



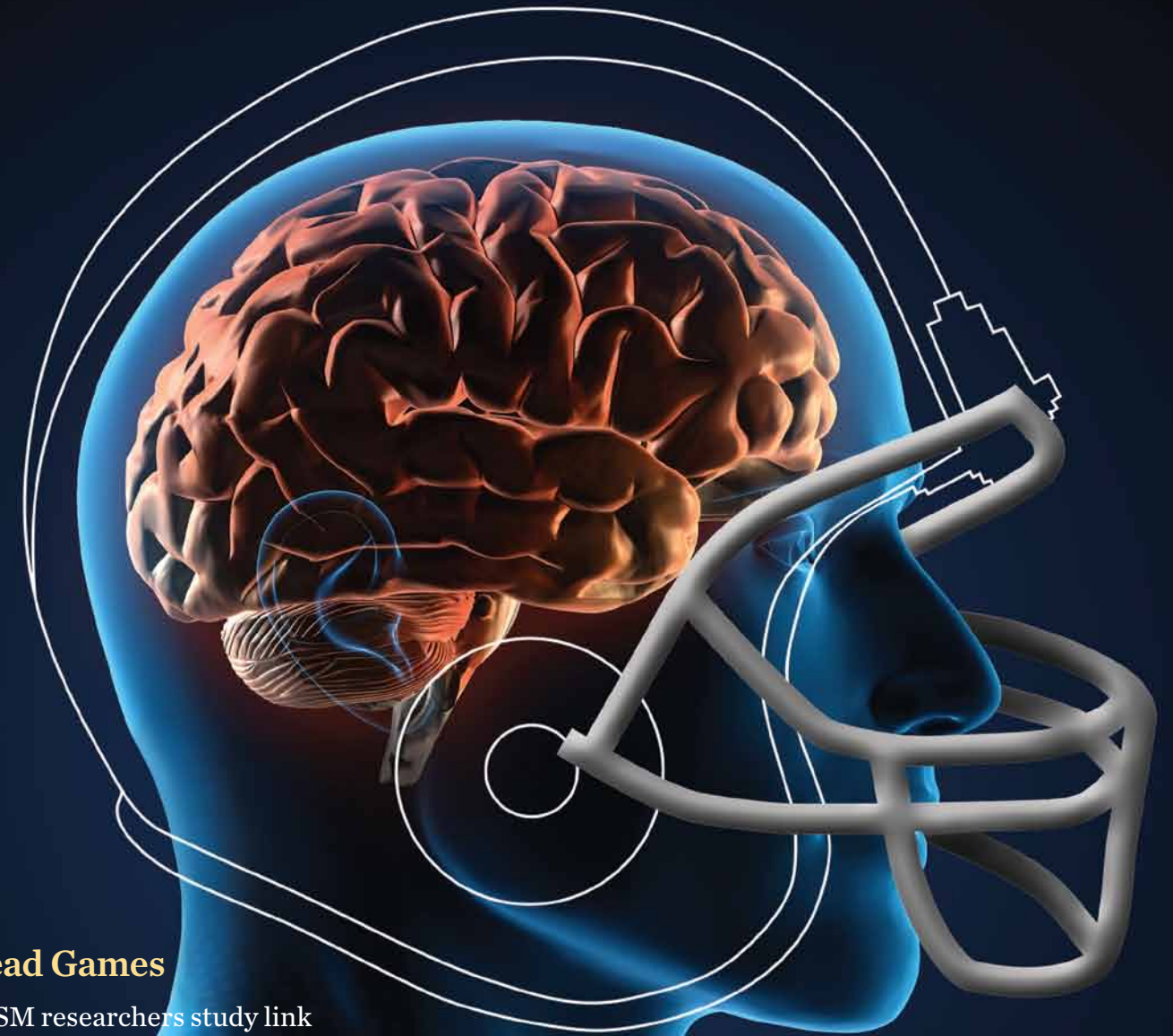
Boston University School of Medicine

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Campus & Alumni News | Summer 2010

Boston University School of Medicine



Head Games

BUSM researchers study link between repetitive head trauma and neurodegenerative disease

Groundbreaking new research at the Center for the Study of Traumatic Encephalopathy (CSTE) suggests contact sports put athletes at risk for a disease never before described in medical literature (p. 9).



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Dear Friends,

Recent events such as the recession, the Gulf oil spill, and the Haiti earthquake bring into sharp focus how dramatically reality can change. Faculty, staff, and students at the medical school are mindful of how these global occurrences affect our everyday lives. This issue of *BUSM Campus & Alumni News* tells the stories of our community of scientists, teachers, students, and caregivers and their pursuit of our far-reaching and substantive social mission.

These endeavors need support. With great pleasure we publicly recognize our own graduate, Shamim Dahod '87, and her husband, Ashraf, for their outstanding generosity. Their previously announced anonymous pledge of \$10.5 million—\$9.5 million to support breast cancer research and \$1 million for the new student residence on campus—is the largest individual commitment the School has ever received and will do an extraordinary amount of good for women's health and our students.

Also, we congratulate our associate dean and faculty member, Jonathan Woodson, MD, who has been tapped by President Obama to be assistant secretary of defense for health affairs and will soon be undergoing Senate confirmation. We wish him well.

I am glad to report that we have reached our initial goal to begin construction of the new student residence. *The student residence remains our major fundraising goal since every dollar donated reduces the rent and ultimate educational debt of our medical students.*

We very much value and appreciate your continued interest and involvement in BUSM.

Best wishes,



Karen Antman, MD
Provost, Medical Campus
Dean, School of Medicine



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Boston University School of Medicine

Campus & Alumni News | **Summer 2010**

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Mary Hopkins, Publications Coordinator

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Frank Curran.

Contributing writers:
Mary Hopkins, Andrea Baird Kennedy,
Maria Pantages, Susan Seligson

Please direct any questions or comments to:
Mary Hopkins
Corporate Communications
Boston University Medical Campus
85 East Newton Street, M-426
Boston, MA 02118

Phone: 617-638-8484
Fax: 617-638-8044
Email: mary.hopkins@bmc.org

Boston University's policies provide for equal opportunity and affirmative action in employment and admission to all programs of the University.

Student Residence on the Threshold

The School is ready and the students are ready. The property has been secured. The plans have been drawn. The city has approved the plans. The University has committed \$30 million to the project. The School of Medicine has raised the \$10 million initial investment needed to start construction on a student residence that will go a long way to helping reduce debt for Boston University medical students.

Why a Medical Campus Student Residence?

There are compelling reasons to build a residence hall on the Medical Campus. It is the right thing to do for the students. The School attracts some of the best and brightest students in the nation who believe in our distinctive approach to medical education and want the kind of diverse, community-based clinical experience offered in conjunction with Boston Medical Center. Boston is a very expensive city in which to live. Further, in what used to be an inexpensive neighborhood around the School, there are no longer affordable options for housing.

"The residence will provide a significant 'scholarship equivalent' for every student who lives in the facility," says Robert Witzburg, associate dean

and director of admissions. "Despite the vigorous efforts by the Dean and the Board to manage expenses and to hold tuition increases at very low levels, the total cost of attendance at BUSM (tuition plus fees plus cost of living) remains high.

"The Medical Campus student residence will substantially enhance the sense of community for our students, providing an opportunity for them to build the foundation of their careers in an appropriately supportive and interconnected environment," adds Witzburg. "The top applicants to medical school now look for this as they evaluate their options." Four out of five students who decline to come to BUSM do so because of out-of-pocket expenses, putting the School at a competitive disadvantage. By building student housing, the School gains in stature and attractiveness.

It is right for the neighborhood. City officials strongly support this project, which will bring several hundred serious-minded medical students into the neighborhood. It will reduce pressure on local affordable housing and increase foot traffic and commercial activity in the area. The residence will add to the already substantial investments Boston University has made on campus and in the area surrounding it.



“Having this facility will enhance life for students and encourage their feelings of community as scholars and professionals.”

“We are absolutely committed to controlling the cost of a Boston University medical degree,” says Dean Karen Antman. “We compete with top-ranked medical schools that have similar residences for their students. We will facilitate student education, in part by providing affordable housing that eliminates the need for late-night, expensive, long-distance commuting.”

The Right Plan

The building will be nine stories high, made of brick and limestone in the classic Boston tradition. It will have 104 units that will accommodate 208 students in two-bedroom suites. All residents in the building will have individual bedrooms, which is the standard for graduate student housing. The two residents will share the bath, kitchenette, and living spaces.

Large window bays will bring ample natural light into the building and enhance the look of the façade. Wireless internet connections will make the resources of the Boston University Medical Campus available to students free of charge, 24/7.

Why Make a Gift to the Student Residence?

It is time to act. Other medical schools in relatively high-cost metropolitan areas took similar

steps decades ago. Creating a versatile facility that will serve our students for generations is of the highest priority for BUSM.

“We need the support of all members of the BUSM community to build this on-campus home for our students,” notes Antman. “Every dollar donated decreases the rent for our students.”

“As the parent of a student entering BUSM in the fall, I know how important it is for the medical students to live on campus in a safe, easily accessible residence,” says David Rothbaum, MD ’82. “Having this facility will enhance life for students and encourage their feelings of community as scholars and professionals.”

The monthly difference between the off-campus and on-campus scenarios is \$450, or \$5,400 in annual savings. With two students sharing the suite, the total savings add up to \$10,800 a year. This does not include the savings on commuting costs.

To make your contribution to the BUSM student residence please contact Karen Engelbourg, assistant dean of development, at kengelbo@bu.edu or call 617-638-4570.

OFF-CAMPUS		vs.	ON-CAMPUS	
Rent	\$ 1,000		Rent	\$ 800
Utilities	\$ 100		Utilities	(included)
Parking	\$ 100		Parking	(not needed)
Internet	\$ 50		Internet	(included)
Total	\$ 1,250		Total	\$ 800

Library Renovations Focus on Students



Stepping off the elevators on the 12th floor of the instructional building opens up a new landscape for patrons of the BUSM Alumni Medical Library. The entry to the Library is now bright and inviting, the soothing sage green of the walls and furniture adding to the light and modern look of the space.

“The goal was to create a more welcoming and comfortable studying and learning environment for students,” explains Mary Blanchard, director of library services. “We repurposed the space to make it more student-centered, removing several stacks of books and periodicals and installing new laptop/study tables, comfortable seating, study carrels along the walls, and fixed computer tables.” With increasingly more students enrolled in programs on the medical campus, expanding and providing more options for study space was another major factor in the renovation. The Library also provides services to students in the Schools of Dental Medicine and Public Health.

Where the circulation desk once was, bistro tables and chairs now sit. The Library supports sustainability initiatives at the medical campus with recycling bins, and the renovation also

includes two filtered water units where students can refill water bottles. A wall was removed to expand library space, and a new ceiling was put in with improved, energy-efficient lighting. The carpet has been replaced and new flooring installed throughout.

“I didn’t think I was going to like it because I thought it might be too modern,” says Shamini Mylvaganam ’13. “But the library is so bright now and the new desks make studying easier. There is so much more room to study.”

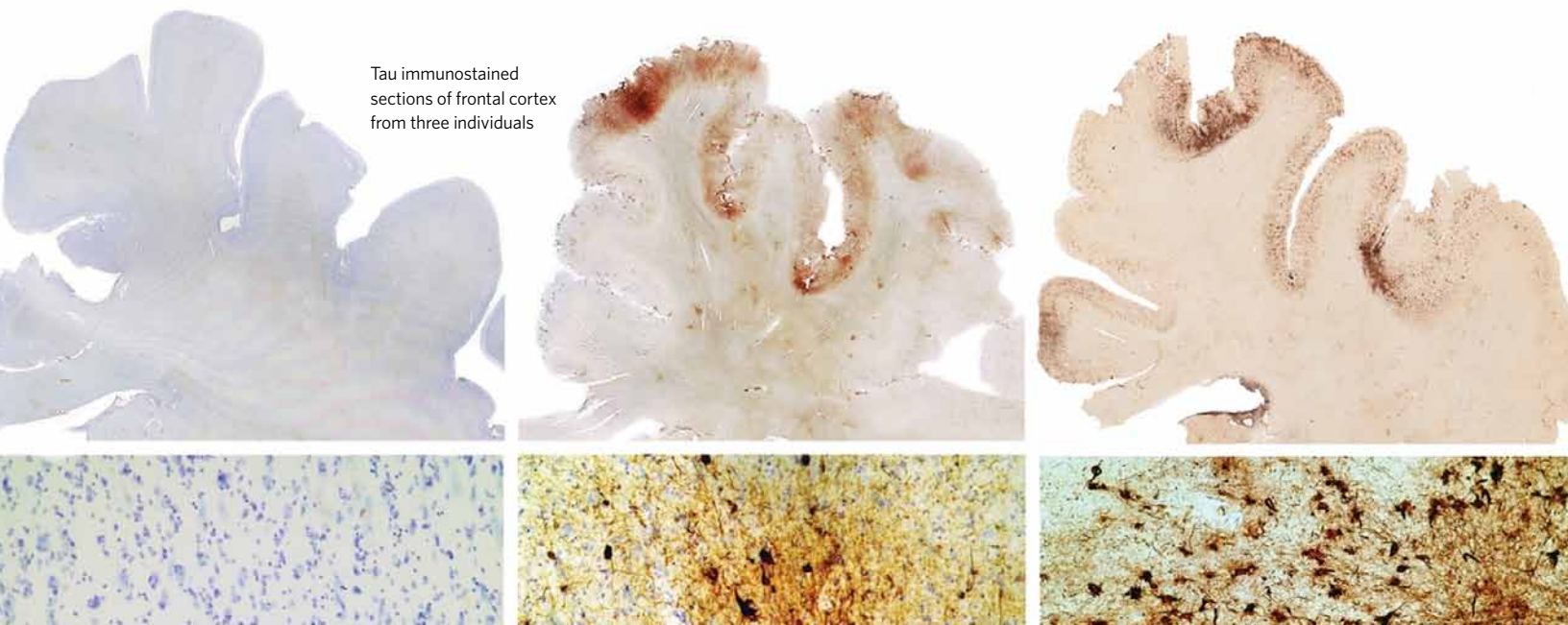
The study tables and carrels are powered for laptops, and a new single-service circulation and reference desk frees up significant additional space for students. What were once offices on the 13th floor have now been converted into study rooms.

Much of the Library’s collection of periodicals was removed from the 12th floor to create more space for laptop/study tables. Reference book stacks were also removed and space was created for comfortable chairs and individual study carrels. Faculty can still request that print materials be placed on reserve in the Library at the circulation desk.

However, the trend is to increase the numbers of e-books, which have the benefit of being available 24/7 to the BUMC/BU campus communities, and do not take up valuable library space.

Except for the few titles available in print form only, the Library’s journal collections are also accessible online. “We are collaborating with the Charles River Campus libraries on building ‘One-BU’ electronic collections that more effectively leverage our resources and provide access to expanded collections on both campuses. The BUMC Library subscribes to very few print journals today and we are actively expanding our e-book collections,” notes Blanchard. “These web-based, electronic resources provide greater accessibility to all of our Library users and free up more space for student use.”

According to Dean Karen Antman, “Our mission at BUSM is the educational, intellectual, professional, and personal development of our students. The Library is an integral resource for them. The renovations provide a facility that meets the needs of a modern academic medical center.”



Tau immunostained sections of frontal cortex from three individuals

Top left: Whole brain section from a 65-year-old control subject showing no tau protein deposition
Bottom left: Microscopic section from 65-year-old control subject showing no tau protein deposition

Top middle: Whole brain section from football player John Grimsley showing patchy deposition of tau protein in the frontal cortex

Bottom middle: Microscopic section from John Grimsley showing numerous tau-positive neurofibrillary tangles and neurites in the frontal cortex

Top right: Whole brain section from a 73-year-old world-champion boxer with severe dementia showing very severe, patchy tau protein deposition in the frontal cortex

Bottom right: Microscopic section from a 73-year-old world-champion boxer with severe dementia showing dense tau-positive neurofibrillary tangles and neurites in the frontal cortex

The Center for the Study of Traumatic Encephalopathy

Head Games

Where sports injury and science connect to understand and prevent a neuro-degenerative disease

What do a former World Wrestling Entertainment (WWE) star, a world-renowned neurosurgeon, a leading Alzheimer's disease (AD) researcher, and a noted brain pathologist have in common? To answer that question, one must follow the intersecting stories of their work and research—and their dedication to understanding and preventing a serious and crippling disease: chronic traumatic encephalopathy (CTE).

CTE—originally referred to as *dementia pugilistica*, the “punch drunk” syndrome, because it was believed to affect only boxers—is a progressive neurological disease caused by repetitive trauma to the brain,

including concussions and subconcussive blows to the head. At-risk populations include athletes, military personnel in combat situations, and victims of domestic violence. Symptoms can begin months or years after a head injury until the illness progresses into full-blown dementia. Unlike other neurodegenerative diseases, CTE has a specific cause and is totally preventable.

Robert Stern, PhD, BUSM associate professor of neurology and co-director of the BU Alzheimer's Disease Center Clinical and Research program, was giving what he calls one of his “lay” lectures on Alzheimer's disease—including the risk factors—to Merrill Lynch

employees. A member of the audience happened to be the roommate of Chris Nowinski, the co-founder of Sports Legacy Institute (SLI), a nonprofit organization that explores brain trauma in athletes and the research, treatment, and preventive measures associated with it. After hearing Stern say that traumatic brain injury early in life increases the chances of getting AD, he urged Nowinski to contact Stern.

“We realized that we spoke the same language,” says Stern. “Chris has a passion for this and there was something more to the story, not just concussion. We are talking about a disease that develops because of repetitive head trauma, a totally preventable cause of dementia.”

Since 2002, twelve former professional and amateur athletes have been diagnosed with CTE when their brains were examined post-mortem (the only way to diagnose CTE accurately). The lives of these players were dramatically affected by cognitive decline and behavioral dysfunction, which neither they nor their families realized were related to the chronic head trauma they experienced as part of playing their sport.

Ann McKee, MD, BUSM associate professor of neurology and pathology and director of the Neuropathology Service for the New England Veterans Administration Medical Centers (VISN-1), specializes neurodegenerative diseases—which in most cases cannot be diagnosed accurately until autopsy—and for two decades has directed brain banks that support their study. “In the course of studying the brains of patients who were diagnosed with Alzheimer's, I came across two boxers with what was best termed *dementia pugilistica*,” she says. “Because I have been so focused on all of the neuropathological variations in neurodegenerative disease, these cases were extraordinarily fascinating, as the brains showed enormous amounts of tau protein in a very unique pattern that was quite unlike any disease I had previously encountered.”

Tau, one of the proteins that provide an internal framework for nerve cells, builds up in the brain in CTE and starts clogging up the normal functioning of nerve cells, eventually causing them to die. It appears that once the abnormal tau protein starts to accumulate, the process continues as long as the patient survives, causing dementia, Parkinsonism, and gait and speech difficulties. CTE is differ-

ent from Alzheimer's disease in that there are no beta-amyloid plaques (in addition to the abnormal tau), which build up in the brains of those with Alzheimer's.

The sports injury connection

Nowinski is a former Harvard College football player and professional wrestler. “As a two-way player in high school and an All-Ivy League defensive tackle at Harvard, I probably hit my head over one thousand times a year from the ages of 13 to 21,” he says. During his three years in the WWE, Nowinski suffered four concussions; the last being a hefty kick to the chin that was serious enough to force him to retire at age 24. He suffered from severe headaches and sleepwalking and eventually contacted noted neurosurgeon Robert Cantu, MD, a concussion expert, for treatment.

Clinical professor of neurosurgery at BUSM and chief of neurosurgery and director of sports medicine at Emerson Hospital in Concord, Massachusetts, Cantu developed the Cantu Grading System for concussion assessment and also helped construct international guidelines for return-to-play issues in sport. He serves as medical director of the National Center for Catastrophic Sports Injury Research, a registry for data collection and analysis of spine and head injuries, and as vice president of the National Operating Committee on Standards for Athletic Equipment (NOCSAE) and is co-director of the Neurological Sports Injury Center at Brigham and Women's Hospital in Boston.

“Bob [Cantu] was the first to tell me about the long-term effects of head trauma, the first guy to tell me what a concussion was and that I had been suffering them throughout my career,” Nowinski says.

It became Nowinski's mission to educate athletes, coaches, and parents about the long-term, debilitating effects of repetitive head injury. According to the Centers for Disease Control (CDC), 1.6 to 3.8 million sports and recreation-related concussions occur each year in children between the ages of 5 and 18 in this country, and athletes who have had a concussion are at greater risk for another one.

