Brown University Division of Biology and Medicine

NO LIMITS
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This inaugural report describes the programs and strengths of the Division of Biology and Medicine at Brown University. Our faculty and students are among the very best in the nation. They provide the energy and the commitment to excellence that characterize Brown.

The Division is composed of three distinct yet interrelated entities. Together they represent a significant portion of Brown’s research enterprise and serve as the hub of Rhode Island’s academic medical center. Our undergraduate, graduate, and medical students are drawn to our faculty and their laboratories, where they engage in the excitement of this new dawn of science.

Brown’s Program in Biology has five outstanding departments in the life sciences, with faculty conducting research that will build the foundation of science for years to come. Dramatic developments are on the horizon: 3-D x-rays, bioengineered organs, treatments for neuromuscular diseases, and brain-controlled prosthetic devices, to name a few.

For almost four decades, Alpert Medical School has distinguished itself through innovations in education and patient care. The faculty in our fifteen clinical departments work in seven affiliated hospitals and in practices statewide. The Medical School boasts centers of clinical excellence in HIV/AIDS, orthopedics, cardiovascular disease, women’s health, and more. In less than two years, the School will move into its first dedicated facility, increase the size of its student body, and strengthen its already robust programs in global health.

Our Public Health Program faculty are thought leaders on the national scene. They are the ones policymakers consult on health issues that affect us all — such as the H1N1 influenza pandemic and the increasing incidence of obesity. The Program’s steadily growing faculty and student body, as well as its dynamic leadership and focus on research and education, have made this one of Brown’s most exhilarating programs.

This report tells the story of these programs and our stellar faculty, students, and staff. There couldn’t be a more inspiring narrative in Rhode Island.

Edward J. Wing, MD
Frank L. Day Professor of Biology and
Dean of Medicine and Biological Sciences
Brown University
The Program in Biology comprises five departments: Ecology and Evolutionary Biology; Molecular Biology, Cell Biology and Biochemistry; Molecular Microbiology and Immunology; Molecular Pharmacology, Physiology and Biotechnology; Neuroscience; a sixth, Pathology and Laboratory Medicine, is a bridge department that spans the Program in Biology and Alpert Medical School. Biology is one of the most popular undergraduate concentrations at Brown, and accounts for 18 percent of the baccalaureate degrees awarded in 2009.

Brown’s basic science faculty are engaged in laboratory research at the cutting edge, from cell biology to biophysics, environmental toxicology to neurobiology. Brown is noted for its “culture of collaboration,” and the Program in Biology is home to multidisciplinary groups that bring faculty from diverse fields together to tackle common issues. Examples include the Center for Biomedical Engineering, the Environmental Change Initiative, and the Center for Vision Research. Additional collaborations with clinical faculty are facilitating translational research.

**PROGRAM IN BIOLOGY AT A GLANCE**

- **226** undergraduate degrees awarded in 2009 of which 46.5% graduated with honors.
- **55** graduate degrees awarded in 2009
- **6** graduate programs
  - Biomedical Engineering
  - Ecology and Evolutionary Biology
  - Molecular Biology, Cell Biology and Biochemistry
  - Molecular Pharmacology and Physiology
  - Neuroscience
  - Pathobiology
- **59** postdoctoral research associates and fellows
- **192** faculty members
- **$1.5 million in external funding** for graduate students from a variety of sources, including Fulbright, Gates Foundation, and NIH National Research Service Awards.
- **$28 million in total research awards**

Silkworm. A Civil Action. Erin Brockovich, Hollywood has shown us what hazardous waste can do to a community. The Superfund Research Program (SRP) at Brown is advancing the state of the science by figuring out the health risks and remediation solutions for hazardous waste in Rhode Island.

The program, called “Reuse in Rhode Island: A State-Based Approach to Complex Exposures,” was first funded in 2005 by an $11.5 million grant from the National Institute of Environmental Health Sciences. It was re-funded last year, through 2014, with an additional $15.4 million grant.

The research has already yielded important information. For years, scientists have wondered why exposure to small amounts of hexavalent chromium can cause such high rates of cancer. An SRP team led by Associate Professor of Medical Science Anatoly Zhitkovich found that when mixed with vitamin C inside the body’s cells, even a small amount of hexavalent chromium causes chromosomal breaks and cellular mutations.

