TB WARS

Major victories are likely as Einstein researchers attack tuberculosis on all fronts
EINSTEIN’S GLOBAL IMPACT

Tuberculosis is South Africa’s leading cause of mortality, responsible for 13 of every 100 deaths. The province of KwaZulu-Natal, where this photo was taken, is notable for the high number of TB cases that are drug resistant. Through research and teaching initiatives, Einstein scientists are aggressively combating KwaZulu-Natal’s TB scourge—efforts that may help turn the tide in the global war on TB.
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Last October, I attended the ceremony for the opening of K-RITH, the KwaZulu-Natal Research Institute for Tuberculosis and HIV. K-RITH is affiliated with the Nelson R. Mandela School of Medicine in Durban, the largest city in KwaZulu-Natal, and was built with funds estimated at $60 million from the Howard Hughes Medical Institute (HHMI). Einstein’s Bill Jacobs, an HHMI investigator elected to the National Academy of Sciences this spring, anchors the TB component of K-RITH along with Einstein colleagues Michelle Larsen, Max O’Donnell and James Brust. Einstein’s presence in South Africa is only one of the College of Medicine’s many global health programs. These programs focus not only on infectious diseases such as TB and HIV, but also on cancer and chronic diseases such as diabetes, which pose increasing threats in developing countries. Bill Jacobs often points out the irony that his lab, on the fifth floor of the Price Center/Block Research Pavilion, overlooks the Van Etten Building, originally built as a hospital for TB patients.

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**A Message from the Dean**

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Introducing Our Cover Story

To most Americans, tuberculosis (TB) is a disease affecting people in faraway places such as Africa, India and China: developing regions of the globe where more than 98 percent of TB deaths occur. But little more than 100 years ago, TB was one of the most feared killers in the Western world.

From 1851 to 1910, some four million deaths in England and Wales—one in every seven—were attributed to TB. The disease was especially noteworthy for striking down young adults; in England and Wales during that period, it was responsible for more than a third of deaths in the 15-to-34 age group and half of all deaths of those 20 to 24.

Not until 1892 did the world learn that TB was caused by a bacterium that spreads from person to person. Before then, TB wasn’t considered contagious but instead was thought to run in families with a hereditary tendency to develop it. A look at two English families of the early 1800s, when TB was the country’s leading killer, shows why a predisposition to TB seemed so plausible and illustrates TB’s huge impact on 19th-century life and art.

The Reverend Patrick Brontë married Maria Branwell in 1812, and they had six children (five girls and a boy) over the next seven years. Maria died in 1821 at age 38, of either cancer or TB. Their two oldest daughters both died of TB in 1825—Maria at age 11 and Elizabeth at age 10. Branwell, the only son and an artist, died of TB in 1848 at age 31.

As for the three most famous Brontë siblings: Emily died from TB at age 30 in 1848, three months after her brother and the same year her book Wuthering Heights was published; Anne, the youngest of the three and author of the novels Agnes Grey and The Tenant of Wildfell Hall, died from TB in 1849 at age 29; Charlotte, the last surviving sister and author of Jane Eyre and Villette, became pregnant soon after marrying Arthur Bell Nicholls in 1854. She died from TB the next year along with her unborn child, three weeks before turning 39.

The Romantic poet John Keats was born in 1795. His mother died from TB when he was 14. Keats later spent a year nursing his younger brother Tom through the terrible final stages of TB—an ordeal ending in 1818, when Tom died at age 19 in his brother’s arms.

Keats wrote Ode to a Nightingale in 1819, the year after Tom’s death. Its third stanza vividly captures TB’s toll on its victims and those who loved them:

Fade far away, dissolve, and quite forget
What thou among the leaves hast never known,
The weariness, the fever, and the fret
Here, where men sit and hear each other groan;
Where palsy shakes a few, sad, last grey hairs,
Where youth grows pale, and spectre-thin, and dies;
Where but to think is to be full of sorrow
And leaden-eyed despairs;
Where beauty cannot keep her lustrous eyes,
Or new Love pine at them beyond to-morrow.

Keats himself would die of TB two years later, at age 25.

— LARRY KATZENSTEIN
Science and Publications Editor
Panelists who had launched global health centers discussed how they “made it work”— which will help others get their own programs off the drawing board and into the field more quickly.

First Conference on Running a Global Health Center

Einstein convened the first-ever meeting of healthcare professionals, practitioners, administrators and faculty who operate prominent U.S. academic global health centers (GHCs) in November 2012.

“We all face similar legal, financial and regulatory issues,” says Jill Raufman, program manager of the Einstein GHC and organizer of the conference. Major topics included best practices in establishing a global health center; safeguarding and instructing students who travel overseas; complying with U.S. and foreign laws; and educational programs stemming from GHCs.

Allen M. Spiegel, M.D., Einstein’s Marilyn and Stanley M. Katz Dean, opened the conference with the Einstein GHC’s co-directors, Louis M. Weiss, M.D., M.P.H., and Kathryn Anastos, M.D. Other faculty members from Einstein and Montefiore, the University Hospital and academic medical center for Einstein, also shared their expertise, as did speakers from schools including the Medical College of Wisconsin, Duke, Stanford, McGill and Emory, as well as Ariel Pablos-Mendez, M.D., M.P.H., assistant administrator for global health at the U.S. Agency for International Development.

The panelists emphasized two hallmarks of a successful global health program: capacity-building and sustainability. “You should be able to expand a program that starts out as a pilot project to a region or an entire country, and it should continue after you leave because it has funding and has trained local people,” explains Dr. Weiss.

Welcome

Derek M. Huffman, Ph.D.

Dr. Huffman worked as a postdoctoral fellow at Einstein for several years and has now joined the faculty as an assistant professor of medicine and of molecular pharmacology. He studies the interplay between endocrine/metabolic systems and aging. He is focusing on the dual role of the growth factor IGF-1—linked to a shorter life span and increased cancer risk while at the same time protecting against age-related diseases such as cardiovascular disease, type 2 diabetes and osteoporosis.

Parsa Mirhaji, M.D., Ph.D.

The College of Medicine welcomes Dr. Mirhaji as an assistant professor of systems & computational biology and director of clinical research informatics at Einstein and Montefiore. Dr. Mirhaji, along with fellow researchers, was awarded the Best Practice in Public Health Award—2002 by the U.S. Department of Health and Human Services for establishing the Defense of Houston web portal for community awareness and public readiness in the aftermath of the September 11 attacks.

Award for Einstein Magazine

Einstein magazine was one of three finalists in the 2012 Folio Magazine Eddie Awards in the single-article category. The article, “AIDS + 30: AIDS Arises and Einstein Responds,” in the Summer/Fall 2011 issue, was recognized for editorial excellence.
Bicoastal Hospitality for Newly Accepted Students

Einstein’s alumni relations office, in coordination with the office of admissions, hosted two events for newly accepted students and their parents earlier this year. Guests in New York and Los Angeles met and talked informally with faculty members, alumni and current Einstein students.

Faranak and Farshad J. Nosratian, M.D. ’83, graciously hosted a brunch at their Los Angeles home on March 10. More than 50 guests attended, including ten newly accepted students and Einstein alumni living in California. Edward R. Burns, M.D. ’76, executive dean, shared his insights on Einstein’s unique attributes as an outstanding educational environment for talented students aspiring to careers in medicine.

A reception at the Harmonie Club in New York City on March 14 drew nearly 200 attendees, including 70 newly accepted students. Welcoming them were Jack Stern, M.D. ’74, Ph.D. ’73, president of the Einstein Alumni Association board of governors; Martha S. Grayson, M.D. ’79, senior associate dean for medical education; and members of the Alumni Association board and the admissions committee.

“As Einstein alumni, we stand on the shoulders of those who came before us—whether they’re our fellow alumni or the exceptional faculty who taught us,” said Dr. Stern. “Just as we benefited from their contributions, the students who follow in our footsteps need us to be there for them. Our tradition of hosting receptions for accepted students demonstrates our commitment to building a warm, supportive and collaborative Einstein community from the start of a student’s journey.”

Video Victory

Second-year M.D./Ph.D. student Ross Firestone was among the winners of the MCAT Video Competition, sponsored by the Robert Wood Johnson Foundation, the Association of American Medical Colleges and Khan Academy, a not-for-profit organization that offers free educational videos online. Ross and 14 others will take part in an all-expenses-paid weeklong training program in which they’ll create educational tutorials—on topics such as human behavior, social sciences, inequality and diversity—that will be used for the 2015 MCAT exam.
Eloquent Images of Africa

Photos taken by Einstein students who have traveled abroad were displayed last fall on the walls of the Leo Forchheimer Medical Science Building’s main hallway in an exhibit, “Global Vision: The Einstein Community Abroad.” Most were shot by students participating in the Global Health Fellowship program. The others were taken by Jonathan Wallen, a professional photographer and the husband of Einstein’s Kathryn Anastos, M.D. The colorfully dressed, seemingly serene men and women told their photographer of the horrific violence of the Rwandan genocide: rape, torture, murder and loss of family members. Each portrait was accompanied by text describing the survivor’s harrowing experience.

Behind the Scenes: Einstein’s Machine Shop

Broken centrifuge? No problem. Mouse needs a cage? Can do. Storage boxes for MRI magnets wanted? Coming right up. Build an entire laboratory in less than a month? Even that’s possible, thanks to the four-person team in the machine shop, located in the basement of the Forchheimer Building.

“We really can put up a custom lab in 30 days, as long as you like the paint we have on hand,” says Joseph Vinciguerra, associate director of engineering and construction.

Einstein’s machine shop is about 10 times bigger than the average home workshop and features equipment your dad never owned. Coexisting with the familiar lathes, saws and workbench tools are a large milling machine for making metal parts; a pneumatic drill that makes precision holes using computerized coordinates; and a new computerized sign maker. Whether it’s welding, carpentry or repairing Einstein’s steam-heating system, no job is too big or too small. Team members even ventured into the morgue recently to install two new 16-ton chillers. Only jobs that carry a liability issue—repairs to equipment whose function could make a life-or-death difference, for example—are left to the original manufacturers.
Lab Chat
Jessica C. Mar, Ph.D., is an assistant professor of systems & computational biology. Her lab focuses on genes—how human disease is affected by differences in gene expression and by networks of genes. Dr. Mar earned her Ph.D. in biostatistics from Harvard University in 2008 and joined the Einstein faculty in 2012. She is also an assistant professor of epidemiology & population health.

Do you see any similarity between New York and Australia, where you’re from?
New Yorkers are very sarcastic. They have a no-nonsense humor, and Aussies are like that too. Aussies share that honest “Let’s just call a spade a spade” attitude with New Yorkers. People are just very up front here, and I like that.

What do you like about being at Einstein and in the Bronx?
The people at Einstein are fantastic. Everyone is so collegial. It’s been amazing to find genuine support and meet great colleagues across different departments so quickly. The Bronx is a different slice of New York that I’ve enjoyed exploring. I live in Harlem, and the Bronx lets me experience the perks of suburbia—I have my butcher, my dry cleaner and my favorite pastry shop here.

Could you briefly describe your research?
We study variability and robustness in biological systems. In systems biology, our goal is to model how gene networks control cells—whether a cell develops into a muscle or kidney cell, for example, or is healthy or diseased. From gene-expression studies, we know that subsets of genes are turned on and off in one situation and not in another. What we’re starting to appreciate now is that genes have “wobbliness” or variability in their expression, too. We’re trying to understand how this variability affects the fate of cells in human diseases like cancer. It’s another way of thinking about how genes work.

Your whiteboard is covered with equations. What are you working on?
It’s a mash-up of different conversations about projects that have evolved over time. One project explores why cancer-causing mutations—those that turn up in the sperm or egg—are present in every tissue of the human body but cause cancer only in a handful of tissues—for example, the mutations in the BRCA1 gene that cause breast cancer.

Where do you do your best thinking?
Usually while running outside. I love running in Central Park at night, around the reservoir. It’s easier to step back from a problem and get more clarity. I might think about our data in different ways, or new questions come to mind.

Where do you go when you’re feeling homesick?
The Tuck Shop, the one on St. Mark’s in the East Village. It’s a fun place to meet Aussies and fellow New Yorkers too. I travel to Australia three or four times a year. My parents and brother are in Brisbane, but I’m fortunate to have my American parents—my aunt and uncle—not far away, in New Jersey.

Next Stop: Morris Park
The effort to extend Metro-North commuter train service to Morris Park continues. (Co-op City, Parkchester and Hunts Point are also candidates for stops.) In May, State Senator Jeff Klein and Bronx Borough President Ruben Diaz, Jr., gathered with Bronx business owners, employers, union leaders, homeowners and commuters on Bassett Avenue—near the railroad tracks—to announce the anticipated economic impact of MTA Metro-North’s expansion into the East Bronx.

“Metro-North service on the Amtrak line, including a Morris Park stop, will help transform Einstein as well as our local community,” noted Gordon Earle, associate dean for communications and public affairs, who spoke on behalf of Einstein at the gathering. “It will provide major benefits for our faculty, researchers, students and the entire East Bronx medical community, offering easy access to and from Manhattan as well as Washington, DC, Connecticut and Boston. We are extremely enthusiastic about the plan.” All aboard!

ON THE WEB
www.einstein.yu.edu/r/train2013
Alumni Association: Hands Across the Years

The White Coat Ceremony
The Class of 2016’s journey toward becoming physicians began last August when its members gathered in Robbins Auditorium for the “On Becoming a Physician” ceremony, informally known as the White Coat Ceremony.

“Over the next four years, each member of the class will need to acquire an enormous knowledge base, develop expertise in clinical and ethical reasoning and become proficient at a variety of technical skills,” said Stephen G. Baum, M.D., senior associate dean for students. The reference to ethics in the midst of the academics reflected the Class of 2016’s oath, in which its members pledged to “strive to earn the trust of all those in our care.”

The students filed onto the stage and were cloaked in white coats. Each student also received a note with the name of the alumnus or alumna who had supported the purchase of the coat. Before his keynote address, Sten H. Vermund, M.D. ’77, Ph.D., director of Vanderbilt University’s Institute of Global Health, encouraged the students to contact the alumni who sponsored their white coats.

The Stethoscope Ceremony
Einstein held its annual Stethoscope Ceremony for first-year medical students last fall to mark the start of their clinical coursework, when they practice their diagnostic skills on actors portraying patients, soon to be followed by real patients.

At the ceremony, students heard remarks from distinguished faculty members, including Felise B. Milan, M.D. ’88, director of the Clinical Skills Center; Martha S. Grayson, M.D. ’79, senior associate dean for medical education and professor of clinical medicine; Martin N. Cohen, M.D., professor of medicine (cardiology) at Einstein and attending physician in cardiology at Montefiore; and
Building Connections: Career Speed Networking

More than 150 students and 50 alumni assembled in the Lubin Dining Hall on a Sunday in late October for Career Speed Networking, co-hosted by the Einstein Alumni Association and the office of student affairs. Einstein alumni were seated at tables by specialty; interested second- and third-year students stopped by to ask questions about career paths and life after medical school. The popular annual event was held just hours before Hurricane Sandy hit the New York metro area. The alumni association is grateful to all alumni who participated, including several who traveled from out of town.

For more information about student mentoring and other volunteer opportunities, please contact the alumni relations office at 718.430.2013 or alumni@einstein.yu.edu.

Scrubs Day

Harris Goldstein, M.D. ’80, calls them the physician’s “combat gear.” They are scrubs: shapeless, comfortable, protective. Einstein’s first-year students receive them early—in October, their third month on campus, just before they begin the Gross Anatomy course, in which they will dissect cadavers. The scrubs come as gifts from Einstein alumni, survivors of Gross Anatomy who now want to help Einstein’s newest students clear one of the major hurdles of their time here.

Scrubs are also a reminder that first-year students are already on the path to physicianhood: “When patients see a doctor in scrubs, they don’t see any signs of rank or artificial educational or socioeconomic barriers separating them. Rather, they see a doctor who is willing to do anything it takes to get them better,” said Dr. Goldstein, associate dean for scientific resources, professor of pediatrics and of microbiology & immunology, the Charles Michael Chair in Autoimmune Diseases at Einstein, the director of the Einstein-Montefiore Center for AIDS Research and an attending physician in pediatrics at The Children’s Hospital at Montefiore. Dr. Goldstein initiated the first Scrubs Day six years ago.

Mimi McEvoy, N.P., M.A., co-director of the Introduction to Clinical Medicine course, associate professor of clinical family & social medicine and assistant professor of pediatrics.

James Post, M.D. ’97, delivered the keynote address. Einstein accepted Dr. Post, a quadriplegic, after he was turned away by several other medical schools. Dr. Post is now a successful practicing physician at the James J. Peters Veterans Affairs Medical Center in the Bronx. A personal assistant helps Dr. Post with some of his day-to-day physical duties, such as holding a stethoscope to a patient’s chest.

At the end of the ceremony, the students received shiny new stethoscopes courtesy of Einstein’s Alumni Association.
Snakebite Central

It’s a little-known fact that Jacobi Medical Center has one of the nation’s leading snakebite-treatment centers, and the only one in New York City.

When someone comes in with fang marks or snakebite symptoms (such as bleeding, low blood pressure, swelling or tissue damage), Jacobi clinicians first try to determine what snake did the biting. Jacobi is licensed to store antivenins for timber rattlesnakes and copperheads, both native to New York. But for exotic snakes, the hospital reaches out to the nearby Bronx Zoo, which has a wide variety of snakes and probably the most complete antivenin supply in the United States, covering most of the world’s venomous snakes.

Each year, about 20 fourth-year Einstein students tour the zoo, learning about the reptiles and seeing the pharmacy, thanks to Michael Touger, M.D., associate professor of clinical emergency medicine at Einstein and medical director of the Jacobi Medical Center Snakebite Treatment Program.

Most of the students are interested in applying to the Jacobi emergency medicine residency program. Dr. Touger teaches them to identify the major families of venomous snakes—most notably the crotalids (including rattlesnakes, copperheads and cottonmouths) and the elapids (deadly neurotoxic snakes, including Asian cobras, African mambas and the domestic coral snake). Students also learn that not all venom gets delivered via fangs. “Bufo toads and Amazon dart frogs use poison in their skin secretions,” Dr. Touger notes.

