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AFTER A TRAUMATIC ACCIDENT, ARTIST **JOHN POWERS** HAS RESUMED HIS CAREER, THANKS TO DOCTORS AT THE CENTER FOR AMPUTATION RECONSTRUCTION. PAGE 2 Restoring Hope and Function **After an Artist Nearly** Lost the Use of His Hand and His Career, an Innovative Center **Brought Them Back** Photographs by Brad Trent



"Dr. Hacquebord was looking three steps ahead, and I really liked that. It gave me a sense that there was a complete plan for me."

—John Powers, who underwent two reconstructive microsurgeries and has received ongoing care at the Center for Amputation Reconstruction

On the afternoon of May 19, 2021, John Powers was using a table saw to make ornamental caps for fence posts outside his home in Putnam Valley, New York. The artist, now 52, is known for his large wood and steel multimedia installations. "I work with my hands—this is how I think," he says.

While notching a large block of wood, the saw suddenly kicked back and dragged his hand through the blade. The block hit him squarely in the nose, stunning him. Then, to his horror, he noticed that the blood spilling onto his boots and the ground was coming from his nondominant left hand. The saw had severed his thumb and ring finger and badly damaged his index and middle fingers.

Powers was rushed to a nearby trauma center, where surgeons were unable to save his ring finger. They tried to reattach his thumb, but it didn't "take." As he was recovering, a question kept nagging him: how much of himself, and his ability to create art, had he lost permanently?

Determined to find out, he made an appointment to see Jacques Hacquebord, MD, associate professor of orthopedic surgery and codirector of NYU Langone Health's Center for Amputation Reconstruction. Powers was impressed immediately. "Dr. Hacquebord was looking three steps ahead, and I really liked that," Powers says. "It gave me a sense that there was a complete plan for me."

Since its launch in 2019, the center has been a driving force in helping patients regain the use of amputated limbs and digits through surgical techniques and rapidly evolving technology. Some cutting-edge prosthetics the team uses, known as myoelectric or bionic devices, have sensors that can detect the firing of adjacent muscles in the residual limb. "So when the patient thinks, 'Bend my index finger,' the prosthetic finger will bend like a real one," says Omri Ayalon, MD, clinical assistant professor of orthopedic surgery and the center's codirector.

Last fall, NYU Langone hosted the inaugural Bionic Reconstruction

Conference, a first-of-its-kind event focused on surgical and prosthetic innovations in the care of upper limb amputees; more than 200 medical, surgical, and technical experts from the US and around the world attended. Dr. Hacquebord and Dr. Ayalon also helped pioneer a surgical advance, called osseointegration, that connects a patient's remaining bone at the site of a lower extremity amputation to a prosthetic device by means of an innovative titanium implant (see "Enhancing the Connection between Limb and Prosthesis," page 6).

Dr. Hacquebord emphasizes that for patients who have lost a limb, compassionate, multidisciplinary care is essential to improve their outcomes. Beyond surgical solutions, he connects patients with prosthetists and physical therapists, among other specialists. "The center is about treating patients in a holistic way that maximizes their function and helps them to flourish in life," says Dr. Hacquebord.

Some patients with thumb amputations opt for a toe-to-thumb transfer, a procedure that can help them regain sensation and intuitive motion. Powers, though, chose not to sacrifice another digit and was instead drawn to a stainless steel and silicone device designed to maximize motor dexterity and grip capability.

On June II, 2021, Dr. Hacquebord, chief of hand surgery, performed reconstructive microsurgery, removing Powers' failed thumb reattachment and restoring nerves in his index finger. A month later, Dr. Hacquebord removed damaged bone and repaired nerves and tendons in Powers' now-healed middle finger. With those procedures completed, he referred Powers to a hand therapist to optimize the connection between his hand and the prosthetic, which attaches to his wrist and replaces his two missing fingers.

"Even though it doesn't look like



Meet the Experts



Jacques Hacquebord, MD HAND AND WRIST SURGERY



Omri Ayalon, MD HAND AND WRIST SURGERY

a hand, it moves like a hand, and I'm far more comfortable when I wear it than when I don't," Powers says. He and Dr. Hacquebord have joked that his device looks like something straight out of *The Terminator*.

As part of the meaningful process of "bringing back my hand," as Powers describes it, he can now turn a doorknob and eat with nearly normal hand movements. He has resumed drawing and smaller-scale artwork, though he hasn't yet returned to his larger projects. Powers and Dr. Hacquebord continue to explore possibilities that might further enhance his fine-motor skills.

"There are parts of this journey that have felt miraculous," says Powers. "Dr. Hacquebord has been my Virgil, my guide, and I'm grateful for that."





ENHANCING THE CONNECTION BETWEEN LIMB AND PROSTHESIS

A recent amputation reconstruction technique, known as osseointegration, offers promise for patients suffering from the nerve pain and the often uncomfortable fit of traditional lower-extremity prostheses. The approach, borrowed from dental implants, connects the limb's remaining bone to a prosthesis by implanting a permanent titanium rod. Compared to traditional prosthetic attachments, the anchoring method gives patients increased range of motion, greater limb strength, and enhanced awareness of the body's position and movement, known as proprioception. Equally important, it reduces painful skin and soft-tissue irritations.

To date, the Center for Amputation Reconstruction has completed four osseointegration procedures for above-the-knee amputations. The first patient, Rafael Tejeda, who lost his left lower leg in a 2022 work accident, is now walking unaided. "He's ecstatic," says Jacques Hacquebord, MD, codirector of the Center for Amputation Reconstruction. "He's driving, he's walking, and he can even shovel snow. He's back to living life and participating in activities that he couldn't do before."

Building upon its success, NYU Langone recently earned FDA approval to begin offering osseointegration for upper arm amputation. "We expect that the indications will be expanded in the coming years for digit and thumb amputations, as well," says orthopedic surgeon Omri Ayalon, MD, the center's codirector. Dr. Omri Ayalon congratulates his patient Rafael Tejeda on the significant improvement he has experienced in pain, phantom limb symptoms, mood, and mobility since a permanent titanium prosthetic connector was implanted into his left femur, improving the fit between his thigh and a prosthetic leg.



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Women's Health

How a New Cardio-Obstetrics Program Made All the Difference between Amanda Perez's First Pregnancy and Her Second

Meet the Experts



Jeffrey Berger, MD PREVENTIVE CARDIOLOGY



Christina Penfield, MD MATERNAL-FETAL MEDICINE



Anais Hausvater, MD CARDIOLOGY



Adam Small, MD ADULT CONGENITAL HEART DISEASE

Lying in bed, exhausted, inside her Bronx apartment, Amanda Perez, now 31, spent most of her first pregnancy hoping things "did not go south." Though she had quit a stressful job at an animal hospital to start a family with her husband, Luis, her high blood pressure—neglected and untreated during the pandemic put her at risk for serious complications. "I watched myself very carefully," recalls Perez, "hoping every headache wasn't a bad sign."

But at 28 weeks, in March 2022, Perez was diagnosed with preeclampsia, a blood pressure disorder of pregnancy that can lead to damage to the liver and kidneys. Preeclampsia, which has no known treatments, is a leading cause of maternal and infant illness and death. Fortunately, Perez's blood pressure stabilized. Christina Penfield, MD, MPH, assistant professor of obstetrics and gynecology, and a member of the maternal-fetal medicine team, recommended delivery at 37 weeks, and on May 15, after an induced labor, Perez gave birth to a healthy baby boy, Lucas, at Tisch Hospital.

A generation ago, Perez's deliverv would have been considered a "cure" for preeclampsia, and medical attention would have shifted to the baby. But a recent stream of research has raised awareness that pregnant and postpartum patients with preeclampsia are prone to continued high blood pressure for as long as 12 months after birth. Moreover, the 10% to 15% of pregnant people who endure pregnancy complicationspreterm births, gestational diabetes, and hypertensive disorders like Perez's-are significantly more likely to develop long-term cardiovascular disease, including strokes or heart attacks, than those who don't. In short, complications during pregnancy are now considered a warning sign of future health threats.

Concerned, Perez consulted her cardiologist, Adam Small, MD, assistant professor of medicine at NYU Grossman School of Medicine, about a long-term care plan. Dr. Small, who specializes in adult congenital heart disease, referred her to colleagues who were starting up a new program at NYU Langone Health: the Postpartum Cardiovascular Health Program. A collaboration between experts in cardiology and maternal-fetal medicine, the program-based on a subspecialty of cardiology known as cardio-obstetrics-uses early detection, prevention, and treatment strategies to care for pregnant patients deemed vulnerable to cardiovascular disease. Perez signed up, becoming one of the program's first participants.

Jeffrey Berger, MD, director of the Center for the Prevention of Cardiovascular Disease, believes the burgeoning program can prevent "a considerable percentage" of future strokes and heart disease. "I am confident that by initiating early prevention measures—a thorough cardiac exam at three months postpartum and a comprehensive plan for optimizing health—we can save a lot of lives," he says.

