Yale alum builds a crucial bridge for psychiatry researchers

Over the course of an eventful life, Herb Allison, M.B.A., a 1965 alumus of Yale College, has found himself in many situations that could make the calmest of us feel anxious. He spent four years as an officer in the U.S. Navy, including a year in Vietnam. After obtaining a business degree at Stanford, he climbed aboard the roller coaster of the financial industry, first at Merrill Lynch, where he rose to become president and chief operating officer. He was president and CEO of TIAA-CREF, stewarding hundreds of millions of dollars in retirement accounts. Near the peak of the financial crisis in 2008, when the U.S. government placed the much-in-the-news mortgage giant in government hands, Allison, who has been living with a severe anxiety disorder, was asked to step back and consider his options.

“I became interested in this field because I know people who have these illnesses, and I myself, when I was an undergraduate at Yale, suffered from a persistent series of panic attacks that he now recognizes was a severe anxiety disorder. Those experiences were the inspiration for a $3 million gift from Allison’s family foundation to the School of Medicine to establish a Psychiatry Research Scholars Program under the aegis of the Yale Child Study Center (YCSC) and the Department of Psychiatry. “I became interested in this field because I know people who have these illnesses, and I myself, when I was an undergraduate at Yale, suffered from anxiety attacks that were very difficult to deal with,” Allison recalls. “These disorders weren’t understood—people told me to just ‘get over it’—and there were no effective drugs at the time either. It slowed me down, and a few times a year it even shut me down, undermining my self-confidence."

Under the direction of Matthew W. State, M.D., Ph.D., the Donald J. Cohen Professor in the YCSC and deputy chair for research in the Department of Psychiatry, the new initiative will provide grant support to talented junior faculty to bridge what State says is the most vulnerable period for young researchers—the first years after training, when risky independent research projects cannot yet garner the federal grants that other disciplines with more predictable funding. In times of uncertain government support for the National Institutes of Health—"the lifeblood of academic research," State says—"there are no other funding opportunities."

“With this support, they will have the freedom to focus on their early research and train with idealism, imagination, and bold ideas,” says State, who was a member of the medical school’s faculty from 1988–2009. “I treasured my time teaching in the medical school, and it was entirely because of the personal relationships.”

State says he sees the opportunity in Yale’s gift caps career fighting killer of children

Leading physician-scientist and wife create a new professorship to sustain a long legacy of basic research on gastrointestinal disorders

In the developed world, diarrhea is thought of as an easily treated nuisance. But in the developing world it is a major scourge: according to the World Health Organization, diarrhea is the second leading cause of death among children under 5 years of age, causing nearly 1 million deaths among that population each year.

Gastroenterologist and scientist Henry J. Binder, M.D., has devoted much of his career to systematically investigating the biology of gastrointestinal problems and diarrheal diseases, and exploring ways to curb their incidence. Now professor emeritus and senior research scientist in the Department of Medicine, Binder and his wife, Joan, have recently committed to endowing a professorship for a physician-scientist to pursue research in gastroenterology at the School of Medicine.

The Binders’ commitment establishes the Henry J. and Joan W. Binder Professorship in Gastroenterology.

Henry and Joan Binder first arrived at Yale in 1963. Now, after almost 50 years, the Binders are giving back by establishing an endowed chair in gastroenterology, a field that Henry Binder has helped to transform.

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LIFELINES

Going with the flow

Building replacements for arteries and lungs takes ingenuity—and patience

Having already earned a doctorate in biophysics at the University of Chicago, Laura E. Niklason, M.D., Ph.D., knew when she started medical school at the University of Michigan that research would be a major part of her career. At Michigan, she did work for a local company on ventricular assist devices—implantable machines that help failing hearts pump blood—but after seeing many patients in intensive care die of organ failure, she was skeptical that artificial solutions would ever work for patients over the long term.

But Niklason, professor of anesthesiology and of biomedical engineering, “stumbled into tissue engineering” during her anesthesiology residency at Massachusetts General Hospital. A tutor working in the M1 lab of biomedical engineering maven Robert Langer, Ph.D., showed her a picture of a rat skull in which he had drilled two holes and then permanently repaired one hole by filling it with engineered cartilage. “That made me sit up because it never had occurred to me that it might be possible to reconstitute a whole tissue just from cells,” she says.

In 1995, while still a resident, Niklason found herself working in Langer’s lab as well, now thinking that “this tissue engineering stuff might be the coolest thing ever.” And though she had no previous experience as a bench biologist, she set out to engineer an artery from scratch, spending three years designing scaffolding on which to grow the tissue, creating a mechanical environment for the cells to grow in that mimicked the action of the heart, and concocting a nutrient medium matching the body’s chemical environment.