The Falk Recreation Center Turns 25

The Anne and Isidore Falk Recreation Center/Max and Sadie Friedman Athletic Facility opened its doors in 1987, offering exercise machines, free weights, a basketball court, a sauna, a steam room and a 75-foot lap pool, among other get-fit enticements. Patricia W. McGlinchey, the former high-school physical education teacher who presided over the Falk Recreation Center’s opening day, is still in charge and over the years has proved flexible with trends from A (aerobics) to Z (the zumba dance craze). For the anniversary, the center held special events such as a T-shirt giveaway and member appreciation day.

Looking back on her time at the Falk Recreation Center, Ms. McGlinchey says that one visitor stands out. “Back in the late ’90s, Dr. Oliver Sacks”—a clinical professor of neurology at Einstein—“was a regular swimmer here,” she says. “It was always nice to see him and chat a bit. When he was featured on 60 Minutes, the CBS crew came to film him swimming and to interview him. That was exciting!” By all accounts, Dr. Sacks did not mistake his bathing suit for a hat.

Was Ms. McGlinchey awed by the famous neuroscientist? Not really. “World-renowned scientists, brilliant faculty, ambitious students and hard-working employees are all members here,” she says. “My staff and I practice a policy centered on being consistent and treating everyone the same.”

Membership at the Falk Recreation Center is included in Einstein students’ tuition, and they take full advantage of the privilege. Paying memberships are available to Einstein employees and spouses as well as to employees and spouses of Einstein-affiliated hospitals.

Hours were recently extended on Fridays and Saturdays, making it a full seven-day operation for Ms. McGlinchey and assistant managers Christopher LaColla and John Ingrassia.
Sharon Silbiger, M.D.
Dr. Sharon Silbiger, professor of medicine and associate chair of medicine for undergraduate education, passed away on September 6, 2012, after a long battle with chondrosarcoma. She was 56.

Dr. Silbiger was an outstanding nephrologist who studied the role of gender in renal disease progression. Before her appointment to the associate chair position, she was the house staff program director for the department of medicine for nearly a decade. Nationally, Dr. Silbiger was the immediate past president of Women in Nephrology. Her commitment to equal care for every patient inspired those who knew her, and she was a role model for countless faculty members, residents and students.

The Sharon Silbiger, M.D., Fund has been established in her memory. This fund will support a lectureship in the department of medicine.

Stanley G. Nathenson, M.D.
Dr. Stanley Nathenson, a distinguished professor of microbiology & immunology and of cell biology and the Samuel H. Golding Chair in Microbiology, passed away on October 15, 2012. He was 79.

Mr. Nathenson’s work led to important findings that helped make transplantation a routine treatment for patients with failing organs. He played a leading role in discovering the molecular and cellular mechanisms that activate T cells and initiate the immune response to disease-causing viruses, transplants and tumors. Dr. Nathenson became a professor in the departments of microbiology & immunology and of cell biology at Einstein in 1973.

He held many leadership positions at the College of Medicine, including director of the immunology and oncology training program. He guided more than 80 young scientists through the program, many of whom advanced to respected positions in academia and industry.

Dr. Nathenson received numerous awards for his innovative research, including election to the National Academy of Sciences in 1988. He continued working in his lab until the week before his death.

Daniel S. Friedman, M.P.A.
Daniel Friedman passed away on November 8, 2012, after a long struggle against pancreatic cancer. He was 66.

Mr. Friedman became the administrator of the Children’s Evaluation and Rehabilitation Center (CERC) in 1978 and quickly made important contributions to its growth and stability. He was later promoted to associate director and remained with CERC for more than 34 years. He cared deeply about the children and adults who sought CERC’s services.

Richard M. Hays, M.D.
Dr. Richard Hays, professor emeritus of medicine at Einstein, died Thanksgiving morning in Greenwich, CT. He was 85.

Dr. Hays joined Einstein’s faculty in 1960 and was director of the division of nephrology from 1979 to 1988. His early research with Harvard’s Alex Leaf, M.D., focused on the dynamic transport of molecules across cell membranes. Dr. Hays went on to explore inhibitors of aquaporins (proteins embedded in cell membranes that regulate water flow into and out of cells) and the process of membrane recycling.

He began his second career—in medical education—in the 1990s, when Einstein’s dean, Dominick P. Purpura, M.D., established the division of education. Dr. Hays headed the committee that organized the division and helped shape the medical school curriculum. He also took over the Einstein renal course, which consistently received rave reviews from students. He was given Einstein’s Lifetime Achievement Award for Excellence in Teaching in 2003.
Albert S. Kuperman, Ph.D.
Leaving a Lasting Imprint

BY KAREN GARDNER

Pioneering Educator
Dr. Kuperman retired this spring. He had been Einstein’s other “Uncle Albert” ever since arriving as Einstein’s associate dean for educational affairs in 1975. In this role, he helped shape the medical school curriculum in ways that often placed Einstein at the forefront of medical education. His innovations included introducing the concept of global health education to provide opportunities that expand students’ experiences with healthcare; establishing research project fellowships to encourage inquiry and increase understanding of the science behind medicine; and fostering a culture of humanism among medical students and faculty that is at the heart of Einstein’s approach to medical education and research.

“When Al took over as head of our preclinical committee, his primary philosophy was ensuring that our medical students learned what they needed to be good doctors, not just students of biology,” says Edward R. Burns, M.D. ’76, executive dean at Einstein, who was appointed by Dr. Kuperman as course director of hematology. “Al empowered the course directors to develop a cadre of excellent teachers who vastly improved the educational experience for students. He urged us not to choose people who were great scientists but poor teachers.”

Dr. Burns notes that Dr. Kuperman was also an early champion of small-group conferences and realized that self-teaching was at least as effective as rote learning in lectures.

The World as Oyster
The global fellowship program, which introduced the concept of global medicine to Einstein in 1976, is perhaps Dr. Kuperman’s best-known contribution. Einstein became one of only a handful of institutions offering such a program.

“He was a visionary, innovative leader who could see the bigger picture,” notes Nadine T. Katz, M.D. ’87, whose role at Einstein most recently was senior...
associate dean of student academic affairs. (She is now medical director of Montefiore’s Einstein campus.) “He understood the value of expanding learning beyond the classroom and into the real world.”

Such real-world experiences have helped shape the careers of many Einstein alumni who have specialized in global health.

“What I’m doing in Sierra Leone would not have been possible without Dr. Kuperman,” says Dan Kelly, M.D., a member of Einstein’s class of 2008. During his student years, Dr. Kelly established a nongovernmental organization, Wellbody Alliance, to serve the amputee communities in the war-torn nation. He also participated in Medical Education in Cooperation with Cuba (MEDICC), a program on whose academic council Dr. Kuperman and others at American and Cuban medical institutions served, which allowed students to travel to Cuba to observe how its healthcare providers administered universal care. (State Department travel restrictions to Cuba have since greatly diminished such opportunities.)

“Taking part in the MEDICC program in Cuba exposed me to the concept of healthcare as a human right,” says Dr. Kelly. “I came away with a desire to see that all who need care in the world have access to it.”

Another important Dr. Kuperman legacy is the student-run Social Medicine course. Fifteen years ago, students seeking to transfer their classroom learning to the outside world lobbied for the course’s creation, and Dr. Kuperman gave his strong support.

“The social medicine course exposed me to phenomenal advocates for justice and change,” says Jessica Karp, M.D. ’12. “Driving the course’s success were Dr. Kuperman’s support and vision of a more just world in which physicians serve not only science, but also the humanity of their patients.”

A Mindset of Possibility

Einstein students are especially grateful that Dr. Kuperman has encouraged them to think—and act—for themselves. From their perspective, his name is synonymous with “empowerment.”

“Dr. Kuperman’s support for student initiatives has been vital,” observes third-year medical student Jenna Cottral. Along with third-year M.D./Ph.D. student Anthony Bowen, she conceived a project in which two fourth-year students traveled to Haiti last spring.

“Dr. Kuperman listened to your ideas and then empowered you to carry them through,” adds Anthony. “When we discussed our Haiti project idea with him, he encouraged us to do what was needed to make it happen.”

Tara Vijayan, M.D. ’07, is completing a fellowship in infectious diseases at the University of California, San Francisco. She remembers that Dr. Kuperman supported her idea for an art and literary magazine to which all members of the Einstein community could submit their work. “In medicine, you have incredibly profound human experiences, and I felt that having an outlet to re-experience them was helpful, even cathartic,” says Tara. “He agreed.”

The publication, called Ad Libitum, continues to offer a creative outlet for students, postdocs, faculty, alumni, staff and even donors. It has inspired an annual event, held on campus, that celebrates the arts with readings, music and a display of artwork and photography by members of the Einstein community; 90 artists were featured this year.

“The idea of dreaming big that Dr. Kuperman encouraged in us is something that I will always carry with me,” adds Dr. Vijayan, who plans to pursue international work.

“I thank you for encouraging students to seek out different experiences and to challenge themselves in their medical education.”

—Margo Harrison, M.D. ’10

“So many fond memories of Dr. Kuperman ... he was always so supportive of every crazy idea that popped into my frazzled head, including Ad Libitum.”

—Tara Vijayan, M.D. ’07

“Every day I was able to stop in your office or chat with you on the way to class made my day brighter.”

—Elana Craemer, M.D. ’12
Vitamin C Can Kill Drug-Resistant TB

In an unexpected discovery, Einstein researchers reported that vitamin C kills drug-resistant tuberculosis (TB) bacteria in laboratory culture. The finding, published in May in *Nature Communications*, suggests that vitamin C added to existing TB drugs could shorten TB therapy, and it highlights a new area for drug design.

TB is caused by infection with the bacterium *M. tuberculosis*. In 2011, TB sickened some 8.7 million people and took about 1.4 million lives, according to the World Health Organization. Infections that fail to respond to TB drugs are a growing problem: About 650,000 people worldwide now have multidrug-resistant TB (MDR-TB), 9 percent of whom have extensively drug-resistant TB (XDR-TB). TB is especially acute in developing countries, which account for more than 95 percent of TB-related deaths.

The Einstein discovery arose during research into how TB bacteria become resistant to isoniazid, a potent first-line TB drug. The lead investigator and senior author of the study was William Jacobs, Jr., Ph.D., professor of microbiology & immunology and of genetics at Einstein. Dr. Jacobs is a Howard Hughes Medical Institute investigator and a recently elected member of the National Academy of Sciences.

Dr. Jacobs and his colleagues observed that isoniazid-resistant TB bacteria were deficient in a molecule called mycothiol. “We hypothesized that TB bacteria that can’t make mycothiol might contain more cysteine, an amino acid,” says Dr. Jacobs. “So, we predicted that if we added isoniazid and cysteine to isoniazid-sensitive *M. tuberculosis* in culture, the bacteria would develop resistance. Instead, we ended up killing off the culture—something totally unexpected.”

The Einstein team suspected that cysteine was helping to kill TB bacteria by acting as a “reducing agent” that triggers the production of reactive oxygen species (sometimes called free radicals), which can damage DNA.

“We were amazed to discover that vitamin C by itself not only sterilized the drug-susceptible TB, but also sterilized MDR-TB and XDR-TB strains.”

To justify testing vitamin C in a clinical trial, Dr. Jacobs needed to find the molecular mechanism by which vitamin C exerted its lethal effect. More research produced the answer: Vitamin C induced what is known as a Fenton reaction, causing iron to react with other molecules to create reactive oxygen species that kill the TB bacteria.

“We don’t know whether vitamin C will work in humans, but we now have a rational basis for doing a clinical trial,” says Dr. Jacobs. “It also helps that we know vitamin C is inexpensive, widely available and very safe to use. At the very least, this work shows us a new mechanism that we can exploit to attack TB.”

See this issue’s cover story, “TB Wars” (page 20), for more about Dr. Jacobs’ research.
Einstein researchers have discovered how the most common genetic mutations in familial Parkinson’s disease damage brain cells. The study, published in March in *Nature Neuroscience*, could also open up treatment possibilities for both familial Parkinson’s and the more common form of Parkinson’s that is not inherited.

The most common mutations responsible for the familial form of Parkinson’s disease affect a gene called leucine-rich repeat kinase-2 (LRRK2). The mutations cause the LRRK2 gene to code for abnormal versions of the LRRK2 protein. But it hasn’t been clear how LRRK2 mutations lead to the defining microscopic sign of Parkinson’s: the formation of abnormal protein aggregates inside dopamine-producing nerve cells of the brain.

“Our study found that abnormal forms of LRRK2 protein disrupt an important garbage-disposal process in cells that normally digests and recycles unwanted proteins, including one called alpha-synuclein—the main component of those protein aggregates that gunk up nerve cells in Parkinson’s patients,” says study leader Ana Maria Cuervo, M.D., Ph.D., professor of developmental and molecular biology, of anatomy and structural biology and of medicine (gastroenterology and liver diseases) and the Robert and Renée Belfer Chair for the Study of Neurodegenerative Diseases. “We showed that when LRRK2 inhibits this recycling process, alpha-synuclein doesn’t get broken down and instead accumulates to toxic levels in nerve cells,” says Dr. Cuervo. “We’re now looking at ways to enhance the activity of this recycling system to see if we can prevent or delay neuronal death and disease.”

Coronary arteries nourish heart muscle with the nutrients and oxygen it needs for pumping. Heart attacks occur when coronary arteries become blocked. Recent studies had suggested that during development, the coronary arteries originate from cells of the sinus venosus (a heart cavity that exists only in embryos) or from the epicardium (the heart’s outermost layer).

“The prevailing wisdom was that cells from the endocardium—the heart’s innermost cell layer—are terminally differentiated, meaning they cannot become any other cell type,” says study leader Bin Zhou, M.D., Ph.D., associate professor of genetics, of pediatrics and of medicine (cardiology) at Einstein. “But our study shows that one population of endocardial cells is actually responsible for forming the coronary arteries. If we can figure out the critical signals regulating coronary artery differentiation and formation, then perhaps we could coax ventricular endocardial cells to build new coronary arteries that can replace damaged ones.”
Risk Markers for Erectile Dysfunction Following Radiation Treatment

In the first study of its kind, a research team discovered 12 genetic markers associated with the development of erectile dysfunction in prostate cancer patients who were treated with radiation. The findings, published last September in the *International Journal of Radiation Oncology ∙ Biology ∙ Physics*, may help clinicians determine the best course of treatment for men with prostate cancer and lead to therapies that alleviate side effects.

Patients in the study cohort were given one of three treatments: brachytherapy (implanting radioactive pellets in the prostate gland); brachytherapy plus external beam radiation; or external beam radiation alone. They were followed for an average of nearly four years to determine their level of sexual function after treatment.

“This is part of our ongoing effort to identify men at highest risk for disease, identify the aggressive tumors that would be responsive to therapy and improve quality of life for men with indolent prostate cancers who might benefit from active surveillance rather than therapy,” says Harry Ostrer, M.D., professor of pathology, of genetics and of pediatrics at Einstein; director of genetic and genomic testing for the division of clinical pathology at Montefiore Medical Center; and co–principal investigator of the study.

When White Cells Control Red Cells

Researchers at Einstein and Mount Sinai have found that macrophages—white blood cells that play a key role in the immune response—also help to both produce and eliminate the body’s red blood cells (RBCs). The findings could lead to novel therapies for diseases or conditions in which red blood cell production is thrown out of balance. The study, conducted in mice, was published in March in *Nature Medicine*.

“Our findings offer intriguing new insights into how the body maintains a healthy balance of red blood cells,” says study leader Paul S. Frenette, M.D., professor of medicine (hematology) and of cell biology and chair and director of the Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research at Einstein. “We’ve shown that macrophages in the bone marrow and the spleen nurture the production of new red blood cells at the same time that they clear aging red blood cells from the circulation. This understanding may ultimately help us to devise new therapies for conditions that lead to abnormal RBC counts, such as hemolytic anemia, polycythemia vera and acute blood loss, plus aid recovery from chemotherapy and bone-marrow transplantation.”

Kids’ Sleep Problems Appear Linked

Children with sleep-related breathing problems (such as snoring or apnea) frequently have concurrent behavioral sleep problems (such as waking repeatedly)—and vice versa, according to a study led by an Einstein researcher. However, children with one type of sleep problem are not routinely evaluated and treated for the other. The findings suggest that pediatricians, respiratory specialists and sleep medicine specialists should work together whenever a sleep problem is suspected. The study was published in December in *Behavioral Sleep Medicine*.

“Our findings should raise awareness among parents and physicians that if a child is sleeping poorly, they should delve deeper to see if there is an unrecognized respiratory-related sleep problem,” says senior author Karen A. Bonuck, Ph.D., professor of family and social medicine and of obstetrics & gynecology and women’s health at Einstein. “There’s ample evidence that anything that interrupts sleep can negatively affect a child’s emotional, cognitive, behavioral and academic development. Fortunately, snoring and apnea are highly treatable, and there are many effective interventions for behavioral sleep problems.”
Gene Discovery for Acute Myeloid Leukemia

Einstein scientists have made a discovery that could bring patients with acute myeloid leukemia (AML), a rare and usually fatal cancer, a step closer to new treatment options. The researchers’ results were published in Cancer Cell in 2012.

“We found that a gene called HLX is expressed at abnormally high levels in leukemia stem cells in a mouse model of AML,” says Ulrich G. Steidl, M.D., Ph.D., associate professor of cell biology and of medicine (oncology) at Einstein, the Diane and Arthur B. Belfer Faculty Scholar in Cancer Research and senior author of the paper. (Gene expression is the process by which a gene synthesizes the molecule that it codes for; an “overexpressed” gene makes its product in abnormally high amounts.)

When Dr. Steidl’s team used a laboratory technique to “knock down” HLX expression in AML cells taken from a mouse model of AML and from AML patients, leukemia-cell proliferation was greatly suppressed in both cases. And when the researchers knocked down HLX expression in mouse AML cells and human AML cells and then transplanted both types of AML cancer cells into healthy mice, those mice lived significantly longer than mice that received unaltered AML cells.

For the last several decades there has been little improvement in the survival rate for AML patients. The findings suggest that targeting elevated HLX expression may be a promising new strategy for treating AML.

Nerves Implicated in Causing and Spreading Prostate Cancer

“You’ve got a lot of nerve” now applies to prostate cancer. Einstein researchers have discovered that nerve endings that infiltrate the prostate play a critical role in prostate tumors’ development and spread. The findings, published in July in Science, may help predict the aggressiveness of prostate cancer and lead to novel therapies for preventing and treating the disease.

