



The Power of Every *One*.
CENTENNIAL CAMPAIGN



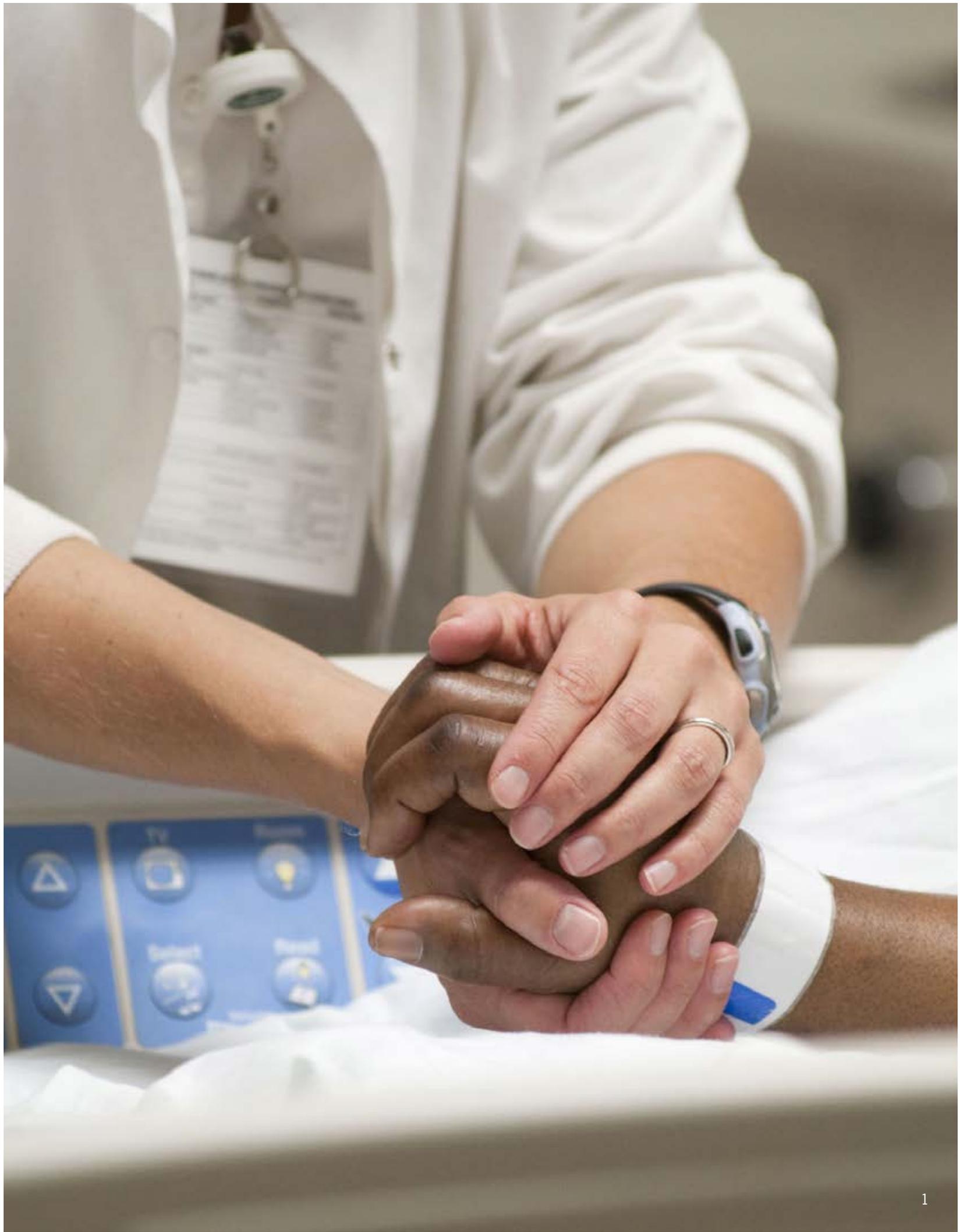
The **Power** of Philanthropy

Impact Report

Why do people come to Cleveland Clinic?
Because we have a unique model of coordinated care, delivered through multidisciplinary teams. Our culture carries a spirit of innovation and a thirst for change, as we constantly seek new ways to deliver better care for patients.

– Tom Mihaljevic, MD, CEO and President





Accelerating Innovation

“Philanthropic funding allowed me to take an idea—one that I simply wrote down on a piece of paper—and turn it into a project with clinical collaborators that has significant potential to improve patient care. That is the power of philanthropy.” – Karl West, MS

At Cleveland Clinic’s Lerner Research Institute, philanthropy fuels innovation in research and commercialization through the institute’s new Accelerator Fund Innovation Competition. This annual award, supported solely by philanthropy, is given to four projects at the \$50,000 level, and is renewable for a second year, up to \$50,000.