Another goal is to gain a deeper understanding of how and why hypertensive complications arise during pregnancy, and how to prevent them. The program's leaders-Dr. Berger, Dr. Penfield, and cardiologist Anais Hausvater, MD, clinical instructor of medicine-are studying blood platelet function in pregnancies at risk of preeclampsia to establish biomarkers that may one day lead to targeted preventive therapies. "What distinguishes our program is the combination of our maternal-fetal medicine team's expertise in hypertensive disorders of pregnancy and postpartum care with the expertise of leaders in the field of preventive cardiology," says Dr. Penfield, codirector of the program. Several months after her deliv-

erv. Perez met with Dr. Hausvater. codirector of the program, who adjusted Perez's medication dosage to stabilize her blood pressure and recommended steps to improve her overall health before she attempted to conceive again. After consulting nutritionist Heather Hodson, RDN, Perez cut down on red meat, swapped packaged cereal for oatmeal and fruit, and reduced her sodium intake by prioritizing minimally processed foods. "A health scare like a traumatic pregnancy and labor experience can be a time of peak motivation for behavioral changes," Dr. Hausvater explains. As Lucas grew into a climbing and leaping daredevil, Perez increased her daily steps naturally in the process of keeping up with him.

After returning from a vacation last summer, Perez learned she was pregnant again. She was excited but nervous, as the possibility of a preeclampsia recurrence remained high. As a precaution, Dr. Hausvater advised her to take a preventive daily aspirin. She also reassured Perez that, backed by research, her lifestyle changes had reduced the likelihood of complications.

Perez welcomed her second son, Daniel, on March 19. She says that throughout her second pregnancy, she felt surprisingly energetic and has her doctors to thank for it. "Because of the care my doctors provided after I gave birth for the first time," she says, "this time around has been so much better."



Ð Seven weeks prior to the birth of her second son, Daniel, Amanda Perez posed for a family portrait with her husband, Luis, and their son Lucas.

Perlmutter Cancer Center

Targeting Tumors with Great Precision, a New Treatment Option for Prostate Cancer Preserves Healthy Tissue

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Stuart Dryburgh, now 72, had a tough decision to make last summer. Routine tests at NYU Langone Ambulatory Care Brooklyn Heights revealed elevated prostate-specific antigen (PSA) levels. His primary care physician, Anne Crenesse, MD, clinical assistant professor of medicine at NYU Grossman School of Medicine, referred him for a biopsy. The results indicated that the Oscar-nominated cinematographer had early-stage prostate cancer.

Like many men in his position, Dryburgh had a variety of treatment options but no clear path. He could choose active surveillance, with periodic tests to assess whether the cancer was advancing. Dryburgh preferred a more proactive course, but he was averse to the most extreme option-the removal of his entire prostate gland, known as a radical prostatectomy-because he was concerned about potential side effects such as erectile dysfunction and urinary incontinence. Ultimately, he was referred to radiation oncologist David Byun, MD, assistant professor of radiation oncology at NYU Grossman School of Medicine, to learn about targeted radiation therapy, which Dryburgh saw as a more comfortable middle-ground treatment option. During his consultation with

Dr. Byun, Dryburgh heard about a groundbreaking technique that seemed like a perfect fit for him: precise doses of radiation delivered by a magnetic resonance imaging linear accelerator, or MR-Linac. The noninvasive approach combines high-resolution imaging that allows doctors to see the prostate gland and surrounding tissue in unprecedented detail with a photon linear accelerator that precisely directs high-intensity radiation beams at cancerous cells while sparing healthy surrounding tissue. "So they're hitting the things they want to hit and avoiding the things they want to avoid," Dryburgh says.

The MR-Linac machine, which arrived last spring at NYU Langone Health, uses a huge magnet that had to be delivered through a shaft accessible from the sidewalk along First Avenue, adjacent to the Manhattan campus. Workers then reassembled the machine in a specially designed suite within the Department of Radiation Oncology. The device, due to its size, cost, and sophistication, is only the second of its kind in the New York metropolitan region.

Dryburgh, who became the first NYU Langone patient treated for prostate cancer with MR-Linac in August 2023, was drawn by the fact that that he'd need only five sessions and that the accuracy was unmatched by other radiation methods. "The beam is still being delivered in a similar way to traditional methods, but the image guidance is the differentiator," explains Dr. Byun. "As clinicians, we can see precisely where the blood vessels and nerves that supply erectile function are, as well as the bladder neck and urethra, both essential for urinary function. So we can better protect those organs."

Even small anatomical movements, such as the bladder filling with urine, can slightly shift the positioning of the prostate, potentially interfering with targeted radiation treatments. But MRI imaging, combined with motion management tracking, enables adjustments to avoid mistakes. "These technologies take MRI snapshots in real time and make submillimeter adjustments before delivering the treatment," explains Michael Zelefsky, MD, vice chair for academic and faculty affairs in the Department of Radiation Oncology and director of brachytherapy services at NYU Langone's Perlmutter Cancer Center. "Throughout the seven or eight minutes of actual treatment, it monitors the prostate to ensure that nothing has changed." Dryburgh's treatments, delivered over two weeks, each took under an hour from start to finish, with little discomfort. "It couldn't have been easier, to be honest," he says.

At his checkup in November 2023, Dryburgh's PSA level had returned to normal. His side effects have remained "very mild and manageable," he reports. With his cancer therapy behind him, he's free to focus on more enjoyable decisions for his latest film project, a romantic comedy called *Kinda Pregnant*, that is shooting near his home in Brooklyn.

Through January 2024, Perlmutter Cancer Center radiation oncologists had used MR-Linac to treat more than 50 patients with early- to advanced-stage prostate cancer. Dr. Zelefsky, who joined NYU Langone from Memorial Sloan Kettering Cancer Center last year, and Dr. Byun have launched multiple clinical trials to assess the treatment outcomes and side effects for their rapidly growing roster.

The close collaborators are investigating other projects, as well, including how MR-Linac might be directed at cancers in other sites requiring high-definition imaging and precision. Among the potential targets are tumors of the gastrointestinal tract, pancreas, lungs, spine, and brain. "There's a great role for expanding this technology and potentially improving the quality of life of patients treated for a variety of tumors," Dr. Zelefsky says.

TO FIND A DOCTOR WHO TREATS PROSTATE CANCER, VISIT NYULAN-GONE.ORG/PROSTATECANCER-DOCTORS, OR CALL 212-731-6000. Radiation oncologists Dr. David Byun, Dr. Michael Zelefsky, and Dr. Naamit Gerber stand adjacent to the MR-Linac machine, which provides precise radiation therapy for prostate cancer. Opposite: Documentary filmmaker Stuart Dryburgh was the first patient at NYU Langone to undergo the treatment.

Meet the Experts



David Byun, MD RADIATION ONCOLOGY



Spine Surgery

This First Responder Found Himself on the Other Side of a Rescue Operation

When Sgt. Matthew Zucker tried to pick up a heavy ballistic shield three weeks before his spinal surgery, he had "zero strength" in his right leg. Today, he reports that his strength is back to 100%. ENERGENCY SERVICE

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"My surgeons did a fantastic job, and the results speak for themselves."

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—Matthew Zucker, who had a spinal tumor removed by Drs. Lee Tessler and Richard Johnson at NYU Langone Hospital—Long Island Condult

Photograph by Tony Luong

"We wanted to take care of Matthew so that he could continue to take care of all of us."

-Lee Tessler, MD, chief of neurosurgery at NYU Langone Hospital-Long Island



WHATEVER THE ACHE OR PAIN, WE'VE GOT YOUR BACK

Some 80% of the population will experience some form of back pain during their lifetime. NYU Langone's Spine Center treats more than 18,000 adults and children for spine conditions each year; a majority receive nonsurgical treatments and therapies. The center's top-ranked clinicians share their expertise and advice in an inventive new patient handbook, *Your Spine: An Operator's Manual*. Inspired by the classic automotive companion found in most glove compartments, this one-stop guide to the spine's inner workings, care, and maintenance delivers everything you need to know about staying upright, nimble, and pain free—and how to proceed when intervention is needed. You can view the publication at **nyulangone.org/yourspine**.

As a sergeant in the Emergency Service Unit of the New York City Police Department (NYPD), Matthew Zucker, 39, relies on his strong back to carry out many strenuous duties—rope rescues, SWAT team operations, and other high-risk missions that he trains fellow officers to perform. However, for no diagnosed reason, he has suffered from chronic back pain since high school.

In November 2021, when various therapies, including chiropractic manipulation and acupuncture, no longer provided relief, Zucker consulted a pain management specialist. It was then that he found himself in a perilous situation of his own. An MRI revealed a small mass behind the first lumbar vertebra (LI), located in the lower back. Though Zucker had no symptoms, a follow-up MRI in February 2022 showed that the tumor, now a bit larger than a pea, had grown by 40%. Within a week of the test, Zucker's right leg started feeling weak and numb, the result of pressure the tumor was exerting on nerve roots in his spinal column.

