BY EARTH INSTITUTE

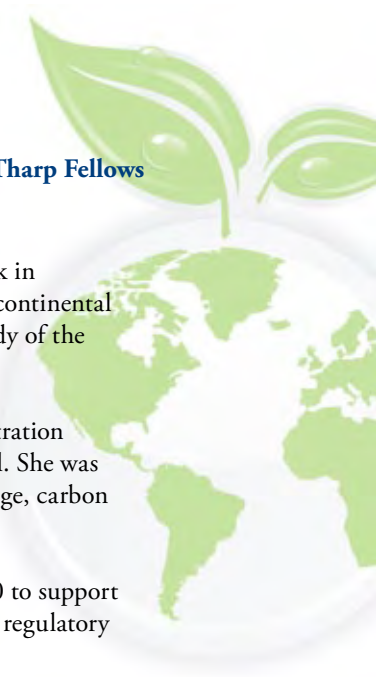


Economics professor Susan Capalbo was named one of four 2007-2008 Marie Tharp Fellows by the Earth Institute at Columbia University.

The award, named after a former Columbia University scientist whose pivotal work in oceanography led to the eventual acceptance of the theories of plate tectonics and continental drift, is given to four women who are making noteworthy contributions to the study of the natural world.

Capalbo directs the Big Sky Regional Partnership and the Big Sky Carbon Sequestration Partnership, and is also a member of Governor Schweitzer’s Science Advisory Panel. She was selected on the basis of her groundbreaking work in the economics of climate change, carbon sequestration, and integrated policy analysis.

Each of the Marie Tharp Fellows spends three months working at the Earth Institute and receives \$30,000 to support their project. Cabalpo will be working with the Lenfest Center for Sustainable Energy to address potential regulatory and economic roadblocks for the early commercialization of carbon capture and storage technologies.



IN MEMORIUM: LONG-TIME L&S EMPLOYEE DIES IN CAR ACCIDENT

Kathleen (Kathy) E. Griffith, the assistant to the dean of the College of Letters and Science who had worked at MSU for more than 30 years, died on September 23, 2007, in an automobile accident near Butte. She was 55.

According to authorities, Griffith was riding in a vehicle that lost control and rolled over on the slick, slushy roadway on Homestake Pass. She survived the crash, but was killed when the driver of a pickup truck, trying to stop and render assistance, lost control and smashed into the car.



Griffith was born in Billings to Mick and Dolores Fraker. The second of four children, she grew up on the family ranch in Clark, Wyoming, near the Montana border. She attended the tiny Pioneer grade school and finished high school in Belfry, Mont. She received an associate's degree from Northwest Community College in Powell, Wyoming.

Griffith began her career at MSU in 1972. Prior to joining the College of Letters and Science in 1990, she worked in the economics and agriculture economics department. She was named an MSU employee of the year in 1995.

Griffith was the wife of Duane Griffith, a professor in the economics/ag economics department. The couple was married on July 12, 1987. She had two daughters, two step-daughters, and a son.

University associates who knew and worked with Griffith say that her serenity and composure, even in times of stress, made her an invaluable friend and employee.

"She was wonderful," said Diane Arnold of the College of Letters and Science. "She had so much patience for everyone and everything."

The college has renamed its annual outstanding employee award in Griffith's memory.

2007 Awards

L&S Dean's Award for Meritorious Research

Paul Grieco, Chemistry & Biochemistry
Brett Walker, History

L&S Outstanding Teaching Awards

Maurice Burke, Mathematical Sciences (Tenure Track)
Becky Parker, Mathematical Sciences (Adjunct)
Sytil Murphy, Physics (Graduate Teaching Assistant)
Wendy Zirngibl, History & Philosophy (Graduate Teaching Assistant)

Kathy E. Griffith Employee Excellence Award

Joan Macdonald, Ecology
Chris Harmon, Chemistry & Biochemistry

President's Excellence in Teaching Award

Scott Creel, Ecology

Provost's Award for Undergraduate Research/ Creativity Mentoring

Beth Quinn, Sociology & Anthropology

Cox Award for Creative Scholarship and Teaching

Susan Cohen, History & Philosophy
Yves Idzerda, Physics

Charles & Nora L. Wiley Award for Meritorious Research

Joan Broderick, Chemistry & Biochemistry

James & Mary Ross Provost's Award for Excellence in Teaching and Scholarship

Mary Murphy, History & Philosophy

Retiring Faculty

(and the year they joined MSU faculty)

Alanna Brown, English (1973)
Jerry Calvert, Political Science (1973)
Chuck Paden, Cell Biology & Neuroscience (1980)
Cheryl Roller, English (1978)

NEW, OLD DINOSAUR DISCOVERED

A new dinosaur that dug burrows and cared for its young in dens was found by a graduate student of professor David Varricchio, a paleontologist in the Department of Earth Sciences.

The 95-million-year-old bones of an adult *Oryctodromeus cubicularis* and two juveniles were found jumbled together in a burrow about 15 miles from Lima, Montana.

“The presence of an adult and two juveniles within a denning chamber represents some of the best evidence for dinosaur parental care,” Varricchio said in an online paper published last March. “The burrow likely protected the adult and young *Oryctodromeus* from predators and harsh environmental conditions. Burrowing behavior may have allowed other dinosaurs to survive in extreme environments such as polar regions and deserts and questions some end-Cretaceous extinction hypotheses.”

Yoshihiro Katsura, a former MSU graduate student, found the remains of the *Oryctodromeus* in 2004 while prospecting on public land. The fossils were lying in the expanded end of a burrow that measured about 6.6 feet long.