Other projects assess testicular damage and pregnancy disruption caused by toxic substances and the possible toxicity of nanomaterials. Engineering projects include novel techniques for heavy metal removal and new ways of determining the danger of chemicals entering household air from contaminated soils. And a longitudinal study will examine the associations between prenatal PCB exposure and adverse pregnancy outcomes.

The SRP has fostered partnerships with Rhode Island’s departments of Environmental Management and Health, and its outreach core works with neighborhood organizations on environmental education.

Dr. Kim Beekelheide, director of the program, says, “The Brown SRP is recognized as one of the best in the country. Our superb interdisciplinary science, exceptional research translation, and outstanding community outreach create marvelous opportunities for engaging students and faculty in helping to solve these complex problems.”
The Warren Alpert Medical School of Brown University is home to a community of scholars and physicians dedicated to the highest standards in education, research, and health care. Since granting its first MD degrees in 1975, Alpert Medical School has become a national leader in medical education and biomedical research.

The state’s only school of medicine, Alpert Medical School has literally transformed health care in Rhode Island and southeastern Massachusetts. With top flight faculty drawn by Brown’s academic medical center, Providence is a destination for leading edge health care. Alpert Medical School helps make Rhode Island a great place to live—and learn.

ALPERT MEDICAL SCHOOL AT A GLANCE

414 medical students
from 89 undergraduate institutions, 40 states, and 6 countries.

794 residents
in 28 residency training programs.

2,003 faculty members
of whom 226 are campus based, 554 are hospital based, and 1,223 are community physicians.

20 academic departments
of which 5 are basic science departments and 15 are clinical departments.

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)

7 teaching hospitals
including a Level 1 trauma center, an adult and a pediatric psychiatric hospital, and a Veterans Affairs Medical Center. Together the hospitals serve 1.5 million people of diverse backgrounds.

Class of 2009: a snapshot
• 90 graduates
• 59% women, 41% men
• 13 underrepresented minorities
• 11 Rhode Island natives
• 12 entered residency programs in Rhode Island
• 51% entered primary care residency programs (vs. 46.5% nationally)

One of Alpert Medical School’s seven affiliated hospital partners, Women & Infants Hospital of Rhode Island sees 10,000 deliveries every year, making it the 10th-largest obstetrical service in the United States. The hospital is renowned for cutting edge care and research, particularly in women’s cancers and neonatology. It is the home of medical education programs at the undergraduate and graduate levels and boasts a number of leading fellowship programs in the gynecologic subspecialties.

Some of Women & Infants’ tiniest patients weigh little more than five sticks of butter. These tiny babies have five-star accommodations: the largest single-family room Neonatal Intensive Care Unit (NICU) in the nation.

Unlike the traditional open-bay style, where babies are arranged in a large room with no dividers, the single-family room offers each baby a controlled environment optimal for growth and development, privacy, and a place for parents to sleep.

The level of care remains the same, James F. Padbury, the William and Mary Oh—William and Elsa Zopfi Professor of Pediatrics for Perinatal Research and neonatologist-in-chief at Women & Infants, says his NICU is known for a “less is better” approach. Narcotics, blood transfusions, and infant handling are kept to a minimum—“just as much as needed, no more.”

“We still have the shortest length of stay and the best survival,” Padbury says, compared to similar academic medical centers.

He notes that the role of obstetrics in outcomes is often overlooked. “OB is extraordinary here. All the elements of obstetrics make a difference.”

Neonatologists in the NICU’s Follow-Up Clinic study what happens beyond survival. Professor of Pediatrics Betty Vohr is chair of the country’s largest longitudinal study of premature infants.

With a Center of Biomedical Research Excellence (COBRE) in Perinatal Biology from the NIH, Alpert Medical School faculty based at Women & Infants are investigating cardiopulmonary development and new therapeutic interventions. The COBRE was renewed in January 2009 with a $10.3 million grant.
The plan to create a state-of-the-art home for Alpert Medical School, announced in May 2009, is one of Brown’s highest priorities. Following a $45-million custom renovation, the building will serve as a clear and concrete manifestation of Alpert Medical School, symbolizing its importance to Rhode Island and its growing stature on the national scene.

Brown is producing new doctors for a new day.

