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The Rockefeller University

THE ROCKEFELLER UNIVERSITY

Benchmarks

The community newsletter of The Rockefeller University

SPECIAL PRINT ISSUE

Convocation 2016

Celebrating our 31 new graduates

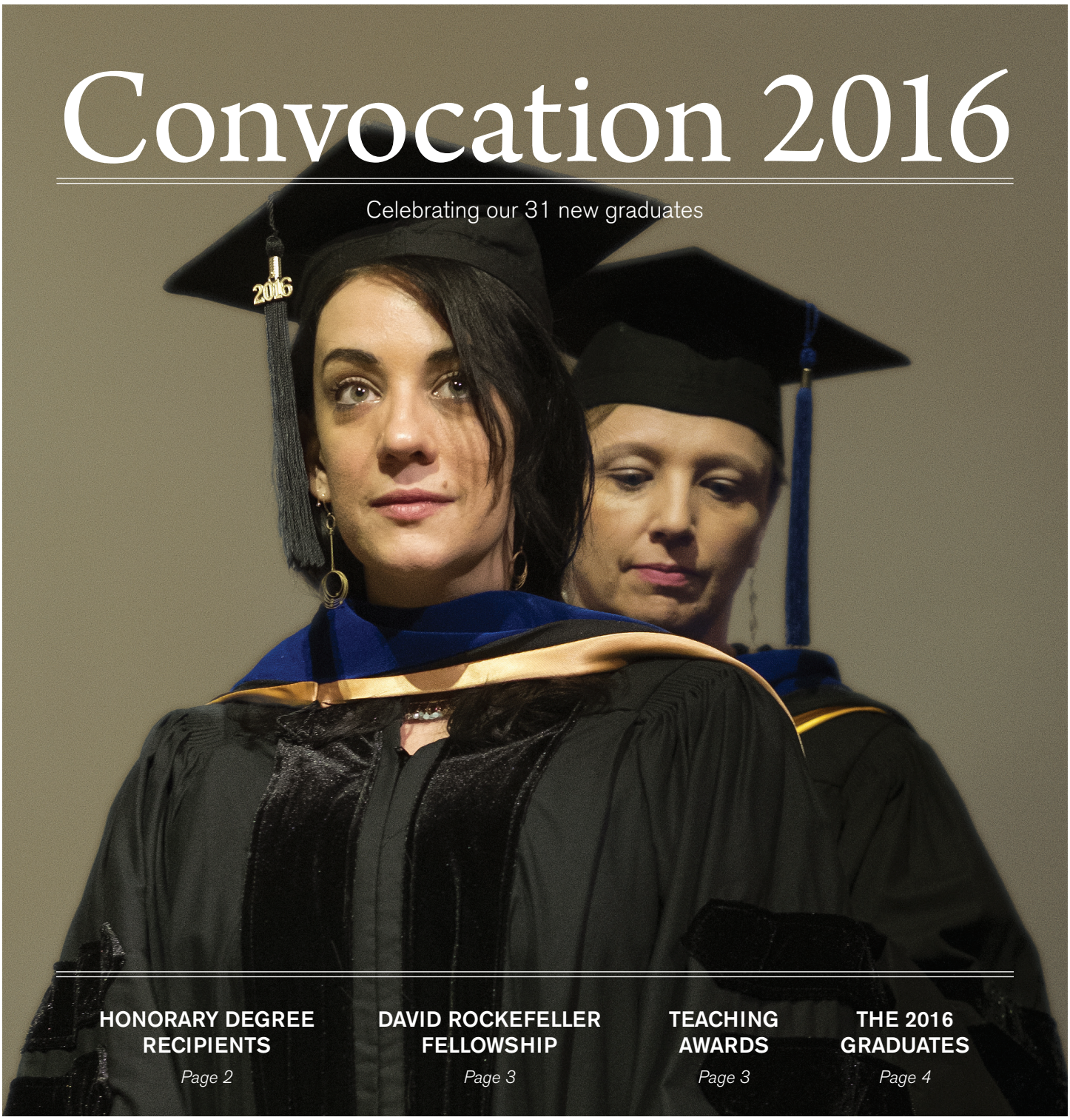

Photo: Mario Morgado

At Rockefeller University's first Convocation in 1959, there were five graduates. Fifty-seven years later, there are now 1,209 recipients of Rockefeller University Ph.D.s.

