New Yale Institute of Global Health to address worldwide issues

Health sciences schools take the lead on an initiative that aspires to have global impact

The Schools of Medicine, Public Health, and Nursing have come together to launch the Yale Institute of Global Health (YIGH), a university-wide effort that will address worldwide health issues. The initial focus of YIGH will be on research aimed at improving the health of individuals and populations around the world.

The creation of YIGH reflects a growing interest by students, faculty, and advanced trainees across the university in conducting global health research, along with the need for a centralized resource for faculty to collaborate on these projects. The recent arrivals of Sten H. Vermund, M.D., Ph.D., dean and Anna M.R. Lauder Professor of Public Health, and professor of epidemiology (microbial diseases) and of pediatrics; and of Ann E. Kurth, Ph.D., C.N.M., M.P.H., dean and Linda Koch Lorimer Professor of Nursing—both of whom bring a wealth of expertise in global health research—was another driving factor.

"There are complicated regulatory, legal, and logistical challenges to doing research in international locations," says Robert M. Rohrbaugh, M.D., professor of psychiatry and director of the Office of International Medical Student Education at the School of Medicine, where more than 40 faculty members conduct global health research. "A centralized group with this type of expertise is helpful, especially for junior faculty."

Slayman professorship is established

Endowment is created to honor the memory of beloved deputy dean and mentor

The School of Medicine has established an endowed professorship to honor the memory of the late Carolyn Walsh Slayman, Ph.D., a distinguished scientist and visionary academic leader who graced the School of Medicine with her inimitable presence for almost 50 years. At the time of her death at age 79 in December 2016, Slayman was deputy dean for academic and scientific affairs, Sterling Professor of Genetics, and professor of cellular and molecular physiology.

"We continue to feel Carolyn's absence, and her influence will be with us for many years to come," says Robert J. Alpern, M.D., dean and Ensign Professor of Medicine. "I am delighted that this professorship has been created to honor her legacy."

Slayman joined the School of Medicine faculty in 1967 as an assistant professor in the Department of Physiology and Microbiology. After spending her initial years at Yale as a bench scientist, she went on to assume administrative responsibilities through which she influenced scores of students, trainees, and colleagues, and kept the School of Medicine at the forefront in countless areas. She was a trailblazer on many fronts. When named chair of the Department of Human Genetics (now Genetics) in 1984, she became the first woman to head a department at Yale School of Medicine. In 1993, she became the school's first deputy dean for academic and scientific affairs, and the first woman to hold a deputy deanship. Shortly after her appointment as deputy dean she said that her job was to be a catalyst, bringing people together to foster active discussion that would guide the school. By all accounts, she succeeded admirably in this endeavor. Many sought... // Endowment (page 5)
A stalwart in laboratory and clinic

Internal Medicine chair discovered a protein with kidney, heart, cancer roles

On a spring day in New York, Gary V. Desir, M.D., 40, now chair of Internal Medicine, and Paul B. Beeson Professor of Medicine, answered a phone call from his father back home in Port-au-Prince, Haiti. Desir had planned to enjoy his first vacation to the United States, while staying at his cousin’s apartment in Queens, and return in a couple of weeks. “My father said, ‘You probably should stay in the U.S. and go to college,’” Desir recalls. “So, I stayed.”

Desir’s father, a cardiologist, had trained in Canada and Chicago and wanted his children to earn their degrees from U.S. schools. So, Desir applied, and was accepted at New York University College of Medicine, where he would major in biology. When the time came to choose his father, paternal grandfather, and great grandfather into medicine, he considered internal medicine and pediatrics, and others, but those Yale because of its system of medical education, which promotes independent learning.

As a first-year, Desir shared a cadaver with a classmate, and soon decided he wanted to share his life with her. And he then, Deborah Dyett, pursued internal medicine residencies at Yale New Haven Hospital, a decision heavily influenced by Samuel O. Thier, M.D., then Yale’s chair of internal medicine, who made sure the couple had similar on-call schedules so they could enjoy days off together. “Also, at the time, I wanted to do research in renal physiology, and Yale was top-rated in this area,” Desir says. That, along with mentors such as Thomas P. D’Agostino, M.D., professor emeritus of medicine (hematology), persuaded the two to stay.

Desir finished a nephrology fellowship at Yale in 1987 and joined the faculty as an assistant professor in 1988. At first, he dedicated himself to research, seeking to better understand ion channel function in kidneys and searching for ways to advance clinical care.

