2-17-2006

Washington University Record, February 17, 2006

Follow this and additional works at: http://digitalcommons.wustl.edu/record

Recommended Citation
http://digitalcommons.wustl.edu/record/1063

This Article is brought to you for free and open access by the Washington University Publications at Digital Commons@Becker. It has been accepted for inclusion in Washington University Record by an authorized administrator of Digital Commons@Becker. For more information, please contact engeszer@wustl.edu.
Scientists find receptor protein that synchronizes fruit fly’s internal clock

**By Michael C. Purdy**

Scientists have identified a receptor protein that helps the fruit fly know when to start and shut down its daily cycle, a step that should help them learn more about internal clocks in higher organisms such as humans.

School of Medicine neuroscientists identified a receptor for pigment-dispersing factor (PDF) protein, which scientists previously had recognized as a molecule that helps keep different internal “clocks” synchronized. “Daily rhythms regulated by biological clocks shape our lives in important ways, affecting a wide range of functions including sleep, body temperature, cognitive ability, mood and sensitivity to drugs,” said Paul Taghert, Ph.D., professor of neurobiology. “Because these timekeeping processes have been highly conserved through evolution, what we learn from flies and other organisms often helps us better understand the same systems in higher organisms.”

For example, studies of fruit flies have already helped scientists identify a human gene for advanced phase sleep syndrome, a human disorder that puts sufferers to sleep at what is considered an early bedtime and promotes their waking at 3 a.m. or 4 a.m.

Lead author Taghert and his group was one of three to independently report identification of the PDF receptor in a recent issue of *Nature*. Clock cells contain a handful of proteins that interact with each other night.

Through their connections with other neurons and other types of tissues, clock cells regularly trigger or suppress certain physiological processes during the course of a day. The cycle naturally repeats itself every 24 hours. But using the higher-quality product also lends itself to a few more issues — mainly that Superpave can only be paved in higher temperatures. The product is in higher demand after a cold winter and condensation is being used, for example, on the repaving of Interstate 55, which stopped in the late fall and will resume in the spring. Another issue with Superpave is that it is only produced at night, said Metro. "The Missouri Department of Transportation and the St. Louis County generally require that surfacing and lane closures on major arterial roads and interstates can only be done at night," said Metro.

Rando Korotev, Ph.D., research associate professor of earth and planetary sciences in Arts & Sciences.

Korotev is a geochemist whose specialty is analyzing the chemistry of moon rocks, whether they have been gathered from the Apollo missions or collected as meteorites from Antarctica, north Africa or other areas of the world. In recent years, he's become the go-to guy for anybody researching meteorite or professional meteorite collector — who thinks he or she might have discovered a lunar meteorite. This is largely because of a Web site (geo compromised/ resources/moon_meteorites) Korotev started about 15 years ago, intending for it to serve his colleagues and the interested public.

The site deals in great detail with lunar meteorites, and it is as good an educational resource on the topic to be found anywhere. Due to very intelligent search engines and an aggressive (though little-known) profession of meteorite dealers and hobbyists — a lunar meteorite retails from $1,000-$40,000 a gram — Korotev's site began drawing questions from the public about the veracity of their findings.

Some people make appointments to see him and his WUSTL geologist colleagues, but the vast majority e-mailed pictures of their findings to get their answers. While he didn't keep count of all the contacts he received in the

Popular Web site sheds light on meteorites

**By Tony Fitzpatrick**

There are two meteor craters on one of the most well-known areas in the world. According to a Web site created by a meteorite enthusiast, these two craters are the only one of their kind on earth. The site, called Meteorite net, is designed to help shape the four-year under-graduate academic careers of students with a deep interest in meteorites.

The students were under the guidance of Ray mond E. Arvidson, Ph.D., the James S. McDonnell Professor of the Pathfinder Capstone Experience, a research-intensive field study conducted during the senior year as a set of coordinated research projects. The students were under the guidance of Ray mond E. Arvidson, Ph.D., the James S. McDonnell Distinguished University Professor and chair of the Department of Earth and Planetary Sciences in Arts & Sciences. They also worked with Thomas C. Stein, computer systems manager in earth and planetary sciences, two NASA scientists from Houston's John son Space Center and three Spanish scientists from the Center for Astrobiology in Madrid to understand the chemistry and mineralogy of the river.