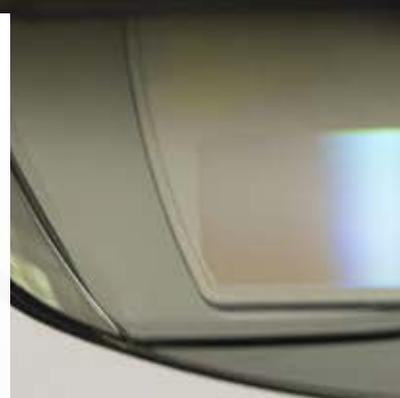
The awards support particularly innovative, disease-oriented research or early product development, which by nature may be difficult to fund in traditional ways.

Karl West, MS, Director of Medical Device Solutions at Cleveland Clinic and staff member in the Lerner Research Institute’s Department of Biomedical Engineering, received an Accelerator Fund award in 2017.

This early seed funding helped Mr. West and Centerline Biomedical, a Cleveland Clinic spin-off company, secure a Small Business Technology Transfer award from the National Heart, Lung, and Blood Institute. With the award they will test a “holographic GPS system for the operating room” that enables 3-D visualization during minimally invasive procedures.

The new technology has many potential applications for clinical care. In particular, they will study its use in the treatment of aortic aneurysms. While stent grafts are commonly utilized during procedures to treat this condition, they are often misplaced and rely on 2-D X-ray fluoroscopy, which leaves surgeons and staff exposed to potentially dangerous radiation.

Using the Microsoft HoloLens, and an application for mixed reality technology that Mr. West previously developed, surgeons will be able to visualize a surgery in true 3-D, streamline the procedure, and reduce both time in the operating room and healthcare costs.





Funding a Team Approach

The Lerner Research Institute is home to 10 Centers of Excellence. The centers, while not physical buildings, provide the framework and funding for physicians and scientists to team up to achieve better treatments and outcomes for patients with life-threatening diseases.

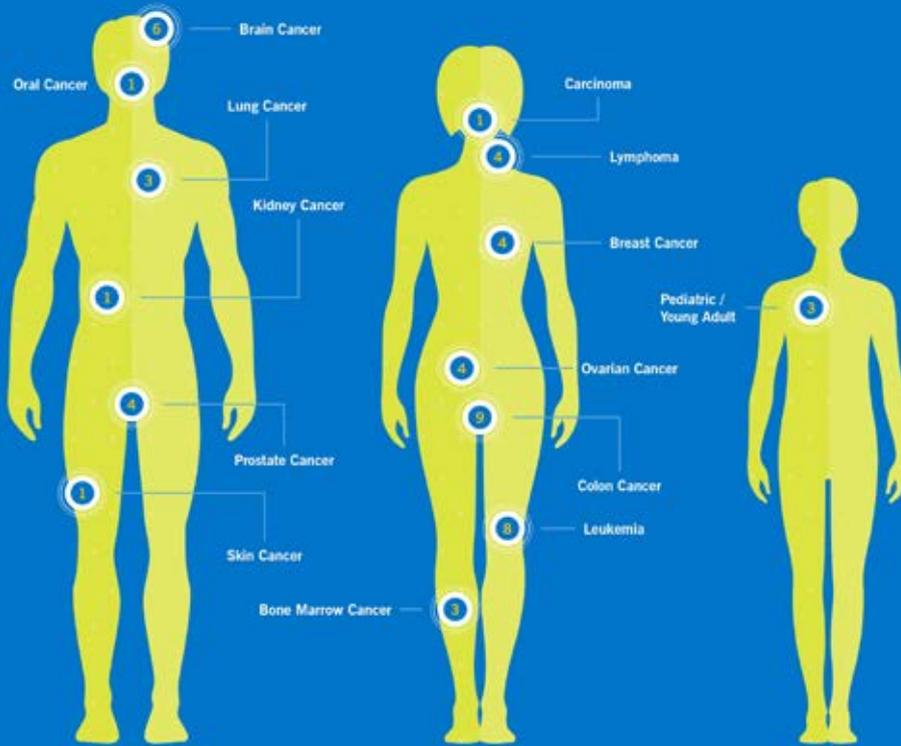
The process for establishing a center is straightforward: each year, teams apply for three-year grants for any new research related to health or disease. These internal grants, funded entirely through philanthropy, help research teams generate and validate enough early-stage data that they can successfully compete for significant follow-up funding.

