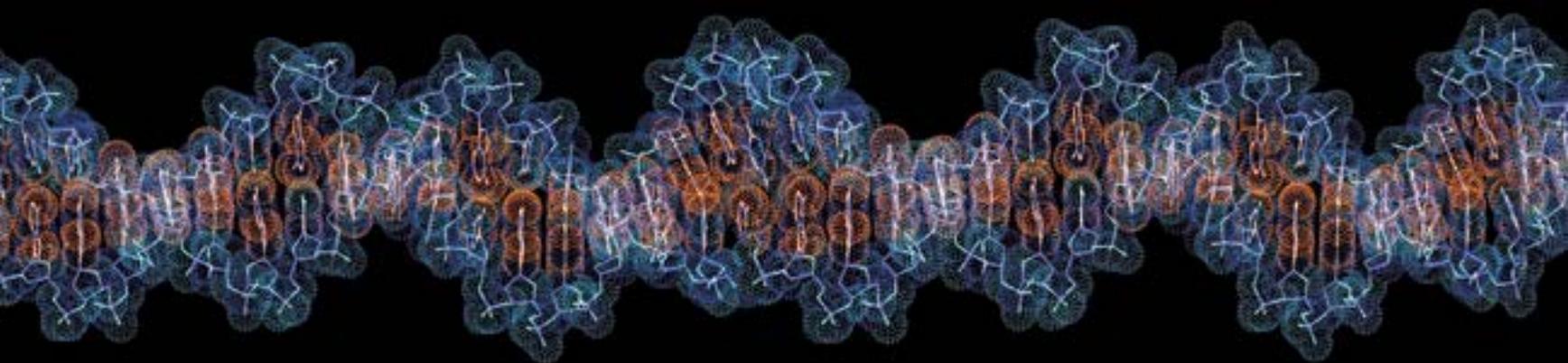
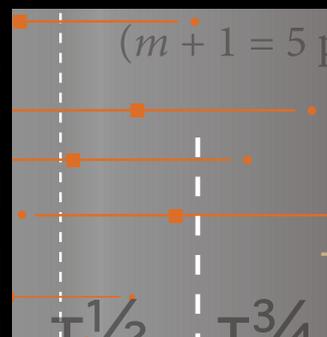


This Is Your Brown

2012 ANNUAL REPORT



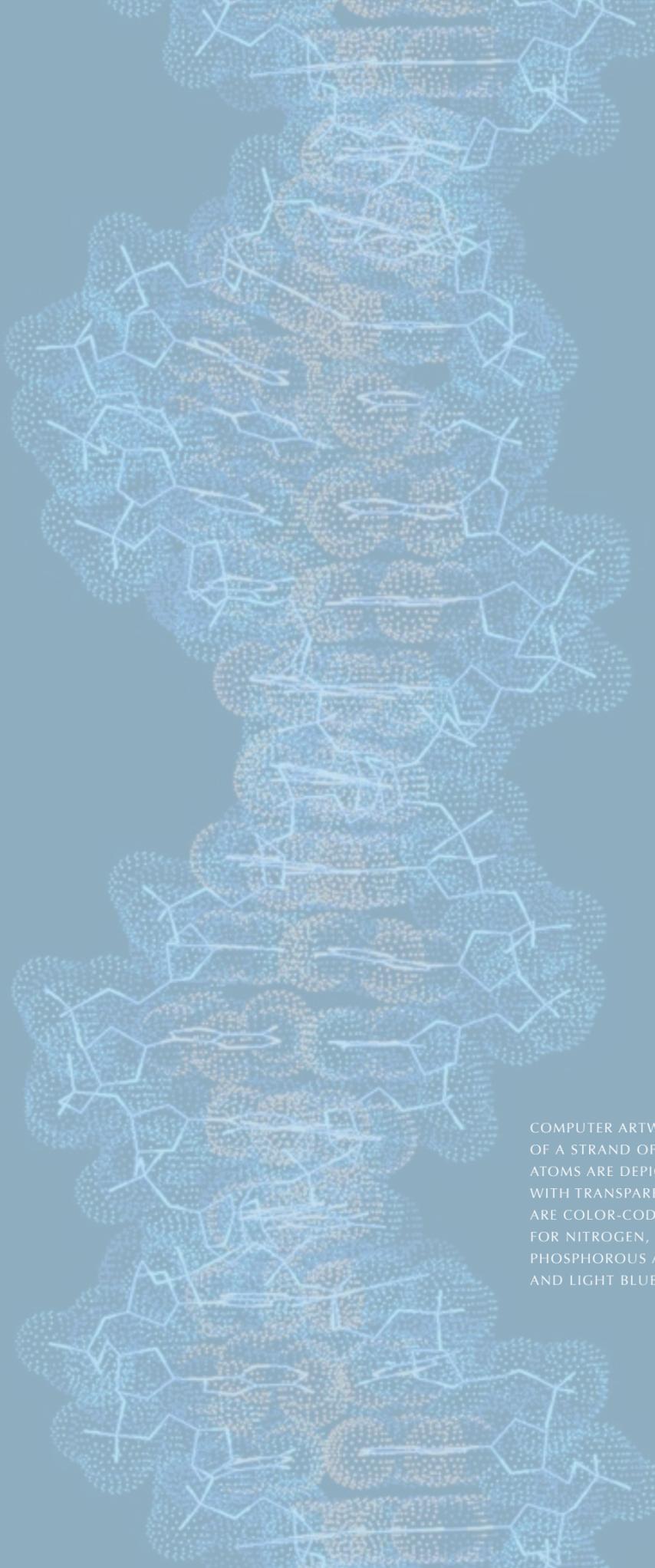
DIVISION OF BIOLOGY AND MEDICINE



BROWN

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A detailed computer-generated illustration of a DNA double helix. The structure is rendered in a semi-transparent, wireframe style, showing the intricate lattice of atoms and bonds. The colors are primarily shades of blue, with some orange highlights, representing different chemical elements. The overall appearance is that of a complex, three-dimensional molecular model.

COMPUTER ARTWORK OF PART
OF A STRAND OF BETA DNA.
ATOMS ARE DEPICTED AS STICKS
WITH TRANSPARENT SPHERES AND
ARE COLOR-CODED: ORANGE
FOR NITROGEN, DARK BLUE FOR
PHOSPHOROUS AND CARBON,
AND LIGHT BLUE FOR OXYGEN.

“The faculty, students, and staff who are the Division of Biology and Medicine do little that is focused only on themselves. Our existence is predicated on an underlying desire to serve.”



MESSAGE FROM THE DEAN

Dear Friends,

I am proud to present the fourth Division of Biology and Medicine Annual Report, which covers the calendar year 2012. Among the many highlights of this past year has been working with Brown University's new president, Christina H. Paxson, a noted health economist and NIH-funded researcher, who is proving to be a champion for the life sciences at Brown.

The faculty, students, and staff who are the Division of Biology and Medicine are committed to improving the health of individuals, our community, and the world—thus *This Is Your Brown*. We serve as teachers, who are training the doctors, scientists, and policymakers of tomorrow; as students, undertaking arduous and lengthy scholarship in science, medicine, and public health; as researchers, finding cures to ease the suffering of our own patients and those around the world; and as physicians, who commit our lives to the care of others. We share our knowledge and our lessons learned with our colleagues, ever aware that we are part of the international academic community as well.

This annual report, the last I will oversee as dean, is an opportunity to reflect on some of the accomplishments of which I am most proud: working with now-inaugural Dean of Public Health Terrie “Fox” Wetle to launch Brown's School of Public Health; completing the overhaul of the medical curriculum

with Associate Dean for Medical Education Phil Gruppuso and the Office of Medical Education; planning the prospective Primary Care-Population Health Program to help offset the need for more primary care doctors; initiating a strategic planning process for our biology departments with Associate Dean for the Program in Biology Edward Hawrot; and supporting faculty from all parts of the Division as they fulfill their research and clinical endeavors.

After a sabbatical, I will return to my own interests in infectious disease and international health. And I will remain very much part of the Division of Biology of Medicine—part of your Brown.

Sincerely,

Edward J. Wing, MD

This Is Your Brown

FOR YOU

FOR YOUR COMMUNITY

FOR YOUR WORLD

This is the work done in the Division of Biology and Medicine every day.



UNLEASHING THE POWER OF THE MIND

BROWN INSTITUTE FOR BRAIN SCIENCE

On a spring day in 2011, Cathy Hutchinson took a sip of coffee.

The scientific community snapped to attention. The worldwide media took notice. Senator Sheldon Whitehouse (D-RI) spoke about it on the floor of the US Senate. And Cathy became a beacon of hope for thousands of people who have been trapped in their own bodies by stroke, traumatic brain injury, spinal cord trauma, and other conditions.

Hutchinson's life had been diminished by "locked in" syndrome for 15 years. Paralyzed and unable to speak since suffering a stroke while working in her garden, she was able to

execute the miraculous act of drinking a cup of coffee—by controlling a robotic arm with her thoughts—because she was enrolled in a clinical trial of BrainGate™, an investigational neural interface device developed at Brown University.