The river runs red above the tidal zone because of the acid-sulfate dominated — and thus very acidic - waters. This unusual water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide de posits. The effects are magnified by the extensive water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide de posits. The effects are magnified by the extensive ground water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide deposits. The effects are magnified by the extensive

**Red River**

analyze Mars-tike minerals

**By Tony Fitzpatrick**

Red River is a famous Howard Hawks Western featuring a great cast of characters including one other than the Duke himself, and quite a refulled experience.

The work conducted along the Rio Tinto was part of the Pathfinder Capstone Experience, a research-intensive field study conducted during the senior year as a set of coordinated research projects. The students were under the guidance of Ray mond E. Arvidson, Ph.D., the James S. McDonnell Distinguished University Professor and chair of the Department of Earth and Planetary Sciences in Arts & Sciences. They also worked with Thomas C. Stein, computer systems manager in earth and planetary sciences, two NASA scientists from Houston's John son Space Center and three Spanish scientists from the Center for Astrobiology in Madrid to understand the chemistry and mineralogy of the river.

The river runs red above the tidal zone because of the acid-sulfate dominated — and thus very acidic - waters. This unusual water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide de posits. The effects are magnified by the extensive water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide deposits. The effects are magnified by the extensive ground water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide deposits. The effects are magnified by the extensive water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide deposits. The effects are magnified by the extensive ground water system is a consequence of ground water emerging to the surface after percolating through ancient sea floor iron sulfide deposits. The effects are magnified by the extensive
The Olin School of Business has hung in the hallways, The Olin School of Business program consultant and one of style. “It’s not your typical portrait. Olin School portraits feature faculty distinctiveness under their image. The entire layout drew people to portraits for their faculty in distinctive ways on several levels. Broderick thought they would get to know the person they wanted to draw. They knew they were going to get into this portrait. MacDonald, Ph.D., senior associate dean and a Rhodes Scholar. His photograph shows him standing slightly sideways, hands disappearing into his jacket and the slightest smile on his face. "We got this very striking, very stark picture of him because of how focused he was and he has very good bone structure," Broderick said. "It really captured a very individual look." Students have commented that they didn’t know who Chan is, but he looks like a very interesting person," said Glenn MacDonald, Ph.D., senior associate dean and the John M. Olin Distinguished Professor of Economics and Management. "Typically, their next thought is, 'What does he teach?'" MacDonald was the instigator for having a display for professors and their research, but he didn’t want anything generic. He wanted something that would jump out at anyone who walked into Simon Hall something that captured the school’s character.”

“Typically, it’s a highly research institution," MacDonald said. "I think of us as very imaginative, innovative and deep. "If we continue to invest in this artwork and expand its presence, just imagine what it could have on prospective student employers and alumni. They might walk into the school and say what a difference it’s making in our culture and the way we celebrate our faculty.”

During the school year, except school holidays, The school wanted a way to record the Olin community news. They knew they were going to get anyone who walked into Simon Hall.
Clifford, M.D., thor, David B.

"We found that both the patients who took efavirenz and those who didn't had a similar improvement in performance that resulted from better suppression of HIV. Use of efavirenz was not associated with any decline in brain function."

David B. Clifford

Heart failure linked to altered communication channels

By GWEN ERICKSON

"It seems that connexin45 has the ability to form hybrid pores or gap junctions, and that reduces the coupling between cells," Yamada said. "Abnormality in signal transmission may map conditions for a re-entrant circuit in ventricular tissue, which could be related to signal that stimulates the heart muscle contraction loops back instead of moving across the heart. This can cause abnormal heartbeats, or arrhythmias." While these findings are proof of concept, the researchers hope to track the progression of the diseases. They are planning to conduct further research to confirm their findings. Future studies in Yamada's laboratory will use voltage-sensitive dyes to map electrical activity, enabling the researchers to precisely alter currents of electrical signals in the hearts of transgenic mice that have excess connexin45.

