



DR. BARBARA HORWITZ, A MENTOR AND A LEADER



Barbara Horwitz

Barbara Horwitz, Interim Provost and Executive Vice Chancellor (EVC) at UC Davis, is a nationally-recognized teacher, researcher, scientist and administrator. Dr. Horwitz is the primary investigator (PI) for a \$1.9 million National Institute for General Medical Sciences Initiative for Maximizing Student Diversity (IMSD) grant, which supports initiatives in undergraduate biology instruction such as the Biology Undergraduate Scholars Program (BUSP) and also supports Ph.D. students in biomedically-related Ph.D. graduate programs through the NIH-IMSD Fellows Program. In addition to leading these programs, Horwitz's role as a campus leader has continued to grow as she has moved from being Vice Provost of Academic Personnel (2001-07) to Interim Provost and EVC, a post recently vacated by Dr. Virginia Hinshaw, who became Chancellor of the University of Hawaii at Manoa on July 1.

"I like what I do," says Horwitz, "and I think it's important to contribute to the vitality of this university."

"The BUSP program is incredibly successful in providing a series of enhancement activities to undergraduates," says Horwitz, "and through the program we increase the number of biological sciences graduates with good grade point averages that allow them to be competitive when applying to graduate or professional school."

Horwitz concurrently holds faculty positions as Distinguished Professor of Physiology in the College of Biological Sciences' Section of Neurobiology, Physiology, & Behavior and in the Department of Physiology and Membrane Biology in the School of Medicine. She has bachelor's and master's degrees in zoology from the University of Florida, and a doctorate in physiology from Emory University.

Through the IMSD Fellows Program, Horwitz mentors a group of five to seven first year Ph.D. students weekly for one year. She provides them with a venue designed to help them strengthen their professional skills – including writing and oral presentation skills - by providing group and individual projects and facilitating peer feedback. Program participants are chosen from underrepresented minority students nominated by eleven eligible graduate groups on campus. As IMSD Fellows, the students meet the requirements of

(continued on page 7)

COLLEGE OF BIOLOGICAL SCIENCES HOLDS 2ND ANNUAL COMMENCEMENT

The College of Biological Sciences (CBS) held its second annual commencement ceremony on June 15, 2007. The CBS awarded some 330 Bachelor of Science, and 15 Bachelor of Arts degrees. As the CBS transitions to awarding its own undergraduate degrees, an additional 330 B.S. degrees for the college were awarded by the College of Agricultural and Environmental Sciences. The College of Letters and Sciences awarded 430 B.S., 20 B.A., and five Bachelor of Arts and Science degrees for the new CBS. In total, 1,115 students graduated with degrees in the life sciences.

(continued on page 7)



Dezirae PeBenito, a graduate in plant biology, shows off her plant-laden cap as she waits in line for commencement to begin. (Marcia Wienert)

News about Biological Sciences at UC Davis is a periodic publication of the College of Biological Sciences to inform alumni and parents of current students about the programs and activities at the College.

We welcome contributions from both graduate and undergraduate alumni. Please send us your news at <http://biosci.ucdavis.edu/alumni/postcards>.

CONTENTS

With Distinction	2
From the Dean	3
Science Notebook	4 & 5
In the News	5
Annual Fund	5
Transitions	6
Kudos	6
In Print	7
Baskin Award	8

WITH DISTINCTION

KOWALCZYKOWSKI AND LANGLEY ELECTED TO PRESTIGIOUS ACADEMIES



Stephen Kowalczykowski

Two professors at UC Davis have been elected to prestigious professional academies. **Stephen C. Kowalczykowski**, who studies the molecular machines that copy and repair DNA, has been elected to the National Academy of Sciences. **Charles H. “Chuck” Langley**, an expert on evolution and population genetics, has been elected to the American Academy of Arts and Sciences.

Kowalczykowski is a distinguished professor in the sections of Microbiology and of Molecular and Cellular Biology in the College of Biological Sciences. Langley is a distinguished professor in the Section of Evolution and Ecology and the Center for Population Biology, also in the College of Biological Sciences.

“We feel quite honored that the two UC Davis faculty recognized this year by these prestigious academies are distinguished professors of the College of Biological Sciences,” said Ken Burtis, dean of the college.