She continued that work at Duke University, where she moved in 1998. At first, “there were lots of snafus, and lots of burst pipes and leaky fluids,” she says. But in 1999, her team published a paper in Science on the first successful transplant of engineered arteries built from an animal’s own cells. Next she focused on translating the method for human cells and making the process clinically feasible—it took three months to grow an artery, far too long to “ask a patient to hold his breath,” she says.

The solution was to grow arteries from donor cells, and then, in the final step, wash the cells away, leaving only the “skeleton” called the extracellular matrix (ECM). Surprisingly, the tissue didn’t look any different and was just as mechanically strong as cellularized tissue, says Niklason, who joined Yale’s faculty in 2006. “The advantage is that since the cells are gone, there’s no rejection. Because it’s non-living we can store it for months, so we have a tissue that’s off-the-shelf.”

This year, Durham, N.C.-based Humacyte, a biotech company Niklason founded while at Duke, will begin its first clinical trials of these arteries, which will be implanted into the arms of individuals with kidney disease to provide a source of high blood flow to expedite dialysis.

Other researchers in her lab are working on lung regeneration as an alternative to lung transplantation, a difficult procedure with a low 10-year survival rate due to infection and organ rejection. The approach is similar to artery engineering: create decellularized lungs, keeping their complex branched vasculature intact, and then seed the ECM with a patient’s own cells.

With a patience that comes from long experience in medical research, Niklason says it may be 20 years before people will be breathing through regenerated lungs. But she’ll keep busy in the meantime. “I’ve piled a lot on my plate, she says, laughing, “but I’ve been doing it for decades.”

School of Medicine welcomes the Class of 2016, a diverse group

A rabbit, a ballerina, and a Green Beret walk into Yale School of Medicine—all of them members of the Class of 2016. Chosen from 4,103 applicants, the 536 incoming students come from an amazing variety of backgrounds, with many impressive achievements already under their belts.

There’s the Fulbright scholar, the Mayo Clinic Ph.D. and the Half Ironman Triathlon National Championship competitor. One entering student founded a music therapy program in Oakland, Calif., and another began an after-school tutoring program for the children of New York City’s juvenile prisoners. One worked his way through college running a Subway franchise. Two were teachers in rural France and Honduras.

The students’ research has led to numerous publications, and their clinical work has already affected patients around the world. The class could hold its own in any musical or sporting event, counting dozens of musicians and athletes in its number.

Sixteen of the students were born outside the U.S., and 23 are underrepresented ethnic or racial minority groups. They hold diplomas from 53 different colleges, though two of those, Harvard and Yale, account for 31 members of the class. “We get many applications from Yale and Harvard every year, and they tend to be strong candidates,” says Richard Silverman, director of admissions. “But we’re delighted to have over 50 colleges represented in a typical class, including a significant increase in applications from California colleges in recent years.”

As part of another noteworthy recent trend, taking time off between college and medical school is no longer the exception: some 64 of this year’s entering students graduated from college before 2012. “The breadth of their experience is really quite striking.”

Seeing many patients die of organ failure as a physician-in-training and in her work as an anesthesiologist, Laura Niklason made a difference. Though she was initially skeptical that artificial organs would ever be clinically practical, she went on to become a leading figure in tissue engineering, and her “off-the-shelf” arteries, decades in the making, are soon to be tested in human clinical trials.

Two international graduate students receive fellowships

Sashka Dimitrievska

Alice Qinhuai Zhou

Two Yale doctoral students have received fellowships through a new initiative of the Howard Hughes Medical Institute (HHMI). Sashka Dimitrievska, in the Department of Biomedical Engineering, and Alice Qinhuai Zhou, in the Department of Molecular Biophysics and Biochemistry, will each receive a $143,000 award, which is given to 30 international graduate students named fellows each year.

Dimitrievska, a native of Canada, is working with Laura E. Niklason, M.D., Ph.D., professor of anesthesiology and of biomedical engineering, in studying aspects of engineered blood vessels (see story at left). Zhou, a native of China, is working with Corey S. O’Hern, Ph.D., associate professor of mechanical engineering and of physics, and Lynne J. Regan, Ph.D., professor of molecular biophysics and biochemistry and of chemistry, in a study to predict and redesign protein-protein interactions.

Recognizing that international graduate students in the U.S. often have difficulty securing funding, HHMI launched the International Student Research Fellowships Program last year to support the diverse research work of these students. HHMI has awarded more than $2 million in fellowships to students from 19 countries.