Major success came in 2005: “A renal fellow and I were caring for patients suffering from kidney disease, and he was lamenting that, in spite of our best efforts, many of our patients ended up dying of cardiovascular-related complications,” Desir says. “That was the inspiration for looking into the connection between kidney and heart disease. And that search, which took several years, led us to discovery of renalase, a flavoprotein, synthesized in the kidney and secreted in blood, that enhances various cell’s ability to survive. The renalase protein is approximately 3 billion years old, and is encoded by a single, highly conserved gene.”

Desir and his team hypothesized that renalase could be used to protect patients from kidney injury and heart attacks, and minimize cardiac cell damage. More recently, Desir and others have also found that dysregulated renalase signaling alters the immune response to tumors and can contribute to the development of certain cancers. His laboratory is developing agents that block renalase signaling as first-in-class therapeutic agents for cancer. Desir holds several renalase-related patents and is scientific founder of two biotech companies.

Over time, Desir has taken on added clinical and administrative roles. He was appointed internal medicine chair at the West Haven VA hospital in 2003. A decade later, he became interim chair of Yale’s Department of Internal Medicine, and then its chair and chief in 2016. Desir also is board chair for Yale Medicine. The school’s clinical practice, where he is working toward making electronic-health-record software less intrusive in physician-patient interactions. In addition, he co-founded the Minority Organization for Retention and Expansion (MORE), with the goal of recruiting—and keeping—more minority faculty and students.

He also has a dual teaching appointment with the School of Forestry & Environmental Studies, where he co-led a graduate course called “Sustainable Development in a Post-Disaster Context,” in collaboration with the Albert Schweitzer Hospital in Deschappelles, Haiti, and continues to host visiting Haitian doctors and nurses in an exchange program.

What at first was going to be a temporary stay for Desir at Yale has now turned into four decades, and he says he has never questioned his original decision to stay. He and Deborah Dyett Desir, M.D., ’80, a rheumatologist in private practice, have raised four children during 38 years of marriage. And within the medical school, he is thankful “to have found collaborators and people at Yale willing to help even though they were not benefiting from what they were helping me with. Even when I was a junior faculty member researching ion channels, I had people willing to help me.” Now, as a senior leader, and by personal example, it is that kind medical school he is dedicated to maintaining.

Garino is appointed director of the Physician Associate Program

Alexandria (Xandi) Garino, Ph.D., P.A.-C., assistant professor of medicine, has been director of the Yale School of Medicine Physician Associate (PA) Program, after serving as interim director since July 2016. Garino joined the PA Program faculty in 2006, and has worked clinically for 10 years as a physician assistant at Yale Cancer Center.

Garino, who places a high value on the program’s research focus, received her Ph.D. in learning science in January 2018 from Fordham University’s Contemporary Learning and Interdisciplinary Research program. Her doctoral work explored the non-cognitive factors that explain how students in the health professions react to, interpret, and use feedback.

She graduated from Catholic Medical Center’s PA program in 1999, and earned her M.S. in biostatistics and clinical research design from Columbia University’s Mailman School of Public Health in 2004.
The protein apelin, previously known to improve glucose metabolism, could become the focus of diabetes treatments. This suggests a new study led by Hyung J. Chun, M.D., associate professor of medicine (cardiology). The study, published in Science Translational Medicine on September 13, reports apelin’s receptors are located specifically on the endothelial cells that line the blood vessels and that apelin binding of its receptor prevents another protein—endothelial fatty-acid binding protein (E-FABP)—from importing fatty acids into the tissues. Excess fatty-acid accumulation can result in insulin resistance and poor glucose metabolism—the hallmarks of diabetes.

Chun’s team fed mice high-fat chow. The mice gained weight and develop insulin resistance. Those mice also produced less apelin. Injecting those same mice with apelin improved their glucose metabolism.

Chun believes drugs that activate apelin receptors or inhibit E-FABP might be potential diabetes treatments. Further, since apelin prevents atherosclerosis in mice, such treatments could also address diabetes-associated cardiovascular problems.

Frequent consultation between bench and clinic enhances the effectiveness and impact of Yale Cancer Center’s Phase I Program

It is a simple concept: bench investigators who identify potential cancer therapies, and clinicians who evaluate experimental drugs in patient trials, sitting down together to figure out how each can make the others’ work more effective. And yet, until just the past few years, the two groups often worked separately from one another at many institutions. The thought process at the bench seldom extended to the operating room, and clinical trial physicians developed their protocols with limited input from the basic scientists who made the initial discoveries.