Prostate cancer is second to skin cancer as the most common cancer in men. The National Cancer Institute estimates that 238,590 new cases of prostate cancer will be diagnosed in 2013, and 29,720 men will die from the disease.

The study was led by Paul S. Frenette, M.D., professor of medicine (hematology) and of cell biology and chair and director of the Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research. Dr. Frenette had earlier discovered that nerves regulate hematopoietic stem cell niches—the sites in the bone marrow where red blood cells are formed.

Nerves are commonly found around tumors, but their role in cancer has not been clear. “Since there might be similarities between the hematopoietic stem cell niche and the stem cell niches found in cancer, we thought that nerves might also have a role in tumor development,” says Dr. Frenette.

The researchers injected human prostate cancer cells into mice, then systematically disabled various parts of the nervous system and observed how the cells fared. They found that both branches of the autonomic nervous system—the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS)—contribute to prostate cancer. The SNS helps initiate the early phases of the disease, while the PNS is involved in the later stages when the cancer metastasizes, or spreads.

To see if their findings were relevant to human cancer, the researchers analyzed biopsies from 43 prostate cancer patients and found higher nerve densities in patients who turned out to have aggressive cancers.

“Our findings raise the tantalizing possibility that drugs targeting both branches of the autonomic nervous system may be useful therapies for prostate cancer,” says Dr. Frenette.
New Approach for Stopping Herpes Infections

Einstein researchers have discovered a novel strategy for preventing infections due to herpes simplex viruses, the microbes responsible for causing genital herpes (herpes simplex virus 2) and cold sores (herpes simplex virus 1). The finding, published in March by the FASEB Journal, could lead to new drugs for treating or suppressing herpes virus infections.

“We’ve essentially identified the molecular ‘key’ that herpes viruses use to penetrate cell membranes and infect cells of the human body,” says Betsy Herold, M.D., professor of pediatrics (infectious diseases), of microbiology & immunology and of obstetrics & gynecology and women’s health. Dr. Herold is also the newly invested Harold and Muriel Block Chair in Pediatrics and director of the Translational Prevention Research Center at Einstein, and attending physician in pediatrics at The Children’s Hospital at Montefiore.

Dr. Herold and her colleagues had previously shown that infection by the herpes viruses depends on calcium released within the cells. In this study, they found that calcium release occurs because the viruses activate a critical cell-signaling molecule called Akt at the cell membrane.

Herpes viruses are known to infect skin cells as well as cells lining the cervix and the genital tract. As part of their investigation of Akt’s role in herpes infections, the researchers took laboratory cultures of those human cell types and mixed them for 15 minutes with four different drugs known to inhibit Akt. The cells were then exposed for one hour to herpes simplex virus 2. All four drugs significantly inhibited herpes virus infection in each of the cell types. By contrast, cells not pretreated with the Akt inhibitors were readily infected on exposure to the virus.

“New approaches for suppressing and treating herpes infections are badly needed,” says Dr. Herold. “Our findings indicate that inhibiting Akt should be a useful therapeutic strategy to pursue.”

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Bioethics for the Real World
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A memorial lecture in November 2012 honored the late Dennis Shields, Ph.D., a cellular biologist who served on the Einstein faculty for 30 years. Dr. Shields and lecturer Peter Walter, Ph.D., distinguished professor at the University of California, San Francisco, worked briefly together in the Rockefeller University lab of Nobel laureate Günter Blobel, M.D., Ph.D. Dr. Walter’s lecture, “The Unfolded Protein Response in Health and Disease,” focused on how cells detect and respond to proteins that are improperly assembled and folded in the endoplasmic reticulum. Controlling levels of misfolded proteins is crucial, since excessive levels can kill cells and contribute to diseases such as diabetes and cancer.

The remembrance of Dr. Shields continued the following day, when three Einstein postdoctoral fellows received the 2012 Dennis Shields Prizes for Outstanding Postdoctoral Research. The $5,000 prizes recognize published research done at Einstein. The recipients and their research topics were:

José Javier Bravo-Cordero, Ph.D., department of anatomy and structural biology, “Cells on the Move: RhoC Leads the Way.”

Saidi M’Homa Soudja, Ph.D., department of microbiology & immunology, “Switching on Memory CD8 T Cells by ‘Inflammatory Signals’ During Microbial Pathogen Invasion.”

Brian Scharf, Ph.D., department of pathology, “Endosomal Repair Mechanisms.”

The awards were presented by Allen M. Spiegel, M.D., the Marilyn and Stanley M. Katz Dean at Einstein; Jonathan M. Backer, M.D., professor of molecular pharmacology, who succeeded Dr. Shields as director of the Belfer Institute for Advanced Biomedical Studies, which oversees postdoctoral life at Einstein; and Ms. Toni Shields, the widow of Dr. Shields.

The award recipients presented brief overviews of their work at a ceremony and luncheon, which also featured poster sessions by other postdocs. Five of these researchers were honored with travel awards of $500 toward attending future scientific meetings.

$12 Million Grant for Preventing HIV Infection

Einstein researchers have been awarded a $12 million grant from the National Institutes of Health to develop a drug-impregnated intravaginal ring to prevent HIV infection in women. “As we move into the fourth decade of the HIV pandemic, the disease is having its greatest impact on women, particularly in sub-Saharan Africa,” says principal investigator Betsy Herold, M.D. “To protect these women and slow the epidemic, we urgently need safe and effective prevention strategies.”

Dr. Herold and co-investigator Patrick Kiser, Ph.D., a bioengineer at the University of Utah, previously developed an intravaginal ring that delivers a potent antiretroviral drug for more than four weeks and proved highly active against HIV in laboratory studies. But learning whether the device’s preclinical performance will translate into real-world effectiveness has proven difficult.

The five-year project will determine if the drug released from the ring retains anti-HIV activity in the presence of vaginal secretions. In addition, studies involving nonhuman primates aimed at optimizing the vaginal ring’s design will be conducted at the Centers for Disease Control and Prevention.
Major victories are likely as Einstein researchers attack tuberculosis on all fronts.
**Mycobacterium tuberculosis**, the bacterium that causes tuberculosis (TB), may well be the world’s most successful pathogen. Today, it infects one-third of all people on Earth. The vast majority of them are only latently infected and suffer no ill effects, but that’s hardly cause for comfort.

About one in 20 latent infections eventually progresses to active disease, with symptoms that include coughing, fever, fatigue and weight loss. If untreated, active TB kills about half its victims. Death can usually be prevented if active TB is caught early and properly treated—big “ifs” in the developing world, where most cases occur.

The numbers tell the story of TB’s terrible toll:

In 2011, TB sickened some 8.7 million people and took some 1.4 million lives, according to the World Health Organization. Africa, Russia, China and Southeast Asia have been especially hard hit.

At the risk of anthropomorphizing a microbe, *M. tuberculosis* is highly intelligent. It has figured out how to fend off all threats to its existence, from nature’s immune cells to humankind’s vaccines and medications. And the AIDS epidemic of the last 30 years has magnified TB’s impact. In people co-infected with HIV and TB, immune systems weakened by HIV can no longer suppress TB. Co-infection has not only made TB more deadly but has greatly increased the number of active TB cases. Studies show that the risk of developing active TB is between 20 and 37 times greater among HIV-positive people; in some sub-Saharan countries, up to 80 percent of TB patients are infected with HIV.

Although scientists have come up with a variety of powerful mycobacterial-fighting antibiotics, the wily TB bacterium inevitably finds a way to evolve and resist the chemical onslaught. Some 650,000 people worldwide now have multidrug-resistant TB.

An even greater impediment to ridding the world of TB is the absence of an effective vaccine. Remarkably, after more than a century of research, there is still just one vaccine against TB: the Bacille Calmette-Guérin (BCG) vaccine, prepared from a strain of the bovine tuberculosis bacillus, *Mycobacterium bovis*. The live attenuated (weakened) BCG vaccine has been used in humans since 1921 and has proven notoriously inconsistent in protecting against TB.

At Einstein, home to one of the country’s most comprehensive TB research programs, developing better TB vaccines is a top priority. Two teams of Einstein scientists are working on novel TB vaccines that may one day replace the BCG vaccine. Einstein researchers are also deciphering *M. tuberculosis*’ secrets gene by gene, seeking vulnerabilities in the TB genome that could be targeted by new drugs. And for countries with raging TB epidemics, Einstein scientists are devising better strategies to combat TB.
A long-sought global health goal is a simple, quick and inexpensive test for active TB infections that threaten patients’ health

strategies for caring for patients, and developing tests that rapidly detect active TB infections and indicate which antibiotics will work best for each patient.

In this battle between man and microbe, *M. tuberculosis* still has the upper hand—but maybe not forever. Thanks to the efforts of Einstein researchers, TB may one day join smallpox on the short list of extinct microbial killers.

Quick, Simple and Inexpensive: The Holy Grail in TB Diagnosis

Most people infected with TB worldwide have latent infections, meaning the TB bacteria in their bodies are controlled by their immune systems and are not causing disease. A long-sought global health goal is a simple, quick and inexpensive test for active TB infections, in which multiplying bacteria overwhelm the immune system, threatening patients’ health and posing a risk for spreading the infection.

Such a test is especially needed in poor countries, where the vast majority of cases occur. But the simple and affordable tests now available are not very accurate for detecting active infection, and tests that are more accurate are expensive, complex or time-consuming.

Sputum-smear microscopy is now the most commonly used point-of-care test for active TB infection. A patient coughs up a sputum sample, which is smeared onto a glass slide and stained with a dye. If *M. tuberculosis*, the microbe that causes TB, is visible under the microscope, the patient almost certainly has an active infection.

The problem with this test is that someone with no observable bacteria in the sputum can still have an active TB infection. “Only about half of all people with active infections have detectable *M. tuberculosis* in their sputum smears,” says Jacqueline M. Achkar, M.D., M.S., associate professor of medicine (infectious diseases) at Einstein and an attending physician in medicine at Montefiore, the University Hospital and academic medical center for Einstein. “So people with active infections but who are smear-negative often aren’t diagnosed.”

This isn’t such a problem in developed countries. “In the United States, if the clinical signs and symptoms point to TB, we usually don’t stop at negative sputum smears,” Dr. Achkar explains. “But in resource-limited settings, people with negative smears would get sent home until they get so sick that they become smear-positive. Obviously, that’s not ideal.”

A possible alternative test would look not for *M. tuberculosis* itself but for antibodies the immune system makes in response to an active infection. This approach has been tried, but with disappointing results. “Many scientists believe that *M. tuberculosis* doesn’t produce a significant antibody response, but new evidence shows otherwise,” says Dr.
Achkar. “It’s likely that people have been looking for the wrong antibodies.” She may now have found the right ones.

Dr. Achkar’s Einstein colleagues previously discovered that when \textit{M. tuberculosis} multiplies in the lungs, the bacteria shed tiny pieces of their membranes into the bloodstream, making the infection more virulent and triggering a small but detectable antibody response—at least in mice.

Dr. Achkar then showed that these bacterial “membrane vesicles” triggered the same effects—but with even more pronounced antibody production—in people with active TB. She found that these patients produce antibodies against three specific types of vesicle proteins, suggesting that this antibody trio might serve as a highly sensitive and specific biomarker for active TB infection.

Dr. Achkar recently devised an assay for the three antibodies and tested its accuracy in 28 patients known to have active TB infections, plus a control group of 16 people with latent TB. Among the actively infected patients, the test correctly diagnosed all 16 smear-positives. And—particularly important—the antibody test was positive for 9 of 12 smear-negatives (people actively infected but with no \textit{M. tuberculosis} in their sputum). No one in the control group tested positive.

“It must be my personality,” says Dr. O’Donnell, who studies the nexus of the TB and HIV epidemics that are both surging in South Africa—particularly in KwaZulu-Natal province, where he works. “But I’ve seen great improvements in combating HIV in South Africa. When I started working there more than a decade ago, perhaps 13 percent of HIV-infected patients were getting anti-retrovirals. Today, it’s up to 80 percent, and people are living much longer. I’m hopeful we’ll eventually achieve the same results with TB through some combination of prevention and treatment.”

Today, Dr. O’Donnell, also an attending physician in medicine at Montefiore Medical Center, participates in efforts to improve TB care in South Africa, including the first clinical trial of the fluorophage diagnostic test. This test, which could dramatically improve the diagnosis of TB and drug-resistant TB, was developed in the lab of Einstein’s William R. Jacobs, Jr., Ph.D., professor of microbiology & immunology and of genetics. Dr. O’Donnell organized the clinical trial that is evaluating the diagnostic test in South Africa.

**A New Gold Standard for Diagnosing TB?**
The TB news from South Africa has long been downbeat. Yet Max R. O’Donnell, M.D., assistant professor of medicine (pulmonary medicine) and of epidemiology & population health at Einstein, remains optimistic.

**THE FLUOROPHAGE TEST FOR DETECTING TB AND DETERMINING DRUG SENSITIVITY**

Left, rapidly detecting TB: A sputum sample was incubated with viruses (phages) that specifically infect TB bacilli and deliver the gene for green fluorescent protein. A few hours later, each living TB cell infected with a phage expresses the green fluorescent gene and glows, indicating an active TB infection.

Right, assessing drug sensitivity: The anti-TB drug rifampicin was added to the sputum sample at left. Twelve hours later no glowing bacteria are visible, indicating that this strain of TB is sensitive to the drug.
The trial, launched last November, will involve some 350 patients with suspected TB at the Prince Cyril Zulu Communicable Diseases Clinic in Durban, the largest city in KwaZulu-Natal province. The fluorophage test will be compared with two other TB tests: sputum-smear microscopy and the GeneXpert MTB/RIF test (which analyzes the microbes’ DNA to gauge antibiotic sensitivity). The former is the standard test for diagnosing TB, while the latter is the most reliable way of detecting drug-resistant TB.

Dr. O’Donnell expects that the fluorophage test will be more sensitive than the sputum-smear test (which misses half of all patients with active TB), and more clinically useful than the GeneXpert test (which is good at detecting drug-resistant TB strains but cannot distinguish between active and latent bacteria).

Better TB diagnostics would be a godsend in areas such as KwaZulu-Natal. Of the province’s 10 million residents, some 100,000 have TB at any given time. Perhaps 5 percent of those, or 5,000, have drug-resistant TB. (To put those numbers into perspective, New York City, with just over eight million residents, has only 600 yearly cases of TB, with a mere handful that are drug resistant.)

Adding to KwaZulu-Natal’s woes, about 70 percent of people with TB are co-infected with HIV. “If TB is fire, HIV is gasoline,” says Dr. O’Donnell. “We need new tools to keep both epidemics in check, and a better diagnostic test for TB would certainly help.”

The fluorophage test may also be useful for assessing how TB infections respond to treatment. “Now, therapy for drug-resistant TB is given for 18 to 24 months, and then we wait another two years before we declare a patient disease free,” says Dr. O’Donnell. “With the fluorophage test, we could have an ongoing measure of the patient’s TB infection and adjust the patient’s therapy accordingly.”

Go South, Young Man

Everyone should take an occasional break. So in 2004—after 12 years of study and training—James C. M. Brust, M.D., assistant professor of medicine (general internal medicine and infectious diseases) at Einstein, swerved from the usual career track before starting a fellowship in infectious diseases. He traveled south, not to some Caribbean resort but to KwaZulu-Natal, ground zero for both HIV and tuberculosis.

Dr. Brust worked on optimizing treatment for people with HIV, many of whom were co-infected with TB. Anti-HIV drugs were working well against HIV in co-infected patients, but the drugs for TB were not. Hundreds of these patients failed to respond to first-line TB medications, eventually falling gravely ill or dying.

“The numbers were bewildering,” he says. Multidrug-resistant TB (MDR-TB) and its less common cousin, extensively drug-resistant TB (XDR-TB), were just beginning to take hold in South Africa. It would be another two years until the full scope of the problem would come to light, which happened thanks to the work of Neel Gandhi, M.D., then an Einstein faculty member.

Dr. Brust resumed his training after that year abroad. But he would return time and again to KwaZulu-Natal to try to figure out how to combat MDR-TB. The care administered was too centralized. Rural patients with MDR-TB had to travel long distances for treatment and remain hospitalized for months—assuming beds were even available.

“After discharge, people would go back home and default on treatment, and hospitals didn’t have the staff to chase them down,” says Dr. Brust, who is also an attending physician in

Hundreds of patients failed to respond to first-line TB medications, eventually falling gravely ill or dying

In Dr. Brust’s home-treatment program, pickup trucks deliver TB medication—and nurses to administer it—to the doorsteps of patients in need. Below, preparing an injection.
internal medicine at Montefiore. It was the perfect scenario for cultivating drug-resistant strains of TB.

Dr. Brust’s solution was to bring the care to the patients. After joining the Einstein faculty in 2008, he spearheaded an effort to develop a rural, home-based treatment program for people infected with MDR-TB (including those co-infected with HIV) in Tugela Ferry, a rural and very poor part of KwaZulu-Natal where 200,000 people lived. Under this pilot program, nurses visited patients at home and gave injections while community health workers and family supporters were trained to help patients stick with their treatment plans and monitor adverse reactions. Physicians provided additional care at monthly follow-up visits. Patients also received HIV care as needed.

The program has since been adopted at other KwaZulu-Natal hospitals and may soon be used widely in South Africa. In 2010, Dr. Brust received a five-year grant from the National Institute of Allergy and Infectious Diseases to formally evaluate the program. A preliminary analysis of 80 MDR-TB patients (66 of them co-infected with HIV) found that 95 percent stayed with the program and 77 percent were cured, as reported in the *International Journal of Tuberculosis and Lung Disease* in 2012. If successful, the program could become a new model for TB treatment in resource-limited settings.

Between trips to South Africa, Dr. Brust sees patients at Montefiore who have a wide variety of infectious diseases, including HIV, pneumonia and malaria. Fortunately, very few have TB. “Maybe one day,” he says, “we can say the same about people in KwaZulu-Natal and beyond.”

**Attacking Drug-Resistant TB with a One-Two Punch**

In 2006, an Einstein-led research team working in KwaZulu-Natal made an alarming discovery: rates of drug-resistant tuberculosis had increased fivefold since the beginning of the decade—far faster than anyone had expected. What was happening in KwaZulu-Natal was not an anomaly but a regional bellwether, adding to the already enormous challenge of keeping the southern African TB epidemic under control.

