

HHMI GRANT WILL HELP PREPARE STUDENTS **TO LEAD**

ith major support from the Howard Hughes Medical Institute, Lafayette will make its already strong biology program even more effective in preparing students to be leaders in science research and medicine.

A \$800,000 grant will enable Lafayette to expand the number of real-world research

experiences

for students and increase

the diversity of students who study science. The funding also will support faculty and curriculum development.

"We are very grateful to the Howard Hughes Medical Institute. This support will significantly strengthen Lafayette's ability to educate the next generation of researchers, educators, entrepreneurs, and leaders in biology and the life sciences," said President Daniel H. Weiss.

"HHMI is investing in [Lafayette and other schools that were awarded grants] because they have shown they are superb incubators of new ideas and models that might be replicated by other institutions to improve how science is taught in college," said Sean B. Carroll, HHMI's vice president of science education.

David J. Asai, the institute's director of precollege and undergraduate science education programs, said, "We are excited by this group of grantees because, together, we expect them to provide leadership in solving some of the important issues confronting science in the nation."

The College plans to found a summer research program for students after their first year, increase on-campus and off-campus research programs for upperlevel students, and provide additional opportunities for students to cultivate (GRANT continued on page 2...)

PROF. ANNA EDLUND MIXES RELIGION, ART, AND SCIENCE

few months ago, Anna Edlund opened her email account and received two pleasant surprises. First, an audience with the Dalai Lama was scheduled for June. Second, she had been awarded a Fulbright grant.

Edlund is among four American biology professors who taught Western science and biology to Buddhist monks in India as guests of the Dalai Lama. In teams of two, the professors taught classes of 50 monks and several nuns for six hours a day through an interpreter. Edlund and her teaching partner focused on disease, the immune system, and epidemiology.

Edlund's visit was organized by the Emory-Tibet Science Initiative, a partnership between Emory University and the Dalai Lama. After the biology professors departed, neuroscientists and physicists arrived to teach the same students.

Edlund then traveled to Stockholm. funded by a Fulbright grant, to study the art of a founding father of her field of pollen biology, Gunnar Erdtman (1897-1973), whose laboratory notes contain hundreds of drawings of pollen grains. For about three months, she worked at the Swedish Museum of Natural History, where Erdtman's



Anna Edlund, assistant professor of biology, and Belinda Sibanda '11 in the greenhouse of Kunkel Hall.



Anna Edlund (right center) with her class in India.

papers are housed, conducting interviews with Erdtman's students and colleagues.

Edlund is fascinated by scientific illustration and observational science. Her interest in Erdtman comes from his stylized drawings and the diagrammatic form, called a palynogram, that he devised to represent the most essential identifying features of a pollen grain. "He was like a caricaturist, catching the nature of each pollen grain in a few deft strokes," she says.

In her lab classes at Lafavette, Edlund requires students to make meticulous illustrations of what they observe in journals. She has invited a professional scientific illustrator to instruct her biology students in observation and basic drawing.

Edlund hopes to create a fuller picture of how art training and sensibility influenced Erdtman's science. After preparing an illustrated article on Erdtman's palynograms, his contributions to pollen science, and the historical and personal context in which he worked, Edlund hopes to share her findings in a public lecture at the museum and to organize a historical session at the International Palynological Congress.

In her Fulbright application, Edlund described Erdtman as a polymath, skilled in (EDLUND continued on page 3...)



Note: all email addresses are @lafayette.edu

FACULTY

Michael Butler Assistant Professor (610) 330-5762, butlermw

Laurie F. Caslake Associate Professor and Assistant Department Head (610) 330-5462, caslakel

James R. Dearworth Associate Professor and Chair of Neuroscience Program (610) 330-5466, dearworj

Anna Edlund Assistant Professor (610) 330-5465, edlunda

Robert Kurt

Associate Professor, Department Head, and Peter C.S. d'Aubermont M.D. '73 Director of the Health and Life Sciences Program (610) 330-5681, kurtr

Wayne S. Leibel Gideon R. Jr. and Alice L. Kreider Professor (610) 330-5460, leibelw

Manuel Ospina-Giraldo Assistant Professor (610) 330-5655, ospinam

Elaine R. Reynolds Associate Professor (610) 330-5654, reynolde

Megan Rothenberger '02 Assistant Professor (610) 330-5459, rothenbm

Nancy McCreary Waters Associate Professor (610) 330-5467, watersn

STAFF

L. Philip Auerbach Department Technician (610) 330-5468, auerbacl

John Drummond Laboratory Coordinator (610) 330-5912, drummonj

Paulette McKenna Department Secretary (610) 330-5456, mckennap

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FROM THE DEPARTMENT HEAD

The Biology Program had another wonderful year. We maintained the ability to teach and conduct research at a level of breadth and depth that I believe puts us at the top of small liberal arts colleges in the country. In addition to teaching 27 different courses last year, biology faculty supervised 48 different students in numerous research projects, many culminating in presentations at scientific conferences and peer-reviewed publications.