In 2006, Nowinski published a book titled *Head Games: Football's Concussion Crisis*, which profiled cases of former NFL players who had died under tragic circumstances after years of progressive

“Unlike other neurodegenerative diseases, CTE has a specific cause and is totally preventable.”

Tom McHale, former lineman for the Tampa Bay Buccaneers



#59, former Houston Oilers linebacker John Grimsley

NFL contributes \$1 million to support CSTE research

The National Football League (NFL) has contributed a \$1 million unrestricted gift to the BUSM Center for the Study of Traumatic Encephalopathy (CSTE) to support the Center's research.

The funds will be used to continue the Center's groundbreaking research into the long-term effects of repetitive brain trauma in athletes, particularly football players. The NFL is the first sports league to financially support the CSTE's research.

"We are extremely grateful to Commissioner Roger Goodell and the NFL owners for their support of this important research," said Robert Cantu, MD, CSTE Co-Director and Clinical Professor of Neurosurgery at Boston University School of Medicine. "This gift and the significant changes made in recent months by the NFL demonstrate the League's commitment to the health and safety of current, retired, and future players, as well as millions of youth athletes. These unrestricted funds allow us to accelerate our research with independence and scientific integrity."

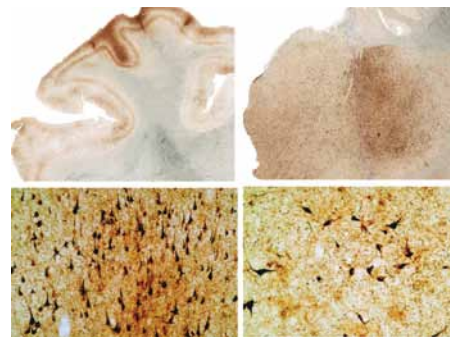
"We obviously are very interested in the Center's research on the long-term effects of head trauma in athletes, said NFL Commissioner Roger Goodell. It is our hope this research will lead to a better understanding of these effects and also to developing ways to help detect, prevent and treat these injuries."

cognitive decline and behavioral dysfunction; he warned that anyone playing the game is at risk for traumatic brain injury. By 2007, he and Cantu had created SLI, an educational and advocacy organization. They hoped to establish a home for research into traumatic brain injury at a top-tier university medical school.

The research connection

Nowinski was aware of the findings of Bennett Omalu, a pathologist who examined the brains of several former NFL players. In 2002, ex-Pittsburgh Steelers lineman Mike Webster committed suicide at age 50 after being homeless; and in 2005, another former Steeler, Terry Long, killed himself at age 45 by drinking antifreeze. Omalu found the evidence of a build-up of tau in both of the athletes' brain tissue.

For years, the National Football League had been denying any connection between brain trauma and CTE, and Nowinski and Canutu agreed that proving the connection between CTE and chronic head-banging to those who controlled policy would require better scientific data.



Brain tissue of Thomas McHale

Top left: A section of the neocortex showing extensive deposition of tau protein (brown stain) as neurofibrillary tangles throughout the neocortex

Bottom left: High magnification photomicrograph of neocortex showing tau neurofibrillary tangles and neuropil neurites

Top right: A section of the amygdala showing dense, patchy deposition of tau protein (brown stain)

Bottom right: High magnification photomicrograph showing tau neurofibrillary tangles and neuropil neurites in the amygdala

In February of 2008, 45-year-old John Grimsley, former linebacker for the Houston Oilers and Miami Dolphins, died accidentally of a gunshot wound to the abdomen and Nowinski received permission for McKee to examine Grimsley's brain. She found a pattern of tau neurodegeneration in Grimsley very similar to that of the boxers she had studied, completely in the absence of beta amyloid, the protein marker for AD. "This was truly amazing in my mind," recalls McKee. "For more than 15 years as part of the Framingham Heart Study, I have been studying the brains of people living 'ordinary' lives and I am quite familiar with the patterns of tau that we had found in those brains—but never had I even remotely seen anything resembling what I found in the brains of John Grimsley and the two boxers."

That year, Chris Nowinski, the athlete; Robert Cantu, the neurosurgeon; Robert Stern, the Alzheimer's researcher; and Ann McKee, the neuropathologist, merged their expertise and resources to establish the Center for the Study of Traumatic Encephalopathy (CSTE) at Boston University School of Medicine as a collaboration between the School of Medicine and the Sports Legacy Institute (SLI).

The Center has three major components: A brain bank so neuropathologists can study brain and spinal cord tissue of former athletes to better understand the cause, progression, and characteristics of the disease; the Brain Donation Registry, a log of current and former athletes who are willing to participate in longitudinal research and donate their brains and spinal cords after death; and clinical studies designed to identify genetic and environmental risk factors, diagnostic tests, and treatments.

Brain Donation Program

Postmortem brain studies require a brain bank to preserve brain tissue for examination. BUSM has had a brain tissue donation program since 1997 through the Framingham Heart Study, and the BUSM-based Alzheimer's Disease Center and the New England Centenarian Study also have brain banks, all directed by McKee.

Family members of deceased athletes may donate their loved one's brain and spinal cord after death, or an athlete can pledge to donate his or her brain.

Family members are interviewed regarding their loved ones, including athletic and concussion history, educational and occupational background, medical history, and history of cognitive, behavioral, and mood symptoms.

The CSTE brain bank has received a number of donations through Nowinski's contacts with the families of deceased players. Tom McHale, who played for Cornell University and the Tampa Bay Buccaneers as a lineman, was a very successful Tampa Bay businessman who experienced chronic head and neck pain and began to show signs of cognitive and emotional problems. He eventually became addicted to painkillers and died of a drug overdose at age 45. His wife didn't remember Tom suffering any concussions during his playing years, but, after his death, former teammates reported that there were times when Tom couldn't remember plays. He also probably took 20,000 sub-concussive hits over his career.

Walter Hilgenberg played for the Minnesota Vikings and experienced numerous concussions. He died at age 66 after many years of a steady mental decline, behavioral changes, and organizational problems, including extreme apathy. He, too, was diagnosed with CTE.

Louis Creekmur, who died at 82 with full-blown dementia, suffered a very slow, progressive decline. A member of the 88 Plan—a program initiated by the NFL to provide financial support to family members of retired players with dementia—Creekmur was described by his wife as becoming "punchy" at 50 years of age, and having outbursts of angry and aggressive behavior. A Hall of Famer, he eventually had trouble walking and talking.

"The creation of the brain bank and the study of the brains of these athletes have given us enormous insight into what exactly CTE is," McKee says. "Before these neuropathological analyses showed that the process was really a tau-based neurodegeneration, there was massive lack of understanding about the chronic effects of mild repetitive trauma." She notes that the analyses have demonstrated the existence of the disease in athletes other than boxers, what parts of the brain it affects, and what type of brain cells are particularly affected. "Now that we know what we are looking

for, we can go out armed with that knowledge and look for markers of the disease in living individuals," she adds.

Not every brain the CSTE has examined has been diagnosed with CTE. However, all 12 examined brains of former college and professional football players showed the disease to varying degrees. The center also examined the brain of a former National Hockey League (NHL) player, and—like the football players—the build-up of tau protein was evident.

Stern is quick to point out that CTE is not limited to professional athletes: "Mike Borich played football in high school and college, but never the pros." Borich was a football coach for Brigham Young University—where he was 2001 NCAA Division I Offensive Coordinator of the Year—but he quickly lost his job because of his out-of-control behavior, including alcohol and drug abuse. He died of an overdose at the age of 42. "The postmortem examination of his brain showed a massive amount of the disease," Stern says. He also cites the example of an 18-year-old who was already showing signs of the disease when he tragically passed away.

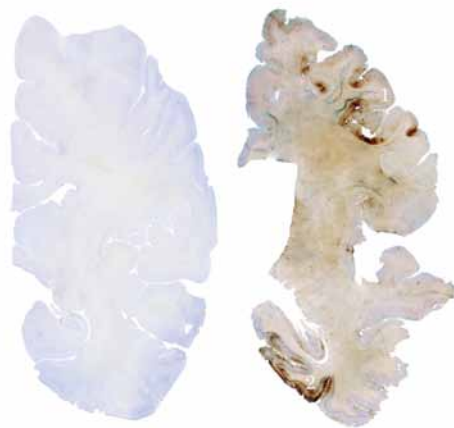
Brain Donation Registry

While pathological examinations are the only way to confirm the existence of CTE in the brains of the athletes, being able to identify risk factors to aid in predicting who among head trauma sufferers is more likely to get CTE is a major component of the Center's mission. "We started the brain donation registry to get more information on the living; we wanted to get athletes involved now. We seized the moment the pathological research was generating," said Megan Wulff, research coordinator for the CSTE. Current and retired athletes can sign up for the CONTACT (Consent to Offer Neural Tissue of Athletes with Concussive Trauma) study by agreeing to donate their brain and spinal cord tissue upon death. CONTACT members also agree to participate in a longitudinal study by updating their medical records and trauma history annually with the CSTE by phone, which enables the CSTE to obtain more accurate and detailed descriptions of the medical histories of eventual donors. The CSTE has applied to the NIH for a grant to add neuroimaging, plus cognitive and blood testing, to the data gathering.



"We started the brain donation registry to get more information on the living; we wanted to get athletes involved now. We seized the momentum the pathological research was generating."

“As we understand more about the processes involved in CTE, we will gain greater insight into them, including Alzheimer’s disease and amyotrophic lateral sclerosis.”



Hemi-sections of the brain immunostained for tau protein (brown). Left: 61-year-old normal control; Right: 42-year-old Mike Borich. The normal brain shows no tau deposition, whereas the brain of Mike Borich shows extensive tau deposition throughout the frontal and temporal gray matter.

The identity of donors is confidential and protected by both IRB rules and HIPAA laws. However, many donors have chosen to allow the CSTE to release their names to draw attention to the research.

Questions to be answered, treatments to be discovered

The four collaborators agree that there is a need for long-term study of athletes with a history of traumatic head injury. Stern notes the threshold of injury, the frequency, and the time in between injuries as some questions that need to be answered: “What are the underlying biological/chemical reactions in the brain that are setting off the disease in the first place?” Also, because not all athletes who suffer head injuries develop CTE, the researchers are looking at other risk factors that may be involved in the disease and hope to identify biomarkers that can predict at-risk candidates and develop prevention treatment options. “Since this is a tau-based disease, we need to actively, comprehensively search for therapies directed against the build up of tau,” says McKee.

Cantu, the clinician, emphasizes that the immediate goal is to be able to diagnose CTE while people are alive. He wants imaging technologies and clinical tests that can accurately determine when a concussion has cleared. “The brain doesn’t know whether it got hit violently on a football field or by a blast in Iraq,” says Cantu. “Brain trauma is brain trauma is brain trauma. There are people with clinical depression, cognitive impairment, dementia, or lack of impulse control, and they are really suffering from CTE.”

The CSTE is working to create a diagnostic test for CTE in living persons, identify genetic and environmental risk factors, and develop treatment for CTE. The CSTE reports its findings to families of the athletes, shares data and findings with other researchers, and stores tissues for future studies to be conducted at CSTE and other laboratories around the world.

McKee believes the research could have enormous bearing on many neurodegenerative diseases: “As we understand more about the processes involved in CTE, we will gain greater insight into them, including Alzheimer’s disease and amyotrophic lateral sclerosis. We have identified a very important disease that has been living among us

undetected, a disease that may affect many individuals from many walks of life—for example, military soldiers, and persons who suffer assaults and motor vehicle accidents—as well as athletes.”

Impact

Because of the education and advocacy work of Nowinski and Cantu through the SLI, the tide is turning in the world of sports. The WWE has instituted a concussion management program that includes neuropsychological testing to evaluate memory, cognitive skills, and reaction time. Wrestlers will be re-tested every six months to monitor long-term issues, and re-tested after suspected concussions to help determine when it is safe to return to in-ring action.

SLI’s 10-Point Plan to Save Football by making it a safer game to play has promoted concussion education for all coaches, athletic trainers, parents, and athletes; a re-evaluation of protective equipment, tackling and blocking techniques, and some rules; and better diagnosis and management of concussion with a minimum standard for medical resources available during a game.

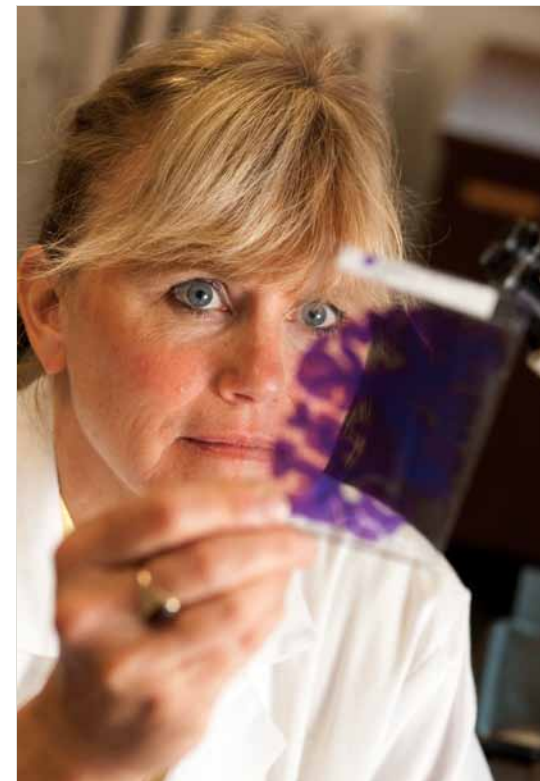
In July 2009, the CSTE’s first academic paper, “CTE in Athletes: Progressive tauopathy after repetitive head injury” was published in the *Journal of Neuropathology and Experimental Neurology*. Noting the pathological data supporting the link between CTE and repetitive head trauma, the study concluded the way to decrease the incidence of CTE is to decrease the number of concussions or mild traumatic brain injuries: “In athletes this is accomplished by limiting exposure to trauma by penalizing intentional hits to the head and adhering to strict ‘return to play’ guidelines.”

The following September, the CSTE announced that the first active professional football players had committed to donating their brains to the CSTE. The Judiciary Committee of the U.S. Congress, responding to growing legal concerns and increasing reports of the long-term effects of head injuries, held hearings in October of 2009. Testifying before the Committee, Nowinski—noting that the primary focus was on the NFL and professional athletes—said, “As we move forward, I hope we can recast this issue as a public health crisis. We must remember that 95 percent of football players are under the age of 18 and under the age of consent.”

Head Games continued on page 10

BU and VA Researchers Discover Brain Trauma in Sports May Cause a New Disease That Mimics ALS

Two former NFL players died after being diagnosed with Lou Gehrig’s disease, but new findings suggest they had a new disease associated with repetitive brain trauma.



Ann McKee, PhD

On August 17 the BUSM Center for the Study of Traumatic Encephalopathy (CSTE) and the U.S. Department of Veterans Affairs (VA) announced that they had the first pathological evidence that repetitive head trauma experienced in collision sports is associated with motor neuron disease, a neurological condition that affects voluntary muscle movements. The most common form of motor neuron disease is amyotrophic lateral sclerosis (ALS), or Lou Gehrig’s disease. The findings are published online and in the September issue of the *Journal of Neuropathology and Experimental Neurology*.

Ann McKee, PhD, and colleagues at the CSTE made this groundbreaking pathological discovery while

examining the brains and spinal cords of 12 athletes donated by family members to the CSTE Brain Bank. Three of these 12 athletes, including former National Football League (NFL) players Wally Hilgenberg and Eric Scoggins, as well as an unidentified former military veteran and professional boxer, developed motor neuron disease late in their lives; the two former NFL players were diagnosed clinically with ALS.

ALS is a progressive neurodegenerative disease that attacks motor nerve cells in the brain and spinal cord, resulting in muscle weakness and atrophy. ALS affects fewer than two in 100,000 patients annually, and 30,000 Americans currently live with the disease. Ninety to ninety-five percent of ALS cases are considered “sporadic,”—or of unknown cause—although ALS has long been suspected to involve a complex interaction between multiple genetic and environmental risk factors.

McKee found that when they died, all 12 athletes showed neuropathological evidence of chronic traumatic encephalopathy (CTE), a progressive degenerative brain disease characterized by deposits of an abnormal form of tau protein and believed to be caused by repetitive head trauma. In the three athletes with motor neuron disease, abnormal tau deposits were not only found throughout the brain but also in the spinal cord.

CSTE researchers also discovered that 10 of 12 CTE victims had a second abnormal protein, TDP-43, in their brains. Of those 10, only three had TDP-43 in the brain and the spinal cord, and those were the three athletes diagnosed with motor neuron disease. TDP-43 is also found in individuals with sporadic ALS although in the athletes with repetitive brain trauma, the TDP-43 pathology was more severe than that in sporadic ALS, and was accompanied by extensive tau pathology. The brains and

spinal cords of normal individuals show no TDP-43 or tau deposition.

These new findings suggest that the motor neuron disease that affected the three athletes is similar to, but distinct from, sporadic ALS, and represents a disease never before described in the medical literature. This new disease, referred to as chronic traumatic encephalomyelopathy (CTEM) by McKee and colleagues, is likely caused by the repetitive head trauma experienced by athletes playing contact sports.

The association between head trauma and ALS is supported by medical literature, which reports the risk of ALS as being higher among contact sport athletes and military veterans. A study of professional soccer players in Italy found that their incidence rate of ALS was 6.5 times higher than in the general population; an increased incidence of ALS has also been reported in American football players, including three from the 1964 San Francisco 49ers who died from ALS. Based on the number of retired NFL players with ALS, it is estimated that their risk is at least eight times higher than in the adult male population. Among military veterans with a history of head injuries, risk of ALS was 2.3 times higher than normal, and Gulf War veterans have a two-fold increased risk. In fact, since 2008, the U.S. Department of Veterans Affairs has considered ALS as a presumptively compensable illness for all veterans. The discovery of this new ALS-like disease by the BU CSTE investigators suggests that one possible reason for the increased risk of clinically diagnosed ALS in veterans and in contact sport athletes may be exposure to repetitive head trauma, including concussions, subconcussive blows, and blast injuries.

The study was funded in part by an unrestricted gift from the National Football League to the CSTE. ●

Head Games continued from page 8

In December of 2009, the NFL acknowledged, for the first time, a connection between repetitive head injury and the neurodegenerative disease afflicting former players. The League also announced major changes to concussion and other head trauma policies, including provisions that players with a head injury must be cleared by medical specialists unaffiliated with their team and that they cannot return to a game or practice in which they have demonstrated signs of head trauma.

The NFL also pledged \$1 million in unrestricted support for the research being done by the

CSTE. The NFL Players Association announced it would collaborate with the CSTE to support its research. Last spring, the number of athletes committing to the Brain Registry steadily increased to include 270 players from across the spectrum of sport. The center also has plans to create a brain registry for military veterans.

Support for the CSTE

In addition to BU's support and the NFL's commitment, the CSTE has received funding from the National Institute on Aging, the National Operating Committee on Standards for Athletic

Equipment (NOCSAE), and the VA New England Geriatric Research, Education, and Clinical Center.

"BUSM is doing important research in the area of neurodegenerative diseases like Alzheimer's and Parkinson's," says Dean Karen Antman. "Advancing the understanding of such a debilitating disease like chronic traumatic encephalopathy is a perfect fit with BUSM's resources and our scientists' expertise." ●

Learn more about CTE, the CSTE, and preventing traumatic brain injury at:

www.bu.edu/cste/

Medical students teaching young athletes how to play smart and be smart about head injury

Dan Daneshvar '14 (MED-GMS) started playing football in fifth grade and recalls his mother's reluctance to watch him play. Both a football player and wrestler in high school and a wrestler while at MIT, Daneshvar knows he suffered head injuries. What he didn't know at the time, but learned in medical school, was that he had suffered several concussions and should have limited his play.

Now a fourth-year student at BUSM working on an MD-PhD, Daneshvar co-founded (and now co-directs) Sports Legacy Institute Community Educators (SLICE) in 2009, which teaches young athletes about sports concussions using discussion, video, and interactive games.

With the support of SLI President Chris Nowinski, Daneshvar and co-founder/co-director Alex Bagley, a second-year MD/PhD candidate at Harvard Medical School, created a curriculum and developed a presentation to engage students in grades 4-12 and teach them how to

recognize the key symptoms of concussion in themselves, their friends, and their teammates. "This is not a science talk," Daneshvar notes. "We use case studies of athletes who have experienced concussion and interactive exercises to make it as real as possible. We give these kids action items, like how to go to your coach to report what you're feeling. Because Alex, a former varsity basketball player at MIT, and I were competitive athletes, we can relate to them that they can play hard, but they can also be smart about it."

