UNLOCKING THE SECRETS OF HUMAN DNA

In the 1600s, a scientist—no one is sure exactly who—looked through the lens of the first compound microscope and saw for the first time the hidden world within our own. Four centuries later, Eric Ho says the discovery of next generation sequencing is just like that. A “hidden genomic landscape has been revealed with tremendous resolution,” says the assistant professor of biology.

Ho’s application of the latest technology in the study of the building blocks of life—which rapidly gives researchers snapshots of genomic sequences—is one of three areas of groundbreaking study he’s pursuing. Ho’s work with Lafayette students is offering the world a clearer picture of the inner-workings of Lyme disease; helping doctors better match drugs to cancer patients; understand the genetic connection between viruses and hosts; and learn about how genetic codes affect evolution.

Maureen Carey ’14 partnered with Ho to study the molecular pathways affected by Lyme disease infection in mice. Preliminary results show that Lyme infection interrupted 13 and 5 molecular pathways in heart and brain tissues, respectively. Carey and Ho are preparing their work for submission to a methodology journal.

A biology graduate, Carey is now pursuing a Ph.D. in infectious diseases at the University of Virginia.

Noelle Kosarek ’16 (Kinnelon, N.J.), a biology major, worked with Ho to develop a computer program that queries Food and Drug Administration databases of cancer drugs and clinical trials. The final product of Kosarek’s work will match a drug either already sold on the market or still in clinical development for all of a patient’s cancer subtypes, dividing them by genomes.

“He’s a fantastic professor,” Kosarek says of Ho. “He’s a super supportive research professor. Even when it gets frustrating, he’s extremely patient with me.”

Two students partnered with Ho on the biological uses of codons—the genetic codes organisms use to create proteins. Ho is primarily interested in understanding...
Editors: Nancy Waters and Wayne Leibel
Photographer: Chuck Zovko

FRANKLIN LAKES, NJ—Today marked the first day of the 2020-2021 academic year at Lafayette College. The start of the school year was marked by several events and ceremonies, including the annual Convocation ceremony held in the Grange Hall. The theme for this year’s Convocation was “Finding Your Voice.”

During the Convocation, President Walter J. Hickel ’68,Ph.D., told the new students that the college is “a place where you can find your voice and express yourself fully.” He also encouraged the students to take advantage of the opportunities available to them at Lafayette and to make the most of their college experience.

The Convocation was followed by the annual Lafayette College Sing, a tradition that dates back to 1833. The Sing features a variety of music, including songs from popular films and television shows. This year’s Sing was particularly special as it marked the 125th anniversary of the college’s founding.

In addition to the Convocation and the Sing, the college also held a number of other events to celebrate the start of the new academic year. These included a welcome breakfast for new students and their families, a welcome reception for returning students, and a number of Orientation sessions for both new and returning students.

Overall, the start of the 2020-2021 academic year at Lafayette College was a festive and exciting occasion, with a focus on celebration and community building.
American Society for Microbiology meeting.

Annual Meeting of the Pennsylvania Academy of Science and two students traveled to New York City to attend the American Society for Microbiology meeting near Mysore, India, to Tibetan Buddhist monks, through the Ethnic Tibet Science Initiative.

Caslake spent the last academic year as Chair of the Governance Committee, served as an associate/taxonomic/technical editor for their publication, Journal of the American Cichlid Association, and is a member of the Board of Trustees. He continues as chair of the Gray D. Jordan Endowment which awards small grants for cichlid research, primarily to graduate students, and continues on as editor of the quarterly magazine, Cichlid News.

JAMES DEARWORTH

Biology, Ecology, Evolutionary Biology, and Environmental Science programs. In addition to teaching, mentoring and scholarship by Dr. Robert Drumm, Dr. Elaine Reynolds taught Neurobiology, and Age-Related Disease in the fall and Intro and Advanced Neuroscience in the spring. She supervised eight research students. Reynolds coauthored a paper published in Neurobiology International, and presented posters at the Huntington’s Disease Research Conference, the PAM meeting, and the LVSFN meeting. She and students also presented at the annual CBLL expo. Reynolds cofounded the bowl and fueled his passion for two art installations, one at the Eastern Farmer’s Market entitled The Gratitude Gram and the other at the School of the Arts Institute of Chicago entitled Promote Foods. Reynolds was Acting Head of the Neuroscience Program, and on the board of the Faculty for Undergraduate Neuroscience and the Journal for Undergraduate Neuroscience Education.

MEET OUR NEWER MEMBER

In fall, Nancy Waters taught Biology 108—The Floating Leaf: Pontoon boat at Merrill Creek Reservoir. In spring, she taught Biology 109—Environmental Biology. She mentored two research students. Results of student research in Biology 152 were presented during the Merrill Creek Conservation Invitational Program, formed the basis of an independent research project, and a summer Excel Scholar. As Faculty Health Professions Advisor, she advises dozens of potential applicants for health professions schools, along with more than 100 students with interests in medical fields, and an innumerable number of alumni. Her compilation of poetry continues under review. Waters was recognized by her alma mater, Saint Francis University for her commitment to undergraduate teaching, mentoring and scholarship by her colleagues.

In spring, Maggie Rothenberg taught the Floating Leaf: Pontoon boat at Merrill Creek Reservoir. She mentored two HHMI students during the summer EXCEL students to the college included memberships on the Faculty for Undergraduate Neuroscience Education.

PHIL JAMES DEARWORTH

American Association of Cancer Research. She presented a student co-authored manuscript at the Journal of the American Cancer Society.