Under the leadership of Provost Wendy Hill and Prof. Laurie Caslake, the College submitted a HHMI proposal which, I am happy to report, was funded (see "HHMI Grant Will Help Prepare Students to Lead in Research and Medicine," page 1). The overarching objective for the project is to encourage persistence of undergraduate students-particularly underrepresented minority students-in the sciences through an apprentice-based, interdisciplinary research program in biology. For this purpose, 20 first-year students will be selected each year to participate in the Science Horizons Program, and each year five of these students will receive support for three summers of research. Moreover, one half of the courses offered in biology will incorporate interdisciplinary modules,

(...**CRANT** continued from page 1) their mentoring skills. A key feature will be expanded opportunities for students to work closely with accomplished alumni.

Wendy L. Hill, provost, dean of the faculty, and Rappolt Professor of Neuroscience, played a key role in developing the project. "These activities will increase research opportunities for students, with an emphasis on interdisciplinary projects. They will also improve students' confidence in their research abilities, increasing the likelihood that they will pursue careers in the life sciences, and provide them with leadership skills that will benefit them in the future," she said.

In addition, through a new faculty and peer mentoring program, the College will support students, especially those from underrepresented backgrounds (including first-generation, low-income, and racial/ ethnic minority students), in persisting in undergraduate studies and research. Lafayette



and a new capstone course will culminate our program.

We wish Prof. Charles Holliday well in his semiretirement (his research continues on and off campus), and welcome our newest faculty member, Prof. Mike Butler, who brings the exciting field of developmental plasticity to our teaching and research

program (see "Newest Member," page 5). We are sad to report that Paulette McKenna will retire at the end of this school year after 16 years of service to our department. At the same time, we are very happy that this will allow her to spend more time with her new granddaughter.

We look forward to contributing to the new Environmental Science and Environmental Studies majors and continuing our support of the Neuroscience and Biochemistry majors and the Health and Life Sciences and Biotechnology/ Bioengineering minors. We also look forward to working with faculty in other departments and programs to incorporate interdisciplinary components in our courses and to offer Lafayette students innovative research experiences that span disciplines.

Matte

has found that participation in research correlates positively with persistence in science, technology, engineering, and math disciplines.

The initiatives integrate key components of Lafayette's strategic plan for improving the environment for undergraduate education, including support for the life sciences and biology, development of a more robust institutional framework for interdisciplinary teaching and learning, increasing the faculty by 20 percent, and enhancing diversity and inclusiveness.

The funding started in September 2012 and will run for four years. The project director is **Robert A. Kurt**. An associate professor in the Department of Biology, Kurt was named the inaugural Peter C.S. d'Aubermont, M.D. '73 Director of the College's interdisciplinary health and life sciences program last year. **Chun Wai Liew**, associate professor of computer

(GRANT continued on page 3...)

PROF. ROBERT KURT: UNLOCKING THE MYSTERIES OF THE IMMUNE SYSTEM

S ome say ignorance is bliss. But for **Bob Kurt**, associate professor of biology, what is not known is a doorway to discovery, especially when unlocking the mysteries of the immune system and its effects on cancerous tumors.

"A student from a few years ago asked the simple question: Do tumor cells express toll-like receptors? These receptors are the immune system's first line of defense," he says. "The logic of this was a eureka moment."

Working with students, Kurt found that manipulating these receptors both inhibited and grew tumors. The latest grant will cover studies into how a signaling pathway channeled through this mechanism and another protein, Myd88, contributes to tumor growth.

Immunology drew Kurt's interest when he was a student because of the field's burgeoning, ever-changing core of knowledge.

"I wanted to understand how the immune system protects you. Although I did OK in classes, I didn't get it, and I really, *really* wanted to understand it," he says.

That understanding came in an unexpected way during his post-doc work when he was offered an opportunity to teach as an adjunct at the University of Portland.