Daneshvar and Bagley are recruiting and training other students from their respective medical schools, because they believe that young, professional medical students are ideal mentors and can effectively teach students about concussion. They also feel the training that medical students receive as presenters can give future neuroscientists and sports medicine physicians an in-depth introduction to the sports concussion crisis and chronic traumatic

encephalopathy (CTE), which most medical schools don't cover.

The med students provide the service on a volunteer basis and the program, which is offered free of charge, has been presented at public and private schools throughout Massachusetts. The student-athletes are taught what concussion is, why it is important to recognize and report one, and what they can and should do to limit lasting effects of the injury. "The Boston Public School system has one trainer on call for the whole system," says Daneshvar. "With the number of games being played, the onus is on the student-athlete to recognize a problem if they have one, and to do something about it. Without information on the signs of concussion they would keep playing, potentially winding up with second-impact syndrome or causing permanent damage."

Daneshvar, who says he has always liked seeing how things work, became interested in the mecha-

nisms of the brain as an undergraduate because so much is unknown about its functions. Working with Robert Stern, PhD, BUSM associate professor of neurology and co-director of the Center for the Study of Traumatic Encephalopathy (CSTE) and Ann McKee, MD, BUSM associate professor of neurology and pathology and also co-director of the CSTE, Daneshvar now intends to utilize the brain bank of the CSTE for his PhD research and is working on formalizing the pathological staging criteria for CTE, as no strict criteria currently exists. "I am also interested in the clinical diagnostic criteria that can be determined while people are still alive," he adds. "There is so much out there to learn and discover."

Daneshvar and Bagley hope to one day make the program a national model that medical students across the country can replicate in their own communities.

Anonymous Donors of Largest Gift to BUSM Step Forward \$10.5M for the Shamim and Ashraf Dahod Breast Cancer Research Center and New Student Residence

In August 2008, a Boston University School of Medicine alumna who chose to remain anonymous at the time pledged \$10.5 million to the School of Medicine, the largest gift in our history.

Now, more than a year and a half later, University Overseer Shamim Dahod (CGS'76, CAS'78, MED'87) and her husband, Ashraf, are putting a face—or more accurately, two faces—on their contribution, which will establish the Shamim and Ashraf Dahod Breast Cancer Research Center at the School of Medicine. The gift will also endow assistant professor and international scholar positions at the center and support MED's new residence hall.

"The Dahods are modest and generous individuals who haven't sought the spotlight," says Karen Antman, dean of MED and provost of the Medical Campus. "But having their names tied to this important work lends both prestige and momentum to our breast cancer initiative. We at the School of Medicine are grateful that they have agreed to step forward and be associated with the Dahod Breast Cancer Research Center."

High school sweethearts and practicing Muslims from Mumbai, India, the Dahods moved to the United States in the early 1970s to enjoy married life and pursue their educations. They are closely connected with Boston University: Shamim, now a primary care physician in Chelmsford, Massachusetts, earned a bachelor's degree in biology from the College of Arts & Sciences in 1978, worked as researcher in a MED lab for five years, and graduated with a BU medical degree in 1987. Ashraf, a computer engineer turned entrepreneur, whose initial start-up, Applitek, developed the first cable modem, holds degrees from the University of Mumbai, the University of Michigan, Stanford University, Northeastern, and Harvard Business School, and he has several relatives who attended BU.

So, although Shamim, a two-time cancer survivor, had been treated for breast and thyroid cancers at another local institution, when they decided to support breast cancer research, she says, BU was "the logical place."

"Our connection with BU was factor number one," Ashraf confirms. "And number two is the patients



Dean Karen Antman and President Robert Brown (right) with University Overseer and BUSM Dean's Advisory Board member Shamim Dahod (CGS'76, CAS'78, MED'87) and her husband, Ashraf.

who are served at Boston Medical Center. If you look at Boston, you find that care and treatment can be very different depending on your social status. We could have made this gift elsewhere, but no other place in this city serves the same population that BMC does."

"I got the best of treatment. But everybody's not that fortunate," Shamim says. As a medical trainee at Boston City Hospital, now Boston Medical Center, New England's largest safety-net hospital, she saw the plight of underserved patients firsthand—lack of knowledge, lack of facilities, lack of insurance. "There was no prevention for them, just emergency or catastrophic care. They were really sick, and they came, and they got sicker, and that was it. So when I went through breast cancer, I said, 'I would like to do something to take care of that population.'"

The \$10.5 million pledge is not the first contribution the Dahods have made to help overcome health disparities. As members of the Dawoodi Bohra, an international Muslim community based in Mumbai, they are charged to "uplift" the needy — in their case, by improving health and education in Yemen, parts of India, and Myanmar.

They were involved, for example, in the construction of Saifee Hospital, a 280-bed general hospital in Mumbai that offers paid care—in rooms like posh hotel suites, for luxury-minded patients—as well as

discounted and free care subsidized by a philanthropic trust. They also helped open a medical clinic in Yemen, where U.S. physicians provide pro bono specialty services on a two-week rotating basis.

Although serving the underserved was the original inspiration behind the Dahod Breast Cancer Research Center, Shamim says her fight against the disease is more personal today. "My brother was recently diagnosed with breast cancer," she explains. "He's in the midst of getting his treatment. I also have a niece who was treated for breast cancer. Now I feel compelled to do something about breast cancer, because it's going to affect my children."

She hopes that the assistant professorship included in their pledge will help up-and-coming breast cancer researchers keep that from happening. "Professors with tenure already have ample opportunities," she says. "This is an opportunity for the young ones—those who are on the bottom rung and trying to climb. This gives them a chance to show their capacity, and bring out an idea that nobody has thought of about how to take care of this disease."

(This story originally appeared in *BU Today*.)

Associate Dean Jonathan Woodson nominated by President Obama to be assistant secretary of defense for health affairs



“Dr. Woodson’s clinical and administrative experience and outstanding leadership will be of great value to our nation’s soldiers and veterans as he takes on this Department of Defense role.”

President Obama has nominated Jonathan Woodson assistant secretary of defense for health affairs for the U.S. Department of Defense. His nomination requires U.S. Senate confirmation.

Associate dean for diversity and multicultural affairs and associate professor of surgery at BUSM, and senior attending vascular surgeon at BMC, Woodson holds the rank of brigadier general in the U.S. Army Reserve. He is currently assigned as assistant surgeon general for reserve affairs, force structure, and mobilization in the Office of the Surgeon General and serves as deputy commander of the Army Reserve Medical Command.

As assistant secretary of defense for health affairs, he would be the principal adviser to the secretary of defense on health issues and oversee the entire U.S. military medical enterprise, known as the Military Health System. This includes the services’ care of war wounded and basic health care for 9.6 million active and retired service and family members through the Tricare medical and dental care program.

He would also be responsible for setting medical health standards for enlistments and deployments, developing health and medical program policies, and overseeing Uniformed Services University for Health Sciences (USUHS), the Armed Forces Institute of Pathology, and other organizations.

In a joint statement announcing the nomination, Karen Antman, provost of BU Medical Campus and Kate Walsh, president and CEO of BMC, wrote, “Dr. Woodson is an excellent choice for this important role. His clinical and administrative experience and outstanding leadership will be of great value to our nation’s soldiers and veterans as he takes on this Department of Defense role. His

military experience makes him the perfect candidate for this position and he is well prepared to handle the challenges of this new position.”

Woodson is a graduate of the City College of New York (*magna cum laude*) and New York University School of Medicine’s (1979) six-year BS-MD program. He received his postgraduate medical education at the Massachusetts General Hospital, Harvard Medical School and completed residency training in internal medicine, general and vascular surgery. He is board certified in internal medicine, general surgery, vascular surgery, and critical care (surgery). He holds a master’s degree in strategic studies (concentration in strategic leadership) from the U.S. Army War College.

In 1992, he was awarded a research fellowship at the Association of American Medical Colleges Health Services Research Institute. His current research interest is in health outcomes, particularly functional outcomes in limb salvage vascular surgery. He has authored/coauthored a number of publications and book chapters on vascular trauma and outcomes in vascular limb salvage surgery.

His prior military assignments include deployments to Saudi Arabia (Operation Desert Storm), Kosovo, Operation Enduring Freedom and Operation Iraqi Freedom. He has also served as a Senior Medical Officer with the National Disaster Management System, where he responded to the September 11 attack in New York City. Woodson’s military awards and decorations include the Legion of Merit, the Bronze Star Medal, and the Meritorious Service Medal (with oak leaf cluster).

In 2009, he received the Gold Humanism in Medicine Award from the Association of American Medical Colleges. ●

BU Cares

Developed in fall 2009 to serve as the condensed version of the BUSM Institutional Learning Objectives (ILOs), the BU CARES objectives are directly linked to the Accreditation Council for Graduate Medical Education’s (ACGME) General Competencies required for all physicians in residency training: Patient Care, Medical Knowledge, Practice-based Learning and Improvement, Interpersonal and Communication Skills, Professionalism, and Systems-based Practice.

The principles behind BU CARES guide the management of the curriculum, inform student assessments, and form the basis of all course and clerkship learning objectives.

The Liaison Committee on Medical Education (LCME), the accrediting body for U.S. and Canadian medical schools, requires all students, faculty, staff, and trainees working with students to have a working knowledge of the institutional learning objectives and to understand their role in guiding the education program of the School. In anticipation of BUSM’s LCME Site Survey (February–March 2011), the Office of Academic Affairs has launched a marketing campaign to ensure that BU CARES reaches everyone involved in BUSM student education—whether teaching occurs on the medical campus, at affiliated hospitals, or in small local or distant community-based practices.

“By the first day of internship, we expect our students to demonstrate mastery in the BU CARES learning objectives,” says Sharon Levine, MD, associate dean for academic affairs. “Our graduates will exhibit the knowledge, attitudes, skills, and professionalism necessary to meet the needs of all patients in our diverse society and demonstrate that they can adapt to the ever-changing world of medicine and science.” ●

The BU CARES Institutional Learning Objectives

(The objectives are linked to the ACGME competencies which are in parentheses.)

The BUSM Graduate:

Behaves in a caring, compassionate, and sensitive manner toward patients and colleagues of all cultures and backgrounds, using effective interpersonal and communication skills

(Interpersonal and Communication Skills; Professionalism)

Uses the science of normal and abnormal states of health to prevent disease, to recognize and diagnose illness, and to provide an appropriate level of care

(Medical Knowledge; Patient Care)

Communicates with colleagues and patients to ensure effective interdisciplinary medical care

(Interpersonal and Communication Skills; Patient Care)

Acts in accordance with the highest ethical standards of medical practice

(Professionalism)

Rearches and critically appraises biomedical information and is able to contribute to the advancement of science and to the practice of medicine

(Practice-based Learning and Improvement; Medical Knowledge)

Exhibits commitment and aptitude for lifelong learning and continuing improvement as a physician

(Practice-based Learning)

Supports optimal patient care through identifying and using resources of the health care system

(Systems-based Practice; Patient Care)

BU CARES

“Our graduates will exhibit the knowledge, attitudes, skills, and professionalism necessary to meet the needs of all patients in our diverse society and demonstrate that they can adapt to the ever-changing world of medicine and science.”



Medical Students Benefit from Campus Research Opportunities

There is a history of advances in medical science achieved by medical students. Studying for a medical career in Padua, Italy in the late 1590s, the Englishman William Harvey was the first to describe correctly and in detail the circulation and properties of blood flow in the body. In 1869, Paul Langerhans, a medical student in Berlin, discovered clumps of tissue in the pancreas called islets that produce secretions; his finding later led to the discovery of insulin by William Banting and second-year medical student Charles Best. Rene Laennec, a medical student in Paris studying and writing about the membranes that line the heart, the brain, joints, and the abdominal cavity, invented the stethoscope in 1817. Helen Taussig, the founder of the field of pediatric cardiology, began her studies of the muscle bundles of the heart while a medical student at BUSM in the early 1920s.

Medical school is replete with lectures, seminars, case-based instruction, labs, clerkships, and rotations, all of which are necessary to prepare for medical practice. Engaging in research is an added enrichment that both enhances clinical deftness and offers the foundation for becoming a physician-scientist.

A decade ago, Suzanne Sarfaty, MD '88, assistant dean for academic affairs and director of international health programs, developed the Medical Student Summer Research Program (MSSRP) at BUSM in response to student requests for greater access to research opportunities.

"I am very proud of the fact that we have been operational all these years and that we have facilitated many authentic and professional student-faculty partnerships which are often long-lasting," says Sarfaty.

Students conduct research full time for eight to ten weeks in a variety of School of Medicine departments including medicine, surgery, dermatology, ophthalmology, cardiology, and emergency medicine. They work with faculty within the context of ongoing clinical and basic science research. Potential projects and mentors are identified through a database of research experiences maintained by the BUSM Office of Enrichment, or students identify projects by independently seeking mentors throughout the Medical Campus.

The program develops and enhances understanding of basic science and/or clinical research principles. It also provides a strong foundation in the ethical conduct of research, strengthens skills in critical evaluation of data, and reinforces the concept of evidence-based medicine. Students broaden their knowledge of the role and relevance

of research to clinical medicine. In addition, the program facilitates the development of faculty-student mentorship and student professionalism.

"We are given eight weeks to get our feet a little wet," explains Leah Evans '12, a program participant. "I wanted to see if I could imagine myself doing this kind of research as part of my career as a doctor. I also wanted to know more about where the research behind many medical therapies comes from and what it entails." Evans worked in the Cancer Center on the mechanisms of gene methylation implicated in the silencing of tumor suppressor genes in many cancers. "This program is a great opportunity for medical students who have experience in research and even have a specific project they want to further, as well as for those of us starting from scratch," she adds.

At the end of the summer, the student researchers submit summaries of their work, even if the project is ongoing. Work often continues during the academic year.

"The MSSRP confirmed my interest in academic medicine and introduced me to professors conducting research, as well as other student researchers," says Steve Sherry '12, whose ongoing summer research project looked at out-

comes of patients with negative or indeterminate post-treatment scans (18F-FDG PET/CT) after primary surgical intervention and/or concurrent chemo-radiation therapy for advanced head and neck squamous cell carcinoma.

"I found that networking with researchers and exchanging ideas are critical to the process of research," adds Sherry. "Because of my experience, I read the medical literature with a more critical eye, and consider the evidence for a medical intervention more carefully. Not all situations are informed by an equal weight of experience."

A series of research seminars and a symposium/poster day complement the research experience. The seminars introduce the student participants to a variety of topics including research ethics, project design, and writing skills, and are taught jointly by BUSM and BU School of Public Health faculty.

Students are required to develop a poster with the help of their faculty mentor; the symposium/poster day represents the culmination of their summer research. During the symposium, all the student-scholars formally present their work and are recognized by the Medical Campus community. Awards, sponsored by Dean's Advisory Board member Jerry Serchuck, also

the parent of Leslie Serchuck '90, are presented for best clinical and best basic science posters.

Sarfaty has sought funding to defray the cost of summer living expenses so students can focus on research. The MSSRP offers up to 30 competitive scholarships each year. "We have had the good fortune of benefiting from some very generous donors, like Jerry Serchuck and Peter Mozden, MD '53, who has been connected to the program from its inception and established an endowment for scholarships by soliciting donations from his classmates," she says. "But as this is an ongoing program, we are continually in need of new funding."

"It is my belief that research is a fundamental obligation of the medical profession," Sherry says. "Every disease diagnosed, treatment provided, and student trained is only possible because painstaking research has shone a little light in the darkness." ●

For more information on the MSSRP, visit www.bumc.bu.edu/enrichment. If you would like to discuss a contribution to the program, contact BUSM Office of Development, 617-638-4570 or Karen Engelbourg at kengelbo@bu.edu.

Alumni on the Value of the Student Summer Research Program



Neda Laiteerapong '05 is an internal medicine specialist at the University of Chicago engaged in health services research.

"I worked with Dr. Karen Freund (BUSM professor of general internal medicine and executive associate director of the Women's Health Interdisciplinary Research Center) on a project on validating the race and ethnicity data of patients in the hospital database. Through this project, I learned a great deal about what defines a person's race and ethnicity and how complicated the issue is. It's a very relevant issue as well, as there has been a great deal of public consternation regarding the race question on the U.S. Census this year.

"I had always thought I'd be a researcher. However, after my initial

attempts in basic science research, I was discouraged because I could not see myself in the lab all the time. I didn't know anything at all about health services research. Working with Dr. Freund was a turning point in my career. It was very challenging at first, since I had no formal research training. However, the summer allowed me to dedicate time and energy to learning essential skills, like IRB submission, oral presentations, and proposal writing. I also learned terminology and concepts, such as what grant and community-based participatory research are. After the summer, I was hooked. When I went

to residency, I sought out a similar mentor and a research project as soon as I could.

"Health services research is bit of an enigmatic term, but basically it examines how people get access to health care, how much care costs and what happens to patients as a result of this care. Specifically, I am interested in improving physician decision making in patients with chronic diseases like diabetes and obesity.

"I see research as a way to affect a larger number of people than you would normally care for as a clinician."



Graham Snyder '05 is an infectious diseases specialist at Beth Israel Hospital in Boston. His research is in the field of infection control and hospital epidemiology.

"During the summer of 2002 and beyond I was introduced to infectious diseases research by my mentor, Dr. Jussi Saukkonen (BUSM associate professor of medicine and director of the pulmonary clinics at the West Roxbury VA Medical Center). Our project investigated risk factors for non-adherence to treatment for latent tuberculosis infection by administering a survey to patients seen during a first visit to the Boston Medical Center Tuberculosis Clinic, and subsequently correlating adherence to therapy with results from this survey.

"One of the benefits of this research was connecting with patients in a new setting and from a different vantage point—that of investigator—as well as getting a sense of how challenges in medicine can be solved through asking the right question, planning a test to solve that question, and then interpreting the results of the test. This is part and parcel of the scientific process, which should be structuring our clinical actions every day.

"The practice of infectious diseases appealed to me by the end of medical school and very early into internal

medicine residency. It requires a meticulous and creative thought process. This is particularly true when we get the whodunnit-type consults requiring a careful history, exam, and brainstorming across disciplines.

"My current research is specifically detection and transmission dynamics of antibiotic-resistant organisms including multidrug-resistant, gram-negative bacteria. The general goal is to be able to trace and detect these bacteria and prevent their transmission from patients to healthcare workers and other patients."

Campus Aid to Haitian Community

The devastating earthquake that hit Haiti in January is estimated to have killed or injured more than half a million people and left one million Haitians homeless. While the international community launched major aid missions, members of the BU Medical Campus responded with an outpouring of assistance by donating to organizations doing relief work in Haiti as well as initiating individual activities to provide assistance to the people there.



Dr. Thea James tending to a patient in the aftermath of the earthquake.

Thea James, MD, assistant professor of emergency medicine, and **David Hirsch, MD**, instructor in emergency medicine and both members of the Emergency Department at Boston Medical Center, traveled to Haiti as part of the Massachusetts Disaster Medical Assistance Team that responds to national disasters by setting up field hospitals and providing medical care. James made a second trip to Haiti, often working 18-hour days at a mobile hospital near Tent City in Port-au-Prince. **Michele David, MD**, associate professor of medicine and co-director of the Haitian Health Institute at Boston Medical Center, also went to Haiti to provide medical assistance.



Members of the Massachusetts Disaster Medical Assistance Team in Haiti

Susanna Walsh, MD, clinical assistant professor of OB/GYN, spent a week in Haiti as part of a surgical team organized by the University of Vermont Medical School to provide orthopedic and plastic surgery and wound care. **Jennifer Dwan, MD**, assistant professor of OB/GYN, and her husband spent 10 days in a town outside of Port-au-Prince with a medical team organized by Family Health Ministries to provide care to more than 1,500 Haitians.

Here in the U.S., **Renee Boynton-Jarrett, MD**, assistant professor of pediatrics, and **Nicole Prudent, MD**, clinical assistant professor of pediatrics, organized the Haitian Earthquake Long-term Pediatric Support (Anmwe/HELPS) program to provide a systematic response to those affected by the earthquake in the local Haitian community, including those who lost family members and those caring for family members—especially children—who were forced to leave Haiti because of the quake. The program educates and trains providers and educators responding to traumatic stress and supporting grieving families. Utilizing existing services at Boston Medical Center and in the community, the program initiated an on-call system to share available resources, a coordinated referral

process, and expanded support services to connect families with community-based resources.

Moses Toussant, a secretary in the out-patient neurology clinic and a Haitian-American, collected funds, clothing, and hygienic supplies and sent them to a small community outside of Port-au-Prince.

Student leaders in the BUSM International Health Organization worked with Drs. David and Prudent to find ways students could volunteer. Several events were organized by BUSM and BUSPH students that raised more than \$3,500 to aid the victims of the earthquake, and a forum was established on the aftermath of the earthquake and the role of public health.