The fossils were within two or three feet of the surface in the Blackleaf Formation, Varricchio said. The formation



Photo courtesy of David Varricchio

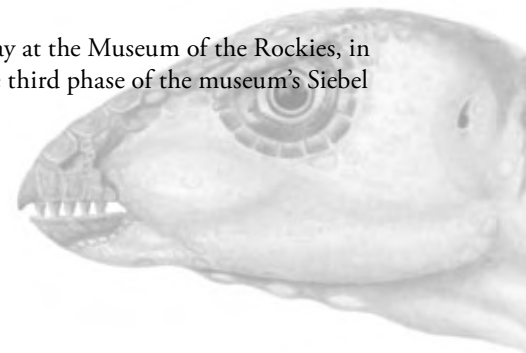
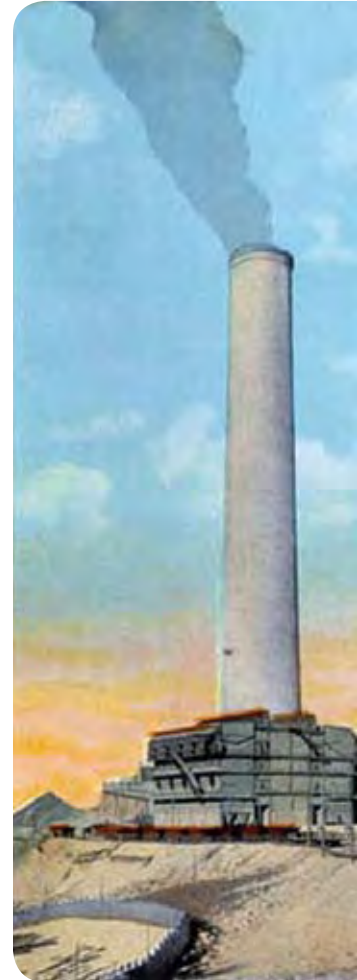
existed during the Cretaceous Period, but is 30 million years older than the Hell Creek Formation of Eastern Montana. The Hell Creek Formation, which dates to the Late-Cretaceous Period, has been a rich source of *Tyrannosaurus rex* and triceratops fossils.

The burrowing dinosaurs didn't have the dramatic frills, horns or teeth of some other dinosaurs, but their fossils are valuable because they are the first vertebrate remains found in the Blackleaf Formation, Varricchio said.

“We have dinosaurs older and younger, but this is a little slice of time we haven't sampled before (in Montana),” Varricchio said. He added that the fossils also represent the first scientific evidence that some dinosaurs dug burrows and cared for their young in dens.

The *Oryctodromeus* was a small plant-eating dinosaur that had several adaptations for digging, Varricchio said. Its snout could be used as a shovel. The large bony attachments in the shoulder could hold powerful muscles. Strong hip bones could help brace the dinosaur during digging. Unlike modern digging animals, however, the dinosaur had long hind limbs and was well adapted to running on two legs.

The fossils are on display at the Museum of the Rockies, in the “Hall of Giants,” the third phase of the museum's Siebel Dinosaur Complex.



A TALE OF TWO MINES



Ashio, Japan

Historians Brett Walker and Tim LeCain received \$306,000 from the National Science Foundation to investigate the similarities between two former copper mines that operated in the late 1800s and early 1900s.

One mine was in Anaconda, Montana, and the other was in Ashio, Japan. With the help of six graduate students, Walker and LeCain will compare how Montanans and Japanese residents dealt with the technology, science, and pollution associated with the mines.

The mines existed in different cultures, environments and religious contexts, but each used highly-sophisticated technology that had never been used before, Walker said. They had underground electrical systems. They had railroad systems and complicated smelting systems.

Each mine helped modernize its country and allowed it to thrive in an international economy, Walker added. Both operations were entrenched in local politics. At the same time, the mines created environmental disasters. Sulfur dioxide fell onto pastures and poisoned the cattle that grazed around Anaconda and Butte. It also fell on mulberry bushes and killed large silkworm colonies in central Japan.



Wahoe Smelter (Anaconda, Montana)

LeCain said, “Two key symbols, cattle and silkworms, suffered very similar effects, but more interesting is that Americans and Japanese, because of their respective cultural differences, had very different readings of these two pollution events.”

Walker, head of the Department of History and Philosophy, is an expert in the environmental history of Japan. LeCain specializes in the history of technology, particularly mining technology. In a blending of interests, the researchers will travel to Ashio and Anaconda to examine the mines, study historical documents, and interview area residents. They plan to write a book on their findings, develop a web site, and create interactive maps to show the impact of each mine.

“A lot has been written about both mines, but there have been no comparisons between the two,” Walker said. “We are asking different questions, more scientific, ecological and technological questions.”

Mining may not be the industry it once was in Montana and Japan, but it’s big in other areas of the world, the researchers said. Other countries are now dealing with the issues that Montana and Japan once faced.

LeCain said, “We all have to grapple with this ecological reality. We are not offering easy solutions, but moral dilemmas.”

Excerpted from Evelyn Boswell, MSU News

\$1 MILLION GRANT FOR HYDROGEN FUEL TECHNOLOGY

By mimicking a protein found in nature, a group of scientists at MSU hopes to produce hydrogen as a fuel using inexpensive sources and a unique chemical reaction. To that end, they received a nearly \$1 million grant from the U.S. Department of Energy. The project was one of 27 grants awarded nationwide that are dedicated to improving the capture, conversion, and use of solar energy.

“Currently the energy industry produces hydrogen by using fossil fuels,” said chemistry professor and co-inventor Trevor Douglas, who also directs MSU’s Center for Bio-Inspired Nanomaterials. “That’s a zero—sum game.” This invention—a hydrogen production reactor—would use organic acids or ethanol and water along with either the naturally occurring protein or a synthetic equivalent to create hydrogen.

“In principle, this is an incredibly efficient, renewable, environmentally friendly source of hydrogen,” Douglas said. In addition to Douglas, the other inventors are MSU chemistry professor John Peters, MSU plant pathology professor Mark Young and Hamilton College (New York) scientist Tim Elgren.

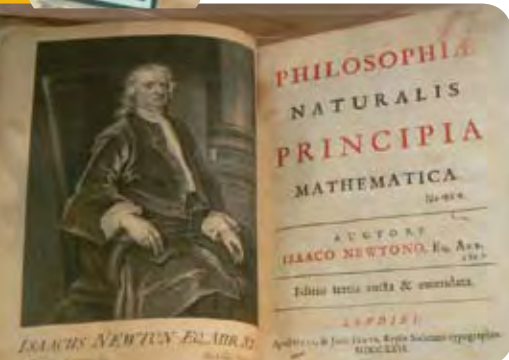
NEW PARTNERSHIP PRESENTS OLD BOOKS

A new exhibit celebrating 400 years of science—on display on the first floor of Wilson Hall—is the result of a unique collaboration between the College of Letters and Science and Bozeman’s American Computer Museum. The display, titled “From Bacon to Bits: 400 Years of Science,” includes a first-edition book by Francis Bacon, second-edition books by Charles Darwin and John Locke, and a book published in 1726 by Isaac Newton. Also displayed are the issue of *Nature* that announced the molecular structure of DNA, and a Commodore 64 Computer. The Guinness Book of World Records called the computer the best-selling single personal computer model of all time, with 17 to 22 million sold world-wide.