Zucker, who lives with his wife, Katherine, in Long Beach, on Long Island, was connected by the NYPD to two neurosurgeons at NYU Langone Hospital—Long Island: Richard Johnson, MD, director of spine neurosurgery, and Lee Tessler, MD, chief of neurosurgery.

Zucker could not have been in better hands. NYU Langone Health spine surgeons perform more than 3,700 surgical procedures each year, with expertise in minimally invasive, robotic, and nonfusion techniques. Their exceptional outcomes, coupled with one of the lowest rates of complications and infection in the nation, are among the reasons NYU Langone is ranked the #1 hospital in the nation for neurology and neurosurgery and #4 for orthopedics by U.S. News & World Report.

Though indications were that the tumor was benign, Drs. Johnson and Tessler recommended surgical removal based on Zucker's age, symptoms, and the growth rate of the tumor. "What do you think my odds of getting back to full duty are?" Zucker asked Dr. Tessler.

"We'll get you back to full duty," Dr. Tessler replied. It was that confidence, Zucker recalls, that convinced him to proceed. "We wanted to take care of Matthew so that he could continue to take care of all of us," says Dr. Tessler.

On May 9, 2022, the two subspecialists performed a four-hour surgery in two stages. First, Dr. Johnson, a spine neurosurgeon, carefully created an access corridor through the bony structures of the spine, so that Dr. Tessler, a tumor neurosurgeon, could remove the mass. Dr. Johnson performed a laminectomy, a procedure in which the back of the spine's bony structure is removed to ease pressure on the spinal cord or nerve roots. In Zucker's case, Dr. Johnson made a three-inch-long incision and removed the back portions of three vertebrae.

After pinpointing the location of the tumor in real time using intraoperative ultrasound, Dr. Tessler exposed the nerve roots. Based on the feedback he received from stimulating the nerves, he was able to identify those that control motor function

TO FIND A DOCTOR WHO TREATS SPINAL TUMORS, VISIT NYULAN-GONE.ORG/SPINETUMORDOC-TORS, OR CALL 844-698-2224. and avoid damaging them. Then, without detaching any nerve fibers, he carefully removed the mass, later identified as a schwannoma, a benign primary spine tumor that develops at the nerve root. Schwannomas are rare, affecting fewer than 200,000 people annually in the US, and they're even less common in a person Zucker's age.

Zucker went home two days after surgery and took long walks with his dog, Loki, to aid his recovery. He returned to limited duty three months following surgery and, as Dr. Tessler promised, is now back to full duty. He reports that the strength in his right leg is 100%.

"My surgeons did a fantastic job," Zucker says, "and the results speak for themselves."

Meet the Experts



Lee Tessler, MD NEUROSURGERY



Richard Johnson, MD NEUROSURGERY





Innovative Care

Hair Loss? Rashes? This Dermatologist Specializes in Easing Cancer-Treatment Side Effects.

Today Show lifestyle contributor Jill Martin has shared her breast cancer journey with her 594,000 Instagram followers. "I am so grateful for Dr. Lacouture's expertise and empathy, because I feel that every day I am looking more like myself," she says.

As a lifestyle contributor to the Today Show and a fashion expert, Jill Martin, 47, leads a very public life. So when she was diagnosed with stage 2 breast cancer in June 2023, she decided to share her cancer experience-including a double mastectomy, chemotherapy, and radiation—with her more than 500,000 Instagram followers. Her reasoning was simple: she wanted other women to learn from her experience and get tested.

Now, there's something else Martin wants women to know: just because you go through chemotherapy or other treatments doesn't mean you have to lose all your hair.

Martin had tried to preserve her long blond locks by "cold-capping"placing frigid gel on her head during her infusions to preserve hair follicles. Despite this, she lost 70% of her hair during treatment, and her eyelashes and eyebrows largely vanished. Sensitive about her appearance, she broke down in tears while wig shopping and rejected the well-meaning "It will grow back" reassurances.

Finally, multiple acquaintances offered some welcome advice: Go see "an amazing doctor" named Mario Lacouture, MD, chief of dermatology at NYU Langone Hospital-Long Island. After an initial consultation, Dr. Lacouture recommended a special shampoo that Martin credits with thickening and strengthening her remaining hair, and prescribed a medication for her brows and lashes that helped them fully regrow. "I am so grateful for his expertise and empathy, because I feel that every day I am looking more like myself," Martin savs.

COURTESY OF JILL MARTIN

To Dr. Lacouture, helping patients receiving cancer therapies deal with aesthetic concerns is anything but superficial. Treating these maladies can not only help patients look better and feel better about themselves, but it can also prevent them-and their doctors-from discontinuing lifesaving cancer treatments. "Looking like oneself can be critical to a person's self-image and, ultimately, improve their outcome," Dr. Lacouture says.

For the past two decades, Dr. Lacouture has focused on devising methods to manage the skin-, hair-, and nail-related side effects of cancer treatments. These extend beyond hair loss and may include everything from measles-like rashes to painful blisters to unbearable itching.

Dr. Lacouture happened upon what would become a new branch of dermatology in 2006, when he treated a patient with a facial rash resulting from cancer therapy. It was so severe that the man planned to stop treatment and skip his daughter's wedding. On a hunch, Dr. Lacouture prescribed an acne medication. "Lo and behold, the rash improved, and I realized, 'Wow, this patient now is going to be able to continue therapy, go to his daughter's wedding, and live a longer life," Dr. Lacouture says. "And I thought, 'How many times, as a dermatologist, can you impact a person's life like that?' That's what started my commitment to this specialty." Later that year, Dr. Lacouture founded the first clinical and research program in oncodermatology at Northwestern University, a model that has been adopted by nearly 70% of the NCI-designated Comprehensive Cancer Centers in the US.

Dr. Lacouture, the medical director of the Symptom Management Program at Perlmutter Cancer Center at NYU Langone Hospital— Long Island, is focused on maintaining and restoring the whole patient's health during treatment. One of his innovations at previous institutions that he plans to adopt at NYU Langone Health is a system of sameday referrals to gastroenterologists, cardiologists, endocrinologists, and other specialists who can address pain, fatigue, nausea, and other non-skin-related side effects. He also oversees a portfolio of clinical trials and the development of preventive strategies for side effects.

A majority of oncodermatology medications are used "off label," meaning they have been approved

MORE INFORMATION, VISIT ANGONE.ORG/PERLMUTTER-GISLAND, OR CALL 516-663-

Meet the Expert



Mario Lacouture, MD ONCODERMATOLOGY

to treat a different condition. Thus, antibiotics may be prescribed for acne-like treatment symptoms, steroids can improve eczema-like skin problems, and pain medications can help ease itching. Dr. Lacouture and his team recently identified an injectable asthma medication that clears up certain rashes in patients with breast cancer.

Some fixes are simpler. For instance, to prevent nerve damage and keep fingertips from becoming inflamed, oncodermatologists may recommend that patients place their hands on ice bags during infusions.

"Our goal is to meet patients wherever they are in their cancer journey with empathy, explore every therapeutic option available, and support their complete healing, inside and out," says Dr. Lacouture.

Complex Case

When a Rare Disorder Left a Former Athlete Gasping for Breath, a Heart-Stopping Surgery Got Him Back on Track



One year after his surgery, Erby Paul enjoyed an outing in Brooklyn's Marine Park with his family: (from left to right) Tahj, Tavier, Haeden-Rose, and, to his left, his wife, Rose-Lyne. Not shown is their daughter Starr-Lyne.

"At NYU Langone, we're fortunate to have a multidisciplinary team with expertise in pulmonary hypertension. That's critical to helping patients with the condition live longer, healthier lives."

> —Roxana Sulica, MD, director of NYU Langone's Pulmonary Hypertension Program

Erby Paul has always loved to run. As a boy in Haiti, he had played competitive soccer, and as a middle-aged dad in Brooklyn, he proudly outpaced his four children in footraces. But in 2013, at age 47, Paul began to feel short of breath during his daily six-mile circuit around Prospect Park. Although checkups, lab tests, and electrocardiograms found nothing amiss, his symptoms grew worse over the following years.

By his early 50s, Paul couldn't climb a flight of stairs without feeling winded, and jogging was out of the question. His feet grew swollen, his lower legs ached, and he was constantly exhausted. "I told my doctor, 'If you can't find what's wrong with me, I think I'm going to die,' " he recalls.

Paul, who works as a surgical technologist at Hassenfeld Children's Hospital at NYU Langone



Health, was referred to cardiologist Alan Shah, MD, clinical assistant professor of medicine at NYU Grossman School of Medicine, in 2019. Dr. Shah ordered a stress echocardiogram, which examines the anatomy and physiology of heart function before and after exercise.

The test led to a sobering diagnosis: Erby had excessively high blood pressure in the lungs, or pulmonary hypertension. Dr. Shah explained that the progressive disorder makes the right side of the heart work harder to pump blood, eventually weakening the cardiac muscle. Untreated, it can lead to heart failure and be fatal. "That was a shocker," says Paul. "I've always been active. I eat well, I don't drink alcohol, and I don't smoke."

