



“The One Place to Go for All the Answers”

NYU Langone's New Concussion Center Offers State-of-the-Art Care for Head Injuries

One Saturday afternoon last April, 10-year-old Lea Lepiarz was swinging on the uneven parallel bars during gymnastics practice when she lost her grip. Falling to the mat, she smacked her head. Hard. Though she didn't black out, Lepiarz seemed dazed when the gym owner questioned her. “She probably has a concussion,” the owner said to the girl's mother, Lisa Lewis. “Best to take your daughter home. There's nothing else anyone can do about it.”

Or so he thought. The next day, Lepiarz complained of a headache but was adamant about returning to practice. Her mother, a professional circus performer who had practiced and performed through plenty of injuries in her career, reluctantly complied. But when Lepiarz got dizzy performing a simple handstand, Lewis took her home. By Monday, Lepiarz was vomiting. That's when Lewis took her daughter to an emergency room, where she was given a CT scan and a neck brace and told not to resume full activities unless she was symptom free for 48 hours. Anxious for a second opinion, Lewis spoke to a friend, a neurologist, who suggested that she contact NYU Langone Medical Center's Concussion Center. “I finally made the right call,” says Lewis.

When Lea Lepiarz hit her head after losing her grip on the parallel bars, she sustained a concussion and was treated at NYU Langone's new Concussion Center. Among young people, ages 11 to 22, sports-related concussions have increased 60% in the last decade.

The Concussion Center, which opened in March, offers the latest diagnostic tools and research, along with a multidisciplinary team of some 50 clinicians, all experts in the rapidly growing field of concussion science. An estimated 4 million American athletes sustained concussions last year alone. Young people like Lepiarz, ages 11 to 22, are especially at risk. In that group, ER visits due to sports-related concussions have increased 60% in the last decade. The center's mission is to set a new standard of care for head injuries, making it easier for parents to find the best evidence-based treatment for their children.

(continued on page 5)

An Enhanced Culture for Children and Their Families

A \$40 Million Gift Greatly Expands Supportive Services for Pediatric Patients and Their Families

“A child who is sick is not a sick child,” said the speaker. In the world of pediatrics, this is an all-important insight, for it draws a subtle yet profound distinction between treating children who are ill and caring for them comprehensively, between defining a patient by their illness and recognizing that a child with an illness should have a fulfilling life beyond that condition. When pediatricians, nurses, and other pediatric specialists grasp this notion, they are well on their way to becoming true caregivers.

On this occasion, however, the speaker was not a member of the medical community. She is a devoted benefactor of NYU Langone Medical Center, a woman who, with her husband, pledged \$40 million in September to establish the Institute for Family-Centered Care (IFCC). Steadfast supporters of KiDS of NYU Langone for many years, the donors have chosen to remain anonymous to ensure that the spotlight remains solely on our pediatric patients and their families. The institute creates a new model for the care of children and their families by integrating a host of pediatric support services and vastly expanding these resources. The IFCC also advances research initiatives and develops innovative educational programs designed for families and the entire staff. As an example of this partnership model,

(continued on page 7)



John Abbott



From the Dean & CEO

One of the great joys of working at an institution like ours is the opportunity to care for patients of all ages, spanning the entire spectrum of human life.

In July, the youngest and smallest surviving infant ever born at NYU Langone Medical Center (age: 23 weeks, 1 day; weight: 15 ounces) was discharged from our KiDS of NYU Neonatal Intensive Care Unit after four months of tender loving care.

In September, we announced the creation of the Institute for Family-Centered Care, funded by an extraordinarily generous \$40 million gift from anonymous donors. To be housed in the Hassenfeld Children's Hospital, it will be unique in its comprehensive multidisciplinary approach to meeting the psychosocial needs of our pediatric patients.

In March, we opened a world-class Concussion Center, staffed by a multidisciplinary team of some 50 expert clinicians who will set a new standard of care for head

injuries, which are becoming increasingly common among young athletes.

In this issue, you'll also meet a man who, at 87, met the love of his life, with whom he enjoys the activities sponsored by our Pearl I. Barlow Center for Memory Evaluation and Treatment (part of the Silberstein Alzheimer's Institute).

Whatever their age, our patients receive the very best we have to offer, and it truly makes them thrive.

Robert I. Grossman, MD



The Uniform That Really Isn't One

Be They Ever So Humble, Scrubs Symbolize Service at Its Most Noble

If the white coat symbolizes medicine at its purest, another kind of ubiquitous hospital attire, scrubs, represents caregiving at its most humble. At NYU Langone Medical Center, some 1,500 employees—nearly 10% of our community—routinely wear scrubs, named for the practice of “scrubbing” the hands before donning gloves to perform surgery or assist in surgical procedures. The policy is for all surgical personnel to wear a white coat over their scrubs when outside the OR. “You never want to run out of scrubs,” says Joe Mraz, associate director for building services, who is responsible for linens and uniforms. “It’s expected that they’ll be there when needed.”

Typically a short-sleeved V-neck shirt and drawstring pants made of a lightweight, water-repellent, wrinkle-resistant cotton/polyester fabric, scrubs are designed to launder easily, be replaced inexpensively, and have a minimal number of places for dirt to hide. Despite the absence of conclusive scientific evidence that they reduce the spread of infections, today’s versions are bacteriostatic, neutralizing and inhibiting the growth of bacteria. They’re also engineered to wick moisture away from the skin, minimizing sweat and discomfort.

Every day, the Medical Center sends about 500 pairs out to be sterilized. The garments are subjected to an oxygenated bleach and softener at 145° F for 35 minutes. Scrubs endure only about 25 trips to the cleaners because the bleach discolors them and breaks down their fibers. Their life expectancy, on average, is about 10 weeks.

Linen workers inspect freshly cleaned scrubs to ensure that they meet the highest standards of hygiene. Next, they match pants with shirts, roll them up, and slide them into dispensing units, each holding up to 120 sets. When staff members poke in a code and select a size—from XXS (under 5 feet tall, less than 100 pounds) to 6XL (over 6 feet 4 inches tall, more than 300 pounds)—out pops a set, primed for action.

At NYU Langone Medical Center, some 1,500 employees—nearly 10% of our community—routinely wear scrubs.