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Innovative microscopy technique brings Yale scientists a real-time glimpse of stem cells in action

The unique ability of embryonic stem cells to make copies of themselves and to differentiate into the myriad cell types that make up the body’s tissues and organs has been described in almost magical terms in the popular press. But the action of some stem cells is quite familiar, and occurs right before our eyes. Clustered under every strand of our hair follicles, in which dynamic cell behaviors are seen, is a specific signaling cues originating both inside and outside the follicle and cell-cell interactions within it regulate the timing and location of stem cell divisions. Researchers have gotten a glimpse of these processes by examining skin slices taken at sequential time points during the hair follicle regeneration cycle under the microscope. But since these samples are only static “snapshots,” this technique may lead scientists to miss important steps of the regeneration process, creating the possibility that what is seen through the microscope does not reflect the dynamic biology of follicles in living animals.

School of Medicine researchers have now developed a non-invasive, high-resolution imaging approach that allows them to observe stem cell regeneration in the hair follicle in real time in live mice. Their findings, published in the journal Nature on July 26, have provided new insights that will allow researchers to tackle questions related to both tissue regeneration and the role of stem cells in cancer and other diseases. “Because we can follow the same cells over time, we can really learn the true behavior rather than infer these from static analysis,” says Valentina Greco, Ph.D., assistant professor of genetics and dermatology and senior author of the study. With this new imaging approach, says Panteleimon Rompolas, Ph.D., a postdoctoral fellow in Greco’s lab and lead author of the Nature paper, “we now have a new way of looking at things that could not be done before. We have an incredible window into the mechanisms of tissue regeneration signals, we still need to figure out how these signals interact with each other in the regeneration process, and in which behaviors they play roles.” Such knowledge, Greco says, would better enable scientists to harness stem cells for therapeutic purposes.

“We’re just now identifying the basis for future work,” Greco says. “It was a risky project, but one with high reward. We now have a new way of looking at things that could not have been explored before. I think the best is yet to come.”

Science that’s more than just skin-deep

One of the most intriguing techniques in current biological research is optogenetics, in which light-sensitive proteins derived from a variety of organisms, including plants, are introduced into cells, allowing scientists to rapidly and precisely control activity within these cells with flashes of light.

“This is a powerful tool to acutely manipulate the metabolism of membrane and branched fatty acids,” says De Camilli, also a Howard Hughes Medical Institute investigator. “Abnormal metabolism of lipids in cell membranes has been implicated in many diseases, such as cancer, diabetes, and neurodegeneration, including Alzheimer’s disease.”

Does natural birth build better brains?

For several years, scientists in the lab of Tamas Horvath, D.V.M., Ph.D., have studied UCP2, a protein that facilitates the metabolism of fatty acids. Breast milk is rich in fatty acids, and UCP2 helps neurons in the brains of newborn animals utilize these nutrients. Horvath and colleagues in Spain and Brazil have now discovered that UCP2 levels are strikingly lower in mice delivered by Cesarean section than those born vaginally, a difference that may persist into adulthood. As reported August 8 in PLoS One, mice with impaired UCP2 function have smaller nerve cells in the hippocampus, a brain region involved in memory, and these cells make far fewer connections with other neurons. Moreover, mice with low UCP2 levels perform differently on behavioral and memory tests. Because UCP2 gene expression is induced by cellular stress, the authors suggest that reduced oxygen levels and restricted blood flow experienced by animals during vaginal birth may trigger production of the protein.

“The increasing prevalence of Cesarean sections driven by concern over maternal blood loss and potential fetal distress, is unlikely to have any lasting effect on brain development and function in humans as well,” says Horvath, the Jean and David W. Wallace Professor of Biomedical Research and chair of the Department of Comparative Medicine.

Second, they confirmed long-standing suspicion that the mesenchyme, a cluster of cells at the base of the hair follicle, is a crucial signaling center that dictates follicle growth; in follicles in which the team removed the mesenchyme with a laser, regeneration halted. “Not only does the study answer pre-existing questions, but the observations also raise new ones about how organizations of cells and their migrations and divisions are controlled,” says Terry Lechler, Ph.D., assistant professor of cell biology at Duke University, who was not involved in the study. “This work opens a whole new tool for analysis of hair follicle morphogenesis.”

The study also has implications for other stem cell niches. “The hair follicle is just a paradigm representing what happens in other tissues,” says Greco, a member of the Yale Stem Cell Center. Using this study as a stepping stone, Greco’s team next plans to manipulate genes in the hair follicle, including over-expressing signaling molecules or knocking them out, to see how the regeneration process is affected. The idea is to eventually determine the function of each gene in regulating hair follicle cell biology. “While there are studies that have identified tissue regeneration signals, we still need to figure out how these signals interact with each other in the regeneration process, and in which behaviors they play roles.” Such knowledge, Greco says, would better enable scientists to harness stem cells for therapeutic purposes.