Because of that, Ranjit S. Bindra, M.D., Ph.D., associate professor of therapeutic radiology, says extraordinary lab work frequently went unnoticed. “There are so many great discoveries in journals like Science Translational Medicine, Science, and Nature, from many institutions, where the clinical implications are so profound, and yet they never made it into the clinic.” Some work, Bindra says, was just not transplantable, but in other instances, he says, “they probably also just never had a feasible mechanism to drive them into the clinic.”

Such a mechanism is now the organizing principle of the Phase I Program at Yale Cancer Center (YCC), one of the few academic programs in the country where regular contact between bench scientists and clinicians is standard practice.

“There is a special drug development seminar once a month,” says Joseph Paul Eder, M.D., professor of medicine (medical oncology) and clinical leader of the Phase I Research Group. “There’s another that’s called clinical cancer colloquium, where basic scientists from Science Hill come talk to us, and we go back to the lab, and say, ‘These are great targets.’ What is special about Yale is that the clinicians and translational scientists talk almost daily. The clinicians attend the science lectures, we pass each other in the hall, and I hope that every scientist knows our doors are always open and our cell phones are always on.”

One project enhanced by these frequent interactions was a paper published in February 2017, whose senior authors were Bindra and Peter M. Glazer, M.D., Ph.D., chair and Robert E. Hunter Professor of Therapeutic Radiology and professor of genetics.

Their research, in Science Translational Medicine, demonstrated the sensitivity of tumor cells with mutations in two metabolism genes, IDH1 and IDH2, to targeted drugs called PARP inhibitors. In the discussion section of the manuscript, the authors wrote that their findings could form the basis for a possible therapeutic strategy in vivo. They could say that confidently because before the paper was even published, Bindra began a series of discussions about how to translate this discovery directly into the clinic with Patricia M. LoRusso, D.O., director of the early therapeutics clinical trials program and associate center director of experimental therapeutics at YCC, who leads the Phase I Program’s Disease Aligned Research Team.

Bindra recalls, “She raised her hand in a research seminar and said ‘I’m not impressed with your animal data.’ You’re seeing these curves that are barely separating in a flank model, you’re not going to be able to convince clinicians to bring this into the clinic.” Bindra went back to the lab to “look at the different PARP inhibitors and to find one that had the biggest difference.” They ended up selecting an FDA-approved PARP inhibitor, olaparib, which demonstrated marked activity in vivo.

That choice is helping patients already. Eder quickly plugged the findings into an existing protocol designed to treat patients with advanced prostate cancer. “I was excited to see if I could bring this into the clinic.” Yale enrolled IDH1/2-mutant patients into the study, and already months later we know at least in some patients this really works.”

LoRusso and Bindra have even more ambitious plans. “Pat and I are writing a series of trials together, really testing [the findings] in rigorous Phase II studies,” says Bindra. LoRusso says trialists will go a step beyond standard safety-related protocols and send samples obtained from their patients back to the bench scientists, “to try to understand why it’s working or why it’s not working and in what patients it’s working.”

“You can’t often do that by just looking at the patients,” she adds. “You need to take the tumor and the patient information and go back into the lab. That’s one of the beauties of having the science and the clinic here.”

Another development seen as beautiful by those involved is the clinic itself, a dedicated trial facility significantly funded by Yale New Haven Hospital, and that opened in 2016. “Instead of being a sort of designated corner of a general medical oncology unit,” says Eder, “it’s now a specified place.” LoRusso says the new facility has accelerated the Phase I Program, which served roughly 35 patients per year when she came to Yale three years ago, and now is on target to enroll at least 150 patients in 2018. “I think it’s done wonders,” she says, “There’s nothing like working in an extremely pleasant environment. It’s a state-of-the-art facility.”

Those concerns matter to patients who struggle to follow the strict protocols of a clinical trial, according to Joseph W. Kim, M.D., assistant professor of medicine (medical oncology). Kim designs many of the trials. His role also includes explaining both the pros and cons of trial participation to his Yale Medicine patients. “These trials are quite involved with research blood draws and biopsies,” Kim says. “The patients need a lot of attention.”