Patients infected with MDR-TB do have treatment options, thanks to so-called second-line TB drugs. However, few if any of those drugs work against MDR-TB’s deadly relative—XDR-TB. In the KwaZulu-Natal study, for example, 52 out of 53 XDR-TB patients died from the disease.

But there may be some relief in sight, thanks to Einstein research. In early 2009, John S. Blanchard, Ph.D., the Dan Danciger Professor of Biochemistry, reported in *Science* that a combination of two drugs (clavulanate and meropenem) was...
highly effective in inhibiting the growth of drug-susceptible as well as XDR strains of TB in laboratory culture.

Individually, the drugs have little or no effect on _M. tuberculosis_, but in combination they’re potent. Clavulanate inhibits a bacterial enzyme (beta-lactamase) that shields TB bacteria from meropenem, a member of the beta-lactam class of antibiotics.

Dr. Blanchard didn’t originate the idea of inhibiting beta-lactamase to make beta-lactam antibiotics effective. His contribution—the result of years spent studying mycobacterial enzymes—was finding the ideal combination of beta-lactamase inhibitor and beta-lactam antibiotic that could overpower _M. tuberculosis_. Both drugs have already been approved by the Food and Drug Administration for fighting other bacterial infections. And while they haven’t yet been tested together in clinical trials, there is evidence for the combo’s clinical effectiveness.

In 2010, physicians at L’Hôpital Universitaire Saint-Pierre in Brussels, Belgium, used the two-drug regimen in a last-ditch effort to save the life of a 14-year-old girl from Chechnya. The acutely ill and malnourished patient was diagnosed with XDR-TB after failing to respond to standard first- and second-line TB medications. “We had nothing to lose,” says the lead physician, Marie-Christine Payen, M.D.

Four weeks after the combination therapy was begun, the girl’s health started improving. And after 11 weeks, her sputum tests were negative for TB. The medical team reported its treatment’s success in the _Pediatric Infectious Disease Journal_.

Last year, Dr. Payen used the two drugs, together with one or two second-line drugs, to treat six more XDR-TB patients. Five of the patients showed dramatic improvement, according to a paper in the _International Journal of Tuberculosis and Lung Disease_. The Belgian team has since used the regimen to treat another six patients, “with some success,” Dr. Payen tells _Einstein_ magazine.
THE ABCs OF TB

TB primarily affects the lungs (pulmonary tuberculosis) and spreads mainly through inhalation of bacteria sneezed or spit into the air. Victims die because the bacteria progressively destroy lung tissue.

TB bacteria also target the bones and joints, the genitourinary system, the central nervous system, the intestines and the lymph nodes.

The spinal curvature caused by TB was known as Pott's disease (after the English physician Percival Pott, 1714–1788). Victor Hugo’s famous Hunchback of Notre Dame exhibited the kind of deformity that can be caused by Pott’s disease.

Dating back to the fifth century, TB that infects and inflames lymph nodes in the neck (which can result in severe ulceration and scarring) was referred to as the King’s Evil because the touch of kings or queens was thought to cure victims. Philip Augustus of France (1180–1223) touched 1,500 people during a single ceremony.

The 19th-century New England folk belief in vampires centered on fear that TB victims could return from the dead as vampires and cause surviving relatives to develop the disease.

TB infection triggers immune cells to wall off the bacteria from surrounding healthy tissue, forming swollen regions known as granulomas. Lung granulomas were referred to as tubercules.

In 1882, the German microbiologist Robert Koch showed conclusively that pulmonary TB was caused by a bacterium, which he named Mycobacterium tuberculosis because of the tubercles it causes—hence the name tuberculosis.

The ancient Greeks referred to TB as phthisis (literally, “wasting”)—a term used by physicians for more than 2,000 years. Hippocrates called phthisis the most widespread disease of his age, and phthisis was the cause of death listed on Charlotte Brontë’s death certificate. Until it was called tuberculosis, the standard lay term for TB was consumption, because victims seemed to be consumed by the disease.

Koch proved that TB is caused by microbes but wasn’t the first to suspect as much. The English physician Benjamin Martin, author of A New Theory of Consumption (1720), speculated that the disease resulted from the actions of “wonderfully minute living creatures.”

In 1895, William Roentgen’s discovery of X-rays allowed physicians to monitor the progress of patients’ TB.

TB sanatoriums debuted in Germany in the 1850s to provide TB patients with fresh air and good nutrition. They were the first major advance in treating the disease. Einstein’s Van Etten Building was built in the 1950s as a 500-bed TB sanatorium but was never used for that purpose, thanks to a sharp decline in U.S. TB cases due to the introduction of effective drug therapy and other public health measures.

A critically ill TB patient was first treated with streptomycin on November 20, 1944—with dramatic results. The drug was considered the long-sought magic bullet for TB, but streptomycin-resistant TB strains soon developed.

In 1987, the American Medical Association’s Advisory Council for the Elimination of TB predicted that the disease would be eliminated worldwide by 2010.

In 2013, the World Health Organization stated that someone dies from TB every 15 seconds.
B Cells, the Forgotten Weapon
In tuberculosis research, B cells get no respect.

“B cells got a bad rap more than a century ago when physicians began experimenting with serum therapies for TB,” says John Chan, M.D., professor of medicine and of microbiology & immunology at Einstein and attending physician in infectious diseases, department of medicine, at Montefiore. The blood’s serum contains antibodies, which are produced by immune cells called B cells. The idea behind serum therapy is to protect people against infection.

This approach worked well against some infectious diseases. But studies in the late 1800s found that antibodies offered inconsistent protection against TB, leading to skepticism regarding their usefulness.

Dr. Chan and his Einstein colleagues are among the small coterie of TB investigators who believe not only that B cells deserve a second look but that they may be essential for creating better TB therapies and vaccines that are more effective.

Dr. Chan first got interested in B cells after noticing unusual aggregates of cells in the lungs of mice infected with M. tuberculosis. To his surprise, those collections of cells were chock full of B cells.

“While more needs to be learned about the role of B cells in TB, there are already enough data to suggest that this

\[\text{Image by Soumya Chakravarty, M.D., Ph.D.}\]

B cells got a bad rap more than 100 years ago. But they may be essential for creating better TB therapies and vaccines that are more effective.

“The body’s immune response to TB was supposedly driven by T cells, not B cells,” he says. “But we saw that humans with active TB had the same B-cell aggregates in lung tissue as mice did, which led us to wonder, ‘What are those B cells doing?’”

Plenty, it turns out. In studies of mice, Dr. Chan and P. J. Maglione, an M.D./Ph.D. student in his lab, showed that B cells:

- form a significant part of lung granulomas (clumps of immune cells that create a physical barrier against the spread of bacteria);
- modulate the functions of T cells, which are critical in defending against M. tuberculosis;
- regulate the inflammatory response in the lungs of infected hosts; and
- boost the effectiveness of the BCG vaccine, the only approved TB vaccine.

“While more needs to be learned about the role of B cells in TB, there are already enough data to suggest that this

\[\text{Immunofluorescence staining reveals a B-cell aggregate in a patient with pulmonary tuberculosis. The surfaces of the B cells are stained red and the nuclei are stained blue.}\]
The Casadevall team is trying to identify the parts of the vesicles that elicit immunity and use them as the foundation for a vaccine

arm of immunity should not be overlooked,” says Dr. Chan. Today, he and his colleagues are in the middle of a five-year study, funded by the National Institute of Allergy and Infectious Diseases, to shed more light on how B cells help fight TB.

Dr. Chan is not the only Einstein TB researcher interested in antibody-producing B cells. Arturo Casadevall, M.D., Ph.D., professor and chair of microbiology & immunology, professor of medicine, the Leo and Julia Forchheimer Chair in Microbiology and Immunology and director of Einstein’s Center for Immunological Sciences, is working on two different TB vaccines, a vesicle vaccine and a conjugate vaccine—both aimed at spurring B cells to kill M. tuberculosis before it gains a foothold in the lungs. (By contrast, virtually all the other TB vaccines under development try to provoke a response from the immune system’s T cells.)

**Vesicle TB vaccine.** In 2011, Rafael Prados-Rosales, Ph.D., a postdoctoral fellow in Dr. Casadevall’s lab, observed that TB bacteria grown in laboratory culture release tiny pieces of their membranes. Studies in mice showed that these membrane vesicles transport proteins and lipids that promote the virulence of M. tuberculosis in the lungs. Vaccinating mice with these vesicles elicited a modest immune response, equal to that provoked by the BCG vaccine.

“Our next challenge is to strengthen that response,” says Dr. Casadevall, also attending physician in medicine (infectious diseases) at Montefiore. “One reason we’re not getting a better antibody response is that the vesicles are too heterogeneous. We’re working with Bill Jacobs’ lab to engineer TB strains to overproduce vesicles that are more homogenous.” At the same time, the Casadevall team is trying to identify the exact parts of the vesicles that elicit protective immunity, and then use those antigens as the foundation for a vaccine.

A vesicle-based vaccine would have an important advantage over BCG, a live vaccine that can cause complications that include meningitis (inflammation of the brain’s outer covering).

**Conjugate TB vaccine.** Dr. Casadevall’s conjugate vaccine combines a polysaccharide (a long chain of carbohydrate molecules) from the outer cell wall of M. tuberculosis with an unrelated foreign protein.

“Polysaccharides are not very immunogenic, which means that they don’t elicit much of an antibody response,” he explains. “So you have to trick the immune system, and one way to do that is to attach a part of the bacterium’s polysaccharide to a protein that is highly immunogenic. The immune system responds by creating a robust antibody response to the polysaccharide.”

The researchers are currently experimenting with a vaccine consisting of a TB polysaccharide called arabinomannan and a nontoxic immunity-bolstering protein derived from anthrax bacteria.

Einstein is the only research center working on B-cell TB vaccines. “Sometimes it’s very hard for the research community to switch gears,” says Dr. Casadevall, whose vaccine studies are funded by grants from the Bill and Melinda Gates Foundation. “The data in support of B cells are there, and they have been confirmed by other labs. But it can take many years to change people’s thinking.”

Dr. Casadevall acknowledges that defeating TB may require both B-cell and T-cell vaccines. “I’m agnostic in this regard,” he says. “What matters to me is to get a vaccine that works. I don’t particularly care how it does it.”
The Persister

Williams R. Jacobs, Jr., Ph.D., is obsessed with 0.1 percenters. Not the earners at the top of the income pyramid, but the tiny minority of tuberculosis bacteria that seemingly survive any and all attackers.

“If you treat *M. tuberculosis* with a powerful antibiotic like isoniazid, you kill 99.9 percent of the cells in the first four or five days,” says Dr. Jacobs, professor of microbiology & immunology and of genetics at Einstein and a Howard Hughes Medical Institute investigator. “But you just can’t kill that last 0.1 percent. Whether confronted by drugs or immune cells, these ‘persisters’ are able to activate a genetic program involving hundreds of genes that allows the bacteria to survive.”

If TB bacteria are persistent, they’ve met their match in Dr. Jacobs. For the better part of three decades—all of them spent at Einstein—he has studied these stealthy microbes, finding new and creative ways to exploit their vulnerabilities.

Dr. Jacobs is a pioneering TB researcher who first made his mark on the field in 1987, when he figured out how to manipulate the TB microbe’s genome. He did so using mycobacteriophages (or “phages,” for short), viruses that specifically infect mycobacteria. The phages he engineered were able to penetrate *M. tuberculosis*’s tough, waxy envelope and insert new mycobacterial DNA.

The word “revolutionary” is overused, but this discovery transformed TB research. Dr. Jacobs’ phages helped reveal how isoniazid (a first-line TB medication) disables TB bacteria. Later, he determined the genetic reason that the BCG strain of TB (used in the first and only TB vaccine) triggers an immune response but does not cause full-blown infection.

More recently, Dr. Jacobs created a rapid fluorophage test that both diagnoses the presence of TB in a sputum sample and determines whether that particular strain is susceptible to antibiotics. To do so, he took phages that infect TB bacteria and engineered them to carry a fluorescent gene taken from fireflies.

Each mycobacterial cell infected with the virus expresses the fluorescent-protein gene, causing it to reveal its presence by glowing green under the microscope (signaling that the patient has an active infection). Upon exposure to antibiotics, the bacterial strain will remain glowing if it’s drug resistant, but the green signal will fade away (along with the bacteria themselves) in the case of an antibiotic-sensitive strain. In 36 hours, the simple and inexpensive fluorophage test can pinpoint MDR-TB and XDR-TB strains. Dr. Jacobs described his fluorophage test in the *Journal of Clinical Microbiology* in 2012. (See page 23 for images of the test.)

Whether confronted by drugs or immune cells, persisters are able to activate a genetic program involving hundreds of genes that allows the bacteria to survive
If the test proves successful in clinical trials, it could save countless lives in places such as sub-Saharan Africa and Central Asia, where drug-resistant TB strains are a growing concern—and where tests to diagnose active TB infections and determine their drug sensitivity are too costly and technologically complex to be used.

Phages are also playing a role in Dr. Jacobs’ promising new TB vaccine, dubbed IKEPLUS. It’s based on an ingenious transfer of genes from *M. tuberculosis* to *M. smegmatis*, a closely related mycobacterial species that is lethal to mice at high doses but does not harm people. To construct the vaccine, Dr. Jacobs and his colleagues first created a version of *M. smegmatis* lacking a set of genes, known as ESX-3, that enable the bacteria to evade host immunity. (This strain was designated IKE, for “immune killing evasion.”)

When high doses of the ESX-3-deficient *M. smegmatis* bacteria were infused into mice, the bacteria quickly succumbed to their hosts’ immune systems via a robust T-cell response—the same response a successful TB vaccine would elicit.

Unfortunately, removing the same set of genes from *M. tuberculosis* killed the bacterium—which meant that *M. tuberculosis* could not be manipulated in this way to make a live vaccine. But the Jacobs team found a workaround. They took the *M. smegmatis* bacteria lacking ESX-3 and inserted into them the analogous set of *M. tuberculosis* ESX-3 genes. These viable *M. smegmatis* bacteria, called IKEPLUS, were then infused into mice, which fought off the infection as before.

Eight weeks later, the mice were challenged with high doses of *M. tuberculosis*, which kills mice as well as people. These “vaccinated” mice lived two and a half times longer than control mice, as Dr. Jacobs reported in 2011 in *Nature Medicine*.

Equally impressive, says Dr. Jacobs, was the markedly reduced level of TB bacteria found in the animals’ tissues. “Most notably,” he said, “those vaccinated animals that survived for more than 200 days had livers that were completely clear of TB bacteria, and nobody has ever seen that before.” Just one in five mice showed this robust response in the initial experiments, indicating that IKEPLUS must be improved before it can be considered for clinical trials.

In yet another phage-related experiment, Dr. Jacobs and his colleagues are systematically deleting all 4,500 genes in the TB bacterium, one gene at a time. In this way, the researchers hope to learn more about the function of each gene by observing how TB bacteria fare without it.

“We hope our systematic evaluation of the entire TB genome will reveal vulnerabilities that we can target with new and more effective treatments and vaccines,” says Dr. Jacobs, whose work is funded in part by the National Institutes of Health and the Bill and Melinda Gates Foundation.

Quite fittingly, Dr. Jacobs’ first phages were discovered in the Bronx—in a soil sample from his own backyard. He has also found other useful phages at the Bronx Zoo, many with the help of local high school students whom he sponsors in a summer science program called “No Phage Left Behind.”

Dr. Jacobs’ enthusiasm for basic research is, well, infectious. Quite a few of his summer students have gone on to careers in science. One recent “student” was Bill Gates, who invited Dr. Jacobs to his Manhattan office in 2012 so he could learn more about research into TB. Dr. Jacobs ended up spending two hours educating the software pioneer turned global health philanthropist. “He loved it,” says the researcher.
The Accidental Tuberculologist

The advice that Steven A. Porcelli, M.D., would offer aspiring researchers boils down to three words: follow your nose. “Sniff out what’s interesting and go after it,” he says. “You never know what you might find.”

Dr. Porcelli’s own career, which began in rheumatology, is a perfect illustration. In the 1990s, he was studying the autoimmune disease lupus when he observed some mysterious T cells that seemed to behave differently from other known T cells. “Having found them, I thought I should figure out what they do,” says the physician-scientist, who is now professor of microbiology & immunology and of medicine (rheumatology) and the Murray and Evelyne Weinstock Chair in Microbiology and Immunology at Einstein.

Using *M. tuberculosis* as his model pathogen, Dr. Porcelli discovered that the T cells he was studying can recognize lipid antigens. Until then, scientists thought that T cells could recognize only protein antigens. This insight would change immunology—and Dr. Porcelli’s career. “Those T cells really got me thinking about tuberculosis,” he says. “Since the *M. tuberculosis* bacterial cell is about one-third lipid by weight, it made sense that our immune systems would have evolved a way to recognize the lipids of foreign bacteria. So if we have these T cells that attack *M. tuberculosis* by recognizing its lipids, why can’t we eliminate *M. tuberculosis* from the body?”

As Dr. Porcelli notes, the vast majority of people infected with TB bacteria do not develop active tuberculosis. “But the bacteria are never eradicated by the immune system,” he says. “Rather, they’re driven into a latent state and usually remain that way. If 100 people are infected, maybe only one or a few will reactivate. But if you have two billion infected worldwide—the current estimate—then it becomes an enormous problem, even if reactivation occurs in just a small percentage of those people.”

Dr. Porcelli has been studying various aspects of TB ever since. He is currently focusing on how one subpopulation of lipid-recognizing T cells, called invariant Natural Killer T (iNKT) cells, respond to *M. tuberculosis* and how this response might be enhanced. He may have found an answer in a class of molecules called glycolipids. Glycolipids are combinations of carbohydrates and lipids that are made by most living organisms. In recent years, scientists have shown that some types of naturally occurring glycolipids can selectively activate iNKT cells. And synthetic glycolipids called alpha-galactosylceramides activate iNKT cells even more strongly. Now, in a study funded by the National Institute of Allergy and Infectious Diseases, Dr. Porcelli is synthesizing different alpha-galactosylceramide molecules and testing whether they can improve the immune response against *M. tuberculosis*. The

“Sniff out what’s interesting and go after it,” says Dr. Porcelli. “You never know what you might find”
results in mouse models have been encouraging, although he doesn’t expect that his synthetic alpha-galactosylceramides will rev up the immune system sufficiently to eliminate TB infections. But the molecules could prove valuable as “adjuvants”—substances that increase the body’s response to vaccines.