BrainGate, the product of an interdisciplinary team of researchers, clinicians, and engineers, is one of an array of therapies, devices, and



CATHY HUTCHINSON AT THE OPENING OF THE CfNN

CLOCKWISE, FROM TOP:

KAREN L. FURIE, MPH '87 MD'90 RES'94
CHAIR, DEPARTMENT OF NEUROLOGY

JOHN DONOGHUE PHD'79, P'09, '12MD'16
DIRECTOR, BROWN INSTITUTE FOR BRAIN SCIENCE
HENRY MERRITT WRISTON PROFESSOR OF NEUROSCIENCE

STEVEN RASMUSSEN '74 MMS'77 MD'77, P'13MD'17
CHAIR, DEPARTMENT OF PSYCHIATRY AND HUMAN BEHAVIOR

DOUGLAS ANTHONY, MD, PHD
CHIEF OF PATHOLOGY

approaches explored by more than 100 faculty members collaborating under the umbrella of the Brown Institute for Brain Science (BIBS). Building on Brown's longstanding strength in neuroscience, BIBS was officially launched in 2011 and reached a new level of potency in 2012 with the opening of two clinical research centers and the appointment of three clinical chairs to complete its leadership team.

Neurologist Karen L. Furie, psychiatrist Steven Rasmussen, and neuropathologist Douglas Anthony, all appointed last year on the strength of The Warren Alpert Foundation's gift to support research at the Medical School, have joined neurosurgeon G. Rees

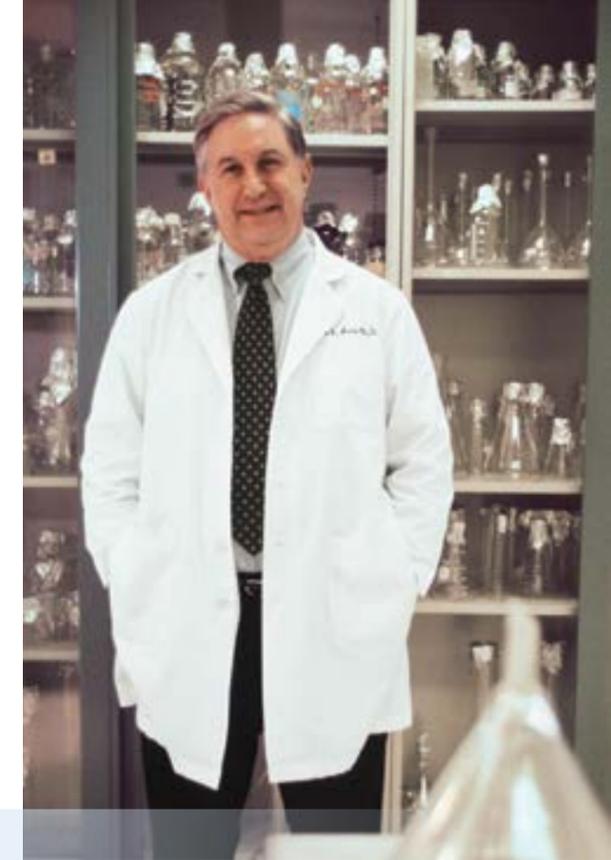
Cosgrove, BIBS director John Donoghue, and other experts in realizing the full potential of brain science at Brown. It's a stunning constellation of thriving brain research and treatment: The Norman Prince Neurosciences Institute at Rhode Island Hospital bridges patient care and basic, translational, and clinical research. At the Providence VA Medical Center, the new Center of Excellence for Neurorestoration and Neurotechnology (CfNN) develops and tests technologies and therapies for former servicemembers with brain disorders, psychiatric conditions, and limb loss. And that builds on the Center for Restorative and Regenerative Medicine at the Providence VA, founded and led by Professor

G. REES COSGROVE, MD
CHAIR, DEPARTMENT OF NEUROSURGERY



“This is an exciting time in brain science, for Brown and for the world. We are poised to take our leadership in the field to the next level.”

ROY K. AARON, MD
PROFESSOR OF ORTHOPAEDICS



of Orthopaedics Roy K. Aaron, which last year received a \$7 million, five-year renewal of funding from the Department of Veterans Affairs to facilitate clinical research on neurologic control mechanisms for prosthetic limbs.

“Our work at the VA continues the blending of our work in brain science on Brown's academic campus and on the campuses of our affiliated hospitals,” says Donoghue, who was elected to the Institute of Medicine in 2012. “In addition to continuing to build a strong interdisciplinary team united by a common mission, the VA site will grow our clinical and research capacity through technology. For instance, we will upgrade the current MRI at the VA to serve as a research MRI as well as a diagnostic tool, complementing the research MRI located on our academic campus.”

In addition to BrainGate, clinical research pursued by BIBS researchers includes: exploring the use of transcranial magnetic

stimulation to help people with disorders of thought, including obsessive-compulsive disorder, depression, and post-traumatic stress disorder; identifying new approaches to the treatment of epilepsy; using robotic technology to aid physical therapy and restore function to people after strokes; and adapting robotics for use by injured veterans and others.

“Several firsts—from BrainGate to the first use of the gamma knife to treat severe obsessive-compulsive disorder—have come out of Brown, and we now have the integrated clinical leadership and infrastructure to execute a powerful collaborative vision flowing from both the clinical and basic science sides,” says Rasmussen. “This is an exciting time in brain science, for Brown and for the world. We are poised to take our leadership in the field to the next level.”

PUBLIC HEALTH TAKES FLIGHT

A NEW SCHOOL OF PUBLIC HEALTH

The seeds of Joseph Braun's research were planted during the year that he worked as an elementary and middle school nurse in inner-city Milwaukee.

"We had a very large population of kids with ADHD and autism," says Braun, now an assistant professor in Brown's Public Health Program. "I had a cabinet filled with meds."

He wondered if there might be a connection between where the children lived—poor neighborhoods, full of old housing stock and lead paint and other chemicals—and their health challenges. Since then, he has been studying the possible role of environmental chemicals as in utero determinants of children's health through early childhood.

"The pedagogical example is lead poisoning—there is nothing you can do to reverse the damage once it's done," Braun says. "If we can

identify and address the impact of environmental chemicals head on, we can improve the health of millions of kids."

Braun is one of six new tenure-track faculty members appointed in public health in 2012. Joining more than 200 colleagues in four departments (Behavioral and Social Sciences, Biostatistics, Epidemiology, and Health Services, Policy, and Practice), the new recruits reflect the program's diversity and depth: biostatisticians Cici Bauer and Christopher Schmid, behavioral scientist Akilah Keita, health services scientist Thomas Trikalinos, and epidemiologists Yen-Tsung Huang and Braun.

"We look for qualitatively as well as quantitatively skilled people—people who ask not only, 'what is it?' but also, 'what does it mean?'" says Terrie "Fox" Wetle, who will become Brown's inaugural dean of public

JOSEPH BRAUN, PHD
ASSISTANT PROFESSOR OF EPIDEMIOLOGY

AKILAH KEITA, PHD
ASSISTANT PROFESSOR OF BEHAVIORAL AND SOCIAL SCIENCES



TERRIE "FOX" WETLE, PHD
ASSOCIATE DEAN OF MEDICINE FOR PUBLIC HEALTH AND PUBLIC POLICY

health. "We want people who are agents of change, who are committed to our shared mission of improving health care policy and practice and making a tangible contribution to population health."

Public health at Brown has soared under Wetle's leadership, rising from a respected program to a full-fledged school by hitting a series of benchmarks, including a unanimous faculty vote of approval in 2012. Finally, in February 2013, the University Corporation approved the creation of a School of Public Health.

"Areas of public health inquiry and action, such as addiction, geriatrics, epidemiology, health behavior, and biostatistical analysis are of vital social importance as matters of health and policy," Brown President Christina H. Paxson said in announcing the Corporation vote. "With this vote to elevate the program to the status of a school, the University provides our public health faculty and students with an even greater ability to realize their potential as leaders and scholars."

"Areas of public health inquiry and action, such as addiction, geriatrics, epidemiology, health behavior, and biostatistical analysis, are of vital social importance as matters of health and policy."

VINCENT MOR, PHD
FLORENCE PIRCE GRANT PROFESSOR OF COMMUNITY HEALTH



Brown's Public Health Program is already a national leader in external research funding from the National Institutes of Health. Across 11 research centers, campus-based public health faculty members attracted more than \$40 million of external research funding last year. Affiliated, hospital-based research centers attracted an additional \$18 million. With its new status as a school and achievement of accreditation by the Council on Education for Public Health, says Wetle, research opportunities will continue to grow.

"Our program is built on a robust infrastructure of very strong research programs, sustained by really excellent graduate students, fellows, and faculty," agrees Vincent Mor, who nurtured the growth of public health at Brown for decades, first as a faculty member and later as chair of the Department of Community Health. "The University's major investment in the School of Public Health, along with our strong record of research accomplishments, gives us instant recognition in the field as a major player in public health."

CLINICAL PLUS

A NEW PARADIGM IN MEDICAL EDUCATION

They will be trained to look at the big picture—the whole patient and the world in which she lives. And they will be prepared to make contributions both as primary care physicians and as advocates and researchers who address system issues and determinants of health.

Starting in 2015, if everything goes according to plan, Alpert Medical School will begin enrolling 24 students per year in its Primary Care-Population Health Program. The four-year, dual-degree program entered the planning stage in 2012, in partnership with a 30-member advisory panel of stakeholders drawn from the local health care and policy communities.

“Our goal is to create a pathway that helps students become ‘clinicians plus’—leaders in education, health services, government, everywhere that decisions are made that drive population health,” says Jeffrey Borkan, who is spearheading the planning effort with Philip Gruppuso and Assistant Professor of Family Medicine Paul George, MD. “We want to educate physicians who take care of patients, while also providing other critical services that are needed by society, people who are integrators and multipliers working toward positive change.”