Scrubs became standard attire in American hospitals in the 1950s, but their history dates back to the 19th century. What is believed to be the first mention of scrubs appeared in 1894, when Hunter Robb, MD, of Johns Hopkins Medical School, advocated the use of “a complete change of costume rather than to simply don a sterilized coat and pair of trousers over the ordinary clothing” as an antiseptic method. He also suggested that these “suits” be made of white twilled muslin—in stark contrast to the black Prince Albert-style coat surgeons wore over their street clothes. These garments, stored in a closet in the operating amphitheater, were rarely, if ever, cleaned. In fact, one of the hallmarks of a busy, successful surgeon was the profusion of dried blood and pus on his garments.

By the first decade of the 20th century, the use of a gown, cap, mask, and gloves had begun to gain acceptance for surgeons, assistants, and the sterile (scrub) nurse, and surgical apparel and drapes were made of white all-cotton fabric. In 1914, Harry Sherman, MD, an orthopaedic surgeon who was one of the founders of the American College of Surgeons, observed that the ubiquitous whiteness of the surgical suite—uniforms, sheets, drapes, towels, gauze, even walls—created a disturbing glare for the surgeon, whose eyes were fixed on bright red blood and tissue for many hours, with no visual relief to be found.

Reasoning that green is a complementary color to red, Dr. Sherman chose the hue of the spinach leaf as a foil to hemoglobin, and he had one of the operating pavilions at St. Luke’s Hospital in San Francisco, where he was on staff, decorated and equipped accordingly. Before long, spinach-leaf green became all the rage in surgical suites across the country.

Scientists have since confirmed Dr. Sherman’s instincts. Shades of green and blue not only keep the surgeon’s eyes keen to red and pink, but also reduce glare, relieve strain, and help calm the mind and soothe the senses. But no matter the color, scrubs, be they ever so humble, symbolize service at its most noble.

New Imaging System at CMC Boasts Multidimensional View of the Skeleton with Minimal Radiation

From the moment he laid eyes on the advanced imaging system called EOS® at a conference in Montreal several years ago, Thomas Errico, MD, professor of orthopaedic surgery and chief of the Division of Spinal Surgery, was smitten. For the first time, he realized, orthopaedic surgeons and radiologists at the Center for Musculoskeletal

Care (CMC) at NYU Langone Medical Center would be afforded an excellent two- or even three-dimensional weight-bearing view of the patient’s entire skeleton, from all angles.

This comprehensive view of spine and joint alignment enables physicians to assess deformities more accurately. In the world of orthopaedic surgery, where repeated X-rays are often needed, a device that can provide vivid images using 9 times less radiation than standard X-rays and 20 times less than a CT scanner has vast implications. “It’s an important new tool for patients,” explains Dr. Errico, “particularly younger ones who need X-rays every three to four months. Parents who brought their children to my scoliosis clinic in New Jersey were so interested in low-dose X-rays that they would drive into Manhattan just to take advantage of this new technology.”

The patient enters a tall open booth, raises their hands over their head or to their shoulders, and exits 20 seconds later (for children, about 10 seconds later). The imaging is performed by two X-ray tubes and detectors positioned at right angles to one another, moving vertically over the defined body area. The result is three-dimensional weight-bearing images of superior quality. Among the virtues of this technology are that it allows simultaneous frontal and lateral full-body images and that it eliminates the vertical distortion common with traditional radiographs.

Leon Rybak, MD, assistant professor of radiology and vice chair of operations for the Department of Radiology, explains that the reduction in dosage is based on a patented technology developed in France that earned its inventor the Nobel Prize for physics. He notes that only a handful of medical centers on the East Coast have this technology.

A full body scan, explains Dr. Errico, is particularly useful for spinal issues, which can relate to problems in the hips and knees. “It makes me a better diagnostician and surgical planner,” he insists. He cites the case of a woman who sought his opinion after two other surgeons recommended two different spinal procedures. “I was able to see her spine and hips on the same image,” he recalls, “and realized what she had was severe arthritis in one hip. ‘You don’t need spine surgery,’ I told her. ‘You need a hip replacement.’ ”





Master of the Microscope

John Abbott

Dr. Farbod Darvishian, associate professor of pathology.

A Day in the Life of Pathologist Farbod Darvishian, MD

After earning his MD in Iran, Dr. Farbod Darvishian, associate professor of pathology, completed an anatomic and clinical pathology residency and three clinical fellowships in New York City to hone his skills in detecting abnormalities in a broad range of cells and tissues, and to fine-tune his subspecialty in breast pathology. Examining breast tissue under a microscope for often subtle signs of disease can be a daunting task, but Dr. Darvishian is known for having what pathologists call a “great eye” for the right diagnosis. One part of his job includes cytopathology, in which he helps diagnose patients based on the visible characteristics of individual cells extracted during needle biopsies. But Dr. Darvishian, one of 20 diagnostic pathologists at NYU Langone Medical Center, devotes most of his time to surgical pathology, scrutinizing the appearance of larger tissue samples. “With cytopathology, you look at a tree in the forest,” he says. “With surgical pathology, you look at the entire forest.”

dozens or even hundreds of slides of tissue samples to ensure that surgeons have removed all evidence of cancer and to guide the patient’s postsurgical treatment. This set of slides has been stained to indicate the relative abundance of several biomarkers—proteins that serve as signposts to reveal key features of the cancer. Dr. Darvishian carefully records his observations of each biomarker. Collectively, these biomarkers predict the response to therapies such as tamoxifen and trastuzumab.

2:40 p.m. Pathology resident Fumiko Konno, MD, meets with Dr. Darvishian to review four cases they’ve studied independently. This collaborative process, Dr. Darvishian explains, gives pathologists critical experience in learning the subtleties of diagnosing cancer. A preinvasive form of breast cancer, known as ductal carcinoma in situ (DCIS), can be a particularly tricky diagnosis. Commonly associated with calcifications that appear like tiny pebbles on X-rays, the cellular abnormalities aren’t always readily apparent. Using a multiheaded microscope that allows both pathologists to peer at the magnified samples, he guides Dr. Konno through the first series of slides. Dr. Darvishian had diagnosed DCIS, but only after ordering additional cross-sectional cuts of the sample to get a better view of a tissue anomaly. “At first, it looked benign,” he says. “Then, a few slides later, I ran into this. How would you approach this?” he asks Dr. Konno. “What do you think this is?” So begins the latest lesson in life-and-death decision making.