The day's festivities began with a luncheon in the Great Hall of Welch Hall, followed by Rockefeller's traditional cap-and-gown procession of students and mentors across campus to the degree-granting ceremony in Caspary Auditorium. The graduates and their families gathered afterward for a celebration in the Peggy Rockefeller Plaza.

The 31 graduates of the class of 2016 come from 14 countries: Argentina, Armenia, China, Colombia, Germany, India, Japan, Mexico, Pakistan, Romania, Singapore, Slovenia, Taiwan, and the United States. Twenty-three Rockefeller labs were represented by the graduates, six of whom are members of the Tri-Institutional M.D.-Ph.D. program and will continue on to medical school. Others will begin careers in academia, industry, or other fields.

This annual Convocation issue of Benchmarks salutes the Rockefeller University class of 2016. To view more photos, visit benchmarks.rockefeller.edu.

Four leaders in biomedicine awarded honorary degrees

by Alexandra MacWade, assistant editor

In addition to 31 students, four esteemed scientists received degrees at this year's Convocation ceremony. Continuing a tradition dating back more than five decades, the university awarded honorary doctorate of science degrees to distinguished individuals who have made notable contributions in their fields: James Allison, professor and department chair at The University of Texas MD Anderson Cancer Center; Max Cooper, professor at Emory University School of Medicine; Suzanne Cory, professor and former director of the Walter and Eliza Hall Institute of Medical Research; and Alice Dautry-Varsat, professor and former president of the Pasteur Institute in France.




Photos: Mario Morgado

(From left) James Allison, Max Cooper, Suzanne Cory, and Alice Dautry-Varsat.

"They are visionaries, explorers, innovators, and scientific leaders," said Marc Tessier-Lavigne, the university's president, who presented the degrees. "It's a great privilege to recognize them with honorary degrees."

Dr. Allison was honored for his work elucidating the fundamental mechanisms of cellular immunity. Among other discoveries, Dr. Allison demonstrated how a molecule called CTLA-4 inhibits activated T cells, a type of white blood cell, impeding their ability to launch an effective immune response against tumors. This research spearheaded the development of drugs called checkpoint inhibitors, designed to help the immune system recognize and attack cancer cells.

"Jim is a pioneer and leader in cancer immunotherapy, a rapidly evolving area of medicine that has achieved unprecedented success thanks to his discoveries," said Dr. Tessier-Lavigne. "He is an inspiration to all of us who value basic science as the most productive route to clinical breakthroughs."

In his remarks, Dr. Allison advised the recent graduates to work on projects they love and to ask themselves, "How can I use what I know to do something to benefit mankind?" Dr. Allison received his own Ph.D. from The University of Texas at Austin. He joined MD Anderson in 2012, where he is currently professor and chair of the department of immunology.

Dr. Cooper was celebrated for his insights into how white blood cells fight infections and how defects in their development can lead to leukemia, lymphoma, and autoimmune diseases. Dr. Cooper and his colleagues described two distinct types of white blood cells, B and T cells, which play important roles in the immune response. Human B cells, which originate in the bone marrow, primarily create antibodies, whereas T cells, derived from the thymus gland, are agents of cell-mediated immunity.

Dr. Cooper's research set the stage for the development of monoclonal antibodies, which Dr. Tessier-Lavigne noted have transformed both basic research and drug discovery. "The distinction of T cells and B cells is taken for granted today," Dr. Tessier-Lavigne said. "Through his discovery, Max changed the field of immunology forever."

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2016 David Rockefeller Fellowship awarded to third-year graduate student Lillian Cohn

by Alexandra MacWade, assistant editor

Lillian Cohn, a graduate fellow in Michel Nussenzweig's Laboratory of Molecular Immunology, has been awarded the 2016 David Rockefeller Fellowship, given annually to an outstanding third-year student for demonstrating exceptional promise as a scientist and leader.

The fellowship was established by alumni in 1995 as an expression of gratitude for David Rockefeller's role in founding the university's graduate program and for his commitment to its success. Mr. Rockefeller, who has served for more than 75 years on the university's Board of Trustees, and celebrated his 100th birthday last summer, has said that few honors have meant so much to him as the creation of this award.