Despite healthy lifestyle choices, factors beyond a patient's control particularly genetics—can increase the risk of developing the disorder. There are five distinct classes of pulmonary hypertension, each with different causes, and several therapeutic approaches. To chart a path forward, Dr. Shah sent Paul to pulmonologist Roxana Sulica, MD, director of NYU Langone's Pulmonary Hypertension Program. She is among a select group of physicians nationwide who specialize in treating the condition.

"At NYU Langone, we're fortunate to have a multidisciplinary team with expertise in pulmonary hypertension—including pulmonologists, cardiologists, surgeons, radiologists, and nurses," says Dr. Sulica. "That's critical to helping patients with the condition live longer, healthier lives."

Paul met with Dr. Sulica early in 2020. She ordered a series of tests, including a radioactive tracer to measure how well the air moves and blood flows through the lungs, called a VQ scan. They revealed that Paul had a rare form of the disorder caused by blood clots that form scar tissue in the pulmonary arteries and block blood flow.

While some forms of pulmonary hypertension can be managed with specific medications, the gold



A specialized dual-energy computed tomography (CT) scan provides information about possible perfusion, or blood flow, defects in the lungs. The blue circle highlights an area of reduced flow to Erby Paul's lower right lung prior to a complex procedure to remove arterial blockages.

standard treatment for Paul's condition, chronic thromboembolic pulmonary hypertension (CTEPH), is a complex procedure requiring surgeons to slice open the affected arteries and remove the blockages. NYU Langone is among just a few hospitals with the surgical expertise to undertake the procedure, known as pulmonary thromboendarterectomy (see "A Surgical Race against Time," at right).

With the COVID-19 pandemic temporarily forcing the suspension of elective surgeries, Dr. Sulica put Paul on a blood thinner, a diuretic, and a medication that improves blood flow by dilating vessels. The drugs brought some relief to his symptoms, but his underlying condition continued to worsen.

Even once the ban was lifted, Paul

Meet the Experts



Justin Chan, MD CARDIAC SURGERY



Roxana Sulica, MD PULMONARY MEDICINE

was hesitant to undergo surgery. Finally, in early 2022, Dr. Sulica introduced Paul to cardiothoracic surgeon Justin Chan, MD, who had recently joined her as codirector of NYU Langone's CTEPH Program. Paul was reassured to learn that Dr. Chan had performed the procedure dozens of times with excellent outcomes.

"He took his time to explain every step, and he didn't hide the risks," Paul says. "Afterward, I said to my wife, 'I'm ready.' "

The eight-hour operation took place on March 8, 2022. After placing Paul on anesthesia, Dr. Chan and a team that included Stephanie Chang, MD, surgical director of the Lung Transplantation Program, opened the sternum, connected him to a heart-lung machine, lowered his body temperature to 68°F to reduce the need for oxygen, and delivered medications to temporarily paralyze his heart. Then, they switched off the machine, stopping circulation completely—a state that can be safely maintained for a maximum of 20 minutes. Working rapidly but carefully, the surgeons removed scar tissue from arteries in the right lung first, restarting the machine briefly to avoid damage to the brain and other organs before moving on to the left lung. After clearing more than 20 arteries in total, they resumed circulation, returned the patient's body temperature to normal, disconnected the bypass machine, and closed the chest.

Two days later, a physical therapist escorted Paul for a walk. To his delight, he was able to traverse much of the hallway at Kimmel Pavilion and even climb a small set of steps without discomfort. Paul was sent home the next week, and by the end of April, the now-58-year-old was back to running. "The speed is not what it used to be, but I hope to beat my kids again someday," he says, with a laugh. "I can't thank this team enough. They're amazing."

For Dr. Chan, the amazement is mutual. "Erby is such a strong, determined guy," he says. "It's fantastic to see him get his life back. That's the reason we do what we do."



A SURGICAL RACE AGAINST TIME

NYU Langone is among a handful of medical centers in the US whose surgeons possess the advanced training and skill to perform pulmonary thromboendarterectomy, the removal of blood clots from the arteries of the lung. Here's a step-by-step guide to the procedure, performed by cardiothoracic surgeons Justin Chan, MD, and Stephanie Chang, MD, that restored Erby Paul's health.

 Plastic tubes are inserted into the aorta, the largest artery, and two portions of the vena cava, the largest vein. Surgeons connect the tubes to a cardiopulmonary bypass, or heart-lung machine, which drains and filters the blood, replenishes it with oxygen, and pumps it back into the aorta.

► The machine cools the blood, reducing the body temperature to 68°F to induce suspended animation and prevent brain damage.

• Surgeons clamp the aorta and use medications to temporarily stop the heart. After draining most of the blood into the machine, they switch it off—creating a condition known as deep hypothermic circulatory arrest.

► The team works quickly to remove arterial blockages without damaging fragile blood vessels. Even at low temperatures, the body can function without oxygen and other nutrients for only about 20 minutes before the risk of neurological injuries and organ damage rises. "To pace ourselves, we break the work up into five-minute segments, with the perfusionist calling out the time," says Dr. Chan, codirector of NYU Langone's CTEPH Program. "We usually clear the vessels of the right lung first, then restart the heart-lung machine for 10 minutes before stopping the pump again and working on the left side."

• Once the arteries are cleared and sutured, circulation is restored, the body is warmed back up, and the bypass machine is disconnected.

• Following the surgery, patients must take blood thinners indefinitely and require regular monitoring by specialists, but most regain normal exercise capacity and life expectancy.

Eastern Expansion

32 Specialties. Over 200 Clinicians. One-Stop Medical Care for Long Island Residents.

Mark Lampasona, 62, can't say enough about the doctors at NYU Langone Health who have performed several major procedures he needed over the years, including a kidney transplant, spine surgery, weight-loss surgery, and cardiac stenting. "Every one of them saved my life," he says.

The retired financial analyst says NYU Langone is also doing wonders for his quality of life. Lampasona, who lives in Seaford, on the south shore of Long Island, used to drive to seven different locations for visits with his internist, weight-loss surgeon, endocrinologist, pulmonologist, dermatologist, gastroenterologist, and podiatrist. Now, he can see nearly all these providers under one roof at the newly opened NYU Langone Ambulatory Care Garden City.

Located in the heart of Nassau County, the four-story, 260,000square-foot medical hub at IIII Franklin Avenue houses over 200 providers of care. Having nearly all his doctors at one location saves Lampasona

> A SPECIALIST AT NYU LAN-MBULATORY CARE GARDEN SIT NYULANGONE.ORG/

many hours on the road and enables him to bundle appointments. "It's one-stop shopping for all my medical care," he says.

The state-of-the-art medical facility provides services in 32 clinical and surgical specialties and is equipped with 260 patient exam rooms. Seven of the specialties—cardiology, vascular surgery, endocrinology, gastroenterology, pulmonology, rheumatology, and urology—were recently ranked in the top 10 nationally by U.S. News & World Report.

NYU Langone has more than 300 outpatient sites across the New York metro area and Florida. "As the newest and largest of our 70 outpatient sites on Long Island, NYU Langone Ambulatory Care Garden City provides our patients with the same high-quality medical care that has consistently earned our ambulatory care system a #I ranking in the US by Vizient, the nation's largest healthcare performance improvement organization," says Andrew Rubin, senior vice president for clin-

NYULangone

ical affairs and ambulatory care.

"NYU Langone is deeply committed to Long Island and expanding our vast network of clinicians, who offer one consistently high standard of care close to where our patients live," says Andrew Brotman, MD, executive vice president and vice dean for clinical affairs and strategy, chief clinical officer. "This beautiful new location allows patients to see multiple doctors in a single visit, with each provider connected to the same electronic health record system that ensures integrated care."

Housed in the former Sears and Bloomingdale's building, NYU Langone Ambulatory Care Garden City is located one mile from NYU Langone Hospital—Long Island and six blocks from the nearest Long Island Rail Road station. The building's modernist design was adapted to enhance the patient experience. NYU Langone's Real Estate Development + Facilities team brought in more natural light by installing windows in the garage wall, created an outdoor garden, and took every opportunity to outfit the building with sustainable, green technology.

"The physical environment plays a powerful role in healing and overall well-being, and this informed every aspect of our holistic approach to designing and constructing this facility, both inside and out," says Vicki Match Suna, AIA, executive vice president and vice dean for Real Estate Development + Facilities.

For Long Islanders, the new ambulatory site is a point of pride and a welcome resource for world-class medical care. "NYU Langone continues to deepen its relationship with Long Island, establishing a stronghold for its special brand of excellence in this community that I love," says Michael Rafferty, a member of NYU Langone's board of trustees and president and CEO of Rafferty Holdings, LLC. "To have perhaps the best health system in the country in our own backyard is an incredible thing for the people of Long Island."





"With these significant communications improvements, no other hospital system can match our MyWall capabilities or our patients' experience."