“I’m certainly honored to be chosen by such an impressive group of scientists,” Kowalczykowski said.

Errors in copying or translating DNA can lead to cancer and birth defects. Working with Ron Baskin, professor emeritus of molecular cell biology, Kowalczykowski’s lab developed techniques to study this process at the level of single molecules, providing new insights into fundamental biology.

Langley said he was “honored and happy” to be elected to the American Academy of Arts and Sciences, noting that many people had contributed to his work over the years. “I think it reflects an appreciation of the science,” he said.

Working mostly with the *Drosophila* fly, Langley seeks to understand the forces that shape genetic variation in natural populations, or how and why individuals are different to each other.

Founded in 1780, the American Academy of Arts and Sciences includes about 4,000 active members and 600 foreign associates drawn from a wide range of fields. Among the eclectic list of 227 new fellows and associates elected this year are former Vice President Al Gore; retired U.S. Supreme Court Justice Sandra Day O’Connor; and Eric Schmidt, president and CEO of Google Inc. Twelve members of the UC Davis faculty, including Langley, are current members of the Academy.

“We feel quite honored that the two UC Davis faculty recognized this year by these prestigious academies are distinguished professors of the College of Biological Sciences,” said Ken Burtis

The National Academy of Sciences was established in 1863 with a congressional charter to advise the nation on scientific matters. This year, the academy elected 72 new members, bringing the current active membership to 2,025. Including Kowalczykowski, a total of 34 UC Davis faculty are now members of the academy or its sibling organizations, the Institute of Medicine and the National Academy of Engineering.

- UC Davis News Service contributed this article



Charles Langley (S.R. Langley)

BAUTISTA RECOGNIZED FOR EXCELLENT TEACHING

“It was tough being an undergrad,” recalls **Erwin Bautista**, sitting back at his desk. An unexpected dichotomy of objects adorn the walls of his office: lab notebooks, binders, “*Human Physiology*,” “*The Cell*” – all frighteningly familiar to the average UC Davis undergrad; then a couple of bicycles, a skateboard, and plenty of photos capturing a life outside of academia.

This journalist will admit, this was not the Erwin Bautista he was expecting to interview after sitting in on a systemic physiology lecture-turned-fireworks display about the stomach the week before. Organized and ready to broaden the mental horizons of his students with an array of information, relevant clinical examples, video clips, and plenty of whiteboard space it is no wonder he was chosen to receive an **Academic Federation 2007 Excellence in Teaching Award** this spring.

After earning his doctorate in neurobiology, physiology and behavior from UC Davis in 2001, Bautista chose to teach rather than pursue a career in research. “The cool thing about teaching is that your results are immediately tangible,” Bautista said. “It gives me a big thrill to be a part of my students’ learning process. I love that aspect of my job.”

Bautista has taught a wide variety of courses in neurobiology, physiology, and behavior ranging from 500-student lectures to sophisticated lab courses, but the toughest, he says, are the lower division non-major courses he himself recently developed which include Human Aging and The Biology of Drug Addiction and Abuse. “I like talking about things from a historical perspective so that my students can connect to the material,” he says.

Bautista dispels the common notion among undergraduates that teaching comes second. “I’ve always felt that a person should contribute to a community,” he says, although he recognizes that students are a special kind of transient community in Davis. The permanent impact of these graduates can be seen in the success of the UC Davis Annual Fund, which points to a record number of donations by recently graduated alumni. “I knew I could make a big impact by teaching,” he said. His colleagues would agree, calling Bautista “virtually indispensable to the teaching program.” - Enosh Baker



Erwin Bautista (left) demonstrating laboratory techniques to freshman Ken Umeh. (Daniels)

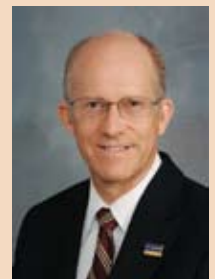
FROM THE DEAN

Where biology begins ...

To discover and explain the fundamental principles of life – these are the missions of the research programs in the College of Biological Sciences. The products of research most easily appreciated by the general public are practical advances, such as new medical techniques, new ways of understanding the environment, and new technologies to deal with issues like global environmental change. However, such “practical” advances are critically dependent on understanding the basic principles that govern life at the molecular, cellular and organismal levels; an understanding that is only achieved through “basic” research of the type carried out in the college. It is in such research that biology truly **begins**, leading to the college motto that serves as the title of this column.