Gone are the days when medical students sat in the same lecture hall for eight hours straight. Today they learn in small groups, working collaboratively through challenging scientific and ethical cases. The new lecture halls, case study rooms, and small classrooms will allow for unprecedented flexibility. Faculty and students will tailor such spaces to their teaching and learning needs, reflecting advances in technology and a dynamic curriculum.

The new building is critical to accommodating an expanded medical school class size—Brown’s response to the initiative, led by the Association of American Medical Colleges, to increase the number of physicians in training to alleviate the nation’s shortage of doctors. The building will also make it possible to institute the Academy system, in which each student is assigned to an “Academy” of 40 students from all four years and remains with that group throughout medical school. The Academy enhances students’ formal and personal education: it provides the ideal setting for small group learning and creates a sense of community.

The new facility’s location will place students within walking distance of the School’s major teaching hospitals and related research laboratories. Such proximity will support the advising and mentoring that are so integral to medical education at Brown.

Equally exciting, students will be just blocks away from Brown’s Laboratories for Molecular Medicine, its new Center for Innovation and Entrepreneurship, and the 10 thriving research centers of Brown’s Public Health Program.

Finally, as the cornerstone of a growing academic medical center, the building (whose ground floor lobby and cafe will be open to the public) will be the catalyst for sustainable, high-value-added employment in Rhode Island’s burgeoning health, science, and biotech industries.
Launched in 2000, Brown’s Public Health Program integrates the academic, research, and public service programs that are relevant to population health. It offers undergraduate degrees in community health and biostatistics; a master of public health; a master of science in biostatistics; and doctoral programs in epidemiology, biostatistics, and health services research.

The Program is a point of convergence for Brown, Alpert Medical School, and local and national public, private, and governmental entities with a public health interest. It is enriched by its connection to Rhode Island’s only medical school and by its strong ties to the state Department of Health. It provides substantial public service to organizations and residents throughout the state and region. The Program’s faculty and students strengthen these community relationships through their commitment to translating research findings into policy and practice.

### PUBLIC HEALTH PROGRAM AT A GLANCE

<table>
<thead>
<tr>
<th><strong>186 students</strong></th>
<th><strong>10 centers</strong></th>
<th><strong>$42 million in external funding</strong></th>
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<tbody>
<tr>
<td>in the Program, of whom 66 are undergraduate concentrations, 79 are MPH and other masters students, and 41 are PhD students.</td>
<td>conduct groundbreaking research in the areas of addiction, HIV/AIDS, global health, epidemiology, gerontology, healthy behaviors, and more.</td>
<td>was awarded to the Public Health Program during academic year 2008-2009.</td>
</tr>
<tr>
<td><strong>135 faculty members</strong></td>
<td><strong>4 disciplines in the graduate programs</strong></td>
<td><strong>712 peer-reviewed articles, chapters, and books</strong></td>
</tr>
<tr>
<td></td>
<td>• Behavioral and Social Sciences</td>
<td>were published by Public Health Program faculty in 2008-2009.</td>
</tr>
<tr>
<td></td>
<td>• Health Services, Policy and Practice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Biostatistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Epidemiology and Environmental Health</td>
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It’s no secret that the United States is on the verge of a monumental demographic shift: by 2030, the proportion of the population aged 65 and older will double to about 71 million, or one in every five Americans. Forty-four states will have similar aging demographics to Florida’s. This transformation far exceeds capacity in the areas of public health, aging services, and the nation’s health care system.

Reform is crucial. But how do we know what to change? Researchers in the Public Health Program are shaping the answers to this question. Vincent Mor, the Florence Pirce Grant University Professor of Community Health, is a leader among the experts on aging and nursing home care at Brown’s Center for Gerontology and Health Care Research.

In 2007, Mor received a $10 million grant from the National Institutes of Health to create a massive database aimed at improving the nation’s long-term care system—and the lives of the elderly who rely on it. When complete, the database will be the first to track nursing home staffing, performance, and policy on a state level for all 50 states.

The study will enable Gerontology Center researchers to trace a clear relationship among state policies, local market forces, long-term care quality, and patient outcomes. In turn, policymakers will use these data to craft guidelines that promote high-quality, cost-effective, equitable care for the elderly.