-Paul Testa, MD, chief medical information officer at NYU Langone Health



Patient Experience

Next-Gen Technology Brings Better Care to the Bedside

The debut in 2018 of MyWall, the digital hub for inpatients, was a game changer for patients at Kimmel Pavilion and Hassenfeld Children's Hospital at NYU Langone Health. A far cry from the basic television monitors that still predominate at many medical centers, MyWall screens let patients choose their entertainment from among 100-plus TV channels, free movies, YouTube, and in pediatric rooms, video game players. They can also see the names and faces of care team members on screen, view personalized educational materials, and order meals according to their prescribed diet.

"MyWall was a big step forward in the medical field, elevating the holistic patient experience," says Nader Mherabi, executive vice president, vice dean, and chief digital and information officer at NYU Langone. "It put us ahead of our competitors."

Fast-forward to today, and the statement is still true. More than 1,600 MyWall units have been installed across the institution, including at Tisch Hospital, NYU Langone Hospital—Brooklyn, NYU Langone Hospital—Long Island, and NYU Langone Orthopedic Hospital, enabling patients at these locations to enjoy its many convenience and informational features.

Now comes MyWall 2.0. The platform's newest technology, Bedside Connect, is less about entertainment and more about augmenting

Bedside Connect enables NYU Langone doctors, pharmacists, and nurses to start a video chat with patients and their families at any inpatient location, a feature that enhances communication, safety, and efficiency. communication. Developed by NYU Langone's Medical Center Information Technology Department with the input of Hospital Operations, Patient Experience, Surgery, Children's Services, and clinicians, Bedside Connect enables doctors, pharmacists, and nurses who have access to Epic, NYU Langone's electronic health record system, to start a video chat from any location.

If that sounds a bit like *1984*'s Big Brother, quite the contrary. The tool aims to boost the quality and safety of a health system that already excels in the category, having been named #1 in the nation for quality and patient safety by Vizient Inc., a leading healthcare performance improvement organization.

"The number one cause of safety events, by far, is inadequate communication," says Fritz François, MD, executive vice president and vice dean, chief of Hospital Operations, who helped champion Bedside Connect. "Anything that improves communication between team members and patients and families enhances safety, efficiency, and patient experience."

There are a number of uses for Bedside Connect, which launched in Kimmel Pavilion in late February, with plans to expand throughout the enterprise by this summer:

Patient communication.

Doctors can't always be in the room to meet with patients, but now they don't have to be. A surgeon, for instance, may want to speak with a patient the evening following surgery to gauge their progress and prepare them for the road ahead, and an internist or referring physician can check in without needing to visit the hospital.

Family communication.

Since doctors perform rounds early in the morning and may have office visits later in the day, Bedside Connect allows them to initiate a video conversation while family members are in the room. Similarly, care managers and social workers who miss family members during rounds can use the video capability to coordinate a safe discharge plan, including the timing of transportation and the type of durable medical equipment that a patient requires.

Clinician communication.

Say, for instance, a nurse or a resident has a concern about a patient's drainage output or a sudden change in symptoms. If the attending physician can't be in the room, they can use MyWall to consult with the bedside clinician, observe the patient, and weigh in remotely.

Pharmacist communication.

Bedside Connect will prove a valuable tool for expanding Meds to Beds, a burgeoning program designed to deliver prior to discharge the prescriptions patients need to take at home, sparing them (or family members) a pharmacy visit. Using Bedside Connect, a hospital pharmacist can discuss the potential side effects and interactions of medications and answer any questions they may have. "Patients are more likely to take their medications if they're delivered right to their bedside and if a pharmacist speaks with them directly," says Dr. François.

Combined with the recent addition of Voyce, a remote interpretation service that connects patients and families with limited proficiency in English—and who don't share a common language with their care team members—with a live interpreter (see page 38), the next-gen MyWall offers first-of-its-kind capabilities.

"With these capabilities taken together as a portfolio of integrated technologies, and with these significant communications improvements, no other hospital system can match our MyWall capabilities or our patients' experience," says Paul Testa, MD, chief medical information officer at NYU Langone Health.

The Art of Caring for Patients with Skin of Color

FIVE QUESTIONS FOR LISA AKINTILO, MD, MPH

Dr. Lisa Akintilo, a fellowship-trained expert in cosmetic dermatology, is the newest member of NYU Langone Health's Skin of Color Program, launched in 2021 to research, diagnose, and treat dermatological conditions that disproportionately affect people who identify as Black, Hispanic, Asian American, or Native American. Dr. Akintilo, assistant professor of dermatology, sees patients at the NYU Langone Ambulatory Care Center East 38th Street. As the monthly host of a new Doctor Radio broadcast that airs on Thursdays from 6:00 p.m. to 8:00 p.m. (ET), Dr. Akintilo takes skin care questions from callers. Here, she fields some of our own.

You were planning to be a classical pianist. What happened?

Growing up in Chicago, I considered going to a music conservatory, and I still keep up with the piano, along with the violin and clarinet. Ultimately, though, I was drawn to medicine. I love working with my hands, and I knew I wanted to be a surgeon in some realm. Dermatologic surgery attracted me because it allows you to see your impact, both surgically and medically, right away. What also drew me to the field was my background in public health. Race, ethnicity, skin color, geography, and socioeconomic status all play a role in skin conditions.

Dermatology is among the least diverse medical specialties. What are the consequences?

People with pigmented skin are projected to make up more than 50% of the US population by 2042. Yet there are only 16 academic skinof-color centers in the country, so people often have to travel to a large urban center to find a dermatologist who looks like them. Having such a doctor can make a huge difference in care, patient satisfaction, and quality of life. About 70% of my patients have pigmented skin.

Are people of color less likely to get skin cancer checks because they think they are less vulnerable to sun damage?

Absolutely. Most people with darker skin never see a dermatologist. I didn't even know I had to wear sunscreen until I aot to medical school. The rates of skin cancer among the skin-of-color population are lower because melanin-rich skin does afford slightly more natural protection, but cancerous lesions tend to develop in less exposed areas like the palms and soles. Among those of African and Latin descent. the incidence of melanoma, the deadliest form of skin cancer, is lower, but it has a higher rate of metastasis and worse outcomes because it's typically diagnosed at a later stage.

What kinds of high-tech tools do you use for cosmetic treatments?

We use lasers

and other energy-based devices to treat fat deposits beneath the skin, called cellulite; rosacea, an inflammatory condition that causes persistent facial redness; cherry angiomas, red bumps made of small blood vessels; and melasma, a skin discoloration on the cheeks, forehead, or jaw; and also to remove tattoos. We have several devices that set us apart from most centers: ultrasound for tightening loose skin, heat-based radiofrequency treatments to reduce acne scars, and a special laser for smoothing uneven complexions without injuring the skin. These treatments are safe for all skin types, and patients are thrilled with the results.

What is your most important advice to people with pigmented skin?

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First, apply sunscreen regularly to exposed parts of your body. I recommend a broad-spectrum type that's SPF 30 or higher. Next, daily use of a facial serum or cream with antioxidants can be a first line of defense against harmful pollutants. Use retinol or other vitamin A derivatives on your face to promote cell growth. Keep your skin well hydrated and moisturized to prevent dry skin. And last but not least, get examined from head to toe by a dermatologist once a year.

TO FIND A DERMATOLOGIST WHO SPECIALIZES IN TREATING SKIN O COLOR, VISIT NYULANGONE.ORG SKINOFCOLORDERM, OR CALL 646-929-7800.

Meet the Experts



Nayoung Lee, MD DERMATOLOGY

Dr. Lee performs Mohs surgery, a tissue-sparing procedure to treat skin cancer. She also provides laser and other cosmetic treatments for raised scars, called keloids, and other conditions.



Daniel Gutierrez, MD DERMATOLOGY

Dr. Gutierrez, the son of a migrant worker from Mexico, is proud to care for patients disadvantaged by healthcare disparities. He specializes in pigmentation disorders, including vitiligo.



Avrom Caplan, MD

Board-certified in internal medicine and dermatology, Dr. Caplan treats sarcoidosis, an inflammatory disease that causes bumps, lesions, and nodules, as well as other complex skin conditions.



Prince Adotama, MD DERMATOLOGY

Dr. Adotama treats hair loss, skin discoloration, and acne and acne scars, among other conditions. He is the first NYU Langone dermatologist to see patients regularly in Brooklyn, at the Joseph S. & Diane H. Steinberg Ambulatory Care Center—Cobble Hill. He also practices at the Joan H. & Preston Robert Tisch Center at Essex Crossing.



Education

For soon-to-be-graduating medical students, the tradition known as Match Day, held each year on the third Friday in March, is everything, everywhere, all at once. Like their counterparts at more than 150 medical schools nationwide, 107 final-year students at NYU Grossman School of Medicine and 24 students at NYU Grossman Long Island School of Medicine gathered at their respective campuses on Friday, March 15, to learn where they would be doing their residencies, the most formative stage of their medical training, for the next three to seven years. At exactly noon (Eastern Daylight Time), each student—holding their future in their hands—anxiously opened an envelope informing them of their assignment from among nearly 40,000 available residency positions nationwide. The matching process, overseen by the National Resident Matching Program, incorporates the preferences of both the residency programs and the students to make the best possible match, using a specially constructed algorithm.