8:15 a.m. The seventh floor at the Skirball Faculty Practice is mostly dark, except for Dr. Darvishian’s office. He has arrived early to stay in synch with the operating room timetable at Tisch Hospital. In a pathology command center on the hospital’s fourth floor, he will oversee two pathology residents as they make initial diagnoses and conduct more extensive follow-ups for all breast tissue samples removed by surgeons. For high-priority cases, his team will try to deliver a preliminary diagnosis within 20 minutes, while the surgeon awaits guidance on how to proceed. “Although we don’t see patients directly,” he says, “we take part in patient care very directly.”

9:12 a.m. Dr. Darvishian and one of his colleagues discuss a complicated case in which a patient’s lung biopsy had drawn a preliminary diagnosis of early-stage lung carcinoma. Dr. Darvishian’s review suggested

otherwise, and in a subsequent meeting held to reach a consensus, other pathologists concurred with him that the abnormal tissue most likely reflected long-standing inflammation from pneumonia. “I’m sure the patient will be elated to hear that he doesn’t have cancer,” says Dr. Darvishian. He seems pretty relieved himself.

9:50 a.m. On the fourth floor of Tisch Hospital, in the specimen receiving and grossing room, a lung tissue biopsy arrives via a modern dumbwaiter. For each of today’s 17 cases, surgeons will send the tissue here for initial analysis. A resident immediately paints each side of larger tissue samples, mostly breast specimens, with inks of different colors to keep track of the original orientation. Then, she flash-freezes the samples and cuts them into razor-thin slices that are affixed to microscope slides. Blue and pink dyes stain the nucleus and cytoplasm of each cell, respectively, helping to point out any anomalies. “For me, the most important thing is to have a good photographic memory,” says Dr. Darvishian. “If my eyes are accustomed to patterns of normal tissue, then if that pattern is disturbed, I can pick it up as something abnormal.” Switching among microscope lenses that magnify the tissue 40, 100, and 400 times, Dr. Darvishian finds what he’s looking for. It’s not cancer, but a lung nodule that is again most likely due to pneumonia-linked inflammation. A call goes out to the surgeon, informing him of the results.

11:25 a.m. Back in his office, Dr. Darvishian examines a set of slides from a patient diagnosed with invasive ductal carcinoma, the most common form of breast cancer. On busy days, he may take on 20 breast cancer cases, each of which may require him to review





Cardiology Comes to Cortlandt Manor

A World Away from the Hustle and Bustle of Midtown, Hudson Valley Ambulatory Care Center Flourishes

There were plenty of reasons for Sally Conklin, an 82-year-old resident of Peekskill, NY, to like the soft-spoken cardiologist who came to visit her in the hospital shortly after she suffered her first heart attack. Glenn Hamroff, MD, clinical assistant professor of medicine, was, she says, a “handsome-looking guy” with an affable manner who sat down next to her bed and patiently answered all her questions in plain English. But the best reason came several weeks later, during one of her daily follow-up visits to see Dr. Hamroff at Hudson Valley Cardiology in Cortlandt Manor, NY, one of NYU Langone Medical Center’s

off-campus ambulatory care centers. Conklin insists she felt fine that day, but the young doctor took one look at Conklin’s EKG and realized she was in the throes of a second heart attack. Conklin was rushed by helicopter to a nearby medical center.

That was seven years ago. Under the supervision of Dr. Hamroff, Hudson Valley’s medical director, and his colleagues, whom she now sees every three months, Conklin has been incident free ever since. “They told me, ‘Take your medication, watch your diet, and you will live another 20 years,’ ” she says. “They take good care of me.”

Dr. Glenn Hamroff, clinical assistant professor of medicine, is director of Hudson Valley Cardiology.

Conklin is one of more than 4,200 patients who were served by Hudson Valley Cardiology last year, a number that continues to grow as word spreads throughout Westchester, Rockland, Putnam, and Dutchess Counties. The practice was first established in 1984 by Richard Becker, MD, clinical assistant professor of medicine, who “basically brought cardiology to the area,” says Dr. Hamroff. Today, the practice consists of seven cardiologists who offer various invasive and noninvasive services for cardiac testing, diagnosis, and treatment. In keeping with its mission of offering patients top-notch medical care close to their homes, the practice has satellites in Putnam Valley, Cold Spring, and Pawling. To keep up with the growing demand, the practice recently moved its Cortlandt Manor headquarters into spacious new offices.

Hudson Valley Cardiology seems a world away from the hustle and bustle of NYU Langone’s Midtown Manhattan campus. The parking lot behind the complex is lined with trees blooming with fragrant white buds, and nearby is a reedy marshland inhabited by geese and chirping birds. Even as the practice grows, patients like Conklin feel it still has a personal touch. For her, a visit to the center’s spacious new waiting room, with its granite counters, leather couches, and muted color palette, is like a visit to the local hairdresser or nail salon: a chance to catch up with old friends and trade bits of gossip. In the waiting room, she recently ran into an old high school chum she hadn’t seen in more than 50 years. He too was a patient and, like Conklin, raved about his experience.

“They know their stuff,” she says. “How am I sure? Because I’m still here.”

Treasures Lost and Found

At the Pearl I. Barlow Center for Memory Evaluation and Treatment, Patients with Faltering Memories Can Discover Some of Life’s Most Precious Gifts

Two years ago, at age 85, Leonard Trent acknowledged that he’d had “a full life, but not an especially happy one.” As a marine in World War II, he earned a Purple Heart for shrapnel wounds to his head and knees. Back home, he sufficiently recovered to pass the NYPD physical and serve honorably as a patrolman for 20 years. Along the way, he made the best of a troubled childless marriage while pursuing solo interests, such as bodybuilding.

After his wife died, he moved to a smaller apartment in the same East Side high-rise and prepared to make the most of whatever time he had left. Trent was friendly with a few neighbors, but when he came home one afternoon and saw three people on his couch, none of them looked familiar. “Who are you?” he asked. “What are you doing here?”

No one was there. He was all alone.