Dr. Porcelli is also trying to build a better TB vaccine. One project, a collaboration with Einstein scientists William R. Jacobs, Jr., Ph.D., and John Chan, M.D., has resulted in a new live attenuated vaccine built from *M. tuberculosis* itself. The researchers created the vaccine by deleting the bacterium’s *sec2A* gene, which helps transport proteins across the cell membrane. The gene’s presence also heightens *M. tuberculosis*’ virulence by preventing infected host cells from displaying bacterial antigens to the immune system.

A first round of testing in mice showed that the *sec2A* vaccine achieved protection against TB that was significantly better than that obtained from BCG vaccination—exactly what the researchers were hoping for. But the microbes in the new vaccine retained some ability to multiply and infect the vaccinated animals. To counter this problem, the Einstein team deleted a second gene, *lysA*, that also influences *M. tuberculosis* virulence. Mouse studies involving this double mutant vaccine showed that a single immunization was significantly more effective than the BCG vaccine and also extremely safe. How it will fare in humans remains to be seen.

“BCG was developed almost a hundred years ago, and we still haven’t improved upon it, which is pretty frustrating,” says Dr. Porcelli. “Perhaps the human immune system lacks the basic weapons it needs to fight this bacterium. I don’t believe that, although it’s a viable hypothesis. I think the problem is that we still don’t know very much about this organism. It has been ‘studying’ us for thousands of years. We’re just beginning to catch up.”

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**THE TWO-ARMED IMMUNE SYSTEM**

The body responds to microbial invaders such as bacteria, parasites and viruses with two major lines of defense: cell-mediated immunity and humoral immunity.

In cell-mediated immunity, immune cells including T cells and phagocytes are aroused to attack the invading pathogen. In humoral immunity, the body makes B cells, which produce antibodies against certain microbial proteins known as antigens.

Both T cells and B cells can become memory cells, ensuring that the body will be ready to respond the next time it encounters the same antigen. The memory response can be triggered by infection as well as by vaccines, which contain microorganisms (or parts of microorganisms) that have been treated so that they provoke an immune response but not full-blown disease.
THE CAMPAIGN TO TRANSFORM EINSTEIN

Celebrating a Historic Gift and Academic Achievement
It was a night glittering with Einstein’s brightest stars: More than 400 Einstein supporters, alumni and faculty gathered on April 15 at the Plaza Hotel in Manhattan to honor our distinguished donors and faculty, and to celebrate two philanthropic milestones and their impact on the College of Medicine.

At the event, Allen M. Spiegel, M.D., Einstein’s Marilyn and Stanley M. Katz Dean, publicly announced the College of Medicine’s most ambitious fundraising effort to date: a capital campaign to raise at least $500 million, known as “The Campaign to Transform Einstein.” He then disclosed the largest gift the College of Medicine has ever received in its 60-year history: a bequest of more than $160 million from longtime Einstein Benefactor Muriel Block. With Mrs. Block’s extraordinary gift, the College of Medicine has now raised more than $420 million toward what Dean Spiegel called a “working minimum goal” of half a billion dollars. He noted that Einstein expects to reach and exceed that total in the months to come.

Mrs. Block, a prominent member of the Einstein National Women’s Division and a leading supporter of scientific research, passed away in 2010. The magnitude of her bequest left the Einstein community deeply moved and excited about the potential impact of such altruism on the future of Einstein and of medical research, especially since National Institutes of Health grant funding has been static in recent years.

“We have crafted a vision to move Einstein forward, and I am grateful for the remarkable generosity of Muriel Block and the thousands of donors who have responded to our mission during this era,” said Dr. Spiegel. “Biomedical research is more expensive than ever—but the payoffs it yields can be greater than ever.”

“It is a night glittering with Einstein’s brightest stars,” Spiegel said. “This is a night that recognizes and celebrates our donors, alumni and faculty. It’s a night that is lifted by the generosity of Muriel Block, whose bequest will enable us to further develop several new initiatives.”

“Einstein has accomplished so much in the six and a half years I have served as chair, and the future has never looked brighter or more filled with possibilities,” Ruth L. Gottesman, Ed.D., chair of Einstein’s Board of Overseers, told the audience. “Thanks to the leadership and stewardship of this premier medical institution, as well as the enthusiastic support of thousands of donors, we begin an exciting new era in biomedical research and education.”

Transforming Einstein

“The Campaign to Transform Einstein” has already helped develop several new initiatives:

- The Center for Experimental Therapeutics, designed to accelerate the movement of potential drugs through the development pipeline and into the marketplace;
- The Genome Sequencing and Analysis Initiative, to answer genetic questions on a wide range of diseases and leverage the resources of the newly established New York Genome Center, of which Einstein is a founding member; and
- The state-of-the-art Education Center, which encourages interactive, small-group learning, offers the latest technology and features space dedicated to studying. It will house a new simulation center to help students hone their clinical skills.

Mrs. Block’s bequest in particular, given in her name and that of her late husband, real estate executive Harold Block, will significantly advance the College of Medicine’s goal of improving human health. In recognition, the school has named several significant entities in honor of the Blocks, including:

- The Harold and Muriel Block Institute for Brain Research;
- The Harold and Muriel Block Building (formerly known as the Mazer Building), which will house administrative offices and additional research space;
- The Harold and Muriel Block Institute for Clinical and Translational Research at Einstein and Montefiore; and
- Ten new fully endowed chairs, known as the Harold and Muriel Block Scholars (see “New Appointments” on the next page).

The evening offered the Einstein community a chance to celebrate all that it has achieved during a remarkable era and the clear vision set forth by Einstein’s leadership for exciting growth in the years to come.
NEW APPOINTMENTS

Twenty-two Einstein physicians and scientists who were newly appointed to endowed professorships, center directorships or both were honored, along with the donors who help make their work possible:

Judy Aschner, M.D., the Michael I. Cohen, M.D., University Chair, Department of Pediatrics
Steven C. Almo, Ph.D., the Wollowick Family Foundation Chair
Michael Aschner, Ph.D., the Harold and Muriel Block Chair in Molecular Pharmacology
Julia H. Arnsten, M.D., M.P.H., director, Center for Comparative Effectiveness Research
Aviv Bergman, Ph.D., the Harold and Muriel Block Chair in Systems & Computational Biology
Arturo Casadevall, M.D., Ph.D., director, Center for Immunological Sciences
Pablo E. Castillo, M.D., Ph.D., Harold and Muriel Block Chair in Neuroscience
Ana Maria Cuervo, M.D., Ph.D., the Robert and Renée Belfer Chair for the Study of Neurodegenerative Diseases
Teresa P. DiLorenzo, Ph.D., the Diane Belfer, Cypres & Endelson Families Faculty Scholar in Diabetes Research
Winfried Edelmann, Ph.D., the Joseph and Gertrud Buchler Chair in Transgenic Medicine
Meredith A. Hawkins, M.D., the Harold and Muriel Block Chair in Medicine and director, Einstein Global Diabetes Institute
Betsy Herold, M.D., the Harold and Muriel Block Chair in Pediatrics and director, Translational Prevention Research Center
Robert C. Kaplan, Ph.D., the Dorothy and William Manealoff Foundation and Molly Rosen Chair in Social Medicine
Kamran Khodakhah, Ph.D., Harold and Muriel Block Chair in Neuroscience
Margaret Kiellian, Ph.D., the Samuel H. Golding Chair in Microbiology
Mimi Kim, Sc.D., Harold and Muriel Block Chair in Epidemiology & Population Health and director, Quantitative Sciences in Biomedical Research Center
Thomas E. Rohan, M.D., Ph.D., Harold and Muriel Block Chair in Epidemiology & Population Health
Robert H. Singer, Ph.D., the Harold and Muriel Block Chair in Anatomy and Structural Biology
Howard D. Strickler, M.D., Harold and Muriel Block Chair in Epidemiology & Population Health
Joe Verghese, M.B.B.S., director, Jack and Pearl Resnick Gerontology Center
Allan W. Wolkoff, M.D., the Herman Lopata Chair in Liver Disease Research and director, Marion Bessin Liver Research Center
Judith Wylie-Rosett, Ed.D., the Atran Foundation Chair in Social Medicine.
Drs. Kaplan and Khodakhah, along with Chaim Puttman, M.D., and Syun-Ru Yeh, Ph.D., also received tenure.

Drs. Kaplan and Khodakhah, along with Chaim Puttman, M.D., and Syun-Ru Yeh, Ph.D., also received tenure.
Burton P. Resnick, Einstein Overseer and chair emeritus, with Joe Verghese, M.B.B.S., director, Jack and Pearl Resnick Gerontology Center.

Overseers Arthur Hershaft, left, and Arnold S. Penner with Dean Spiegel.

Dean Spiegel with Todd Olson, Ph.D., professor of anatomy and structural biology. The check represents a bequest of $8 million to Einstein from the late George J. Fruhman, Ph.D., associate professor of anatomy and structural biology, establishing endowed four-year scholarships for medical students of intellectual merit.

Overseer Benjamin J. Winter and Susan Winter.

From left, Overseer Gerald Dorros, M.D. ’68; Overseer Ronald J. Ross, M.D. ’59; and Richard Frankenstein, M.D. ’73.

Overseer Samuel G. Weinberg and Andrew M. Weinberg, Men’s Division executive board member.

Overseer Edward S. Panzer, Pamela Panzer, Overseer and chair emeritus Robert A. Belfer and Overseer Renée E. Belfer.

Overseer Linda Altman and Earle Altman.

Kathy Weinberg, president, Einstein National Women’s Division, second from left, with Women’s Division national executive board members Vera Chapman, Terri Goldberg and Ellen Salaburg.

Overseer Linda Altman and Earle Altman.

Honorary Overseer Irving J. Baumrind.

Overseer Roger Einiger and Carol Einiger with Philip O. Ozuah, M.D., Ph.D., right, executive vice president and chief operating officer, Montefiore Medical Center, Einstein’s University Hospital and academic medical center.
As a sophomore at Bronx Science High School, Dr. Dorros visited a hospital, saw children in body casts and decided to go into medicine. Einstein was his first choice.
Dr. Dorros and his wife, Myra, live in Jackson Hole, WY. There he has fulfilled his lifelong dream of becoming an American cowboy: riding horses, camping in the mountains and learning about the West.

A member of the National Cutting Horse Association, he trains on cutting horses in Wyoming and Arizona and competes in cutting-horse rodeos throughout the western states. (He and Myra pull their horses in a trailer labeled “Cutting Cowboy Cardiologist.”)

In cutting, the goal is to guide a cow out of the herd. “During the ride you give up control of the horse by putting down your reins. You don’t have control of the cows, but your horse is trained to block the cow getting back to the herd. You just hold on to the saddle’s horn,” he explains. “Cutting is like a ballet except it’s really fast, you’re dealing with a 1,200-pound horse and 300- to 500-pound cows, and everything must be done according to critical rules applied by highly trained judges. It’s the most difficult and humbling sport imaginable.”

Dr. and Mrs. Dorros enjoy visits from their four grown children (including Ari Dorros, M.D. ’97) and five grandchildren. His leisure activities also include collecting rare books, especially illustrative volumes about Western Americana.
On May 29 at Lincoln Center's Avery Fisher Hall in New York City, Yeshiva University president Richard M. Joel told Einstein’s 55th graduating class: “Your education here amounts to so much more than an assemblage of facts and medical know-how...We hope we’ve shown you how to build meaningful lives on the values of integrity and morality and service to the world...You will heal not only body but spirit; not only a person but families and communities.”

Alumni have been carrying Einstein’s healing mission into the world since 1959. The Class of 1963—celebrating its 50th reunion (see pages 42–45)—received a special round of applause; pioneering interventional radiologist Monique C. Katz, M.D. ’63, offered inspiring words and wisdom to the members of the class 50 years its junior and hoped they would experience the same “moments of sheer joy that the practice of medicine has given us throughout these past 50 years.” Five alumni received special recognition this year for their accomplishments; Robert D. Burk, M.D., a distinguished professor in four Einstein departments, was accorded Honorary Alumnus status (see box on page 57). Presenting the awards was Jack Stern, M.D. ’74, Ph.D. ’73, president, Einstein Alumni Association board of governors.

Also honored were six outstanding Einstein faculty members: Eric J. Epstein, M.D.; Setul Pardanani, M.D.;
The identity of this year’s commencement speaker—Philip O. Ozuah, M.D., Ph.D., executive vice president and chief operating officer of Montefiore, the University Hospital and academic medical center for Einstein—reminded the audience that we don’t need to look beyond our own community to find someone with a unique and inspiring perspective, “a true leader,” said Allen M. Spiegel, M.D., Einstein’s Marilyn and Stanley M. Katz Dean. (See sidebar at left.) In addition to his responsibilities at Montefiore, Dr. Ozuah is a professor of pediatrics and of epidemiology & population health at Einstein.

After Dr. Ozuah’s address, Dean Spiegel presented to President Joel 197 M.D. and 62 Ph.D. candidates, 21 of the latter also receiving M.D. degrees. This brings Einstein’s grand total of graduates to 8,086 M.D.s and 1,411 Ph.D.s.

Along with Joan W. Berman, Ph.D., senior academic advisor to the graduate division, the Ph.D. candidates affirmed their commitment to use science to the benefit of all. Dean Spiegel led the medical students in the Declaration of Geneva, which exacts a pledge not to use medical knowledge to further human abuses.

Commencement was both a family-and-friends occasion and an academic event. Many students were hooded by members of the wider Einstein community, including President Joel himself, who hooded his daughter-in-law, Leora Goodman Joel. Numerous graduates brought beautiful babies and children on the journey across the stage. (When a baby cried during Dr. Ozuah’s commencement address, the doctor—a pediatrician—smiled broadly. “Music to my ears,” he said.)

Following Einstein tradition, Dean Spiegel concluded with the Prayer of Maimonides. Grand marshal Edward R. Burns, M.D. ’76, executive dean; Richard M. Joel, Yeshiva University president; Philip O. Ozuah, M.D., Ph.D., commencement speaker and Montefiore Medical Center executive vice president and chief operating officer; Steven M. Safyer, M.D. ’82, Montefiore president and chief executive officer; and Dean Spiegel.

Amanda C. Raff, M.D.; Rachel J. Katz, M.D.; Howard M. Steinman, Ph.D.; and Ana Maria Cuervo, M.D., Ph.D.

2 Dean Allen M. Spiegel, M.D., with Samuel S. “Woodie” Kessel, M.D. ’74, M.P.H., 2013 Lifetime Achievement Award recipient.

3 Daniel Belyusar, Ph.D. ’13.

4 Edward R. Burns, M.D. ’76, executive dean; Richard M. Joel, Yeshiva University president; Philip O. Ozuah, M.D., Ph.D., commencement speaker and Montefiore Medical Center executive vice president and chief operating officer; Steven M. Safyer, M.D. ’82, Montefiore president and chief executive officer; and Dean Spiegel.
Einstein’s 2013 Reunion got off to a rousing start on Wednesday, May 29, with a Welcome Luncheon for members of the 50th Anniversary Reunion Class of 1963. The luncheon was hosted by the Alumni Association at the Yeshiva University Museum at the Center for Jewish History in Manhattan. After Allen M. Spiegel, M.D., the Marilyn and Stanley M. Katz Dean, congratulated them on reaching their important milestone, the members of the fifth class of Einstein graduates viewed a slideshow of photos from their medical school days and reminisced about their pioneering years at Einstein.

The next stop for many luncheon celebrants: Lincoln Center’s Avery Fisher Hall, where they joined alumni from the other reunion classes (graduation years ending in 3 or 8) to march at Commencement. As they led the alumni into the hall, members of the Class of 1963 were applauded by Dean Spiegel, the new graduates and the assembled dignitaries and guests.

The Hilton New York Hotel was the site of the Gala Reunion Dinner for all nine reunion classes on Thursday, May 30. Alumni Association president Arthur Kozin, M.D. ’82, then president-elect and the evening’s emcee, welcomed the 28 members of the Class of ’63 as they filed into the ballroom. Speaking on behalf of the class, Samuel Silverstein, M.D. ’63, cited the “superb” medical education that he and his classmates had received, and “the estimable faculty under whose tutelage we were privileged to study.

“The excellence of our education has enabled us to remain productive through the greatest social and scientific revolutions in the history of medicine,” Dr. Silverstein observed. “The kind and respectful manner in which we were educated taught us by example to be kind, compassionate and humanistic physicians.”

During the dinner program, Dean Spiegel congratulated the 2013 Alumni Award honorees. The celebrants also heard from Eric Tanenbaum, Class of 2014, recipient of the Alumni Association Scholarship Award, who thanked all of those assembled for help-

“The kind and respectful manner in which we were educated taught us to be kind, compassionate and humanistic physicians.”
of clinical operations in the department of ophthalmology and visual sciences at Einstein and an attending physician at Montefiore Medical Center, spoke fondly of her classmates and of her medical school experience. “Einstein allowed every one of us an opportunity to be ourselves,” said the mother of three. Two of her three children were born while she was in medical school.

The festivities culminated on Friday, May 31, with Alumni Day on Campus. Harris Goldstein, M.D. ’80, welcomed guests to a morning symposium in the Ethel and Samuel J. LeFrak Auditorium at the Michael F. Price Center for Genetic and Translational Medicine/ Harold and Muriel Block Research Pavilion. Dr. Goldstein is professor of pediatrics and of microbiology & immunology, the Charles Michael Chair in Autoimmune Diseases, director of the Einstein-Montefiore Center for AIDS Research and associate dean for scientific resources.

The symposium was titled “Proactive Diagnosis and Treatment of Disease by Genome Sequencing and High Resolution Imaging of the Heart and Brain.” Presenters included Dean Spiegel; Mario J. Garcia, M.D., professor of medicine and chief, division of cardiology, professor of radiology and the Pauline A. Levitt Chair in Medicine at Einstein and co-director of the Montefiore-Einstein Center for Heart and Vascular Care; and Michael L. Lipton, M.D., Ph.D., associate professor in the departments of radiology (neuroradiology) and of psychiatry and behavioral sciences and in the Dominick P. Purpura Department of Neuroscience, and associate director of Einstein’s Gruss Magnetic Resonance Research Center.