While cautioning against false hope, Kim can also describe the encouraging longevity certain patients have enjoyed thanks to recent research advances. “We have patients from 2014 who remain on treatment without any evidence of disease,” he notes. “An average life expectancy of patients coming to the Phase I clinic is 1 to 6 months. So, they are well beyond life expectancy. It’s amazing.”

Kim has adapted other work by Glazer and Bindra for a current trial to treat patients with advanced prostate cancer. “We sat down and talked about how hypoxia could suppress DNA repair,” Bindra says. “He clearly looked at the papers and was thinking deeply about it.” Their close cooperation mirrors that of many other bench researchers and clinicians at Yale.

For Eder, the program puts Yale in a place where it wants to be. “I don’t think you can find any of the original papers on immuno-oncology drugs like ipilimumab and nivolumab where Yale investigators were not first or last authors on those papers.”

Now, he says, investigators have the optimal outlet for their work. “It’s not just great scientists at the bench. It’s not just great docs in the clinic. We can bring these two things together and bridge that for a clinical trial that will benefit [patients] now.” And, he enthusiastically tells patients, “You can be among the first.”

Since their arrival at Yale within the past six years, Patricia LoRusso (right) and Joseph Paul Eder (center)—who are also Clinical Research Coordinator Alexandrina Minnella—have overseen a sharp increase in the number of clinical trials conducted by the Phase I Program at Yale Cancer Center. Bench investigators and the clinicians who design and conduct early-phase trials interact regularly, each sharing knowledge with the other that both strengthens the basic science and brings new discoveries to patients more quickly and effectively.

A path toward drug synthesis in cells

A Yale-led research team has described the structure of pyrrolysyl-tRNA synthetase (PylRS), a protein that synthetic biologists rely upon to match the amino acids with the tRNAs that carry them into the genomes of cells. That synthetic biologists rely upon to “treat” cancer and develop insulin resistance and improve glucose metabolism—the hallmarks of diabetes.

In the past, most biology textbooks have described 20 amino acids—the building blocks of all proteins—and 20 tRNAs, responsible for matching the amino acids with the correct genetic molecules. Recently, however, researchers have uncovered additional rare amino acids, including the so-called “22nd amino acid” pyrrolysine, found in bacteria and single-celled organisms.

To help advance efforts to integrate pyrrolysine into the genomes of other types of cells, Dieter Stoll, Ph.D., Sterling Professor of Molecular Biophysics and Biochemistry, and professor of chemistry, and colleagues determined the three-dimensional structure of PylRS, the only synthetase required for pyrrolysine.

As published October 16 in Nature Chemical Biology, Stoll’s team not only described the structure of a unique section of PylRS, but also evolved new variants of the synthetase that function as a standard lab setup that is both simpler and faster than prior techniques that need specialized equipment. Stoll foresees “the exciting prospect of synthesizing new drugs inside living cells.”

Clinical trials take innovative approach

Advances in drug discovery are allowing researchers to move more quickly to the clinic, for patients with rare diseases like apelin deficiency. To this end, researchers have uncovered a rare amino acid, pyrrolysine, found in bacteria and single-celled organisms.

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May 3 Cheryl Henson (front left), Yale College ’84, president of the Jim Henson Foundation founded by her late father, who created the Muppets, helped film a segment for the Yale Early Social Cognition Lab, with puppeteers Lindsey “Z.” Briggs (front, second from left) and Stephanie D’Abruzzo (front right). Katarzyna Chawarska, Ph.D., (center rear), lab director and professor in the Yale Child Study Center, is surrounded by her lab team, which analyzes responses of children with autism to videos of puppets interacting with live actors.

October 1 The inaugural First Sunday was held at the home of Darin A. Latimore, M.D. (front, center), deputy dean for diversity and inclusion and chief diversity officer. More than 45 medical, graduate, and postdoctoral students attended the community-building event, with plans to hold similar gatherings each month.

October 6 On National PA Day, New Haven Mayor Toni Harp (center) helped celebrate the 50th anniversary of the Physician Assistant (PA) profession with Yale leaders. From left, Rita A. Rienzo, M.S., PA-C, assistant professor in Yale’s PA Program; Michael Devanney, MHS, PA-C, current vice president of Connecticut Academy of Physician Assistants; Courtney Fankhanel, MM Sc., PA-C, assistant professor in Yale’s PA Program; James Van Rhee, M.S., PA-C, director of Yale’s PA Online Program; and David Brissette, MMSc, PA-C, assistant professor in Yale’s PA Program.