Understanding the mind – how it works, why it sometimes fails – **begins** with knowing how neurons develop and organize themselves at the molecular and cellular levels, and how the physical structures of the brain relate to sensory perception and behavior. Understanding cancer **begins** with knowing how the genome is damaged to initiate the loss of control over cell division that is a hallmark of this disease, and knowing why the DNA repair mechanisms that ordinarily serve to protect the integrity of the genome fail in this disease. Increasing crop yields and developing plants that can adapt well to new environments often **begins** with understanding seed and plant development and the molecular mechanisms by which plants sense and respond to their surroundings. We can not **begin** to understand the biology of either land or sea without a fundamental knowledge of microbial communities that comprise most of the biomass on earth. These are but a few examples of the basic research pursued in the college that creates a foundation for the practical benefits of research that society enjoys.

Finally, our ground-breaking new basic biology core curriculum, developed through the inspiration and hard work of faculty across the college and offered for the first time next year, is itself designed around the concept of **beginnings**. It starts with a course that builds on fundamental chemical and physical principles to explain the origins of life, and builds on this foundation through two more courses that explain the mechanics of evolution and examine the amazing diversity of life forms that have come into being through this process. In both research and teaching, the CBS is where biology **begins**.



Ken Burtis

Dean, College of Biological Sciences

HARADA RECEIVES UNDERGRADUATE TEACHING AWARD

John Harada, professor of plant biology, has been awarded the 2007 Academic Senates Distinguished Undergraduate Teaching Award for his innovative and inspiring teaching style.

Harada arrived at UC Davis in 1984 as an assistant professor of botany, and he became a professor of plant biology in 1994. In addition to teaching, Harada runs a laboratory that studies the molecular and cellular biology of embryogenesis in higher plants. His laboratory has identified genes that can cause some plants to produce embryos from vegetative tissue, without sexual reproduction, implicating these genes as key regulators of embryo development. These genes may eventually be used to radically change breeding practices in agriculture.

Harada “is a truly inspirational teacher who can excite and motivate his students, even those in his classes who have a self-proclaimed dislike of plants!” wrote his primary nominators, Professor William Lucas, section chair, in a letter also signed by Professor Anne Britt, vice chair for instruction. They described Harada’s “dedication and passion” for teaching PLB 113, a course that he developed to focus on hypothesis testing rather than rote memorization. The nominators also cited his collaboration with Professor Venkatesan Sundaresan to revamp PLB 112, “largely abandoning the traditional textbooks” because they lagged behind advances in the field. Instead, the professors relied on lecture notes derived from current research literature.

- UC Davis News Service contributed to this article.



John Harada, professor of plant biology (center), focuses his research on the study of seed formation or “embryogenesis.”

WHEELIS CHOSEN FOR CBS TEACHING AWARD



Mark Wheelis. (Daniels)

The College of Biological Sciences (CBS) recognized **Mark Wheelis**, senior lecturer in microbiology, with the CBS 2007 Faculty Teaching Award.

Wheelis joined the UC Davis faculty in 1970 after completing his Ph.D. in bacteriology at UC Berkeley. An expert on biological and chemical weapons and the history of biological warfare, Wheelis has acted as a consultant to governments and as a technical expert on biological weapons control. He has contributed extensively to curriculum development, most recently be devising a new course on Chemical and Biological Weapons (MIC 100).

For the last 15 years, Dr. Wheelis has served as the master advisor for students in microbiology. “In addition to teaching, Dr. Wheelis has also been a wonderful academic master advisor,” says Matthew Siri, a 2007 graduate in microbiology and a nominator for this award.

Wheelis has been consistently rated highly by students throughout his career. Dr. Wheelis is the well-known co-author of the book “The Cartoon Guide to Genetics”, and his latest writing project is a general microbiology textbook set for release in fall 2008.



Marisa Ramos

Dr. Marisa Ramos, academic coordinator for the HHMI-funded Biology Undergraduate Scholars Program (BUSP) in the College of Biological Sciences, has left to pursue an opportunity as a Research Scientist Epidemiologist/Biostatistician in the new California Department of Public Health's Refugee Health Section.