Ms. Cohn, who grew up in Seattle, initially planned to go to medical school. She majored in biology and was a pre-med student at Brown University, but as time went on, she found herself drawn more to lab research. "Patient care was still a priority to me, but I wanted to do science that could reach many people at once," she says.

After graduating from Brown, Ms. Cohn worked at the biotechnology firm Genentech for two years. She knew Rockefeller well—her grandfather Zanvil A. Cohn was co-head of Rockefeller's Laboratory of Cellular Physiology and Immunology until his death in 1993—and joined the graduate program in 2013.

"Rockefeller is an incredible place," she says. As an undergraduate, Ms. Cohn enjoyed the open curriculum at Brown, which allows students to create their own programs of study. That same kind of flexibility attracted her to Rockefeller. "There are no departments or bureaucracy here. You find your own way, and the student is driving the program," she says.

Much of the research in the Nussenzweig lab focuses on the biology of HIV or the development of new therapies against the virus, including broadly neutralizing antibodies and vaccines. Ms. Cohn's work is focused on figuring out why there isn't yet an effective cure for the disease.

Although HIV can be controlled with drugs, HIV-positive individuals will develop AIDS if therapy is discontinued. That's because there's a number of cells in their bodies that harbor HIV and remain undetected by the immune system. "These cells don't get killed; they just hang out," Ms. Cohn says. "If the therapy is stopped, they're lying in wait, like sleeper cells." Ms. Cohn is studying and characterizing these cells as a way to understand how to cure HIV.

Photo: Mario Morgado

Agata Smogorzewska, associate professor and head of the Laboratory of Genome Maintenance, presents Lillian Cohn with the fellowship citation.

Outside the lab, she is an enthusiastic volleyball player—she's captain of a team that plays in a Manhattan league—and an active volunteer with New York Cares. She also volunteers in prisons; while in California, she was involved with the Prison University Project at San Quentin State Prison, teaching English literature and biology to inmates. "It was a transformative experience, and it helped me understand the power of education in the lives of people who had limited access to it before," she says. Here in New York, she has taught incarcerated high school students.

Looking ahead, Ms. Cohn hopes to have her own lab. It's a goal that not only reflects her love of science but also the obligation she feels to help other aspiring scientists, especially women. "It's hard to be a woman in science," she says. "I've had amazing women mentors who have inspired me every step of the way, and I want to pay it forward."

Mary E. Hatten and Daniel Kronauer honored with teaching awards

by Alexandra MacWade, assistant editor

Mary E. Hatten, Frederick P. Rose Professor and head of the Laboratory of Developmental Neurobiology, and Daniel Kronauer, assistant professor and head of the Laboratory of Social Evolution and Behavior, were honored at this year's Convocation luncheon with Distinguished Teaching Awards.

Dr. Hatten, who studies the development of cellular architecture in the mammalian brain, has been teaching a course in central nervous system development for the past 20 years. Popular with both Rockefeller and Weill Cornell Medicine graduate students, the biennial course places a particular emphasis on the molecular mechanisms of cell patterning in the brain.

In Dr. Kronauer's course, Genetics and Evolution, students learn about basic genetic mechanisms, including the generation of mutations and genetic segregation, linkage, and recombination. Dr. Kronauer, who studies evolution in insect societies, has taught the course annually with Fred Cross since 2013.

He also teaches Social Evolution and Behavior, a class held at Rockefeller's Center for Field Research in Ethology and Ecology in Millbrook, New York. This one-week intensive course—which Dr. Kronauer structures as a collaboration between 20 students and 10 faculty members from Rockefeller, Memorial Sloan Kettering, the University of Massachusetts Amherst, the University of Pennsylvania, Princeton University, and the New Jersey Institute of Technology—was first offered in 2014 and is being given again this summer. Participants attend lectures and field outings, conduct workshops, and prepare and give presentations. The course explores societies from a variety of angles, including genetics, behavioral ecology, ethology, neuroscience, and evolutionary and theoretical biology.

The annual Distinguished Teaching Awards were established in 2005 to recognize outstanding individual contributions to the university's educational environment. The winners, who receive a plaque and a monetary gift, are chosen by a committee that includes faculty and the university's scientific executive officers.

The 2016 Graduates

During the Convocation ceremony, Rockefeller faculty commended their students for their scientific contributions, untiring work, and unique skills. Below are the highlights from congratulatory tributes given to each of the 2016 graduates (including students in the Tri-Institutional M.D.-Ph.D. Program, denoted with an asterisk). To read the full tributes, visit benchmarks.rockefeller.edu/tributes2016.