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Giving creative researchers freedom to pursue ideas

Solving the mysteries of disease requires creative, innovative ideas from the best minds in medical research. Creativity can’t be propped up to occur within a specific budget, yet that is precisely how most research grants are administered. Today’s tight budgets and risk-averse grant committees favor research awards that provide funds to build on what is already known—not what is novel or unexpected.

Private support for endowed professorships, like the Henry J. and Joan W. Binder Professorship described in this issue, can provide established researchers with secure, flexible funding to pursue new ideas... to think creatively... to discover new treatments. Additionally, endowed professorships ensure that a donor’s name and particular interests are advanced in perpetuity.

Gifts from donors can also spark new investigations by junior faculty like those who will be supported through the new Psychiatry Research Scholars Program covered in this issue. Yale School of Medicine seeks donors who are not satisfied with a conservative approach to research, and who wish to participate in pushing the boundaries of knowledge. For more information on endowing a professorship or establishing a new research program, please contact Jancy Houch, associate vice president for development and director of medical development at (203) 436-8560 or jancy.houch@yale.edu.
OUT & ABOUT

June 1, 2012  Alumni of the School of Medicine returned to campus in droves for an event-filled Reunion Weekend. 1. (From left) Samir Bhatt, M.D. ’86, Anil Bhatt, M.D. ’87, and Robert H. Gifford, M.D., professor emeritus of medicine and former deputy dean for education. 2. Alumni and members of the campus community paid tribute to the late Howard M. Spiro, M.D., founding chief of the Department of Internal Medicine’s Section of Gastroenterology from 1955 until 1982, and founder of the Yale Program for Humanities in Medicine in 1983. 3. Melissa Grafe, Ph.D., the John R. Bumstead Librarian for Medical History, shares information from the library’s exhibit “Medicine in Shakespeare’s London.” 4. (From left) Gary B. Leydon, associate director of technology at the medical school, with Robert Adams, M.D. ’51, and Dawn Adams.

August 16, 2012  The School of Medicine formally welcomed the 100 members of the Class of 2016 (see related story, page 2) at the White Coat Ceremony, an annual event at which incoming medical students receive physician’s jackets. 1. Nancy R. Angoff, Ph.D., M.D., associate dean for student affairs, with David Asuzu. 2. (From left) Melissa Taylor, Durga Thakral, Sasha Deutsch-Link, Rebecca Treger, Linh Vu, Adesuwa Ighodaro, Deborah Ahove, Hiam Naiditch, and Emmanuel Ohuabunwa. 3. (From left) Jason Weed, Linh Vu, Jay Patel, Joyca Cheng, and Jake Wang. 4. Marcella Nunez-Smith, M.D., M.H.S., assistant professor of medicine, gave this year’s keynote speech. Visit medicineatyale.org for a podcast of the keynote speech and video of the day’s events.

August 17, 2012  All members of the School of Medicine’s incoming Class of 2012 received Apple iPads. The tablet computers have become a staple tool in the medical school’s curricula (see related story, facing page). 1. Daniel Yang. 2. (From left) Laura Yockey and Sasha Deutsch-Link. 3. (From left) Anirudh Seekirchnan and Nathan Lifton.

August 24, 2012  High school students in the medical school’s Discovery to Cure Summer Internship Program presented original research they conducted over the summer in Harkness Auditorium, an event marking the program’s 10th anniversary. (From left) Gil G. Mor, M.D., professor of obstetrics, gynecology, and reproductive sciences and Discovery to Cure director, with Amanda Kelly, a 2011 graduate of Sacred Heart Academy in Hamden, Conn.

Visit medicineatyale.org
Center treats cystic fibrosis in adulthood

Medical advances are bringing longer, fuller lives to patients of a dedicated Yale clinic for adults

In the mid-1990s, children with cystic fibrosis (CF), a genetic disease that causes thick mucus to clog the lungs and pancreatic ducts, were not expected to survive long enough to attend grade school. Even so to 15 years ago, children with this disease routinely died before their 18th birthday. But today, thanks to advances in both research and treatment strategies, doctors at the Yale Adult Cystic Fibrosis Center are seeing patients graduate from college, get married, have children, and work in every profession from teacher to executive. One recently ran in the New York City marathon.

Having CF is still a major challenge for patients, who often must take several medications to manage the disease, as well as various therapies to clear their lungs. In severe cases, they become candidates for lung transplantation. Still, these days, most patients’ stories represent a vast improvement over the recent past. “Most of my patients are working members of the community, and nobody passing them on the street, no longer working with them, would know they are sick,” says Jaideep Talwalkar, M.D., assistant professor of medicine and pediatrics, and associate director of the center.

Yale’s adult program, accredited by the Cystic Fibrosis Foundation, has continually kept up with advances in the field. Because long-standing data links comprehensive care with better long-term survival, all patients now have easy access to a nurse, respiratory therapist, nutritionist, social worker, physical therapist, and research coordinator.