The Expert Is In: an Interview with Alec Kimmelman, MD, PhD, Director of Perlmutter Cancer Center

Alec Kimmelman, MD, PhD, who was named director of the Laura and Isaac Perlmutter Cancer Center in November 2023, brings uncommon experience to the job: he has a stellar record of leadership in both research and patient care. Dr. Kimmelman joined NYU Langone Health in 2016 as the Anita Steckler and Joseph Steckler Chair of Radiation Oncology, a role he retains. An internationally recognized expert on the biology of pancreatic cancer, he has identified critical metabolic pathways that enable the disease to grow and spread, pointing toward potential therapeutic targets. Here, Dr. Kimmelman discusses his vision for expanding treatments, advancing research, and enhancing care at the National Cancer Institute-designated Comprehensive Cancer Center.

What are your primary goals for Perlmutter Cancer Center?

We have three priorities. The most basic is to expand access to topflight cancer care throughout NYU Langone. When you walk into any of our sites, the services and treatment offerings should be identical. The second is to ensure every patient has access to our burgeoning portfolio of 192 open clinical trials. For many cancers lacking effective treatments, the best therapy available may be one that's in the investigational stage. If you live in Brooklyn, Queens, or Long Island, you shouldn't have to travel to Manhattan for that kind of innovative care. We've made progress toward this goal in recent years, but we're still not done.

Our third priority is to expand our translational research—the kind that travels from the lab bench to the bedside and back again—so that we can benefit patients at NYU Langone and all over the world. We're ramping up research centers to develop treatments and diagnostics for cancers of the lung, brain, spine, pancreas, breast, and skin.

TO FIND A CANCER SPECIALIST, VISIT NYULANGONE.ORG/PCC DOCTORS, OR CALL 212-731-6000.

You've noted that it's a particularly exciting time to lead at an academic cancer center. Why?

The pace of scientific progress is astonishing. We're going from the discovery of new molecular targets to medicines that treat patients more rapidly than ever. For example, a study last year led by our deputy director, Jeffrey Weber, MD, PhD, showed that a vaccine that trains the immune system to attack proteins unique to a patient's cancer, when combined with an older class of immunotherapy called a checkpoint inhibitor, could dramatically reduce the recurrence of melanoma, a deadly form of skin cancer.

We're seeing an explosion of investigational drugs aimed at neutralizing KRAS, mutant proteins that are among the main drivers of pancreatic, lung, colon, and blood cancers. For decades, KRAS has been a sort of holy grail in cancer research, but recently we've been able to target it.

In my own lab, we're making headway in decoding pancreatic cancer, the third leading cause of cancer deaths. Our work focuses on how cancers use various fuel sources, known as tumor metabolism, and uncovering metabolic pathways that might prevent them from spreading.

How does being both a clinician and a researcher impact your leadership style?

As a clinician, I've taken care of cancer patients across the continuum, from early stage to end of life, getting a firsthand look at how difficult the journey can be. Cancer treatments, even if they're successful, can cause serious and lasting side effects. The psychological journey can be equally challenging. As a researcher, this insight has made me realize how important it is not only to develop better therapies, but also to elevate the quality of our care.

How will you ensure that Perlmutter Cancer Center has the resources to fulfill your translational research goals?

We're anticipating trying times for federal funding. So we're embarking

on a large philanthropic venture to tap alternative grant sources, including nonprofit foundations. In addition, we're nurturing partnerships with pharmaceutical and biotech companies that are working to develop novel therapies and determine the best ways to deploy them. Of course, if our researchers have some breakthroughs of their own, royalties and intellectual property would be another valuable funding source.

Despite good news on the treatment front, a recent study found that global cancer rates are rising, especially among people under age 50. What can be done to curb this alarming trend?

We need more research to understand why this is happening and who is most at risk. People often ask, "Why can't everyone just get a fullbody MRI every year?" Putting cost and resources aside, these scans often do more harm than good, yielding ambiguous findings that require invasive and often unnecessary follow-up tests. Before we establish more aggressive screening protocols, let's figure out who needs to be screened and the best way to screen them.

If full-body scans aren't the answer, what is?

A better strategy than early detection is prevention. Some 30% to 50% of cancer cases could be avoided by taking a few simple lifestyle steps. First and foremost, stop smokingstat! Smoking increases the risk for many cancers, not just lung cancer. Moderate your intake of alcohol, since consuming three or more drinks per day is linked to a variety of cancers. Obesity is another risk factor, so maintain a healthy weight and exercise regularly. And make sure your child or young adult is vaccinated against human papillomavirus (HPV), a sexually transmitted infection that is driving an epidemic of gynecological malignancies and cancers of the tonsils and the larynx. There's no guarantee that you'll avoid cancer by following these guidelines, but you'll certainly optimize your chances of staying healthy.



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"We're working to ensure that every patient has access to our 192 open clinical trials. If you live in Brooklyn, Queens, or Long Island, you shouldn't have to travel to Manhattan for that kind of innovative care."

> —Alec Kimmelman, MD, PhD, director of NYU Langone Health's Perlmutter Cancer Center

Searching for Answers

A Mother's Tragedy Leads to Groundbreaking Research on Sudden Unexplained Deaths in Young Children



When her 15-month-old daughter, Maria (above), died suddenly in 1997, Laura Gould (opposite) began a decades-long mission to study the causes and risk factors for a phenomenon that results in the deaths of 400 children ages one and older each year.

Photographs by Tony Luong

For more than two decades, Laura Gould has spearheaded research to unlock the causes of sudden unexplained death in childhood (SUDC), a tragic phenomenon that affects about 400 children ages one and older in the US each year. What drives her is a mother's worst nightmare: one day in 1997, when she went to wake her 15-month-old daughter, Maria, from a nap, she found the toddler lying on her stomach, still and silent.

"I called 911 and did CPR, but it was too late," says Gould, now a research assistant professor of neurology at NYU Grossman School of Medicine. "Maria was my firstborn. She'd just learned to blow bubbles. She loved to dance. And now she was just...gone."

Maria had had a low-grade fever the night before, but she had seemed fine in the morning. The initial autopsy found nothing amiss. Weeks later, the medical examiner declared that she had died from myocarditis, an inflammation of the heart muscle. However, Gould, a physical therapist at the time, had seen no evidence of that illness; she sent autopsy slides to several cardiac pathologists, who ruled it out. Ultimately, the cause of her daughter's death was changed to "unexplained."

Heartbroken, Gould embarked on a deep dive in search of an explanation. She soon discovered that while a huge body of research existed on sudden infant death syndrome (SIDS), the leading category of unexplained deaths in babies under one year old, virtually nothing was known about its counterpart in older children.

So Gould went to work. She gave the phenomenon a name ("I thought, 'It's a sudden death, it happens in childhood, and it's unexplained,' " she says). She advocated for a law in her home state, New Jersey, that established forensic protocols for investigating sudden deaths in infants and children. Later, she helped to develop nationwide guidelines with the US Centers for Disease Control and Prevention and championed federal legislation to improve data collection for such deaths.

Starting in 1999, she partnered with a pediatric pathologist at the University of California San Diego to study SUDC's causes and risk factors. Among their most striking findings: victims were 10 times more likely to have a history of febrile seizures—convulsions that can occur when a young child has a fever above 100.4°F—than the overall population of children.

After her collaborator retired in 2012, Gould reached out to Orrin Devinsky, MD, a renowned neurologist and director of the Comprehensive Epilepsy Center at NYU Langone Health, who was studying sudden death in children and adults with epilepsy. "I'd never heard of SUDC, but I realized this would be an opportune place for me to contribute," Dr. Devinsky says. He quickly hired Gould as a full-time research scientist. Together, they established the SUDC Research and Registry Collaborative, a multisite project that has now collected data on more than 360 cases, including DNA analysis from 124 victims and their parents; it is the largest SUDC registry in the world.

From the collaborative's data, a multidisciplinary team of investigators has identified several genetic abnormalities that likely explain some cases of SUDC, and in January 2024, Gould was the lead investigator for a groundbreaking study, published in the journal *Neurology*. In examining videos of seven toddlers with SUDC whose final moments had

"We need a lot more research to understand what's behind these tragedies and how to prevent them. But we're moving the needle."

—Laura Gould, research assistant professor of neurology at NYU Grossman School of Medicine

"Some of the most important contributors to science have been intelligent and driven outsiders. Laura Gould's experience as a mom is her secret sauce."

-Orrin Devinsky, MD, director of the Comprehensive Epilepsy Center at NYU Langone Health

been caught on crib cameras, the team found that five had definitively experienced a convulsive seizure before dying, and a sixth likely had experienced one.

"This may turn out to be the smoking gun," says Dr. Devinsky, the study's senior investigator. "It's too soon to say whether seizures are the most common mechanism in SUDC, but they're clearly an important factor."

Besides helping Gould advance her cause, Dr. Devinsky has nurtured her growth as a scientist. He encouraged her to pursue a master of science degree in clinical investigation, which she completed last year. He then supported her appointment to the faculty in December 2023, enabling her to pursue independent research grants. "Some of the most important contributors to science have been intelligent and driven outsiders," he notes. "Laura's experience as a mom is her secret sauce."