Specific curriculum design is in development, and will require regulatory approval before

program launch. But Borkan imagines an educational experience built on active, small-group learning; integration of basic science, medical science, and population health; and longitudinal clerkships in which students follow patients through their natural histories. “What if a student could follow a cancer patient from disease staging through surgery and treatment and reconstructive surgery?” he suggests. “How would that enrich his or her understanding of the medical, psychosocial, and financial impact of cancer on a patient’s life?”

And, more importantly, how would having that knowledge make that student a better doctor for the patient?

“The single biggest impact of this initiative may be on medical education,” says Gruppuso. “We have an extraordinary opportunity to break the mold, to design a medical education curriculum from the ground up. We envision a paradigm shift in which you begin your medical education not with study of the individual, but by considering the broader context of your future patients’ lives. For students in this program, the first lecture on the first day of medical school might begin with a map illustrating prevalence of obesity in the United States, followed by an overview of biochemistry and metabolism—linking basic science and medicine in the context of population health.”

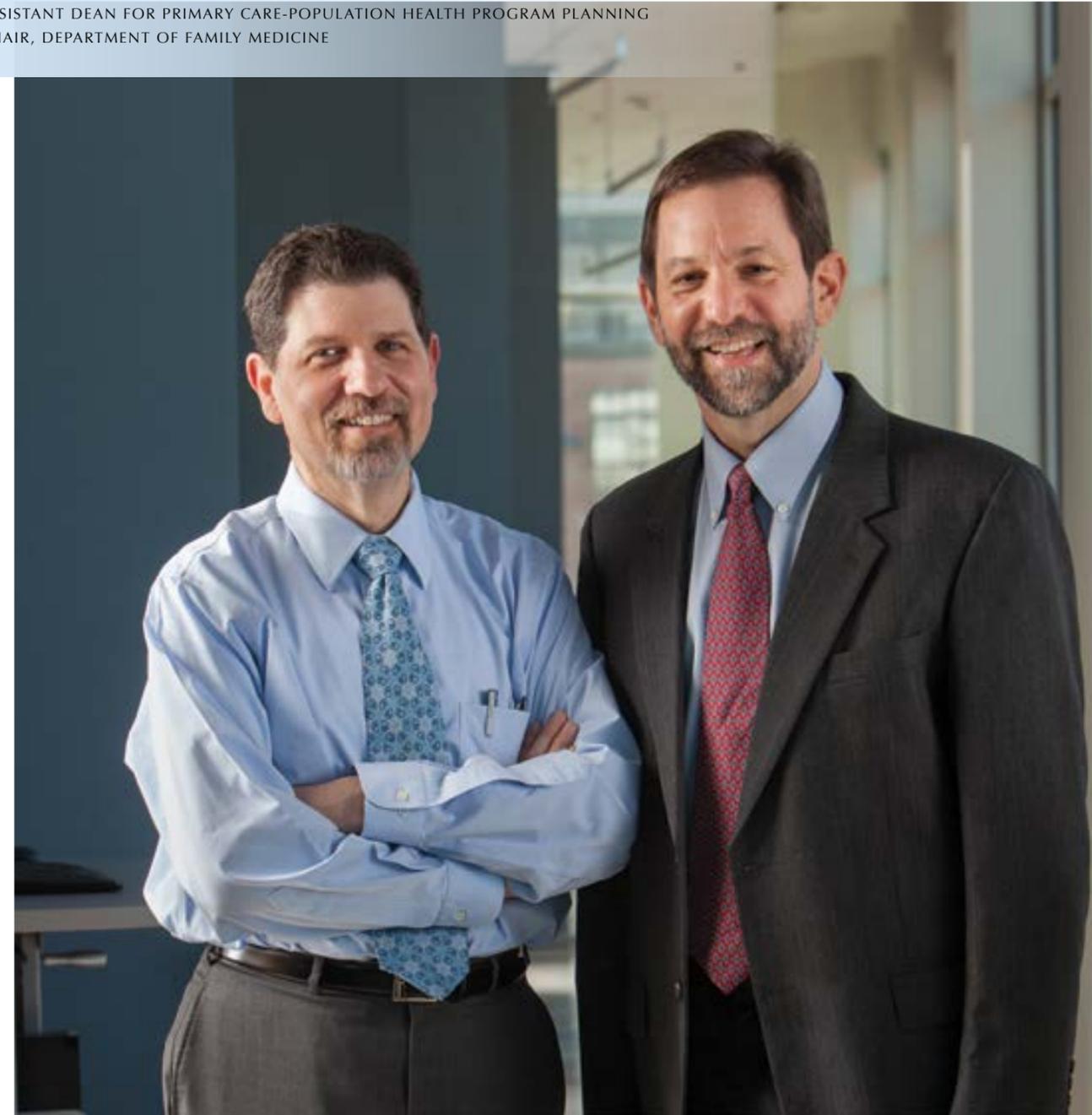
The new initiative aims to educate clinical leaders who will make broad-platform contributions while addressing critical primary care capacity needs in Rhode Island.

“Brown has fundamentally changed health care in Rhode Island over the past 40 years, facilitating the development of a health care system

of specialization and depth, but we do not have enough generalists in neurology, surgery, psychiatry, primary care, and other areas,” says Borkan. “This program will build on Brown’s tradition of innovation, helping to create the next generation of clinician leaders in Rhode Island and beyond.”

PHILIP A. GRUPPUSO, MD
ASSOCIATE DEAN FOR MEDICAL EDUCATION

JEFFREY BORKAN, MD, PHD
ASSISTANT DEAN FOR PRIMARY CARE-POPULATION HEALTH PROGRAM PLANNING
CHAIR, DEPARTMENT OF FAMILY MEDICINE



MINING THE GENOME

SECRETS OF GENE EXPRESSION MAY REVEAL NEW CANCER THERAPIES

Erica Larschan isn't one for dragging her feet—which is a good thing, because her research may help to develop new drugs to treat cancer.

Two years ago, a few months after she joined the faculty, *Nature* featured Larschan's research—begun as a postdoctoral scholar at Harvard Medical School and Brigham and Women's Hospital, and completed after arrival at Brown—on gene expression on the X chromosome. Larschan and her team shed new light on the activity of MSL, a protein complex that helps to “up-regulate” the lone X chromosome in males, increasing gene expression. By measuring RNA polymerase II (an enzyme that converts DNA instructions to RNA code to express genes) on the X chromosome of male *Drosophila*, before and after interfering with the fly's MSL, the team revealed that MSL boosts the enzyme's ability to move along the male X chromosome, increasing opportunities for gene expression.

It was Larschan's second appearance in *Nature*. She followed it up with selection as a Pew Scholar in the Biomedical Sciences. Then, in 2012, Larschan received the Presidential Early Career Award for Scientists and Engineers, the highest government honor bestowed on

science and engineering professionals in the early stages of their research careers. The awards are presented in recognition of young scientists' pursuit of innovative research at the frontiers of science and technology and their commitment to community service as demonstrated through scientific leadership, public education, or community outreach.

For Larschan, it all goes to build a strong platform for future investigation, with the ultimate goal being development of new cancer therapies.

“I'm looking forward to continuing to probe the dynamics of gene regulation in our laboratory,” she says. “We're working on understanding the basic mechanisms of how genes turn on and off. When do they work? How do they work? Which ones can we target for different therapeutics? The answers to those questions will help us design new, effective drugs.”

“I'm looking forward to continuing to probe the dynamics of gene regulation in our laboratory.”

ERICA LARSCHAN, PHD
ASSISTANT PROFESSOR OF BIOLOGY

THE SUM IS GREATER THAN ITS PARTS

BROWN LAUNCHES CENTER FOR EVIDENCE-BASED MEDICINE

The practice of medicine is a calibrated blend of art and science.

To guide a patient from diagnosis through treatment, physicians must channel a river of constantly proliferating scientific knowledge through the unique landscape of each individual life. It's a process awash in shades of gray. Will this therapy work? Probably. Do benefits outweigh risks and costs? Maybe. Is there a definitive indication for it? Sometimes.

In a health care environment of many choices and finite resources, providers, insurers, and other clinical decision-makers increasingly turn to evidence-based medicine, which

evaluates interventions by developing methodologies for analyzing available data. In 2012, Brown launched a Center for Evidence-Based Medicine within the Public Health Program, building on the expertise of a cadre of physician-scientists, biostatisticians, and computer scientists who are collaborating with colleagues worldwide.

"It's difficult to make sense of the vast amount of data available and integrate it into a body of medical knowledge," says the Center's director, Thomas Trikalinos. He relocated to Brown from Tufts Medical Center, with co-director Joseph Lau and Christopher Schmid, to launch the new enterprise with Issa Dahabreh and Byron Wallace. "Also, the evidence is not static;

CLOCKWISE FROM TOP:

ISSA DAHABREH, MD, MS, ASSISTANT PROFESSOR OF HEALTH SERVICES, POLICY, AND PRACTICE (RESEARCH)

CHRISTOPHER SCHMID, PHD, PROFESSOR OF BIostatISTICS

JOSEPH LAU, MD, PROFESSOR OF HEALTH SERVICES, POLICY, AND PRACTICE

THOMAS TRIKALINOS, MD, PHD, ASSOCIATE PROFESSOR OF HEALTH SERVICES, POLICY, AND PRACTICE
DIRECTOR, CENTER FOR EVIDENCE-BASED MEDICINE

BYRON WALLACE, PHD, ASSISTANT PROFESSOR OF HEALTH SERVICES, POLICY, AND PRACTICE (RESEARCH)

new data are continuously introduced. This work can help to achieve efficiencies at several levels, from development of clinical guidelines to reducing duplication of effort in research.”