Seven students graduated in absentia: Sergio Botero, Debjani Chakraborty, Josefina del Marmol, Lisa Fish, Jia Min Loo, Ryan Quin Notti, and Andrej Ondračka.

Rachel L. Belote

presented by Sanford M. Simon

Melanocyte-Keratinocyte Interactions and Intercellular Communication in the Skin

She comes from Rutgers / She's got Jersey pride / Though she works up here / The Upper East Side / She came to study / And work alongside / Scientists she felt / Were most qualified // Her studies were on / The melanocyte / Cells throughout the skin / That block the sunlight / So the UV does / Not over excite / The DNA of / Keratinocyte // Cells were kept healthy / To grow and divide / Glucose and peptide / Carbon dioxide / Staining was vital / No formaldehyde / Results were startling / But most bona fide // Their dendrites had spines / Things seen in the brain / Synaptic proteins / Were in the membrane / And calcium sparks / In local domains / In skin can this be? / Please help me, Elaine!

Daniel Blanco Melo

presented by Paul D. Bieniasz

Paleovirological Analyses of Endogenous Retroviruses and Host Innate Immune Effectors

The viral DNA fragments in our genomes are a rich fossil record of ancient viral infections. Daniel joined my lab to understand how ancient viruses shaped the intrinsic defense mechanisms that cells deploy to block viral attack. In a remarkable set of experiments, he described how natural selection by pathogenic viruses, over hundreds of millions of years, has taken a copy of a gene that ordinarily makes a gate that guards pores in cell membranes and fashioned it into a gene whose product instead traps virus particles as they depart from the surface of infected cells. Daniel is full of insight and determination, and among the most unselfish scientists I have encountered. He is embarking on a great career as a postdoc and beyond.

Roman Corfas

presented by Leslie B. Vosshall

The Genetics of Mosquito Heat-seeking Behavior

Roman Corfas is interested in your body heat. In a series of elegant experiments, he demonstrated that mosquitoes pay attention to relative differences in temperature, allowing them to hunt humans at a range of ambient temperatures. This work is important because these animals are currently infecting hundreds of millions of people with Zika, dengue, and other dangerous viral diseases. Roman came to Rockefeller to carry out basic research in neurobiology and behavior, and his thesis work beautifully captures his interests at the intersection of genes, behaviors, and circuits.

Peter C. Fridy

presented by Michael P. Rout

Nanobody-based Interactomic Studies of Single Transcripts during mRNA Maturation

Peter is intelligent and thoughtful, an excellent experimentalist, and a shining example of the outstanding caliber of our students. For his thesis, he developed a hugely impactful new way of making "nanobodies"—tiny, artificial antibodies—from immunized llamas. He really threw himself body and soul into the project, even visiting our llamas at the farm to make sure they were happy. After this, llamas may have become a bit of an obsession with him, as he even knows them by their first names—Barbie, Blossom, and Marley. How he got on a first name-basis with them, I didn't enquire. He next developed a second new methodology—this time, one to isolate single RNAs at different stages of their assembly, an approach that promises to open the door to new avenues of discovery.

Stefanie Gerstberger

presented by Sidney Strickland
on behalf of Thomas Tuschl

A Census of Human RNA-binding Proteins and Characterization of the DEDDh RNA Exonuclease NEF-SP in the 3' End Maturation of 28S Ribosomal RNA

Stefanie is an exceptional scholar. For her thesis, she conducted a genome-wide census of human RNA-binding proteins, analyzing their evolution, abundance, and tissue-specific expression patterns. She showed that RNA-binding proteins represented the most abundant and numerous group of human gene products: over 1,500 proteins directly interacting with RNAs and coordinating the expression of our approximately 20,000 genes. When her census was published, she received an email from a reader that said, "Your analysis is the single most helpful piece of literature I've encountered about RNA-binding proteins." That is the nicest compliment one can receive for a research publication.