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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.

ALICIA BARTLEY ’72 has been working as a laboratory technician for the Reproductive Medicine Associates of New Jersey for almost three years. She is also pursuing her master’s degree in biology and teaches undergraduate biology labs at William Paterson University. In her free time she loves to travel and tries to visit a new place in the U.S. and abroad every year.

BRIDGET HILBIG ’10 finished her Ph.D. at University of California Riverside in 2015 and is currently doing a post-doc in plant sciences.

After Lafayette, PRIYANKA NAIR ’08 started her Ph.D. in Julie Magarian Blander’s lab at the Mount Sinai School of Medicine in New York City. A primary focus of the Blander laboratory is understanding how innate immune signals influence inflammation, host defense, and adaptive immunity. In her dissertation, Priyanka identified a novel mechanism through which toll-like receptors enhance the ability of dendritic cells to activate CD8 T cells to activate CD8 T cell responses to Streptococcus pneumoniae and neutrophils. Her lab’s main focus is to identify proteins expressed on the bacterial cell surface that are degraded by neutrophil-derived enzymes and result in effective killing of the S. pneumoniae.

TOM SAVFIELD ’11 matriculated this fall to pursue his M.D. at George Washington University.

BENJAMIN TRISCUT ’14 finished a position at Ashby Woods Nature Center and took a job with the NYC Parks Fellowship & Conservation Corps program. After he finished his HHMI Capstone experience in Dr. Joaquin Espinosa’s lab at CU Boulder in 2014, KYLER TUCKER ’14 was hired to do research in the lab of Dr. Roberta Gottlieb’s lab in Cedars Sinai’s Heart Center and took a job with the NYC Parks Fellowship & Conservation Corps program. “Some teachers have the ability to inspire. Dr. Kunkel had that effect on me.”

Hench’s work focused on chronic rheumatoid arthritis. Through his research, he found that articular cartilage cells, or chondrocytes, have the capacity to undergo many other bodily changes, such as pregnancy, experienced a significant decrease in their symptoms. He hypothesized that the pain-relieving substance present during these changes was actually a steroid.

He and his colleagues began testing cortisone on patients. The results were dramatic. The steroid suppresses the immune system reducing inflammation, pain, and swelling. Patients’ symptoms of rheumatoid arthritis disappeared. In some cases, complete isolates were able to walk freely on their own after treatment.

For his “achievement affecting the future welfare of mankind,” Hench accepted the Oct. 27, 1950 edition of the New York Times newspaper. “You’ve got to take it apart to figure out what it’s made of,” Edlund says. Beyond the scope of her research, new knowledge on how pollination works is needed in the world of agriculture and agribusiness and could also contribute to our understanding of evolution—flowers whose pollination processes are adapted to carry their pollen the farthest may be the most fit for survival in the long term. “We’ve learned so much from the process of wall degradation produces a infinitesimal amount of heat produced during pollen walls. The process of wall degradation produces a infinitesimal amount of heat produced during pollen germination or degraded. In some cases, complete isolates were able to walk freely on their own after treatment.

For his “achievement affecting the future welfare of mankind,” Hench accepted the Nobel Prize for Medicine from King Gustav V at the ceremony on December 10, 1950 in Stockholm, Sweden. It was one of dozens of honors and awards Hench received for research during his career.

Scientists have so far found impossible. Their research lab is filled with microscopes and tiny glass tools for watching and moving around pollen grains. The research team has also been working to measure the infinitesimal amount of heat produced at the moment of pollen germination or degraded. In some cases, complete isolates were able to walk freely on their own after treatment.

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BIOLOGY AT LAFAYETTE: 1967-69

1967 H. Keffer Hartline, class of 1923, wins the Nobel Prize for Medicine. Professor Kunkel encouraged him to undertake research and Hartline’s first scientific paper concerned visual responses of land isopods. Summers at the Marine Biological Laboratory at Woods Hole added to Hartline’s biological training. After receiving his doctoral degree from Johns Hopkins in 1927, a National Research Council Fellowship enabled Hartline to study mathematics and physics to strengthen his background for future biophysical research. In 1949 Hartline accepted a position at Johns Hopkins University as professor of biophysics and chairman of the Thomas C. Jenkins department of biophysics, where he did his groundbreaking research.

1967 Robert S. Chase Jr., who joined Lafayette in 1958 as an instructor of biology and assistant dean, is promoted to the rank of assistant professor. He is president of the Pennsylvania Academy of Sciences and a member of the American Society of Ichthyologists and Herpetologists, and Southwestern Association of Naturalists.

1967 Bernard Fried, who joined the faculty in 1963, is granted a two-month leave to participate in a trip that acquaints him with parasitic diseases in Costa Rica, Honduras, El Salvador, Guatemala, Mexico, and Panama. A four-year research grant of $27,000 from the National Institutes of Health affords Fried the opportunity to pursue the study of flatworms. Sometimes as many as eight dozen chicks are cooped in Jenks Hall, which Fried infects with the worms in order to analyze the worms’ growth and development.

1969 A new $1.5 million biology building is completed six months after Beverly Kunkel’s death, and is named “Beverly Waugh Kunkel Hall.” The impressive structure houses some of the most modern biological equipment available at the time. One of the distinctive features of the structure is the greenhouse located at the left front of the four-story building. School begins with more than 300 students taking biology classes. “There are not many graduate students who get as good a deal as this,” says Professor Louis Stableford of the new complex, which replaces the department’s old home in 103-year-old Jenks Hall.