The team has already responded to multiple requests from clinical collaborators at Alpert Medical School-affiliated hospitals, says Trikalinos, and the Center has secured several contracts to conduct research for the federal Agency for Healthcare Research and Quality as one of 11 AHRQ-designated Evidence-Based Practice Centers nationwide.

Evidence-based medicine will be integral to the evolution of health care delivery, says Lau, noting that medical technology assessments are mandated under the federal Affordable Care Act and that evidence-based methodologies play a role in developing Medicare drug formularies and are encouraged by the National Institutes of Health. “We now live in an evidence-based world,” he says.

The challenges inherent in the work transcend volume, notes Dahabreh. “What counts as evidence? What weight should it have? There is continuing disagreement among scientists about considering observational studies

and randomized trials when evaluating the evidence. How does that influence interpretation of data?”

Wallace, a computer scientist, is working to address what he calls the “evidence explosion” by creating an open-source, web-based tool that will use machine learning to facilitate retrieval of biomedical literature while eliminating redundancies and reconciling subtle variations in methodologies, patient population, and other elements of study design. The team is also working on open-source software for performing meta-analysis—the statistical synthesis of evidence from independent studies—and is a driving force of global initiatives in meta-analysis software. The team also collaborates with external colleagues through two international research consortia that collectively span more than 10 scientific disciplines and 100 countries and encompasses more than 30,000 members.

The value of the new Center’s work may ultimately extend beyond medicine to other spheres of social benefit, says Schmid. “Some of the first meta-analyses of this kind were actually done in education,” he notes. “Our work could have applications in the life sciences, economics, education, criminal justice, psychology, management science, and other fields. Being at Brown, where interdisciplinary collaboration is so welcomed, makes that an exciting possibility.”

FROM LEFT: JOHN COHEN, MD '59, BETTE COHEN, THOMAS TRIKALINOS, AND TERRIE WETLE. TRIKALINOS DELIVERED THE 2012 LEVINGER LECTURE IN HEALTH CARE ECONOMICS, WHICH WAS ENDOWED BY PAUL AND RUTH LEVINGER, PARENTS OF BETTE COHEN.



Partnerships

ALPERT MEDICAL SCHOOL SIGNS NEW AFFILIATION AGREEMENTS

Alpert Medical School signed new affiliation agreements with two strategic partners in 2012, building a foundation for collaboration and growth in medical education, research, and clinical care in women’s health, newborn care, psychiatry, behavioral health, and chronic and end-of-life care.

A new affiliation with Care New England Health System replaced separate agreements between the system’s two teaching hospitals, Women & Infants Hospital and Butler Hospital. Nearly 280 faculty members are based at either Women & Infants (designated as “the major affiliated teaching hospital for activities unique to women or newborns”) or Butler Hospital (designated as “the major affiliated teaching hospital for psychiatry or behavioral health”). The agreement provides for enhanced investment in academic programs

by Care New England and establishes an Affiliation Committee charged with planning clinical and academic collaborations.

The Medical School also signed an affiliation agreement with Home & Hospice Care of Rhode Island, establishing HHCRI as its “major teaching affiliate for hospice and palliative medicine.” The agreement creates an innovative learning environment in end-of-life care for medical students and residents, capitalizing on Brown’s longstanding preeminence in the study of aging.

“These agreements encourage strategic programmatic growth for the academic medical center while enhancing medical care in Rhode Island,” says Edward Wing, MD, dean of medicine and biological sciences. “We are fortunate to have such outstanding clinical partners.”



ORGANIC SYNERGY

SCIENTISTS ACROSS DISCIPLINES ADDRESS MEDICAL CHALLENGES FROM THE CELLULAR LEVEL UP

Diane Hoffman-Kim works with state-of-the-art technology. She is also given to sketching on napkins.

It's a way of sharing ideas with interdisciplinary colleagues and conceptualizing her work, which is about building vessels for the body's most minute elements. Hoffman-Kim, PhD, a bioengineer and associate professor of medical science, is passionate about communication—every semester, she has students test their presentation skills by bringing a non-scientist friend to class—and making things that drive clinical progress.

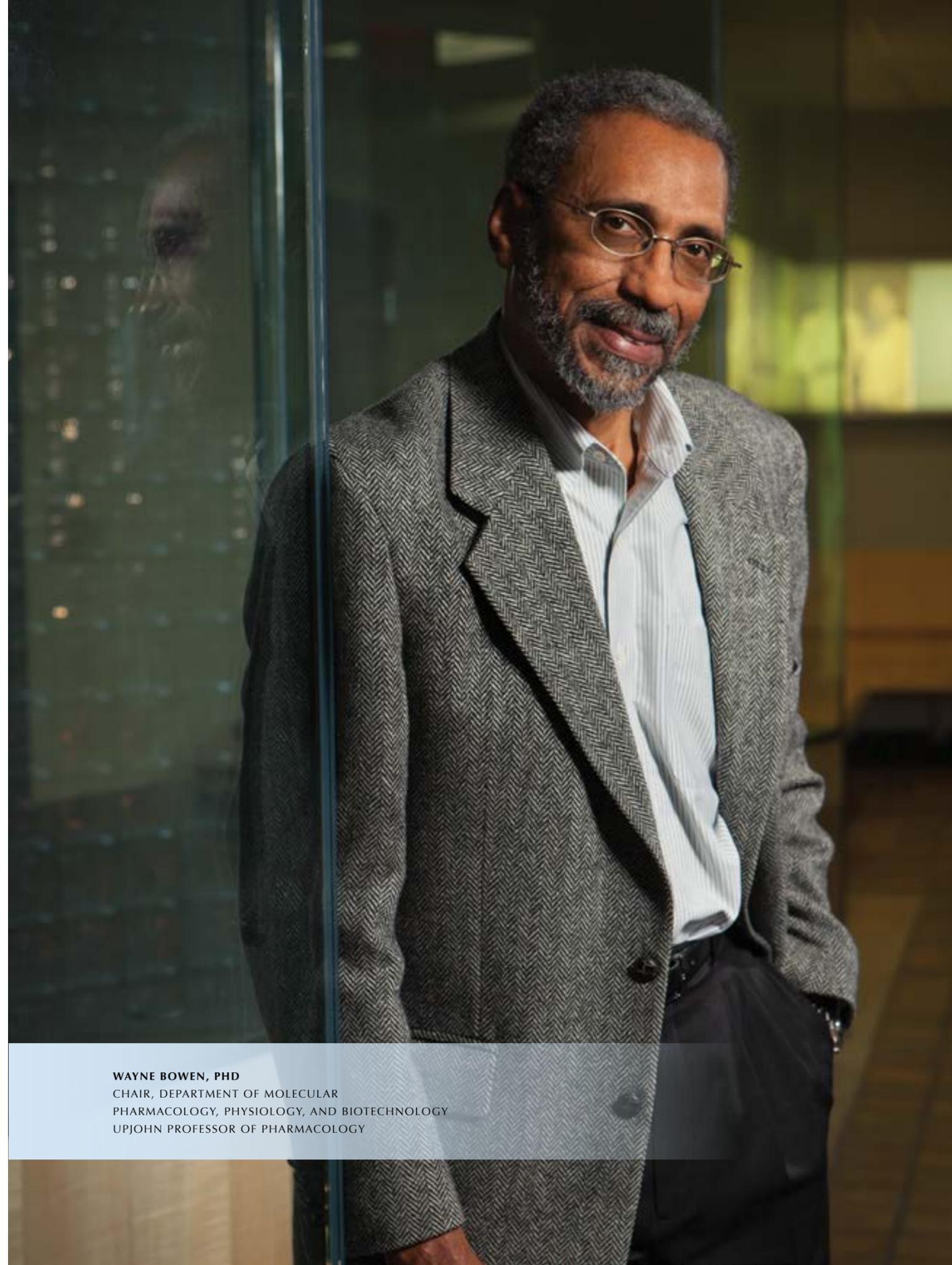
Hoffman-Kim is using technology invented by Jeffrey Morgan, PhD, also an associate professor of medical science in the Department of Molecular Pharmacology, Physiology, and Biotechnology, to create three-dimensional cultures of brain cells. She is also using technology developed in her own laboratory to create 3D synthetic platforms that mimic Schwann cells, the glial cells that form a scaffold on which nerve cells grow. Her team's efforts to reveal the nuances of Schwann success—is it better if the architecture is straight or curved or in elliptical form? are guideposts necessary?—may help accelerate nerve growth by lining nerve guidance channels (the tubes in which surgeons connect the ends of severed nerves to encourage regeneration) with the artificial polymers. Clinical Assistant Professor of Surgery Scott Schmidt, a hand surgeon at Rhode Island Hospital, is collaborating on the project.

For Wayne Bowen, that kind of ferment is a hallmark of his interdisciplinary team.

“Our overarching theme is that we carry out basic and applied research to understand disease mechanisms and develop novel therapies,” says Bowen, whose lab explores the roles of sigma receptors in tumor growth and metastasis and in the actions of psychoactive drugs. “We span the spectrum of figuring out the basic physiology, illuminating the molecular underpinnings of disease, identifying therapeutic targets, and facilitating organ repair and regeneration, all the way up to delivering therapeutic agents.”

An organic synergy rises in the department, one of the most interdisciplinary on campus, says Bowen. “Although everyone isn't working on the same therapy or disease, there are many commonalities among our faculty and students,” he says. “Expertise developed in one lab can be applied in another, and our graduate students have the unique opportunity to form thesis committees that cross disciplines and departments, building multidimensional strength.”