“Hallucinations are symptomatic of Lewy body disease, the second-most-common form of dementia after Alzheimer’s disease,” explains James Galvin, MD, professor of neurology, psychiatry, and population health, and director of NYU Langone Medical Center’s Pearl I. Barlow Center for Memory Evaluation and Treatment (part of the Silberstein Alzheimer’s Institute), where Trent was sent for evaluation and care. Parkinson’s-like features are also common.

“The problem with Lewy body,” adds Dr. Galvin, “is that the medicines that reduce the hallucinations often worsen the Parkinson’s symptoms, and vice versa. It’s a very delicate interplay to find the right balance for patients—and their caregivers.”

Trent benefited almost immediately from such medications as Namenda and the Exelon patch. The hallucinations were gone, and the Parkinson’s symptoms barely noticeable. “Mr. Trent was very fortunate,” notes Dr. Galvin. “Not everyone has such a rapid and robust response without any noticeable side effects.”

At 87, Trent seems to be on the luckiest streak of

his life. He was introduced to a neighbor in his building, Phyllis Bowling, a 77-year-old former hotel executive, who “has become the love of my life,” he gushes, as well as his caregiver. With Bowling’s support, Trent takes full advantage of Barlow’s multidisciplinary approach, which includes nutritional counseling, exercise, social activities, and psychological support.

“The center provides the most progressive diagnostics, technologies, treatments, and research,” says Yael Zweig, NP, a nurse practitioner at Barlow. “Our mission is to measurably improve the quality of life for a wide range of people living with dementia and their caregivers using a multidisciplinary model of care.”

In addition to Alzheimer’s disease and Lewy body disease, the center also treats all types of neurodegenerative disorders, including mild cognitive impairment, vascular dementia, and variations of frontotemporal degeneration. It is estimated that nearly 10% of all people over age 65 and up to 50% of those over age 85 suffer from some form of dementia.

The entire spectrum is present every Thursday during social worker Ursula Auclair’s group session. “Our group is very representative of the Barlow population,” she says. “We have about 15 regular participants, ranging from 70 to 87. Our oldest member, Leonard Trent, may be the highest functioning. He’s very engaging and encouraging to the others. We also have patients with more advanced forms of their disease who may struggle to keep up but, on occasion, will surprise us with an insight or comment.”

At the end of the session, 22 of the Barlow Center’s patients and caregivers unite to give common voice—literally—to a mutual interest: music. They’re members of the Unforgettables, a choral group that meets every week to practice for performances given throughout the year at St. Peter’s Church, located at the base of the Citicorp building in Midtown Manhattan. Mary Mittelman, DrPH, research professor of psychiatry, who



Leonard Trent and his caregiver, Phyllis Bowling.

founded the chorus, believes that “familiar music from the past can calm people with dementia, increase socialization, and decrease the need for drugs.”

The acknowledged star of the group is Leonard Trent, whose pitch-perfect tenor strikes the right notes on standards like “Our Love Is Here to Stay,” “Begin the Beguine,” and “Stars in My Eyes.” “Leonard never knew he could sing,” says Auclair. “In fact, he had so many talents that were untapped for much of his life. Here’s a man whose world has changed for the better after being diagnosed with Lewy body.”

Or as Trent likes to say, with a twinkle in his eye: “I’m the luckiest guy in the world. I feel like a kid again. I’m in love, and I finally found my voice.”

Healing with All of His Heart

With Bad Habits, Joe Cozzocrea Nearly Killed Himself. With Sheer Willpower—and Help from the Joan and Joel Smilow Cardiac and Pulmonary Rehabilitation and Prevention Center—He Staged an Amazing Comeback.

Joe Cozzocrea remembers well the lifestyle that nearly killed him: two packs of cigarettes a day, copious junk food, and an utter disregard for exercise. He also remembers attending a New York Rangers game two years ago at Madison Square Garden and feeling discomfort in his chest as he left with a friend. What he has *no* memory of is collapsing on the floor in his Midtown Manhattan office the next day, the two coworkers who frantically administered CPR until paramedics arrived, or the team at NYU Langone Medical Center that performed lifesaving angioplasty and stenting of his occluded arteries.

“I just remember waking up in the hospital and seeing all these tubes attached to me,” says Cozzocrea, who was turning 50 at the time. “I was scared, naturally, but I was also resolved never to put myself in that position again.”

He found an equally committed partner in the Joan and Joel Smilow Cardiac and Pulmonary Rehabilitation and Prevention Center. After spending a week recuperating at Tisch Hospital, Cozzocrea was admitted to the center’s seven-day inpatient cardiac rehabilitation program, followed by a 12-week outpatient program, both orchestrated by Rusk Rehabilitation and the Leon H. Charney Division of Cardiology.

“Joe is a remarkable man who essentially died at his desk and managed to stage a full recovery,” says Jonathan Whiteson, MD, assistant professor of rehabilitation medicine and medicine, and the center’s co-medical director, who was part of Cozzocrea’s multidisciplinary treatment team. “I’m delighted to say he’s representative of many of our patients.”

Every year, about 785,000 Americans suffer a heart attack. Another 470,000 have a second or third. Studies have shown that programs that move patients seamlessly from treatment or surgery to recovery and maintenance cut mortality rates by 25%. Rusk’s research shows that rehab participants have fewer recurrent cardiac episodes than those with no follow-up.

“From our perspective, as soon as a stent’s been implanted, we’re ready to start cardiac rehab,” explains Dr. Whiteson. “That doesn’t mean these patients should be running on a treadmill immediately, but they *should* be out of bed.”

Cozzocrea went through the paces of inpatient rehab like a man on a mission. Wearing a telemetry unit that continuously monitored his heart rate and other vital signs, he spent 90 minutes in the cardiac gym each day on a treadmill, exercise bike, or elliptical machine, all under the watchful eye of specially trained nurses and a supervising physician. He worked one-on-one with physical therapists, exercise physiologists, and nutritionists as part of a customized treatment plan to ensure that he didn’t repeat the mistakes of the past.

At the conclusion of the inpatient program, Cozzocrea transitioned to outpatient rehab without missing a beat. The emphasis at these three-day-a-week hour-long group support sessions was on reinforcing not just the physical, but also the behavioral and emotional pillars of healthy living. “The rehab specialists at Rusk had an amazing ability to motivate and educate,” recalls Cozzocrea, an accountant who lives in The Bronx. “In my case, that made all the difference in the world.”