Another public health researcher is Amal Trivedi, an expert on health care disparities, whose research lays the groundwork for further solid, evidence-based reform. He has found, for example, that if mental health co-payments are equal to primary care co-payments, patients are more likely to seek timely outpatient care after a psychiatric hospitalization — reducing the likelihood of repeat hospitalizations. Trivedi has also shown that even a modest co-payment for a mammogram can deter women from receiving one. Because mammograms are critical in the fight against breast cancer, such findings have important health policy implications.
Brown’s Division of Biology and Medicine does not believe in boundaries. No borders separate biologists from orthopedists, gerontologists from biostatisticians. Faculty and students mix and merge ideas in dynamic ways that create new knowledge. Knowledge that changes lives.

The work of our faculty spans bench science, clinical care, and public health policy. Their research, teaching, and care have an impact in our lifetime and across our lifespan.
urchin fertilization the using to children. BARRY LESTER
children genome, screening for human ills. Study one identification of hearing impairment for newborns. "Brain Waves models, use of technology in newborn health research," says director of the Women’s Brain Health Initiative. "It's a huge opportunity for research and development." 

"Neurodegenerative diseases such as Alzheimer’s disease and Parkinson’s disease are a significant public health concern," he adds. "Brain Waves is designed to help address the needs of people with neurodegenerative diseases by fostering collaboration among researchers, and helping to establish a central clearinghouse for research and development efforts to prevent and treat these diseases."

"It’s exciting to be part of a program that has the potential to make a significant impact on the lives of people with neurodegenerative diseases," he says. "Brain Waves is a unique opportunity to bring together researchers from around the world to work towards a common goal."
The following were elected Fellows of the American Association for the Advancement of Science:

David M. Berson
Sidney A. Fox and Dorothy Doctors Fox Professor of Ophthalmology and Visual Sciences
Mark D. Bertness
Robert P. Brown Professor of Biology
John F. Donoghue
Henry Merritt Wriston Professor of Neuroscience
Susan A. Gerbi
George D. Eggleston Professor of Biochemistry

The National Institute of Neurological Disorders and Stroke awarded $1.3 million to Professor of Neuroscience Justin Fallon for translational research on a new treatment for Duchenne muscular dystrophy.

Professor of Biochemistry Susan A. Gerbi received a $600,000 grant from the Susan G. Komen Foundation for projects related to breast cancer research.

Professor of Ecology and Evolutionary Biology Marc Tatar received the Roger C. Duvoisin, M.D. Award from the American Parkinson Disease Association.

Professor of Biology Kenneth R. Miller ’70 received the Distinguished Service Award of the National Association of Biology Teachers and the AAAS Award for Public Understanding of Science and Technology.

Assistant Professor of Biology Dov Sax was selected as a Leopold Leadership Fellow by the Woods Institute for the Environment at Stanford University.

The National Heart, Lung and Blood Institute awarded a $2.5 million grant to fund the Cardiopulmonary Research Training Program, which trains physicians and scientists in basic science research related to cardiovascular and pulmonary diseases. Professors of Medicine Gideon Koren and Sharon Rounds co-direct the program.

Professor of Medicine Timothy Hanigan received $1.2 million from the National Institutes of Health to launch a new training program aimed at helping promising minority researchers develop successful careers in HIV/AIDS research.

A Brown ecologist has found that coastal “dead zones” may not be so dead after all. Postdoctoral research associate Andrew Altieri found that the commercially valuable quahog clam thrives in hypoxic waters in Narragansett Bay—partly because the clam’s predators flee the low-oxygen areas.

The findings could have broad implications for future treatments for nicotine addiction and the search for new drug targets for diseases such as schizophrenia.

Assistant Professor of Biology (Research) Katherine Smith was part of a team of scientists who found that wildlife imports into the U.S. are fragmented and insufficiently coordinated, resulting in a range of diseases being introduced to the country.

Journal of Proteome Research
Associate Dean for the Program in Biology and Alva O. Way University Professor of Medical Science Edward Havreit and his lab discovered that the alpha-7 nicotinic receptor interacts with far more proteins than previously known. The findings could have broad implications for future treatments for nicotine addiction and the search for new drug targets for diseases such as schizophrenia.

Science

Proceedings of the National Academy of Sciences
Professor of Biology Stephen Helfand and Assistant Professor of Biology Nicola Neretti (left) discovered a mechanism in genetically altered fruit flies that could someday help humans fight the aging process.
Professor of Medical Science Eli Y. Adashi and Professor of Obstetrics and Gynecology and Medicine Susan Cu-Uvin were appointed to the Institute of Medicine’s Committee on Women’s Health Research.