Hilary Johnston-Cox '15 and **Nahomy Calixte '11** used their \$1,000 Alpha Omega Alpha Medical Student Service Project Award to support the Haitian Health Career Leadership Conference. Sponsored by the Haitian Health Institute at Boston Medical Center, the conference addressed "Lessons from the Haiti Earthquake: Emergency Preparedness, Relief and Beyond." ●



BUSM Associate Dean Barry Manuel, MD, presenting Alpha Omega Alpha Service Award to Nahomy Calixte '11 and Hilary Johnston-Coy '15



Commencement: All good things must pass as the last of three siblings—all enrolled at BUSM at the same time—has graduated. Sunena Tewani '10, who will remain on the Medical Campus doing an internal medicine residency at Boston Medical Center, is flanked by her sister, Sonia '08, a resident in general surgery at Baylor College of Medicine, and her brother, Sumeet '07, who is doing a fellowship in gastroenterology at Beth Israel Deaconess Medical Center in Boston. They are joined by David McAneny, MD, associate professor of surgery and the recipient of the Stanley L. Robbins Award for Excellence in Teaching.



Reciting the Hippocratic oath is the culmination of the commencement ceremony.



David Salz '10 is hooded by his parents Linda Hsueh '81 and Alan Salz '81.



Speaking for her fellow PhD candidates, Adrian Oblak '10 addresses the 2010 BUSM commencement.



A sea of red robes illustrates the momentous and joyous nature of commencement.



Three generations celebrate the achievement of Anthony Lim '10. With Lim are his son, Joshua, and his father, Dr. Kiat Beng Lim, who hooded him.

School of Medicine graduates commence

"Now is not the end. It is not the beginning of the end," said Karen Antman, MD, Dean of the School of Medicine and Provost of the Medical Campus, quoting Winston Churchill as she opened the 163rd MED commencement Saturday, ** at Agganis Arena. **"But it is, perhaps, the end of the beginning."**

"This is the commencement of your careers of lifelong learning in the health sciences," she added. "We hope you will do well, but even more, we hope you will do good."

Rather than belaboring the current challenges of the health care delivery system or the issues of health care reform, the focus instead was on the positive roles that the graduates are now moving into as they leave BU behind. Some will start residencies in their chosen medical specialties, while others will begin post-doctoral fellowships or employment in their fields of expertise.

Two student speakers, one from the Division of Graduate Medical Sciences and one from the School of Medicine, offered comments on behalf of their respective classmates.

Speaking for the PhD grads, Adrian Lynn Oblak noted about scientists, "We work in a lab to try to figure things out. We crave the unknown and we

must explain our contributions to the world and to society. We have inherited the responsibility to make the world a better place."

Justin Golden, who was elected to speak for his MD classmates, said, "Each challenge that we faced (during medical school) served as a stepping stone to strengthen our resolve.

"The bonds we have built these last four years will carry and support us during the challenges and obstacles we are bound to face in our careers. There is no such thing as incorrect effort. We are driven by the desire to help people. Do the right thing, even when it isn't the easy thing."

But perhaps it was Robert Lowe, MD, associate professor of medicine and the educational director of the Section of Gastroenterology at Boston Medical Center, chosen by the students to deliver the commencement address, who stole the show.

"You aren't the same person you were when you walked into medical school," he said. "Being a doctor is the greatest thing in the world. It is about intimacy. It is about access. It is a privilege. It is awesome. People trust us with their lives.

"Medicine extends beyond the office, beyond the OR, beyond the hospital. You are a doctor now. It

careers in health, science

is who you are, all the time. It defines your role in society, and it defines how you look at people and respond to situations. Don't be mean. Love what you do... medicine is big, with lots of opportunities. Be a doc. You're gonna find out that life is huge, and amazing, and kinda scary—in other words, it's awesome." With that, the entire audience erupted with cheers and a standing ovation.

Among the graduates who are now physicians were Gretchen and Jonathon Struempf, a married couple who met as freshmen at Notre Dame and tied the knot one month before they started at MED. Gretchen's mother, Deborah Dado, graduated from BU's School of Nursing in 1973. They were hooded by Gretchen's father, W. Murray Ryan, MD. "I've wanted to be a doctor since I was seven. Now it's official," Gretchen said. "Being married worked for us. We studied together; we went through everything together. Boston University was awesome for medical school. I don't think we would have been as happy if we were anywhere else." The couple's next stop is the University of Kansas-Wichita, where Gretchen will start a residency in pediatrics and Jonathon will start one in orthopedic surgery.

Stacey Fulton, MD, deferred her residency for one year to do research on spinal chord injuries and

pressure ulcers at the Cleveland Clinic. "BU gave me a top-notch education," she said. "I am prepared. I know I will conquer things that come my way. BU showed me facets of myself that I never knew I had."

Elizabeth Housman graduated *magna cum laude* and is a resident in internal medicine at Boston's Beth Israel Deaconess Medical Center. Between commencement and residence, Housman married Jonah Cohen, who graduated from Brown University School of Medicine in May. Elizabeth's twin sister, also a Brown medical student, introduced them. "I've been blessed," Elizabeth said. "This is an incredible achievement that is something I will never forget."

Six faculty members were also recognized during the ceremony. The Educator of the Year awards, established in 1999 by the Committee on Faculty Affairs and selected by student nominations, honor, recognize, and reward faculty who, as gifted teachers, facilitate the education of their students. Gwynneth D. Offner, PhD, associate professor of medicine, was named the Educator of the Year in Graduate Sciences; Ann C. Zumwalt, PhD, assistant professor of anatomy and neurobiology, was named Educator of the Year in Preclinical Sciences; and Daniel C-R Chen, MD,

assistant professor of medicine, was named Educator of the Year in Clinical Sciences.

Gary J. Balady, MD, professor of medicine, and Robert J. Vinci, MD, professor of pediatrics, received the Leonard Tow Humanism in Medicine Faculty Award, presented annually by the Arnold P. Gold Foundation to faculty members at approximately 80 medical schools nationwide who demonstrate outstanding compassion in the delivery of care, respect for their colleagues, their patients and their patients' families, and who practice clinical excellence.

David B. McAneny, MD, FACS, associate professor of surgery, received the Stanley L. Robbins Award for Excellence in Teaching, MED's highest teaching award presented annually for extraordinary contributions to medical education at Boston University. ●

View Dr. Lowe's speech at: www.bu.edu/buniverse/view/?v=4aOIZGk.

"Where are you going?"

The Division of Graduate Medical Sciences launches master's degree graduates from thirteen different programs.



"Quo Vadis? Where are you going?" So asked Graduate Medical Sciences (GMS) Associate Provost Linda Hyman of the 130 graduates of 13 programs in the division when she addressed them at the 2010 GMS commencement ceremony on May 14, 2010.

Presiding at her first GMS commencement exercises, Hyman noted that in the year she has been on campus, "I have seen firsthand that BU is about its people and putting you, the student, in the center of our mission. Whatever you are doing or wherever you are going, you are now armed with the best the world has to offer: State-of-the-art knowledge of your discipline and a 'just do it' and 'yes I can' attitude."

Describing her own journey from New York to New Orleans to Montana to Boston as "the Big Apple to the Big Easy to the Big Sky to the Big Time," Hyman told students, "Where you will go, no one knows, but wherever it is, make it your own Big. Not just for you, but for all whose lives you will touch."

Dean Karen Antman praised the class: "You have worked very hard to get to this moment. Graduation is only the end of the beginning of your education. More importantly, it is the commencement of your careers of lifelong learning in the health sciences. We hope that as you begin the next phase of your life you will derive a great deal of professional and personal satisfaction on this path you have chosen, and that at trying times you will remember why you chose it."

Three members of the Class of 2010 selected by their classmates addressed the class and their families. Katherine Coles, a graduate of the genetic counseling program, reminded her fellow graduates that "We got a wonderful and richly diverse education at BU and we are that much stronger for it."

Samuel Kim, who received a master's degree in medical sciences, said, "When we do encounter those moments when things don't pan out the way we plan, we look back on our experiences—especially in this program—and we gain strength,



resilience, and the ability to face it head on with confidence, pride, and the knowledge that we can do it."

Kathleen Copeland, who received a master's degree in mental health counseling and behavioral medicine, shared how the program had changed her. She expressed her gratitude "to our BU director, our professors, our mentors, and our administrators, who have educated, trained, and supported us to get to this point together and beyond to achieve more than just degrees and a real paycheck."

The 2010 Educator of the Year Award was presented to Gwynneth Offner, PhD, associate professor of medicine. The award recognizes, honors, and rewards a faculty member for excellence in teaching, mentoring, and devotion to students. Citing nominations for Offner, Antman said, "Dr. Offner is a truly passionate educator. Her genuine enthusiasm for the material captivates her students' interest while the clarity of her lectures makes her effective in the classroom."

Hooded by the faculty member of their choice, each graduate received a gift from Jean Ramsey '90, associate dean for alumni affairs, courtesy of the Alumni Association. Addressing the candidates being presented to her, Dean Antman said, "It is with enormous pride in your accomplishments that the faculty of the Boston University School of Medicine confer your diplomas today." ●



MS Program in Biomedical Forensic Sciences Earns Full Accreditation

The Master of Science Program in Biomedical Forensic Sciences has received full accreditation for five years by the Forensic Science Education Programs Accreditation Commission (FEPAC) of the American Academy of Forensic Sciences.

One of the only forensic sciences programs based in a major medical center, it is only the second forensic sciences graduate program in New England and the only graduate program in Massachusetts. Started at BUSM four years ago, the program trains specialists in forensic sciences with a complementary background in biomedical disciplines related to crime scene investigation and evidence analysis.

"There has been a tremendous growth in the interest in forensic science education," says Robin Cotton, PhD, director of the program. "We have created a rigorous and challenging course of study."

"The accreditation by FEPAC assures students that we adhere to the highest standards for forensic science education," notes Cotton, associate professor of anatomy and neurobiology, and an expert in the fields of DNA identification and analysis of biological evidence. "It also helps prospective students in selecting an appropriate program."

"The five-year accreditation is an outstanding achievement for such a young program, and a testament to its quality and rigor," said Linda Hyman, PhD, associate provost for the Division of Graduate Medical Sciences at BUSM.

To learn more about the program, call 617-638-1950 or email bmfs@bu.edu. You can also visit us online at www.bumc.bu.edu/biomedforensic/mastersprogram/.

Mental Health Counseling and Behavioral Medicine

A unique program that combines training in counseling with neuroscience foundation and the biological basis of illness

With backing and input from the departments of psychiatry and anatomy and neurobiology, the Mental Health Counseling and Behavioral Medicine program was launched at BUSM in 2002. Former BUSM Dean Aram Chobanian and former Division of Graduate Medical Sciences (GMS) Associate Dean Carl Franzblau discussed developing more clinically focused programs for the division.

The two-year Master of Arts program is designed to meet the educational requirements for licensure as a mental health counselor in Massachusetts. "We focus on a traditional mental health curriculum that includes how to talk with patients, how to diagnose mental disorders, theory of psychotherapy, and techniques of therapy," says Stephen Brady, PhD, associate professor of psychiatry and director of the Mental Health Counseling and Behavioral Medicine program. "What makes us unique is that we also offer courses in neuroscience and behavioral medicine. We have learned so much about the brain in the past 10 to 15 years that it is important for master-level clinicians to understand the central nervous system and how to talk with patients about the biological basis of their illnesses."

Located in an academic medical center, the program offers students a wide range of research, clinical, and training opportunities, exposing them to cutting-edge therapies and interventions. Students can round with psychiatrists and other clinicians at Boston Medical Center on inpatient units or in the psychiatric emergency services, and learn in the diverse atmosphere of BMC, which serves a wide range of racial, ethnic, and income groups.

Approximately 90 second-year students are placed in internships, where they join a team providing ongoing patient treatment. Students work

in inpatient and outpatient clinics with both adult and child psychiatric issues. Placements are also available for addiction services or with trauma patients at VA Hospitals.

"A good therapist or counselor is able to tailor treatment plans to suit the client," says Mary-Helen McInerney, a first-year student in the program. "This program offers a breadth of exposure to various theories and therapeutic interventions and modalities. The faculty and staff are amazing, supportive, and willing to meet at any time to talk about anything from career, to school, to family."

The program also offers collaboration opportunities with BU's schools of Social Work and Education, and BUSM's Graduate Medical Sciences programs in genetic counseling, clinical nutrition, and the Master of Arts in Medical Sciences.

"What makes us unique is that we also offer courses in neuroscience and behavioral medicine."

In addition, a dual degree MA in Medical Sciences and MA in Mental Health Counseling and Behavioral Medicine is offered, giving students the chance to combine a broad-based program in medical sciences with a professional study in mental health counseling and behavioral medicine, including a strong academic foundation in neuroscience.

Notes Bradley, "If the marketplace has dictated that care in large systems is provided by master's-level clinicians, then we will absolutely have the best trained clinicians who are especially sophisticated providers." ●

Mental Health Counseling and Behavioral Medicine program team receives \$2.8 million federal grant to study mentally ill at high risk for HIV infection



MED's **Stephen Brady** says MI counselors will give mentally ill people unsparing information about the potential price of risky sexual or drug use behavior and help them build skills to change that behavior.

Armed with a five-year, \$2.8 million federal grant, School of Medicine researchers are hoping to stem HIV infection and transmission among mentally ill people engaged in risky behaviors such as needle sharing and unprotected sex.

Applying a technique called motivational interviewing (MI), the BU team, from the Mental Health Counseling and Behavioral Medicine Program (MHCBM), will recruit and counsel severely mentally ill adults who want to protect themselves from HIV or who are already infected but don't want to pass the disease to others. Sometimes homeless, these people lack the confidence, self-control, and communication skills to change their behavior. By tailoring sessions to the individual, MI counselors give people unsparing information about the potential price of their risky behavior and help them build skills to change that behavior, says Stephen Brady, BUSM associate professor of psychiatry and graduate medical sciences and MHCBM director. The study, funded by the National Institute of Mental

Health, will include 308 volunteers and will compare brief MI-based prevention treatment with what clinicians call "care as usual."

Participants will be recruited through advertisements posted at homeless shelters, emergency rooms, housing for the mentally ill, and other care centers, and will represent people living with a range of mental illnesses, including schizophrenia, major depression, bipolar disorder, and severe anxiety disorders like post-traumatic stress disorder. What they have in common, along with intravenous drug users in the study, is their greatly increased risk of acquiring or passing along HIV.

Brady and his colleagues will measure MI's effects in sessions three, six, and twelve months after the interventions. If results are as promising as those of a much smaller pilot study completed by the team in 2009, says Brady, the model could be adapted to a range of settings and providers.

Although MI was first described in 1983, the method has sparked much interest recently, according to Brady. More goal-oriented than many talk therapies, MI seeks to change behavior by helping people explore and resolve their ambivalence, rather than trying directly to persuade them to stop doing things that can harm them.

"We give them feedback about their risk behavior, tell them what the odds are they will contract HIV; we have them pick areas that are most difficult to change, and we work on skills such as condom or barrier use, or de-linking the use of alcohol or drugs with having sex," says Brady, whose clinic also offers HIV testing and care referrals for research subjects who want them.

Why target the seriously mentally ill in an HIV/AIDS study? In a review of 52 studies, Brady found that the majority of adults with serious

mental illness are sexually active. Of these, many engage in high-risk behavior, which is most prevalent among the homeless. The review found that nearly half of the people in the studies had multiple partners and never used condoms, while a quarter had a history of prostitution or sex trading, and 30 percent had had at least one sexually transmitted disease. Additionally, 20 percent of the seriously mentally ill in the studies had histories of IV drug use.

"What we do is primary prevention," Brady says, "to prevent people who don't have HIV from getting it, and secondary, preventing those who are HIV-positive from spreading it."

Brady believes high-risk behavior among the mentally ill is a motivation problem. "Most behavioral science research is very static," its strategy applied across the board, he says. "But the package we offer is focused on the individual patient and what he or she wants to do. We can help people with their thinking and planning, from saying no to negotiating safer sex." For example, he says, female condoms are expensive, but the women who begin using them soon feel empowered.

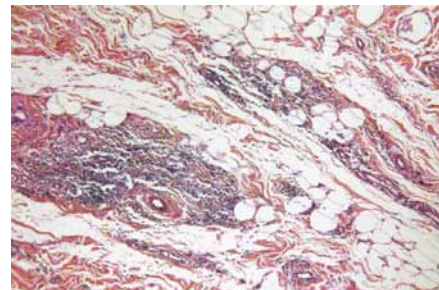
When Brady first began his research, people in the field told him that his approach would never work. "Predictions were that the clients would all wind up with HIV," he says. "But my experience is, these people don't want to get HIV and they don't want to give it to people. They just face so many obstacles — where to sleep, drug addictions, using their bodies to get what they want. But this doesn't mean people can't be motivated to use condoms, have periodic visits with an ob-gyn," or stop sharing needles." ●

(This story originally appeared in *BU Today*.)

Research in Brief

BUSM Researchers Discover Pathway Responsible for Epigenetic Memory During Breast Cancer Progression

BUSM researchers have determined how the TGFβ-Smad signaling pathway, which is overactivated in late-stage cancers, is responsible for the “epigenetic memory” that maintains unique patterns of regulatory DNA hypermethylation causing the critical genes that facilitate breast cancer progression to be silenced. These findings, reported in the February 1, 2010 issue of *Cancer Research*, may lead to the development of new therapeutic strategies for late stage breast and other cancers.



“The re-expression of genes that promote cell adhesion in cancer cells upon inhibition of the Smad signaling pathway causes reversal of tumorigenic properties and puts the brakes on cancer progression,” says principal investigator Sam Thiagalingam, PhD, associate professor of medicine and pathology and a member of the Cancer Research Center at BUSM. “This study may pave the way to discovering other pathways and networks of events that are responsible for sustaining epigenetic memory in cancer and cancer stem cells. It could also lead to the unraveling of effective targets for eradication of tumor cells as well as tumor-initiating cells.”

“While targeting of TGFβ and TGFβ receptors has been actively pursued for cancer therapy, the current finding may introduce a new spin on the wheel and lead to the development of new thera-

peutic strategies for late stage breast and other cancers by the direct perturbation of the Smad signaling pathway,” explains lead author Panos Papageorgis, PhD, a post-doctoral fellow in the genetics program at BUSM.

Funding for this study was provided by Susan G. Komen for the Cure and the National Institutes of Health.

Angiotensin Receptor Blockers Associated with Lower Incidence and Decreased Progression of Alzheimer's Disease

BUSM researchers have found that angiotensin receptor blockers (ARBs)—a particular class of anti-hypertensive medicines—are associated with a striking decrease in the occurrence and progression of dementia.

Using data from the Decision Support System Database of the U.S. Department of Health System Veterans Affairs (which contains information on more than five million people), the researchers examined records from patients who used ARBs and compared them with subjects who had a similar health status but were taking different medications. They found patients taking ARBs had up to a 50 percent lower chance of getting Alzheimer's disease or dementia. Patients taking two forms of medications targeting the angiotensin system, ARBs and Angiotensin Converting Enzyme (ACE) inhibitors, had a 55 percent lower risk of dementia.

The researchers also examined patients who were already suffering from Alzheimer's disease or dementia, and found those subjects had up to a 67 percent lower chance of being admitted to nursing homes or dying if they were taking both ARBs and ACE inhibitors. Patients who appeared to benefit particularly well from use of ARBs were those who had experienced strokes before or during the course of their illness.

These results suggest that ARBs might protect against developing Alzheimer's disease and dementia. “For those who already have dementia, use of ARBs might delay deterioration of brain function and help keep patients out of nursing homes,” said senior author Benjamin Wolozin, MD, PhD, professor of pharmacology. “The study is particularly interesting because we compared the effects of ARBs to other medications used for treating blood pressure or cardiovascular disease. This suggests that ARBs are more effective than other blood pressure and cardiovascular medications for preventing Alzheimer's disease or dementia.”

These findings appeared in the January issue of the *British Medical Journal*. Funding for the study was provided by the Retirement Research Foundation and the Casten Foundation.



Pre-Pregnancy Obesity and Gestational Weight Gain Influence Risk of Preterm Birth in African-American Women

Researchers at BUSM's Slone Epidemiology Center and Boston University School of Public Health (BUSPH) have found that pre-pregnancy obesity and gestational weight gain are associated with

an increased risk of preterm birth in African-American participants from the Black Women's Health Study.

Using data from the Slone Epidemiology Center's study of black women's health, BUSM researchers compared more than 1,000 mothers of infants born three or more weeks early with more than 7,000 mothers of full-term infants. They examined two types of preterm birth—medically indicated, or those that occurred for medical reasons; and spontaneous, or those that occurred for no known reason.