The day concluded with a luncheon followed by guided tours of the Jack and Pearl Resnick Campus led by Edward R. Burns, M.D. ’76, executive dean and professor of pathology and of medicine (hematology), and Nadine T. Katz, M.D. ’87, professor of clinical obstetrics & gynecology and women’s health, medical director of Montefiore’s Einstein campus and vice president of Montefiore Medical Center. The tours featured stops at the Ruth L. Gottesman Clinical Skills Center; the laboratory of Matthew Levy, Ph.D., assistant professor of biochemistry, in the Price Center/Block Research Pavilion; and the anatomy laboratory in the Leo Forchheimer Medical Science Building.

1 From left, Stephen A. Wertheimer, M.D. ’63; Phyllis M. Rosen; and Richard A. Rosen, M.D. ’63.

2 From left, Monique C. Katz, M.D. ’63; Connie R. Goldstein, M.D. ’63; Michael S. Goldstein, M.D. ’63; and Mordecai D. Katz.

3 From left, Joel W. Eisner, M.D. ’63; Ira Rezak, M.D. ’63; and Lawrence I. Bonchek, M.D. ’63, at the Class of 1963 Welcome Luncheon.

4 From left, Blake Nosratian; Faranak Nosratian, D.D.S.; and Farshad Nosratian, M.D. ’83, recipient of the 2013 Einstein Lifetime Service Award.

5 From left, Stephen R. Baker, M.D. ’68; Robert Zohlman, M.D. ’68; Roger Platt, M.D. ’68; and Julie Rich Ingelfinger, M.D. ’68.

6 Members of the Class of 1978.
1 Frank Chang, M.D. ‘83, and Mohammad Faisal, M.D. ‘83.
2 From left, Karen Zur, M.D. ‘98; Sarah Klagsbrun, M.D. ‘98; Catherine Hicks, M.D. ‘98; Katerina Shvartzman, M.D. ‘98; and George Ruiz, M.D. ‘98.
4 From left, Felise Milan, M.D. ‘88, professor of clinical medicine; Sharon Albers Glick, M.D. ‘88; Mary Glynn Furlong, M.D. ‘88; and John Furlong.
5 Todd R. Olson, Ph.D., professor of anatomy and structural biology, welcomes Alumni Day on Campus attendees to the anatomy lab in the Leo Forchheimer Medical Science Building.
6 Members of the Class of 2003.
The New York chapter of Einstein’s National Women’s Division hosted its 59th annual Spirit of Achievement Luncheon on April 30 at New York City’s Plaza Hotel. This year’s honorees were noted fashion designer and entrepreneur Liz Lange, who pioneered the concept of chic maternity wear; Anne Wojcicki, cofounder of the personal genetics and biotech company 23andMe and of the Breakthrough Prize in Life Sciences, the world’s largest academic prize for medicine and biology; and Einstein faculty member Francine H. Einstein, M.D., a leading expert in maternal and infant health. Proceeds benefited the Women’s Division initiative to support research on breast and gynecologic cancers at the Albert Einstein Cancer Center.

Back by popular demand for the fifth consecutive year, Willie Geist, co-host of NBC’s Today and of MSNBC’s Morning Joe, donated his time and talent as luncheon emcee. Guests were treated to an exclusive fashion show courtesy of the Manhattan boutique 25 PARK. Style expert Jill Martin, an Emmy Award–winning television personality and a past Spirit honoree, contributed her expertise as special guest commentator.

New York chapter co-presidents Mindy Feinberg and Mara Sandler welcomed the 320 Women’s Division members and guests and thanked luncheon co-chairs Alison Brettschneider, Janet Hershaft, Tara Mark Rosenblum and Andrea Stark. Ruth L. Gottesman, Ed.D., chair of Einstein’s Board of Overseers, also greeted the attendees, noting that the Women’s Division has contributed $6 million toward Einstein’s current $500 million capital campaign.

Dr. Einstein, an associate professor of obstetrics & gynecology and women’s health and of medicine (endocrinology), talked about her work as a physician-scientist conducting research and treating patients with high-risk pregnancies. She also shared her personal experience as a patient, when she was diagnosed with breast cancer. That experience gave her “a better understanding of what my
patients are going through…and how much we all need each other.”

Ms. Lange, who launched her maternity line in 1997, was diagnosed with cervical cancer in 2001. “I had two young children and was busy building my business,” she recalled. “But through early detection and state-of-the-art treatment, I was cured. The doctors and scientists at Einstein are changing the lives of so many women by stacking the odds in their favor.”

Ms. Wojcicki spoke of her company’s mission to revolutionize healthcare by helping people obtain and understand their own genetic information. “Albert Einstein College of Medicine is enabling people everywhere to live healthier lives,” she said. “23andMe owes a debt of gratitude to everyone at Einstein who has participated in creating this legacy for nearly 60 years.”

To join the Einstein National Women’s Division’s initiative to support research on women’s health and cancers, or to learn more about the Women’s Division, please contact Janis Brooks at 718.430.2818 or janis.brooks@einstein.yu.edu.

Save the Date: Monday, November 11, 2013

60th Anniversary Celebration of the Women’s Division and the Founding of Albert Einstein College of Medicine

honoring Daryl Roth and Benjamin Winter

The Plaza Hotel, New York City

For more information: womensdivision@einstein.yu.edu • 718.430.2818

www.einstein.yu.edu/r/womensdivision
Men’s Division Golf and Tennis Outing Highlights Translational Research

Scarsdale Golf Club in Hartsdale, NY, was the setting for the Einstein Men’s Division’s annual Golf & Tennis Tournament and Dinner on June 3. This year’s honoree was Robert A. Knakal, chair of Massey Knakal Realty Services, a leading New York–based commercial real estate firm. The event benefited the Men’s Division Research Scholars Program (MDRSP), the division’s initiative to support the career development of Einstein physician-scientists who collaborate with senior scientists at the College of Medicine on important translational research studies.

Men’s Division Chair Mitchel Maidman was the evening’s host. He opened the program by introducing Allen M. Spiegel, M.D., Einstein’s Marilyn and Stanley M. Katz Dean, who greeted the assembled members and guests and spoke about Einstein’s new Center for Experimental Therapeutics. Dean Spiegel also congratulated the Men’s Division for contributing to the success of The Campaign to Transform Einstein, the College of Medicine’s current capital campaign, by raising $3 million toward the MDRSP.

Mr. Maidman then presented Mr. Knakal with the 2013 Albert Einstein Humanitarian Award, in recognition of his philanthropic leadership in promoting the health and education of disadvantaged children, both in New York City and in Israel.

"Bob Knakal is an outstanding business professional, a dedicated philanthropist and an exceptional human being," said Mr. Maidman. "He has demonstrated extraordinary passion and commitment in helping to make life better for the children of New York City, a cause that is also important to Einstein."

"I’m proud to receive this honor and to help support medical research at Einstein that benefits people in our city..."
Einstein’s Men’s Division

Since 1961, the Men’s Division of Albert Einstein College of Medicine has provided volunteer leadership to encourage the growth and development of the College of Medicine. Its current fundraising initiative is the Men’s Division Research Scholars Program.

To learn more about the Einstein Men’s Division or the Men’s Division Research Scholars Program, please contact Eric Blomquist at 718.839.7952 or eric.blomquist@einstein.yu.edu.

4 From left, Stephen R. Karafiol, Men’s Division executive board member; Greg Gonzalez, Men’s Division vice chair and event chair; and Michael Winston, general manager, Tourbillon Boutique, New York.

5 Andrew M. Weinberg and Peter E. Zinman, Men’s Division executive board members and 2013 Golf chairs.

6 Peter Bernstein, Men’s Division executive board member and event chair, center, with Casey Klein, left, and Jason Buchberg.

7 From left, Robert A. Knakal, honoree; Ruth L. Gottesman, Ed.D., chair, Einstein Board of Overseers; Mitchel A. Maidman; and Dean Allen M. Spiegel, M.D.

8 From left, Neil Katz; Marc Altheim, 2013 Tennis chair; Robert Kapel, M.D.; and Einstein Overseer Stanley M. Katz, Men’s Division past chair and executive board member emeritus.

and throughout the world,” said Mr. Knakal. He commended the College of Medicine on its work on behalf of children, noting the exceptional clinical services and research focusing on autism and other developmental disorders at Einstein’s Children’s Evaluation and Rehabilitation Center.

Mr. Maidman thanked his fellow division members for their generous support of the MDRSP. He also recognized event chairs Andrew Weinberg, Peter Zinman, Adam Gottbetter, Jonathan Hageman, Marc Altheim and Martin Luskin for contributing their time and expertise to planning and organizing this year’s golf and tennis outing and for making it a success for Einstein.
Einstein in Florida 2013

Recent advances in drug discovery, toxicology, pediatrics and stem cell research were the focus of Einstein in Florida 2013 programming. These popular events bring friends and supporters of the College of Medicine in Florida together with leading Einstein experts to discuss timely medical issues and new developments in key areas of research at Einstein.

This year, Overseers Marilyn and Stanley M. Katz hosted two luncheon seminars at Palm Beach Country Club. The guest speakers on January 16 were Vern L. Schramm, Ph.D., professor and chair of biochemistry and the Ruth Merns Chair in Biochemistry, and Victor L. Schuster, M.D., professor and chair of medicine, professor of physiology & biophysics and the Ted and Florence Baumritter Chair in Medicine. Drs. Schramm and Schuster gave an overview of Einstein’s new Center for Experimental Therapeutics, which will speed the development of innovative drug treatments for cancer, heart disease, neurodegenerative disorders and other serious medical conditions.

Guests on March 20 heard from Allen M. Spiegel, M.D., the Marilyn and Stanley M. Katz Dean, and new faculty members Judy Aschner, M.D., the Michael I. Cohen, M.D., University Chair and professor of pediatrics and physician-in-chief, The Children’s Hospital at Montefiore, and Michael Aschner, Ph.D., professor of molecular pharmacology and of pediatrics and the Harold and Muriel Block Chair in Molecular Pharmacology. Research targeting diseases of the heart and lungs in high-risk preterm infants, and the effects of heavy metals on the brain, were among the issues discussed.

That evening, the Club at Admiral’s Cove, in Jupiter, was the setting for a conversation and reception hosted by Overseer Karen Mandelbaum and her husband, David. Dean Spiegel and Drs. Judy Aschner and Michael Aschner were the featured speakers. Topics included:

• the role of research in improving pregnancy outcomes and child health;
• the possible link between heavy metals and neurodegenerative diseases such as Parkinson’s and Alzheimer’s;
• stem cell research and regenerative medicine; and
• personalized-medicine approaches to cancer and other diseases.

1 Overseer Karen Mandelbaum, second from right, and her husband David Mandelbaum, far left, with Judy Aschner, M.D., and Michael Aschner, Ph.D.

2 Overseer Ronald J. Ross, M.D. ’60, and Helen Ross.

3 Overseers Marilyn and Stanley M. Katz, left, with Victor L. Schuster, M.D.

4 Janet and Martin Spatz, right, with Vern L. Schramm, Ph.D.
MAKING A DIFFERENCE  EINSTEIN EMERGING LEADERS

EEL Raises Funds for CERC and Debuts “My Einstein”

A crowd of 500 philanthropically minded New York professionals attended the second annual Einstein Emerging Leaders (EEL) gala on June 6. Held at the Dream Downtown Hotel in Chelsea, the event benefited Einstein’s Children’s Evaluation and Rehabilitation Center, which has been the focus of EEL’s advocacy and fundraising efforts on behalf of the College of Medicine.

Attendees were introduced to My Einstein, a new EEL initiative that was unveiled in a short video. My Einstein allows prospective donors to learn about and support areas of medical research that spark their interest, and to share with the wider community, via EEL’s social media platforms, their reasons for becoming involved with Einstein.

“By connecting passion with need, My Einstein lets our generation engage in philanthropy on our own terms—in a modern, connected, transparent way,” explains EEL executive chair Joanna Steinberg.

Author and fashion trendsetter Leandra Medine donated her star power as the evening’s special guest host and also appeared in the video.

“Like Leandra, EEL represents the new generation of New York’s brightest young professionals with a strong desire to leverage their influence for the greater good,” says Adam Friedman, M.D. ’06, an Einstein faculty member and a founding EEL board member. “EEL offers like-minded Millennials a chance to be involved in activities that help advance biomedical research at Einstein and to give back in a whole new way.”

Other celebrity guests included TV host and model Lenay Dunn, actress Allison Carter Thomas, actors Chaske Spencer and Rob Gorrie, TV personality Sharon Carpenter and former NFL Giant Tiki Barber, who also attended last year. Dance music spun by DJ Louis XIV kept the party going well into the night.

“My colleagues and I congratulate the EELs on a successful gala,” says Ruth L. Gottesman, Ed.D., chair of the Einstein Board of Overseers, who attended the event. “It’s thrilling to see this committed group of young philanthropists embrace Einstein’s mission with passion, energy, fresh ideas and great style.”

1 Special guest host Leandra Medine, second from right, with EEL board members Joanna Steinberg, Matt Makovsky and Danielle Segal.

2 EEL board member Dr. Karthik Krishnamurthy, assistant professor of dermatology at Einstein, and his wife, Dr. Aneesa Krishnamurthy.

3 Sheera Minkowitz, M.D. ’12, and gala host committee member Alyx Rosen, M.D. ’13.

4 EEL hosted “Superfoods Are Fun!”—a program for children and families served by CERC—on Sunday, May 5, in the Van Etten lobby.

SCIENCE AT THE HEART OF MEDICINE  51
How do doctors go from a patient’s complex constellation of symptoms to an accurate diagnosis and appropriate treatment plan? Einstein students begin learning how to traverse this terrain in their first- and second-year courses. Then, in their third-year student “clerkships,” their educational experience moves to a higher level with real patients in hospitals, emergency rooms and outpatient clinics. This year’s Mini–Med School retreat, hosted by Einstein’s Board of Overseers on May 22, gave attendees a glimpse of this learning process by focusing on two challenging patients with cancer. Each case, with active audience interaction, raised important medical, ethical and research questions that provided deeper insight into our students’ educational experience.

“Our annual Mini–Med School offers Board members and friends a window into some of the people and programs that make Einstein a unique medical institution,” says Allen M. Spiegel, M.D., Einstein’s Marilyn and Stanley M. Katz Dean, who oversees the content and direction of the “curriculum” with input from Ruth L. Gottesman, Ed.D., chair of the Board of Overseers. “It also allows them to experience the new competency-based approach to medical education.”

The program began with a working lunch in the lower lobby of the Michael F. Price Center for Genetic and Translational Medicine/Harold and Muriel Block Research Pavilion, where Dean Spiegel introduced the day’s topic. The group then moved to the Ethel and Samuel J. LeFrak
Auditorium where I. David Goldman, M.D., professor of medicine (oncology) and of molecular pharmacology, the Susan Resnick Fisher Professor and director of the Albert Einstein Cancer Center (AECC), presented an overview of the AECC and the collaborative research conducted by Einstein faculty from across different disciplines.

Dr. Goldman’s remarks were followed by two interactive case studies. The first was presented by Dean Spiegel and Steven K. Libutti, M.D., professor and vice chair of surgery, professor of genetics and associate director for clinical services at the AECC; the second was offered by Patricia (Tia) Powell, M.D., professor of clinical epidemiology & population health and of clinical psychiatry and behavioral sciences, and Mark H. Einstein, M.D., M.S., associate professor of obstetrics & gynecology and women’s health (gynecological oncology) and of epidemiology & population health. They invited audience members to respond to questions via the electronic response system that Einstein students use in the classroom. Attendees also took part in an informal question-and-answer session.

“To have so many of our Overseers and friends take time from their busy lives to engage in this special educational experience reflects the depth of their commitment to our mission to improve human health,” says Dr. Gottesman. “We all came away with a better understanding of the many complicated issues related to diagnosing and treating cancer, and an even greater appreciation for the work of faculty members like Drs. Goldman, Libutti, Powell and Einstein, who did a great job explaining the challenges and decisions facing cancer patients and their caregivers.”
WALKING WITH EINSTEIN
College Launches New Planned-Giving Initiative

In the early 1950s, a group of families and business leaders was inspired by the idea of a new medical school that would welcome gifted students regardless of race, religion, gender or creed. They provided the initial fundraising impetus for Albert Einstein College of Medicine.

Since then, enlightened philanthropists have sustained this institution throughout its 60 years of leadership in medical research and education.

To ensure Einstein’s continued leadership, the College of Medicine has launched a new giving program, Walking with Einstein: The Legacy Society of Albert Einstein College of Medicine.

“The program’s name was inspired by Albert Einstein, who gave us an amazing legacy—the gift of his name—and was known for taking walks with colleagues to discuss mathematical, scientific and even social challenges,” explains Glenn Miller, associate dean for institutional advancement. The College of Medicine opened its doors for the first time in 1955, five months after Professor Einstein’s passing.

Over the years, Einstein has benefited greatly from planned gifts, also known as legacy gifts. These gifts have been made by leading New York–area philanthropists such as Muriel L. Block, whose recent $160 million bequest was the largest gift in the College of Medicine’s history (see pages 34 to 37), as well as by friends, alumni, faculty and staff.

“Some legacy gifts are large, many others are more modest, but all are welcome and deeply appreciated,” says Mr. Miller.

“Giving back to Einstein, for me, is simply a matter of gratitude,” says Richard S. Frankenstein, M.D. ’73, who has made Einstein a significant beneficiary in his estate plans.

“My medical school years were a time of tremendous growth—not only in knowledge, but in my personal development,” he continues. “Einstein is where I learned the science involved in being a physician, as well as the art: how to speak to patients while examining them, how to deliver bad news, how to reassure

“Spiral of Life” Captures One Family’s Einstein Connection

Members of the Einstein community joined members of the Resnick, Katz and Doppelt families and their guests in the lobby of the Van Etten Building on May 31 to unveil and dedicate a unique work of art: “Spiral of Life.” The sculpture was created by Roni Doppelt, daughter of Einstein Overseers Marilyn and Stanley M. Katz and granddaughter of Jack and Pearl Resnick, early Einstein supporters and Benefactors. The College of Medicine’s campus was named in the Resnicks’ honor.

Installed at the center of the art deco lobby, the sculpture stands nine feet tall and is made of cast bronze and polished stainless steel. It was draped with a dark cloth as the moment of the unveiling approached.