Society of Critical Care Medicine
Professor of Medicine Mitchell M. Levy was elected president of the Society of Critical Care Medicine.

American Journal of Public Health
Professor of Medicine Kenneth H. Mayer and co-authors explored how clinicians and public health professionals can improve research methods, clinical outcomes, and service delivery for lesbian, gay, bisexual, and transgender people.

Journal of the American Medical Association
Professor of Medicine Mark Fagan was co-author of a paper that discussed factors associated with medical students’ decision to enter careers in internal medicine.

Epilepsy and Behavior
Assistant Professor of Psychiatry (Research) W. Curt LaFrance found that cognitive behavioral therapy can alleviate nonepileptic seizures, reducing the number of seizures and improving quality of life for patients.

Cancer
Professor of Dermatology and Community Health Martin Weinstock found that sun-damaged rough patches on the skin known as actinic keratoses lead to more forms of skin cancer than previously thought. Weinstock and colleagues also determined that lesions can become invisible and resurface over time.

Pediatrics
Professor of Pediatrics Neal LeLeiko was senior author on a study that showed children commonly receive free drug samples from their doctors, which pose a serious and unappreciated risk.

HIGHLIGHTS

For research in adolescent addiction, Assistant Professor of Psychiatry and Human Behavior (Research) Robert Miranda Jr. and Brown’s Center for Alcohol and Addiction Studies received $1.2 million from the NIH and the American Recovery and Reinvestment Act of 2009, one of the first in the country to use stimulus funding.

The National Institute of Child Health and Human Development awarded Brown University a $12 million contract to expand its participation in the National Children’s Study. In 2007, Brown received $14.1 million to join the landmark study.

Associate Dean for the Program in Public Health and Public Policy Terrie Fox Welter received the Donald P. Kent Award from the Gerontological Society of America.

Chair of the Department of Community Health Vincent Mor received the Award for Excellence in Scientific Research in Palliative Care from the American Academy of Hospice and Palliative Medicine.

New England Journal of Medicine
A major clinical trial for colorectal screening found that more patients stand to benefit from a comprehensive, less invasive method to accurately detect colorectal cancer and precancerous polyps. The Brown Center for Statistical Sciences, directed by Constantine Gatsonis, helped design the trial, then monitored it and conducted the data analysis.

American Journal of Public Health
Professor of Community Health and Medicine Joan Teno co-wrote a guide to help doctors place their patients in the best possible hospice care.

Journal of the American Medical Association
Assistant Professor of Medical Science Amal Trivedi was lead author of a study that found that more patients with mental illness will seek follow-up care after a hospitalization if their co-payments for mental health care are as affordable as those for primary care.

Chair of the Department of Community Health Vincent Mor was a co-author.
Medical, public health, and science faculty, students, and residents generously donate their time and expertise in the local community. Opportunities for service range from free clinics to statewide organizations, from one-on-one mentoring to science education. People in the Division of Biology and Medicine are known for taking action wherever help is needed. Here are just some of the ways they give.

**Area Health Education Center of Rhode Island (AHEC)**
Based at Brown, Rhode Island’s AHEC fosters academic, training, and community collaborations that improve the supply and distribution of a high quality, culturally sensitive, interdisciplinary health care workforce. AHEC provides grants to students to plan and execute community health projects, such as implementing health education workshops at theYWCA and assessing the utilization of medical interpreter services.

**Brain Awareness Week (BAW)**
During BAW, Brown undergraduates, graduate students, and faculty conduct educational presentations and hands-on activities in local schools on human brain gross anatomy, recording from nerve cells, learning and memory, addiction, visual system function, mental illness, and other diseases of the nervous system.

**Community Asthma Programs Asthma Camp**
This week-long summer camp for 9- to 13-year-olds with severe asthma allows children to participate fully in outdoor activities while learning how to manage their asthma. Camp staff includes physicians, students, therapists, and EMTs who volunteer their time. After participating in the camp, campers report increased self-esteem and recognition that they are not alone with this chronic disease.

**Peer HIV/AIDS Sight-Based Education (PHASE)**
PHASE works collaboratively with community-based organizations that provide HIV/AIDS prevention and education to adolescents and young adults. Volunteers are trained to implement and develop curricula in various locations, with the guidance and supervision of professionals.