"I realized when I was teaching that I came to understand immunology more," says Kurt. "As a teacher, you can't just memorize it—you have to understand it. I liked that."

The revelation set Kurt on a path toward the combination of teaching and basic science at the collegiate level rather than simply pursuing clinical studies. He believes the pairing allows for more nimble corrections to existing ideas when fellow scientists publish new information in the field.

Kurt believes that not all answers are found in a single discipline. As chair of the

(...**CRANT** continued from page 2) science, is the project's co-director, and **Laurie Caslake**, associate professor of biology, serves as assessment coordinator.

Lafayette's multidisciplinary approach to biology and the life sciences takes advantage of the College's mix of bachelor of arts and bachelor of science degree programs, especially those in engineering and science. More than one-quarter of Lafayette's faculty members (59 professors in 15 departments) engage in research related to the life sciences. Faculty members from several academic departments and interdisciplinary programs worked



interdisciplinary minor program in health and life sciences, he strives to bring knowledge from faculty and students in other programs to bear on pressing health problems. He and **Chun Wai Liew**, associate professor of computer science, teach the course Modeling-Based Approach to Biology, combining computer science with biology to model living systems, which may improve understanding of Kurt's cancer studies.

This interdisciplinary approach to learning further fuels Kurt's passion for educating undergrads, which is why he chose the more intimate program of Lafayette over the narrower focus of a larger university.

"Students here work with professors and get to do lab work. I believe students learn more because of this," he says. "They are often in charge of their very own research project."

He cites a recent study that he co-authored with **Kurt Yaeger '11** on nanoparticle vaccines for cancer, with help coming from the departments of chemistry and chemical and biomolecular engineering. All told, Kurt has co-authored 20 published articles with Lafayette students, a rarity in other undergraduate programs.

"Research takes students out of the textbook and shows them how the information in that textbook came to be known. Then they can go back to research articles and gain a new, greater perspective and can determine what an investigator did right or wrong," he explains. "Dissecting what is valid and what is not is important in cancer studies."

"Immunology is always changing," adds Kurt, who has been honored with the College's Carl R. and Ingeborg Beidleman Research Award and the Delta Upsilon Distinguished Mentoring and Teaching Award. "One of the most fun things about teaching it is asking students why something works this way—or why does this happen—and they will try to answer. But the truth is we just don't know yet." ■

together to plan and design the Hughesfunded initiatives, including biology, chemical and biomolecular engineering, chemistry, computer science, mathematics, mechanical engineering, neuroscience, and philosophy.

In this highly competitive grant process, 182 proposals were submitted by 187 schools, and only 43 awards (less than 25 percent) were made. One of the nation's largest philanthropies, HHMI, headquartered in Chevy Chase, Md., is a nonprofit medical research organization that plays a powerful role in advancing biomedical research and science education in the United States. (...EDLUND continued from page 1) both art and science, and wrote that through her study of him and her travels, she hopes to become more of a polymath herself. She feels at home at Lafayette, where the value of interdisciplinary coursework is emphasized.

"My charge as a professor at a small college is to go beyond lecturing," she says. "I am to model for my students a curious, interdisciplinary approach. The more I can draw connections, think up rich metaphors, and share anecdotes, the more my students will care about and remember their lessons in biology."

FACULTY AND STAFF UPDATE



PHIL AUERBACH, technician III, completed 35 years of service in September 2011. An outstanding, skilled individual, he performs many complex, technical jobs in an exceedingly competent fashion and with

unflappable good humor (amazing, given the department's demanding personalities!). The biology staff finds his service and contributions invaluable. We could never do it without him! His talents and contributions were recognized in 2012 when he was presented with the Lafayette College Distinguished Service Award. Congratulations, Phil!



LAURIE CASLAKE, associate professor, taught Molecular Genetics in the fall and Plagues, Progress, and Bioterrorism in the spring. She supervised four independent research students and three honors students.

One manuscript was published with a student as coauthor, and four students presented posters at the general meeting of American Society for Microbiology (ASM) in San Francisco. She served as academic adviser for 34 students and on the Honors Thesis Committee for four students. She also served on three College committees and presented "Polio Eradication: Is it Possible?" at Experience Lafayette. She was recently elected chair of ASM's Education Division.