The exhibit arrived compliments of George Keremedjiev, director of the American Computer Museum. The exhibit space, developed by the College, used to be a lobby that housed vending machines. Future displays will feature MSU research, as well as rotating displays from the American Computer Museum on the history of technology and science.

“It’s a marvelous resource for faculty and students,” said George Tuthill, interim dean of the College of Letters and Science in 2006-2007.

Keremedjiev said, “Wilson Hall, where the display is located, is at the heart of the academic intersections for the various core requirements. The display exposes students studying mathematics, history, philosophy, religion, etc. to some of the very books they cover in their studies.”



BORDERLANDS SERIES TARGETS IMMIGRATION ISSUES



“Bozeman, like communities across the nation, is experiencing tremendous growth in its Latino population,” said Bridget Kevane, as she introduced a talk by author Helena María Viramontes at the Bozeman Public Library on September 27th. “It became clear that a discussion on immigration, ethnic identities, and community growth was needed in Bozeman.”

The result, a collaboration by faculty members in five L&S departments, was a four-speaker series titled “Borderlands: Migration, Ethnic Identity, and the Changing Face of Community.” Sponsored by L&S and the Bozeman Public Library, the series was designed to promote awareness of the growing issue of Mexican and Latino migration to Montana.



Helena María Viramontes

In her talk, Viramontes described the monolithic freeway interchange system of East L.A. as “held up by the bones of the forgotten.” She was referring to the ethnic neighborhoods, and their adjacent cemeteries, that were razed for urban progress in the 1960s. But the reference to an immigrant community that is often cut-off, ignored, and overlooked, remains accurate forty years later.

Viramontes, the child of migrant farm workers, grew up in East Los Angeles and has written extensively about the experiences of Chicano and Chicana farm workers in the U.S. A professor of English at Cornell University, she has published two novels—*Under the Feet of Jesus* (1995) and *Their Dogs Came with Them* (2007).

Additional speakers in the series included: Raul Homero Villa, Professor of English at Occidental College, on the topic of “Space and Place in Chicano Culture;” Stephen Trejo, Professor of Labor Economics at the University of Texas on “The SocioEconomic Progress of Mexican Americans;” and Don Mitchell, Professor of Geography at Syracuse University, on “Terrorists, Vigilantes, War, and the Border.”

BLINDING METH WITH SCIENCE

Montana's fight against meth got a high tech boost thanks to the work of three L&S alumni and a \$150,000 grant from the National Science Foundation.

Jay Brasseur (Physics, M.S. '95, Ph.D. '98.), Randy Reibel (Physics, M.S. '00; Ph.D. '02), and Pete Roos (Physics, Ph.D. '02) are the co-founders of Bridger Photonics, based out of MSU's Spectrum Lab in Bozeman, with plans to develop a portable, low-cost laser system that can detect the chemicals used to make methamphetamine from a distance.

Despite its often pristine image, Montana has a methamphetamine abuse problem that is as big as its legendary sky. According to the Montana Meth Project, a statewide anti-meth advertising campaign, meth use in Montana is 230% higher than the national average, and meth-related crime in Montana is 429% higher than meth-related crime nation-wide. In addition, almost $\frac{3}{4}$ of the state's federal sentences were meth-related in 2003.

While the Montana Meth Project has documented significant progress in meth-use prevention, Bridger Photonics hopes that its technology will help address "supply side" issues.

Meth is derived from amphetamine and is commonly made using the base chemicals ephedrine or pseudoephedrine found in over-the-counter medicines. Other common

household products can be added to make meth, including acetone, iodine, anhydrous ammonia (fertilizer), hydrochloric acid (pool supply), lithium (batteries), red phosphorus (matches or road flares), sodium hydroxide (lye), sulfuric acid (drain cleaner), and toluene (brake fluid).

When manufactured by amateurs, the production of meth can be extremely dangerous and create harmful, toxic gases. Many illegal meth

labs are only discovered after fires or explosions occur due to improper handling.

However, these meth labs are increasingly difficult for law enforcement to uncover as producers become more sophisticated and mobile. In

close collaboration with Spectrum Lab, Bridger

Photonics is working to develop a hand-held laser based sensor that can be used to detect clandestine meth labs. Each meth chemical absorbs a unique set of wavelengths providing a unique chemical "fingerprint;" therefore, when a laser wavelength matches these absorption features, this unique "fingerprint" is identified. "By making a lightweight, robust, hand-held remote sensor for the detection of meth labs, Bridger Photonics is enhancing law enforcement capabilities for combating meth, which translates to safer communities across our state," Roos explained.

Roos, who returned to Bozeman after three years of post-doctoral research in Boulder, Colorado, joined Spectrum Lab's team of applied laser physics researchers in 2005. There he connected with

Reibel, also a research scientist at Spectrum Lab. Brasseur, who is also vice president of laser technologies for another company, Directed Energy Solutions, currently lives in Colorado Springs, Colorado.

Dr. Randy Babbitt, director of the Spectrum Lab, and Roos' advisor when he was a graduate student, is excited about their project, noting that "it contributes directly to the education of students, new research opportunities for MSU, local economic development, and the societal need to wipe out the surge of meth."

"Returning to Montana and being able to work on a project with so much potential benefit for the state has been a great homecoming for me," Roos said.