“All of our caregivers are very important,” says Cheryl Robaczynski, registered dietitian for the clinic, explaining that CF is a complex disease that affects not only the lungs, but other factors as well, such as digestion and blood sugar. “One symptom may be an issue for a patient during a visit and it may take center stage, but everything is important. As a member of the team, I need to have basic knowledge in all of the areas,” she says.

The center’s expertise has recently been bolstered by the 2010 recruitment of Amy M. Ahasic, M.D., M.P.H., assistant professor of medicine and an expert in critical care and occupational medicine.

Most of the center’s patients were diagnosed as newborns or children, and treated at the Yale Pediatric Cystic Fibrosis Center by the center’s director, Marie E. Egan, M.D., and her colleagues. Very early screening has given these patients an advantage in that they began respiratory therapy before they were weakened by built-up mucus and debilitating lung infections. “We’re very aggressive in making sure kids are gaining weight and getting adequate pancreatic enzymes if they have pancreatic insufficiency, which most patients do,” says Egan, associate professor of pediatrics and of cellular and molecular physiology.

When patients turn 18, they participate in a formal transition to the adult clinic, quickly or gradually, depending on their comfort level.

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Apple names Yale a ‘standout school’ for curricular innovations

The School of Medicine’s iPad initiative, through which all Yale medical students have been provided with an Apple tablet computer containing the school’s curriculum, has won praise on campus and off, most recently by Apple Computer itself, which chose to include the School of Medicine in its “Standout Schools” webcast series.

The series showcases educators from across the country who are using technology to engage students in new ways.

On July 31, the live event featured an interview with Michael L. Schwartz, Ph.D., associate dean for curriculum and associate professor of neurobiology, who described the transition from the mountainous stacks of paper students once received to a curriculum that is essentially paperless. The idea, which began as a five-month pilot program in 2010, has had manifold benefits. “We felt this would allow us to be a little ‘greener’ in our curriculum, by reducing the nearly $100,000 a year we spent on copying costs,” Schwartz said.

But the initiative has also vastly changed the way Yale medical students learn, and may ultimately change the way they practice medicine. “Our goal was to provide a full curricular material to our students, electronically, taking advantage of what the platform allows,” Schwartz says. “We also wanted to provide our students with a secure mechanism for generating, storing, and reading electronic protected health information, and the iPad met the standard very well for us. And finally, we wanted to create a platform that will provide our faculty with new ways to continue developing our curriculum.”

The webcast can be found online at http://edseminars.apple.com/standout-schools.
Grants and contracts awarded to Yale School of Medicine
September/October, 2011