JAMES DEARWORTH, associate

professor, taught Comparative Vertebrate Anatomy and Anatomy of Vision and supervised five research students and two honors students in the fall. In the spring, he

taught Neuroanatomy and supervised two research students and two honors students. Four students were coauthors on abstracts presented at the EXCEL Summer Poster Symposium and at the third annual Lehigh Valley Society for Neuroscience Undergraduate Research Conference. Dearworth finished his second year as Neuroscience Program chair and coordinated the LEARN (LafayettE Alumni Research Network) Program, including a visit by Peter Donovick '61 of the State University of New York at Binghamton. He served on search committees for the biology and chemistry departments, co-presented a brownbag on careers in the life sciences for junior biology majors, and hosted Mickey

Ariel of Saint Louis University School of Medicine speaking on "Illuminating the Brain's Control of Eye Movements."



JOHN DRUMMOND, general biology lab coordinator, taught eight sections of Biology 101 Laboratory in the fall and six sections of Biology 102 Laboratory in the spring. He supervised eight teaching

assistants (TAs) and eight teaching assistant assistants (TAAs) in the fall and six of each in the spring and served on an honors thesis committee. Drummond revamped an ecology field lab at Tobyhanna State Park, estimating the number of red-backed salamanders per half-acre. He conducted a Monarch Butterfly Day for 500 visitors at Hawk Mountain Sanctuary, Kempton, Pa., and was invited to speak at Hawk Mountain on monarch migration. He conducted an all-day monarch butterfly program for second-graders at Blue Mountain Elementary School East in Orwigsburg, Pa., chaired a session at the Lehigh Valley Ecology and Evolution Symposium, and attended the Monarch Biology and Conservation Meeting at the University of Minnesota.



ANNA EDLUND, assistant professor, taught Biology of Women (a First-Year Seminar) and Biological Pattern Formation in the fall and Developmental Biology in the spring. She mentored three

independent research students in the fall and eight in the spring. She is Principal Investigator on an NSF grant on pollen cell biology and serves on the steering committee for two separate NSF grants for Research Coordination Networks (RCNs). At the Mid-Atlantic Society for Developmental Biology Conference, she gave an invited research lecture and presented an abstract and poster with four research students. She presented research lectures at Swarthmore College and at the RCN 2011 Annual Meeting on Integrative Pollen Biology and a poster at the annual meeting of the American Society for Plant Biology in Minneapolis.



BERNIE FRIED, Kreider Professor Emeritus, continues to be an asset with his collegiality, productivity, and student mentoring. This year he published 12 manuscripts (seven with Lafayette

student coauthors). With Joseph Sherma,

Larkin Professor Emeritus of Chemistry, he co-edited a special issue of the *Journal of Liquid Chromatography & Related Technologies* on Thin Layer Chromatography. He was recently commissioned by Springer Publishing to do a "Monograph on Trematodes," coedited by Rafael Toledo, for publication late 2013.



CHARLES HOLLIDAY, professor emeritus, taught Human Physiology and Invertebrates and World Health in the fall and was academic adviser to 12 students. Following a leave in the spring, he conducted research

on the Lafayette population of cicada killer wasps in the summer. He and colleagues Joseph Coelho (Quincy University) and Jon Hastings (Northern Kentucky University) published two scientific papers on these wasps. Holliday belongs to the rival Entomological Society of America and American Entomological Society. In June he retired after 30 years of teaching (2296 students), doing research (mentored 130 student-semesters of research, mentored 21 honors students, published 51 papers/research notes/poster presentations), and grading a stack of blue-book short-essay exams eight meters tall at Lafayette since 1982. His new office/research space is in Pardee Hall.



ROBERT KURT, associate professor, taught Immunology in the fall and A Modeling-Based Approach to Biology and Infectious Diseases in the spring. He supervised seven independent research

students in the fall and six in the spring. Two manuscripts were published with students as coauthors, and two research students presented their work at the Pennsylvania Academy of Science meeting. Kurt presented student research results at the 99th Annual Meeting of the American Association of Immunologists in Boston, served as an academic adviser to 13 students, and was awarded a three-year renewal for his NIH grant with his research students. He serves as the Peter C.S. d'Aubermont, M.D. '73 Director of the Health and Life Sciences Program and chair of IACUC.



WAYNE LEIBEL, Kreider Professor, taught Evolutionary Biology both semesters and Evolutionary Genetics in the spring. He gave a presentation at one professional meeting last summer and published one article on cichlid fishes. He continued his work as associate editor/ technical editor of the *Journal of the American Cichlid Association*, as chair of the Guy D. Jordan Endowment Fund of the American Cichlid Association (which administers small grants for cichlid research for graduate and postdoctoral students), and as editor of *Cichlid News*.