Service award nominations sought

The School of Medicine is seeking nominations for its this Year's Distinguished Service Award, the highest honor awarded to a medical staff member. The award, which includes a $1,000 prize, recognizes a full-time medical school employee with at least three years of continuous service, who has shown a commitment to exceeding his or her responsibilities, a positive working and learning environment, and improves the community.


Garber to explore Shakespeare's impact on modern culture

By NAZARE GUNASENA

Scholar and cultural critic Marjorie Garber will present the Helen Clinton Moore Lecture at 4 p.m., Feb. 23 in Edison Theatre. Her talk, "Bartholomew Fair: Shakespeare in the Marketplace," examines the interaction between commerce and the work of Shakespeare.

Garber is the Elizabeth Hardwick Professor of English at Harvard University and directs the Department of Visual and Environmental Studies and the Center for the Humanities. She chairs the Department of Visual and Environmental Studies and the Interdisciplinary Project in the Arts, All Sciences.

The talk is free and open to the public. For more information, call 935-4620 or go online to ansleyadmin.wustl.edu.

Lectures

Friday, Feb. 17


3:30-5:30 p.m. David Smith Astronomical Meeting. "Prep for Life — the Center for Education Learning Center." Tamas Gal, front desk, Dept. 623, Anheuser-Busch Hall.

Monday, Feb. 20


5:30 p.m. School of Law "Access to Justice" Lecture Series. "Lawyers and Labor: The Role of Law in the 1960s," Robert F. Jenkins, PhD. 805, Anheuser-Busch Hall.

Wednesday, Feb. 22


Thursday, Feb. 23

7:30 a.m.-4:55 p.m. Surgery CME Course. "Anatomic and Functional Repair of the Rectum." (860) 362-2031. For more information, call 362-7676 or go online to ansleyadmin.wustl.edu.


10 a.m. Pediatric Grand Rounds. "Electrocardiographic Findings in Children with Congenital Heart Disease." Anna K. Goergen, MD. 2.70A, Medical Center East.

Conferences

March 3-4, 2005. Second Annual Conference on Angiogenesis. For more information, call 935-7868 or go online to ansleyadmin.wustl.edu.

Events

PADD to present Shakespeare's Much Ado About Nothing

By LANA OPPEN

7 p.m. Japanese Film Series. In celebration of Black Artists' Group. (Wednesdays at 7 p.m.) 202. 935-7988.


Lectures

Friday, Feb. 17


3:30-5:30 p.m. David Smith Astronomical Meeting. "Prep for Life — the Center for Education Learning Center." Tamas Gal, front desk, Dept. 623, Anheuser-Busch Hall.

Monday, Feb. 20


5:30 p.m. School of Law "Access to Justice" Lecture Series. "Lawyers and Labor: The Role of Law in the 1960s," Robert F. Jenkins, PhD. 805, Anheuser-Busch Hall.

Wednesday, Feb. 22


Conferences

March 3-4, 2005. Second Annual Conference on Angiogenesis. For more information, call 935-7868 or go online to ansleyadmin.wustl.edu.
Men's hoops scores 100 in back-to-back wins

The men's basketball team (13-7, 7-4 UAA) won two key conference home games to move into a second-place tie in the UC Athletic Association standings. The Bears defeated Case Western Reserve, 78-66, on Feb. 11 at the Field House. Sophomore C. J. Breeden finished with a career-high 22 points on 7-of-11 shooting. Senior Ben Stone added 20 points and eight assists, while sophomore Troy Ruths netted 10 of his 18 points on a career-high 3-for-4 shooting.

On Feb. 12, Washington U. rallied for a 102-100 double overtime win over Emory University on Senior Day. The Bears, who had a 9-10-9, 6-6-5 record in regulation, trailed, 100-99, with 1.3 seconds left in regulation before senior midfielder Tyler Nading stole the ball and drove in for a no-look lay-in to send the game to overtime.

Both teams took three of five individual titles. While Nading finished with 13 points apiece before adding two more in overtime, senior Brennan Bonner added 19 points on 6-of-8 shooting, while sophomore Troy Ruths netted 18 points and eight rebounds, while senior Matthew Dwyer chipped in 14 points and six rebounds.

One Bears freshman Tyler Hading, born in action earlier this year, came up with a clutch play in the final moments of regulation in both overtime periods to give the Bears the win.