// YIGH (page 4) sustainable global partnerships,” says Vermund. Current programs across the university address such areas as infectious diseases, maternal and child health, noncommunicable diseases, and health systems and research capacity. YIGH will build upon this foundation to address such global challenges as pandemic preparedness, refugee health, urbanization, and climate change and health. Researchers at the health sciences schools will collaborate with experts from the Schools of Forestry & Environmental Studies, Law, and Management to expand the institute’s interdisciplinary agenda.

It is a sign of increasing demand for what YIGH plans to do that about a third of each year’s School of Medicine class travels abroad for an international clinical elective. Rohrbough notes that many of these students also want experience conducting research in international settings; one challenge this trend presents has been student access to mentors. By bolstering opportunities for international projects, YIGH is expected to develop new mentorship capacity to support student research at the health professions schools and across the university.

A search is underway for a faculty director and YIGH is already ramping up its activities. Initiatives include a program to provide consultation to faculty who are developing new grant proposals or exploring potential collaborations based on geographic or topical areas of interest, and seed grants for faculty to pursue new research opportunities.

“We want to harvest all the talent and the distinct assets we have across the university, to make a deeper impact with our global initiatives,” says Kurth. “YIGH will provide a catalyzing center for these collaborations.”
Non-smoker’s lung cancer, and associated gene mutations, are among the priorities for Yale scientists in both the lab and the clinic

For a quarter century, Ginny Grunley, her husband Ken Grunley, president and chief executive officer of Grunley Construction, Inc., and their family have been enthusiastic philanthropists. Their determination to help others has included Ginny volunteering as a court-appointed special advocate for disadvantaged children.

“Writing a check is not enough,” Ginny declares as a firm statement of family philosophy. “You need to be involved in the process.”

In 2017 the Grunleys became supporters of Yale School of Medicine, with a million-dollar gift to fund lung cancer research led by Roy S. Herbst, M.D., Ph.D., Ensign Professor of Medicine and professor of pharmacology, associate director for translational research at Yale Cancer Center (YCC), and chief of medical oncology at YCC and Smilow Cancer Hospital. Their involvement, however, is something they would not have imagined just a few years ago. Ginny came to learn about Herbst’s research because she had become one of his patients, after being diagnosed with a rare lung cancer associated with the EGFR gene mutation—a condition commonly known as non-smoker’s lung cancer.

She considers herself lucky that the cancer was discovered so early—many lung cancers are not—and also that Ellen V. Sigal, Ph.D., founder and chair of the organization Friends of Cancer Research, and the wife of one of Ken Grunley’s business acquaintances, knows Herbst well because of his basic and clinical-trials work in the field. Sigal, whom Ginny now calls “my guardian angel, my best friend, my sister,” is well-connected in the cancer community, and she brought Roy in from the very beginning.

The Grunleys flew to New Haven, where Herbst introduced them to his clinical and research teams, including Katerina Politi, Ph.D., associate professor of pathology; Grunley says Politi, whom she calls “an amazing young woman, so brilliant,” examined her in extraordinary detail. Based on that analysis, Politi and Herbst recommended that Grunley switch from her prior medication to afatinib, a targeted medication that she kept her cancer at bay with just minimal side effects for two joy-filled years. To be able to see these brilliant minds at work,” says Grunley, “was just what I needed.”

Herbst agreed. “My proudest achievement is the team I’ve built here at Yale, and the way they work together,” he says. “They’re committed, and they’re caring, from the lab to the clinic.”

As for the Grunleys’ gift, Herbst says, “It has allowed us to expand our sequencing work in lung cancer to look for new mutations that might result in patients becoming resistant to some of these target drugs while building new animal models to test new therapies. It’s allowed us to explore new approaches of how to study brain metastases, and target them in lung cancer research.”

The resistance to drugs that Herbst notes has now caught up with Ginny Grunley. The two good years the afatinib gave her have run their course. So, Herbst and the Grunleys are teaming up, along with other top cancer experts, to determine the next treatment solutions together.

“One thing Roy does is he gives hope that there’s so much coming down the road, that this isn’t by far the last thing to try,” says Grunley. “I just want to make it for my daughter’s wedding and my grandson’s bar mitzvah, and he knows how important that is to me. He gets it. There are not enough adjectives to describe Roy. He’s the best.”