The researchers found that obesity increased the risk of medically indicated preterm birth and very early spontaneous preterm birth (at less than 32 weeks), and that underweight increased risk of both preterm birth subtypes. Among obese women, gestational weight gain within the range recommended by the 2009 Institute of Medicine (IOM) report (0.4–0.6 lbs/week in the second and third trimesters) was optimal in reducing risk of preterm birth.

“Our data suggest that it is especially important for obese women to adhere to the IOM guidelines for pregnancy weight gain to reduce their risk of preterm birth,” says lead author Lauren A. Wise, ScD, an associate professor of epidemiology at Boston University School of Public Health and a senior epidemiologist at the Slone Epidemiology Center.

The study appeared in the March issue of *Epidemiology*. Funding was provided by the National Cancer Institute and the Hood Foundation.

New Syndrome Identified

BUSM researchers have identified a new syndrome affecting potentially thousands of hospital inpatients. Coined SHAKE (Supplement-associated Hyperammonemia After C(K)achetic Episode), the condition, which results in altered mental status and difficulty walking, can be prevented by excluding high-protein dietary supple-

ments in patients' diets if they have experienced poor eating for more than a week prior to their admittance.

Altered mental status describes a disorder of impaired cognition, diminished attention, reduced awareness, or an altered consciousness level. Ten to 50 percent of hospitalized patients will experience acute altered mental status which accounts for a significant portion of neurological inpatient consultation.

After excluding for other causes, the researchers concluded that the confused mental status and high levels of ammonia in the blood were due to introducing high amounts of protein too quickly into the patients' diets after weeks of poor eating.

“With advances in nutritional education and supplements, this syndrome likely occurs thousands of times per year in hospitals across the United States,” says senior author Michael Perloff, MD, PhD, a fourth-year resident in the Department of Neurology. “We believe it may account for more than 10,000 hospital days, countless morbidity, and even some mortality.”

The condition is described in the March issue of the *Archives of Internal Medicine*.

Funding for this study was provided by the Boston University Department of Neurology Residency Education Fund.

New Approach for Identifying Smokers at Highest Risk for Developing Lung Cancer Discovered

In collaboration with investigators at the University of Utah, BUSM researchers have discovered a new approach for identifying smokers at the highest risk for developing lung cancer. The findings will allow the researchers to use a genomic approach to prevent lung cancer in these individuals and to personalize cancer chemoprophylaxis and therapy.



Cigarette smoke is the dominant cause of lung cancer in the U.S. Ten to 20 percent of smokers develop lung cancer, but there are currently no tools available to identify which of the approximately 90 million current and former smokers in the U.S. are at the highest risk.

Diagnosis is made most often at an advanced stage where treatment is largely ineffective. The damage caused by cigarette smoke is not limited solely to the lung, but rather constitutes a ‘field of injury’ throughout the entire respiratory tract that is exposed to the toxin.

Consistent with this idea, study lead author Avrum Spira, MD, BUSM associate professor of medicine and pathology and chief of the section of computational biomedicine in the Department of Medicine, and his colleagues previously developed a gene expression-based biomarker measured in the cytologically normal bronchial airway epithelium that reflects an individual's physiologic response to smoking and distinguishes smokers with and without lung cancer. Although this biomarker is successful at diagnosing lung cancer, it does not identify the signaling pathways underlying these gene expression changes.

Using a novel gene expression-based approach to define oncogenic pathway signatures, the researchers, in collaboration with Dr. Andrea Bild at the University of Utah, have now discovered that the expression of genes belonging to one

Research in Brief

specific cancer-related pathway, PI3K, are activated in the cells that line the airway of smokers with lung cancer. This gene expression activity in the normal cells of the proximal airway precedes the development of lung cancer and may be reversed with a specific chemo-preventive agent (myo-inositol) that targets this pathway.

The researchers validated their findings by measuring the biochemical activity of this pathway in the airway epithelial cells from an independent group of smokers with and without lung cancer. They maintain that the data suggests measuring this airway gene expression activity can help determine which specific cancer pathways have been deregulated within an individual smoker, allowing one to tailor a specific drug that will target the pathway to reduce that individual's risk of lung cancer.

"This represents a critical advance in the field of lung cancer prevention as there are currently no effective strategies for lung cancer prevention among high risk smokers. Our work has the potential to help address the enormous and growing public health burden associated with lung cancer, the leading cause of cancer-related death among men and women in the U.S. and the world," says Spira.

The findings appeared in the April 7, 2010 issue of *Science Translational Medicine*. Funding for the study was provided by the National Institutes of Health. Spira is one of the founders of Allegro Diagnostics Inc., a molecular diagnostics company that plans to market the gene expression biomarker.

Study Shows Massachusetts Health Care Reform Improved Access to Inpatient Procedures among Minorities

Researchers from the Department of Veterans Affairs and BUSM found that health care reform in Massachusetts has improved minority access for some inpatient procedures.

Since 2006, when Massachusetts became the first state to enact health care reform and sharply expand health coverage to all its citizens, no studies have examined whether expanded insurance coverage has improved access to specific elective inpatient procedures among minorities until now.

Using information from 2004 to 2008, the researchers analyzed Massachusetts hospital inpatient discharge data looking specifically at a number of cardiovascular, cancer, and musculoskeletal procedures that are most often scheduled by physicians and therefore likely to be sensitive to insurance status. These procedures are traditionally underutilized among minorities.



They found that use of some surgeries among minorities increased significantly following the introduction of reform in 2006. Higher rates of increase for minorities were found when compared with similar rates for whites, and when compared with their trend prior to reform. Between 2007 and 2008, use of some musculoskeletal procedures went up by 17 percent for blacks, nine percent for Hispanics and five percent for whites; these rates increased over similar rates in the pre-reform period for blacks and Hispanics, but not for whites. Use of some cardiovascular surgeries also grew faster among blacks and Hispanics.

"We have shown that health care reform has had a positive impact on minority patients in Mas-

sachusetts, specifically increasing access to important surgeries, which are typically underutilized by this population," says study presenter Amresh Hanchate, PhD, BUSM research assistant professor of general internal medicine and a VA research health scientist. "These findings may help further our understanding of how national health care reform could affect access throughout the country."

Additional Genes That May Play a Role in Alzheimer's Disease Identified

In collaboration with scientists from the U.S. and Europe, BUSM researchers have identified two new genes that may be risk factors for the development of late-onset Alzheimer's disease (AD). Genetic variants appear to play an important part in the development of the disease, since having parents or siblings with the disease increases a person's risk.

Using an intensive, genome-wide association analysis study (GWAS), the researchers identified two new genes at specific locations in the DNA called loci that reached the required genome-wide statistical significance threshold for the first time, thus pinpointing them as very likely associated with AD. The findings were replicated in an independent population.

"Identifying each of these new genes, one on chromosome 2 and a second locus on chromo-



some 19, points to new biological pathways involved in the development of AD," says senior author Sudha Seshadri, MD, BUSM associate professor of neurology and an investigator at the Framingham Heart Study. "Although such benefits are likely a decade away, studying these pathways should lead to new ways to postpone, prevent, and perhaps treat the disease."

Since 1975, the National Heart, Lung, and Blood Institute (NHLBI) and BU's Framingham Heart Study have gathered information on AD; in 2007 they obtained extensive genetic data on these persons through the SHARe (SNP Health Association Resource) project. BUSM researchers then joined with leading epidemiological researchers worldwide who were also studying AD in population cohorts—notably the Rotterdam study, the Cardiovascular Health Study and the AGES-Reykjavik study—to form the Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) consortium. The researchers combined their data with published data and assembled the largest sample to date—over 35,000 persons, of whom over 8,000 developed AD.

"This highly collaborative international effort enabled researchers to build the large sample size needed to identify elusive gene variants that may play a role in this devastating neurological disease," says Marilyn Miller, PhD, of the National Institute on Aging, which funds the collection of AD data in the Framingham study and funded the analysis for this GWAS. "Such collaborations are key to a fuller understanding of the many genetic factors that may contribute to overall risk for late onset Alzheimer's and how these genes affect the development of the disease."

The findings were reported in the May 12, 2010 issue of the *Journal of the American Medical Association*. Funding for this study was provided by the National Institute on Aging, NHLBI, and Boston University.



Supranuclear cataract in a 64-year-old male subject with Down syndrome. Juliet Moncaster, PhD and Lee Goldstein, MD, PhD, Boston University School of Medicine, Boston, MA. Copyright 2010. All rights reserved.

Study Finds Alzheimer's Disease Link in Eyes of Children with Down Syndrome

Findings May Lead to Eye Tests for Brain Disease in Alzheimer's and Down Syndrome

A team of researchers has discovered that the protein that forms plaques in the brain in Alzheimer's disease also accumulates in the eyes of people with Down syndrome. The new findings in Down syndrome show that the toxic protein, known as amyloid- β that causes Alzheimer's pathology in the brain also leads to distinctive cataracts in the eyes. The discovery is leading the researchers to develop an innovative eye test for early detection of Alzheimer's pathology in both disorders.

The research, led by Lee Goldstein, MD, PhD, BUSM associate professor of psychiatry, neurology, ophthalmology, pathology and laboratory medicine, and biomedical engineering; and Juliet Moncaster, PhD, associate director of BU's Molecular Aging & Development Laboratory, included investigators at the the Brigham and

Women's Hospital; Massachusetts Eye and Ear Infirmary; Massachusetts General Hospital; Harvard Medical School; Rush University Medical Center; Children's Hospital Boston; and the University of Washington, Seattle.

"People with Down syndrome develop symptoms of Alzheimer's-type dementia often by the age of 30," says Goldstein. "This is because they have an extra copy of a key Alzheimer's gene that leads to increased amyloid- β accumulation in the brain. We discovered that this same protein starts to accumulate very early in the lens of the eye, even in children."

"The lens provides a window to the brain," Moncaster explains. "The lens can't clear protein deposits the way the brain does. Our findings show that the same amyloid-protein that aggregates in the brain also accumulates in the lens and leads to these unusual cataracts in Down syndrome."

"We are developing an eye scanner to measure amyloid- β in the lens," says Goldstein. "This approach may provide a way for early detection and monitoring of related pathology in the brain. Effective treatments for the brain disease in Down syndrome and Alzheimer's disease are on the horizon, and early detection is the key for successful intervention. The path to effective treatment is what drives our research."

The findings were presented at the annual meeting of the Association for Research in Vision and Ophthalmology in Fort Lauderdale, Florida and reported in the May 20 issue of *PLoS One*. The five-year research effort was supported by the National Institutes of Health (National Institute of General Medical Sciences, National Institute on Aging), American Federation for Aging Research, Alzheimer's Association, American Health Assistance Foundation, Cure Alzheimer's Fund, National Disease Registry Interchange, Sun Health Research Institute, Florida Lion's Eye Bank, and an anonymous foundation.

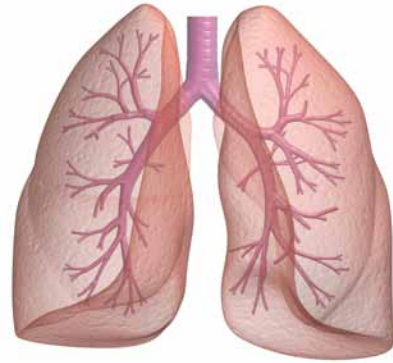
Research in Brief

Gene Network Associated with Vitamin A Deficiency and Lung Birth Defects Discovered

BUSM researchers have discovered the mechanism responsible for the failure of the lungs to form as a result of vitamin A/retinoic acid (RA) deficiency. The study also shows that corrections to this network make it possible to prevent the lung defect in retinoic acid-deficient animals.

Congenital abnormalities of the respiratory system are often part of multi-organ syndromes associated with genetic, environmental, or nutritional imbalances during fetal life. Developmental defects, such as tracheoesophageal fistula, pulmonary hypoplasia, and failure to form one or both lungs have been known for decades to be important components of the so-called "Vitamin A deficiency syndrome." Researchers knew that Vitamin A, through its active form RA, is highly utilized at the time and site where the lung develops in the embryo. However, why RA is so critical and how this pathway controls lung formation have been little understood.

To tackle this problem, BUSM researchers investigated the initial stages of lung development in RA-deficient mice using pharmacological and



genetic models. They identified gene networks controlled by RA and characterized their role and hierarchy in this process. The researchers found that RA controls lung formation by balancing the effect of the Wnt and Tgfb pathways in Fgf10, a growth factor required for induction of lung buds. Like two opposing forces, Wnt and Tgfb act as positive and negative regulators of Fgf10 and bud growth, respectively. The study shows that RA coordinately acts on these pathways, ensuring that proper levels of Fgf10 are present at the sites of budding.

"Our data strongly suggest that disruption of Wnt-Tgf-Fgf10 interactions represents the molecular basis for the failure to form lung buds classically reported in vitamin A deficiency," says Wellington V. Cardoso, MD, PhD, professor of

medicine and pathology and director of the Lung Development and Progenitor Cell Biology program at BUSM.

"Moreover, we show that simultaneously activating Wnt and repressing Tgf fully rescues the lung in both RA-deficient models. These findings unveil molecular interactions critical for lung progenitor cell development and shed light into the pathogenesis of abnormalities induced by vitamin A deficiency."

According to the researchers, a better knowledge of the molecular pathways regulating early lung organogenesis is critical for the understanding of the pathogenesis of congenital lung malformations. This is particularly relevant in the context of conditions associated with disruption of RA signaling. Genetic mutations in RA pathway components leading lung developmental defects have been already identified in human syndromes.

The study appeared in the June issue of the *Journal of Clinical Investigation*. Funding for this study was provided by grants from National Institutes of Health/National Heart, Lung, and Blood Institute and the GlaxoSmithKline Pulmonary Fellowship Award.

McNary Learning Center Visited by McNary Family



The family of the late William F. McNary, Jr., visited the School of Medicine and the McNary Learning Center. Beloved by generations of BUSM students for his concern for their professional and personal well-being, his reputation as a teacher was legendary. McNary was the first associate dean for student affairs at the School of Medicine and held the position for 16 years. He taught anatomy to BUSM students for 41 years until his death in 1991.

In 1995, the School named the student learning center in his memory. Members of the McNary family pictured along with faculty, students, alumni, and staff: **First Row:** Kelley McNary, Ryan McNary, Scott McNary, Tom Clancy (son) **Second Row:** Chris Simons '10, Maureen Clancy, Shannon Clancy, Chris McNary, Elizabeth Gallagher, Tariq Hashmi '13 **Third Row:** Jim Nilson, Tom Clancy (father), Steve Ober, Richard Hoyt, Jim Munroe

Appointments

MD-PhD program has new director

John Schwartz, MD, BUSM professor of medicine in the renal section, was appointed director of the MD-PhD program effective July 1, 2010. Schwartz, who has been at BU since 1977, is a successful physician scientist, maintaining continuous National Institutes of Health support for his research while fully active in the clinical arena.

"John has a strong commitment to teaching and mentoring," says Linda Hyman, PhD, associate provost of the Division of Graduate Medical Sciences. "I cannot think of an individual better suited to lead the next generation of physician scientists."

A graduate of BU College of Arts & Sciences, Schwartz received his medical degree from New York University School of Medicine and completed his internship, medicine residency, and fellowship in nephrology at Beth Israel Hospital in Boston. He served as a lieutenant colonel in the U.S. Army Medical Corps and was chief of nephrology at the Walter Reed Army Institute of Research.

His general area of research is renal epithelial cell biology and ion transport. The author of 168 publications and book chapters, Schwartz is on the editorial board of *Seminars in Nephrology*, *American Journal of Physiology*, and the *American Journal of Physiology-Renal Cell Physiology*.

He is a member of numerous professional organizations including the American Association for the Advancement of Science, American Society for Clinical Investigation, and the National and International societies of Nephrology, and is a diplomat of the American Board of Internal Medicine.

Schwartz has also been a member of the BUSM Admissions Committee for 31 years.

The MD-PhD program offers students the opportunity for advanced education and research

training in one of the medical sciences while providing exposure to and training in clinical medicine.

Appointments for new administrative positions in GMS

Hee-Young Park, PhD, has been appointed assistant dean for the Division of Graduate Medical Sciences. Park, an associate research professor in the BUSM Department of Dermatology, has served as principle investigator on research projects and as an educator in their graduate program as well as an advisor in the Master of Arts in Medical Sciences (MAMS) program. She received her doctorate in biology from the Massachusetts Institute of Technology. Her research centers on elucidating molecular mechanisms regulating pigmentation, hair growth and wound healing. She will be engaged in all the operational activities of the Division, concentrating on student affairs.

Gwynneth Offner, PhD, has been appointed director of the Master of Arts in Medical Sciences (MAMS) program, the largest in the Division of Graduate Medical Sciences. An associate professor of medicine, course manager of biochemistry and cell biology, and member of the School of Medicine admissions executive committee, Offner has been a researcher in the Section of Gastroenterology in the BUSM Department of Medicine focusing on the structure, function, and regulation of epithelial mucins.

Theresa Davies, PhD, has been appointed assistant director of the Master of Arts in Medical Sciences (MAMS) program. Davies has long been a member of the Boston University community as a student post-doc and now as an assistant professor of biochemistry. She currently serves as an advisor to the MAMS program and as co-course manager for the biomedical information course.

Appointments and Promotions to Professor

Warren Hershman, MD, promoted to professor of medicine

Tsuneya Ikezu, MD, PhD, appointed professor of pharmacology and experimental therapeutics

Peter Moyer, MD, MPH, named professor emeritus

Kitt Shaffer, MD-PhD, appointed professor of radiology

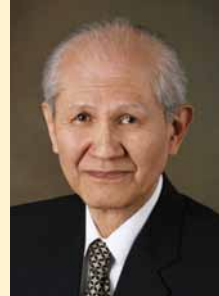
Maria Trojanowska, PhD, appointed professor of medicine

Zhi Wang, MD, promoted to professor of otolaryngology

Awards Honors

Osamu Shimomura Honored at Commencement

Nobel-winning chemist receives Doctor of Science



Osamu Shimomura, who discovered green fluorescent protein in the jellyfish *Aequorea victoria* in 1962, never expected his work to change the world of cell biology.

Osamu Shimomura, a Nobel Prize-winning

chemist and BUSM professor emeritus of physiology, was awarded an honorary Doctor of Science at Boston University's 137th Commencement ceremonies on Sunday, May 16, 2010.

Shimomura, a former senior scientist at the Marine Biological Laboratory in Woods Hole, Mass., was one of three winners of the Nobel Prize in 2008 for his discovery of green fluorescent protein in the jellyfish *Aequorea victoria*. He shared the \$1.4 million award with Martin Chalfie of Columbia University and Roger Y. Tsien of the University of California, San Diego, two researchers who pioneered cellular research techniques using the proteins Shimomura identified.

Although Shimomura pursued his studies of GFP for years, he didn't realize the potential applications of his work until 1994, when Chalfie's research emerged. In an organism, GFP can be fused to proteins of interest to scientists, with minor effects on the organism's behavior. Researchers can then observe the locations and movements of the studied proteins by monitoring the GFP, which remains fluorescent.

"These discoveries were seminal and decades ahead of their time," says Gary Borisy, director and CEO of the Marine Biological Laboratory. "They really have ushered in a revolution in cell biology."

(This story originally appeared in *BU Today*.)

Irving Bigio, PhD, was selected for the BU School of Engineering 2010 Distinguished Lecturer Award. A physicist, Bigio is a professor in the departments of Medicine, Biomedical Engineering, Electrical & Computer Engineering, and Physics. The annual Distinguished Lectures Series Award honors a faculty member engaged in outstanding, high-impact research and offers that person a public forum to discuss and showcase research before the Boston University academic community.

Robert Cantu, MD, clinical professor of neurosurgery, has been named the 2009 United States Sports Academy Ernst Jokl Sports Medicine Award winner. Cantu is known throughout the world for his work on catastrophic head and neck injuries, concussions, and post concussive syndrome. He was the first doctor to establish a grading scale for concussions based on symptoms at the time of injury.

David Coleman, MD, professor and chair of the Department of Medicine, was elected to the Board of Directors of the American Board of Internal Medicine effective July 1, 2010, for a two-year term as an at-large member.

Catherine Costello, PhD, professor of chemistry, biochemistry, and biophysics and founding director of BUSM's mass spectrometry resource and its cardiovascular proteomics center, was recognized by the American Chemical Society with the 2010 Frank H. Field & Joe L. Franklin Award for Outstanding Achievement in Mass Spectrometry.

