Scientists honored for research unveiling molecular machines

In the 1960s, when cardiac surgery was still a young field, Horace C. Stansel Jr., M.D., was already making his mark at Yale as a skillful, innovative pediatric heart surgeon. A member of the School of Medicine faculty until his death in 1994, Stansel built a reputation as a skilled surgeon who could think on his feet. He was a master at knowing how to get out of trouble in the operating room, and colleagues often called on him for assistance.

Stansel also pushed the boundaries of surgical technique—the Damus-Kaye-Stansel procedure is still used by pediatric surgeons to treat congenital heart defects—and he trained numerous physician-scientists who went on to head surgery departments around the country. “Stan personified the commitment to life-long learning that is so necessary to medicine,” says Fenn.

To carry on Stansel’s legacy, the Stansel family recently established an endowment that will provide support to Yale medical students conducting research in cardiac surgery. Known as the Horace C. Stansel Jr. Research Fund, the endowment will provide one- and two-year fellowships to students with financial need, allowing them to pursue research. // Gift (page 8)

Student research on heart surgery gets a boost from new endowment

The month of May brought the good news that two School of Medicine scientists, each of whom have done pathbreaking work on molecular machines involved in human disease, had received high honors for their research. On May 1 Jorge E. Galán, Ph.D., M.D., and Lucille P. Markey Professor of Microbial Pathogenesis and professor of cell biology, was elected a member of the National Academy of Sciences (NAS), one of the most prestigious honors in science. On the 29th, Arthur L. Horwich, M.D., was named a winner of the Shaw Prize in Life Science and Medicine, along with his longtime scientific collaborator Franz-Ulrich Hartl, M.D., Dr.med., of the Max Planck Institute of Biochemistry in Germany.

Galán is renowned for his research on the cell biology, biochemistry, immunobiology, and structural biology of the bacterial pathogens Salmonella and Campylobacter, which together cause most of the world’s food-borne illness. Galán’s group has thoroughly characterized the Salmonella “needle complex,” a syringe-like organelle through which the bacterium injects bacterial proteins into host cells during infection, modulating the function of those cells for its own advantage. In 2004, Galán and colleagues used cryoelectron microscopy to visualize the three-dimensional structure of the needle complex. For his wide-ranging research, in 2011 he was awarded the Koch Prize, the leading international scientific award in microbiology. The NAS, an organization of scientists and engineers dedicated to the furtherance of science and its use for the general welfare, was established in 1863. The Academy acts as an official adviser to the federal government in any matter of science or technology. Also elected to the NAS in May was John R. Carlson, Ph.D., of the Department of Cellular, Molecular, and Developmental Biology in Yale’s Faculty of Arts and Sciences, bringing the total number of NAS members at Yale to 63.

Horwich, an NAS member since 2003, has devoted his career to understanding protein folding—how chains of amino acids are formed into three-dimensional, functional structures. Misfolded proteins have been implicated in many diseases, including Alzheimer’s disease and amyotrophic lateral sclerosis (ALS).

In 1989, Horwich’s lab, in collaboration with Hartl and his postdoctoral mentor Walter Neupert M.D., Ph.D., discovered a specialized protein in yeast called Hsp60 that acts as a protein-folding machine. Horwich and colleagues went on to elucidate how such machines work by studying a related bacterial protein called GroEL. By 1993, in a collaboration with the late Yale X-ray crystallographer Paul B. Sigler, Ph.D., the atomic structure of GroEL—a “beautiful work of nature”—in Horwich’s words—had been deciphered.

The Shaw Prizes carry a monetary award of $1 million (U.S.) and are given by the Hong Kong-based Shaw Prize Foundation for achievement in the life sciences, astronomy, and mathematics. Established in 2002 by filmmaker and philanthropist Run Run Shaw, the awards are “dedicated to furthering societal progress, enhancing quality of life, and enriching humanity’s spiritual civilization.” Horwich and Hartl will receive the award in Hong Kong in September.