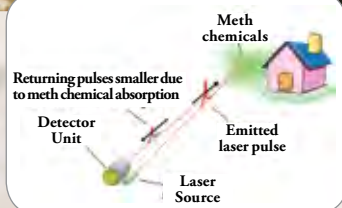
by Sarah Alexander



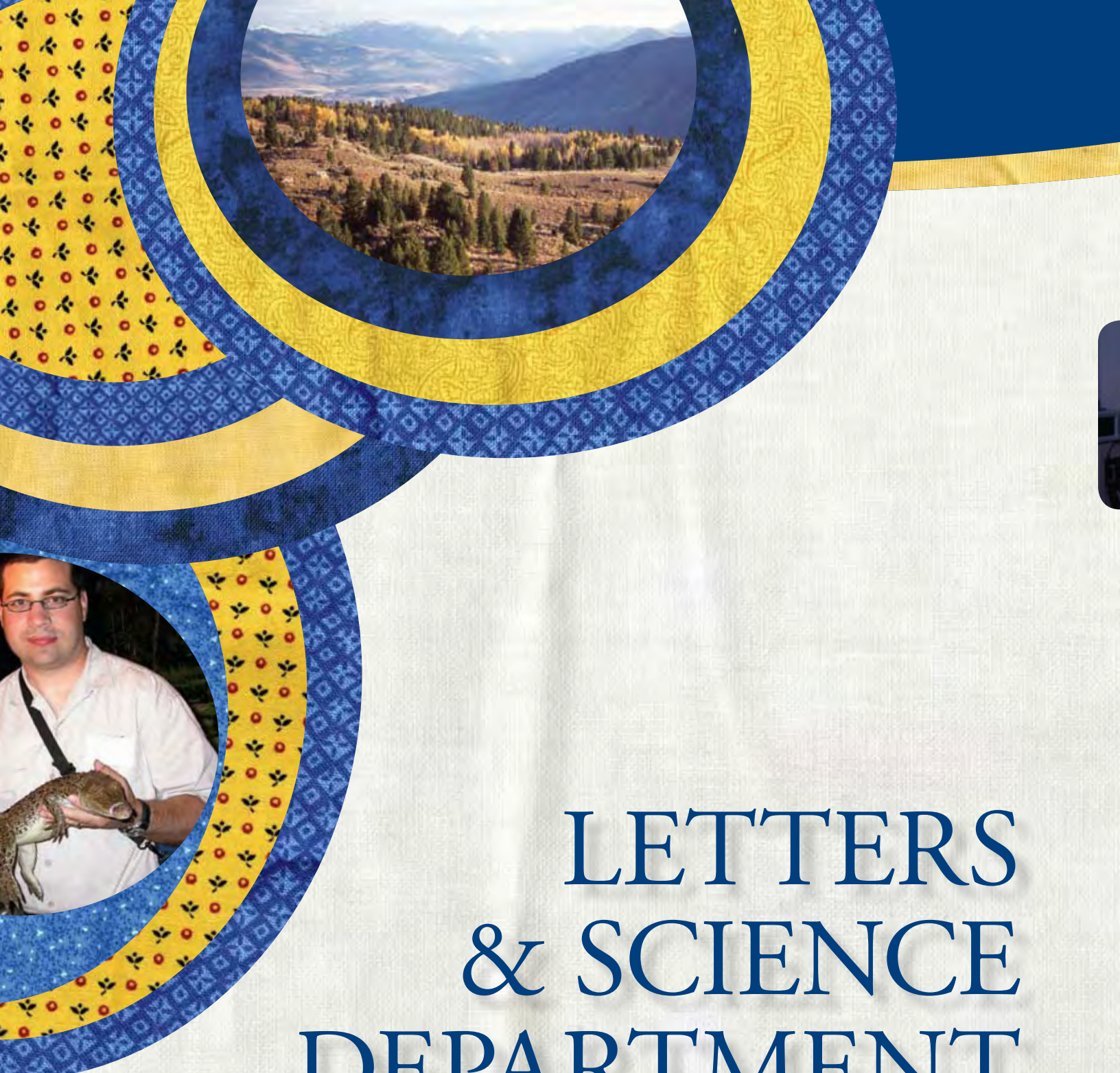
Pete Roos (left) and Andy Reibel, two of the Bridger Photonics founders.

"Returning to Montana and being able to work on a project with so much potential benefit for the state has been a great homecoming for me ..."

-Pete Roos



A schematic for laser remote sensing. A light pulse goes out, and the returning pulse is attenuated if meth effluents are present. (Illustration courtesy Bridger Photonics)



LETTERS & SCIENCE DEPARTMENT HIGHLIGHTS

CELL BIOLOGY & NEUROSCIENCE

Professor John Miller was named a Distinguished Professor of the College of Letters and Science. The three-year appointment recognizes faculty members who have a record of internationally-recognized scholarship, excellence



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in teaching, and contributions to their profession, the state of Montana, and Montana State University. Miller, who joined MSU as director of the Center for Computational Biology in 1997, is internationally recognized for his pioneering research in computational neuroscience. As a graduate student, Miller developed a technique to inactivate single neurons within a network of neurons, and by doing so, was able to assess that single neuron's contribution to the activity of the whole. This led to a career devoted to understanding the neural code, using an approach that combines theoretical, computational, and experimental techniques. Miller has enjoyed continuous funding for his research, and is one of the founding editors of *The Journal of Computational Neuroscience*. At MSU, Miller led the effort to establish the Hughes Undergraduate Biology Program and was largely responsible for establishing the graduate program in Complex Biological Systems.

This past May, CBN faculty member Susan Gibson, WWAMI medical student Katie Newell, and undergraduate CBN students Maggi Fairhurst, Matt Davis and Katie Senter traveled to the Darhad Valley in Mongolia to participate in a health services project as part of the MSU BioRegions program. The long-term project, spearheaded by Gibson, adds a medicine and health component to the BioRegion's outreach program.

The students' goal was to acquire basic data regarding the health of residents living in the region in order to establish future healthcare priorities of the largely nomadic population. They took blood pressures and helped with glucose and urinalysis testing for over 100 individuals in both the countryside and the town center. Follow-up testing will be carried out by local hospital staff, and Katie Senter will complete a statistical analysis of the data.



Photo Courtesy of Susan Gibson

CHEMISTRY

Each summer the Department of Chemistry and Biochemistry gives a small group of students a research experience that can launch them into successful science careers. The REU (Research Experience for Undergraduates) program, established in 2000 and directed by Professor



Mary Cloninger, provides research experiences to students from small colleges in the northwestern U.S. where such opportunities would otherwise not be available. Students, who receive generous funding from the National Science Foundation, spend the summer working on independent research projects in

chemical biology labs with faculty advisors and graduate student mentors. In addition to hands-on research, they gain familiarity with state-of-the-art instrumentation and receive counseling on scientific ethics, careers in chemistry, and applying to graduate school. Of the 87 students who have participated in the program since its inception, 34 have gone into science Ph.D. programs, five have entered medical school, and six have become working chemists.

