NIH-funded program enhances diversity of biomedical researchers

Temple University has been awarded a second-five year grant from the National Institutes of Health for an undergraduate training program designed to help diversify the national pool of biomedical researchers. Awarded in 2014, the five-year, $3.3 million grant—the fifth-highest grant among the NIH-funded programs—brings $1.5 million to Temple. Its purpose: to diversify biomedical research by including more students from under-represented groups including racial minorities, low-income and first generation college students.

The 24-month program provides tuition support and a research stipend for minorities, low-income and first generation college students. The 24-month program provides tuition support and a research stipend for minorities, low-income and first generation college students.

To expose students to potential graduate programs, the NIH requires students to spend one of their summers in a high-caliber research laboratory outside of Temple. During the program’s first five years, 25 of the 30 graduating students entered competitive graduate programs and two students are currently in competitive programs at the National Institutes of Health before applying to PhD or MD/PhD programs. TU MARC alumni have attended Harvard, Columbia, Yale, Cornell, Penn, Penn State, University of Maryland, University of Chicago, University of Wisconsin, Johns Hopkins, Albert Einstein, Thomas Jefferson, SUNY and CUNY. One student is an MD/PhD student at NYU.

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Behavioral Processes. which I was the lead author, “Light and Shadow: Leopard Frogs,” which was published in the journal Brain this information is processed.

As the current student ambassador and ombuds- person for the Department of Biology and vice president of Alpha Epsilon Delta, a health-pre-professional honor society, I have cultivated a wide variety of interests at Temple. Through Temple’s Office of Pre-Professional Health Studies, these have included working with Gregory Smatzer, associate professor (teaching/instructional), through the Undergraduate Research Program to study an alternative pathway for inositol 1, 4, 5-triphosphate signaling for calcium flux during enamel formation in mammalian tooth cells. I have also participated in a clinical research program in the Emergency Department of Thomas Jefferson University Hospital and served as a teaching aide for a freshman seminar. These opportunities have all enabled me to build a strong foundation to continue to pursue my passion for healthcare.

Erick Recktenwald PhD ’15: PhD graduate earns tenure-track position

After five years as a graduate student in biology, this year I earned my PhD and achieved one of my goals: attaining a tenure-track teaching position that will allow me to continue my research on the frog’s visual system at Allegheny University in Reading, Pennsylvania.

I am very grateful to CST, the Department of Biology and particularly Professor Edward Grueber for the opportunities I enjoyed at Temple to teach and conduct advanced research. When I began, little was known about how frogs see stationary objects. My work focused on understanding what stationary objects frogs can and cannot see, and where in the brain this information is processed. That work culminated last summer in a paper on which I was the lead author, “Light and Shadow: Visual Recognition of the Stationary Environment by Leopard Frogs,” which was published in the journal Behavioral Processes.

New faculty continued from page 1

Sudhir Kumar
LAURA H. CARNELL PROFESSOR OF GENOMIC MEDICINE

Sudhir Kumar’s research focuses on analyzing the evolution of species, genomes and mutations using integrative and comparative approaches, particularly through technology. Kumar has received numerous grants from the National Institutes of Health to develop computational analysis of genetic evolution; his web applications have been cited more than 50,000 times. He came from Arizona State University and now directs CST’s Institute for Genomic and Evolutionary Medicine.

David Liberles
ASSOCIATE PROFESSOR, BIOLOGY

David Liberles studies bioinformatics, comparative genomics and molecular evolution. A recipient of numerous grants from the National Institutes of Health, the National Science Foundation and the European Science Foundation, Liberles has also presented his work and taught at locations around the world, including Oslo, Norway; Christchurch, New Zealand; and Bellville, South Africa. A recipient of a PhD in chemistry from the California Institute of Technology, Liberles came to Temple from the University of Wyoming.