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“As a junior faculty colleague, I learned a great deal from Stan,” recalls John E. Fenn, M.D., now clinical professor of surgery at the medical school. “He was a skilled surgeon who could think on his feet. He was a master at knowing how to get out of trouble in the operating room, and colleagues often called on him for assistance.”

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Making sense of addiction

Neuroscientist is focused on the brain bases of tobacco dependence

Marina Picciotto, Ph.D., says that while she was growing up in Manhattan, she was “one of those scattered people who did well in school but got yelled at by the teachers.” In science labs, however, “that was never a problem.” At the magnet high school she attended, students completed graduation requirements early, and took on full-time internships as seniors. Some-what by chance, she came across an opening in a lab at the Rockefeller University, where she worked on studies of feeding behavior in rats that would neatly foreshadow her later career.

After earning a B.S. in biology at Stanford University, Picciotto returned to Rockefeller as a PhD student in molecular neuroscience. Her mentor there was Paul Greengard, PhD, who would later receive the Nobel Prize for his work—a great deal of which he had accomplished while on the Yale School of Medicine faculty—explaining the molecular basis of communication among nerve cells in the brain.

In Greengard’s lab, Picciotto studied signal transduction and the transport of ions across nerve cell membranes. “It was very satisfying, because you could actually say, ‘this goes with this’ [and make] pictures that made sense. But I was always sneakily trying to get back to [the question], ‘What do these molecules mean for complex behaviors?’”

It’s a question that has driven Picciotto’s research ever since. As a post-doctoral fellow at the Institut Pasteur in Paris, France, she began studying nicoti- nic acetylcholine receptors (nAChRs), proteins in nerve cells that are acti- vated by the neurotransmitter acetyl- choline, but also respond to chemicals like nicotine. She describes this research the way many describe their first ciga- rette: “Once I started, I was hooked.”

In 1995 she joined the School of Medicine’s faculty as an assistant pro- fessor. Now the Charles B.G. Murphy Professor of Psychiatry and professor of neurobiology and pharmacology, Picciotto studies the links between ne- rochemical signaling and behavior. Her primary interest is the role of nAChRs in brain development and function, with a special emphasis on behaviors related to nicotine addiction and smoking.

“What’s really cool about investi- gating nicotinic acetylcholine receptors is what happens when you stimulate them,” Picciotto says. For instance, in 2011, she and lab member Yann S. Mineur, Ph.D., associate research scien- tist, teamed up with colleagues in the Section of Comparative Medicine to show that a specific type of nicotinic receptor is the crucial trigger for nico- tine’s effects on appetite suppression and weight-loss in mice. The study, published in Science, could lead to new strategies to treat obesity.

Picciotto also studies galanin, a neuropeptide that works to modu- late acetylcholine but also heightens the effects of opiate drugs—many of which are addictive. In 2003, she pub- lished research in Proceedings of the National Academy of Sciences showing that in addition to increasing the pain- fighting effects of opiates, galanin also decreased their addictive proper- ties. Her lab continues to explore how manipulating galanin might combat addiction and withdrawal symptoms.

“We’re never going to understand all the molecules necessary for an entire behavior,” Picciotto says, “but the overall philosophy—that you can say something meaningful about mol- ecules in the brain that can inform how we think about the molecular basis of behavior—that’s something that’s approachable, and it’s worth doing.”

Class of 2012 urged to give patients ‘the best possible existence’

At this year’s commencement cere- mony, held May 21, graduating medical students were treated to words of wisdom from pediatric neurosurgeon Benjamin S. Carson Sr., M.D., who recounted the story of a dilemma he faced in 1985 as a young doctor.

In his commencement address, Carson said he believed that a hemi- spherectomy—removal of half of the brain—was the best way to help one of his patients, a girl with severe epilepsy who was suffering constant seizures. But a senior physician, a distinguished neurologist, disagreed. Carson, a 1973 graduate of Yale College, decided to perform the surgery anyway.