Michele David, MD, associate professor of general internal medicine, was selected for the 2010 William A. Hinton Award by Massachusetts Public Health Commissioner John Auerbach for her many years of activism, commitment to public health, and extensive work to promote and support efforts to eliminate health inequities and to educate the public about them. The award is named in honor of one of the first African-American graduates of Harvard Medical School who made important contributions in the field of immunology.

James Hamilton, PhD, professor of biophysics and physiology, with joint appointments in biomedical engineering and medicine, received the Biophysical Society's 2010 Avanti Award in Lipids to recognize his innovative contributions in the application of nuclear magnetic resonance methods to phospholipids and fatty acids. The Biophysical Society is a professional, scientific society established to encourage development and dissemination of knowledge in biophysics.

Barry Manuel, MD '58, associate dean and professor of surgery, was honored by the Massachusetts Medical Society (MMS) with its 2010 Lifetime Achievement Award, the Society's most prestigious recognition. It is given each year to a member of the Society who has made a lasting contribution to the practice of medicine over a lifetime and who has made significant contributions to the goals of the Society.

A member of the MMS since 1962, Manuel has a long and distinguished record of service with the organization. Following terms as president-elect and vice president, he served as the Society's president from 1990 to 1991. He has been a member of its House of Delegates since 1973, was a four-term member of the board of trustees, and has served on many of the organization's committees, including the Committees on Administration and Management, Finance, Professional Liability, and Occupational Health, all of which he chaired at various times.

Jonathan Olshaker, chief and chair of emergency medicine, has received the Above and Beyond Award, presented by the Employee Support of the Guard and Reserve (ESGR) Department. The award recognizes employers at the state and local level who have gone above and beyond the legal requirements for granting leave and supporting military duty by their employees.

Adam Rose MD, MSc, assistant professor of medicine and core investigator at the Center for Health Quality, Outcomes, and Economic Research at the Bedford VA Medical Center, has been named a 2009 Pier M. Mannucci Young Investigator prizewinner. Rose received this award for his article titled "Warfarin dose management affects INR Control" which appeared in the *Journal of Thrombosis and Haemostasis* (Volume 7, Issue 1).

Awards Grants

Richard Goldstein, PhD, professor of pediatrics, has been awarded an Individual Biomedical Research Award by The Hartwell Foundation and will receive \$300,000 over three years as a Hartwell Investigator for his project titled, “A Vaccine Against *Streptococcus Pneumoniae* Based on Bacterial Surface Proteins Phylogenically Certified as Highly Conserved.” Goldstein is also director of the section of molecular genetics, Maxwell Finland Laboratory for Infectious Diseases at Boston Medical Center.

Streptococcus pneumoniae (*S. pneumoniae* or the pneumococcus) is a bacterium commonly found in the nasopharynx (back of the nose) of healthy humans. However, this microbe has also proven to be the most common bacterial species causing pneumonia, invasive meningitis (infection of the fluid surrounding the spinal cord and brain), and sinusitis and otitis media (middle ear infection) in children, the elderly, and immune-compromised

populations. The extraordinary evolutionary diversity of *Streptococcus pneumoniae* has to date allowed it to circumvent current vaccines.

Goldstein proposes a promising alternative vaccine target strategy that would provide universal protection against all known pneumococcal strains. He intends to identify and characterize a new category of vaccine target—referred to as a “common surface protein”—universal to all the otherwise variant capsular types of *S. pneumoniae*. The novel foundation of this strategy is his identification of genes coding for such common proteins that are resistant to mutation, thus invariant throughout the species.

Shelley Russek, PhD, professor of pharmacology and experimental therapeutics, and Amy Brooks-Kayal, MD, of the University of Denver/Children’s Hospital, have received an award from Citizens United for Research in Epilepsy (CURE) to exam-

ine the role of a cell-signaling pathway called the Jak/Stat pathway in the development and progression of epilepsy.

Their labs recently discovered that this pathway regulates brain inhibition and is activated by seizures, likely in response to an increase during seizures of the growth factor, brain derived neurotrophic factor (BDNF). Using a combination of studies in the laboratory and in animal models of epilepsy, they will use specific blockers of BDNF and the Jak/STAT pathway to reduce or prevent epilepsy development and/or progression.

CURE awards seed grants for novel research projects that address the goals of “no seizures, no side effects,” and specifically those that address prevention of epilepsy, including post-traumatic epilepsy; advancement of the search for a cure; elimination of treatment side effects; and reversal of deficits caused by frequent seizures.

In Memoriam

Marie-France Demierre, MD, professor of dermatology and medicine and director of the Skin Oncology Program in Dermatology at Boston Medical Center, passed away unexpectedly at the age of 43 on April 13, 2010, at Boston Medical Center.



Demierre lectured the world over and was internationally recognized for her clinical expertise in the management of melano-

ma. She was especially dedicated to melanoma prevention and public education regarding safe sun practices—as well as to patient quality of life—and wrote and lectured extensively on these topics.

Rhoda Alani, MD, Herbert Mescon Professor and Chair at BUSM, and dermatologist-in-chief of the Department of Dermatology at Boston Medical Center, said, “Dr. Demierre was an exception-

ally talented colleague who brought tremendous passion to her work and cared deeply about her patients. She was that rare academician who excelled as a clinician, educator, and scholar and was an internationally recognized leader in the management of patients with skin cancers. It is tragic to have lost someone with so much talent and promise so early on in her career.”

For many years, Demierre led the BUMC Annual Skin Cancer Screening and volunteered for the annual screening of the Boston Red Sox, where she discovered numerous early malignancies and unquestionably saved lives. She testified repeatedly before the Massachusetts Legislature in favor of stricter regulations for the indoor tanning industry and helped document the increase in melanomas among young women who had used tanning beds. She pioneered educational programs for mothers of newborns and young children regarding the lifelong risks of unprotected sun exposure.

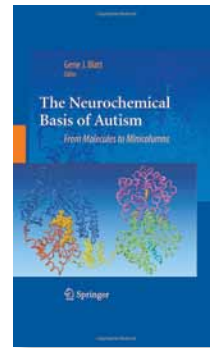
In 2009, Demierre was honored for her efforts in raising awareness of sun safety, skin cancer, and melanomas with the President’s Award from the Women’s Dermatologic Society. She was also honored in 2009 by the Boston Red Sox as a Medical All Star for her tireless community work promoting sun safety awareness and education to children, teens and their parents.

She received her medical degree and clinical training in medicine and dermatology at McGill University. Arriving at Boston University Medical Center for a skin oncology fellowship in 1995, she was recruited back to head the program in 1997. As director of the Skin Oncology Program at Boston Medical Center, Demierre developed and expanded a highly regarded service for care of melanoma patients and a photopheresis program for patients with cutaneous T cell lymphoma (CTCL) and other disorders.

She will be greatly missed.

Faculty in Print

Gene J Blatt, PhD, editor
The Neurochemical Basis of Autism
Springer, 2010

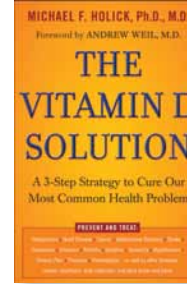


The contributors to this book were selected for their expertise in their respective fields. Each chapter presents a unique perspective into the clinical, developmental, neurochemical, and/or physical chemical basis of autism. Current research findings are summarized, novel

ideas presented, and hypotheses and possible mechanisms proposed that may be operative during development. The potential consequences of defects in specific molecules, receptors, or genes is also covered.

Blatt is an associate professor of anatomy and neurobiology and a member of the Laboratory of Autism Neuroscience Research in the Department of Anatomy and Neurobiology at BUSM.

Michael F. Holick, MD, PhD
The Vitamin D Solution
A 3-Step Strategy to Cure Our Most Common Health Care Problem
Penguin/Hudson Street Press, 2010

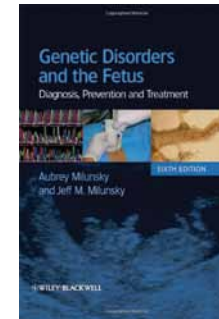


Dr. Michael Holick identifies the causes of vitamin D deficiency, outlines why it is essential to our health, and provides a three-step program to attain optimal levels of vitamin D in our bodies. The subject’s leading expert worldwide, Holick has studied vitamin

D for more than 30 years. His research has shown that every body cell has a receptor for vitamin D going beyond bone health. Increasing the amount of vitamin D can treat, prevent, and even reverse a remarkable number of daily ailments, from high blood pressure to back pain; lessen the symptoms of chronic conditions such as diabetes and arthritis; and actually prevent infectious diseases, including H1N1 and cancer.

Michael Holick is a professor of medicine, physiology and biophysics and director of the General Clinical Research Unit, the Bone Health Clinic, and the Heliotherapy Light and Skin Research Center at BUSM.

Aubrey Milunsky, MBBCh, DSc, and Jeff M. Milunsky, MD, editors
Genetic Disorders and the Fetus: Diagnosis, Prevention and Treatment, 6th Edition
Wiley Blackwell, 2010



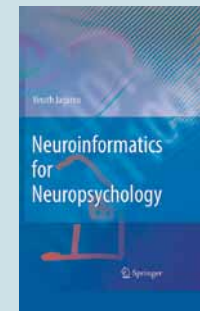
The sixth edition of *Genetic Disorders and the Fetus* provides a critical analysis and synthesis of established and new knowledge based on the long experience of authorities in their respective fields. A broad international

perspective is presented through contributions from authors in 11 countries. All chapters and guidelines have been updated to reflect contemporary practice. New chapters have been introduced on the use of chromosomal microarrays in prenatal diagnosis, the social, legal, and public policy issues with special reference to international approaches, and the important peroxisomal and related fatty-acid oxidation disorders. Aubrey Milunsky is a professor of human genetics, pediatrics, pathology, and obstetrics and gynecology, and director of the Center for Human Genetics at BUSM. Jeff Milunsky is a professor of pediatrics and genetics and genomics; and director of clinical genetics and associate director of molecular genetics at the Center for Human Genetics at BUSM.

Alumni in Print

Vinoth Jagaroo, PhD '98
Neuroinformatics for Neuropsychology
(Springer, 2009)

Neuroinformatics for Neuropsychology is the first book to explain the relevance and value of NI to neuropsychology. It systematically describes NI tools, applications, and models that can enhance the efforts of neuropsychologists. It also describes the implications of NI for neuropsychology in the 21st century and the fundamental shifts away from the conventional modes of research, practice, and communication that have thus far characterized the field.



Vinoth Jagaroo is a cognitive neuroscientist. His primary interests are neuroinformatics applied to neuropsychology, and spatial cognition. He is an Associate Professor in the Department of Communication Sciences and Disorders at Emerson College (Boston) and in the Department of Psychiatry and the Behavioral Neuroscience Program at Boston University School of Medicine. Jagaroo is also the founding member of the recently launched Society for Neuroinformatics in Neuropsychology.

AMA Foundation honors BUSM student as an outstanding leader in medicine



At the award ceremony, from left to right: **Richard Hovland, CPA**, AMA Foundation president; **Freda Lewis-Hall, MD**, chief medical officer, Pfizer Inc.; **Andrey Ostrovsky**; and **J. James Rohack, MD**, AMA president

Andrey Ostrovsky '10 has very high aspirations—his plans include strengthening health systems in the U.S. and developing countries through research on social and environmental risk factors that determine well-being.

Ostrovsky has already made considerable strides toward accomplishing his goals. Last spring, he received the prestigious American Medical Association Foundation's 2010 Leadership Award at their national conference. The award is presented to physicians and medical students who exemplify the medical profession's highest values: commitment to service, community involvement, altruism, leadership, and dedication to

patient care. Ostrovsky is one of only 20 medical students in the nation to receive the leadership award this year.

As part of his medical education, Ostrovsky—who is interested in primary care pediatrics and internal medicine—conducts research and has developed a public health assessment tool.

Awarded a Doris Duke Clinical Research Fellowship at the end of his third year, he investigated neurodevelopmental outcomes in neonates with congenital heart disease (CHD) at the University of California, San Francisco. His research examined whether an MRI-based technique that measures brain volume and curvature can replace or supplement the current standard of measuring brain development through behavioral and cognitive testing. The research was submitted as an abstract to the 2010 Pediatric Academic Societies Conference.

While at the University of California in San Francisco, he volunteered at the city's Department of Public Health, where he created the San Francisco Health Report Card (SFHRC), a tool for evaluating the progress of health interventions and fostering collaboration among health stakeholders to reduce health inequities in the city. The San Francisco Health Commission approved his report card and now uses it as the assessment instrument for the city's budget and planning efforts for the Department of Public Health. He hopes to develop a template that other municipalities can use for creating their own integrated health evaluation and collaboration tool.

"We have many extraordinary students at BUSM, and Andrey is one of them," says Phyllis Carr, MD, associate dean for student affairs. "His dedication to improving public health is so strong that I foresee his making wonderful contributions on both the community and societal levels."

Honor Medical Society Inducts New Members

Joined by house staff, faculty members, and a BUSM alumna, twenty-four members of the Class of 2010 were inducted into the Alpha Omega Alpha Honor Medical Society. Inductees are recognized for their professionalism, academic excellence, service, and leadership in the medical profession.

Class of 2010 AOA inductees

Paul Bower
John Cuaron
Christopher D'Ardenne
Alexander DeHaan
Steven Deso
Daniel Faden
Sarah Freilich
Ravi Garg
Mathew Geltzeiler
Justin Golden
Ashleigh Halderman
Elizabeth Housman
Ryan Hunt
Nicole Jaffe
Amy Judy
James Kimbaris

Nitin Kulkarni
Jamal Nabhani
Patrick Redmond
Ari Sacks
David Salz
Matthew Sullivan
Matthew Watto
Emily Welsh

House Staff Inductees

Jon David Dorfman, MD
Amanda Ruth Vest, MBBS

Faculty Inductee

Todd Hoagland, PhD

Alumna Inductee

Marie McDonnell, MD '99



Top right: BUSM faculty and department chairs with the 2010 inductees of the Alpha Omega Alpha Honor Society.

Bottom right: Inductee Matthew Sullivan '10 and his family with Dean Antman during the reception for guests before the Alpha Omega Alpha Induction ceremony held at The Castle at Boston University on March 15, 2010.

The Rebecca Lee Crumpler Academy wins the first annual Academies of Advisors Volleyball Tournament

In February, the six Academies of Advisors went head to head in a volleyball tournament in the Solomon Carter Fuller Building gym. Pictured right are "The Crumpinators" of the Rebecca Lee Crumpler Academy, who won the competition, defeating the Mary Jane Safford Academy in two sets, 21-18, 21-9. The winners received a free breakfast buffet courtesy of the Academies Student Steering Committee and the Student Affairs Office.



ENGMEDIC student receives grant to study lung cell production



BU ENGMEDIC student **Kelsey Derricks** was awarded a highly competitive American Medical Association (AMA) Foundation Seed Grant to conduct research on lung cell production with future implications for developing treat-

ments for chronic obstructive pulmonary disease (COPD). ENGMEDIC is the BU Engineering/Medical Integrated Curriculum that combines an undergraduate degree in biomedical engineering and a degree in medicine.

Derricks, a 2009 graduate from BU's biomedical engineering program, will expand on her senior research project, Engineering a 3D Lung Extracellular Matrix, completed under the guid-

ance of Matthew Nugent, PhD, BUSM professor of biochemistry and Bela Suki, PhD, BU professor of biomedical engineering. She will study the mechanisms controlling lung cell production of extracellular matrix and specifically aims to understand how mechanical forces and inflammatory proteases act together to modulate the structure and function of lung extracellular matrix. The goal of these studies is to gain further insight in order to aid in the development of new therapies for COPD, a large group of deadly diseases with few available treatment options.

"Kelsey is an outstanding young physician-scientist in the making and is an ideal candidate for an AMA Foundation grant," Nugent says. "Her high standards in her work reflect an overall spirit of excellence that is inspiring."

The AMA Foundation established the Seed Grant Research Program in 2000 to encourage medi-

cal students, physician residents, and fellows to enter the research field. The program provides grants to help budding physician scientists conduct small basic science, applied, or clinical research projects. In 2010 the AMA Foundation awarded 38 seed grants to physicians and students across the United States. Derricks is the first Boston University student to be awarded an AMA Seed Grant.

An early selection program designed for biomedical engineering students who are interested in becoming physicians, the ENGMEDIC program was created in 1990 by the Department of Biomedical Engineering in the College of Engineering and the School of Medicine. A small number of highly qualified students who have completed two years of the pre-medical option of the undergraduate biomedical engineering curriculum are admitted to the program each year.

Two class of 2010 members named Massachusetts Medical Society Scholars



Robert Cole '10, recipient of the Arnold P. Gold Foundation Humanism Award and the BUSM Internal Medicine Award, has been a volunteer for many years. While in California, he volunteered at a

center for people with mental and physical disabilities. During his years at BUSM, he was active in the Here to Help Advocacy Group for people with intellectual disabilities and served on the Outreach Van Project caring for the homeless.



As a first-year student at BUSM, **David Young '10** earned the Best-Dissection Award in gross anatomy. In 2009, he was inducted into the Arnold P. Gold Humanism Honor Society. A volunteer with Boston

Medical Center's Project Trust Inpatient program, he was appointed project development manager and a member of its executive board.

Both Cole and Young received recognition for their community involvement as well as their academic performance from the Massachusetts Medical Society (MMS). Each honoree, as one of eight 2010 MMS scholars, received a \$10,000 award and was recognized at the society's annual meeting in May.

Cole also has a master's in medical science with honors in research from BUSM and has authored articles in the *Spine Journal* and *Journal of Bone and Mineral Research*. He is a resident at UCLA Medical Center in internal medicine and plans to specialize in cardiology.

Young has two master's degrees from BU's Sargent College in applied anatomy and physiology and in nutrition. He is doing an emergency medicine residency at Brigham and Women's Hospital in Boston and plans to continue his work with underserved populations, youth development and education, and public policy.

GMS student selected BU Student Employee of the Year

Rebecca Lufler, who graduated in May with a PhD in anatomy and neurobiology, began tutoring dental students in 2006 while still in the grind of graduate school. She continued working for the next two years, becoming tutor coordinator for first-year medical students taking gross anatomy.

"I did it because I love teaching and helping the students," she says. "It was extra, not part of anything I had to do—it was something I wanted to do."

The Student Employment Office has sponsored the Student Employee of the Year awards since 1989. This year, for the first time, federal Work-Study students employed at nonprofit and community service agencies off campus were eligible. A five-judge panel of BU staff from around campus chose the winners from the 50 students who were nominated.

Lufler was honored at a reception on April 13, 2010, along with three other students. Their names have been sent to the Northeast Association of Student Employment Administrators for possible state, regional, or national honors.

Setting his sights on better eye care for underserved populations

Despite his youth, third-year BUSM student **Andrew Francis** has dedicated considerable time and effort to understanding and treating eye diseases in local and international populations that often receive very little care in this area.

On a grant from the International Health Summer Research Scholarship at BUSM, last summer Francis traveled to Accra, Ghana where he conducted nine weeks of full-time research into risk factors for glaucoma progression in the native population. Advanced glaucoma is a leading cause of blindness in Ghana, and this is the first study there to correlate potential risk factors such as advancing age, gender, intraocular pressure, and increasing cup-to-disc ratio using standardized International Geographical and Epidemiologic Ophthalmology criteria to define moderate and advanced glaucoma.

Haiyan Gong, MD-PhD, BUSM associate professor of ophthalmology and anatomy and neurobiology, was Francis' mentor on the project. "Andrew Francis is an exceptional young man and a prodigiously hard worker with large goals he will achieve in his career," says Gong. "His extracurricular activities and research demonstrate exceptional leadership in addressing the health care needs of minorities. I have no doubt that he has the potential to make important contributions to academic medicine and address the needs of the underserved."

Francis' research was accepted for presentation at the 2010 World Ophthalmology Congress held in Berlin, Germany. He also presented his summer research project at the Unite for Sight national conference and the Association for Research and Vision in Ophthalmology conference.

In the winter, he went to Guatemala with Mayan Medical Aid on an educational scholarship to provide medical care to the indigenous population who suffer from a cycle of poverty and poor nutrition that results in high rates of disease and early death.

A native of California and the son of physicians, Francis has raised more than \$3,000 in philanthropic funds to offset the cost of cataract surgeries in Ghana and for medical supplies in

Guatemala. In Boston, he is organizing a sustainable fundraising system for the Mayan Medical Aid program.

"Globally, more than 300 million people are visually impaired and 45 million people are blind," said Francis, who plans to specialize in ophthalmology. "I want to devote myself to international activities, strategic research, and volunteerism to help deliver health care on a global level, possibly developing a nonprofit."