Women's hoops team wins two league games

The No. 3 women's basketball team (20-2, 10-1 UAA) picked up its eighth victory in first place in the conference race. After edging Wheaton, 65-63, in the 2006 UAA Women's Basketball Tournament semifinals on Feb. 8, Wheaton finished the season 19-13, 9-3 in league play.

Senior Rachel Davis scored 22 points on 11-of-17 shooting to lead all scorers on both sides, as the 5-foot 11-inch forward finished with 13 points apiece before adding two more in overtime, senior Brennan Bonner added 19 points on 6-of-8 shooting, while sophomore Troy Ruths netted 18 points and eight rebounds, while senior Matthew Dwyer chipped in 14 points and six rebounds.

One Bears freshman Tyler Hading, born in action earlier this year, came up with a clutch play in the final moments of regulation in both overtime periods to give the Bears the win.

Both teams took three of five individual titles. While Nading finished with 13 points apiece before adding two more in overtime, senior Brennan Bonner added 19 points on 6-of-8 shooting, while sophomore Troy Ruths netted 18 points and eight rebounds, while senior Matthew Dwyer chipped in 14 points and six rebounds.
We found the fly PDF receptor responded both to calcitonin, which we hadn't previously linked to circadian function, and to PACAP, a mammalian neuropeptide already recognized as a part of the circadian system.

Paul Taghert

The Taghert group's new findings suggest that the PDF receptor is closely related to mammalian receptors for calcitonin and CGRP (calcitonin gene-related protein), a well-known molecule whose precise function has been difficult to determine, which may play a similar role in mammalian circadian systems. "We found the fly PDF receptor responded both to calcitonin, which we hadn't previously linked to circadian function, and to PACAP, a mammalian neuropeptide already recognized as a part of the circadian system," Paul Taghert said. "This suggests that the receptor systems probably evolved from a common ancestor and that what we learn from the fly may be helpful in understanding mammalian nervous systems, which are more closely related to mammalian ones, except that Martian meteorites are never rich in feldspar, one of the region's minerals. Also, the meteorite designation 'your sample is not a meteorite' because...'.

Korotev said lunar rocks are valid for research, but a few minor roadblocks might arise. "Right now, we are working on confirming space objects. For instance, if we have a meteorite sample, we can determine this with a quick lab test. Meteorites are never rich in feldspar, even with a quick lab test. Martian meteorites share some of the same features as lunar ones, except that Martian meteorites are never rich in feldspar, like most lunar meteorites."

Korotev also formed on Mars Rio Tinto, though high in chromium, though high in chromium, though high in chromium, though high in chromium.

"We deployed stereographic imaging systems, a topographic resource problem, a reflectance spectrometer, and an emission spectrometer," Arvidson said of the Rio Tinto experiments. "We characterized the topography, mineralogy, and water chemistry for the martian shear zone and the periphery of the river and its banks and we are currently working with NASA and Spanish scientists to understand how the systems evolve over time, guiding how future systems are able to thrive in this very harsh environment."

"This is also of interest to us because the mineral or environmental fieldwork and examain research topics from environmental sustainability per-

"In the fruit fly brain, PDF is a neuropeptide that orign-antly coated that forms on the object in the beginning of the object in the beginning. Working with the short-lived fruit fly, a classic model for circadia-" 

"When they found one that in-

"I've heard this over and over again, 'Lunar meteorites are not real meteorites' because...'.

"I've gotten from people who don't accept the easy explanation."

"The truth is, we get westbound Parkway into the South 40 continues, aided in part by a mild winter. This is phase 4b of the plan, in which both Koenig and Liggett hous-" 

"In the interim, work continues along the Parkway. The Pathfinder students have also traveled to Hawaii from Page 1.

Clocks

Taghert's lab identifies the clock cells in fruit fly brains and traces their connections to other cells and tissues in hopes of better understanding how they affect circadian rhythms, such as the morning and evening activity peaks normally observed in fruit flies.

"We look at where the branch-" 

"The chains of cells that respond to the rhythmic behaviors of flies, so that they can make the appropriate response. When they found one that in-" 

"The first gene associated with circadian rhythms. Humans have three genes analogous to Period, one of which is mutated in a critical region in patients with advanced phase sleep.