Proteins are the signal receptors, motors, and pumps that do most of the work in cells, and they are turned on or off by chemical modifications in response to stimuli like infection or stress. The field of proteomics reveals the particular modifications that are marshaled in response to disease-causing stimuli. Chemistry professors Edward A. Dratz and Paul A. Grieco have developed an improved tool for this purpose: a new family of multicolored fluorescent dyes (called Zdyes) that are about 10-100 times more sensitive than existing fluorescent dyes suitable for proteomic analysis. Dratz and Grieco are particularly interested in using their dyes to identify new biomarkers for Type 2 diabetes risk factors. They expect that a deep, global search for protein markers will reveal patterns that will signal Type 2 diabetes risk significantly earlier and more reliably than current diagnostics. Presently, a large fraction of patients with Type 2 diabetes already have severe complications and are at a greatly increased risk of heart disease by the time they are diagnosed.

EARTH SCIENCES

Department Head Steve Custer and graduate student Mark Schaffer have been working on the relationship

between ground water and surface water in the Four Corners area near Bozeman. This work includes over 30 shallow wells, 60 stream bed piezometers, and measurement of gains and losses in the Gallatin River and irrigation ditches. Ground-water monitoring is sufficiently sensitive to show snow melt in the spring, responses of the ground-water system to rising and falling river levels, and responses of the ground-water system to irrigation. Well records show ground-water-elevation rises of from two to ten feet in response to irrigation, while the elevations drop relatively rapidly following the end of the irrigation season. Measurement of

ground-water, river, and stream-bed specific electrical conductance and temperature help reveal areas of ground water discharge into the river bed. This information will help people better understand the intimate relationship between the river and the ground-water system in this rapidly growing area.



The Department of Earth Sciences graduated its first two Ph.D. students this past May. Frankie Jackson, whose research has focused on the study of dinosaur eggs and the processes of fossilization, completed and defended her dissertation titled, “Titanosaur Reproductive Biology,” which compared two nesting localities and found important differences in the nesting behavior of sauropod dinosaurs. Jackson, who has spent considerable time at excavations in Argentina, Spain, and China, continues as a research scientist and adjunct instructor with the department. Ewan Wolff’s research looked at disease in both living and fossil archosaurs, a group that includes crocodiles, birds, dinosaurs, and a variety of other extinct forms. He was able to recognize immune system differences between dinosaurs and mammals as well as the presence of unique diseases in the fossil record. Wolff is currently working on his veterinary medicine degree at the University of Wisconsin-Madison.



Jackson (center) and Wolff (right) with their advisor David Varricchio.

ECOLOGY

Professor Scott Creel won the President’s Excellence in Teaching Award for 2007. Creel, who has developed and taught seven new courses during the past decade at MSU, was honored for his skills in the classroom. With the goal of developing his students’ critical thinking, synthesis, and problem-solving skills, he emphasizes content and personal accountability. He credits his 10 years at the Selous Game Reserve and Serengeti National Park in Africa for making him a better teacher. Creel’s research focus is in ecology, behavior, and evolution. He and his research team examine responses of elk to variation in the risk of predation by wolves. They hope to quantify those responses, determine the costs of these responses, and predict the impact on the population dynamics of both elk and wolves.

With global warming issues on the rise, it’s clear that society would benefit from an early warning system for ecosystem changes. As part of a National Science Foundation project, MSU was selected as one of the founding members of the National Ecological Observatory Network (NEON), a national laboratory focused on understanding ecological processes at the continental scale. Proposed by ecology professor Andy Hansen (in collaboration with colleagues in Earth Science, Land Resources & Environmental Sciences, the Big Sky Institute, Yellowstone National Park and the Gallatin National Forest), the Yellowstone Northern Range site will be one of twenty eco-climatic domains in wildland areas that will host a fully-instrumented NEON system. The Yellowstone site, which includes the wildlands area from Gardiner to Cooke City as well as more developed land to Livingston and Bozeman, was chosen for its rural residential development gradient adjacent to a major intact ecosystem. The twenty NEON sites will record and archive ecological data for at least 30 years in order to develop the scientific understanding necessary to manage the nation’s ecological changes and challenges.



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NPS Photo

AGRICULTURAL ECONOMICS & ECONOMICS

Christiana Stoddard received the 2007 Betty Coffey Award for faculty who demonstrate outstanding achievement in incorporating women's perspectives in the curriculum or developing academic programs that contribute to the success of women students.



Stoddard, through her research and teaching, has incorporated women's issues into the economics curriculum. She helped develop two new courses—Women in the Economy and The Economics of Life—and also incorporates topics that relate to women in her other economics courses. Stoddard received her Ph.D. from the University of California, Santa Barbara in 2002. Her current research focuses on education, specifically voter decisions about education issues.

In 2004, the state legislature required all high schools in Montana to include basic economic concepts in their curricula, despite the fact that many high schools currently have no teachers on staff with formal training in economics. Since then, several professors in the Department of Economics have worked closely with the Montana Council on Economic Education (MCEE) to develop in-service training programs for Montana high school teachers. They have also developed a series of sixteen Economic Learning Modules (ELMs) that form an “off-the-shelf” high school curriculum on microeconomic concepts and hot topic issues (such as poverty in Montana and the impact of China's rapid growth on the Montana economy). This past August, professors Vince Smith, Norm Millikin and Bill Yellowtail (Native American Studies) presented a three-hour workshop for 25 social science teachers from high schools in Missoula and the Swan Valley based on the ELMs. Yellowtail addressed issues of poverty among American Indians and Smith examined the impacts of international trade on employment, as well as the effects of rapid economic growth and pro-market changes in policy on China's rural population and grain markets.



ENGLISH

Professor Greg Keeler, a widely-known and respected creative writer, was named a Distinguished Professor of the College of Letters and Science. The three-year appointment recognizes faculty members with a record of internationally-respected scholarship, excellence in teaching, and contributions to their profession, the state of Montana, and Montana State University. Keeler, who joined the Department of English in 1975 after receiving his D.A. from Idaho State University, has an exceptional record of publication in fiction, nonfiction, playwriting, songwriting, and poetry. He has six books of poetry in publication, another in press, and he is the author of *Waltzing with the Captain*—a biography of Richard Brautigan—published in 2004. In 1998, Keeler received MSU's prestigious Wiley Award for Research and Creativity, and in 2001 he was recognized with the Montana Governor's Award in the Humanities. In addition, Keeler's joy in language, passion for poetry, knowledge of literature, and commitment to the development of student-writers make him one of the College's most sought-after professors.