“I risked my career because I asked myself why I became a neurosurgeon, and it was to give patients the best possible existence,” he told the 100 members of the Class of 2012. “When you tell someone their loved one is do- ing well,” Carson said, “that’s the best feeling in the world.”

Carson, director of pediatric neurosurgery at Johns Hopkins Medi- cal Institutions, received national at- tention in 1987 for the first separation of twins joined at the back of the head. Among his many awards is the Presidential Medal of Freedom, which he received in 2008. Carson’s belief in the power of education is such that he and his wife established the Carson Scholars Fund, which has awarded more than $4.4 million to scholars in 43 states.

New section chief to be appointed for Otolaryngology

Wendell G. Yarbrough, M.D., will be named chief of the Section of Otolaryngology at the School of Medicine and Yale-New Haven Hospital (YNH). He will also be director of the head and neck cancer program at Smilow Cancer Hospital at Yale-New Haven as well as the co-director of the molecular virology research program at Yale Cancer Center (YCC).

Yarbrough, whose appoint- ment begins August 1, comes to Yale from Vanderbilt University, where he is professor of otolaryng- ology and cancer biology and di- rector of the Barry Baker Labora- tory of Head and Neck Oncology. He is also the Ingram Professor of Cancer Research and co-leader of the thoracic and head and neck program at the Vanderbilt Ingram Cancer Center.

Yarbrough’s research con- centrates on the identification of tumor suppressors in head and neck cancers and the understand- ing of tumor growth. Recently, he has focused on identifying subtypes of head and neck and salivary cancers and the use of models that the lab has developed to test targeted agents.

“I am confident that Dr. Yar- brough’s experience, leadership, and goals for head and neck cancer research and care will strengthen our head and neck cancer program at Smilow Cancer Hospital at Yale-New Haven,” said Thomas J. Lynch Jr., M.D., director of YCC and physician-in-chief of Smilow Cancer Hospital at Yale-New Haven.

Yale school of medicine

Robert I. Alpern, M.D., has been named chief of the Section of Medicine at Yale-New Haven, succeeding Jancy L. Houck, M.D., who is stepping down effective July 1.

Alpern was named interim chief of the Section of Medicine when Houck announced in December that she would retire July 1 after 30 years at Yale New Haven. He was named chief of the Section of Medicine at the Yale-New Haven Hospital in 2009.

Alpern’s research focuses on the development of effective pain medica- tions that do not lead to drug dependence.
The medical school’s ‘hidden treasure’

General Internal Medicine at Yale is a flourishing research powerhouse with a diverse portfolio of projects

As is the case at most medical schools, Yale’s Department of Internal Medicine is by far its largest, with over 300 faculty members. These faculty are organized into sections, most of which carry names easily mapped onto familiar medical specialties: Nephrology, Geriatrics, Rheumatology, and so on. But the less descriptive name of the Section of General Internal Medicine (GIM), which claims 70 of the department’s faculty as members, makes its role far less obvious, which is perhaps what leads Dean Robert J. Alpern, M.D., to call the section “a hidden treasure of Yale.”

Many of GIM’s activities are quite visible: The section is home to the many Yale primary care physicians who work at Yale Internal Medicine Associates (a part of Yale Medical Group), Yale-New Haven Hospital, the VA Connecticut Healthcare System in West Haven, Conn., and clinics and hospitals as far afield as Waterbury, Conn., which together have patient visits in the tens of thousands each year. GIM is also an important educational resource, contributing to three departmental residency programs and numerous medical-student teaching services, which are overseen by some of the medical school’s most outstanding clinician-educators.

The more “hidden” aspect of GIM is that the section is a research powerhouse, with a robust and extraordinarily diverse portfolio. The section’s physician-scientists study such topics as targeting insulin resistance to prevent stroke and heart attacks, HIV and comorbid disease in aging veterans, occupational asthma and hearing loss, and the effectiveness of health-education video games. They advise the national organizations that judge hospitals. They investigate the diffusion of surgical robot technology and develop office-based treatments for drug addiction and alcohol dependence. They examine the epidemiology and treatment of congestive heart failure, cancer, and stroke. They develop curricular guidelines that are used in internal-medicine residency programs nationwide. And, in keeping with the whole-patient philosophy of general internal medicine, they study the big picture, scrutinizing patient safety, clinical effectiveness, and discrimination in health care.