Yale as an institution also impresses Grunley, from Herbst’s lab to the University Art Gallery, which Ken and Ginny—an amateur artist—toured with Herbst after a challenging day of treatment and consultation. “I went from discussing all these really tough issues to this museum full of beauty and history and it was wonderful,” she says with admiration. “Yale has something to offer everyone, and to feel like you’ve been taken into their community is just very kind.”

A Yale hoodie is now a frequent part of her wardrobe.

The Grunleys’ generous philanthropy, in sum, is one part for Roy Herbst, a physician-scientist they admire; one part for Yale, an institution that Ginny has come to love; and one part for future patients affected by the EGFR mutation. “I did not know about this form of cancer,” Ginny says. “But now that I do, I want [Herbst and his team] to understand that I’m not just doing this for a cure for me. I think that they can eventually find a cure for this. Whether I’m there or not I’m not sure, but I know they can do it, and I will never stop supporting it.”

Gift supports work on a stubborn cancer

Neurons called vasoactive intestinal peptide (VIP) cells make up just 1 per cent of all brain cells, but their disruption in mice causes symptoms that mimic those of humans with schizophrenia, reports a study by Jessica A. Cardin, Ph.D., associate professor of neuroscience, published on August 16 in Neuron.

Cardin and her team mutated VIP cells in young mice, then observed the consequences in the visual cortex. VIP cells usually fire when mice start to groom, but they did not do so in the mutant mice. The mutant mice also had reduced synchrony of neuronal firing and impaired vision. The failure of neurons to respond to changes in behavioral state, of which walking is one example, is characteristic of neurodevelopmental disorders such as autism and schizophrenia, as are reduced firing synchrony and perception problems.

In the mice, all of these symptoms emerged by adolescence, the time when, in humans, schizophrenia typically begins. These correspondences between mice with mutated VIP neurons may represent a therapeutic target.

Seeing more nuance for a cancer therapy

A growing number of cancer drugs are designed to shut off epidermal growth factor receptor (EGFR), a protein known to be involved in a wide array of cellular processes including proliferation. Now, Yale researchers have answered a long-standing question about how EGFR can mediate so many diverse processes.

Scientists already knew that seven different growth factors bind to the receptor portion of the EGFR protein, each causing two receptor molecules to come together, turning on the active portion of the proteins. But researchers had been puzzled by how the binding of each growth factor causes different actions within the cell.

Mark A. Lemmon, Ph.D., David A. Sackler Professor of Pharmacology and co-director of the Cancer Biology Institute at Yale Cancer Center, and colleagues formed crystals of the EGFR protein to study its structure under different conditions. Different growth factors, they showed, cause EGFR’s receptor portions to assemble in slightly different ways, with variations in the timing and strength of the activation that alter the cell’s "read-out" as different signals.

The discovery, published online in Cell on October 12, may lead to drugs that target EGFR in more nuanced ways, rather than simply shutting it off.

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He received his bachelor’s degree and was awarded the Purple Heart. As an officer in the 1st Infantry Division, he resided at Branford College. His research has sprung from their generosity. "It is a great honor and a personal pleasure to be able to support both the university and the School of Medicine." Wallace said. "It was his pleasure and honor to be able to support both the university at large and the School of Medicine." His greatest achievement. Just prior to his 50th year reunion, Wallace and his wife donated $9 million to renovate his 50th year reunion, Wallace and his wife donated $9 million to renovate

**Yale researcher is a new member of National Academy of Medicine**

**Arnsten is recognized for work including mechanisms of brain vulnerabilities**

Amy F.T. Arnsten, Ph.D., professor of neuroscience, psychiatry, and psychology, and at the Yale Child Study Center, has been elected to the National Academy of Medicine (NAM), which recognizes individuals who have demonstrated outstanding professional achievements and commitment to service. NAM membership is widely considered one of the highest honors in the fields of health and medicine.

Arnsten’s lab discovered molecular mechanisms that govern activity in the brain’s highest-order circuits and help explain why neurons are vulnerable to disorders such as schizophrenia and Alzheimer’s disease. Her research has led to two treatments now in widespread clinical use: guanfacine (Intuniv®) for treating childhood cognitive disorders such as attention deficit hyperactivity disorder (ADHD) and autism, and prazosin for the treatment of post-traumatic stress disorder (PTSD).