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Danell Jones, a visiting professor from MSU-Billings, joined the department this year to share her interests in Virginia Woolf and creative writing. Jones, who has been teaching writing for more than twenty years, earned her Ph.D. in English literature from Columbia University, where she was awarded both a Whiting Fellowship in the Humanities and a Bennett Cerf Award for her work on Virginia Woolf. She recently published *The Virginia Woolf Writers' Workshop*, with Bantam Dell. In seven fictional classroom sessions, woven from passages from Woolf's diaries, essays, letters, and novels, the book imagines what it would be like to take a writing class from one of the groundbreaking writers of the twentieth century.



HISTORY & PHILOSOPHY

The third iteration of the “Teaching American History Grant” will funnel \$1 million towards helping the Bozeman School District and Montana State University work together to improve American history education in Montana schools. The three-year grant from the U.S. Department of Education is aimed at pairing mentor teachers from Bozeman with teachers in under-served school districts, especially in central and eastern Montana. Robert Rydell, MSU history professor, is co-director of the grant along with Jim Bruggeman, principal of Irving School in Bozeman. Bradley Snow, a history Ph.D. student, is the project director. The grant provides for lectures, hands-on activities, and in-service training led by a research historian from MSU, an instructional specialist, and a master teacher. It also emphasizes the significance of the American West in understanding American history. “There have been very few districts in the country that have received two American history teaching awards,” Rydell said. “Three is highly unusual.”



History professors Robert Campbell and David Large have both published new books in the last year. Campbell’s book, his first, chronicles the reactions of early sightseers to Alaska. *In Darkest Alaska: Travels in the Nature of Empire*, published by the University of Pennsylvania Press, includes firsthand accounts, archival photographs, maps, and more, showing how these visitors were inspired by Alaska’s bounty of wildlife, tribal artifacts, geological riches, and novel thrills, paving the way for its eventual settlement and exploitation. *Nazi Games*, Large’s eighth book about 20th century Germany, describes how the 1936 Olympics catalyzed Nazi Germany’s rise to power and how the controversies of those games would resonate through future Olympics. The narrative includes a stirring account of the international effort to boycott the games, derailed finally by the American Olympic Committee, and also recounts the dazzling athletic feats of these Olympics.



MATHEMATICAL SCIENCES

Though highly mathematical, much of Professor Robert Boik’s research is motivated by problems in the behavioral sciences, where he holds a Ph.D. in Experimental Psychology in addition to his doctorate in statistics. He recently collaborated with researchers at the University of Texas M.D. Anderson Cancer Center, one of the leading cancer research hospitals in the world, to develop a data analysis method that can be used to determine whether a mixture of several cancer-fighting drugs work together in a synergistic or antagonistic manner. The goal, of course, is to identify mixtures that work synergistically so that lower doses of each drug can be combined into an effective mixture. Boik has also developed accurate procedures for factor analysis and principal components, which are widely used by behavioral and biological scientists to study the structure that underlies a set of multiple measures. In psychology, for example, these techniques are used to study the dimensions of personality and intelligence.



The Department of Mathematical Sciences has a new multi-media computing lab, the culminating piece of the department’s space upgrades that have been ongoing for over two years. With 28 workstations, a variable zoom projector, a digital document camera, a DVD/VCR player, and a sound system connected to four ceiling-mounted speakers, the lab provides a state-of the art facility for teaching and research seminars. The lectern supports SunRay interface connected to a UNIX server, a PC desktop, and a plug-in for a laptop, all connected through a dedicated Category 6 line. Images are projected on a 68” by 91” screen. Other space renovations included a remodeled Learning Center, a new Testing Center, additional faculty and graduate teaching assistant offices, and a study room for students.



MICROBIOLOGY

Across the country, hospital laboratories need more than three times as many employees as are being trained in the field. The Department of Microbiology, with support from department head Tim Ford and clinical instructor Barbara Hudson, obtained over \$860,000 from the state of Montana to establish a new Clinical Laboratory Scientist Training program at MSU that will help meet this critical healthcare need. In the new program, the only one in Montana, students will study basic sciences at MSU, the



University of Montana, or MSU-Billings for their first three years. During the summer after their third year, they will receive clinical training in a student lab at MSU before spending two more semesters at clinical laboratories throughout the state. At the end of the fourth year, students graduate and are

ready to take the professional licensing exam. Hudson, the program director, is currently hiring experts in the major areas of clinical diagnostic testing to teach up to 15 students each summer.

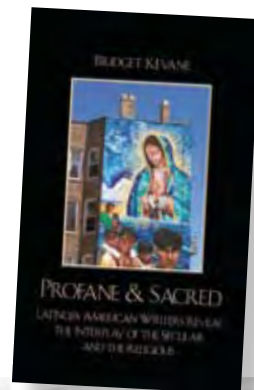
Cholera infects 100,000 people annually, so when Dr. Rita Colwell told an audience at the September Café Scientifique that she convinced Bangladeshi women to use folded sari cloth from old dresses as a micro-filter to prevent disease, listeners were impressed. Colwell's sari solution cut cholera incidents in half among the Bangladesh villages along the Ganges River. Colwell, the first female director of the National Science Foundation from 1998 to 2004, was the keynote speaker at the INBRE-COBRE Conference on Infectious Disease and Environmental Health. Colwell currently chairs Canon U.S. Life Sciences, Inc. and serves as Distinguished University Professor at both the University of Maryland at College Park and Johns Hopkins University Bloomberg School of Public Health. Colwell's continued research has found a link between warming global temperatures and cholera, and has created a modeling system that forecasts where and when outbreaks will occur. "The bad news," according to Colwell, "is that infectious disease will be on the rise due to global warming."



Photo Courtesy of Steven Hunts

MODERN LANGUAGES & LITERATURES

Profane & Sacred: Latino/a American Writers Reveal the Interplay of the Secular and the Religious (Rowman & Littlefield, 2007), a new book by Professor and department chair Bridget Kevane, takes an original look at religious experience in contemporary Latino/a fiction. Drawing from such well-known authors as Julia Alvarez, Oscar Hijuelos, and Helena María Viramontes, Kevane explores how recent Latino/a novels provide extended reflections on the problem of the politics of faith, exposing both the incompatibilities of religious practices and social justice and also devising new forms of politically interventionist faith. Kevane notes that just as culture, language, and history has shaped Latino/a identity, so too has religion. Kevane, who grew up in Puerto Rico, is also the author of *Latino Literature in America* (2003) and co-editor of *Latina Self-Portraits: Interviews with Contemporary Women Writers* (2000).