**Rhode Island Free Clinic**
Alpert Medical School provides a consistent pool of student and physician faculty volunteers who serve Rhode Island Free Clinic. Since the clinic opened in 1999, students have worked with physicians to provide quality accessible health care for patients without health insurance. Student volunteers assist physicians with electronic medical records, help with the Patient Assistance Program, and work in check-out positions.

**Shape Up RI**
Founded and chaired by Brown medical student Rajiv Kumar, Shape Up RI has encouraged 15,000 Rhode Islanders to exercise more and lose weight by joining their peers in teams. The average participant loses 7.3 pounds, exercises 4.55 hours per week, and takes more than 9,000 steps per day. The program is expanding nationwide and will soon include schoolchildren. Rajiv won a 2009 Community Health Leaders Award from the Robert Wood Johnson Foundation—one of 10 people around the country chosen for the honor.

**GLOBAL COMMUNITY**
Health issues transcend national boundaries. Our faculty and students have a strong commitment to improving health in communities across the world. Through academic and volunteer organizations, they seek not only to aid in disease prevention and treatment, but also to identify and eradicate the underlying conditions that contribute to the persistence of disease—such as disparities in access to care or poverty, violence, and war.

The **Brown/Tufts Fogarty AIDS International Training and Research Program** trains foreign scientists in degree and non-degree programs. The vast majority of trainees continue their work in their home countries, which include India, Cambodia, the Philippines, Indonesia, Kenya, Vietnam, and Bangladesh.

Through the **Brown Kenya Program**, Alpert Medical School residents and faculty work on the medical wards of the Moi Teaching and Referral Hospital in Eldoret. Kenyan medical students in turn rotate at Alpert Medical School’s teaching hospitals in Rhode Island.

The Department of Medicine’s **Dominican Republic exchange program** enables medical students and residents to do four-week rotations at Hospital Regional Universitario de Jose Maria Cabral y Baz, in Santiago. The Brown/Cabral clinic is the country’s largest HIV service provider.

**Shoulder to Shoulder**, a private, non-profit, NGO partnership, provides health care, public health, and educational services in rural Honduras. Through a partnership initiated by the Department of Family Medicine, physicians, medical students, residents, nurses, lawyers, business experts, builders, and students from Rhode Island volunteer their time and expertise.

**Y.R. Gaitonde Centre for AIDS Research and Education (Y.R.G. CARE)** in Chennai, India, has been the locus of collaboration on studies of antiretroviral therapy since 1998. In addition to the clinical care research trainees provide through Y.R.G. CARE, they have also published some of the first, definitive reports on the natural history, prevention, care, and treatment of HIV/AIDS in Southern India.
Last February, Congress passed the American Recovery and Reinvestment Act (ARRA) of 2009. One of the provisions of the ARRA is to increase federal funds for education and health care. As of December 1, 2009, the Division had won more than $11 million in new awards.

**NIH ARRA AWARDS (Campus and Affiliated Hospitals)**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Brown University</td>
<td>56%</td>
</tr>
<tr>
<td>Lifespan</td>
<td>34%</td>
</tr>
<tr>
<td>Care New England</td>
<td>6%</td>
</tr>
<tr>
<td>Memorial Hospital of Rhode Island</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Total Campus Awards** $134,006,150
- Division of Biology and Medicine $78,299,181
- Education and General (non-Division) $55,025,204

**Total Affiliated Hospitals Awards** $101,803,963
- Lifespan $70,299,181
- Care New England $22,258,923
- Memorial Hospital of Rhode Island $4,774,692
- Providence VA Medical Center $4,471,167

**RESEARCH SPACE (Campus and Affiliated Hospitals)**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Gross Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhode Island Hospital</td>
<td>1,043,800</td>
</tr>
<tr>
<td>The Miriam Hospital</td>
<td>50,000</td>
</tr>
<tr>
<td>Emma Pendelton Bradley Hospital</td>
<td>5,000</td>
</tr>
<tr>
<td>Women &amp; Infants Hospital of Rhode Island</td>
<td>57,100</td>
</tr>
<tr>
<td>Butler Hospital</td>
<td>26,600</td>
</tr>
<tr>
<td>Memorial Hospital of Rhode Island</td>
<td>22,000</td>
</tr>
<tr>
<td>Providence VA Medical Center</td>
<td>26,800</td>
</tr>
</tbody>
</table>