Alexander Gitlin*

presented by Michel C. Nussenzweig

Selection Dynamics in the Germinal Center during Antibody Affinity Maturation

Our immune systems have to be ready to respond to anything that nature comes up with, which is a nearly impossible task. So they start with the best thing available, and then refine it to make it better. For antibodies, this means introducing mutations and then selecting the mutations that increase antibody affinity for the pathogen. How it happens has been a bit of a mystery. Through a series of elegant experiments, Alex discovered that affinity maturation is an iterative process, and he defined how it's regulated. His work has been much appreciated by scientists in a number of different disciplines and led to his being awarded the prestigious Weintraub Award. I will miss having him barge into my office with his constant canine companion Noodle to discuss yet another brilliant idea or debate the result of an interesting paper.

Nicholas David Gulati*

presented by James G. Krueger

Characterization of Skin Immune Reactions Induced by the Contact Sensitizer Diphencyprone in Healthy Volunteers and Metastatic Melanoma Patients

Nick is my first student to complete a series of projects that spanned the spectrum of translational research—often characterized as bench-to-bedside and back again. His thesis project involved molecular characterization of immune reactions in patients with metastatic melanomas that were created to induce immune-mediated cancer regression, but his project extended into normal volunteers so that he could study differences in immune responses in normal individuals versus cancer patients. Nick is also a prolific writer—he has at least 22 papers published from his graduate studies—and I wish him the best of luck in a future career likely to be centered on skin biology when he completes his medical training.

Zhanna Hakhverdyan

presented by Michael P. Rout

Plasticity of the Nuclear Pore Complex Revealed with Proteomics

Zhanna has a strong sense of dedication and perseverance, which I discovered when I found out that one of her hobbies is paragliding. Her fearlessness led her to work on two difficult and related projects. She was first instrumental in developing a method to isolate and preserve the dynamic macromolecular complexes in our cells. She then studied how huge cellular machines such as the nuclear pore complex are assembled and maintained. For this, she developed painstaking and careful assays to gather the data she needed. Zhanna's work has been a fascinating and highly impactful tour de force, from a talented young researcher, that has given us some fundamental insights and raised important new questions.

Joshua A. Horwitz

presented by Michel C. Nussenzweig

Dynamics of HIV-1 Infection and Therapy In Vivo

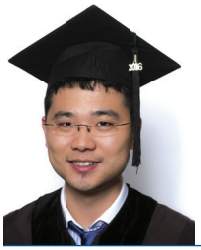
HIV-1 is a chronic disease affecting millions, and although we can control it, we have no vaccine and no cure. Our laboratory has been investigating rare individuals who fight the virus by producing antibodies that are broadly neutralizing. After we cloned the antibodies, Josh was one of the first to investigate their activity in animal models. He came up with and tested the idea of combining the antibodies with standard therapy in animal models to great effect, and his success at the bench led us to perform successful clinical trials modeled on his earlier experiments. Josh is a fabulous individual who will be missed, not just for his scholarship, but also for his culinary skills at our annual barbeques.

Hala Iqbal

presented by Elizabeth Campbell
on behalf of Sean F. Brady

Natural Products from Functional Screening of Soil Metagenomic Libraries

During her graduate studies, Hala established improved methods for building libraries of environmental DNA in cultured *Streptomyces* species. Many research groups have tried these experiments but failed. Her work is very exciting, as it has led to the discovery of the first truly novel complex metabolites to arise from functional screening of soil DNA libraries. Hala has not only been an active member of my lab, but she has also participated in many social movements during her time in New York City. She is a remarkable and earnest young woman who has contributed to making the Rockefeller community more socially aware, and for that I would like to thank her.



Wenyan Jiang

presented by Luciano Marraffini

CRISPR-CAS: From a Prokaryotic Immune System to a Genome Editing Tool

Wen has distinguished himself as both a technological guru and a passionate, curiosity-driven scientist. Shortly after he joined my lab, he had the vision to use CRISPR-Cas systems for genome editing, a technique that today is revolutionizing biomedicine. He thought of this before anybody else I know. He trusted his intuition and pioneered the development of microbial genome-editing techniques in my lab and, at the same time, elucidated how a special set of CRISPR-Cas systems defends the bacterial host by degrading viral transcripts. When a lab is being born, the people working in it have its future in their hands. I could not have been luckier to have had Wen in the genesis of my research group.