With its 22-bed inpatient unit in the Schwartz Health Care Center and a new outpatient facility at NYU Langone’s Ambulatory Care Center on East 38th Street, the Cardiac and Pulmonary Rehabilitation and Prevention Center provides the largest and most sophisticated program of its kind in the Northeast. Launched in 1991, the program boasts a tight working relationship with NYU Langone’s cardiac and vascular specialists and Rusk’s rehabilitation specialists.



After surviving a massive heart attack, Joe Cozzocrea dedicated himself to regular exercise and a healthy diet, which have enabled him to shed more than 100 pounds.

“Typically, a cardiac rehab program is supervised by cardiologists,” explains Ana Mola, RN, ANP, the center’s program director. “But we felt a marriage between cardiology and physiatry would be the best way to provide comprehensive care because it allows us to treat medically complex patients.”

Few success stories are more impressive than Cozzocrea’s. When he reports to work, it’s never without a gym bag—a nod to the rigorous, hour-long cardiovascular workout he does each day at a nearby gym. The fact that he also walks regularly, eats a healthful diet, and has sworn off cigarettes (thanks to the center’s smoking cessation program) is evident in the more than 100 pounds he’s shed.

“If I didn’t have someone coaching me about my health, I’m sure I would have gone back to my old habits,” says Cozzocrea. “Without that program, I wouldn’t be here.”

Concussion Center *(continued from page 1)*

“No other place has the number of qualified practitioners, and such a communicative process,” says Dennis Cardone, DO, associate professor of orthopaedic surgery, chief of primary care sports medicine in the Department of Orthopaedic Surgery, and one of the center’s three codirectors, along with Steven Flanagan, MD, the Howard A. Rusk Professor of Rehabilitation Medicine and chair of the Department of Rehabilitation Medicine, and Laura Balcer, MD, professor of neurology and vice chair of the Department of Neurology. “We’re always talking, meeting on cases, trying to stay ahead of the curve,” adds Dr. Cardone.

On the initial intake over the phone, a nurse asked Lewis a series of questions. Mara Sproul, RN, the center’s program manager, followed up with Lewis to ask and answer any remaining questions. In almost all instances, patients are advised to see a specialist in one of three main disciplines: sports

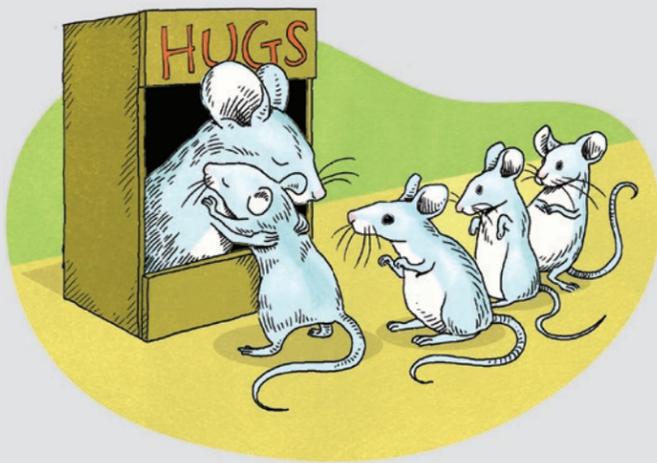
medicine, neurology, and neuropsychiatry. “Based on Lisa’s answers, and the fact that the injury occurred during an organized athletic activity,” explains Sproul, “we determined that Lea should see Dr. Cardone, a specialist in sports medicine with expertise in treating children.”

In contrast to the advice Lewis received at the ER, Dr. Cardone recommended a minimum of 14 days of rest—no TV, computer, or video games, all of which can prolong the recovery process. “The brain is already swollen from the first injury,” says Cardone. “If another trauma occurs, there is no more room for swelling. That pressure can have serious consequences.” A study recently published in the journal *Pediatrics* showed that children and young adults who had suffered more than one concussion in a year took up to 28 days to recover, about two weeks longer than those who had suffered a single concussion.

Unfortunately, there is no simple test to

definitively diagnose a brain injury or to differentiate a concussion from a more serious traumatic brain injury. Brain scans can help detect bleeding or fractures, but they cannot confirm a concussion. Due to the radiation exposure, Dr. Cardone rarely recommends CT scans for children. Only a physician can diagnose a concussion, he insists. He relies on a thorough physical and cognitive exam, observation of the patient’s symptoms, and an understanding of the incident that led to the injury.

Under Dr. Cardone’s expert guidance, Lepiarz made a full recovery, and nearly 21 days after her precipitous fall, resumed all activities. Back at the gym, Lewis was eager to share her experience with the owner and parents. “There is something they can do if someone hits their head,” she says, pointing to the Concussion Center’s number tacked up on the bulletin board. “I tell them that it’s the one place to go for all the answers.”



For Children Who Have Tonsillectomies, Why Less Is More

For American youngsters from the 1940s and well into the 1960s, a tonsillectomy almost amounted to a rite of passage. Each year, between 1.2 and 1.4 million children had the two oval-shaped masses of tissue that sit on each side at the back of the throat removed, mostly to counter the bedeviling sore throats and spiking fevers that attended recurrent infections. Now, however, antibiotics tame a large portion of such infections, so tonsillectomies among children have dropped precipitously to less than 700,000 annually. As the operation has waned as a means of preventing infection, though, it is becoming increasingly popular—in children as well as adults—for another purpose: to cure breathing problems.

“The tonsils can be so large—as big as ping-pong balls—that they obstruct the airways,” says Scott Rickert, MD, assistant professor of otolaryngology, pediatrics, and plastic surgery, and director of pediatric otolaryngology at NYU Langone Medical Center.

Tonsils normally reside comfortably within pillars of muscle at the sides of the throat, but sometimes they bulge outside these capsules and across the pharynx, blocking air to the trachea, or windpipe. “The swelling may be caused by intractable persistent inflammations,” explains Dr. Rickert, “but they also may be caused by simple, natural growth. There is some speculation, but no proof, that rising levels of obesity may be aggravating tonsil expansion and airway problems.”