WAYNE BOWEN, PHD
CHAIR, DEPARTMENT OF MOLECULAR
PHARMACOLOGY, PHYSIOLOGY, AND BIOTECHNOLOGY
UPJOHN PROFESSOR OF PHARMACOLOGY



HEALTHY CHOICES

RENA WING HONORED FOR PIONEERING BEHAVIORAL APPROACHES TO OBESITY

When Rena Wing started studying obesity, it was widely considered a cosmetic issue.

“We were not in an obesity epidemic, as we are today, and, although there was evidence that weight loss could prevent type 2 diabetes, the devastating systemic effects of obesity were not fully understood,” she remembers.

Forty years of groundbreaking research later, Wing is recognized as a transformative thinker in addressing what may be America’s greatest public health threat. In 2012, the American Psychology Association presented her with its Lifetime Achievement Award for her pioneering work in obesity research.

Wing considers the first major contribution of her career to be the inclusion of behavioral approaches in the Diabetes Prevention Program, a 27-site national study designed to evaluate weight-loss strategies among individuals with impaired glucose tolerance.

“The early consensus was that it should be a drug study,” she recalls. “I was the only principal investigator who had a behavioral weight-control background, and I argued that we should at least try a lifestyle intervention.”

The results were stunning. Over the four-year course of the study, which was published in 2002, the lifestyle intervention reduced the risk of developing diabetes by 58 percent, compared with just 31 percent for participants who tested a pharmaceutical approach. “For the first time,” says Wing, “we showed that intensive lifestyle interventions, focused on modifying diet and exercise, are more effective than drug therapy.” The program developed in the study is now available at YMCAs nationwide.

Last year, Wing announced another startling finding.

People with diabetes are twice as likely to develop heart disease compared to members of the general population. In 2012, data from Wing’s Look AHEAD (Action in Health and Diabetes), a 14-year, National Institutes of Health-funded clinical trial that followed 5,000 people with type 2 diabetes, revealed that weight loss did not reduce morbidity or mortality from heart disease among people with diabetes. The study was published in early 2013.

But Wing is as passionate as ever about promoting weight loss, saying there are

RENA WING, PHD
PROFESSOR OF PSYCHIATRY AND HUMAN BEHAVIOR

nevertheless many other reasons to focus on fighting obesity. “Weight loss has a tremendous impact on sleep apnea, which itself is a risk factor for heart disease, as well as diabetes, osteoarthritis, urinary incontinence, and a range of debilitating conditions and disabilities,” she says.

Wing is now partnering with ShapeUp, a team-based fitness and weight-loss initiative launched by Rajiv Kumar ’05 MD’11, to test strategies to increase weight loss by adding behavioral strategies to the ShapeUp program.

“One of our goals is to see if we can cost-effectively increase the weight losses that most people achieve—testing different approaches

“Weight loss has a tremendous impact on sleep apnea, which itself is a risk factor for heart disease, as well as diabetes, osteoarthritis, urinary incontinence, and a range of debilitating conditions and disabilities.”

to see if we can make it possible for people to lose even more weight,” she says.

Among other approaches, Wing is testing web-based lessons and check-ins for ShapeUp participants. But the technology is only a tool, she says, pointing to data from the National Weight Control Registry, which she cofounded in 1994. Human behavior is the key.

“Participants in the registry, which follows more than 10,000 people who have lost at least 30 pounds and kept it off for one year—and in fact have lost an average of 70 pounds—share certain habits,” she says. “They eat breakfast. They watch very little television. They exercise a lot. They weigh themselves frequently.

“All successful interventions involve diet, exercise, and behavior modifications that help people deal with the sight and smell of food and the cognitive and social cues around it. Although changes in policy can make it easier to eat healthy and be physically active, in the end the individual must still change their behavior and make the healthy choices.”



ERIKA EDWARDS, PHD
RICHARD AND EDNA
SALOMON ASSISTANT
PROFESSOR OF BIOLOGY

Unearthed

HERBARIUM FINDS A NEW HOME, ON CAMPUS AND ONLINE

Castilleja guadalupensis is extinct. Once plentiful on Guadeloupe Island, off the coast of Mexico, the bright flowering plant can be found now only in herbaria, like Brown’s Stephen T. Olney Herbarium. The same can be said for the complete set of British mosses (vintage 1818) that were destroyed in Europe during World War II but live on in the Brown BioMedical Center.

Thanks to support from the National Science Foundation (NSF), these specimens—along with about 10,000 other samples of rare and extinct plant life—are about to enter the digital age.

Brown’s herbarium is one of about a dozen in New England selected in 2012 to share a \$2.4 million NSF grant supporting digitization of their specimens. The grant includes funding for a study examining whether plants have begun to flower earlier in the year than they did a century ago, possibly shedding light on questions about climate change.

The Brown herbarium’s physical catalog also took a major leap forward in 2012 when a new, 1,600-square-foot home was renovated to house it. The facility features climate-controlled collection storage, a prep room for processing new specimens, and a specialized room for studying and working with the samples.

Who knows what researchers will discover among the herbarium’s treasures?

“We want to build the tree of life,” says Erika Edwards, curator of the herbarium. “We want to understand how all the branches on the tree of life are related to one another.”

The facility will be open to the public by appointment and is sure to make adding to, and working with, the collection much easier for researchers at the University and beyond.



SAVING WOMEN'S LIVES

CENTER FOR AIDS RESEARCH PILOTS CERVICAL CANCER SCREENING

She was one of the first patients whom Dean of Medicine and Biological Sciences Edward Wing, MD, treated with antiretroviral therapies while in Kenya. Originally presenting with pericarditis, the young woman recovered and thrived in treatment for HIV. Years later, she died of cervical cancer.

HPV, a virus that causes cervical cancer, is more likely to infect HIV-positive women and to progress to cancer. There are about 70,000 HIV-infected women in the AMPATH clinic in Eldoret, Kenya. Without sophisticated laboratory infrastructure to support Pap smears, diagnosis of cervical cancer can come tragically late.

With funding from the Lifespan/Brown/Tufts Center for AIDS Research, one of 20 NIH-funded CFARs in the US, two Kenyan physicians—both of whom trained at the Brown-affiliated Miriam Hospital under the Brown/Tufts Fogarty AIDS International Training and Research Program—have piloted a low-cost, high-impact alternative screening method in Eldoret.

“Our study showed that visual inspection of the cervix, using an acetic acid wash, is as effective as a Pap smear,” says Susan Cu-Uvin. “We now have an effective screening tool that allows nurses to look for abnormalities using simple household vinegar.”

The program has screened 17,000 women over the past three years. Screening is offered at five clinics, where 22 nurses have been trained to perform screenings and treatment

with cryotherapy. Two gynecologists were trained to perform radical hysterectomies.

In 2012, Brown was awarded a renewal of the grant that makes it all possible: \$8.5 million that will fund CFAR into 2017.

“The imprint of Brown’s work under CFAR is huge,” says Cu-Uvin. “We’re training faculty and clinicians in the Global South, we’re running prevention and treatment programs all over the world, and we’re spearheading advocacy efforts and basic and clinical research at home in Rhode Island.”

“Brown’s collaborations to advance research and care for women with HIV—along with our groundbreaking prevention and treatment efforts on behalf of current and former incarcerated people and injecting drug users—are among the most effective in the world, and are among the most important contributions we have made under CFAR,” says CFAR principal investigator Charles C. J. Carpenter.

“The collaboration among the various CFARs is impressive,” Carpenter continues, noting that Brown-developed prison interventions have been replicated in several communities in the CFAR network. “Many CFAR leaders have worked together since the early days of the epidemic, when we weren’t able to do a whole lot for patients and before anyone was aware of the magnitude of the challenge in sub-Saharan Africa. Certainly, there is still a great deal to do. But it’s extraordinary to contemplate the scope of CFAR’s impact.”



CHARLES C. J. CARPENTER, MD
PROFESSOR OF MEDICINE

SUSAN CU-UVIN, MD
PROFESSOR OF OBSTETRICS AND GYNECOLOGY AND MEDICINE
CO-DIRECTOR, CENTER FOR AIDS RESEARCH; DIRECTOR, BROWN GLOBAL HEALTH INITIATIVE

Stewarding a Healthy World

A HIGH SCHOOL CURRICULUM ON CLIMATE CHANGE AND HUMAN HEALTH

Will my allergies get worse with climate change? Will rising sea levels sink coastal cities? Will a warmer world be a sicker world?

These are some of the questions addressed in a nine-module high school curriculum on climate change and health, developed by 15 undergraduate students last year in a class led by Katherine Smith. The team collaborated with two Rhode Island teachers, David Upegui and Vicki Santos Silva, to develop the curriculum, which includes background for lectures, ideas for classroom warmups and activities, and assessments.

The interactive curriculum—in which students role-play as allergists to present their

findings, for instance—reflects the ethos of Smith's class, where students engage in intensive research and discussion based on assigned readings. "I didn't want it to be a class, I wanted it to be a studio where students learn by doing," she says.

Smith and her students hope that the curriculum will alert teens to the relationship between climate change and health, from infectious disease to the global food supply. "The health implications of climate change and all these interacting factors are not necessarily touched upon in high school science classes," says Smith. "Providing teachers with a resource to help them put together their own units is very exciting."

The course is sponsored by the University's Global Health Initiative and the Environmental Change Initiative.