Federal
Philip Askensie
• Allergy and Immunology Training Grant, 5 years, $31,024
• Iglyda Baraktar, Health Resources and Services Administration, National Health Training Centers/Expanding HIV Training Into Graduate Medical Education, 3 years, $450,000
• Rachel Barnes, NIH, Examining Invasive Prostatic Cancer Using Novel Constructs, 2 years, $79,160
• Robert Bjornson, NIH, High-Performance Computing instrumentation for Yale University Biomedical w/ Center, 1 year, $127,595
• Christopher Bud, NIH, Pnl:4 Kinase Regulation of Protein Sorting in the Golgi Apparatus, 3 years, $1,522,377
• Andrew Chittenden, NIH, Nociceptin and TRPV1-Related Pathways Influence NK Cells, 7 months, $28,977
• Peter Krause, NIH, The Health Benefits of Recently Discovered Borrelia, 1 year, $114,900
• Marcela Noreen, NIH, Mouse Metabolic Phenotyping Center, 4 years, $505,906
• Nicole Mcneer, NIH, Nanoparticle Delivery of Triptans for Headache: Mechanisms of Vasodilation in the Brain, 1 year, $140,001
• Dennis Shalad, NIH, U.S. Army Medical Research Acquisition Activity, Regulation of Yeast Mitochondrial Function and Cell Life Span by Toc1 in Signal transduction and Ubiquitin-based Output Systems Research Network (co-2C), 4 years, $3,473,575
• Jordan Pober, NIH, Regulating Anti-Endothelial Cell Responses in Graff-Articularis, 3.7 years, $509,518
• Richard Flavell, NIH, Inst. for Occupational Safety and Health, Assessing Hearing Conservation Effectiveness, 4 years, $524,460
• Richard Flavell, NIH, U.S. Army Medical Research Acquisition Activity, Developing the Role of the inflammasome in the regulation of the inflammatory response of immune cells, 1 year, $125,400
• David Fiellin, NIH, Integrate and Synthesize Alcohol and Other Drug Use in Live, 5 years, $700,500
• Richard Flavell, U.S. Army Medical Research Acquisition Activity, Describing the Role of the inflammasome in the regulation of the inflammatory response of immune cells, 1 year, $21,459
• Enrique De la Cruz, NIH, Actin Filament Bundling during Dendritic Cell Migration, 3 years, $385,287
• Joseph Craft, NIH, Training Program in Investigative Rheumatology, 5 years, $1,633,685
• Diana H. Gonzalez, NIH, Regulation of a Lipid Raft Trafficking Pathway in Human Lysosomes, 1 year, $100,000
• Gerard Shalad, NIH, U.S. Army Medical Research Acquisition Activity, Regulation of Yeast Mitochondrial Function and Cell Life Span by Toc1 in Signal transduction and Ubiquitin-based Output Systems Research Network (co-2C), 4 years, $3,473,575
• Jordan Pober, NIH, Regulating Anti-Endothelial Cell Responses in Graff-Articularis, 3.7 years, $509,518
• Jody Sindelar, NIH, Fish, Harold and Leila Y. Eberhard Center for Interdisciplinary Research on the Epidemiology of Ticks-Borne Diseases at Yale, 1 year, $1,159,500
• Megan Smith, NIH, Study of Alcohol Consumption and the Emergence of Schizophrenia (1R03MH107182-02), 1 year, $52,000
• Richard Eriko, NIH, Department of Homeland Security, A Mini-Neuromuscular Superheated Emulsions for Nuclear Material Detection, 4 years, $911,804
• Prasad Mocci, NIH, Pleiotropic Roles of Dyslexia Genes in Neurodevelopmental language impairments, 3 years, $100,000
• Jason Fletcher, NIH, Evaluating the Causal Effect of Smoking on Health Behaviors, 3 years, $212,235
• Terri Fried, NIH, The Role of hyperoxic in Coagulopathy in Reinfarction, 1 year, $39,242
• Alan Caren, NIH, Hepatitis D Virus Genomic Eta in the Etiology of Liver Cancer, 2 years, $75,000
• James Howe, NIH, The Potential Role of Serotonin as a Serotonin 5-HT2C Receptor, 1 year, $100,000
• Deborah McKnight, NIH, The Testosterone Trial: Examining the Effect of Testosterone on Cardiovascular Function in Elderly Men, 1 year, $140,001
• Daniel Dries, NIH, Human Fetal Brain Mechanosensory Development as a Model to Elucidate Novel Mechanotransduction in Matrix Adhesions, 3 years, $1,861,603
• Megan King, NIH, Inventor for Treatment of Tinnitus, 4 years, $75,000
• Benjamin De Camilli, NIH, Human Frontier Science Program, Novel Constructs of ADAMTS13 in Human Physiology, 3 years, $250,000
• John Eicher, NIH, Maternal Self-Regulation of Maternal Smoking Cessation During Pregnancy, 2 years, $1,021,717
• Michael Rikbin, NIH, Yosemite Symphony Orchestra, The Role of IL-13 Signaling and Agonist in the Pathogenesis of Pulmonary Arterial Hypertension, 2 years, $1,400,000
• Jason Yooh, NIH, College of Physicians of Philadelphia, Integrative Studies in Human Inflammatory/Cooperative Study Group for Autoimmune Disease Prevention Pilot Project, 1 year, $150,000
• Nancy Hume, NIH, Research in Progress, Caring for Myw by Picx in Ph or Pm, 1 year, $150,000
• Halvor Colson, NIH, Josiah Macy Jr. Foundation, Using Continuance of Therapy, Patient Care and Inter-Family Communication in PCP Visits, 3 years, $150,000
• Hiroshi Kato, NIH, University of Wisconsin-Madison, Eta Proteostasis in Breast Cancer, 11 years, $68,804
• Harvey Risch, Johns Hopkins University [Dept. of Defense], Epidemiological Evaluations of Inheritable Lesions of Organic Serous Cavum by Elucidating Its Early Changes, 1 year, $10,288
• Robert Romans, Columbia University [w/ New Jersey Institute of Public Health and Health Resources and Services Administration, National Health Training Centers/Expanding HIV Training Into Graduate Medical Education, 3 years, $450,000
• Robert Rosenheck, Feinstein Inst. for Medical Research, [w/], Recovery After an Initial Schizophrenic Episode (2R03MH070059-05), 2 years, $209,700
• William Robek, Smith, Foundation for Translation and Clinical Research at Yale Medical, 2 years, $620,625
• Robin Wellman, Trust, NanoScan in the Living cell, 25 years, $4,599,244
• Elaine Scheideman, American Cancer Society [Inc.], Retinol Binding Protein and Retinoids as Potential Autoimmune Transmembrane Inhibitors, 3 years, $150,000
• Martin Schwartz, Sanford-Burnham Medical Research Institute [w/], Ultrastructural Basis of Membrane Traffic, 3 years, $252,062
• Michael Vinyard, NIH, Foundation [w/], Opportunities to Quit Smoking in CT Medica[;] Medical of Home, 5 years, $1,076,903
• Brian Smith, Association of Pathology Chairs, Pro- nanotechnology Conferences and Training Institutes, 5 years, $1,075,995
• Stuart Weitzman, Stanford University [w/], Oncologic Circuits of Sensing and Signaling by Peripheral Membrane Protein, 3 years, $268,500
• C. David Wilson, NIH, University of Wisconsin-Madison [w/], Eta Proteostasis in Breast Cancer, 11 years, $68,804
• Harvey Risch, Johns Hopkins University [Dept. of Defense], Epidemiological Evaluations of Inheritable Lesions of Organic Serous Cavum by Elucidating Its Early Changes, 1 year, $10,288
• Michael Robek, Columbia University [w/ New Jersey Institute of Public Health and Health Resources and Services Administration, National Health Training Centers/Expanding HIV Training Into Graduate Medical Education, 3 years, $450,000
• Robert Romans, Columbia University [w/ New Jersey Institute of Public Health and Health Resources and Services Administration, National Health Training Centers/Expanding HIV Training Into Graduate Medical Education, 3 years, $450,000
• Robert Romans, Columbia University [w/ New Jersey Institute of Public Health and Health Resources and Services Administration, National Health Training Centers/Expanding HIV Training Into Graduate Medical Education, 3 years, $450,000
• Robert Romans, Columbia University [w/ New Jersey Institute of Public Health and Health Resources and Services Administration, National Health Training Centers/Expanding HIV Training Into Graduate Medical Education, 3 years, $450,000
better-known disorders such as schizophrenia and autism receive far less research funding than the research at Yale for just short of 50 years,” he says. “I have been here since 1986 with a degree in history. The Binders’ daughter, Sarah, graduated from Yale College in 1986 with a degree in history. “Yale has given me a collegial environment that has been very beneficial. I have established collaborations and interactions with a range of colleagues,” Henry Binder says. “I found it a very nurturing, friendly, collaborative environment.”