Xin Jin

presented by Marc Tessier-Lavigne
on behalf of Cori Bargmann

Aversive Olfactory Imprinting in Caenorhabditis elegans

The brains of humans and animals have a special ability to form memories during certain stages of life called critical periods. Xin discovered that the tiny worm *Caenorhabditis elegans* has a critical period for traumatic olfactory learning, which causes it to form a lifelong aversion to bacteria that made it sick when it was young. Remarkably, the rules that Xin discovered in aversive olfactory imprinting in worms bear similarities to the rules for long-term memory in more complicated animals, including ourselves. Xin's work shows that learning and memory are fundamental features of all nervous systems, derived from their earliest evolutionary history.

Corynn Kasap*

presented by Tarun Kapoor

DrugTargetSeqR: A Genomics- and CRISPR/Cas9-based Method to Analyze Drug Mechanisms of Action

There are several technologies to discover new candidate therapeutics; however, sorting out how these potential therapies work in our cells remains very challenging. Corynn has devised a powerful new approach to address this major challenge. She sets up "crash tests" in the laboratory and systematically analyzes how the drug fails. She then combines genome editing, cell biology, and biochemistry to identify the genetic alterations that cause the drug to fail. These data can establish a "gold standard" proof for how the therapeutic agent works. Corynn applied the new method to dissect how an anti-cancer agent that recently entered clinical trials works, revising the accepted hypothesis and providing valuable insights for further studies.

Maxime Jérémie Kinet*

presented by Shai Shaham

Regulatory Architecture of a Non-Apoptotic Cell Death Program in Caenorhabditis elegans

Maxime had a keen interest in understanding a mysterious form of cell death that my lab has uncovered, and the role it plays in the development of *C. elegans*. We had identified a number of candidate genes involved in the process, and Maxime began characterizing a set that appears to regulate gene expression. Not only did he discover that a key cellular gene involved in protecting cells from stress actually had the opposite capacity to kill cells, but he generated reagents that allowed us, for the first time, to test the order of action of the various genes we identified—transforming our knowledge from a simple list to a logically organized gene network. Maxime is an adventurous scientist, and it has been very exciting to see him through his discoveries.

Yi-Hsueh Lu

presented by Jeffrey M. Friedman

Qualitative and Quantitative Regulation of the Leptin Gene In Vivo

Life is not always easy for Yi-Hsueh Lu. You see, Yi-Hsueh is outstanding at everything she does, and this often makes it difficult for her to choose from among the many different paths that she could pursue with precision, passion, and excellence. Yi-Hsueh has decided to enter Stony Brook Medical School, and to no one's surprise she is excelling there, as she has everywhere else. In her thesis, she identified the key DNA sequences that control the production of leptin, a hormone that regulates appetite and body weight, and characterized one of the key protein factors that interact with these DNA elements. Thanks to her efforts, our laboratory is well on its way toward solving a mystery surrounding leptin function. She has been a wonderful colleague, and everyone in the laboratory will miss her greatly, none more than me.

Monica Mugnier

presented by Nina Papavasiliou

Tracking the In Vivo Dynamics of Antigenic Variation in the African Trypanosome

Parasitologists think of Monica's thesis work as a landmark in the field. She has devised and used tools to assess how quickly the African trypanosome, the parasite that causes sleeping sickness, changes its surface coat composition to evade the immune response. Her work upends a 100-year-old paradigm in the field. But that is only a side note. It also opens the door for mechanistic studies into how the parasite and the immune system interact and, ultimately, for more general studies into how any pathogen interacts with the antibody response.

Hirofumi Nakayama

presented by Nathaniel Heintz

Genetic Dissection of Neural Circuits Underlying Value-based Decision Making

I knew Hiro would forge a path into the scientific unknown. With a great deal of ingenuity and effort, he devised a behavioral scheme in which mice could learn to adjust their behavior based on the probability of reward, and he showed that this task could reveal each aspect of value-based learning. He also demonstrated that the brain areas and circuitry required for obsessive or compulsive behaviors are distinct from those involved in action selection or learning—a significant accomplishment because it allows one to identify cellular and molecular mechanisms that play key roles in even very advanced cognitive functions. And it is all due to the talent and dedication of this impressive young man!