"It is a great honor and a personal pleasure to be elected to the National Academy of Medicine," Arnsten says. "As my lab does research in the highest order of scientific thinking, especially in terms of the number of Nobel laureates, it is particularly moving to be recognized by one’s peers."

Arnsten received her Ph.D. in neuroscience from the University of California, San Diego, in 1986. She did postdoctoral research with Susan D. Iverson, Ph.D., at Cambridge University in the UK, and at Yale with the late Patricia Goldman-Rakic, Ph.D., Eugene Higgins Professor of Neuroscience. She joined the School of Medicine faculty in 1986. The National Academy of Medicine, established in 1970 as the Institute of Medicine, is an independent organization of eminent professionals from diverse fields including health and medicine; the natural, social, and behavioral sciences; and from the National Academy of Sciences and the National Academy of Engineering as an adviser to the nation and the international community.

The first immunotherapy treatment approved to treat advanced stomach cancer

A drug whose clinical testing was led by Charles S. Fuchs, M.D., M.P.H., Richard Sackler and Jonathan Sackler—professor of neurology (medical oncology) and director of Yale Cancer Center, has become the first FDA-approved immunotherapy treatment for advanced stomach cancer.

The drug, pembrolizumab (Keytruda®), was approved by the U.S. Food and Drug Administration (FDA) for adult patients diagnosed with advanced stomach cancer or gastroesophageal junction cancer showing PD-L1-positive patients had achieved at least a partial response through 10 months of treatment, including several patients whose tumors completely disappeared. Some of the responses lasted for what were considered long periods of time, ranging from several months to more than a year.

"The responses really are quite robust and far longer than you would see with any cytotoxic chemotherapy agent," says Fuchs. Prior to pembrolizumab, the only FDA-approved drug for non-responsive stomach cancer was ramucirumab (Cyramza®), a monoclonal antibody whose benefits to patients have been classified as “modest” by the National Cancer Institute.

Fuchs says progress against advanced stomach cancer has been less robust than he would like because very few drugs have been developed to address the particular biology of the cancer. "Most commonly," he explains, "we use anticancer drugs that are used to treat other cancers and apply them to patients with stomach cancer because we just don’t have dedicated efforts to develop drugs specific for stomach cancer." That is a deficit he hopes to continue to rectify.
Chair named for Radiology & Biomedical Imaging

Rob Goodman, MB BChir, M.B.A., has been appointed chair of the Department of Radiology & Biomedical Imaging and chief of Radiology and Biomedical Imaging at Yale New Haven Hospital. Goodman, professor and section chief of pediatric radiology served for six years as vice chair for clinical affairs for the department and recently completed two years as its executive vice chair. Before his appointment took effect on Jan. 1, he had served as interim chair.

“As chair, Rob will build upon his many experiences in radiology to enhance and integrate the department’s world-class research and clinical strengths,” says Robert J. Alpern M.D., dean and Ensign Professor of Medicine. “I’m delighted that he will lead the department and look forward to working with him.”

Research areas in which Goodman plans to focus include such areas as novel MR pulse sequences, functional MRI, MR spectroscopy, novel PET tracers, and 3D image manipulation. By including industry partners, he is eager to expand the department’s translational research program to help convert basic science discoveries into clinical applications that improve patient care.

Goodman joined Yale in 2004 from the John Radcliffe Hospital in Oxford, UK, where he was lead clinician for its radiology department. When he came to the United States, he was struck by the marked differences in radiation awareness between the two countries, which is especially relevant in pediatric radiology due to children’s susceptibility to the effects of radiation. He has since played a major role in the movement to reduce radiation exposure from CT scans in children, as well as adults.

During his tenure at Yale, Goodman has overseen the expansion of pediatric radiology services, spearheaded the installation of a dedicated pediatric MRI scanner at Yale New Haven Children’s Hospital, implemented a critical test result reporting system, and identified mechanisms to improve the radiology peer review process. Building upon his experience implementing a Picture Archive and Communication System (PACS) in the UK, he now will be involved in the implementation of a new enterprise PACS across Yale New Haven Health. As well as improving clinical efficiency, this cutting-edge tool will have the potential to augment departmental machine learning/artificial intelligence research.

“What I find inspiring about radiology is that we touch every medical and surgical specialty,” says Goodman. “Any improvements we make have a trickle-down effect throughout the entire medical enterprise.”