Gould, founder and president of the SUDC Foundation, will describe her remarkable journey at NYU Langone's first TEDx talk, Beyond Boundaries—Innovating for a Healthier Tomorrow, to be held at Murphy Auditorium, on the Manhattan campus, on Tuesday, June 4, 2024, at 5:30 pm.

She continues to pursue answers about the terrible mystery that changed the course of her life and her career. "We're going to need a lot more research to understand what's behind these tragedies and how to prevent them," says Gould. "But with the help of dedicated researchers and highly motivated parents, we're moving the needle."





SIDS VS. SUDC: UNDERSTANDING THE DIFFERENCES

These two categories of sudden death in children share several aspects in common. Both occur more often in males, typically while the victim is asleep, and often follow mild illnesses. However, they affect different age groups, and there are more than three times as many SIDS cases as SUDC cases. In addition, multiple risk factors for SIDS have been identified, while those for SUDC remain largely unknown.

Sudden Infant Death Syndrome (SIDS)

- Ages affected: under one year
- ▶ Number of cases annually: about 1,400

► Known risk factors: sleeping on stomach, premature birth, low birth weight, overheating during sleep, secondhand smoke

Sudden Unexplained Death in Childhood (SUDC):

► Ages affected: 1 to 18 years (more than half of victims are under age 4)

▶ Number of cases annually: about 400

 Known risk factors: history of febrile seizures (other potential factors are under investigation)



Aging Gracefully, Part 1

Our Care for Older Patients Has Been Rated "Excellent." We're Making It Even Better.

Age is only a number, it's often said. But when it comes to caring for older patients, some numbers are truly significant because they tell a more enlightening story. Take the number two, for example. That's the ranking *U.S. News & World Report* has awarded NYU Langone Health—out of 4,515 hospitals nationwide—for the quality of our geriatric services. NYU Langone also earned a rating of "excellent" among older patients for its 30-day survival rate after admission, frequency of discharging these patients directly to their homes, high nurse-to-patient ratio, and supportive patient services.

"Our hospitals have outstanding metrics for older patients because of an extraordinary system of quality and safety measures that we've developed over the years," notes Joshua Chodosh, MD, the Michael L. Freedman Professor of Geriatric Research and director of the Division of Geriatric Medicine and Palliative Care at NYU Grossman School of Medicine. "Our reputation speaks to the excellent practitioners we have across the board, in both inpatient and outpatient services."

At the same time, Dr. Chodosh is mindful of some sobering statistics about older adults, including their growing numbers and their vulnerabilities. Among them: by 2034, for the first time in our nation's history, adults older than 65 are projected to outnumber children under 18. NYU Langone is tackling the challenges posed by an aging population head-on, implementing a host of new programs and initiatives designed to further augment and enhance its care of older patients. Last fall, the division received a \$54 million federal grant to lead a study involving 82 hospital emergency departments nationwide with the aim of improving emergency and postemergency care for patients with dementia and their care partners.

"We are totally data driven and supported by our outstanding Medical Center Information Technology team," says Dr. Chodosh. "Our innovations for these patients will continue to raise the bar for quality and safety."

> "I don't know of any health system better poised to continually improve quality and safety in its care of older patients."

> > —Joshua Chodosh, MD, director of the Division of Geriatric Medicine and Palliative Care



Aging Gracefully, Part 2

Six Ways We're Making a Difference for Senior Patients

"There's a growing enthusiasm for aging-related care and research at NYU Langone," notes Joshua Chodosh, MD, director of the Division of Geriatric Medicine and Palliative Care. That interest stems, in large part, from a heightened awareness of our country's aging population. To address this trend, NYU Langone has launched numerous bold initiatives in geriatric medicine across our institution. Spotlighted here are the Optimal Aging Institute, the Geriatric Ambulatory Consultative Clinic, a clinical trial to help counsel patients with prediabetes, and three other progressive programs. "I don't know of any health system better poised to continually improve quality and safety in its care of older patients," says Dr. Chodosh.

Fact

ONE IN FIVE AMERICANS WILL BE OVER AGE 65 BY 2030

Initiative

AN OPTIMAL AGING INSTITUTE DESIGNED TO ADD YEARS OF LIFE AND LIFE TO YEARS

The best way to add luster to the golden years is to stay healthy. That's the premise of the new Optimal Aging Institute, established with the conviction that many agerelated diseases can be prevented by modifying key risk factors: smoking, sleep, diet, exercise, blood glucose, weight, lipids, and blood pressure. The institute's mission is to build a hub that creates and connects world-class multidisciplinary teams of clinicians and scientists to fuel discovery research through shared resources. Its inaugural director, Josef Coresh, MD, PhD, an expert on vascular health and its connection to cognitive decline, defines optimal aging as "attaining a higher level of functional independence earlier, retaining it longer, and losing as little independence as possible—and it can start at any age."

Fact

NEARLY HALF OF AMERICA'S OLDER ADULTS, MORE THAN 26 MILLION PEOPLE, HAVE PREDIABETES

Initiative

A TRIAL THAT AIMS TO STAVE OFF DIABETES

A diagnosis of prediabetes is a startling wake-up call and a prime opportunity for patients to change course so that they don't join the ranks of the 15.9 million adults 65 and older who have type 2 diabetes. NYU Langone researchers are conducting a randomized trial to compare the effectiveness of two distinct strategies for counseling the more than 15,000 patients at NYU Langone who have prediabetes. The study—called BRIDGE, for BRInging the Diabetes Prevention Program to GEriatric Populations—compares in-person education sessions to teleconferencing ones. Funded by the National Institute of Diabetes and Digestive and Kidney Diseases, the trial is led by Jeannette Beasley, PhD, RD, MPH, and Dr. Joshua Chodosh. Dr. Beasley is associate professor of medicine at NYU Grossman School of Medicine and associate professor of nutrition and food studies at NYU's Steinhardt School of Culture, Education, and Human Development. To learn more, visit wp.nyu.edu/bridgedpp.

Fact

ONE OUT OF TWO PEOPLE WHO ARE 65 OR OLDER VISIT AN EMERGENCY DEPARTMENT (ED) EACH YEAR

Initiative

CREATING A MORE AGE-FRIENDLY EMER-GENCY DEPARTMENT

"The front door of the hospital healthcare system is the emergency department, and geriatric emergency medicine sits at the crossroads," explains Ula Hwang, MD, MPH, professor of emergency medicine and population health at NYU Grossman School of Medicine. Dr. Hwang, a leader in her field, was recently appointed medical director of geriatric emergency medicine for the Ronald O. Perelman Department of Emergency Medicine. She notes that EDs are not favorable environments for older patients and are poorly adapted to care for their special needs. Dr. Hwang's mandate is to establish a support network for NYU Langone's geriatric emergency care, and a related research infrastructure. "It's largely a matter of devising quality and safety protocols that are tailored to this vulnerable population," she says.

Fact

PATIENTS 65 OR OLDER MAKE UP 23% OF TRAUMA ADMISSIONS TO HOSPITALS

Initiative

NYU LANGONE HOSPITAL—BROOK-LYN HELPS SENIORS BOUNCE BACK FROM TRAUMATIC INJURIES

Nearly 1,300 patients 65 or older are treated for trauma each year at NYU Langone Hospital—Brooklyn. In 2021, with funding from the Fan Fox & Leslie R. Samuels Foundation, the hospital established the Beyond Hospital Doors-Aging Wisely Grant Program to improve care for hospitalized older adults with traumatic injuries. "We looked at 427 older patients who had traumatic injuries, with the goals of returning them to their preinjury living, removing barriers to care, reducing reinjury, and screening for food insecurity," says Lauren Parker, MD, the hospital's medical director of geriatric medicine and palliative care. In 13 months, the program increased geriatric consults from 9% to 64%, follow-ups with primary care physicians from 16% to 80%, physical therapy consults from 63% to 72%, and nutritional consults from 28% to 71%. "This is a multidisciplinary model of care for NYU Langone and other institutions," says Dr. Chodosh.



Fact

30% OF PEOPLE AGE 65 OR OLDER NEED THE CARE OF A GERIATRICIAN

Initiative

AN AMBULATORY CLINIC'S HOLISTIC APPROACH TO ELDER CARE

The demand for geriatricians will jump 50% by 2030, yet the number of these specialists is expected to decrease over the next decade. To combat the growing shortage, NYU Langone has established the Geriatric Ambulatory Consultative Clinic, based at 222 East 41st Street. The clinic, established in 2023, focuses on comprehensive geriatric assessments and expands patient access to specialized services. The goal is to approach complex healthcare issues for older patients in a holistic manner, notes James Lai, MD, associate director of clinical services for the Division of Geriatric Medicine and Palliative Care. "Patients love it because they're getting the kind of care they could never receive otherwise," says Dr. Chodosh.

GERIATRIC MEDICINE, VISIT NYULANGONE.ORG/GERIATRI MEDICINESPECIALIST, OR CAL 646-929-7800.