KATHERINE SMITH, PHD
ASSISTANT PROFESSOR OF ECOLOGY
AND EVOLUTIONARY BIOLOGY

MARK SCHLISSEL, MD, PHD
PROVOST AND
PROFESSOR OF MEDICAL SCIENCE



Honors

SOHINI RAMACHANDRAN NAMED PEW SCHOLAR



Does variation on the human X chromosome reflect sex-specific processes in the past? Does genetic variation account for different cancer treatment outcomes? Do cultural traits "mutate" more quickly than genes?

These are some of the questions that Assistant Professor of Biology Sohini Ramachandran, PhD, aims to answer through her research. The Pew Charitable Trusts named Ramach-

andran a Pew Scholar in the Biomedical Sciences in 2012. As a winner of the highly competitive grant, Ramachandran will receive \$240,000 over four years for her research using mathematical and statistical models and computer simulations to make inferences about human population histories from the genetic variations found in individuals.

Only 22 young scientists are named Pew Scholars each year. Two other Brown faculty, Assistant Professor of Biology Erica Larschan, PhD (see page 16), and Assistant Professor of Neuroscience Gilad Barnea, PhD, have received the award in the past five years. Ramachandran also was named an Alfred P. Sloan Research Fellow by the Alfred P. Sloan Foundation in 2012.

MEDICAL STUDENT AMONG FIRST CLASS OF NIH MEDICAL RESEARCH SCHOLARS



In 2012, the National Institutes of Health (NIH) selected Arkady Rasin '09 MD'13 and 44 other talented medical, dental, and veterinary students for the inaugural class of its Medical Research Scholars Program (MRSP).

The MRSP is a year-long enrichment program that provides mentored training to creative, research-oriented students at the

intramural campus of the NIH in Bethesda, MD. The program enables scholars to conduct basic, clinical, or translational research in areas that match their personal interests and research goals, and offers the opportunity to present their research over the course of the academic year to the NIH community and at domestic professional conferences. MRSP scholars also attend courses, seminars, a structured lecture series, and clinical teaching rounds. Each scholar is assigned a tutor/adviser who helps to devise a well-articulated career development plan and with selecting a dedicated NIH mentor approved by the program's leadership.

Rasin is a native of Brookline, MA.

GOOD DOCTORS ARE GOOD TEACHERS

CURRICULUM INNOVATIONS AT ALPERT MEDICAL SCHOOL

Twice each year, 400 future health care practitioners—second-year Alpert Medical School students, pharmacy and nursing students from the University of Rhode Island, nursing students from the Community College of Rhode Island, and social work students from Rhode Island College—convene at the Medical School to learn the art of collaboration.

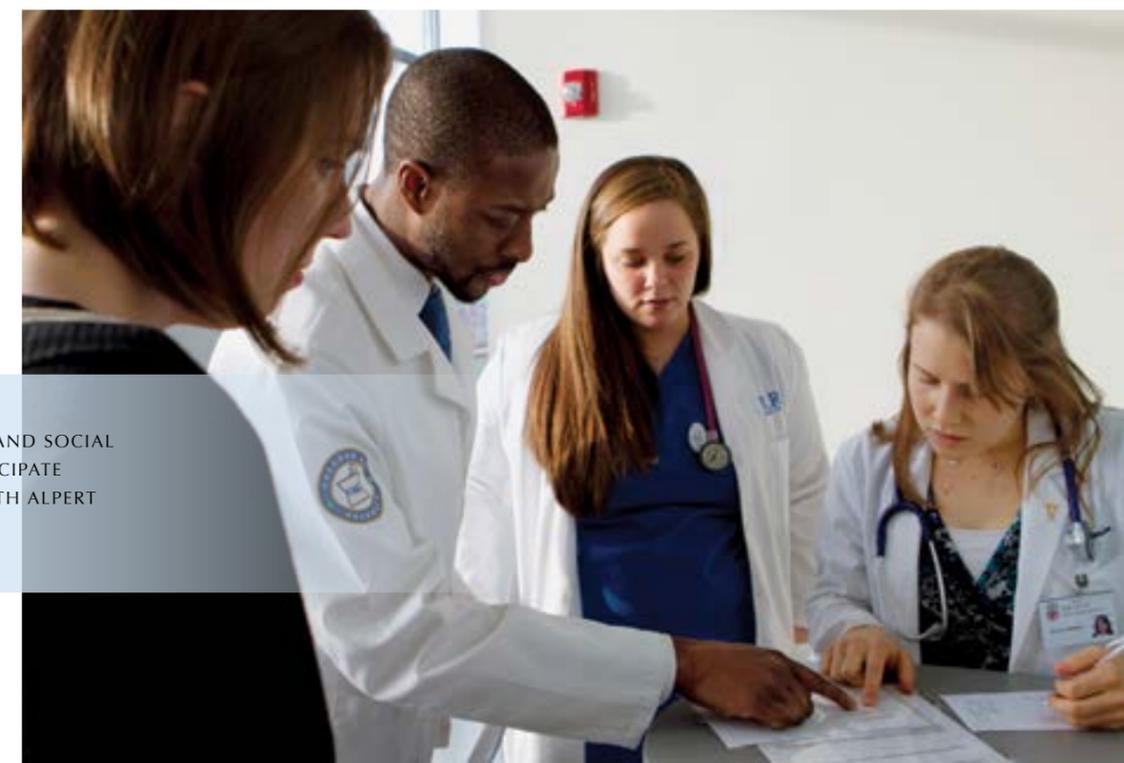
Alpert Medical School's full-day interdisciplinary care team exercise is designed to model decision-making in the clinical environment. Students are assigned to teams

and rotated through stations, including paper-based cases, ethics situations, leadership exercises, and standardized patient (an actor portraying a patient) cases. They receive feedback from the standardized patients and from faculty members from each school—as well as from each other.

“The students teach each other about various aspects of the standardized patient cases—discussing a standardized patient who might be a survivor of domestic violence from the medical, nursing, and social work points of view, for instance—and confer to develop diagnosis and

JULIE S. TAYLOR, MD, MS, DIRECTOR OF CLINICAL CURRICULUM
PHILIP A. GRUPPUSO, MD, ASSOCIATE DEAN FOR MEDICAL EDUCATION
PAUL GEORGE, MD, ASSISTANT PROFESSOR OF FAMILY MEDICINE

PHARMACY, NURSING, AND SOCIAL
WORK STUDENTS PARTICIPATE
IN A TEAM EXERCISE WITH ALPERT
MEDICAL STUDENTS.



LCME RENEWS ALPERT MEDICAL SCHOOL'S ACCREDITATION

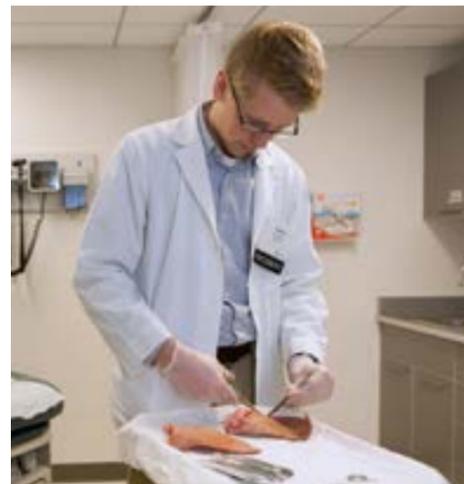
Alpert Medical School has been awarded continued accreditation by the Liaison Committee on Medical Education (LCME), the nationally recognized accrediting authority for medical education programs leading to the MD degree in the United States and Canada.

Preparation for LCME evaluation was an extension of the intensive, introspective work that has been underway for years, as curriculum innovations and relocation to a new, state-of-the-art medical education hub have yielded a redesigned medical education program, says Associate Dean for Medical Education Philip Gruppuso, MD.

“Over 100 people worked together on our year-long self-study, and it was a very valuable opportunity to take a good look at what we do well and what we could do better,” he says, adding that one outcome was a renewed commitment to diversity. Associate Dean for Academic Affairs Michele Cyr, MD, led an effort to re-write the diversity statement for the University’s Division of Biology and Medicine, and a new Office of Diversity and Multicultural Affairs, headed by Associate Dean of Recruiting and Professional Development Jabbar Bennett, PhD, was created.

The Medical School was found to be compliant with all of the more than 120 accreditation standards. Among the strengths noted in the report were the overall access and support of student participation in scholarly activities, financial aid counseling and the School’s commitment to limiting student indebtedness, and the new medical school building that facilitates optimal student learning.

“We’re very pleased that we met the LCME’s stringent criteria,” says Gruppuso. While the LCME noted a need to monitor diversity, the learning environment, and the school’s financial well-being, reaccreditation was granted for an eight-year term that will not expire until the 2020-2021 academic year.



treatment plans,” says Paul George, who directs the course. “They learn how their different competencies fit together to benefit the patient, and they observe how leadership can come from all disciplines. We hope this will ingrain the idea of team-based care early.”

Long-term plans, says George, include incorporating other health professionals—physical therapists, nutritionists, and more—as well as introducing interdisciplinary rounds for third-year medical students.

The interdisciplinary care team exercise is one of several recent medical curriculum innovations. Another program also incorporating peer-to-peer teaching is a three-week Clinical Skills Clerkship launched in 2012. Designed as an element of Alpert’s Doctoring program, in which students spend time in clinics, private practices, and hospital settings, the Clinical Skills Clerkship prepares students for the practical and theoretical aspects of their third-year clerkships. Supervised by George, Director of Clinical Skills Assessment Dana Zink, RN, and Julie Taylor, fourth-year medical students teach rising third-year students.



“This course happens at a key leverage point in third-year students’ development,” says Taylor. “It’s the moment when they shift focus away from themselves and become patient-centric, and it’s the moment when they transition from functioning as an individual to functioning as a member of a team.”