Azouz Begag, novelist, essayist, screenwriter, sociologist, and former French Minister for Equal Opportunities in France, spent a week on the MSU campus at the end of October. Chris Pinet, professor of French, coordinated his visit. Born to Algerian immigrants in France, Begag's childhood in a shantytown suburb of Lyon was the subject of his first novel, *Le Gone du Chaâba* (Shantytown Kid) (1986) and he is the author of several more books, most recently *Ethnicity and Equality: France in the Balance*. Begag, who speaks with authority and clarity on the complexities of immigration, race, and ethnic relations in France, gave a public lecture titled "Fighting Racism in France" and moderated a free screening of the film based on his autobiographical novel. Also during his fully-scheduled visit, he spoke with students in political science, sociology, and French literature courses, met with a group of Native American students, and spent time with the College of Letters and Science's Advisory Council discussing minority education.



PHYSICS

Professor Jiong Qiu received the Karen Harvey Award for solar physicists who have made significant contributions early in their career.

This is the second time in five years that an MSU scientist has won this major award. Qiu's solar research focuses on two areas. In one, she analyzes measurements taken from the ground and space to see how magnetic activities on the sun relate to activities in space. In the other, she has played a major role in figuring out how to measure the brightness of the dark side of the moon.



MSU News

Called "earth shine," that brightness is actually sunlight reflected from the earth. Knowing how much light is reflected relates to changes in global climate. Qiu came to MSU in 2005 after earning her doctoral degree in China and working seven years at Big Bear Solar Observatory in California and New Jersey Institute of Technology.

MSU physicists who search for black holes and super novas are now part of an international group devoted to gravitational waves.

The Montana Gravitational Wave Astronomy Group, led by astrophysicist Neil Cornish, was accepted as the 42nd member of the LIGO Scientific Collaboration, which involves approximately 500 scientists and five gravitational wave observatories. MSU's membership lets Cornish's group and other scientists around campus use data collected by the observatories. Gravitational waves are created when objects collide in space. Using gravitational waves to explore the universe is like a sighted person suddenly gaining hearing, Cornish said. "Right now, we are deaf to the universe," Cornish said. "Those gravitational wave detectors will be our ears."

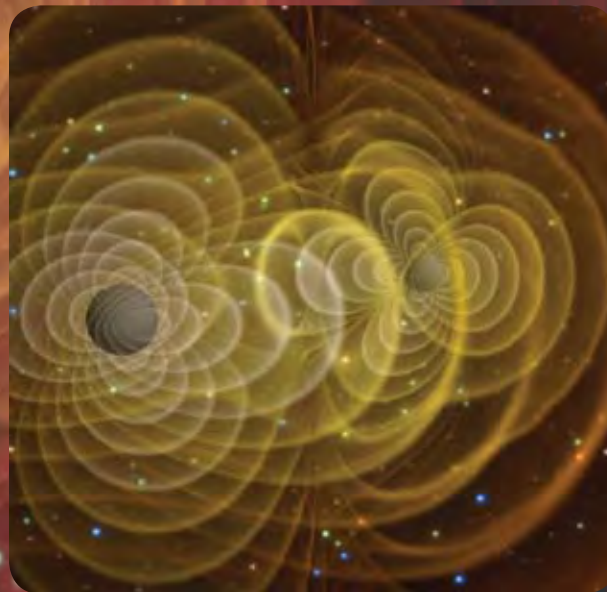


Photo:

Three Dimensional simulation of merging black holes.

Large background photo:

The intense burst of gravitational waves at the moment of merger of two black holes.

POLITICAL SCIENCE



Professor Jerry Calvert retired after more than thirty years of teaching and research at MSU.

Calvert received his Ph.D. from Washington State University and came to MSU in 1973, joining what was then the Department of History, Government and Philosophy. Calvert, who served as head of the Department of Political Science for fourteen years, received numerous research grants to investigate voting behavior and elections, served on the editorial board of the *Western Political Science Quarterly*,

wrote many articles for the top political science journals, and mentored most of the practicing lawyers in the state of Montana. His book, *The Gibraltar: Labor and Socialism in Butte, Montana, 1895-1920*, is still considered the best source of Butte's labor history. Due to his expertise on American national government, legislative process and policy, electoral behavior, political parties and campaigns, Jerry was the go-to expert for the *Washington Post*, *LA Times*, the *Denver Post*, and "60 Minutes" when they reported on the Montana political scene. In Calvert's honor, the Department of Political Science created a new award: the Jerry W. Calvert Award for Excellence in Political Science. The award will go to a senior who shows an interest in a career as a political scientist, political activist, or political journalist.

Professor Sara Rushing will join the Department of Political Science in January.

Rushing, who received her M.A. and Ph.D. from UC Berkeley, has focused her research on the ideas of hope and the future, specifically in the "New West." Her doctoral thesis, titled "Future Framers: Feminism, Hope, and Utopia," asked the question, "Is there a single 'boomtown experience' in the New West, or does it vary between communities?" Rushing is also co-editor



of *Histories of Postmodernism* (Routledge, 2007), which reexamines the development of postmodernism. Rushing will teach several courses in political theory, media and politics, and the occasional course on American institutions.



NATIVE AMERICAN STUDIES



MSU News

Two new faculty members joined the Department of Native American Studies this past fall. Professor Lawrence (Larry) Gross believes that the tradition of storytelling is crucial to the survival and revival of American Indian cultures. Some of his recent research explores the role of the trickster in Anishinaabe (Chippewa) life and religion; for instance, the ways in which the worldview inspired by the trickster is helping the Anishinaabe preserve their culture. Gross, who spent the last year researching the Anishinaabe in Bemidji, Minnesota, received his Ph.D. from Stanford University in 1998. An enrolled member of the Mississippi Band from the White Earth Nation in Minnesota, Gross has also written on the use of Native American ceremonies in helping Native American veterans cope with post-traumatic stress disorder and is interested in working with local groups, both religious and secular, to develop their own ceremonies to welcome veterans back and reintegrate them into society.