Obstructed breathing results in interrupted sleep. “Children wake up gasping for air,” Dr. Rickert says. “They can’t get into deep sleep, and so they toss and turn all night. They have night terrors, even wet the bed. During the day, they doze off in class, have difficulty concentrating, and turn irritable.”

To help patients whose breathing problems result from bulging tonsils, Dr. Rickert and his colleagues at NYU Langone perform a variation of the conventional tonsillectomy. Rather than remove all of the tonsils (still the standard when they’re infected), they take out only 85 to 95%. This partial tonsillectomy, also known as tonsillotomy or intracapsular tonsillectomy, is actually a revival of a pre-1940s technique that was abandoned by surgeons, who feared that leaving behind any tissue set the stage for infection. “Most surgeons still do total tonsillectomies for all cases,” says Dr. Rickert, “but a rolling minority are turning to partial tonsillectomy for patients with obstructed airways.”

Various methods—laser, harmonic scalpel, electrocautery, radiofrequency ablation—are used to reduce the size of the tonsils. “At NYU Langone,” explains Dr. Rickert, “we use a microdebrider, a device with a rotary blade that shaves away tissue.”

By retaining 5 to 15% of tonsil tissue, explains Dr. Rickert, youngsters experience less bleeding and less pain, and enjoy a speedier recovery. “They’re off a liquid diet and back to normal eating, speaking, and activities in 5 to 7 days—compared to 7 to 12 days with total tonsillectomies,” he notes. “We’re always striving to get the most benefit with the least amount of risk, and partial tonsillectomy is an excellent operation.”

Better Mothering through Chemistry

Robert Froemke, PhD, assistant professor of otolaryngology, and neuroscience and physiology, shows a video of a female mouse retrieving a newborn pup from across the cage. “She’s being alerted by the pup’s high-pitched call,” says Dr. Froemke. The mouse, guided by the cry, locates the pup, picks it up by the scruff of the neck, and deposits it back in the nest. The mouse doing the retrieving, however, isn’t the pup’s mother, but a virgin female who was put in the same cage with the mother and her offspring.

“When such females are first placed with pups, they won’t respond to their cries at all,” notes Dr. Froemke, a Pew Scholar supported by the Pew Charitable Trust. Eventually, they tend to learn retrieval behavior by observing mothers, but this normally takes days. In this case, however, the virgin was retrieving like a veteran within hours. The reason: an infusion of the hormone oxytocin into the mouse’s left auditory cortex, the region of the mouse’s brain that recognizes a pup’s cries. “Infusing oxytocin dramatically speeds up the learning process for these animals,” Dr. Froemke explains. In one experiment, 10 of 12 virgin females were retrieving within 12 hours after an infusion, compared to 2 of 8 in a control group.

Dr. Froemke’s lab studies neuroplasticity, the brain’s ability to adapt as we learn. He and his colleagues are finding that oxytocin, a neurochemical manufactured in the brain’s hypothalamus, plays a key role in learning social behaviors. Some years ago, oxytocin was labeled the “cuddle chemical” when scientists discovered that in humans, it promotes feelings of contentment and security in the presence of one’s mate and surges during romantic and sexual encounters. More recently, it’s been linked to self-centered behavior, with studies showing that it encourages gloating and increases affinity for one’s own ethnic group in threatening situations. The hormone is also strongly associated with maternal behavior, including bonding with offspring and defending them from predators.

To Dr. Froemke and his fellow neuroscientists, these apparent contradictions make perfect sense. “Oxytocin is a neuromodulator—it modifies other neural input,” he explains. “We hypothesize that it enhances social stimuli, making them register more strongly.” Oxytocin, in other words, amplifies social impulses you’re already feeling, drawing one closer to a lover or newborn child, but also strengthening allegiance to one’s self or social group in the face of external threats. By using electrodes to measure oxytocin’s effect on individual neurons, Dr. Froemke’s lab has shown that it enables neurons to fire more readily when stimulated by various inputs, making it easier to trigger related behaviors, such as retrieving a lost mouse pup.

Oxytocin’s influence appears greatest when new social behaviors are being learned. Once virgin mice learn to retrieve pups, they continue doing so even when oxytocin activity in their brains is blocked. This finding points the way to possible short-term treatments for certain disorders. Plans are under way, for example, to test oxytocin on individuals with autism-spectrum disorder, who typically have low levels of this chemical. But Dr. Froemke cautions that “as oxytocin treatments emerge, we need to be careful about the therapeutic environment and the counseling subjects receive. When you give someone a drug that heightens social stimuli, like oxytocin, these things matter—a lot.”

Unraveling the Mysteries of Regeneration

The human liver can regrow itself from only one-fourth of its tissue, but that’s not the only part of our body capable of regeneration. If we lose a fingertip, it typically grows back—bone and all. Mayumi Ito, PhD, assistant professor of dermatology in the Ronald O. Perleman Department of Dermatology, has long been fascinated by such mysteries. As a graduate student, she worked with newts that were capable of regrowing entire limbs, making her ponder the phenomenon. “I wondered why mammals could not do this,” she says.

Dr. Ito and her team of researchers solved one big piece of the puzzle when they reported in the journal *Nature* that stem cells near the base of the nail help promote the tissue and bone formation necessary for digit regeneration. (Stem cells are cells that can differentiate into a variety of tissue types.) In their experiments, the researchers amputated the digits of mice at varying distances from the tip. In general, digits that were only partially amputated grew back, while the stumps where digits were removed entirely did not show any evidence of regeneration. By tracking cell growth and differentiation, Dr. Ito began to understand why the mice showed such different recovery patterns. Mice that had only part of their



digits amputated—roughly equivalent to a person losing a digit halfway down the nail—still possessed nail stem cells.