The clerkship also provides a valuable educational opportunity for fourth-year students, she adds. “This program offers the most extensive teaching opportunity that students

will receive in medical school, and that’s just as critical as developing clinical skills,” Taylor says. “All good doctors are good teachers.”

“We believe that each of these programs is essential to the education of future physicians,” says Philip Gruppuso. “The Clinical Skills Clerkship is really the capstone of Doctoring. It allows students to consolidate all they’ve learned about clinical practice in the first two years of medical school and launch into their core clinical rotations with confidence. The interdisciplinary care team exercise plays a similar role, preparing students for the realities of clinical care. Interdisciplinary education needs to become an intrinsic part of medical education.”

Ultimately, it will be the future patients of all of these caregivers who will benefit from these new approaches to medical training.

“They learn how their different competencies fit together to benefit the patient, and they observe how leadership can come from all disciplines.”



ALEX HADICK '15, LEFT, WATCHES PROFESSOR OF MEDICAL SCIENCE PETER SHANK, PHD, DURING THE PHAGE HUNTERS CLASS.

The Thrill of Discovery

BROWN TURNS UNDERGRADUATES INTO PHAGE HUNTERS

Science at Brown is inclusive. In almost any lab, you'll find undergraduates, graduate students, postdoctoral fellows, and medical students collaborating with faculty and staff.

A new course is giving undergraduates an extra head start.

In 2012, Brown was one of 11 schools nationwide selected by the Howard Hughes Medical Institute to participate in the Phage Hunters program of the institute's Science Education Alliance, giving freshmen an immediate taste of scientific discovery.

Students in the two-semester Phage Hunters course unearth a bacteriophage (phage for short), a virus that infects and replicates within bacteria, in campus soil or elsewhere. They name their virus and examine its DNA,

using centrifuges, electron microscopes, and bioinformatics—learning skills, in real time, that they normally wouldn't acquire for years. They also enter a secret-ballot competition by which the class selects one phage for the honor of having its DNA fully sequenced between semesters.

The process mirrors the exhilarating unpredictability of scientific discovery, says Peter Shank, a course instructor, adding that a publication may even result if something is discovered.

"This is how research actually operates," says Shank. "We hope this will spark a passion for science."



BARRY CONNORS, PHD



DIANE LIPSCOMBE, PHD



DAVID RAND, PHD

Honors

FACULTY FELLOWS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The American Association for the Advancement of Science, the world's largest general scientific society, elected five Division of Biology and Medicine faculty members as AAAS Fellows in 2011 and 2012.

Elected in 2011 and formally welcomed by the AAAS in February 2012 were:

Barry Connors, PhD
The L. Herbert Ballou University
Professor of Neuroscience

Diane Lipscombe, PhD
Professor of Neuroscience

David Rand, PhD
Professor of Biology
(Ecology and Evolutionary Biology)

Elected in 2012 and formally welcomed by the AAAS in February 2013 were:

Mark Schlissel, MD, PhD
Provost and Professor of
Medical Science

Julie Kauer, PhD
Professor of Medical Science

The peer-nominated honor recognizes scientifically or socially distinguished efforts to advance science or its applications. Approximately 45 current, former, and emeritus members of the Brown faculty are AAAS fellows.



MARK SCHLISSSEL, MD, PHD



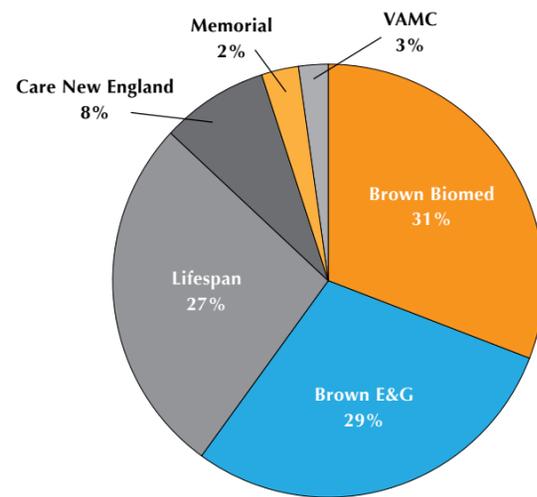
JULIE KAUER, PHD

FINANCIAL INFORMATION

For 2012, the Division of Biology and Medicine generated a modest surplus of \$600,000, primarily due to growth in indirect costs earned from increases in sponsored funding, and from an increase in both tuition and fees and unrestricted hospital support. During the same year, we incurred over \$5 million in capital expenditures—significantly outpacing the operating surplus that was generated.

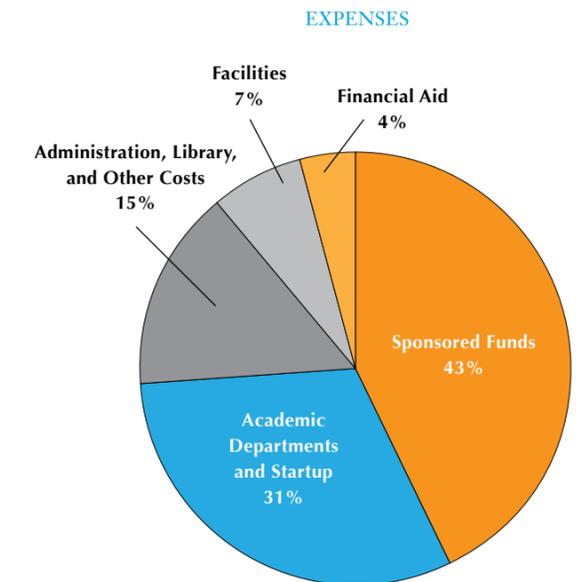
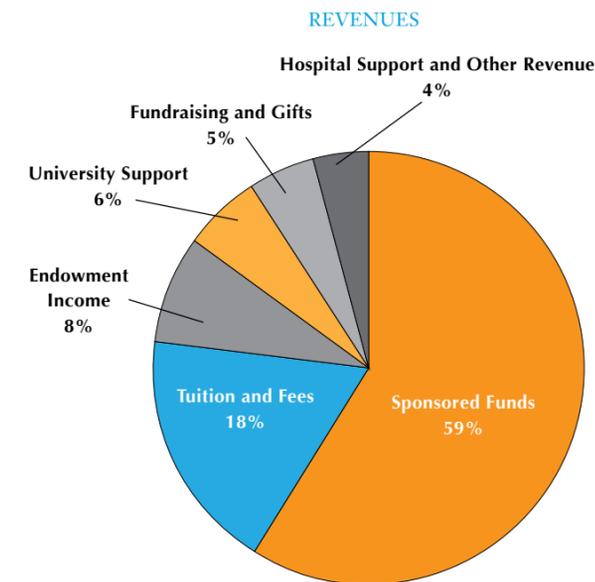
FY'12 Sponsored Funding (Campus and Affiliated Hospitals)

Total Sponsored Funding	\$293,574,439
Total Campus Awards	\$175,222,000
31% Division of Biology and Medicine	\$90,922,000
29% Brown, excluding Division	\$84,300,000
Total Affiliated Hospitals Awards	\$118,352,439
27% Lifespan (Rhode Island Hospital, The Miriam Hospital, Bradley Hospital)	\$78,169,643
8% Care New England (Women & Infants Hospital, Butler Hospital)	\$25,039,566
3% Providence VA Medical Center	\$8,928,782
2% Memorial Hospital of Rhode Island	\$6,214,448



FY'12 Revenues (Campus)

Total Revenues	\$153,261,000
59% Sponsored Funds	\$90,922,000
18% Tuition and Fees	\$28,090,000
8% Endowment Income	\$11,597,000
6% University Support	\$9,499,000
5% Fundraising and Gifts	\$7,643,000
4% Hospital Support and Other Revenue	\$5,510,000



FY'12 Expenses (Campus)

Total Expenses	\$152,646,000
43% Sponsored Funds	\$65,581,000
31% Academic Departments and Startup	\$46,842,000
15% Administration, Library, and Other Costs	\$22,377,000
7% Facilities	\$11,214,000
4% Financial Aid	\$6,632,000

PHILANTHROPY

JULY 1, 2011 – JUNE 30, 2012

The following list reflects gifts of \$2,500 and up paid in fiscal year 2012.

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DONOR SPOTLIGHT

Gifts in support of the Alpert Medical School building were an important part of the Division's fundraising success in 2012. Erik Sirulnick '93 MD'97 and his family named a case study room.

Sirulnick, a cardiologist who specializes in cardiac electrophysiology, says he has "very fond memories of my years at Brown and of my training." Sirulnick came to Alpert Medical School through the Program in Liberal Medical Education and feels "privileged to have been educated at both the University and Medical School."

Now the director of the electrophysiology lab at the Catholic Healthcare West Hospitals in Las Vegas, Sirulnick says Brown has "shaped the type of physician I try to be, my character. Receiving that kind of education—one focused on developing its students not just as effective clinicians, but as decent people—is one of the best things that has ever happened to me."

Supporting the new building has been a great opportunity for the family to give back to the School, Sirulnick says.

"We wanted to support Brown's growth as a more comprehensive, substantial, globally recognized medical center," he says. "To have a state-of-the-art center for medical education at Brown is something I can be proud of as an alum."



FROM LEFT, MARINA MACNAMARA MD'13; JILL SIRULNICK; DEAN EDWARD WING; ERIK SIRULNICK; HIS FATHER, SANDY SIRULNICK; AND SHREYUS KULKARNI MD'14 VISIT THE ERIK J. SIRULNICK, MD, CASE STUDY ROOM.