SHYAMAL MAJUMDAR, Kreider Professor Emeritus, supervised an independent research student, coauthored a book chapter and two abstracts with

research students, and coedited

a book. He was an invited participant and speaker at the 13th Annual Meeting of Society of Science and Environment in Calcutta and Third International Conference on Ecotoxicology and Environmental Sciences in Goa. He chaired a scientific session at each conference and was chair of the latter's International Advisory Committee. He served on the editorial boards of the journals *In Vitro: Cellular and Developmental Biology* and *Advances in Pharmacology and Toxicology* (India). He is a Fellow of the American Association for the Advancement of Science.



PAULETTE MCKENNA,

department secretary for 16 years, supports and sustains the department in these and other valuable ways: She serves the department head in running the department,

assists other biology faculty, manages the building, coordinates the purchase of equipment and supplies, and handles faculty scientific grant expenditures. She also oversees the departmental budget, makes arrangements for faculty to attend scientific conferences, handles invited speaker arrangements, and compiles the extensive documentation for our Annual Report. Moreover, she facilitates course field trips, monitors student hiring and contract submissions, controls student payrolls, and issues key requests for students working in the building. Last, but not least, she directs prospective students to appropriate faculty members and gives tours for potential students and parents.

MANUEL OSPINA-GIRALDO, assistant professor, taught General Biology in the fall and Molecular Genetics in the spring. He supervised two independent research students each semester and supervised five EXCEL



scholars (all funded by external grants) in the summer. Most of the student research conducted this year was presented at the American Phytopathological Society and the Pennsylvania Academy of Science meetings

in Honolulu and Allentown, respectively, and three manuscripts were published. These presentations resulted in three published abstracts. He served on the College's Enrollment Planning Committee, Biotechnology and Bioengineering Advisory Committee, and Institutional Review Board. He also advised 30 students. With funding from his two federal grants, Ospina-Giraldo supported the travel of his summer EXCEL students to attend the Bioinformatics Workshop at Virginia Tech.



ELAINE REYNOLDS, associate professor, taught Neurobiology and Aging and Age-related Disease in the fall and spring. She supervised seven students in research projects. Last summer, she supervised a

Nalven Scholar, two students in a collaborative project with Lehigh Valley hospital, and two students in collaboration with Chun Wai Liew and Jeff Pfaffmann of the computer science department. Reynolds published a paper with Liew in BMC: Neural Systems and Circuits and coauthored two poster presentations at the Society of Neuroscience meeting in Washington, D.C., and one at the Drosophila Research Conference in Chicago. She served as a member of the Civility Project and Mellon Arts Advisory Committee and as a participant in the Teagle Foundation diversity group. She reviewed grants for the SOMAS program and NSERCC and serves as president of the organization Faculty for Undergraduate Neuroscience.

MEGAN ROTHENBERGER,



assistant professor, taught Conservation Biology and Environmental Issues in Aquatic Ecosystems in the fall and two sections of Biology 102 in the spring. She supervised

one honors student in biology and seven students in independent research projects. Two research students presented their work at the National Conference on Undergraduate Research in Ogden, Utah, and two others at the Pennsylvania Academy of Sciences meeting. An academic adviser to 13 students, Rothenberger served on honors thesis committees for students in the departments of art, chemical and biomolecular engineering, and geology and environmental geosciences. She served as a member of the Sustainability Committee, Environmental Science Minor Advisory Committee, Environmental Initiative Steering Committee, and Student Appeals Committee.



NANCY WATERS, associate professor, mentored a Nalven Fellow, EXCEL Scholar, and Mellon Fellow during her 2011-12 sabbatical. All completed poster presentations in a local venue. She completed

work on four posters coauthored by seven students. Results of research on monarch butterfly ecology including three students moved into preparation for submission. After withstanding an auto accident on College Hill she was able to participate in the Howard Hughes proposal initiative, Health Professions workshop, and a biology search. She brought two manuscripts with three student co-authors nearly to completion, compiled an eight-poem compendium of poetry, and established a blog to open Interim 2012. She also reviewed NSF graduate fellowship proposals and manuscripts and accepted appointments as the Faculty Health Professions Adviser and co-chair of the Health Professions Advisory Committee.