Alexander Nguyen*

presented by Sohail Tavazoie

Characterization of Mechanisms that Mediate Cancer Metastatic Colonization

In one of the two projects Zander took on for his thesis work, he studied how individual cancer cells within a tumor are able to become so different from one another. Such diversity is a major clinical problem—enabling rare cancer cells within human tumors to resist chemotherapies. Zander showed that these clever cells achieve such diversification by having faulty machinery for zipping together pieces of RNA messages that code for proteins, leading to the production of gene products that are diverse in their nature and abundances. There is no challenge big enough for Zander, whether it be competing in triathlons, teaching himself multiple computer languages for analyzing biological data, or substituting for his professor as a speaker at conferences. I fully expect him to keep pursuing his triathlons both in life and in science.

Jason Pitts

presented by Marc Tessier-Lavigne

Retrograde Activation of a Somatic Transcriptional Program Regulates Distal Axon Degeneration

A good place to start with a Ph.D. project is to test what seems like an obvious prediction, to see if it either holds up or takes one in a new direction. In Jason's case, the prediction did both. Jason knew that axon degeneration was controlled by an enzymatic cascade controlled by a protein called Bax, and the simple prediction was that one or more of the known activators of Bax would be required for the degeneration. He found that one of these activators is indeed required, but then, to his and our surprise, he found that it is not present in the axons that degenerate—instead, it is in the nerve cell body. Many would have glossed over this seeming discrepancy, but Jason doggedly pursued it, leading to beautiful and unexpected findings on how the nerve cell body remotely controls the degeneration of nerve fibers. Jason is thoughtful, rigorous, reads widely, and thinks deeply, especially about paradoxical findings—the source of his success.

Benjamin Sabari

presented by C. David Allis

Metabolic Regulation of Transcription through Differential Histone Acylation: Regulation and Function of Histone Crotonylation

Not every graduate student enjoys having editors from high-profile science journals describe their work as being "out of this world" or "another classic," but Ben's first paper in my lab, which focused on a chemical modification of histone proteins called crotonylation, triggered these words in a preview entitled, "Greetings from Planet Croton." Ben's next orbit will take him to MIT, where he will no doubt enhance, or super-enhance, his career. This is because Ben is not only a super-scientist but also a super-man, the "real ticket" on planet Earth and beyond.

Caitlin Sengelaub

presented by Sohail Tavazoie

Protein Regulators of Phosphoinositides as Promoters of Cancer Metastasis

Caitlin hails from the farmlands of Indiana. Her proud biologist parents recognized her early knack for science and fostered this by exposing her to the lab as a young teenager. In my lab, she studied the mechanisms by which cancer cells spread—or metastasize—to distal organs and how they form colonies in those organs. Given her interest in the intersection of chemistry, biology, and human disease, Caitlin now advises biotech and pharmaceutical companies on research and development. She is incredibly smart, classy, rigorous, and articulate; but she also knows how to party hard. I fully expect that she will play an important role in guiding the development of future therapies.

Constantin Nicolae Takacs

presented by Sanford M. Simon
on behalf of himself and Charles M. Rice

Analysis of Hepatocyte Secretion Pathways: A Case Study on Hepatic Apolipoproteins, Serum Albumin, and Hepatitis C Virus

Born in Romania / Close to the Black Sea / He came to New York / As a devotee / Of one of our best / Nobel inductee / A fellow landsman / Doc George Palade // Like George his first love / Cell biology / He chose to study / The assembly / Of a grim virus / Hepatitis C / To understand it / Meant he had to see / So he made fusions / All to GFP / And blocked with mutants / Of Rab-GTP / Informing release / Of the HCV // Now postdoc at Yale / University / Studying *Borrel- / ia burgdorferi*

Boyuan Wang

presented by Tom Muir

Reconstitution and Mechanistic Studies on the Staphylococcal agr *Quorum Sensing Circuit*

The first day Boyuan walked into my lab, he had hair down to his waist and sported a long pencil-thin moustache. He also had an idiosyncratic approach to communication. One early example of what would eventually be known in our lab as "Boyuanisms" was when he wrote the following in a birthday card the lab gave me, and I quote: "Tom, have a great birthday, it may be your last." Anyway, we got him a haircut and a shave and sent him off to study how virulence is regulated in the commensal human pathogen, *S. aureus*. Boyuan's contribution to this area is one that has rewritten the rules for how we study this system, and has truly exciting implications for our understanding of bacterial two-component signaling in general.