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Lindsay J. Graham
Executive Dean for Administration

Philip A. Gruppuso, MD
Associate Dean for Medical Education

Edward Hawrot, PhD
Associate Dean for the Program in Biology

John A. Perry, CFRE
Senior Associate Dean for Biomedical Advancement

Glenn A. Tung, MD
Associate Dean for Clinical Affairs

Terrie “Fox” Wetle, PhD
Associate Dean of Medicine for Public Health and Public Policy

DEPARTMENT CHAIRS

Biology

Mark D. Bertness, PhD
Ecology and Evolutionary Biology

Wayne D. Bowen, PhD
Molecular Pharmacology, Physiology and Biotechnology

Laurent Brossay, PhD, MS
Molecular Microbiology and Immunology

Barry W. Connors, PhD
Neuroscience

Agnes B. Kane, MD, PhD
Pathology and Laboratory Medicine

Kimberly L. Mowry, PhD
Molecular Biology, Cell Biology and Biochemistry

Medical School

Jeffrey M. Borkan, MD, PhD
Family Medicine

William G. Cioffi Jr., MD
Surgery

G. Rees Cosgrove, MD
Neurosurgery

John J. Cronan, MD
Diagnostic Imaging

Michael G. Ehrlich, MD
Orthopaedics

Karen L. Furie, MD, MPH
Neurology

Agnes B. Kane, MD, PhD
Pathology and Laboratory Medicine

Robert B. Klein, MD
Pediatrics

Raymond G. Dufresne Jr., MD
Dermatology (Interim)

Maureen G. Phipps, MD, MPH
Obstetrics and Gynecology (Interim)

Steven A. Rasmussen, MD, MMS
Psychiatry and Human Behavior

Louis B. Rice, MD
Medicine

David E. Wazer, MD
Radiation Oncology

Brian J. Zink, MD
Emergency Medicine

Public Health

Stephen L. Buka, ScD
Epidemiology

Constantine A. Gatsonis, PhD
Biostatistics

Christopher W. Kahler, PhD
Behavioral and Social Sciences

Ira B. Wilson, MD, MSc
Health Services, Policy, and Practice

ENDOWED PROFESSORSHIPS

THE FOLLOWING IS A LIST OF ENDOWED PROFESSORSHIPS AND THE DIVISION FACULTY WHO HOLD THEM.

J. Murray Beardsley Professorship in Surgery
William G. Cioffi, MD

Esther Elizabeth Brintzenhoff Professorship in Medical Sciences
Christine A. Biron, PhD

Robert P. Brown Professorship in Biology
Mark D. Bertness, PhD

Hermon C. Bumpus Professorship in Biology
John M. Sedivy, MD

Paul Calabresi, MD, Professorship in Oncology
Peter J. Quesenberry, MD

Robert and Nancy Carney Assistant Professorship in Neuroscience

Gilad Barnea, PhD

Chace-Joukowsky Professorship in Obstetrics and Gynecology
(Search in progress)

Frank L. Day Professorship in Biology
Edward J. Wing, MD

George D. Eggleston Professorship in Biochemistry
Susan A. Gerbi, PhD

Michael G. Ehrlich, MD, Professorship in Orthopaedic Research
Qian Chen, PhD

Sidney A. Fox and Dorothea Doctors Fox Professorship in Ophthalmology and Visual Sciences
David M. Berson, PhD

Sidney A. Fox and Dorothea Doctors Fox Professorship in Ophthalmology and Visual Sciences
(Search in progress)

Sidney A. Fox and Dorothea Doctors Fox Professorship in Ophthalmology and Visual Sciences
Michael Paradiso, PhD

Frances Weeden Gibson - Edward A. Iannucilli, MD, Professorship in Emergency Medicine
Brian J. Zink, MD

Henry Ledyard Goddard University Professorship in Medical Science and Applied Math
Constantine A. Gatsonis, PhD

Florence Pirce Grant University Professorship in Community Health
Vincent Mor, PhD

David S. Greer, MD, Professorship in Geriatric Medicine
Richard W. Besdine, MD

Alan G. Hassenfeld Professorship in Pediatrics
Cindy L. Schwartz, MD

Sylvia Kay Hassenfeld Professorship in Pediatrics
Robert B. Klein, MD

Dean's Professorship in Medical Sciences in honor of Charles C. Carpenter, MD
Eleftherios Mylonakis, MD

Intrepid Heroes Professorship in Orthopaedic Surgery
Christopher Born, MD

Joukowsky Family Professorship in Medicine
Louis B. Rice, MD

Jeffrey and Kimberly Greenberg - Artemis and Martha Joukowsky Professorship in Gastroenterology
Jack R. Wands, MD

Karl E. Karlson, MD, and Gloria A. Karlson Professorship in Cardiothoracic Surgery
Frank W. Sellke, MD

Krisnamurthi Family Professorship in Urology
Mark Sigman, MD

Ruth and Paul Levinger Professorship in Cardiology
Samuel Dudley Jr. MD, PhD

Nancy Duke Lewis Professor of Biology and Gender Studies
Anne Fausto-Sterling, PhD

Lucy Lippitt Professorship in Orthopaedics
Braden Fleming, PhD

Henry Frederick Lippitt Professorship in Orthopaedic Research
Joseph J. Crisco III, PhD

Manning Assistant Professorship in Ecology and Evolutionary Biology
Casey Dunn, PhD

Manning Assistant Professorship in Molecular Biology, Cell Biology, and Biochemistry
Mark Zervas, PhD

Donald G. Millar Distinguished Professorship in Alcohol and Addiction Studies
Peter M. Monti, PhD

Mittleman Family Director of the Center for the Study of Human Development
Stephen L. Buka, ScD

The Robin Chemers Neustein Professorship in Biomedicine
Kim Mowry, PhD

William and Mary Ob - William and Elsa Zopfi Professorship in Pediatrics for Perinatal Research
James F. Padbury, MD

Stephen T. Olney Professorship in Natural History
(Search in progress)

Phyllis and Charles M. Rosenthal Director of the Brown-Marine Biology Laboratory Partnership
Christopher Neill, PhD

Richard and Edna Salomon Assistant Professorship of Biology
Erika Edwards, PhD

Sigal Family Professorship in Humanistic Medicine
Fred Schiffman, MD

Charles A. and Helen B. Stuart Professorship in Medical Science
Laurent Brossay, PhD, MS

University Professorship in Molecular Biology, Cell Biology, and Biochemistry
Arthur Landy, PhD

Upjohn Professorship in Pharmacology
Wayne D. Bowen, PhD

Alva O. Way University Professorship of Molecular Pharmacology, Physiology and Biotechnology
Edward Hawrot, PhD

Vincent Zecchino, MD, Professorship in Orthopaedic Surgery
Michael G. Ehrlich, MD

Mary E. Zucker Professorship in Psychiatry and Human Behavior
Steven Rasmussen, MD

BIOMED AT A GLANCE

DIVISION OF BIOLOGY AND MEDICINE FACULTY

Total Faculty – 2,384

Biology – 116

Public Health

- Campus based – 92
- Clinical – 46

Medical School

- Campus based – 180
- Hospital based – 652
- Clinical – 1,298

Academic Departments

- Clinical – 14
- Basic Science – 5
- Public Health – 4
- Hybrid (basic science-clinical) – 1

Affiliated Hospitals

- Butler Hospital
- Bradley Hospital
- Memorial Hospital of Rhode Island
- The Miriam Hospital
- Providence VA Medical Center
- Rhode Island Hospital/Hasbro Children's Hospital
- Women & Infants Hospital of Rhode Island

PROGRAM IN BIOLOGY

241 undergraduate degrees were awarded in 2012, of which 50% graduated with honors

56 doctoral and 41 master's awarded in 2012

78 postdoctoral research associates and fellows

257 graduate students

8 graduate programs:

- Biomedical Engineering
- Biotechnology
- Computational Biology
- Ecology and Evolutionary Biology
- Molecular Biology, Cell Biology, and Biochemistry
- Molecular Pharmacology and Physiology
- Neuroscience
- Pathobiology

Research awards totaled \$43 million in FY12

ALPERT MEDICAL SCHOOL

457 medical students

102 undergraduate institutions, 40 states, and 6 countries represented

Class of 2012: A Snapshot

- 78 graduates
- 56% women, 44% men
- 11 underrepresented minorities
- 6% Rhode Island natives
- 12.5% entered residency programs in Rhode Island

560 residents in 16 residency programs

167 fellows in 52 fellowship programs

38% of Rhode Island physicians were trained at Alpert Medical School and in its residency programs

43% of Rhode Island physicians have a faculty appointment at Alpert Medical School

5 degree programs:

- MD
- MD/PhD
- MD/MPH
- MD/MPP (Master of Public Policy)
- MD/MPA (Master of Public Affairs)

Research awards totaled \$126 million in FY12

PUBLIC HEALTH

246 students

- 90 undergraduate concentrators
- 113 master's students
- 43 doctoral candidates

Joint or combined degree programs

- AB/MPH
- Fifth-Year Master's Biostatistics
- MD/MPH

Graduate programs

- ScM in Behavioral and Social Sciences Intervention and Epidemiology
- ScM or AM in Biostatistics
- Master of Public Health
- Master of Clinical and Translational Research
- PhD in Biostatistics, Epidemiology, Health Services Research

\$40 million in external funding to campus-based research centers

11 centers and institutes conducting research in evidence-based medicine, addiction, HIV/AIDS, global health, epidemiology, gerontology, healthy behaviors, and more



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