Dr. Ramos, who completed her Ph.D. in nutritional biology at UC Davis, joined the CBS in July of 2006. Marisa's role as academic coordinator included teaching three classes per quarter: a freshman research skills seminar, a sophomore basic laboratory seminar, and a junior/senior honors research workshop. During the summer, Dr. Ramos taught a lab skills course to train BUSP students to work in campus labs.

"I have enjoyed teaching undergraduates about biology, research, and laboratory skills," says Dr. Ramos, "I will miss working with students."

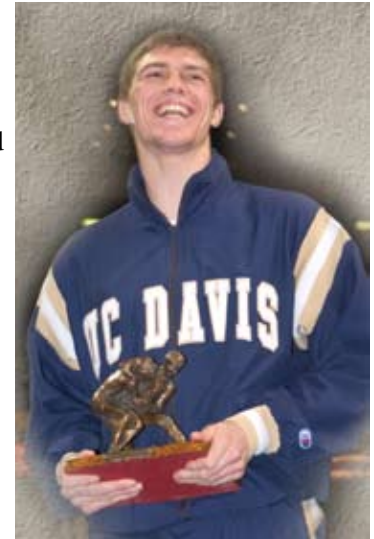
Recruitment is underway for a new BUSP academic coordinator.

CBS SENIOR WINS FIRST NCAA DIVISION 1 CHAMPIONSHIP

Derek Moore, a graduate in biochemistry and molecular biology, became the first athlete from UC Davis to win a NCAA Division 1 Championship this spring. Moore took the winning title at the NCAA wrestling tournament in March, held in Detroit, Michigan. In June, Moore also earned another landmark victory: he was the first of his family to graduate from college. This summer, he will begin four years of Army service in October as part of his Reserve Officers Training Corps (ROTC) scholarship commitment.

Next spring Moore will try out for the Army wrestling team, which will be his official Army job if he makes the team. Future plans for Moore include medical or biological sciences graduate school depending on where his military career takes him.

One thing for sure is that I want to keep wrestling in my life forever, either coaching or competing," says Moore. "Passing my knowledge on to future wrestlers would be very fulfilling."



Derek Moore (Randy Martin)

CBS GRADUATE STUDENTS WIN TEACHING AWARD

Two graduate students from the College of Biological Sciences, **Linda Barter** and **Robin Altman**, were recognized with 2007 Outstanding Graduate Student Teaching Awards. Both students are pursuing a Ph.D. in molecular, cellular and integrative physiology.

Linda Barter received the award for teaching a core course about cardiovascular and respiratory systems to first year students in the School of Veterinary Medicine. She also taught undergraduates last year in NPB 10, Human Physiology.



Linda Barter and Robin Altman

"The thing I like most about teaching," says Barter, "is helping students develop an understanding of a subject rather than just memorize facts."

Robin Altman was recognized for teaching undergraduates in NPB 111, Advanced Systemic Physiology Laboratory during fall and spring quarters last academic year.

"If you are lucky enough to teach something that you are passionate about, as I have been," says Altman, "then it is incredibly fun to share that enthusiasm with the students."

LUCAS ELECTED AMERICAN SOCIETY OF PLANT BIOLOGISTS FELLOW

Distinguished professor and chair of plant biology **William Lucas**, whose research recently discovered the protein that signals flowering in growing plants, has been elected as the **2007 Fellow of the American Society of Plant Biologists (ASPB)**, a professional society devoted to the advancement of the plant sciences.

2007 is the award's inaugural year. Fellows of the ASPB are elected annually in recognition of distinguished and long-term contributions to plant biology and service to the Society by current members in areas that include research, education, mentoring, outreach, and professional and public service.

ROST SELECTED FOR BOTANICAL SOCIETY TEACHING AWARD

Tom Rost, professor emeritus in plant biology, has received the **2007 Charles Edwin Bessy Teaching Award** from the Botanical Society of America for the outstanding contributions he has made to botanical instruction and leadership. The award, which is the highest honor bestowed for teaching by the Botanical Society, is a high point in Rost's remarkable career, during which he was also awarded the UC Davis Academic Senate Distinguished Teaching Award in 1997.