In his opening remarks, Ira Lipson, director of institutional advancement, noted that Ms. Doppelt and her husband, Stuart, hosted the first-ever Florida Cancer Center Research Advisory Board luncheon in 1999, at their home. Since then, she has graciously hosted other Florida events and has been a regular at Einstein’s Florida dinners and Lunch and Learn Programs and a supporter of the Albert Einstein Cancer Center.

“I am thrilled to dedicate this work of art, which I created as a loving tribute to two remarkable people—my parents, Marilyn and Stanley Katz, in honor of their 60th wedding anniversary—and in memory of my dear grandparents, Jack and Pearl Resnick,” said Ms. Doppelt.

The inspiration for “Spiral of Life” came about during a visit to the Einstein campus, when Ms. Doppelt walked by the Michael F. Price Center for Genetic and Translational Medicine/Harold and Muriel Block Research Pavilion and saw the DNA spiral staircase through the glass front of the building.

At the core of the sculpture is a couple embracing, she explained. “They represent love—the source of life and the force that all living things need to thrive. The steel ribbons represent the double helix—the biological basis of life.”

Allen M. Spiegel, M.D., Einstein’s Marilyn and Stanley M. Katz Dean, joined Ms. Doppelt in unveiling the sculpture.
patients with some good news. I learned all this from the conscientious, caring Einstein faculty."

On the occasion of the College of Medicine’s dedication in 1955, the *New York Times* reported: “Though its first class has only just entered, [Albert Einstein College of Medicine] already ranks with the great medical schools of the world.” Walking with Einstein will help ensure that the legacy continues.

For more information, please contact Glenn Miller, associate dean for institutional advancement, at 718.430.2411 or glenn.miller@einstein.yu.edu, or Thomas Gray, senior major gifts officer, at 718.839.7943 or thomas.gray@einstein.yu.edu.

“Our logo incorporates a graphic of the spiral staircase and is modeled after a strand of DNA, and our tagline, ‘Science at the heart of medicine,’ signifies the excellence of our science, combined with our humanism, that helps contribute to improving human health around the globe,” he said. “Roni has incorporated both into her artistic vision and her naming of this exceptional sculpture.”

After the ceremony, Marilyn Katz, who is also the founding chair of Einstein’s Cancer Research Advisory Board, said, “We are continually impressed by the research coming out of the College of Medicine to help people in the Bronx community and around the world. To see our children and grandchildren become involved with Einstein is very gratifying.”

“The Resnick and Katz families have been leaders in advancing our institution’s mission since its early days,” said Dean Spiegel. “We look forward to sharing many more happy occasions with this very special Einstein family.”

“The name was inspired by Albert Einstein, who gave us an amazing legacy—the gift of his name—and was known for taking walks with colleagues to discuss mathematical, scientific and even social challenges.”

Dean Spiegel with Overseers Marilyn and Stanley M. Katz and their daughter, Roni Doppelt, in the Van Etten lobby following the dedication of the sculpture “Spiral of Life.”
1950s
Marion Zucker Goldstein, M.D. ’59, M.S., is a professor in the department of psychiatry at the State University of New York at Buffalo School of Medicine and Biomedical Sciences. She can be reached at mzg@buffalo.edu.

Jesse Roth, M.D. ’59, was awarded a Ph.D. Honoris Causa from Ben Gurion University of the Negev in May 2012. Dr. Roth reports that he was delighted also to have been selected to receive the 2013 Delbert A. Fisher Scholar Award from the Endocrine Society’s history task force and its annual meeting steering committee. As the recipient of this award, he was invited to deliver the Clark T. Sawin Memorial History of Endocrinology Lecture at ENDO 2013, the Endocrine Society’s annual meeting in June, in San Francisco.

Evelyne Albrecht Schwaber, M.D. ’59, writes, “I continue to be deeply appreciative of my Einstein education. The intense attention our teachers paid to listening to us as students and to our learning how to listen deeply and respectfully to patients—whether to their words or body cues—has remained central to my work in psychiatry and psychoanalysis. I was deeply honored to receive the Dominick P. Purpura Distinguished Alumnus/a Award in 2012 for my work in this domain. I continue to practice, teach and write. A compendium of my writings, My Journey in Listening, will soon appear in a German volume and, possibly, in an English edition. My husband, Jules (Cornell Medical School ’58), recently retired from primary care practice in Boston and is a volunteer teacher at Harvard Medical School. Two of our four sons live in the United States: Carl, a teacher and actor in Los Angeles, and Jeff, a lawyer in Maryland. The other two live in Israel: Mitchell Schwaber, M.D. ’91, specializes in infectious diseases and is director of the National Center for Infection Control of the Israel Ministry of Health. A major in the Israel Defense Forces (IDF) medical corps reserves, he served as an infectious disease specialist with the IDF field hospital deployed in Haiti following the earthquake in 2010. Glen is a founder of Israel CleanTech, an international venture fund dedicated to the support of Israeli companies devoted to environmental enhancement and the ‘greening’ of Israel. Jules and I are blessed with 10 grandchildren (on both sides of the Atlantic), ages 2 to 22.”

1960s
Ronald J. Ross, M.D. ’60, F.A.C.R., and his wife, Helen, recently received the Distinguished Fellows Award from Cleveland Clinic; it is the highest lifetime honor given to those who have made extraordinary contributions of service and resources to further the clinic’s mission. Dr. Ross also was recently presented with the Ellis Island Medal of Honor by the National Ethnic Coalition of Organizations at a ceremony on Ellis Island. An internationally recognized pioneer in the field of radiology, Dr. Ross is director emeritus of the department of radiology at Hillcrest Hospital Cleveland Clinic Health System. He is a member of the board of directors and of the board of trustees of Cleveland Clinic and chair of the board of trustees of the East Region Hospitals of Cleveland Clinic Health System. In 2012, the Einstein Alumni Association awarded Dr. Ross its Lifetime Service Award for his outstanding service to the College of Medicine. He was elected to the Einstein Board of Overseers in November 2012.

Howard J. Schwartz, M.D. ’60, reports that he received smicha (rabbinic ordination) this past year and is currently a visiting scholar in the Center for Jewish Studies at the University of Arizona.
Edward Stim, M.D. ‘60, reports that he “continues going strong in Tokyo, Japan.” Visit: http://physiciansnotebook.blogspot.com and http://adventuresofkimi.blogspot.com for information on his activities and publications.


Joseph A. Santiago, M.D. ‘61, serves as head elder in the Mankind Project, an international organization based in Austin, TX.

Ron Grober, M.D. ‘62, reports, “This past summer we sailed our boat up to New England, concentrating mostly on the waters off the coast of Maine. It was a wonderful time and something that would never have been possible during my solo practice in orthopedic surgery and sports medicine. I worked as Florida team physician for the New York Mets baseball organization from 1988 until 2011. I am 76 years old and retired three years ago. I have a wonderful lady in my life; we have been together nearly 30 years. We enjoy our second home, in the Rocky Mountains of Colorado, in summer and during snow-ski season. Jazz music is a big hobby of mine; I maintain a jazz band that performs publicly in our local area on the Treasure Coast of South Florida. Until recently, I had a jazz radio show, and continue to write a quarterly article for a local jazz newsletter. We enjoy sailing and golf and have many fine friends. We have four daughters between us, and three grandchildren who add immensely to our daily lives. If ever there was something to be thankful for, family and good health are it!”

Jon Ostrow, M.D. ‘62, writes, “Ellyn and I enjoyed attending my Einstein 50th Reunion. A pleasant surprise was seeing my classmate Charlie Krone, M.D. ‘62, and meeting his wife, Suki. They have been living in Tucson, AZ, for many years, unbeknownst to us. Charlie is the former chief of gastroenterology at the University of Arizona School of Medicine. Since my retirement in 2001, we’ve been wintering in Tucson to escape the Seattle winters. We hope to see the Krones more frequently now that we know where they are. Our biggest other news is that our granddaughter, Sarah Essex, is a sophomore at Smith College, which her mom, Debbie Ostrow, also attended. Tempus fugit.”

Arnold Goldschlager, M.D. ‘63, writes, “After my 74th birthday, I am still practicing office cardiology in the San Francisco area. I am associate clinical professor of medicine at the University of California, San Francisco, and have taught for more than 40 years. I gave up hospital, ICU, night and weekend calls six years ago but have no plans to retire. I continue to pursue my passions of boating in the San Francisco Bay and Delta, as well as big-game hunting all over the world. Growing up as a Jewish kid in New York City, I never dreamed I would have had the adventures that I have been fortunate to experience. I serve on the boards of several foundations, as well as the local hospital oncology council. My wife, Nora, continues to work full time as a professor of cardiology at UCSF. Our two daughters, a science editor and a swim coach, live nearby.”

Connie Goldstein, M.D. ‘63, and Michael Goldstein, M.D. ‘63, announce with pleasure that our sixth grandchild, Shira Chana, was born in
Hadassah Hospital in Jerusalem, to our daughter Debbie and son-in-law Daniel on September 28, 2012. We celebrated our 50th anniversary with our children and grandchildren in Israel.”

Ira Rezak, M.D. ’63, reports that an exhibition, Mirroring Medicine: Medals from the Collection of Dr. Ira Rezak, was presented at the Columbia University Medical Center in the fall of 2012. Dr. Rezak’s medical medal collection, which he compiled over 50 years, “encompasses medicine in its broadest sense.” It includes more than 275 items from 30 countries dating from the 3rd to the 21st centuries. The fields of nursing, dentistry, hospitals, medical education, public health, pharmacy and physical rehabilitation are represented. “Besides being rare and informative, the medals are often works of fine art in their own right,” writes Dr. Rezak.

Joseph Berke, M.D. ’64, announces that his latest book, Why I Hate You and You Hate Me: The Interplay of Envy, Greed, Jealousy and Narcissism, was published in November 2012 by Karnac Books, London. A successful launch event was held at Karnac’s Bookshop, with many friends and colleagues in attendance. Dr. Berke reports that he is working on two more books: Freud and the Rebbe, a study of Freud’s Jewish identity, and a Haggadah for Tu B’shevat.

Judith R. Shapiro, M.D. ’64, writes, “For the first time since 1969 I do not have an active medical license; I did not renew it when we moved to Chevy Chase, MD, for retirement. It’s a terrific community to retire to: easy walking access to the post office, pharmacy, food and retail shopping and the Metro, which takes us into downtown DC.

Myron L. Belfer, M.D. ’65, M.P.A., continues in his roles as professor of psychiatry at Harvard Medical School and senior associate in psychiatry at Boston Children’s Hospital, where he co-leads the Global Partnerships for Child Mental Health and their associated observership program. He is a member of the Harvard Medical School International Committee and leads the Global Child Mental Health Committee at the Harvard Center on the Developing Child, which along with Harvard University funded a recent child mental health needs-assessment project in Shanghai, China. This initiative has resulted in the screening of more than 20,000 children, with the goal of deriving data to inform a mental health intervention initiative for all schoolchildren, parents and teachers in Shanghai. Dr. Belfer’s current international activities also take him to Indonesia, where he is a consultant for a child mental health
Bill Friedel, M.D. ’66, writes, “I am retired and happily living in San Diego. I still do a little volunteer medicine, but in general just volunteer and enjoy life.”

Raphael S. Bloch, M.D. ’67, retired from his private ophthalmology practice in Mount Kisco, NY, in 2006, but continues to see patients on a part-time basis at Montefiore Medical Center. He recently published Healers and Achievers: Physicians Who Excelled in Other Fields and the Times in Which They Lived (Xlibris, 2012). The book is a series of biographies of physicians, from ancient Egypt to the 21st century, who achieved lasting renown in their nonmedical endeavors. His subjects include the architect of the first Egyptian pyramid, a pope, a rabbi, the “fathers” of astronomy, geology, magnetism and bibliography, American founding fathers, French revolutionaries, a buccaneer, world-class athletes, a spy and an astronaut.

Daniel Nussbaum II, M.D. ’67, F.A.A.P., writes, “About two years ago, I contracted a mysterious malady that prevents me from walking long distances and standing for any amount of time. It also affects other bodily functions. Accordingly, I retired at the age of almost 70. My wife, Alice, and I returned to Rochester, NY, and will remain here. Alice plans to stay active by continuing to design Judaic needlework and consulting on matters of Jewish family education, and I will try to find a health professional who can improve my health. My daughter, Yapha, is a school librarian at the Brentwood Lower School in Los Angeles. My son, Joe, is a director in Hollywood; his filmography is available on the Internet. They are each married with one child. We would be glad to hear from any alumni in upstate New York; contact me at yekkey@aol.com.”

Les Linet, M.D. ’68, writes, “I am practicing both child and adult psychiatry in Princeton, NJ. I have a particular interest in divorce and Parental Alienation Syndrome. You can view my videos at www.LesLinetMD.com.”

Robert Hoffman, M.D. ’69, writes, “Just back from the most recent of our (my wife’s, my 93-year-old mom’s and my) frequent weekend trips in our 23-foot RV from our lovely ‘country’ home in the Santa Monica mountains (Malibu Hills, CA) to San Rafael, Marin County (over the Golden Gate Bridge from San Francisco), visiting two married psychotherapist daughters and their five children. During the trip we were delighted by our eldest grandchild’s wonderful theatrical performance in Neil Simon’s Little Me, a surprisingly funny musical. Busy as ever commuting on my BMW motorcycle to full-time psychiatry/psychotherapy/psychopharmacotherapy, psycho-oncology, integrative medicine practice in the West San Fernando Valley and Ventura. Daily exercise; Vipassana (mindfulness); weekly rehearsals; and visits to my mom, our seven children, their six spouses and five grandkids. I recently submitted a chapter to be published in a book on pituitary disorders, to add to my other published book chapters and journal articles. Anyone interested can learn more at www.robertshoffmanmd.com.”

Les Linet, M.D. ’68, writes, “I am practicing both child and adult psychiatry in Princeton, NJ. I have a particular interest in divorce and Parental Alienation Syndrome. You can view my videos at www.LesLinetMD.com.”

Marc Berenzweig, M.D. ’71, writes, “As a member of Jewish International Healthcare I worked in Gondar, Ethiopia, this past October, screening Ethiopian emigrants on their way to Israel. There is a near total lack of chemotherapy medication at the large Gondar hospital and medical school. I am networking with two attending pediatricians to ameliorate this problem. This year I also have the honor of being on the board of the Westchester (NY) chapter of the American Jewish Committee.”

Carl Mankowitz, M.D. ’71, retired in early 2008 and pursued a master’s degree in Judaic Studies from Hebrew Union College. He briefly returned to healthcare consulting, working with Manatt Health Solutions and the Association of American Medical Colleges to write a number of papers on its “Readiness for Reform” initiative. Dr. Mankowitz also worked with two leading Jewish Federation agencies, Selfhelp and FEGS, to create Singlepoint, a managed-care company that subcontracts management of long-term care services in the home for major Medicaid health plans. He completed a pro bono consultation for his undergraduate alma mater, Kenyon College in Ohio, providing design
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— Joy Goldstein, Class of 2016,
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For more information, please contact the office of alumni relations at 718.430.2013 or alumni@einstein.yu.edu.
requirements for a new student health and counseling center, which will open in May 2014. He writes, “I’ve definitely retired a second time, enjoyed watching the election returns on MSNBC and have taken up serious biking, with trips over the George Washington Bridge and up Route 9W with like-minded friends. My wife, Lisa Rubin, continues to work as an executive coach, and our son, Zachary, now at Columbia Prep in Manhattan, continues to thrive as a student and computer whiz.”

Miriam Tasini, M.D. ’71, reports that her book Where Are We Going? was published on October 9, 2012, by Gordian Knot (distributed by the University Press of New England). It tells of her family’s three-year odyssey during which they escaped life-threatening situations and survived imprisonment, hunger and illnesses throughout a 20,000-mile trek during World War II. Dr. Tasini, a psychiatrist and psychoanalyst, has practiced in Los Angeles since 1977. Early in her professional training she became involved in a study that addressed the effects of the Holocaust on subsequent generations, which was a stimulus for Where Are We Going? She has served for a number of years on the International Psychoanalytic Association New Groups Committee, which was instrumental in establishing a new psychoanalytic institute in Warsaw, Poland. This work required numerous trips to Poland and allowed her to explore her family history; that experience also inspired the book. Dr. Tasini was invited to present Where Are We Going? at the New York Public Library and many other venues throughout the country.

Jim Gagne, M.D. ’73, reports, “After graduating from Einstein in 1973, I completed two years of internal medicine residency at the old Lincoln Hospital, in the South Bronx. At the time, it seemed to me New York City was falling apart, and I couldn’t wait to relocate to California. I completed my training at Kaiser-Permanente Medical Center in Santa Clara. Shortly after finishing residency, I moved to Los Angeles and have been here ever since. In 1989 I married fellow internist Mary Hardy. Our son, Chris, majored in ABM (anything but medicine) and now works in Web development in Silicon Valley. Currently, I practice internal medicine in a four-physician group, Verdugo Internal Medicine, in Glendale. I’ve also developed expertise in treating addiction and chronic pain and am board certified in three specialties: internal medicine, addiction medicine and pain medicine. I’m a consulting physician at the Canyon at Peace Park, an addiction-treatment facility for patients with concurrent addiction and psychiatric illness. I’m somewhat of a computer geek and developed my own website, www.jamesgagne.com, for patients who want to know more about me and how I approach medical care.”

Margo Hausdorff Vale, M.D. ’75, reports that “after nearly 30 years in private practice in dermatology (medical and skin cancer surgery),” she and her husband Michael Vale, M.D. ’75, retired in 2007. Their son, Edward, is a spokesperson for the AFL-CIO and campaigned for President Obama’s reelection; daughter Judith married Michael Rubin of Piscataway, NJ, in 2010, and is an associate at a law firm in Manhattan. Dr. Vale notes, “We finally sold our house on Long Island and are moving to Tucson, AZ. We will come east in the summers to be with our family.”

Irit Gordon, M.D. ’76, writes, “I have been practicing emergency medicine since 1979. Currently I work in the emergency department at Evans Army Community Hospital in Fort Carson, CO. I opened an urgent-care center in Denver in March 2012. I am married to Larry Karsh, M.D., a urologist, and we have three children.”