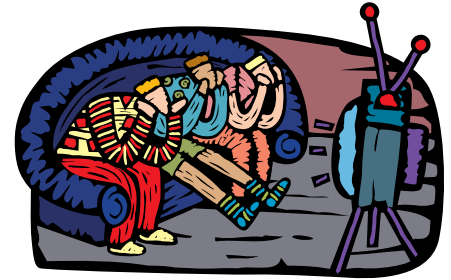
Professor Matt Herman, who brings expertise in Native American literature to the NAS faculty, received a master's degree in English from the University of Montana, and his Ph.D. in English from SUNY Stony Brook in New York, along with a graduate certificate in cultural studies. Most recently, he taught at Stone Child College on the Rocky Boy's Reservation in the Liberal Arts Program, where he received the Teacher of the Year Award in 2006. In 2003, he received a \$25,000 grant from the National Endowment for the Humanities to research the history of the Rocky Boy's Cree, and in 2005, he began serving as coordinator of Stone Child College's Rocky Boy's Tribal History Project. His research interests include contemporary Native American literature and politics, Chippewa-Cree history and culture, and contemporary American cultural studies. Herman is currently working on a book about aesthetics and politics in contemporary Native American writing.



MSU News

PSYCHOLOGY

The “epidemic of obesity” is spreading rapidly in the U.S., which has particularly serious implications for children. Professor Wesley Lynch, in collaboration with Lynn Paul from the Department of Health and Human Development, received a \$13,000 seed grant from MSU’s Clinical Research Development Program to develop a competitive grant application for the USDA’s National Research Initiative (NRI) program on Human Nutrition and Obesity. Lynch and Paul intend to use their combined experience to enhance and extend to children an obesity intervention program that has been successfully applied in preliminary studies with adults. The existing 9-week program called Steps to a New You, developed by faculty at the University of Wyoming, was delivered to more than 400 adult participants in three states. They anticipate that the challenges associated with translating this program for effective implementation with children will require the active participation of parents, teachers, and community leaders. Lynch, whose previous obesity research has focused on Native American adolescents, hopes the program will specifically target communities on or near state tribal lands.



Professor Jessi Smith (center) with students.

Eleven psychology students, both undergraduates and graduate students, attended the annual Rocky Mountain Psychological Association Conference in Denver, Colorado in April 2007.

Accompanied by professors Mike Babcock and Jessi Smith, nine students presented papers (talks or poster presentations), and the other two were co-authors on presented papers. Graduate student Katie Coombs, who is now pursuing her Ph.D at the University of Arizona, won an award for her presentation. Most of the students were members of Psi Chi, the National Honor Society in Psychology, of which Professor Smith is the faculty advisor of the MSU chapter. Travel to the conference was funded by L&S Research Enhancement Awards, which are partly supported by donations from psychology alumni.

SOCIOLOGY & ANTHROPOLOGY

Tomomi Yamaguchi joined the Department of Sociology and Anthropology in fall 2007. Yamaguchi received her M.A. and Ph.D. from the University of Michigan. A cultural anthropologist and expert on contemporary Japanese society, Yamaguchi teaches courses on popular culture, gender, and Japanese society, as well as general anthropology courses. Her research focuses on the dynamics of feminism and its responses in post-World War II Japan. From 2004-2007, Yamaguchi was a Post-Doctoral Scholar at the Center for East Asian Studies at the University of Chicago. While there, she conducted archival and field work in Japan, with a focus on grass-roots right-wing organizations and religious groups. She also organized a national screening tour for a documentary, “Thirty Years of Sisterhood,” bringing screenings and panel discussions to eleven universities and colleges across the U.S. The Department of Sociology and Anthropology received a Staff Expansion grant from the Japan Foundation to support Yamaguchi and to enhance the new Japan Studies program at MSU.



Professor Scott Myers recently published an article titled “Religious Homogamy and Marital Quality” in the *Journal of Marriage and Family*. To address historical and generational trends, Myers used data collected between 1980 and 1997 from over 3,000 respondents in both the parental and offspring generations. He found that the traditionally strong relationship between religious homogamy (marriage between spouses who share the same religious beliefs) and marital quality weakened significantly between 1980 and 1997. For both generations, the link was weaker partly because of the increasing influence of gender, work, and family issues. Additionally, for the younger generation mostly, waning perceptions of religious authority further weakened the religion-marital quality connection. Even so, religiously homogamous couples still report higher marital quality. Myers, who teaches Sociology of the Family among other courses, is currently researching issues that relate to religion and birth intentions in American families since 1980.





NEW SCHOLARSHIP FOR NATIVE AMERICAN GRADUATE STUDENTS

The Dennis and Phyllis Washington Foundation established a new scholarship at Montana State University to promote achievement by American Indian graduate students.

The \$10,000 award will go annually to a graduate student at MSU who is a Montana resident and also a member of a Montana Indian tribe.

A foundation official said he hopes the Dennis R. Washington Native American Graduate Fellowship will help students meet the needs of Montana's native communities. "The fellowships have the potential to produce immeasurable returns for the student and society as a whole," said Mike Halligan, executive director of the Dennis and Phyllis Washington Foundation.

According to Wayne Stein, a professor in MSU's Department of Native American Studies, Indian graduate students often face financial challenges, and fellowships such as the one funded by the Washington Foundation make a huge difference. "The money (our students) get from scholarships is often the difference in them staying or leaving the university," Stein added.

FACULTY FELLOWSHIP ESTABLISHED TO SUPPORT CREATIVE WRITING

The new Reta K. Haynes Faculty Fellowship, established through the generosity of the Harold K. and Reta Haynes Family Foundation of San Rafael, CA, will provide support for creative writing in the Department of English at Montana State University.

Expected to provide approximately \$10,000 annually, the endowment will be used to support English department faculty members in their creative writing endeavors. Mrs. Haynes studied creative writing when she was an undergraduate student at Texas Christian University.

Harold Haynes, who graduated from Texas A&M University with a degree in civil engineering, began his career as an engineer with Standard Oil Co. of California (SOCAL), now Chevron. He became the company's president in 1969, and then its chairman and CEO. He retired in 1981. The Haynes, who have a home in Bozeman, raised three daughters and have six grandchildren. Mr. Haynes currently serves on the Entrepreneurship Advisory Network of MSU's College of Business (COB), and has previously established both faculty and student development awards for the COB.

THE END



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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The College, like the University, operates on a fiscal-year calendar. Gifts listed in the Annual Giving section were received between July 1, 2006 and June 30, 2007. If you believe we have made an error, please contact the L&S development office so that we may recognize you appropriately and accurately in future publications (406)994-2092.

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