Horwitz...Continued from page 1

their graduate group as well as those of the one year IMSD Program.

"The success of the IMSD Fellows not only reflects the IMSD program but also the commitment of the faculty with whom these students interact in their research rotations, their graduate group courses, and the laboratory in which they ultimately decide to do their dissertation research" says Horwitz. She has a new group of students starting the program on August 1st.

In her role as Interim Executive Vice Chancellor, Dr. Horwitz shares the overall coordination of campus administration with Chancellor Larry Vanderhoef, with emphasis on day-to-day operations, supervision of budget preparation, allocation of funds, policy development, and physical planning. As Provost, she serves as the chief academic officer for the campus.

Horwitz's roots with campus biological sciences are strong. She joined UC Davis in 1968 as an assistant research physiologist and moved through the ranks to become full professor in 1978. She chaired the Department of Animal Physiology from 1991 to 1993 and the Section of Neurobiology, Physiology and Behavior from 1993 to 1998. Her own research program centers currently on

the neurochemical regulation of pathways associated with metabolic regulation and the metabolic physiology of aging and obesity. Horwitz is the author of ~170 research papers, has had continual funding from NSF/NIH since 1968, and received a rare NIH MERIT award in 1992.

Horwitz's leadership extends throughout the UC Davis campus and beyond. She is a fellow of AAAS, and has served as president of the American Physiological Society, president of the Society for Experimental Biology and Medicine, and a member of UC Davis' Academic Planning Council. Horwitz's excellence has been recognized by many awards, including the University of California Presidential Award for Excellence in Fostering Undergraduate Research (1995), the UC Davis Prize for Teaching & Scholarly Achievement (1991), and the UC Davis Academic Senate Distinguished Teaching Award (1982). Most recently, she received the 2007 Bodil M. Schmidt-Nielsen Distinguished Mentor and Scientist Award for outstanding contributions to physiological research and training students in physiology.

"I like what I do," says Horwitz, "and I think it's important to contribute to the vitality of this university."

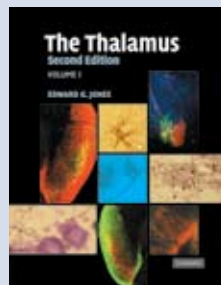
Read more about the NIH-IMSD program: <http://biosci.ucdavis.edu/grad/nih-imsd/>

IN PRINT

Martina Newell-McGloughlin, director of the UC Biotechnology Research and Education Program (BREP) and Edward Re, professor at Solano College, "*The Evolution of Biotechnology: From Natufians to Nanotechnology*" (Springer, 1st Edition.) This book traces the evolution of biotechnology in the broadest sense from prehistoric organismal manipulation by our first settled ancestors through to speculation about future directions for the technology as it increasingly intersects with other high technologies such as IT and Nanotech.



Edward G. Jones, director of the Center for Neuroscience and distinguished professor of psychiatry at UC Davis, "*The Thalamus 2 Volume Set*" (Cambridge University Press, 2nd Edition.) The Thalamus is one of the most



cited publications in neuroscience. Jones has completely rewritten his landmark volume, incorporating the numerous developments in research and understanding of the mammalian thalamus.

Commencement...Continued from page 1

Ashley Heers, a graduate in both evolution, ecology and biodiversity, and in geology, was this year's University Medal recipient. Ashley graduated with a 4.00 grade point average, in which she earned 43 A+ grades. Outside the classroom, she served as a research assistant, completed an honors thesis, and worked as a coach for the Science Olympiad. She will pursue a Ph.D. in Avian Biology at the University of Montana–Missoula this fall.

Gregory Ho, a graduate in biochemistry & molecular biology, received the Chancellor's Award for Excellence in Undergraduate Research. Gregory worked as a research assistant for three years in the Tantillo lab, where he used computational quantum chemistry to study complicated organic molecules.

Erin Lynn Richman, a graduate in biological sciences with an emphasis in neurobiology, physiology, and behavior, was recognized as the first recipient of the College of Biological Sciences Medal. Erin maintained a 4.0 grade point average in her major and was placed on the Dean's Honor List every quarter. Erin will pursue a Master's degree in Epidemiology at Harvard University's School of Public Health this fall.