At Yale, Lister will continue his research on monitoring children at risk for sudden infant death, work on which he has collaborated with Yale’s Eve R. Cohon, M.D., associate professor of pediatrics, for many years. He also hopes to develop a program to help students interested in pediatrics develop careers as physician-scientists, and to build bridges between pediatrics and other departments. In particular, he is interested in multidisciplinary efforts to diagnose and treat chronic illnesses that emerge in childhood, such as diabetes, congenital heart disease, and depression. Lister succeeds Clifford W. Boggs, M.D., professor emeritus, as interim chair of the Department of Pediatrics since September 2010.
RNA biologist is honored as scientist, advocate, and mentor

The School of Medicine’s Joan A. Steitz, Ph.D., has been awarded two major prizes that recognize outstanding achievements of women scientists.

Steitz, Sterling Professor of Molecular Biophysics and Biochemistry and a Howard Hughes Medical Institute investigator, was awarded the Pearl Meister Greengard Prize of Rockefeller University for more than four decades of research on how messenger RNA (mRNA) is fashioned in order to make proteins from the instructions in DNA, a process crucial to all life.

Steitz was also named winner of the 2013 Vanderbilt Prize in Bioscience, created “to honor and recognize a woman scientist of national reputation who has a stellar record of research accomplishments and is known for her mentorship of women in science” by Vanderbilt University School of Medicine.

“Professor Steitz is both a tireless advocate and a visible and successful role model for women in science,” said Steven Girvin, deputy provost for science and technology at Yale. “Her work was critical to our understanding of the complex and crucial role RNA molecules play in biology.”

As a student at Harvard University in the 1960s, Steitz almost decided not to pursue a career in science because of a lack of opportunities. However, with the encouragement of established scientists such as James D. Watson, Ph.D., winner of the Nobel Prize for discovery of the structure of DNA, Steitz began to study how RNA operates in bacteria. After coming to Yale in 1970, Steitz soon discovered “initiator regions,” sites in mRNA strands that mark where the cell’s protein-making machinery begins translating mRNA into proteins. In a classic paper published 10 years later, Steitz showed that RNA-protein complexes in the cell nucleus called snRNPs are critical to splicing, by which non-coding sequences are excised from pre-mRNA to form mRNA. Steitz has been an international leader in describing the molecular events involved in creation of mRNA. In the decades since, RNA biology has exploded, and Steitz continues to explore RNA’s diverse and powerful roles in the cell.