MEET OUR NEWEST MEMBER



MIKE BUTLER assistant professor, holds a Ph.D. from Arizona State University, M.S. from Boise State University, and B.A. from Bowdoin College. He has taught labs for introductory biology for

majors and non-majors, human physiology, and vertebrate zoology. He also co-designed and co-taught a graduate seminar, Scientific Teaching, exploring how to teach undergraduates most effectively. He will teach Human Physiology, Physiology of Extreme Animals, and General Biology. His research program will utilize field and laboratory techniques to explore animal behavior, animal coloration, and ecoimmunology, with a focus on birds. Elements of his research on mallard ducks and great-tailed grackles have been covered by *Science News, Discover Magazine*, BBC *Earth News*, Discovery Channel Canada, and other news outlets.

ALUMNI UPDATES



Thanks to those who keep us updated. We would love to know how you are, what you are up to, and ways you have used your biology knowledge in your careers or everyday life.

CHRIS SANGIOVANNI '95 is now VP of Operational Support and Compliance with Menzies Aviation, Los Angeles. He is moving through his career as a lab technician into environmental safety in the airline industry. Chris now oversees safety, security, quality assurance, and training programs for the Americas region. He also manages the DOT drug and alcohol programs and de-icing programs for Menzies Aviation.

DAN BILLS '97 (Harvard Dental School '01, University of Illinois-Chicago Orthodontics '04) was recently honored by selection to the Top 6 Dentists in New Jersey by the profession. For more information, visit http://njmonthly.com/ articles/topdoctors/smiling-faces.html.

REGINA LAMENDELLA '04 recently began as an assistant professor in the Department of Biology at Juniata College.

SARAH SMITH '07 obtained her M.A. and teaching certification at Immaculata University in 2011 and is a biology teacher at Germantown Academy, Fort Washington, Pa.

MICHAEL WERNER '07 recently began an M.D./Ph.D. program at the University of Pennsylvania.

LAUREN GEORGE '08 received her medical degree from Drexel University in June and is a resident in internal medicine at the University of Maryland.

JACKIE MARCHESE '09 left her position as an Environmental Analyst at CSC, Alexandria, Va., to enter the University of Delaware's graduate program in entomology and wildlife ecology.

BRIDGET HILBIG '10 passed her doctoral qualifying exams and is a candidate for a Ph.D. at the University of California, Riverside, where she is working on seagrass invasions and wetland conservation.

KAREN LESAGE '10 finished her training and "is now a real bonafide FBI Examiner," working in Quantico, Va. She is a physical scientist/forensic examiner in the Latent Print Operations Unit.

KATELYN SCOULAR '10 was accepted by a variety of schools, but Penn State was her favorite. She'll join the Ph.D. program in nutritional sciences there. Her adviser will be Dr. Shelly M. Nickols-Richardson, who has long studied bone metabolism but is now focusing on obesity and received a USDA grant to run an obesity intervention program for middle-school kids. Scoular will help with this project for her graduate assistantship. She will also complete the coursework necessary to obtain the Registered Dietician credential. She is excited to join a community where they have the faculty and facilities to ask some interesting questions about dietary interventions at the clinical level. "This is where I think I fit in along the spectrum of nutrition research, not out in basic research and not out in pure epidemiology, but somewhere in the middle at the clinical/translational level. Penn State feels like a great fit for me, and I could not be more excited!"

COLLEEN KELLY '11 is working as a research technician in the lab of Dr. Norbert Perrimon in the Department of Genetics at Harvard Medical School.

COLLEEN NETHERBY '11 entered her second year in the immunology Ph.D. program at Roswell Park Cancer Institute. Having finished her rotations, she recently joined Dr. Scott Abram's lab, where she will research tumor immunology with an emphasis on tumor escape mechanisms and potential mechanisms underlying apoptotic resistance in an ovarian cancer model.

TORI POCIUS '11 entered the master's program in ecology at the University of Kansas, where she will continue working with her beloved monarch butterflies.

ELIZABETH WALLACH '11 was accepted into the physician assistant program at Pace University-Lenox Hill Hospital, New York City.

FISH GENUS NAMED IN HONOR OF JOHN H. CARUSO '69

Fish biologists have named a newly identified genus of fossil anglerfishes after John H. Caruso '69, professor of practice, ecology, and evolutionary biology at Tulane University.

Caruso, a biology graduate and assistant professor of biology at Lafayette from 1977 to 1983, is an ichthyologist and one of only two biologists in the world who have focused their research on anglerfishes.



John Caruso '69

The other, Theodore Pietsch of the University of Washington, and his coauthor, Giorgio Carnevale of the University of Toronto, gave Caruso's name to the genus in the March 2012 Journal of Systematic Palaeontology.