Matthew Siri, a graduate in microbiology, won the V. Glenn Winslow Award. Matthew excelled academically and has made numerous contributions as a peer advisor, a resident advisor, and president of the American Society of Microbiology club. Matthew volunteered for three years at the UC Davis Medical Center's Child Life center and he was awarded the Vice Chancellor's Merit Award in 2006.

Two students received the College of Biological Sciences Undergraduate Student of the Year Award: **Jennifer Yuhas**, a graduate in neurobiology, physiology, and behavior, and **Eisha Zaid**, a graduate in genetics.



Jim Doyle (left), Ashley Heers (center), Emily Prieto (right) and Ms. Heers' parents at the CBS Citation for Excellence reception. (Marcia Wienert)

Go to <http://biosci.ucdavis.edu/alumni/> for more commencement info & an Eisha Zaid profile!

SCIENCE NOTEBOOK

TED THE TITAN ARUM BREAKS CAMPUS RECORDS

The May 7, 2007 bloom of Ted the Titan Arum at the UC Davis Botanical Conservatory was extremely successful in teaching the world about plants. With over 29,000 visits to the live webcam with audio, viewers all over the world listened, and learned about the fascinating plant also known as *Amorphophallus titanum*, ultimately setting the record for the most popular UC Davis webcast. Over 4,000 visitors also stopped in the Botanical Conservatory to experience the plant in person.

"It makes your eyes water, and it makes you feel like throwing up," said Tim Metcalf, director of the UC Davis Botanical Conservatory.

James R. Symon M.D., a medical doctor with a passion for all things Aroid (members of the family Araceae), donated Ted so that visitors could share in his appreciation for large and interesting plants, and with the intention that Propagules would be disseminated to botanical gardens everywhere. Brought to UC Davis in 1995 by his friend, Bill Strickland '79 A.B. botany, Ted first flowered in 2003, and then again on loan to the Conservatory of Flowers in San Francisco in 2005.

The Botanical Conservatory followed Dr. Symon's vision by making sure that anyone who wanted to could see the webcast, therefore setting the number of connections to "unlimited" in the quest to share this joy with the world. When the smell finally dissipated, the cost of sharing the story with the world came into view: over \$15,000!

"You could say we have sticker shock," says Ernesto Sandoval, curator, "We didn't realize we would be so successful in reaching out to the world to experience the bloom!"

The UC Davis Botanical Conservatory's limited budget supports its role to the University and public communities as an instructive facility, research resource and genetic diversity preserve. **Donations of \$50, \$100, \$200 or more would be greatly appreciated to help fill the sizeable dent this educational event has made on the budget.**



Barry Rice, a Nature Conservancy invasive species specialist on campus, reacts to Ted the Titan's stench. (Ernesto Sandoval)

Donations can be sent as checks to:

**UC Regents
c/o Botanical Conservatory,
1002 Life Sciences, Plant Biology,
Davis, CA 95616.**

If you have any questions please email Ernesto Sandoval, Curator, jesandoval@ucdavis.edu or Tim Metcalf, Director, hmmetcalf@ucdavis.edu or you can call the Conservatory at 530-752-0569.

A Quicktime movie of Ted's blooming and a beautiful photographic timeline are available online at <http://greenhouse.ucdavis.edu/conservatory/>.

SPECIALIST FLIES LOSING SCENT GENES

Imagine that the cast of Gilligan's Island never made it off, doomed to eat nothing but fruit for the remainder of their lives. Half a million years later, how would their genes have evolved differently than the rest of ours? Not even the Professor (clearly bogged down by coconuts, and PCR not having been invented for another two decades) seemed to ponder this question. A graduate student in population biology at UC Davis, **Carolyn McBride** is doing just that, but the star of her show is a fruit fly.

Drosophila sechellia is endemic to the Seychelles Archipelago, isolated by the Indian Ocean for several hundred kilometers. Presumably, *D. sechellia* diverged from its sister species *D. simulans* half a million years ago after being blown to the islands from the east coast of Africa. Interestingly, this split is characterized by a remarkable

change in diet – while *D. simulans* feeds on a wide variety of plants, *D. sechellia* feeds exclusively on the fruit of *Morinda citrifolia*, the scent of which is repulsive and toxic to other flies.