Susan Patterson
ASSOCIATE PROFESSOR, BIOLOGY

Susan Patterson studies the mechanisms underlying learning and memory, which depend on the functional strength and structure of the synapses that connect nerve cells and the brain—and the effects the immune system can have on such synaptic plasticity. After earning a PhD in neurobiology and behavior at the University of Washington, she was a postdoctoral fellow and then a research associate in the Center for Neurobiology and Behavioral Health at Columbia University. She then was an assistant professor of psychology and neuroscience at the University of Colorado before coming to Temple.

Brent Sewall
ASSISTANT PROFESSOR, BIOLOGY

Brent Sewall’s research focuses on understanding critical and emerging threats to biodiversity and developing effective strategies for conservation. He joined the Biology Department as a non-tenure track faculty member in 2009. He has received several awards, including the American Society of Mammalogists William T. Hornaday Award for outstanding contributions to mammal conservation and CST’s William Caldwell Memorial Distinguished Mentoring Award. Prior to arriving at Temple, Sewall was a visiting assistant professor of conservation biology at the College of William and Mary. Sewall received his PhD in ecology from the University of California, Davis.

HEDGES HEADS NEW CENTER FOR BIODIVERSITY

Temple’s new Center for Biodiversity facilitates research, education and conservation of species by faculty and associates, especially those in the areas of ecology and evolution.

Located in the Science Education and Research Center (SERC), the center was established by its director, Laura H. Carnell Professor of Biodiversity S. Blair Hedges, upon his arrival at Temple in July 2014.

The center includes Department of Biology faculty members Erik Cordes, Amy Freestone, Tonia Hisch, Sudhir Kumar, Robert Sanders, Brent Sewall and Rachel Spigler, as well as research assistant professors Matthew Helmus and Julie Martin.

In spring 2015, the center hosted the “Phylogenetics and Biodiversity” meeting, which brought together 35 scientists from nine countries to discuss the latest research in this field, which researchers use to understand the general principles for the evolution and distribution of species globally, in the past and future.

Funded by both the Society for Molecular Biology and Evolution and Temple University, the meeting also highlighted Temple’s new SERC facility. Said one distinguished researcher: “This may go down as the best meeting ever.”

For more information about the center and Hedges’ research, go to: www.biodiversitycenter.org.

iGEM institute plumbs genetic causes of diseases and traits

The Institute for Genomics and Evolutionary Medicine (IGEM) brings genomic data and evolutionary biology together to reveal the genetic causes of diseases and traits.

Housed in the new Science Education and Research Center, IGEM was founded by its director, Laura H. Carnell Professor Sudhir Kumar, upon his arrival in July 2014 following a highly distinguished career at Arizona State University.

IGEM research programs pursue a Pattern-Process-Prediction-Product (P4) paradigm, where scientists first conduct fundamental research to discover biological patterns and then elucidate processes that have generated these patterns over evolutionary time. It is IGEM’s mission to harness the cloud-edge of these patterns and processes to make predictions about genomes, diseases and biodiversity. Ultimately, IGEM researchers are developing products, including research tools and resources, which enable scientists to accelerate biological discovery and make better predictions.

The core laboratories in IGEM integrate concepts and methods from diverse disciplines. Working at the interface of evolution, genomics, analytics and medicine, they focus on making discoveries in the genomics of health, disease dynamics and biological complexity. The process of establishing the core laboratories has already begun with the hiring of several world-renowned scientists, and with plans to recruit more. These faculty searches are being conducted jointly with the Center for Computational Genetics and Genomics (CCGG), led by Professor Jody Hey. The integration of CCGG and IGEM faculty and initiatives now makes Temple an elite institution in the fields of molecular evolution and population genomics.

“IGEM is heralding a new era of genomics research where the computational and big-data science will be an integrative force across new research programs that apply evolutionary knowledge to better the human condition and to understand the nature around us,” said Professor Kumar.

For more information about the Institute and Professor Kumar’s research, please go to: igem.temple.edu.