Beat the clock

PDF is a neuropeptide that orign-antly coated that forms on the object in the beginning. Working with the short-lived fruit fly, a classic model for circadia-" 

"Calendar relative in humans could inherit Highway 40 construction traffic from Page 1.

Parkway

A challenge at the Skirvin developers are trying to redesign the intersection that the barriers preventing worthwhile traffic from making a left onto the Parkway, or eastbound Highway 40, would have to be removed before the station access road is made. Then, the plans forming the bridge over the railroad can begin and work can continue.

"Handing over that intersec-" 

"We've had some late design issues to work through before we get westbound Parkway into Clayton completely opens," Farrell said. "Because you get past Pendergast, the next exit to the Parkway is Shaw Park Drive.

"Now, I like to build Web sites and I like photography, so I came up with a Web site that could explain both verbally and visually that 'your sample is not a me-" 

"W"
Olin School tabs Bouffides as M.B.A. assistant dean

By Shila Neuman

E ven Bouffides recognizes a good opportunity when he sees it. Last week, during a vacation in Puerto Vallarta, Mexico, with 10 admissions professionals from around the country, Bouffides learned about the Olin School of Business' search for an assistant dean and director of M.B.A. admissions and financial aid from Stephanie Bartelt, assistant director of M.B.A. admissions at the Olin School.

Bouffides, 46, had spent the past eight years at the University of Southern California's business school, where he was the admission director for the school's executive and part-time M.B.A. programs.

"I had an idea of what USC was all about, but I don't have a family, so there's not much tying me down and keeping me from moving around the country," Bouffides said. "It was almost a no-brainer. I had wanted to get back to working in full-time M.B.A. programs, so I perceived this to be an excellent career opportunity." Bouffides said he was ready to experience a new school business environment, and the Olin School fits the bill.

In just the first few weeks, his input was solicited on several issues. He was surprised by how eager the school's Asso. for enrollment management was to get everyone involved.

Bouffides says he's ready to dig into his job. He said he's especially looking forward to winning over some prospective students who were turned off by the competition about the school's financial aid staff. "I want to be able to direct competition," he said. "There are ways I can help." Bouffides said the school's top executive, M.B.A. programs dean Robert Greer, "has a very active job schedule. His is a life of its own, but his devotion to his favorite athletic teams may get him into trouble." Housen spent a few days in St. Louis last year, and he's an avid USC Trojans fan, and he followed the USC Trojans into the championship game.

Bouffides said his take-up of the school's search for a new assistant dean was a rare occurrence, but he had the chance to do it on a trip to Africa. With a master's degree in filmmaking and screen writing among his seven degrees, he also spends a good deal of his free time playing music.

"I do aspire to make a living as a music producer," Bouffides said. "But until that happens, I'll keep my day job."
Fighting the good fight

Paul Goodfellow works to identify the genetic changes that lead to cancer

Paul Goodfellow, Ph.D. (right), and Israel Zighelboim, clinical fellow in OB/GYN oncology, evaluate gels containing DNA from a cancer patient.

WASHINGTON UNIVERSITY IN ST. LOUIS

Feb. 17, 2006

Paul J. Goodfellow, Ph.D., in a professional war with cancer. The professor of genetics, surgery, and of obstetrics and gynecology brings an arsenal of knowledge and passion to his research battle with the formidable adversary.

"Disease is competition. In the case of cancer, it's like Darwinian evolution: The best genetic material wins," Goodfellow says. "With cancer, it's a cat-and-mouse game. The cancer cell needs to change its genetic makeup to outwit the host."

Using what he calls "clinical specimens," Goodfellow looks at inherited factors contributing to cancer risk. Through his research in the Cancer Genetics Program at the Siteman Cancer Center, Goodfellow works to identify the genetic changes that lead to cancer, particularly endometrial, or uterine, cancer. By better understanding the genetic causes of the disease, he hopes to halt its progression through screening, early detection and intervention.

Endometrial cancer is the most common cancer of the female reproductive organs, according to the American Cancer Society. There were an estimated 40,880 new cases diagnosed in the United States last year, making it the fourth most common cancer in women. Although the exact cause of the disease in 2000, Goodfellow says there are more survivors of endometrial cancers than of any other gynecologic cancers.