Goodman obtained his medical degree from Cambridge University in 1988 and an M.B.A. in health care from Yale in 2017. Upon completing his residency at the Central Oxford Hospitals in the UK, he did a fellowship in pediatric radiology at the Hospital for Sick Children in Toronto. He is the Pediatric Community of Practice President for the American Institute for Ultrasound in Medicine, which recently elected him to its Board of Governors.

New program makes the addiction crisis a priority

A collaboration to treat patients, train practitioners, and investigate addiction

The School of Medicine’s Section of General Internal Medicine has established the Yale Program in Addiction Medicine, a multidisciplinary clinical, educational, and research program.

The program is intended to enhance Yale’s portfolio of state-of-the-art addiction research and patient care, while increasing the pipeline of physicians trained in evidence-based strategies to tackle the opioid crisis and other addiction-related health issues.

The program will emphasize research on topics that include improving the recognition of, and access to treatment for, substance use disorders in primary care, emergency departments, and hospitals; addressing the quality of addiction treatment; and technology-based prevention in youth.

The Yale Program in Addiction Medicine includes collaborations with Yale School of Public Health and the Departments of Emergency Medicine and Psychiatry. Its director is David A. Fiehn, M.D., professor of medicine (general medicine), of emergency medicine, and of public health.

“Since the use of opioid, tobacco, alcohol, marijuana, and other substances is common in general medical settings, and often goes undetected and untreated, we need a medical system that does a better job of making sure that all health care professionals implement effective prevention, screening, treatment, or referral practices, and treat addiction as they do other medical conditions,” Fiehn says.

The establishment of the program comes at a time when addiction to opioids and other substances is widely seen as a crisis. Drug overdose deaths nearly tripled during 1999–2014, according to the Centers for Disease Control and Prevention. From 2014 to 2015, the death rate from synthetic opioids increased by 72.2 percent, and heroin death rates increased by 20.6 percent. Death rates rose across all demographic groups and regions, and in many states.

Yale School of Medicine was one of the first medical institutions to establish an accredited fellowship program in addiction medicine. It began accepting trainees in 2015.

In addition, Patrick G. O’Connor, M.D., the Dan Adams and Amanda Adams Professor of General Medicine and chief of general internal medicine, and Gail D’Onofrio, M.D., chair and professor of emergency medicine, led the effort to make addiction medicine an official medical subspecialty in 2016. This landmark change will increase the number of physicians in a variety of primary care and other medical specialties, including psychiatry, to be trained and certified as specialists in addiction prevention and treatment.

“The current opioid epidemic, along with the high prevalence of a variety of substance use disorders, demands innovative and creative approaches in prevention, treatment, and medical education,” says O’Connor. “Yale is uniquely positioned to provide national leadership in this critical area.”

Extensive experience in the US and UK shapes plans for research and clinical care

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Awards & Honors

Sonia Caprio, M.D., professor of pediatrics (endocrinology) has received the Samuel J. Fomon Nutrition award from the American Academy of Pediatrics, for outstanding achievement in research relating to the nutrition of infants and children.

Hayley P. Blumberg, M.D., John and Hope Furth Professor of Psychiatric Neuroscience and professor of psychiatry, in the Child Study Center, and of radiology and biomedical imaging, has been awarded the Colvin Prize for Outstanding Achievement in Mood Disorders Research, by the Brain & Behavior Research Foundation.

Liping Chen, M.D., Ph.D., United Technologies Corporation Professor in Cancer Research and professor of immunobiology, of dermatology, and of medicine (medical oncology), has received the Warren Alpert Foundation Prize for transformative discoveries of anti-PD-1/ PD-L1 cancer immunotherapy.

Robert L. Hines, M.D., chair and Nicholas Greene Professor of Anesthesiology, has received the 2017 Clinical Scientist Research Recognition Award.

Roberta L. Hines, M.D., chair and Nicholas Greene Professor of Anesthesiology, has received the 2017 Clinical Scientist Research Recognition Award.

Kevin N. Seth, M.D., associate professor of neurology and of neurosurgery, has received the Derek Denny-Brown Young Neurological Scholar Award from the American Neurological Association.

Hilary P. Blumberg, M.D., John and Hope Furth Professor of Psychiatric Neuroscience and professor of psychiatry, in the Child Study Center, and of radiology and biomedical imaging, has been awarded the Colvin Prize for Outstanding Achievement in Mood Disorders Research, by the Brain & Behavior Research Foundation.