“In many very good places, the general medicine section is simply a group of clinicians to see primary-care patients,” says Jack A. Elias, M.D., Waldemar Von Zedtwitz Professor and chair of the Department of Internal Medicine. By contrast, he says, Yale’s GIM physicians, “while providing expert primary care, are also doing things that are going to impact patient care and national policy. They’re going to impact how we take care of people from impoverished and affluent backgrounds, after how we take care of people with heart failure, change how we deal with drug addiction and provide important insights into ways to provide less expensive and safer patient care. They’re at a level that almost no other section of general medicine is at.”

Founded in 1975, the GIM ranks among the highest of the Department of Medicine’s sections in research funding. And keeping pace with the department as a whole, it has recently enjoyed meteoric growth. In 2002, it employed 90 full-time faculty; today there are 91. Research funding totaled a healthy $4 million in 2004, but by 2011 it had zoomed to $21 million, the vast majority from federal sources (see figure).

“We’re spread thick,” says GIM Section Chief Patrick O’Connor, M.D., M.P.H., of the section’s varied research projects. “We approach each of these research areas in a scientifically rigorous manner, and the reputation of the faculty and their success at getting funding in these areas through peer-reviewed federal sources speaks for itself.” Some of the most exciting work in the section, he adds, is

Doctor and patients who are impatient for new drugs to hit the market often get the sense that the United States’ drug approval process is a long and slow road. But a new study by School of Medicine researchers found that the U.S. Food and Drug Administration (FDA) actually moves faster when reviewing drug applications than its counterparts in Canada and Europe. The first author of the study, second-year Yale medical student Nicholas Downing, was co-lead by Assistant Professor of Internal Medicine Joseph S. Ross, M.D., M.H.S., examined publically available drug applications from 2001 through 2010 to the FDA, the European Medicines Agency (EMA), and Health Canada.

As reported May 16 in the New England Journal of Medicine, for 72 drugs eventually approved by all three agencies, the average review time at the FDA was 90 to 100 days faster than at the other agencies, and most of these drugs hit the U.S. market first. For all drugs reviewed during the nine-year period, the FDA took 352 days on average, while the EMA averaged 366 days and Health Canada took 393 days.

Tight rein on glucose no boon in diabetes

Theories have swirled around the field of diabetes research that aggressively controlling the glucose levels of patients with type 2 diabetes would reduce their risk of impaired kidney function. But a new analysis of the data by Yale researchers has found no evidence that such treatment prevents ultimate kidney failure.

Steven Coca, D.O., M.S., assistant professor of internal medicine, Chirag R. Parikh, M.D., M.P.H., associate professor of medicine, and colleagues analyzed seven previous clinical trials that together included 38,065 adult patients monitored for up to 15 years. When these patients had been treated more aggressively—with higher doses of drugs and a lower target blood glucose level than is standard—certain markers of kidney function did improve over those in patients treated with the standard drugs and glucose targets. But the more aggressive treatment plan did not reduce the patients’ risk of impaired kidney function, the need for dialysis, or eventual death from kidney disease, the team reports in the May 28 issue of Archives of Internal Medicine.

“Our analysis shows that intensive glycemic control may improve some things about the kidney that we measure, but did not affect patients’ outcomes,” says Coca.

The more than 90 faculty members in the Section of General Internal Medicine provide quality primary medical care to patients, but also advance our knowledge and shape national policy through a diverse, well-funded research portfolio.