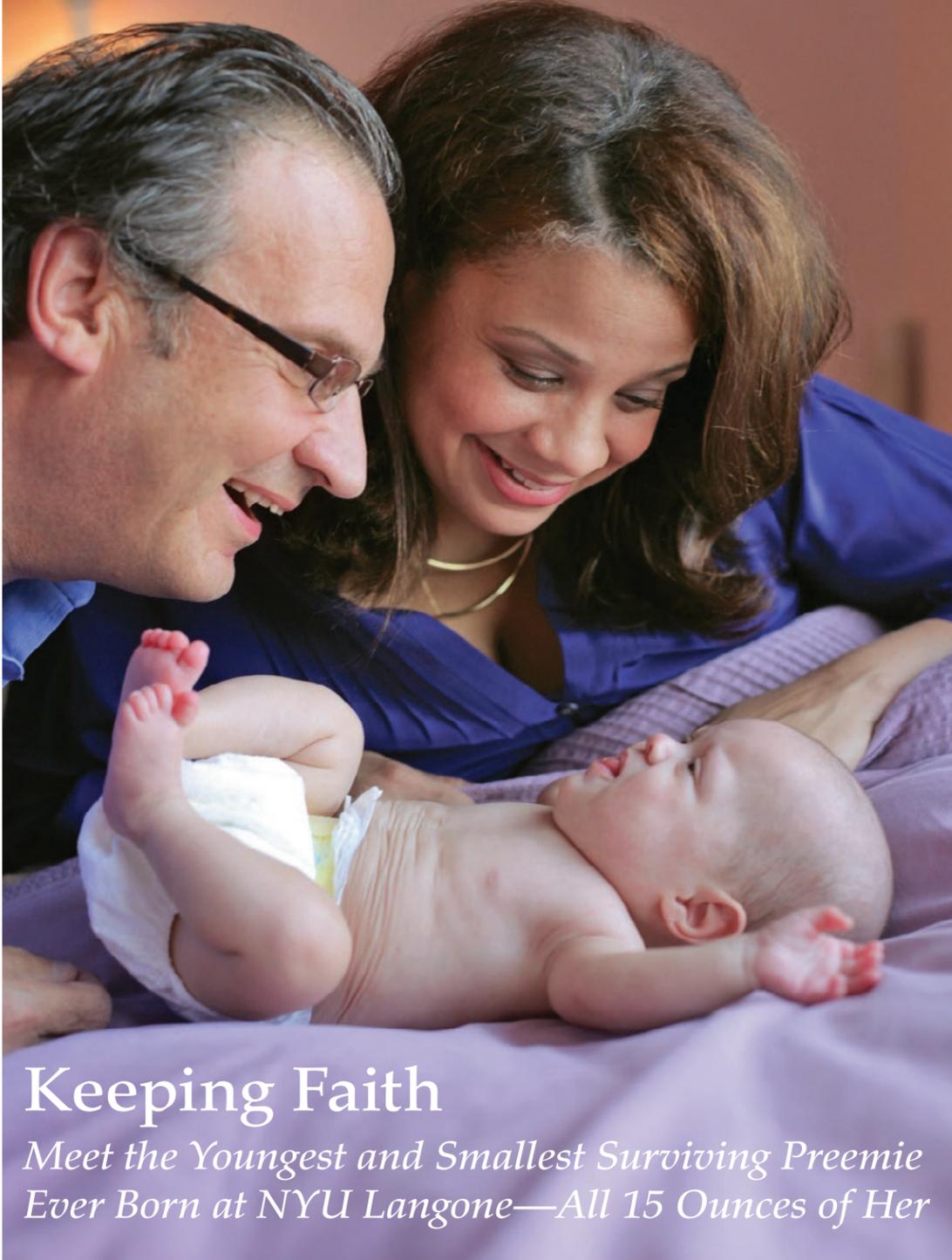
But that was only part of the explanation. Dr. Ito also found that digit-tip regeneration depends on Wnt proteins. Nail stem cells express these proteins, which were already known to be crucial in controlling embryonic tissue generation and, later on, hair growth. These proteins transmit continuous biological

signals that allow nails to keep growing throughout an animal’s life. Ultimately, the same cells that coordinate nail growth also determine whether a lopped-off digit regenerates.

In mice that had their entire digit cut off, toe stumps showed a basic wound-healing response instead of growing back completely. “If we remove the entire nail,” Dr. Ito says, “no regeneration can be induced.” However, when genetic engineering was used to force production of Wnt proteins in mice with entire toes removed, the bone and tissue began to grow back, indicating that such interventions can coax removed digits to regenerate.

In future experiments, Dr. Ito plans to isolate the nail stem cells and grow them in the lab so that she can implant them to encourage Wnt protein signaling in mice that have had entire digits amputated. Her goal is to stimulate a regenerative pathway that normally operates only when a small part of a digit is missing. If this technique works, a similar strategy could be tried in people who have had digits amputated due to diabetes, cancer, or trauma. “Mammals may retain some mechanisms that are utilized for amphibian limb regeneration,” says Dr. Ito. “We still have the ability to partially activate those pathways.”

Richard Abrams, Marie Massey, and their daughter, Faith, who is thriving beyond everyone's expectations.



Keeping Faith

Meet the Youngest and Smallest Surviving Premie Ever Born at NYU Langone—All 15 Ounces of Her

John Abbott

ing tube they had into Faith's tiny lungs, and hooked her up to a ventilator that delivers 100% oxygen. One of her lungs collapsed that first night, requiring the insertion of a chest tube. But at dawn the next day, she was still alive.

"Every day at 4:43 p.m., the time Faith was born, I said, 'Thank you for another day,' " says Massey, who for weeks was not allowed to touch her daughter as she lay in an incubator. Tisch's NICU, a Regional Perinatal Center, cares for more than 600 of New York City's sickest newborns annually, and Faith was one of its most vulnerable patients ever. "For several weeks," Massey recalls, "the doctors warned me about brain bleeds and seizures and all the things that could go wrong. But I really felt that everything would be okay."

One challenge after another tested Faith. At two weeks of age, she needed crib-side surgery to close a heart valve, which should have closed itself soon after birth, as it does in full-term infants. While she avoided the worst complication of extremely premature infants—intraventricular hemorrhage, or bleeding in the brain, which affects 25% of premies and usually causes permanent neurological damage—Faith did develop retinopathy of prematurity, one of the leading causes of blindness in children. Laser surgery was used to stop the aggressive disease from causing lasting damage. One thing on Faith's side was her gender: premature girls have a significantly higher survival rate than boys, perhaps due to the effects of estrogen on lung maturity.