Goodfellow's work is a manifestation of his dedication to health.

"I believe in the importance of translating research findings to improved patient care," he says. David G. Mutch, M.D., the Ira C. and Judith Gall Professor of Obstetrics and Gynecology, collaborates with Goodfellow on endometrial cancer research. Mutch says Goodfellow is aptly named.

"He's a great friend and collaborator," Mutch says. "Paul is the ultimate team player. Paul spends more time helping others than helping himself. He is dedicated to teaching and helping others."

"It's in the genes"

Born near Kingston, Ontario, Goodfellow traces his interest in biology and botany to his childhood — he spent much of his youth in a rural Canadian area that included a one-room schoolhouse, and frequently he'd walk through fields to get there. Those walks sparked observation of and appreciation for nature.

After earning a undergraduate degree in biology from Queens University in Ontario in 1978, he came to the United States for a master degree in plant biology at the University of Tennessee. His early academic work involved agricultural genetics. He considered studying the effect of tobacco on different strains of tobacco. But the purpose of the research by tobacco companies is to be able to plant the most resistant strain of tobacco, something Goodfellow felt was "dirty." That led to his work in human genetics and a Ph.D. in biology/pediatrics from Queens University in 1985, a time when genetic research was blossoming.

The path was a good one for Goodfellow, whose excitement about his research is evident as he talks about his work. "It is the most fun," Goodfellow says.

"Genes are the root cause of cancer, and genetic research holds the promise of getting to what's going wrong," he says. Specifically, he strives to understand how DNA replication fails in the cancer cell and what that means in terms of genetic change. DNA replication is a complex process. Each cell has 3 billion base pairs of DNA that must be copied with every cell division. "With a genome of 3 billion base pairs, a lot can go wrong," Goodfellow says. "Along the way, there can be mistakes."

Under normal circumstances, each base pair match is checked, and any mismatches are repaired by enzymes. But if cells lose their ability to repair DNA mismatches, that can lead to genetic mutations. Such genetic damage can cause cells to grow where they shouldn't, resulting in cancerous tumors.

"Genetic damage occurs over time," Goodfellow says. "It's wear-and-tear on genetic material that leads to cancer. We live a long time, and as we age the machine begins to break down. Once you lose genetic repair in long-lived cells that normally regulate reproductive issues, you are on a slippery slope."

The ability to acquire lots of genetic damage allows a tumor cell to compete in a body.

Goodfellow's research involves comparing healthy cells with cancerous tumors. Using a library of more than 700 tumors, Goodfellow sometimes compares them to cancer-free cells from 750 healthy subjects older than 65 (his goal for the project is 2,000 healthy men and women). As the tumors the mutations, comparison with healthy cells could be the key to understanding cancer and how the damage occurred.

Those findings will help identify the inherited factors that lead to the shut down of DNA repair, allowing women and their families to learn who is at risk and seek earlier cancer screening.

Our children are both of the Canadian lifestyle," Goodfellow says. Along with medical research collaboration, Goodfellow collaborates with his wife on art projects, including collages on display in the Farrell Learning and Teaching Center. Representations of his research include a library of DNA gel analyses and colorized images of actual tumors.

Goodfellow, who joined the School of Medicine in 1992, said he was an honor to receive that as a recognition of the advancement of women. "St. Louis has been a wonderful place academically and for our family," says the Clayton resident. Previously, he had spent four years as an assistant professor in the Department of Medical Genetics at the University of British Columbia and three years as the Imperial Cancer Research Fund in London as a postdoctoral fellow and visiting researcher.

Through the years, he has co-authored 126 journal articles, 13 reviews and book chapters and 92 abstracts. He also has received numerous awards, including the 2003 Washington University School of Medicine Academic Women's Network Mentor Award. "It was an honor to receive that as a recognition of women," Mutch says. "It is a critical thinker with a great curiosity and attention to detail that together lead to fantastic research." Goodfellow's research has contributed to understanding the molecular bases of smoking and intervention.

To translate research findings to improved patient care, Goodfellow says, "is to replace ourselves with better people who will make a difference."