Philanthropy fuels research

The research advances emanating from Yale’s Section of General Internal Medicine (GIM) require constant and consistent funding. Private philanthropy often provides critical early support to researchers who wish to pursue creative but untested approaches to important questions, allowing investigators to collect the initial data needed to successfully compete for external funding. Your generosity can fuel research that will lead to tomorrow’s treatments and cures. Current-use gifts may be directed for specific projects, while endowments can generate perpetual support for investigators just launching their careers or for a senior professor with a sustained record of accomplishment. To find out more about how to contribute to GIM’s research projects, contact Richard Galiette at 203-436-8529 or richard.galiette@yale.edu.

On the rise

Research funding for investigators in Yale’s Section of General Internal Medicine, mostly from federal sources, has seen a steady increase over the past eight years, and is now approaching the $22 million mark.
March 3, 2012 Patients of the Yale Children’s Diabetes Program and their families attended the annual Family Day Symposium held at the Yale School of Nursing. The half-day symposium included lectures, discussions, and interactive programs for adults and children. 1. Bryce Ferguson 2. Sasha Averko, clinical services manager at Massachusetts-based Insulet Corporation, gives a demonstration of an insulin management system. 3. William V. Tamololane, M.D., professor of pediatrics, speaks to attendees.

May 8, 2012 Student Research Day, an annual event, showcased medical students’ theses, an integral part of the Yale System of medical education, and a requirement for students since 1839. A record 92 students exhibited posters in The Anlyan Center displaying the results of their research. 1. John M. Leventhal, M.D., professor of pediatrics, and Jennifer Duffy, Ph.D., known informally as the M.D./Ph.D. Program, with M.S.T. Director James D. Jamieson, M.D., Ph.D., professor of cell biology (back row, second from left), (front row, from left) Nancy Allen ’14, Ruth Wang’ondu ’15, and Katherine Gyhazl ’14. (Back row, from left) Chen Wang ’14, Jamieson, Corey Frucht ’12, and Daniel Okie ’14. 3. (From left) Alice Li ’12 and Kofi-Buaku Atsina, M.D. ’11. 4. (From left) Kwame Atsina ’12 and Panos Christakis ’12.

May 11, 2012 A reception was held in the Medical Historical Library marking the election of Jorge Galán, Ph.D., D.V.M., chair and the Lucille P. Markey Professor of Microbial Pathogenesis, to the National Academy of Sciences (see related story, page 1). (From left) Galán, Ruslan M. Medzhitov, Ph.D., the David W. Wallace Professor of Immunobiology and Howard Hughes Medical Institute investigator, Akiko Iwasaki, Ph.D., professor of immunobiology and of molecular, cellular, and developmental biology, and Craig R. Roy, Ph.D., professor of microbial pathogenesis.

May 21, 2012 This year’s Commencement ceremony marked the end of medical school for the Class of 2012, and also set a new record: the class’s senior gift campaign raised more than $5,600 for the Alumni Fund, with 84 percent of graduating students participating. 1. Mona Sadeghpour (second from right) with (from left) her mother, Maryam Dargahi, her brother, Mehrad Sadeghpour, and Ardavan Akhavan, M.D. 2. John Gilbert (left) and Whitney Sheen, who spearheaded the class gift effort. 3. Michael Ma (left) and Henry Park 4. (From left) Richard Bolltzy, M.D., the Harold W. Jockers Associate Professor of Medical Education, associate professor of psychiatry, and deputy dean for education, and Matthew Singleton with his son Matthew Singleton Jr.

March 31, 2012 The medical school’s Department of Psychiatry hosted Neuroscience 2012, an annual symposium aimed at mental health professionals and consumers throughout the State of Connecticut. (From left) John H. Krystal, M.D., the Robert L. McNeil Jr. Professor of Translational Research and chair of the Department of Psychiatry, “Dr. Ruth” Westheimer, Ed.D., recipient of the department’s seventh annual Research Advocacy Award, and Robert E. Davidson, Ph.D., president of the Connecticut chapter of the National Alliance on Mental Illness.