After a few rocky weeks, "feisty Faith," as one nurse nicknamed her, settled into a routine, though for some time she wasn't allowed to suck or become stressed or overstimulated, which burned crucial calories. But she received plenty of TLC from her parents, nurses, and eventually, when flu season ended, her big brother and sister. Once Faith reached the two-pound mark and was off the ventilator, Massey coached her husband as he held his daughter for the first time—against his bare chest, just as she did, a therapeutic touch known as kangaroo care. Every weekday, Massey visited during her lunch hour. "We kept our connection to each other," she says. "There were days when I felt so low, and Faith brought me up. There were other days when she wasn't feeling so great, and I would lift her up."

On July 7, four days after her actual due date, Faith Abby Abrams was discharged from Tisch Hospital with the proud distinction of being the smallest and most premature baby ever to survive at NYU Langone. At 5 pounds, 2 ounces, she looked like any other infant squirming in a car seat. Her harrowing entry into the world will keep her at risk for lung infections, but her survival, caregivers say, is "amazing" and her outlook is "excellent."

On March 7, 2013, just 23 weeks and 1 day into her pregnancy, Marie Massey began to feel so ill during her morning commute from Princeton, New Jersey, to Midtown Manhattan that she considered asking the conductor to stop the train to let her off. With two older children—a 20-year-old daughter and 12-year-old son from an earlier marriage—Massey soon recognized the unmistakable signs of labor, but she told herself it couldn't be true. Not four months early!

At NYU Langone Medical Center's Tisch Hospital, the situation quickly escalated. A bacterial infection in Massey's placenta, one of the most common causes of premature birth, meant the delivery could not be stopped or slowed. Michael Espiritu, MD, assistant professor of pediatrics, a neonatologist in the KiDS of NYU Neonatal Intensive Care Unit (NICU), arrived at Massey's bedside to discuss the baby's poor prognosis with her and her partner, Richard Abrams. Infants born before 24 weeks, the limit of viability, have a survival rate between 10 and 20%. Less than

5% survive without serious lifelong cognitive and physical deficits. "As I was talking," explains Dr. Espiritu, "her water broke. Two minutes later, the baby was on the bed." A faint cry sounded and the newborn gasped for air.

This baby symbolized a new life for Massey, 42, and Abrams, who at 56 looked forward to his first child, conceived by in vitro fertilization. Even through her mother's eyes, Faith—named for the reassuring dream Massey had the morning she gave birth—hardly looked like a baby at all. Weighing 15 ounces—less than a loaf of bread—she had bright red, translucent skin that showed the blood vessels just underneath. Fragile, with severely underdeveloped organs, she spent her first hours in extremely critical condition. Doctors had no time to administer steroids before birth to boost the level of surfactant in her lungs, a substance needed to keep the organs expanded between breaths, further limiting her chances for survival. Dr. Espiritu and his team threaded the narrowest breath-

An Enhanced Culture for Children and Their Families (continued from page 1)

family members will be recruited and trained to teach both medical and support staff skills for effective communication in all aspects of healthcare. To help future generations of physicians develop expertise in communicating and partnering with patients and their families, these skills will also be taught to medical students.

"It's a remarkable gift, beyond its sheer generosity, because it enables us to create a comprehensively nurturing culture for children and their families," says Catherine Manno, MD, the Pat and John Rosenwald Professor of Pediatrics and chair of the Department of Pediatrics. Believed to be the largest donation for pediatric psychosocial and other support services ever made to a medical center anywhere, the gift promises to transform the breadth and depth of the care NYU Langone provides for children across our entire institution.

"The IFCC represents a sea change in the way NYU Langone cares for its pediatric patients and their families," says Dr. Manno. "It greatly enhances such support services as social work, psychiatry, pain management and palliative care, child life and creative arts

therapy, care coordination, patient quality and safety, nutrition and wellness, and patient and family education."

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Under the direction of Dr. Manno and Michele Lloyd, vice president for children's services, the IFCC will start its work immediately and grow to full capacity over the next three years. "The IFCC is about a partnership between patients, families, and staff—at the bedside, in the exam room, and in the conference room," says Lloyd.

"Care is a human undertaking, so we can't assume that partnering in the care of an acutely or chronically ill child happens automatically. The IFCC provides a seamless continuum of care for the entire family."

The IFCC will impact all aspects of care at the new Hassenfeld Children's Hospital, which encompasses the full range of pediatric healthcare services across the entire Medical Center. A comprehensive, state-of-the-art pediatric inpatient facility will be housed within the Helen L. and Martin S. Kimmel Pavilion, scheduled to open in late 2017.

"We're very happy that the Hassenfelds named the Children's Hospital," says one of the donors. "We're of like minds: we put children and families first. Wherever children are treated, everyone who comes into contact with them, starting with the receptionist, has to understand that they are part of the care team. My husband said, 'Produce the best plan you can—everything you think it should be.' I believe the team working on behalf of pediatrics and children's services could not have produced a better plan, and we are all eager to implement it."

NEWS & VIEWS

Inside This Issue



“The One Place to Go for All the Answers”

An estimated 4 million American athletes sustained concussions last year alone. With a multidisciplinary team of some 50 clinical experts, NYU Langone’s new Concussion Center sets a new standard of evidence-based treatment for head injuries. [page 1](#)



Master of the Microscope Examining breast tissue under a microscope for often subtle signs of disease can be a daunting task, but Dr. Farbod Darvishian, one of 20 diagnostic pathologists at NYU Langone, is known for having what pathologists call a “great eye” for the right diagnosis. [page 3](#)



Healing with All of His Heart Every year, about 785,000 Americans suffer a heart attack. Studies show that programs that move patients seamlessly from treatment or surgery to recovery and maintenance, like those at the Joan and Joel Smilow Cardiac and Pulmonary Rehabilitation and Prevention Center, cut mortality rates by 25%. [page 5](#)



Keeping Faith Meet Faith Abby Abrams, the youngest and smallest surviving preemie ever born at NYU Langone. Born at 23 weeks, 1 day, she weighed 15 ounces, less than a loaf of bread. On July 7—four days after her actual due date—she was discharged from Tisch Hospital weighing 5 pounds, 2 ounces, with an “excellent” prognosis. [page 7](#)

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White Coat Ceremony 2013

In an Annual Rite of Passage, New Medical Students Don Their First White Coats in the Presence of Faculty and Family