Caruso has been interested in the systematics of chaunacid and lophiid anglerfishes since the early 1970s. "I became interested in the lophiids [monkfishes] first because they were very poorly known and greatly in need of a revisionary study," he says.

Beside the new genus, Caruso has discovered and described seven new species of anglerfishes and a new species of giant snake eel.

"My most exciting discovery was a new species of deep-water lophiid anglerfish in the genus *Sladenia*," he says. "It was described in 1976 from the first specimens seen in nearly 70 years. At the time the entire genus was known from only two specimens from the Indian Ocean and Indo-West Pacific, each having been described as a distinct species. I am still working on that genus."

Caruso got research experience in parasitology with **Bernard Fried**, now Kreider Professor Emeritus of Biology. "He was a great teacher and an inspiring mentor, so even though I didn't want to pursue a career in parasitology, I found it fascinating and loved working with Bernie," he says.

"Having a genus named in your honor is a tremendous accomplishment," says Fried, with whom Caruso coauthored his first scientific article. Fellow scientists have named three organisms in honor of Fried, one of the world's foremost experts in parasitology, including *Echinostoma friedi* in 2000. ■

KAREEMA GRAY '94 INVOLVED IN SOCIAL ISSUES AS PROFESSOR AND ACTIVIST

With both intellectual and practical expertise in the field of social work, **Kareema J. Gray '94** expresses her passion as a professor, adviser, researcher, and community leader.

As an assistant professor of social work and undergraduate program director for the Department of Social Work at Winthrop University in Rock Hill, S.C., Gray says her favorite course to teach is social policy, the study of actions that affect people and their access to goods and resources.

Gray, who received a master's and doctorate in social work from University of Georgia, focused her thesis research on African American social work history, particularly in Philadelphia during the Progressive Era. She explains that while new ideas for providing services and programs to help the growing poor populations in large cities were being implemented, they excluded African Americans. So, African Americans developed their own service delivery system.

"We have to understand history in order to fully understand the issues and social problems today," Gray says. "The problems that we are dealing with now in our society are more often than not the same ones in different forms. We can learn from mistakes and victories in the past."

A biology graduate, Gray was a member of the women's basketball team, conducted undergraduate research, and volunteered in the community. She continues to play basketball, although "I do not run as fast or jump as high," she says. "My love for the game has not changed. I think it has grown."

"Coach **[Pat]** Fisher was hard on us and pushed us to do more than we thought we could. I did not understand what she was doing then, but I do now," Gray says. "I do the same with my students. I tell them that I am going to push them and challenge them to do more than they think they are capable of, but I am also going to encourage them and support them along the way."

GOING GREEN?

Would you like to go green? Let us know and we'll add you to the list of alumni who will receive electronic copies of the newsletters instead of paper copies. Gray conducted research on the cicada killer wasp with Professor Emeritus Charles Holliday and assisted Wend Hill, provost, dean of the



assisted Wendy Kareema Gray '94 talks with Hill, provost, students at Winthrop University.

faculty, and Rappolt Professor of Neuroscience, on a project mapping calls from finches.

"Both experiences gave me a confidence that I don't think graduates from many other schools get. Even though I was not 100 percent sure of my career path, I was confident that whatever I chose, I was going to be prepared because of the solid foundation I was able to build at Lafayette."

Recently named a Woman of Achievement at Winthrop's Office of Multicultural Life celebration, Gray participated last year in a national conference call with First Lady Michelle Obama and Joshua DuBois, executive director of the White House office of faithbased neighborhood partnerships, to discuss the Joining Forces military family initiative.

Gray is involved in a pilot program to train, educate, and move homeless single mothers from poverty to self-sustainable, independent living, co-sponsored by the Department of Social Services in Mecklenburg County, N.C., the Housing Authority of Charlotte, N.C., and HOPE Charlotte. She is also part of a pilot program in Hays State Prison in Georgia to create a long-term peace initiative.

At Winthrop, Gray serves on the Cultural Events Committee, Diversity Team, and Faculty Advisory Committee on Intercollegiate Athletics. She also advises two student groups, Disciples on Campus and the student chapter of National Association of Black Social Workers.

A board member of HOPE Charlotte and The Youth Source in Rock Hill, Gray has also worked with Habitat for Humanity. She considers a week spent in Port Au Prince, Haiti, helping a community rebuild as her most remarkable experience.