**FACULTY (As of June 30, 2009)**

- Total Faculty 2,003
- Academic Campus Based Faculty 226
- Academic Hospital Based Faculty 554
- Clinical Voluntary Faculty 1,223

**TEACHING HOSPITALS (Affiliated with Alpert Medical School)**

Rhode Island Hospital (including its pediatric division, Hasbro Children’s Hospital)
The Miriam Hospital
Emma Pendelton Bradley Hospital
Women & Infants Hospital of Rhode Island
Butler Hospital
Memorial Hospital of Rhode Island
Providence VA Medical Center

Rhode Island Hospital, The Miriam Hospital, and Bradley Hospital are members of the Lifespan health system. Women & Infants Hospital and Butler Hospital are members of the Care New England health system.
The Division of Biology and Medicine is thankful for the generous generosity of its benefactors—both longstanding supporters and new donors. Below is a list of true philanthropic leaders. By giving generously to Boldly Brown: Campaign for Academic Enrichment, these individuals and institutions have helped propel the Division forward in bold new ways. We salute them.

**INDIVIDUAL DONORS**

**$5 Million and above**
Anonymous
The late Sidney E. Frank ’42 LHD’05

**$1 Million to $4,999,999**
Anonymous (4)
Dorothy Beckwith and G. Nicholas Beckwith III ’87, P’97MD’99
Richard L. Brody P’98MD’93
Richard G. Deeds ’78 and Marcella Deeds ’78
The late Frances Morden Gibson ’45, P’58
Alie G. Hassfeld and the Hassfeld Foundation
Mary D. Lokas, MD
The late Mary Ann Lipsett
Robin Chermers Neustein ’75 and the Lightfighter Trust
Hong Chang Pang and Shihuen Pang ’51
Marilyn Dawson Searle MD’76 and H. Jay Searle PAM’07
Jean Woring Sorenson ’72 and E. Paul Sorenson ’73, MD, P’06, ’06

**$500,000 to $999,999**
Mary Bayles Carlson ’43 and the late Maurice Edillon Carlson ’46
Mary Ann Ehrlich and Stephen B. Ehrlich ’53, P’85
Jill E. Braunman ’85 and Daniel Nir
Donald G. Patriquin ’50
Steven Price ’54
The late Albert B. Tabor Jr. ’56
Eleanor Van Cott

**$100,000 to $499,999**
Anonymous (3)
Rocio Kett Blumentharn ’76 and Mark S. Blumentharn ’72 MD’75 MMS’76 P’90, ’88
Marilyn Rice Bray ’53 and George A. Bray Jr. ’53
Richard F. Carsten ’58, P’84, ’90, ’93
Frank V. Carroll ’50
Elizabeth Zoph Chace ’39 and Malcolm G. Chace LHD’04
Diana Kane Cohen ’54
Gordon S. Cohen ’56, P’84, ’87
Mary Wall Cox ’72 and Robert W. Daly ’73, P’06
Nicole Gill ’90 and John A. Deckert
Joseph F. Fosso ’80 MD’84 and Laura Watson ’78
The late Elytht Atwood Walen Fraser
Aileen Gardner and Colin R. Gardner, PhD P’95MD’99, W’98MD’13
Jordan C. Grunfeld MD’03
The late Lucille B. Blacking ’40
The late Harry B. Hembald ’40, P’77
William J. Kaplan ’47
Elkem Levinson Lewis ’59 and David C. Lewis ’64, P’83, ’87
The late E. F. Lovering, MD’18, PG’53, GP’61
Peter J. Panton ’79 MD’82
Veronica Stimmens Petersen ’55
The late Grace Boss
Terry M. Sanderson
The late Jack Swann
Monica R. Shah ’89 MD’94
Nicolah R. Shah ’90
Marilyn Winkser and James W. Winkser ’53, P’89
Robin Wolf and Warren Wolf P’04MD’11, HS’12
Sarah Lloyd Wolf ’72 and Charles B. Wolf ’72

**$20,000 to $99,999**
Anonymous (2)
Ellen Fuchs Abramson ’87, and David A. Abramson ’84, P’95
Tom Adelsi and Eli Y. Adelsi, MD

Penny E. Bank P’95
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Richard A. Johnson ’72, P’11
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