He is currently the president of the BUSM Unite For Sight (UFS) chapter and is the UFS campus representative. One of his USF projects is organizing vision-education events and teacher-training workshops in the Boston public school system to identify children with academic difficulties due to vision problems. He has worked to connect uninsured patients to free eye-care services, reaching out to homeless shelters, libraries, and nursing homes throughout Boston, and has also managed an ongoing eyeglass collection drive for two years that has sent more than 1,000 pairs of glasses to villages in Ghana.

In recognition of his community service and research, he received the Unite for Sight Volunteer of the Year Service Award at their annual conference.

Edward Feinberg, MD, BUSM professor, emeritus chair of ophthalmology, and advisor to Francis, sees a bright future ahead for the medical student: "He is already active in the roles that an academic surgeon fills in teaching, research, and service."

Francis assists Dr. James Clark with a cataract extraction in Accra, Ghana. >



Francis examines a local patient at the Santa Cruz La Laguna clinic in Lake Atitlan, Guatemala.

"Globally more than 300 million people are visually impaired and 45 million people are blind."



More than forty percent of the Class of 2010 Match in Primary Care Specialties

Since 1952, **Match Day** has been a rite of passage for medical students across the country. Getting the envelope with the all-important news of which residency program one has been accepted into is the culmination of many days and of study, research, and clinical rotations.

The 140 BUSM members of the Class of 2010 celebrated the milestone with family, friends, and BUSM mentors.

This year, more than 40 percent of the graduates are pursuing careers in internal medicine, pediatrics or family medicine. Anesthesiology, obstetrics and gynecology, and diagnostic radiology were the next highest choices followed by general surgery.

"BUSM faculty and staff are very proud of our outstanding students. Match Day is a rite of passage, perhaps as memorable as graduation for medical students. It has been a privilege to both teach and learn from our young physicians. We wish them the very best in their future endeavors and know that they will do great things," said Phyllis Carr, MD, associate dean of students and professor of medicine.



From Emergency Room to Corner Office

Joseph Fastow '70, founder, president, and medical director of Physician Management Ltd.

Growing up in a small town in New Jersey, Joseph Fastow was a science fan and fascinated by the study of medicine. A biology major at Rutgers, when it came time to decide on a medical school he chose BUSM, the second-smallest medical school in the country, partly because of its size.

"I grew to love the school and faculty," he says. Fastow wasn't sure what specialty he wanted to pursue when he graduated, but internal medicine seemed to have the broadest exposure in patient care. He completed his medicine internship at Pennsylvania Hospital in Philadelphia, then spent two years with the Public Health Service in Bethesda, Maryland.

Fastow fell in love with the Baltimore-Washington, DC, metropolitan area. After his internship, he realized that internal medicine was not for him and started an anesthesiology residency at George Washington University Hospital. Soon he became aware of a number of emergency medicine residencies—including some at Johns Hopkins, where he was accepted 1974. "I felt that the spontaneity of emergency medicine was a better fit for me than the regimentation required of anesthesia, and the flexibility of shift work allowed me to be a clinician and a contractor of physician services," he explains.

In 1972, a cardiologist friend mentioned to him that his hospital had agreed to fund night and weekend coverage for their CCU. Fastow, seeing a business opportunity and a chance to provide a service to hospitals by direct-contracting with physicians, began calling cardiology fellows in the Baltimore-Washington metropolitan area. "When I had a critical mass, I contacted the hospital," he says. By 1975, Fastow and his wife, Ellen, had formed Physician Management to manage physician coverage contracts in Maryland and Virginia; shortly they expanded to New Jersey. The company has contracted for the provision of

urgent care services, internal, pediatric, intensiv-

ist, and emergency medicine, and has approximately 100 physicians and physician assistants working in three states.

"The environment of hospital medicine is changing dramatically," says Fastow, who also holds an MPH in comprehensive health planning from John Hopkins University School of Hygiene and Public Health. "Fifteen years ago, there was one hospitalist program in San Francisco; now, they are in more than 80 percent of hospitals nationwide. Emergency physicians were the first to form themselves into multi-hospital and multi-state groups. Today, we are seeing the same organizational structure in anesthesiology, radiology, and hospitalist services." He also notes the consolidation of hospitals into networks, citing Virginia, where a decade ago there were over seventy independent hospitals and now there are eleven, and Maryland, where three networks operate more than half of the hospitals in the state.

"Health care reform has focused attention on the deficiencies in the fee-for-service model, especially in hospitals, and bundling hospital services is on the horizon," he adds. "In the future we expect more requests from hospitals to locate physician practice leaders and strong clinicians, and fewer requests to manage entire programs. Hospital-based physicians will view themselves more as part of a hospital team than as independent vendors of services."

Dr. Fastow has been a major contributor to the new BUSM student residence project: "I lived in Dorchester because there was limited housing around the school and it was expensive. I considered the time spent commuting and parking to be wasted." A consistent supporter of BUSM, the student residence project resonated with him. "My hope is the student residence will provide a campus atmosphere that fosters learning and collaboration between students and faculty," he says. ●



"My hope is that the student residence will provide a campus atmosphere that fosters learning and collaboration between students and faculty."

Alumni Weekend 2010

Alumni Weekend festivities were held on the medical campus and at the Renaissance Boston Waterfront hotel on Friday, April 30, and Saturday, May 1.

1. According to these alumni, 1965 was a great year and a great class.
2. Dawn and Michael Mullarkey '70 with Lee and Paul Haydu '70.
3. Associate Dean for Student Affairs Phyllis Carr, MD, with Class of 2010 members Carrie Charlton and Kurtis Birch.
4. Celebrating his 60th reunion is Jeffrey Harris '50 with one of the newest members of the Alumni Association, Daniel Hall '10.
5. Alumni Association President Elizabeth Barnett '85 passes the gavel to President-elect N. Stephen Ober '86.
6. Classmates Robert Valerio and Gene Grindlinger enjoying a collage of Class of 1970 headshots taken at the time they and their class entered BUSM.
7. Jean Ramsey '90, assistant dean for alumni affairs, with Kenneth Walsh, PhD, BUSM professor of medicine and director of the Whitaker Cardiovascular institute. Walsh presented the Sidney Kibrick Memorial Lecture on "Molecular Control of Body Composition."

8. Alan Horowitch '80, Richard Rothstein '80, and Steven Sepe '82, in the Hiebert Lounge with the Boston skyline as the backdrop.
9. Members of the Class of 2010 attending the Alumni Banquet compliments of the Alumni Association.
10. Class of 1960 members enjoying their reunion.
11. Mark Rapoport '70, BU student Ramya Kumar, Dean Karen Antman, and Assistant Dean Jean Ramsey '90.
12. As part of the tour of the campus, Peter Jeffries '60 and Mary Smith Reed '80 practice their clinical skills on the Sim Man in the School's Simulation Center.
13. 14. 15. It may have been 30 years since they graduated, but to the many members of the Class of 1980 who joined together for their reunion it seemed like yesterday.
16. Members of the Class of 1960 received 50th-Reunion gifts as special guests of the Alumni Association.



Awards Honors



Steven Colan '77 is congratulated by Alumni Association President Elizabeth Barnett '85

2010 Alumni Awards

The 2010 Alumni Awards were presented to **Drs. Colan and Hunter** by Assistant Dean for Alumni Affairs Jean Ramsey'90 at the Annual Meeting and Banquet of the Alumni Association on May 1, 2010.

Distinguished Alumnus Award

Steven Colan '77 is a professor of pediatrics at Harvard Medical School and chief of clinical operations in the Department of Cardiology at Boston Children's Hospital.

Colan earned a Bachelor of Science in Mathematics and Philosophy from Massachusetts Institute of Technology. He completed his internship and residency in pediatrics at Massachusetts General Hospital and a fellowship in cardiology at Boston Children's Hospital.

An accomplished researcher, teacher, and clinician, Colan's primary research area is on myocardial mechanics, including investigations of basic physiology, the development and verification of new indices of ventricular and myocardial performance, and clinical studies of ventricular function in children with congenital and acquired heart disease.

This method of stress-strain analysis has been used in more than 200 published studies, and numerous multicenter NIH-funded clinical trials have employed the index as one of the primary clinical end-points. Colan's early work focused on the development of noninvasive methods for wide application in pediatric cardiology. He developed

a noninvasive, load-independent assessment of contractility which has since become the reference standard in pediatric cardiology.

Colan teaches myocardial mechanics and evaluation and care of patients with cardiomyopathy and lectures on evaluation of systolic and diastolic function, hypertrophic cardiomyopathy, echocardiography, and exercise physiology. He also trains cardiology fellows and visiting cardiologists in the echocardiography laboratory and hosts cardiologists who visit his laboratory to learn the methods of assessment of ventricular function pioneered at his institution.

His clinical work includes caring for patients with ventricular function issues, including cardiomyopathy.

Humanitarian Award

Christine Hunter '80 is a Rear Admiral in the United States Navy and Deputy Director for TRICARE Management Activity, which coordinates health care for more than 9 million military beneficiaries worldwide.

As deputy director, Hunter serves as the principal advisor to the U.S. Assistant Secretary of Defense (Health Affairs) on the Department of Defense health policy and performance. She oversees the acquisition, operation and integration of the Department of Defense managed care program within the Military Health System.



Christine Hunter '80 accepting the Humanitarian Award

She is a graduate of the combined BU six-year program where she earned dual Bachelor of Arts and Doctor of Medicine degrees with honors in 1980.

She has served as Director of Medical Services at Naval Medical Center San Diego, where she redesigned primary care services and developed the Medicare Subvention project that served as the model for TRICARE for Life. She also served as executive assistant to the Surgeon General, focusing on best practices in primary care and enhancing Navy Medicine's service to the fleet.

In 2000, Dr. Hunter assumed command of Naval Hospital Bremerton in the state of Washington as Pacific Fleet Surgeon, where she developed the Concept of Operations for resuscitative surgery aboard small combatant ships which later served as the prototype for today's Expeditionary Resuscitative Surgical System.

She was then Chief of Staff of the Bureau of Medicine and Surgery, where she ensured the ongoing deployment of medical personnel in support of Operations Enduring Freedom and Iraqi Freedom and organized medical support for tsunami, earthquake, and hurricane relief missions. She led the development of Navy Medicine's Pandemic Flu Response Plan, and implemented the reorganization of Navy Medicine to create an Echelon II Headquarters with four subordinate regional commands.

In 2007, Dr. Hunter assumed command of Navy Medicine West and Naval Medical Center San Diego, where she developed nationally-acclaimed programs for wounded warriors including amputee care, combat stress control, and traumatic brain injury; expanded health services across the Pacific; promoted medical research; and led the medical center to achieve the top ranking in the Department of Defense for combined quality, population health, and business performance.

Her personal decorations include the Legion of Merit (six awards), Defense Meritorious Service Medal, Meritorious Service Medal, Navy and Marine Corps Commendation Medal (two awards), and Navy and Marine Corps Achievement Medal (two awards).

Hunter will receive the Boston University Alumni Award at the fall University Alumni Weekend.

Class Notes

1949

Sylvan B. Baer of Englewood, Colorado, shares that he is "proud of his family and six children."

Updates include a son who graduated from Harvard University, went on to be an executive producer for the television show *ER* and currently works for the series *Law and Order: Special Victims Unit*; identical twin sons who are both surgeons in Denver, Colorado, each with two children; another son who is blind and a math teacher at Boston Latin School (the oldest public school in the U.S.) in Cambridge, Massachusetts; a son who both lives and is an urban planner in New York City; and a daughter who is a public defender in Chicago, and teaches juvenile law at Northwestern University.

1950

Herbert L. Martin of Burlington, Vermont, and his wife say: "Dr. Martin has been ill since last July but is much improved as of late. It is a big question if we will make the big 60 but we'll be there if at all possible. I found this picture from Hawaii 1970. Enjoy!"

1952

Alvin N. Eden of New York, New York, writes, "I have retired as chairman of the Department of Pediatrics at Wyckoff Heights Medical Center after only fifty-one and a half years (probably a world record) and, as chairman emeritus, continue to teach and mentor research activities. Thankfully, I still play tennis regularly, both singles and doubles. I am already looking forward to our 60th reunion in just two years."

Nicholas Giosa of Wethersfield, Connecticut, writes, "To my aging classmates, those of us who are left, allow me an old habit of sending a poem and sharing a brief meditation with you."

The Autumnal Wayfarer

Stumbling into old age, pulling my cart of memories along a pilgrimage of tangled histories - aware that there are endings to all that we traffic in, to all endeavors we endure, to all the songs that fill the cornucopia of the ear, and to dreams that deliver us through the night till the dawn appears - I labor - demeaned as Quixote - as I tilt at the void of the road ahead and consider what bits of comfort tomorrow brings.

Reveries without rude awakenings? A revelation as to what might have been

had we followed the road not taken? A whispered shred of hope, for as yet, unanswered prayers?

But whatever tomorrow may bear, let us praise without rancor or regret, this interim given to our senses that read and rejoiced in this canopy of moving light and beguiling clouds; this stony earth with its peaks and vales and winding roads; this play of changing seasons - a quartet with its shifts of major and minor tones, its array of songs of lilting birds, the gift of gold of autumn leaves.

And from our cart filled trove of memories, recall those with whom we touched and shared love's proximity.

Before the journey's done and the coda ends, let us not forbear, but let us summon the strength for one last run, the urge to tilt at one windmill, the will to bend and forge...one last poem.

Nicholas Giosa
July-August 2009

1955

Joseph T. Mullen of Virginia Beach, Virginia, writes, "I am now retired 17 years and have enjoyed every minute of it. Bill Luke, Andy Crummy, Bob Cutting, Fred Doran, and myself have remained in close contact for years. We have met as a group every year for the past decade, and frequently as individuals as well through all the years since 1955. As Dr. Mallory of Pathology said in 1954-55, our class was a 'great bunch' but 'not very studious.' I cherish our class and its memories."

1956

Melvin Stahl of Roseville, California, writes, "I can't believe I will be 80 in three months. Eighty and above is a fertile ground for morbidity and mortality. While I do have a couple of annoying chronic diseases, I am relatively well. As a pathologist, I am aware that no one dies of good health. So I take some comfort in that and realize my good fortune so far.

"I miss the practice of medicine, but there is no remedy for that. Once you leave pathology, it is gone. Really gone. Roberta is well and takes good care of my unpredictable nature. She is the best thing that has happened to me. One son is a pathologist in Kansas City. A daughter is an attorney in Wisconsin. Another daughter is a

pediatric nurse. Another son is struggling with the effects of the recession.

"If any of you are thinking of moving and settling in California, go ahead! We need all the victims we can get out here! For heaven's sake, stay away from this fiscal mess!

"Best to all of you."

1957

Gilbert A. Norwood of Danvers, Massachusetts, writes, "Still trying to enjoy retirement. My wife, Judith, died November 2, 2009, which was a huge loss. We had such a great life despite her many medical problems. I keep busy teaching IP to first year BUSM students (great time!), remain on several Beverly Hospital committees, take art lessons, joined the rotary, play in a concert and a jazz band, and am active in church. My health is good so far. I try to keep on pedaling! Regards to all classmates."

1959

Julius H. Mueller of Pacific Grove, California, writes, "We are beginning the next 50 years. As for myself, I'm living in the Carmel-Monterey area and doing clinical ophthalmology in Modesto, California one day a week. Cecilia and I enjoy travel and spending time with family."

1960

Robert C. Cochran of Charleston, West Virginia, shares, "Hope to make it back to my 50th. Still working three half days a week and teaching medical students. I have written my memoirs, *Glands and Guts: a Life in Service*, available through Pointed Prose Press (www.pointedprosepress.com). The advantage of memoirs over an autobiography is I don't have to stick to facts to make a good story. Most readers have found this very amusing."

1964

Anita L. Mitchell of San Francisco, California writes, "I have been working for the state of California for the past 15 years and am currently with the Department of Public Health overseeing the state-wide maternal and child health programs for low-income, high-risk populations in this diverse state of 38 million people. For over 40 years, my career in pediatrics and public health has been focused on providing patient care and administrative services to the poor, minorities, immigrants, refugees,

Class Notes

children of parents in the U.S. military, and incarcerated populations. My husband and I also had the opportunity to practice medicine in the Middle East, which was a very rewarding experience.

"We have four children and six grandchildren and enjoy family vacations at the beach in southern California. We are most grateful for all the blessings in our lives, including our family, and medical careers, which we have found so gratifying, especially since I decided to become a pediatrician when I was nine years old. I have worked full time in medicine in many diverse settings since I completed my education and training many years ago."

1965

Michael L.J. Apuzzo, the Edwin M. Todd/Trent H. Wells, Jr. Professor of Neurological Surgery, Radiation Oncology, Biology, and Physics at the Keck School of Medicine received the Francesco Durante International Prize in Neurosurgery.

Apuzzo was lauded as "an inspired visionary whose ideas, research, and contributions revolutionized neurosurgery worldwide."

Awarded only occasionally, the Durante Prize is administered jointly by the Universities of Messina, La Sapienza, and the European Association of Neurosurgical Societies. Apuzzo has been recognized for his contributions in microneurosurgery, cerebral surgery, endoscopy, imaging-guided surgery, and radiosurgery, and for introducing concepts of minimal invasion, cellular and molecular methods for functional restoration, and nanotechnology to the neurosurgical discipline. He is editor-in-chief of the international publication *WORLD NEUROSURGERY*.

Curtis R. Clayman of Ashburnham, Massachusetts, writes, "I'm still practicing full time and enjoying every medical aspect of it (but not the paperwork). Barbara, my wife, is my crackerjack office manager. One of our three has pursued the medical field as a cardiologist."

Hernan F. Mendez of Dorado, Puerto Rico, writes, "I retired from the practice of plastic surgery in September of 2009. I am enjoying my nine grandchildren, Puerto Rico, and learning about the history of Salvation and interpretation of the Bible in order to better advise my family and friends."

1968

Michael J. Kussman of Chevy Chase, Maryland, has joined Aetna's Military Health Care Advisory Committee. Dr. Kussman, a retired U.S. Army brigadier general, recently served as the undersecretary of health for the Veterans Health Administration (VHA) after a nearly 40-year career that includes military service, private practice in medicine, and health care administration. A native of Troy, New York, he earned bachelor's and medical degrees from Boston University and a master's degree in management from Salve Regina University. He is a graduate of the Army War College and an honor graduate of the Command and General Staff College. His military decorations include the Distinguished Service Medal, Legion of Merit with three oak leaf clusters, Defense Meritorious Service Medal and the Order of Military Medical Merit.

1969

William H. Frishman of Scarsdale, New York, submitted the following: "Bill Frishman, who is currently in his 13th year as chairman of Medicine at New York Medical College and director of Medicine at Westchester Medical Center, has had the longest continuous tenure as a chair of medicine among the current chairmen in New York state. He also recently completed the third edition of his textbook, *Cardiovascular Pharmacotherapeutics*. He continues to serve as an editor of the *American Journal of Medicine*, the official journal of the Association of Professors, and *Cardiology in Review*, which is an affiliated journal of the American Heart Association. In March 2010, he gave the Alpha Omega Alpha address at New York Medical College commemorating the 150th anniversary of the School's founding in 1860. He also serves as the clinical head of the New York State Cardiac Stem Cell Research Consortium."

Marc F. Hirsch of Bowling Green, Kentucky, writes, "This is my first class note. I did a rotating internship in San Francisco in 1969. I attended the American Indians on Alcatraz. I went on to a general practice residency in the Bay Area (Martinez) which was mainly surgery and trauma management. After years of sporadic work I did a family practice residency in New York, became chief resident, then got board certified. I married a wonderful woman and became chairman of family medicine at my local hospital in New York. Now I



Joshua Wynne '71 named vice president and Dean of University of North Dakota School of Medicine and Health Sciences.

The University of North Dakota (UND) has named **Joshua Wynne** UND's Vice President for Health Affairs and Dean of the School of Medicine and Health Sciences (SMHS).

Wynne has served as interim vice president for health affairs and interim dean of the UND School of Medicine and Health Sciences since 2009. He is a senior physician executive with strong leadership, administrative, clinical, educational, and analytical skills, and extensive experience in multiple aspects of academic health care systems.

Wynne came to UND in 2004 as vice dean for the SMHS. Prior to that position he was senior analyst at the Institute for Strategic Analysis and Innovation, Detroit Medical Center. Wynne served as chief of the Division of Cardiology at Wayne State University School of Medicine in Detroit.

He completed his internal medicine residency and cardiology fellowship at Peter Bent Brigham Hospital, and spent the subsequent six years at the Harvard University-affiliated Brigham and Women's Hospital. He holds an MBA degree from the University of Chicago and an MPH degree in health management and policy from the School of Public Health, University of Michigan. Wynne served in the United States Army as a battalion surgeon while stationed in the Republic of Korea from 1973 to 1975.

live in Kentucky and work locums. I am hoping to locum in Alaska off and on doing ER, hospital, and outpatient à la Northern Exposure. Regards to all my classmates."