"Our team built a road that was about a halfmile long using only buckets, shovels, rocks, and gravel! To have the honor of working side by side with such amazing people whose lives had been literally turned upside down, yet they remained so positive, moved my soul."

STUDENTS PRESENT RESEARCH AT PA. ACADEMY OF SCIENCE

Eight biology majors presented research papers with their faculty mentors at the 88th annual meeting of the Pennsylvania Academy of Science March 30-April I at Cedar Crest College.

Amanda Balaban '12 presented with Kreider Professor Emeritus Bernard Fried on *Echinostoma caproni*, parasitic flatworms that can invade humans, domestic animals, and wildlife.

Alicia Bartley '12 and Christine Vrakas '13 worked with Associate Professor Robert Kurt on separate projects focusing on breast tumors in mice.

Carolyn Cabrey '12 presented on harmful algal blooms in Raritan Bay, N.J., with Assistant Professor **Megan Rothenberger.**

Jason Ewer '13 worked with Assistant Professor Manuel Ospina-Giraldo on *Phytophthora infestans*, the organism that caused the Irish Potato Famine.

Shane Foye '12 presented with Rothenberger on the impact of beetles on purple loosestrife within Jacobsburg State Park, Wind Gap, Pa.

Lauren Hinkel '14 and Hannah Komar '13 worked on research on *Phytophthora sojae*, a plant pathogen that can damage soybean crops, with Ospina-Giraldo.

BIOLOGY STUDENT AWARDS AND SCHOLARS

WILLIS ROBERTS HUNT PRIZE Amanda Balaban '12 Emma K. Flaherty '12

JOSEPH WATT KUEBLER JR. MEMORIAL PRIZE Kellyann Niotis '12

DR. LORRAINE MINEO TEACHING ASSISTANT AWARD Alyssa M. Leone '12

NALVEN SUMMER 2012 RESEARCH FELLOWSHIPS Blaine Caslin '13 Alex Pong '13 Elizabeth Rentschler '13



Biology Department 109 Kunkel Hall Easton, PA 18042 Nonprofit Org. U.S. POSTAGE **PAID** Permit No. 108 Easton, PA

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BIOLOGY AT LAFAYETTE: 1901-1915



1901 Laboratory practice and experimentation as part of instruction in the sciences are greatly increased in accordance with the educational policy of President Ethelbert Dudley Warfield (1891-1914).

1902 The Department of Biology, which had occupied cramped, temporary quarters in South College, moves into 10 rooms of the renovated Jenks Hall, with large new laboratories, a grand museum, and a vivarium with areas for live frogs, turtles, and other living specimens.

> Professor Alvin Davison is becoming widely known as

his health and hygiene textbooks are used in many Pennsylvania schools and his lab manual on mammalian anatomy meets with favor in many colleges. His demonstration of germs on public



drinking cups, which are rarely washed, paves the way for the establishment of the Dixie Cup plant in Easton.

1905 The first mention of evolution appears in a course description in vertebrate zoology stating that "the factors and methods of evolution" are included.

Before this point evolution is discussed but not formally, and there seems to be no opposition to the teaching of evolution in the biology department. However, in 1909 a professor of philosophy is dismissed for espousing evolution in his class.

1908 Professor **Jacob Updegrove** resigns. For years he has been a practicing physician with a large practice but has continued with his college work on a part-time basis. After his resignation as physical director, he continues to give lectures in hygiene and demonstrations in bandaging for two years.

1909 In the catalog, all biology classes are listed as electives that may be taken at any time prior to the second term of the senior year. The work of the second and third term of the senior year is designed for students expecting to enter the professions of teaching or medicine. The courses are mammalian anatomy, vertebrate zoology, general biology, bacteriology and health, physiology, embryology and histology preparation, sanitary biology, and botany.

1910 Students are calling Jenks Hall "the cat lab" due to the mammalian anatomy class taught by Professor Davison (see 1904), where cats are the principal subjects of dissection. For the course, the students have to get their own specimens for dissection and inject them for preservation.

1913 Many students go on to become distinguished professors throughout the country, including J.B. Amberson, who is widely known for his contributions in medical literature on tuberculosis and diseases of the chest. He becomes president of the National Tuberculosis and Health Association.

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1915 Early in the summer Professor Davison suddenly dies. Through his teachings and writings he is perhaps more widely known

than any other member of the faculty. His unique and effective methods of teaching lead to an unusual number of students who become distinguished in the fields of anatomy and medicine.