Using the publicly available genome sequences of *D. simulans* and *D. sechellia*, McBride set out to decipher the evolution of host specialization. Particular attention was paid to the suite of genes responsible for the flies' smell and taste, given their likely importance in identifying potential host plants.

The results of McBride's research, published in the *Proceedings of the National Academy of Sciences*, show that certain genes, once shared by both *D. simulans* and *D. sechellia*, are being lost at a rate 10 times faster in the latter species. Subsequent studies on a closely-related, but independently evolved West African specialist (*D. erecta*), support McBride's

findings.

"It is possible that the two specialists are losing bitter receptor genes because they are no longer exposed to, and therefore no longer need to recognize as many harmful compounds as do generalists," she explains.

Changes in these receptors may be the key to understanding host adaptation in insects, the implications of which will be felt throughout the scientific community.

"These genes may provide good candidates for manipulation when trying to find ways to prevent agricultural pests and disease-vectors from finding their preferred hosts," says McBride. Her work was supported by grants from the National Science Foundation and the National Institutes of Health.

- Enosh Baker

ENCYCLOPEDIA OF DNA PUBLISHED

A consortium of U.S. and international researchers, including a group at the University of California, Davis, Genome Center, has completed a detailed study of a piece of the human genome. The project yielded some surprises as well as developing technology for exploring the rest of the genome.

A team led by **Peggy Farnham**, professor of pharmacology and associate director of the **UC Davis Genome Center**, looked for sites where factors bind on to DNA to turn genes on or off. These “transcription factors” play a key role in deciding what cells do and when, and they play an important role in stem cell development and cancer.

In a group paper published in the June 14 issue of *Nature* and in 28 companion papers published in the June issue of *Genome Research*, the ENCYClopedia Of DNA Elements (ENCODE) consortium, which is organized by the National Human Genome Research Institute (NHGRI), part of the National Institutes of Health (NIH), reported results of its exhaustive, four-year effort to build a parts list of all biologically functional

elements in one percent of the human genome. The work was carried out by 35 groups from 80 organizations around the world.

One outcome of the study so far is that while some transcription factors attach to the DNA close to the gene they regulate, many others bind further away. “By looking across the genome, we can study these patterns,” Farnham said.

“If we want to know how a gene is turned on, we need to fill in the grid,” Farnham said. About 30 transcription factors have been looked at so far, but there are thought to be about 2,000 in the entire genome.

The three billion base pairs or “letters” of DNA in the human genome form the instruction manual needed to make the human body. Researchers still must learn how to read the manual, identify every part and understand how the parts work together to contribute to health and disease.

- Andy Fell of UC Davis News Service contributed this article

ANNUAL FUND DELIVERS 599 NEW DONORS

The College of Biological Sciences (CBS) worked with the UC Davis Annual Fund call center to reach out to nearly 10,000 biological sciences alumni during spring 2007. The campaign brought 599 new donors to the CBS, who together donated more than \$44,000 to be used for student scholarships, faculty research, innovative teaching, and other exciting programs. Annual Fund “unrestricted gifts” allow for flexibility in maintaining excellence in the life sciences at UC Davis; your individual donations have been welcomed with many thanks!

The callers at the Annual Fund are an amazing group of friendly and knowledgeable students. Aisha Shafqat has worked at the Annual Fund for two years, and during the CBS campaign she enrolled four new members in the recently-created Dean’s Circle!

“The biological sciences alumni are a fun group to call. They are so open and nice and they love to share stories about their families and lives,” said Aisha, “I’ve enjoyed talking to everyone and I’ve even heard a few tips about Ophthalmology school, which is what my brother wants to pursue after Davis.”

Thanks to all of our alumni who contributed to the college during the Annual Fund calling drive!



Aisha Shafqat, student caller at the Annual Fund

You can join the Dean’s Circle today by making an annual donation of \$1,000 or more to the College of Biological Sciences.

Unraveling Cell Division

A team of researchers, including the laboratory of UC Davis cell biology and biochemistry professor **Jonathan Scholey**, have identified the set of genes contributing to spindle assembly in the *Drosophila* fly. The study, among the first of its kind, was published this spring in the journal *Science*, offering a glimpse at the complicated cellular machinery behind cell division. Using computer-assisted full genome RNA interference screening, the team blocked all 14,425 fly genes, coming up with a 200-gene “hit list,” more than half of which were unexpected. Blocking these genes resulted in failure to produce a proper spindle, a commonly observed defect in human cancers.