The Pearl Meister Greengard Prize was created by Nobel laureate and Rockefeller professor Paul Greengard, Ph.D., who donated his entire monetary share of the 2000 Nobel Prize in Physiology or Medicine to Rockefeller University to establish the annual prize, which honors the accomplishments of women scientists. The prize is named in memory of Greengard’s mother, who died giving birth to him. The award includes a $100,000 honorarium.

Winners of the Vanderbilt Prize receive a $55,000 honorarium, visit Vanderbilt to meet with faculty and to deliver a Discovery Lecture, and also serve as a mentor, “nurturing the career, research, and studies” of a Vanderbilt Prize Scholar, “a promising woman beginning her Ph.D. studies” at Vanderbilt University School of Medicine. Steitz will receive the award in May, 2013.

Epidemiologist honored for work developing mathematical models of disease outbreaks

Alison P. Galvani, Ph.D., has received the Blavatnik Award for Young Scientists from the New York Academy of Sciences. Galvani, associate professor of epidemiology and of ecology and evolutionary biology, is one of four faculty recipients of the award in 2012.

Galvani’s work focuses on integrating epidemiology, evolution, and ecology in order to generate predictions that could not be made by these disciplines alone.

This interdisciplinary approach has widespread potential for answering evolutionary questions, explaining empirical observations, and informing public health policy.

She has applied this approach to the study of HIV, influenza, tuberculosis, and the human papillomavirus (HPV), among other diseases.

The Blavatnik Awards celebrate the excellence of young scientists and engineers in New York, New Jersey, and Connecticut. They recognize high-innovation, impactful, and interdisciplinarity accomplishments in the life sciences, physical sciences, mathematics, and engineering, with unrestricted financial prizes.

Leading researcher on disability in the aged is lauded by national gerontology society

Thomas M. Gill, M.D., an expert in research and clinical care aimed at preventing disability among older persons, has received the 2012 Joseph T. Freeman Award from the Gerontological Society of America.

Gill, the Hunuma Professor of Medicine and professor of epidemiology and of investigative medicine, is a leading authority on the epidemiology and prevention of disability among older persons. His research has offered compelling evidence to support an emerging paradigm of disability as a reversible, and often recurrent, event. With results from his epidemiologic studies, Gill successfully implemented a landmark clinical trial that demonstrated that functional decline among frail elderly persons can be prevented.

Gill serves as director of the Yale Program on Aging, the Claude D. Pepper Older Americans Independence Center, the Center on Disability and Disabling Disorders, and a National Institute on Aging–funded postdoctoral training program in geriatric clinical epidemiology and aging-related research.

Stem cell scientist is the recipient of awards from the White House, genetics societies

In July, President Obama named Valerie Horsley, Ph.D., the Maxine F. Singer ’57 Assistant Professor of Molecular, Cellular, and Developmental Biology one of 66 recipients of the Presidential Early Career Awards for Scientists and Engineers (PECASE). In August, she was given a 2013 Residential Franklin Young Investigator Award, which is funded by the Gruber Foundation and administered by the Genetics Society of America and the American Society of Human Genetics.

Horsley studies the cellular and molecular mechanisms that control stem cell activity and function within epithelia—the tissues that line our internal organs and outer surfaces. Her lab uses the mouse as a genetic model system to study how adult stem cells within epithelial tissues maintain tissue homeostasis and contribute to wound healing, and their role in cancers.

The PECASE is the highest award bestowed by the United States Government on science and engineering professionals in the early stages of their independent research careers. The Franklin Award, named in honor of one of the founders of modern genetics, is given every three years to two young women geneticists. Designed to support career development, the awards include a grant of $50,000 over three years.

Charity renews support for research on outcomes in survivors of childhood cancer

Nina S. Kadan-Lottick, M.D., M.S.P.H., associate professor of pediatrics, has received a St. Baldrick’s Foundation Extended Scholar Award. The award extends Kadan-Lottick’s previous St. Baldrick’s Scholar Award, given in 2008, for an additional two years.

Kadan-Lottick researches outcomes among survivors of childhood cancer, 25 to 30 percent of whom experience long-term impairment in cognitive abilities and emotional regulation.

Her research seeks to explain the considerable variation in outcomes seen among children who received identical therapy, with a focus on possibly inherited factors that affect how chemotherapy is metabolized, or that result in vulnerability to these outcomes.

The St. Baldrick’s Foundation, founded in 2005, is a volunteer-driven charity committed to funding research to find cures for childhood cancers and to give survivors long and healthy lives.

Kadan-Lottick, medical director of the hero’s Program at Yale, received her M.D. from Johns Hopkins University School of Medicine. She completed a residency in pediatrics at Johns Hopkins Hospital, and fellowships in pediatric hematologic/oncology, at The Children’s Hospital at the University of Colorado Health Sciences, and in epidemiology, at the University of Minnesota.