May 8, 2012 Roger Daltrey, founder and lead singer of English rock band The Who, who has a long record of charitable work for teenagers and young adults with cancer, visited doctors and patients at the medical school and at Smilow Cancer Hospital at Yale-New Haven. 1. Daltrey signs autographs for Darrel Janis (left), manager of the medical school’s Marigolds Dining Service, and Joyce Brown, banquet server for Marigolds. 2. (From left) Tara Saeft, M.D., assistant professor of medicine and medical director of the Survivorship Clinic at Yale Cancer Center; Daltrey, Stuart E. Seropian, M.D., associate professor of medicine; Hari A. Deshpande, M.D., assistant professor of medicine and surgery and assistant clinical professor of nursing; Michael E. Hurwitz, Ph.D., M.D., assistant professor of medicine, and Clifford W. Bogue, M.D., interim chair and associate professor of pediatrics, chief of the Section of Pediatric Critical Care Medicine, and physician-in-chief at Yale-New Haven Children’s Hospital.

March 31, 2012 Patients of the Yale Children’s Diabetes Program and their families attended the annual Family Day Symposium held at the Yale School of Nursing. The half-day symposium included lectures, discussions, and interactive programs for adults and children. 1. Bryce Ferguson 2. Sasha Averko, clinical services manager at Massachusetts-based Insulet Corporation, gives a demonstration of an insulin management system. 3. William V. Tamololane, M.D., professor of pediatrics, speaks to attendees.
When Lieping Chen, M.D., Ph.D., was training to be an oncologist in the 1980s, the lack of effective cancer treatments made it a depressing job. “That’s why I quit clinical practice,” he says. But Chen soon shifted to research, focusing on the role of the immune system in cancer.

For decades Chen and other scientists have grappled with the mystery of systems—such as brave warriors when it comes to other diseases—mostly sitting on the sidelines while cancer invades the body. Though our bodies produce T cells, the immune system’s soldiers, in response to cancer, these cells don’t seem to have much of an effect. Scientists have yearned to find some way to “switch on” the immune system to attack cancer cells, an approach that could target the disease precisely while sparing normal cells, resulting in greater effectiveness and fewer of the side-effects of conventional treatments. And because the immune system “remembers” invaders it has encountered, the long-term impact of immunotherapy should be long-lasting.

On June 2 in the New England Journal of Medicine, a multi-center team that included Chen and two Yale colleagues reported that in an early clinical trial of BMS-936558 (a drug developed by Bristol-Myers Squibb) enrolling 296 patients, tumors had regressed significantly in about one in three to one in five patients, depending on where the tumor originated, whether kidney, lung, or melanoma. The results, which received wide media coverage, were presented the same day at the annual meeting of the American Society of Clinical Oncology in Chicago, Ill.

For reasons that are not fully understood, the small number of patients with colorectal or prostate cancer in the trial did not respond to BMS-936568. But the response in lung cancer patients is remarkable, says Professor of Medicine Mario Sznol, M.D., because previously immunotherapies showed effectiveness only in melanoma and kidney cancers. Chen points out that the patients in this trial had all previously been heavily treated with therapies that likely depleted their immune systems; if administered to patients in earlier stages of cancer, the drug should be even more effective, he says.

The other exciting finding of the study, says Sznol, who was instrumental in bringing the trial to Yale, is the consistency of the responses: 20 of 31 responses lasted for at least one year, a result only rarely observed with traditional chemotherapy or other forms of therapy that target specific characteristics of tumors.

Since similar results were seen at each of the nine centers participating in the trial, Sznol considers this highly unlikely that the drug’s effectiveness is a fluke. Scott N. Gettinger, M.D., associate professor of medicine, who recruited many lung cancer patients for the trial, agrees, saying the response in those patients “opens the door to looking at other solid tumors,” such as breast cancer. The majority of his patients experienced few or no side effects, he says, and none of those typical of chemotherapy such as hair loss, a drop in blood-cell counts, and fatigue. “This is probably the best drug I have ever given to patients with lung cancer,” Gettinger says.