Susan Leibenhaut, M.D. ’75, and Joe Gootenberg, M.D. ’75, report the sudden passing of Daniel Hommer, M.D. ’76, a psychiatrist and National Institutes of Health section chief, on January 2 in Bethesda, MD. His laboratory studied functional and structural brain imaging in relation to alcoholism, with an emphasis on the brain systems involved in motivation and emotion. “Dan had a wonderful family and retained his strong sense of justice, his passion for bicycle commuting and his exuberance for everything in his life. We felt fortunate to be able to connect with him in recent years,” they wrote. Dan leaves two daughters, Rebecca and Elana; two sons, Jonathan and Zachary; and three grandchildren. His wife, the former Melissa Cohen, predeceased him.

Mary Flannery, M.D. ’77, writes, “All is well on the family front. My fourth grandchild, and first grandson, was born in September 2012. He’s a Brooklynite, so I get to see him a little more often than I see his cousins, who live in the ‘People’s Republic of Cambridge (MA).’ The day before he was born, I took the
psychiatry boards, and am now certified in psychiatry as well as in pediatric. Last June I completed a five-year residency/fellowship program in adult, child and adolescent psychiatry at St. Luke's–Roosevelt Hospital Center in Manhattan. I am now doing inpatient adolescent psychiatry at Four Winds Hospital in Katonah, NY, where I get to precept Einstein medical students!

Jesse Goodman, M.D. ’77, moved to the Washington, DC, area in 2001 from Minnesota, where he had been professor of medicine and chief of infectious diseases at the University of Minnesota. He raised his three boys “largely on the unusual Minnesota combination of hockey and community civility.” Dr. Goodman is currently the chief scientist at the Food and Drug Administration (FDA). In addition to providing leadership for the FDA’s community of scientists, scientific strategy, training and collaborative activities, his office is responsible for cross-cutting emergency-preparedness, pandemic and emerging-threat efforts. He was one of the leaders of the nation’s 2009 H1N1 pandemic influenza response. Dr. Goodman continues to be active in clinical medicine and teaching; he is a staff attending in infectious diseases at the Walter Reed National Medical Center. His wife, Dr. Nicole Lurie (University of Pennsylvania ’75, University of Pennsylvania Medical School ’79), a general internist and health services/policy researcher, is the United States assistant secretary for preparedness and response, in addition to teaching and “taking care of patients in the safety net” in Washington, DC.

Lynne M. Mofenson, M.D. ’77, writes, “I received the Samuel J. Heyman Service to America Medal as the 2012 Federal Employee of the Year on September 13, at the Andrew W. Mellon Auditorium in Washington, DC. This award recognized my work at the Eunice Kennedy Shriver National Institute of Child Health and Human Development on prevention of mother-to-child HIV transmission since 1989. Also, importantly, Bruce and I celebrated 40 years of marriage on August 27, 2012, and our daughter, Jessica, who works at the Carnegie Endowment for International Peace in Washington, DC, turned 30 last year. We celebrated with a fantastic vacation to Turkey in late September with a National Geographic Expedition tour; we took a hot-air balloon ride at dawn in Cappadocia, which I definitely recommend.”

Sam Salamon, M.D. ’77, and his son, Yehuda Salamon, M.D. ’12, do the Harpo Marx handshake at Commencement 2012 “since we were in full regalia,” writes Sam, who has been practicing ophthalmology in Cleveland, OH, since 1985. Yehuda is an anesthesiology resident at Montefiore Medical Center in the Bronx, NY.

Alfredo A. Sadun, M.D. ’78, Ph.D., writes, “In November 2012, I was very fortunate to become the 11th recipient of the William F. Hoyt Lecturer Award, the highest award in neuro-ophthalmology, at the American Academy of Ophthalmology meeting in Chicago. My wife was a co-conspirator in finding photos from my childhood that made for an entertaining introduction by Steven Feldon, M.D. ’73. Steve used 20 slides to test the hypothesis that I was a Renaissance man by comparing me, at each age and stage, to Leonardo Da Vinci, and concluding that the difference was not statistically significant. Steven Newman, M.D. ’77, also was present. The festivities afterward included a dinner party with Steve and his wife, Diane, and several of my undergraduate Massachusetts Institute of Technology hallmates and their wives. They entertained and shocked my current colleagues with ‘tales told out of school’ from my late adolescence. Getting prizes may simply be a sign of aging, but any excuse will do for such a grand reunion.”

1980s

Irene Kitzman, M.D. ’80, reports, “I am a psychiatrist currently in private practice in Tucson, AZ. Getting ready to retire, I am involved in many astronomy-related activities in and around the Tucson area.”
Timothy S. Loth, M.D. ’80, a hand surgeon at Physicians’ Clinic of Iowa, accepted the Iowa State Nurse Practitioner’s Advocacy Award in Des Moines on October 30, 2012, to a standing ovation. Dr. Loth was honored by the Iowa Association of Nurse Practitioners and the Iowa Nurse Practitioner Society for his work promoting the profession of nurse practitioners.

Ellen Weinberg, M.D. ’81, is a psychiatrist at a clinic in Manhattan. She has a daughter, Deborah, 18, who is a modern dancer and attends the Boston Conservatory, and a son, Mark, 16, a junior at Brooklyn Technical High School who wants to be a sports broadcaster. Dr. Weinberg and her children appeared in Vegucated, a documentary about the benefits of a vegan diet directed by Marisa Miller Wolfson. She also produced a concert version of a comic opera, The Pioneers, written by her grandfather, Jacob Weinberg (1879–1956), a prolific classical composer. Dr. Weinberg hopes to write his biography and produce more of his works. She did an original solo show, “Rest in Pieces, A Stand-Up Tragedy!”; it can be seen on YouTube, along with other samples of her work, under the stage name “Ellen Orchid.”

Cy A. Stein, M.D. ’82, Ph.D., is the Arthur and Rosalie Kaplan Professor and chair of the department of medical oncology and experimental therapeutics at the City of Hope Medical Center in Duarte, CA. He is also deputy director for clinical research at the City of Hope Comprehensive Cancer Center. He and his wife, Myra, have a new granddaughter, Lily Leigh, born July 13, 2012.

Ronald L. Hoffman, M.D. ’83, writes, “I am looking forward to my 30-year class reunion. I’m still practicing integrative medicine at the Hoffman Center in Manhattan, will soon reach the milestone of 25 years of broadcasting ‘Health Talk’ on WOR Radio and recently won for my age group in an Olympic distance triathlon (woot! woot!).” Dr. Hoffman thanks Einstein “for a great medical education!”

Grace Vivona Yelland, M.D. ’87, and Joel Yelland M.D. ’87, celebrated 25 years of marriage in May 2012, as well as their 25th Einstein class reunion. They live “on beautiful Olympic Peninsula,” WA. Joel is the medical director for the Lower Elwha Tribal Health Center, and Grace is a staff pediatrician with the county’s only pediatric clinic. They are both active in community orchestras and bands, musicals and plays. Their son, Jamie, and daughter, Gabrielle, are both in college, “steering clear of any inclination to attend medical school.”

Rachel Rabinovitch, M.D. ’89, is a professor of radiation oncology at the University of Colorado Comprehensive Cancer Center, where she has been on the faculty since 1994. Her clinical and research expertise focuses on breast cancer and hematologic malignancies. She is chair of the Radiation Therapy Oncology Group Quality Control Committee and serves as a member of the National Cancer Institute Breast Steering Committee's
Breast Oncology Local Disease task force. Dr. Rabinovitch is a co-principal investigator of a study investigating the role of accelerated partial breast irradiation in early-stage breast cancer in a phase III randomized trial. She lives in Denver with her husband, Nathan Rabinovitch, and their three children. Active in the local Denver Jewish community, she is a past president of Denver Academy of Torah.

**1990s**

Panayiotis Ellinas, M.D. ’91, writes, “I arrived in the middle of the night in a hostile Middle East desert to replace the command surgeon of an expeditionary military unit, Lieutenant Colonel Diane Traver, M.D. ’80. Little did I know at the time, but the first friendly face I had seen in a while and the hearty hug I received, along with an iridescent smile, emanated not only from a fellow U.S. Army Medical Corps Officer…but an Einstein alumna! We were a few years apart at Einstein, but I had never felt like I had found a kindred spirit in the U.S. military until that night. Thanks, Einstein, for building solid docs and soldiers too.”

Jose A. Ortiz, Jr., M.D. ’92, reports that he has been elected chief of the medical staff at Mayo Clinic Health System in Eau Claire, WI. He was also selected for, and recently completed, the Mayo Clinic’s Leadership and Development program.

Philip J. Rosenblum, M.D. ’93, held the grand opening of a second office of his medical practice, Arbor Family Medicine, in Westminster, CO, on March 15. Arbor Family Medicine is a full-service family medicine practice employing four physicians and four physician’s assistants, with plans to add two additional physicians in the next two years. Dr. Rosenblum writes, “Currently two physicians manage obstetric patients, and all of our providers perform a wide range of outpatient primary care services for patients across all age ranges.”

Robert Stern, M.D. ’93, and Gillian Schweitzer, M.D. ’94, report, “We will be completing our two-year tour in Cairo, Egypt, with the United States Department of State this summer. Robert currently serves as a regional medical officer stationed in the United States embassy, and Gillian is in private practice in Cairo. In August, we will be moving with our children, Trevor and Talia, to New Delhi, India, where Robert will be the new regional medical officer in the U.S. embassy. In that role, Robert will cover the U.S. Department of State missions in New Delhi, Mumbai, Chennai, Calcutta and Hyderabad as well as Colombo, Sri Lanka. All Einstein graduates are welcome to visit us. We can be reached at SternR1@state.gov.”

Eric Goldberg, M.D. ’95, has relocated his internal medicine practice from New York City to Phoenix, AZ. His primary interests are preventive medicine, autoimmunity and sports physiology. He is affiliated with Scottsdale Healthcare.

Reena Karani, M.D. ’97, writes, “I am currently associate dean for undergraduate medical education and curricular affairs at the Mount Sinai School of Medicine in New York City. In this role, which I took on two years ago, I oversee the curriculum and learning resources for our medical students. I also continue to care for patients in geriatrics and palliative medicine.”
**2000s**

Andre Ramos, M.D. ’02, writes, “I continue living in Oakland, CA, and working as a pediatrician for the Permanente Medical Group in Hayward. My wife, Kirstin Hernandez, and I are the ecstatic parents of twins, Ezekiel and Zoe.”

Olga (Pantukhova) Segal, M.D. ’04, and Eric B. J. Segal, M.D. ’05, report, “Eric enjoys working as a pediatric epileptologist serving most of North Jersey. After running a stroke center for a few years, Olga is now working as an adult neurologist in New York. Together, we are raising four wonderful children ages 7, 6, 3 and 1. Our family enjoys camping, biking, museums and theater. Life is never dull!”

Shervin Eshaghian, M.D. ’05, has opened a cardiology practice in Beverly Hills, CA. He can be contacted at 310.858.6500 or beverlyhillscardiology@gmail.com.

Joshua Sisser, M.D. ’05, and Rachel (Bakst) Sisser, M.D. ’05, recently celebrated their 10th wedding anniversary. Joshua and Rachel met at Einstein and married in 2002. Rachel is a pediatrician in Williamsburg, Brooklyn, and Joshua is an anesthesiologist at Huntington Hospital on Long Island. They have three children: Aaron, 7, Rebecca, 4, and Sophie, 1.

Matt Dombrow, M.D. ’06, writes, “I recently completed a vitreoretinal fellowship at Yale University. I am now in private practice at Connecticut Retina Consultants, LLC, and am a clinical instructor at Yale University School of Medicine. My wife, Melissa, and I welcomed our second daughter, Alexa Devan, on September 10, 2012. We also have a three-year-old daughter, Leah Paige. If anyone would like to contact me about choosing a specialty, whether they’re interested in ophthalmology or simply cannot make up their mind, I am more than willing to help out. The decision-making process was difficult for me, so I would like to help others.”

Casey Barbaro, M.D. ’07, writes, “Check out my first blog from South Africa. I’ll be here for about a year, so there should be some interesting things to see over the next few months. The people here have been awesome so far. Their warmth and kindness are amazing. This is like no place that I have visited before. Please come out and stay for a while if you get a chance. If not, you can follow along on this blog: http://capetowntrauma.blogspot.com. I hope to see you all soon!”

Hayley Solomon Quant, M.D. ’07, and her husband, Jarod Quant, welcomed a son, Myles Elliot, on June 29, 2012. The family is living in Philadelphia, where Hayley is in the second year of her maternal fetal medicine fellowship at the Hospital of the University of Pennsylvania.

Rebecca Birnbaum, M.D. ’08, completed her residency in psychiatry at Johns Hopkins Hospital last June and is currently a research fellow at the newly founded Lieber Institute at Johns Hopkins Hospital. She is focusing on schizophrenia research.

Miriam Steinbein, M.D. ’08, writes, “In April 2012 I became associate medical director for primary care at Planned Parenthood Mar Monte (CA). I am also a volunteer faculty member at the University of California, San Francisco, at San Francisco General Hospital, in the department of family and community medicine. I live in the Mission District of San Francisco with my husband, Yaron, and our two children, Cruv and Rimon.”

Eric Siskind, M.D. ’09, and his wife, Lauren, write, “With gratitude and joy we would like to announce the birth of our son, David Everett.”

Alison L. Sikora, Ph.D. ’11, was married to Robert Heller on October 7, 2012, in Connecticut. Alison and Rob live in Menlo Park, CA, where Alison works as the global publications planning leader for Pharmacyclics, a small biopharmaceutical firm that designs, develops and commercializes novel therapies for hematological malignancies.

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**In Memoriam**

We acknowledge with sadness the passing of the following Einstein alumni. We honor their memories and extend our deepest condolences to their families and friends.

- Ronald A. Cyrulnik, M.D. ’64
- Kenneth Greenspan, M.D. ’63
- Daniel Hommer, M.D. ’76
- Jerome Liss, M.D. ’64
- Michael P. Novak, M.D. ’62
- Charles Pollak, M.D. ’62
- Alan B. Port, M.D. ’81
- Eric Todd Rogoff, M.D. ’97
- Alan D. Sklar, M.D. ’63
- Claire M. Spininger, M.D. ’73
- Daniel Stern, M.D. ’60
Building Expression

When drawing, artist Mark McBride doesn’t shy away from despair, rejection, anger or fear.

His artistic career began abruptly one day in 2008. “An idea came to me, and I just picked up a pencil and began sketching,” says Mark, who works as a clerk/messenger at Einstein. He showed his wife, Melissa, the resulting drawing, titled “Yikes!”—of three buildings witnessing a car crash. “I really like it,” was her reaction.

Mark shrugged off the compliment at the time. But later, when he looked at the picture again, he was inspired to take it to the next level.

“Yikes!” became the first of a picture series that Mark calls Building Character™, showing buildings that convey messages or feelings. Another drawing, “Any Last Words?” shows a blindfolded building with its arms tied behind its back, awaiting destruction by a wrecking ball. For emotional balance there’s also “Eric the Empire State Building,” a tall, jolly building holding an apple in its hand.

Mark’s second series, Fed-Up Ferris!!™ focuses on a mild-mannered, kind, hardworking character named Ferris who endures hardships that push him to the limits of his patience. He morphs into an angry doormat, an annoyed elevator button and an about-to-be-sliced-open envelope. Ferris, says Mark, is a proxy for everyone who has experienced job frustration. The envelope drawing, for example, shows Ferris brandishing a sword and saying, “I’m here to bring you information, and this is how you treat me?” When people see Ferris, says Mark, they say, “Hey, I can relate.”

When Mark came to the Bronx from Georgia in 1996, survival—not art—was his main concern. He got a job at a McDonald’s but soon realized he needed more money. An acquaintance suggested that he apply to Einstein. There were no openings, but “I’d go back every two weeks—that’s how desperate I was,” he recalls. Finally, Mark got a call about a temporary opening and leapt at the chance.

Mark and Einstein were a good fit, and Einstein eventually hired him full time. The stable job allowed Mark to get his life on track. Soon, he met and married Melissa, a teacher. Today, the couple lives in Co-Op City with their three children.

These days, Mark spends about nine hours...
a week on his art, mainly in the evenings
and on weekends. Self-taught, he often
works from photographs he takes. His
favored media include markers, colored
pencils and pens.
Mark has trademarked Building
Character and Fed-Up Ferris, established
a website and had his work exhib-
ited several times at Einstein. He also
works on commission, often for fellow
Einstein employees, who have been sup-
portive. “Without them,” says Mark,
“I definitely wouldn’t be where I am
today.”
Looking ahead, Mark says it would
be nice to attract a wider audience—
maybe do a syndicated cartoon strip,
a book or even a movie. But fame and
wealth are secondary. “Money’s nice,” he
says, “but at the end of the day, it’s about
expressing myself as an artist.”

Above left, “Behemoth,” 2010. Featured in
the Einstein publication Ad Libitum.
Above right top, McBride’s latest series,
giving classic Peanuts® characters new roles in
Building Character, 2013.
Above right bottom, McBride’s take on
Yankee Stadium, 2013.
Facing page:
Top, select illustrations of Ferris working as
door mat, from Fed-Up Ferris!!, 2012.
Bottom, as an envelope, Ferris fights back—

ON THE WEB
http://mcbrideart.com
The date of the photo is unknown. “It looks like a meeting from about 35 years ago,” guesses Albert S. Kuperman, Ph.D., Einstein’s longtime associate dean for educational affairs, who is seated at the desk in the photo. Also lost to history are the students’ names, the topic of the meeting and the name of the photographer who documented Dr. Kuperman’s specialty: listening to and guiding Einstein students.

“This was probably one of thousands of meetings I had with students over the years during which I advised them about various student programs and fellowship opportunities,” says Dr. Kuperman, also an associate professor of molecular pharmacology. He retired this spring.

One thing that is well known: Dr. Kuperman changed the lives of many Einstein students for the better. A profile honoring Dr. Kuperman and describing his contributions to Einstein begins on page 12.
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EINSTEIN IMAGES

A FIRST OF ITS KIND

Images showing internal structures of a pregnant rat and fetuses in exquisite detail from the lab of Francine Einstein, M.D., associate professor of obstetrics & gynecology and women’s health. At Gruss MRRC, the rat underwent MRI (image 1), followed by PET (image 2) showing areas of different metabolic activity (red highest, blue lowest). Co-registration performed by Linda Jelicks, Ph.D., associate professor of physiology & biophysics, created image 3—the first use of PET/MRI to visualize a pregnant rodent—and image 4, a 3D presentation of the merged images.