Xiaoqiu Yuan

presented by Howard C. Hang

Chemical Tools for Exploring IFITM3 S-Palmitoylation and Mechanism

Xiaoqiu had graduated with honors and already coauthored several research papers when he joined Rockefeller. I was thrilled we were able to recruit him into our Tri-Institutional chemical biology program and very pleased to have him join my laboratory. His thesis work played an important role in helping us understand how a crucial protein of the innate immune system prevents pathogens such as influenza virus from entering our cells. By developing precise imaging and protein cross-linking methods, Xiaoqiu's work helped demonstrate that this protein directly engulfs incoming virus particles and targets them for destruction. His thesis also helped reveal an important means by which our innate immune system prevents virus infection, and should help us design new antiviral therapeutics. I would like to thank him for his hard work and dedication to this exciting project, and I wish him the best in the future.

Coming soon, to The David Rockefeller Graduate Program

As the graduating class of 2016 moves on to the next stages of life and career, the Rockefeller community welcomes the incoming group of graduate fellows. There were 755 applications received this year, and after careful consideration by the admissions committee, 77 applicants were offered admission to the university. The 23 incoming students are from nine countries: Austria, Bangladesh, Canada, China, Pakistan, Peru, Poland, Vietnam, and the United States. Their alma maters include: Cayetano Heredia University; Harvard College; Hunter College, CUNY; Linfield College; Massachusetts Institute of Technology; McGill University; National University of San Marcos; Northwestern University; Pomona College; Reed College; Rutgers University; University of California, Los Angeles; University of Lodz; University of Massachusetts Amherst; University of Oxford; University of Pennsylvania; University of Toronto; University of Vienna; Vanderbilt University; Vassar College; Washington University; and Yale University.

Four leaders in biomedicine awarded honorary degrees *(continued from page 2)*

"I'm a little bit envious of you," Dr. Cooper, who received his M.D. from Tulane University School of Medicine, said in his address to the graduates, "not only for the high quality of your work, but also for the excitement of what you can do at this moment in time." He is currently a Georgia Research Alliance Eminent Scholar in Developmental Immunology and professor of pathology and laboratory medicine at the Emory University School of Medicine.

Dr. Cory received her honorary degree for offering key insights into immunology and cancer biology, as well as for her many accomplishments as an institution leader. She and her colleagues helped advance the understanding of how B cells assemble molecules on their surface, called antigen receptors, by gene recombination. In later work, they helped elucidate how abnormal chromosome rearrangements can lead to the development of cancer. They also broadened the understanding of cancer through studies of the molecular mechanisms that promote tumor formation by interfering with cell death processes. Dr. Cory is the first woman to have served as director of the prestigious Walter and Eliza Hall Institute in Melbourne, where she is currently a professor. In 2009, she won Rockefeller's Pearl Meister Greengard Prize, given to honor women who have made extraordinary contributions to biomedical science.

"Suzanne has been a tireless advocate for research and education in Australia and on the global stage," said Dr. Tessier-Lavigne. "She has made vital contributions as an investigator, institutional leader, and international advocate of science for the benefit of humankind."

"I feel very humbled at receiving this honorary degree because I've long regarded Rockefeller as one of the greatest biomedical research institutions in the world, and this is a day that I will treasure all my life," said Dr. Cory, a Ph.D. alumna of the University of Cambridge.

Dr. Dautry-Varsat was recognized for her work advancing the understanding of the host response to infectious agents, in addition to her transformative leadership of the Pasteur Institute, where she is currently head of the institute's Biology of Cell Interactions Laboratory. Her studies have focused on receptor-mediated endocytosis and cell signaling in the immune system. Her work on intracellular pathogens has helped explain key aspects of host–pathogen interactions. In 2005, Dr. Dautry-Varsat became the Pasteur Institute's first woman president, a position she held until 2013. During her presidency, she promoted the expansion of numerous scientific programs, led the construction of a new research facility in Paris dedicated to emerging diseases, and strengthened the institute's international research network.

"Alice is an accomplished cell biologist and visionary leader, who has worked in the laboratory, the field, and the boardroom to foster excellence in science for the improvement of human health worldwide," said Dr. Tessier-Lavigne. "She has helped to nurture new generations of scientists."

"Science starts with curiosity and requires a lot of hard work and tenacity," Dr. Dautry-Varsat, who received her Ph.D. from the University of Paris, told the graduates. "But what really makes great science is creativity and inspiration."

Benchmarks

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