The long road to these results began in 1991, when Chen and colleagues at the Mayo Clinic, discovered a protein called B7-H1 that had the power to suppress the activity of T cells. He did not know the T cell molecule responsible for this effect, but in 2000, researchers from Harvard Medical School’s Dana-Farber Cancer Institute and the University of Kyoto found that B7-H1 binds to another protein called programmed death-1 (PD-1), which blocks another checkpoint molecule expressed on the surface of T cells known as CTLA-4, for the treatment of advanced melanoma. Ipilimumab has a response rate of about 11 percent, but anti-PD-1 therapies have been shown to be safer and more efficacious. Chen believes that this is due to limited PD-L1 at sites of inflammation, including tumors. The CTLA-4 ligand, on the other hand, controls an earlier stage of immune system activation, so blocking its receptor has led to severe toxicities.

The PD-1 pathway is only one inhibitory strategy tumors may employ to silence the immune system. Last year the FDA approved the drug ipilimumab (marketed as Yervoy), which blocks another checkpoint molecule expressed on the surface of T cells known as CTLA-4, for the treatment of advanced melanoma. Ipilimumab has a response rate of about 11 percent, but anti-PD-1 therapies have been shown to be safer and more efficacious. Chen believes that this is due to limited PD-L1 at sites of inflammation, including tumors. The CTLA-4 ligand, on the other hand, controls an earlier stage of immune system activation, so blocking its receptor has led to severe toxicities. There are side-effects of PD-1 blockage—in the current trial, three patients died of drug-related lung inflammation—but Chen thinks they can generally be successfully managed.

Jedd D. Wolchok, M.D., Ph.D., of Memorial Sloan-Kettering Cancer Center, who was not involved in the current trial, says that the new results are important because, along with the success of ipilimumab, they are the second clear demonstration that unleashing the immune system can produce durable regressions in cancer.

Although BMS-936558 was quite effective when used alone, the Yale researchers believe that it will be most useful combined with other therapies. Sznol is currently collaborating with Wolchok on a clinical trial that targets both PD-1 and CTLA-4, and Chen believes that adding drugs that block T cell checkpoints could even reverse the low success rate of cancer vaccines seen thus far.

“We’re just at the beginning of a sort of paradigm shift in the treatment of cancer,” Sznol says, who believes that immunotherapy will surpass standard treatments like chemotherapy over the next five years. As for BMS-936558, Chen is hoping to see FDA approval in two to three years, but “it should be approved tomorrow.” Sznol says; “It’s better than the approved drugs. I have patients who have benefited enormously from this drug. For some patients it’s a home run. For the field it may be a triple.” And while current treatments prolong life for months or a couple of years, Sznol says, “these new therapies may eventually offer the possibility of cure.”
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ersham.
Two Yale scientists are inducted into the American Academy of Arts and Sciences

The American Association of Immunologists (AAI) has awarded the 2012 AAI-Life Technologies Meritiorious Career Award to Peter Cresswell, Ph.D., the Eugene Higgins Professor of Immunobiology, professor of cell biology and dermatology, and Howard Hughes Medical Institute investigator.

Cresswell was honored for “his groundbreaking contributions to the field of immunology in the area of antigen processing and presentation.”

Prior to joining the Yale faculty in 1991, Cresswell was on the faculty at the Duke University Medical Center. His past honors include the 1995 Rose Payne Distinguished Scientist Award from the American Society for Histo-compatibility and Immunogenetics, a MERIT Award from the National Institutes of Health, and the 2010 Buchanan Medal, presented by the Royal Society in the U.K. for distinguished contributions to the medical sciences, among other honors.

He is a member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences, and is a Fellow of the Royal Society.

Medical school immunobiologist honored for contributions to understanding of antigens

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The Academy was founded in 1780 during the American Revolution by John Adams and other leaders of the new nation, to “cultivate every art and science which may tend to advance the interest, honor, dignity, and happiness of a free, independent, and virtuous people.” Today it is an international society whose 4,600 fellows and 600 foreign honorary members are drawn from multiple disciplines. The current membership includes more than 250 Nobel laureates and more than 260 Pulitzer Prize winners.