Fact

OF THE MORE THAN 700,000 HOSPITALIZED PATIENTS WHO SUFFER A FALL EACH YEAR, MOST ARE OLDER ADULTS

Initiative

NURSES AT NYU LAN-GONE HOSPITAL— LONG ISLAND ESTAB-LISHED PROTOCOLS FOR REDUCING PATIENT FALLS

Nearly 40% of hospital patients nationwide are over age 65, and falls are among the biggest threats to their safety. Fall prevention was the special focus of a recent yearlong training program at NYU Langone Hospital-Long Island. Five nurses-Vincenza Coughlin, MS, RN; Gwenn Brown-Tammaro, BSN, RN; Heidi Pierluissi, MSOL. RN; Waitline Williams, PhD, RN; and Woodlyne Pierre-Lallemand, MSN, RN-participated in the Nurses Improving Care for Healthsystem Elders (NICHE) Leadership Training Program, a national program of NYU Rory Meyers College of Nursing. After new protocols were implemented on a pilot unit, falls among older adults decreased by 50% from November 2022 to December 2023. "The training enabled quality improvement through evidence-based care," says Pierre-Lallemand. Every NYU Langone hospital is now part of the NICHE network.

Discoveries

Dark Matter Project Shines New Light on Human Genome

Of the roughly 3.2 billion building blocks of DNA that make up our genetic blueprint, or genome, only about 2% have a clear function: encoding instructions for the production of proteins that perform critical tasks in every cell. The remaining 98%, long considered noncoding or "junk" DNA, "is what we call dark matter," says Jef Boeke, PhD, the Sol and Judith Bergstein Director of the Institute for Systems Genetics at NYU Langone Health.

An ambitious NYU Langone-led effort within the institute, known as the Dark Matter Project, is helping to illuminate how elements within this vast, mysterious expanse may play key roles in determining whether—and how—our gene-encoded proteins function. "Some regulatory sequences can act over vast genomic distances to turn functional genes on or off," Dr. Boeke explains. In addition, millions of other bits of DNA, called retrotransposons, can hop around the genome and cause profound changes where they insert themselves.

The Dark Matter Project has netted more than \$31 million in funding from the National Institutes of Health. Among its dozens of explorations, one showed how human genes can be activated within genetically engineered mice to study SARS-CoV-2, the strain of coronavirus that causes COVID-19. Two more recent studies, published a week apart, offered valuable insights about how genomic dark matter may have orchestrated critical steps in evolution.

A Tale of Missing Tails

The February 28 cover story of *Nature* was sparked by the curiosity of Bo Xia, PhD, then a graduate student at NYU Langone's Vilcek Institute of Graduate Biomedical Sciences under the joint mentorship of Dr. Boeke and Itai Yanai, PhD, professor of biochemistry and molecular pharmacology. Dr. Xia noticed that the DNA sequence of a gene controlling tail length is virtually identical in tail-sporting primates like monkeys and their tailless relatives, including humans and apes. However, he found one notable exception: a retrotransposon that inserted long ago into a noncoding part of the gene in tailless primates.

Like the excess footage cut between the scenes of a film, these noncoding lengths of

DNA, or introns, are often seen as expendable. However, a series of clever genetic experiments in mice and human cells suggested that the inserted retrotransposon can pair up with a second, preexisting retrotransposon to form a hairpin loop between them. When the cells convert the gene's DNA into an RNA template and remove its excess introns, the outward bulge can cause some of the functional RNA to be snipped out too, changing the function of the resulting protein.

"We believe we have identified a onetime genetic alteration that happened 25 million years ago and led to an entire lineage of primates that have no tail, including us," Dr. Boeke says. In a further twist, senior coauthor Dr. Yanai says the research hints at an "ancient evolutionary trade-off"—our tail loss may have led to a higher rate of spina bifida, a birth defect that prevents the spinal cord from developing properly.

Hinting at How Genes Are Born

Another study published in *Nature*, on March 6, found enticing new clues to the evolutionary question of how new genes emerge. The researchers, including Brendan Camellato, PhD, then a graduate student in the Boeke Lab, deliberately reversed the order of the DNA letters spelling out a large human gene and inserted the backward sequence into both mouse and yeast cells.

In mouse cells, the machinery tasked with converting DNA into the RNA template needed for protein production shut down when it encountered the faulty sequence. The default setting that turns off DNA unless it meets stringent requirements may help protect mice and other mammals from potentially harmful genetic material, Dr. Boeke says.

By contrast, the yeast cells readily sprang into action and churned out useless bits of RNA from the reversed code. The "very unexpected" result, says Dr. Boeke, suggests that the simpler yeast organism may be more permissive of foreign DNA that can drive its faster evolution. "We know that genes can get duplicated and acquire new functions, but we know much less about how new genes are born," he says. "This result suggests an interesting potential mechanism for that birth."

\$31 Million

NIH FUNDING EARNED BY THE DARK MATTER PROJECT, PART OF THE INSTITUTE FOR SYSTEMS GENETICS AT NYU LANGONE HEALTH Enhancing Communication

No Matter Which Languages Our Patients Speak, Now They Can Communicate in One Voice



In February 2024, 41% of the 12,252 Voyce sessions conducted at NYU Langone Hospital— Brooklyn were initiated by clinicians in the Emergency Department.

distress. She was alone and spoke a dialect no clinician understood. Two of the hospital's administrators-Vjollca Latifi, supervisor of Volunteer, Language, Cultural, and Disability Services, and Maricruz Criollo, director of Patient Relations, Cultural Competence, Volunteers, and Language Services-enlisted the help of a Spanish interpreter on staff, who determined that the woman spoke K'iche', a Mayan language indigenous to the central highlands of Guatemala. Armed with that information, Criollo was able to reach an interpreter outside the hospital who was fluent in K'iche'. The interpreter helped the woman describe her pain. She was quickly transferred to labor and delivery, where she gave birth to a healthy baby. "To be able to provide translation services to a patient in urgent need, as she was, is very rewarding," says Criollo. The tool that facilitated that crit-

One day last fall, a young pregnant

woman arrived in the Emergency

Department (ED) of NYU Langone

Hospital—Brooklyn in great physical

ical dialogue, and thousands more cases like it, debuted at NYU Langone Hospital—Brooklyn only weeks earlier, on July 24, 2023. Voyce, a secure, state-of-the-art video and audio remote interpretation service, enables interpretation for more than 240 languages, including American Sign Language and various indigenous dialects, often in 20 seconds or less. Voyce connects patients, their families, and clinicians with a live interpreter. The service's speed, efficiency, and accuracy reassure patients and their families while providing essential real-time information to clinicians, enhancing safety and leading to better outcomes.

"In the ED, seconds count," notes Ian Wittman, MD, clinical associate professor of emergency medicine at NYU Grossman School of Medicine and chief of service for the hospital's Emergency Department. "Improving the speed and quality of our interpretation ensures that all patients receive the same excellent and expeditious care." In February 2024, 41% of the hospital's 12,252 Voyce sessions were initiated by clinicians in the ED.

Perhaps none of NYU Langone Health's hospitals has had greater need for a robust interpretation service than NYU Langone Hospital— Brooklyn, whose patient population is "as multicultural as the United Nations," notes Criollo. The surrounding neighborhood of Sunset Park is among the most diverse in New York City, with more than three in four residents best served in a language other than English.

Voyce was implemented across our entire enterprise, including outpatient sites, by NYU Langone's Medical Center Information Technology (MCIT) Department in November 2023. The system is now used in 84% of engagements with patients who have limited proficiency in English. In the remaining 16% of cases, translation is done in person through staff interpreters or staff members; more than 2,400 employees are certified by our Bilingual Competency Program.

NYU Langone's goal is to ensure that patients with limited proficiency in English have access to interpretation services throughout their stay. They can choose the gender of their Voyce interpreter, and a session that is audio only or audio with video. The app is available on most devices with access to Epic, NYU Langone's electronic medical record system, including computers, tablets, smartphones, and MyWall, a digital hub for inpatients (see page 22). A record of each interpretation session is automatically documented on Epic, though the content is not recorded for privacy reasons.

Anatoly Feldman, a director on the Enterprise Clinical Ancillary System team in MCIT, says the technology's deep integration with Epic makes it easy for clinicians to use. "Voyce launches from Epic with one click of a button," he explains. "For registered patients, there's no need to provide patient information and request a language because Voyce interpretation requests are automatically routed to an appropriate interpreter based on the patient's preferred language."

Bret J. Rudy, MD, executive vice president and chief of hospital operations at NYU Langone Hospital—Brooklyn, says Voyce allows the hospital to better serve the community, ensuring optimal care for every patient who enters its doors. "I can think of no better way to welcome patients into our institution," he notes, "than by showing them the respect of communicating effectively with them."

"Improving the speed and quality of our interpretation ensures that all patients receive the same excellent and expeditious care."





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Source: 2023 Vizient Quality and Accountability Ranking. Ranked #1 out of 116 participating comprehensive academic medical centers and #1 out of 62 participating ambulatory networks.



See what makes us #1





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