1970

Robert A. Vigersky of Washington, D.C., writes, "This coming year, the 40th since my graduation from BUSM, is also the year that I am the president of the Endocrine Society, the world's largest and most prestigious organization devoted to the research and practice of endocrinology. Over my career, I have straddled the worlds of basic research, clinical research, and clinical practice. However, my election to the Society's presidency is a unique honor since I am the first person ever to have been in full-time private practice of endocrinology and become the Society's president. In recognition of this, I have established the Harold Vigersky Practicing Clinician's Travel Award in honor of my father. These awards will assist those who want to come to the Society's scientific and educational meetings but have been unable to do so because of lost income while they are away from their practices. I look forward to reconnecting with my classmates in May."

1976

Stuart L. Davidson of Alexandria, Virginia joined Edward White, MD, and Burton Pearl, MD, on the staff of MDI Orthopedics beginning in March of 2010. Dr. Davidson's practice involves all aspects of general orthopedic surgery, including pediatric orthopedics, sports medicine, trauma, and adult reconstructive surgery. From 1981 to 1983, Davidson worked for Framingham Orthopedic Associates Inc. in Framingham, Massachusetts. Since 1983, he has served on the staff of Mount Vernon Orthopedic and Podiatric Associates and as chief of surgery, chairman of the surgery department and president of the medical staff of INO VA Mount Vernon Hospital in Alexandria, Virginia. From 1995 to present, Davidson has also served as a member of the courtesy medical staff at Shore Memorial Hospital in Nassawadox, Virginia. Davidson is a fellow of the American Board of Orthopedic Surgery.

1980

Daniel Levy of Newton, Massachusetts, was recently awarded the Population Research Prize by the American Heart Association. He is the director of the Framingham Heart Study of the National Heart, Lung, and Blood Institute and professor of medicine at Boston University School of Medicine. This award recognizes an individual who makes outstanding contributions to the advancement of cardiovascular science and who currently heads a major population research laboratory.

Levy's accomplishments include the recruitment of a third generation of participants in the ongoing heart study and the use of imaging methods. He was the leader of a genetics consortium of 30,000 participants from around the world that identified eight novel genetic regions associated with blood pressure. He also established the SABRE CVD Initiative, which will combine a wide range of Framingham data to increase knowledge of the biology of cardiovascular diseases and for the discovery of new targets for therapy. (picture and press release included, in classnotes folder)

1985

Alan S. Mulz of Woodbury, New York, writes, "I was recently named the chairman of medicine at Nassau University Medical Center in East Meadow, New York. As well, I received an inaugural appointment to the new Hofstra University School of Medicine in Uniondale, New York as professor of medicine."

Robert A. Rosenberg of Newton, Massachusetts, was recently hired as the new psychiatrist at Braintree Hospital at MetroWest Medical Center in Natick.

1987

Bruce E. Sands of Andover, Massachusetts was recruited to join Mount Sinai School of Medicine as chief of the Henry D. Janowitz Division of Gastroenterology in June of 2010. His world-renowned experience in research, patient care, and advocacy in Crohn's disease and ulcerative colitis make him a welcome leader at Mount Sinai School of Medicine's nationally ranked Gastroenterology program.

Dr. Sands is chair of the Clinical Research Alliance of the Crohn's and Colitis Foundation of America

and has been published in several journals, including the *New England Journal of Medicine*, *Gastroenterology*, and *Gut*. He is the medical co-director of the Crohn's & Colitis Center, an associate professor of Medicine at Harvard Medical School, and recently served as acting chief of the Gastrointestinal Unit at Massachusetts General Hospital.

In 2006 he was named Humanitarian of the Year by the New England Chapter of the Crohn's and Colitis Foundation of America, and the Massachusetts General Physician Organization honored him for "Excellence in Action" in recognition of his distinguished patient care. Dr. Sands has consistently been chosen as one of the "Best Doctors in America" by Castle Connolly Medical Ltd.

1988

Suniti N. Nimbkar of Hanover, Massachusetts, was recently named medical director of the Breast Care Center at the new Dana-Farber/Brigham and Women's Cancer Center, in clinical affiliation with South Shore Hospital in Weymouth, Massachusetts. Dr. Nimbkar is recognized regionally for her expertise in breast surgery and has updated surgical approaches to wire-location biopsy of the breast. Her pioneering work in sentinel node biopsy and advanced breast-care treatment techniques is a cornerstone of the multispecialty surgical oncology program she will lead at the center.

1993

Keyvan Nouri of Miami, Florida, is the director of Mohs, dermatologic and laser surgery, director of surgical training, as well as professor of dermatology and otolaryngology at the University of Miami Leonard M. Miller School of Medicine. In his time since graduating from Boston University School of Medicine, he has published three textbooks, 74 peer-reviewed papers, and 52 book chapters, and been an invited presenter at 292 national and international meetings.

2000

Mark Amorosino and Jessica Lee-Amorosino (2003) of Newburyport, Massachusetts, are proud to announce the birth of a baby girl, Madelyn Lee Amorosino. She was born on November 16, 2009, in Massachusetts, and weighed 7 lbs., 1 oz. Mark, Jessica, and big brother Steven are doing great.

In Memoriam

1943-A

Saul C. Holtzman of Dunwoody, Georgia, on Sunday September 13, 2009, at the age of 91. Originally of Boston, MA, he was a psychiatrist, a veteran of the U.S. Army, and a long-standing member of the Army Reserves. He graduated from Boston University School of Medicine in 1943. After WWII, the Korean War, and stateside tours in Tennessee, Georgia, and Massachusetts, he worked at the Veteran's Administration and soon opened his own psychiatric practice. In 1974, he was called back to active duty by the Army and completed two tours as chief of psychiatry at the 97th General Hospital in Frankfurt, Germany, and as chief of community mental health activities at Tripler Army Medical Center in Honolulu, Hawaii. He then spent two years as chief of psychiatric services for the VA Medical Center in Lebanon, Pennsylvania. He also served as chief of inpatient psychiatry at the VA Medical Center in Albuquerque, New Mexico until he retired. Throughout his career, he received numerous awards and recognition for his outstanding service from the military, the Veteran's Administration, and as a civilian in private practice. He leaves behind his wife, Mildred Holtzman of Dunwoody, to whom he was married for 62 years; his daughter and son-in-law, Deborah Holtzman and Rick Rubinson of Dunwoody; grandchildren Max, Emily, Paul, and Claude Rubinson; daughter Kimberly Holtzman of Los Angeles, California; daughter Karen Holtzman of Coconut Creek, Florida, and daughter and son-in-law Sara and Rob Page of England.

1943-B

Gordon D. Arnold of Amherst, Massachusetts, on December 20, 2009, at the age of 92. Born in Stoneham, Massachusetts to Reverend Willard Clark Arnold and Julia Davies Arnold in 1917, he attended Burdett Business College from 1934 to 1936 and Boston University from 1936 to 1941 before graduating from Boston University Medical School in 1943. He was also a fellow of the American College of Surgeons. He enlisted in the US Navy during World War II and continued his surgical training at the US Naval Hospital in St. Albans, New York, serving as a lieutenant before being honorably discharged in 1946. In 1953, he set up his surgical practice in Northampton, Massachusetts. He retired in 1985 as chief of surgery at Cooley

Dickinson Hospital and then volunteered his surgical services with Project Hope, making three trips to Grenada and another to Thailand with his wife, Caroline. He is survived by his wife of 40 years, Caroline Gavin Arnold; five children, Pamela, Bruce, Mark, Marcia and Bonnie; three stepchildren, six grandchildren, four step-grandchildren, four great-grandchildren, and two step-great-grandchildren.

1946

Robert M. Steel of Placentia, California, on April 13, 2009. Born in 1919 in Bridgeport, Connecticut to Alexander Scotland Steel and Isabella Macdonald Steel, he grew up in the city of Stratford in Fairfield County, Connecticut and attended Tufts University before completing his undergraduate education at the University of Alabama. He was accepted to Boston University School of Medicine and received his medical degree in 1946 after serving a short stint in the US Army during World War II. He completed his internship at Caritas Carney Hospital in Boston and then went on to complete a postgraduate course in surgery in Edinburgh, Scotland. He then returned to Stratford, where he worked as medical director at Sikorsky Aircraft Corporation and started a part-time general medicine practice on the side. During the Korean War, he enlisted in the Navy as a flight surgeon and achieved the rank of Lieutenant Commander. Upon leaving the Navy, he moved with his family to Orange County, California in 1957 and developed specializations in internal medicine and allergy. In 1960, he opened a private allergy practice in Anaheim and practiced medicine until just a few years ago. He is survived by his four children and eight grandchildren from his first marriage, and by his wife, Phyllis, and her three living children and eight grandchildren, as well as his oldest sister, Mary, who is now 92 years old.

1952

Lee S. Binder of New York, New York, on April 3, 2010. He is survived by his wife of 57 years, Sylvia; two children, Michael and Ellen; four grandchildren, Mara, Aaron, Anna, and Zach (Sussman); son-in-law Bob; daughter-in-law Amy; and brother, Eugene.

William J. Cummings of West Springfield, Massachusetts, on May 10, 2010. He served as chief of

anesthesiology for nearly 15 years at Mercy Hospital. He attended Dartmouth College, which he interrupted to enlist in the Navy, where he served from 1945 to 1947. He attended medical school at Dartmouth and completed his MD at Boston University School of Medicine in 1952. He interned at Strong Memorial Hospital and began his professional career at the VA Hospital in White River Junction, Vermont, where he worked until 1963. He then moved to West Springfield, where he joined the staff at Mercy Hospital. He is survived by his loving wife, Alice; his children Peter, Carol, Chris, Bob, and Steve; 13 grandchildren, Stephan, Gerard, Gabriele, Jack, Mike, Ashley, Natasha, Brian, Krystal, David, Joe, Erin, and Rachel; and four great-grandchildren, Hayley, Callie, Sheridan, and Gerard.

1954

Duncan W. Campbell of Tucson, Arizona, on March 8, 2010. A Tucson physician and surgeon for 25 years, he was also an avid pilot and sailor. He loved great adventures, great friends, great books, great meals, and great jokes. He had a wry sense of humor, a tender heart, and many pearls of wisdom, which he shared with his five daughters and their families. As he often said, "Sing no sad songs for me."

1955

Edward D. Swiss of Newburyport, Massachusetts, on August 17, 2009. Born in Elizabeth, New Jersey in 1927, he was the first in his family to graduate from college. He received a PhD in Pharmacology from Boston University in 1954 and graduated with honors from Boston University School of Medicine in 1955. He served his internship in internal medicine at Ohio State University, where he was a member of many clinical research teams. He was also a veteran of the US Navy. After serving on the Anna Jacques Hospital staff for many years, he began his retirement in 1995 by volunteering at the hospital, where he truly loved his work and his colleagues. Dr. Swiss served on the Newburyport School Committee from 1962 to 1974. He was a member of the American Medical Association for 50 years. Dr. Swiss leaves behind his beloved wife, Peg; daughters Diane Swiss and Deborah Swiss; and two grandchildren, Alex and Alison Rice-Swiss.

1957

Panteleymon Shohov of Sea Cliff, New York, on January 4, 2010. Born in 1927 in Thessaloniki, Greece, his father was a lawyer educated at St. Petersburg University who served as a local government official in pre-revolutionary Russia, and his mother was a graduate of the Smolny Institute for Noble Young Ladies and worked as a German Language teacher. Dr. Shohov was educated in a German school in Munich, Germany. Upon arriving in the US in 1950, he received his bachelor's degree from Davis & Elkins College in West Virginia in 1952. He graduated from Boston University Medical School in 1957 and was a resident at Maimonides Hospital in Brooklyn, New York. He served in the armed forces during the Korean War and was a captain at the Air Force base in Biloxi, Mississippi. Upon completion of military service, he returned to Sea Cliff, New York and worked as a pathologist for the Nassau County Medical Examiner's office. He also worked for Mercy Hospital for many years, retiring in 1995. He was employed at Quest Diagnostics Laboratories until January of 2008. He leaves his wife, Anna Shohov, his daughters, Tatiana Shohov and Elizabeth Shohov-Olhovsky, his son, Serge Shohov, and his sister, Alexandra Zezulin, as well as nieces, nephews, and many other relatives.

1960

Jane V. Anderson of Newtonville, Massachusetts, on February 6, 2010. Jane was the daughter of the late Robert Emery and Virginia (McLean) Anderson. She received her undergraduate degree from Smith College and her medical degree from Boston University School of Medicine and held appointments at Harvard Medical School, Beth Israel Hospital, and McLean Hospital.

1961

Albert Reichert of Seattle, Washington, on January 12, 2010. Born in Paris, France, to Leib and Faiga, his seemingly idyllic childhood was shattered by the Holocaust. The tragedy of losing his parents at a tender age altered and informed his life journey. Brought to the U.S. by family on the East Coast, he went to Harvard University, and then received his medical degree at Boston University School of Medicine. His interest in devel-

opmental and behavioral pediatrics brought him to Seattle, where he worked at the UW CDMRC, and then as superintendent of Rainier School for Retarded Children, in Buckley, Washington. In the 1970s he began his private practice, helping countless children and families, remaining dedicated to his practice until nearly the end of his life, when his advanced pancreatic cancer made this impossible. He is preceded in death by his wife of 44 years, Carol. He is survived by his children, Lo (Karen), David (Debra), Fran (Jim), Matt (Steve); sister Annette (Irwin); sister-in-law Susan; nephews and nieces Peter (Catherine), Mitchell (Alona), Stuart (Lana), Stefanie, Uma, Leonard (Martha), Stephen (Teresa), Francine (Louis); grandchildren Amanda, Rachel (Nathan), Adam, Nathaniel, Kristen, Tirza, Gabriela, Sam and Max; and beloved Janet and Carly.

1963

Richard E. Bickham of Bay City, Michigan, on December 18, 2009, at the age of 76. Born in Bay City in 1933 to the late Edward and Isabella (Rajewski) Bickham, he graduated from Wayne State University in Detroit and received his medical training at Boston University School of Medicine. He served his residency at Henry Ford Hospital in Detroit and returned to Bay City to practice as an area pediatrician for 37 years. He served with the U.S. Air Force. He is survived by his wife, Dorothy J. Meyerhofer, and leaves three children: Stephan Bickham, Philip (Kathy) Bickham, and Sarah Bickham; two step-children: Michael (Brenda) McKenna and Dianne (Raymond) Kortkowski; six grandchildren: Lori Wackerle, Aerial Bickham, Haley Bickham, Arik Bickham, and Katie Bickham; three brothers: Pat (Joy) Bickham, Larry Bickham, and John (Mary) Bickham; and a sister, Jane Creek. He was preceded in death by two brothers: Jim and Jerry Bickham.

1964

Martha B. Boyd of Reston, Virginia, on March 12, 2010. Born in 1929 in Cranston, Rhode Island, she graduated from Northeastern University in 1959 and, while raising children, earned her medical degree from Boston University School of Medicine in 1964. That year she received a fellowship in pharmacology from the National Institutes of Health and later did her surgical internship at Uni-

versity Hospital in Boston. For most of her career as an anesthesiologist, Dr. Boyd worked in the Boston area. She was director of anesthesia research at the former Boston City Hospital and chief of anesthesiology at Emerson Hospital in Concord, Massachusetts. Dr. Boyd also practiced at Cambridge Hospital in Cambridge, Massachusetts, and taught at Harvard Medical School. Boyd and her husband, Dr. Thomas Fyans Boyd, moved to Reston 20 years ago after her retirement. She is survived by her husband of 62 years; two sons, Stowe Boyd and Al Gresham; a daughter, Tanya Parrish; a sister; a brother; and five grandchildren.

1975

Robert M. Austin of Northampton, Massachusetts, on September 27, 2009, at the age of 60. Born in Wilmington, Delaware, he was raised in Teaneck, New Jersey, and graduated from Dartmouth College in 1971 and Boston University School of Medicine in 1975. He trained at Tufts New England Medical Center and worked at Beth Israel Hospital in Boston before joining Radiology and Imaging, Inc. at Baystate in 1985. He is survived by his wife of 34 years, Elinor Lipman; their son, Benjamin Austin; and his loving mother, Elsie Tobias Austin of Longmeadow.

1993

Laura Weldon Hoque of Washington, D.C., on July 16, 2009. A specialist in breast diseases and surgery, she helped establish Hawaii's first breast center at Kapi'olani Medical Center in 2004. She received undergraduate and master's degrees in biology from Boston College and her medical degree from the Boston University School of Medicine. She completed her surgical internship at the University of Hawaii in 1994 and served as a surgery resident from 1994 to 1997 at Saint Vincent's Hospital. She completed a breast surgery fellowship in 1997 and 1998 at the Memorial Sloan-Kettering Cancer Center in New York City. She leaves behind her husband, Tareq Hoque, and four children.

Alumni Association Phonathons continue to support the School of Medicine

On Tuesday, March 16, 2010, 37 students and six alumni came together for the Spring Phonathon to ask alumni to contribute to the annual fund, scholarships, and student organizations. Combined with totals from the Fall Phonathons in November, \$135,000 was donated to the School from alumni during the three nights of calling.



1



2



3



4

1. Malori Callender '13 reached out to alumni throughout the evening, particularly concentrating on raising funds for the Stethoscopes for Students program.

2. George Aghia '10 and Michael Friedberg '10 called alumni across the country as the sun set over Boston. This was the last Phonathon for George and Michael as student volunteers: both graduated in May and headed off to residencies in family medicine and pediatrics, respectively.

3. The Phonathons do more than fundraise for the School's programs and services. Alumni called classmates to encourage attendance at Alumni Weekend. Howard Ledewitz personally spoke to dozens of his classmates from the Class of 1965 to remind them about their 45th Reunion in the spring.

4. Emily Kidd, Amanda DeLoureiro, and Lee Jamison, members of the Class of 2013, enjoyed dinner before a night of successful calling.

Continuing Medical Education Conferences

September 24 - 25, 2010

Inflammatory Bowel Disease:
The Art and Science in the Diagnosis and Treatment in 2010
Langham Hotel, Boston, MA

October 1, 2010

2010 Head Trauma and the Athlete
Conference Center at Waltham Woods, Waltham, MA
Massachusetts Medical Society

October 15, 2010

Medical-Legal Partnership Advocacy Boot Camp
Location TBD

October 16 & 17, 2010

Pediatric Infectious Diseases in the Headlines
Royal Sonesta Hotel, Cambridge, MA

October 25 - 27, 2010

The 11th International Symposium on Virtual Colonoscopy
Westin Copley Place, Boston, MA

January 2 - 6, 2011

The 27th Annual Conference on Obstetrics, Gynecology,
Perinatal Medicine, Neonatology and the Law
Fairmont Kea Lani Suites, Maui, HI

January 5 - 8, 2011

The 11th Annual Multispecialty Conference on Medical Negligence
and Risk Management in Medicine, Surgery, Emergency Medicine,
Radiology and Family Medicine
Fairmont Kea Lani Suites, Maui, HI

March 25 - 26, 2011

Steven J. Parker Memorial Developmental Behavioral
Pediatric Conference: Clinical Problems in Primary Care
Royal Sonesta Hotel, Cambridge, MA

For more information, please contact:

Continuing Medical Education
Boston University School of Medicine
72 East Concord Street, A305
Boston, MA 02118
Tel: 617-638-4605
E-mail: cme@bu.edu
www.bumc.bu.edu/cme

Calendar of Events

Graduate Medical Sciences Welcoming Barbeque

Talbot Green, BUSM
Monday, August 30, 2010

Alumni Association Fall Phonathon

Hiebert Lounge, BUSM
Thursday, September 23, 2010, 5:30 p.m.

Alumni Association Fall Phonathon

Hiebert Lounge, BUSM
Tuesday, October 5, 2010, 5:30 p.m.

University Alumni Weekend

Young Alumni Reunion/SMED Reception
Friday and Saturday, October 29-30, 2010

Dean's Club Dinner

Board of Trustees Ballroom
BU School of Management
Saturday, October 30, 2010, 6 p.m.

Alumni Association Fall Phonathon

Hiebert Lounge, BUSM
Monday, November 15, 2010, 5:30 p.m.

Match Day

BUSM
Thursday, March 17, 2011, 12 Noon

Chester S. Keefer, MD, Society Dinner

Friday, March 18, 2011

Alumni Weekend

Friday and Saturday, May 13-14, 2011

Commencement Weekend

Friday to Sunday, May 20-22, 2011

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