Competing with the Wind

Puerto Rican anole lizards use head-bobs to communicate territorial boundaries between each other. In an environment with enough windblown vegetation, the lizards’ movements may become hard to distinguish against a visually noisy background. Published this winter in *Proceedings of the Royal Society of London, Series B*, UC Davis postgraduate researcher **Terry J. Ord** and colleagues found that by increasing the speed of a broadcast display, lizards enhance its conspicuousness to receivers. The faster the wind blows the surrounding vegetation, the faster the lizards bob their heads.



Terry Ord with *Anolis lineatopus*

Dehesh to Study Biofuels

Katayoon (Katy) Dehesh, professor of plant biology, was recently awarded a three year, \$943,433 Chevron research grant to study the conversion of cereals into oil crops. This research project begins in August 2007.

Dr. Dehesh is the principal investigator on this grant, working with professor Sten Stymne of the Swedish University of Agricultural Sciences in Sweden. Their aim is to increase the oil content of cereals through identification of the genetic switch between starch and oil biosynthesis in concert with prolonging the time of oil deposition during seed development. The results will support the conversion of high starch cereals, such as maize, into oil crops, leading to a substantial increase in the proportion of fossil oil that could be replaced by bio-based fuels.

COLLEGE EVENTS

Please check <http://biosci.ucdavis.edu/seminars/> or call 530-752-2358 for upcoming events.

COLLEGE OF BIOLOGICAL SCIENCES

UNDERGRADUATE MAJORS

Biochemistry and Molecular Biology
Biological Sciences
Cell Biology
Evolution, Ecology and Biodiversity
Exercise Biology
Genetics
Microbiology
Neurobiology, Physiology, and Behavior
Plant Biology

GRADUATE PROGRAMS

Animal Behavior
Biochemistry and Molecular Biology
Biophysics
Cell and Developmental Biology
Exercise Science
Genetics
Neuroscience
Physiology
Plant Biology
Population Biology

SECTIONS

Evolution and Ecology
Microbiology
Molecular and Cellular Biology
Neurobiology, Physiology, and Behavior
Plant Biology

UNIVERSITYWIDE AND CAMPUSWIDE PROGRAMS

UC Davis Biotechnology Program
Center for Neuroscience
Center for Population Biology
Genome Center
UC BREP

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FIRST ANNUAL RONALD AND LYDIA BASKIN RESEARCH AWARD

Edgar Ivan Sanchez, a graduate in biomedical engineering, was recognized at spring commencement for his extensive research with the first annual Ronald and Lydia Baskin Research Award. Sanchez will receive a unique glass laser-etched medallion and a cash award of \$1,000.

Sanchez excelled academically during his time as an undergraduate, earning a 3.915 grade point average. He has completed research projects at both UC Davis and UC Irvine over the past two years. In Dr. Angelique Louie's lab at UC Davis, Sanchez worked on developing new standard toxicity assays and assisted with Dr. Louie's ongoing research. At UC Irvine he worked on a project last summer to develop multiphoton microscopy for use in studying a form of brain cancer, and there he established a protocol to stain and image brain cancer cells in a three-dimensional matrix using advanced optical imaging techniques. These studies will contribute towards the development and understanding of optical methods to diagnose and treat brain cancers known as gliomas.

Edgar was awarded a Presidents Undergraduate Fellowship for research this past year, and he will enter the Ph.D. program in Biomedical Engineering at Massachusetts Institute of Technology (MIT) this fall.

Students from all UC Davis undergraduate colleges are eligible for the Baskin Research Award for research in the biological sciences. **Dr. Ronald J. Baskin**, professor emeritus of molecular and cellular biology, and his wife, Lydia, created an endowment in July 2006 to establish this prize recognizing excellence in undergraduate research. Dr. Baskin is still actively engaged in research using optical tweezers to study single molecules as they carry out biochemical reactions, and he was published most recently in the October 19, 2006 issue of *Nature* with Stephen Kowalczykowski.



Edgar Ivan Sanchez, Lydia Baskin, Ronald Baskin, and Dean Ken Burtis (Daniels)



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