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Medical school immunobiologist honored for contributions to understanding of antigens

The American Association of Immunologists (AAI) has awarded the 2012 AAI-Life Technologies Meritiorious Career Award to Peter Cresswell, Ph.D., the Eugene Higgins Professor of Immunobiology, professor of cell biology and dermatology, and Howard Hughes Medical Institute investigator.

Cresswell was honored for “his groundbreaking contributions to the field of immunology in the area of antigen processing and presentation.”

Prior to joining the Yale faculty in 1991, Cresswell was on the faculty at the Duke University Medical Center. His past honors include the 1995 Rose Payne Distinguished Scientist Award from the American Society for Histo-compatibility and Immunogenetics, a MERIT Award from the National Institutes of Health, and the 2010 Buchanan Medal, presented by the Royal Society in the U.K. for distinguished contributions to the medical sciences, among other honors.

He is a member of the U.S. National Academy of Sciences and the American Academy of Arts and Sciences, and is a Fellow of the Royal Society.

Two Yale scientists have been elected to the American Academy of Arts and Sciences. Richard P. Lifton, M.D., Ph.D., chair and Sterling Professor of Genetics and Howard Hughes Medical Institute investigator, and John R. Carlson, Ph.D., the Eugene Higgins Professor of Molecular, Cellular, and Developmental Biology, were named fellows of the Academy in April, and will be formally inducted at an October ceremony in Cambridge, Mass.

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Jonathan B. Demb, Ph.D., associate professor of ophthalmology and visual sciences and of cellular and molecular physiology, has received the Cogan Award from the Association for Research in Vision and Ophthalmology. Demb was honored for his “outstanding contributions to vision science in the retina and in the central visual pathways emphasizing three areas of visual science: quantitative psychophysics, retinal microcircuity, and molecular synaptic mechanisms,” according to the association’s website. Demb joined the Yale faculty in 2011.

Jack A. Elias, M.D., the Waldemar Von Zedtwitz Professor of Medicine and chair of the Department of Internal Medicine, delivered the J. Burns Amberson Lecture at the American Thoracic Society International Conference in May. The lecture is given by individuals who have made major lifetime contributions to pulmonary research or clinical practice. Elias studies the cellular and molecular biology of processes related to lung injury and repair. His work established current concepts of the inflammatory mechanisms of lung diseases, including asthma, chronic obstructive pulmonary disease (copd), acute lung injury, and pulmonary fibrosis.

Tamas L. Horvath, D.V.M., Ph.D., Jean and David W. Wallace Professor of Biomedical Research and chair of the Section of Comparative Medicine, has been honored by the Endocrine Society with the 2012 Ernst Oppenheimer Award, one of the society’s Laureate Awards. Horvath, also professor of neurobiology and of obstetrics, gynecology, and reproductive sciences, is director of the Yale Program on Integrative Cell Signaling and Neurobiology of Metabolism. His work has played a key role in the development of the current model of neuroendocrine regulation of energy balance.

Alexandra J. Lansky, M.D., associate professor of medicine and director of the Yale Cardiovascular Research Group and the Yale Valve Program, has received the Wenger Award for Excellence in Medical Leadership. Lansky was honored “for her lifetime commitment to pursuing gender-based outcomes research and teaching interventional cardiology and prevention,” according to a press release. The Wenger Awards are given by WomenHeart: The National Coalition for Women with Heart Disease to recognize those who have set precedent in advancing women’s heart health.

Pramod N. Bonde, M.D., who is developing wireless power supplies for cardiac assist devices. Some patients with failing hearts are outfitted with a mechanical pump, with a power cord routed through the abdomen. To eliminate the cord—a frequent source of infection—Bonde is testing charging technologies that transmit energy to an internal battery via electromagnetic waves.

“Yale faculty break new ground every day, and students in our program engage directly in generating this new knowledge,” Alpern says. “I am grateful that the Stansel family is supporting a program we see as a critical component in the education of tomorrow’s physician-scientists.”

John Carlson

Richard Lifton

Awards & Honors

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