Institute Chair Serpil Erzurum, MD, oversees research conducted through the centers. Dr. Erzurum, who was recently elected to the prestigious National Academy of Medicine, holds the Alfred Lerner Memorial Chair in Innovative Biomedical Research.

She notes that so far, the work has been catalytic and couldn't be done without generous philanthropic support.

Dr. Erzurum applauds the diversity and creativity the researchers have shown in putting their teams together. "A team looking at lung cancer, for instance, might have a radiologist, a lung doctor and a scientist. Essentially, the center directors say, 'You do what you do best; I'll do what I do best, and then let's come together with a strategy and find a solution.'"

VeloSano: Funding Cancer Research



VeloSano Funded Cancer Research

73 projects supported with funds from 2014 - 2016

2017 funds to be allocated in 2018

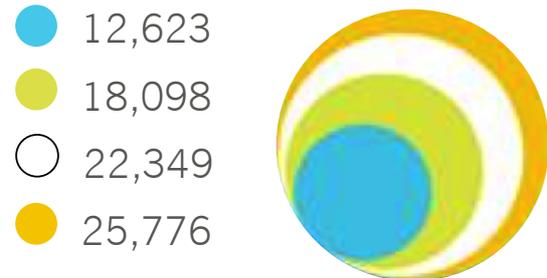
General projects



DOLLARS RAISED

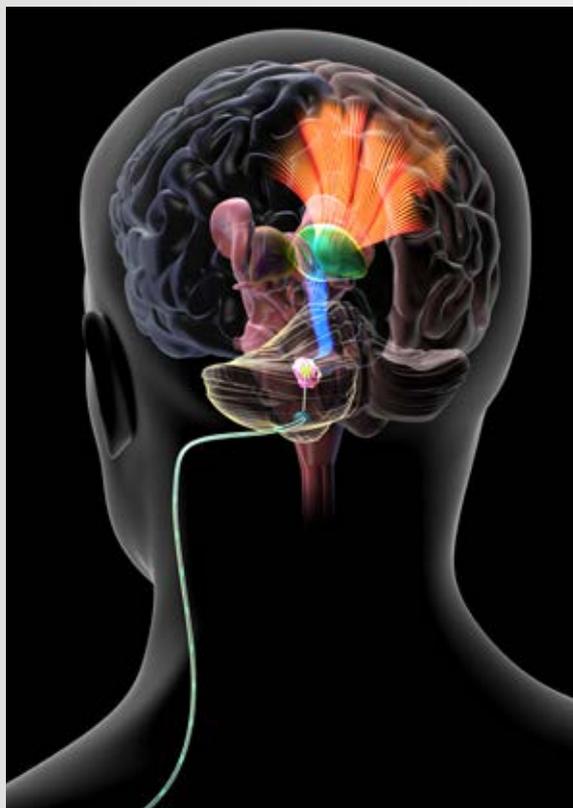


TOTAL DONATIONS



YEARS ● 2014 ● 2015 ● 2016 ● 2017

Novel Stroke Treatment Brings Hope



Two years ago, Judy Slater, a 59-year-old resident of Pulaski, Pennsylvania, was getting out of bed when she had a severe stroke. She fell down and couldn't get back up; the stroke had left her entire left side paralyzed.

After the stroke, Mrs. Slater couldn't bathe or cook on her own, and she longed for her former independence. That's why she agreed to become the first person in the world to receive deep brain stimulation (DBS) for stroke recovery: a procedure in which electrodes are implanted in the brain to provide small electric pulses.

In December 2016, Mrs. Slater's physicians surgically implanted electrodes in the area of her brain called the cerebellum. The electrodes provide small pulses that target damaged areas of the brain to help recover movement.

"Since we've turned on the device, we've seen an acceleration in her recovery, and we have not yet seen the limit of her gains," says Andre Machado, MD, PhD, Chair of Cleveland Clinic's Neurological Institute and the lead investigator into the use of DBS for stroke recovery. He holds the Charles and Christine Carroll Family Endowed Chair in Functional Neurosurgery.

DBS is not intended to replace physical therapy, but to make it work better. And Mrs. Slater continues to improve.

She can open up her left hand, move her wrist and elbow, open her purse and grab what she needs. She can get dressed and do the dishes.

"I can move my fingers and my hand," Mrs. Slater says. "I can cook, cut vegetables and get dinner ready. I still have a way to go, but I am going to get there."



“You lose nearly 2 million brain cells a minute during a stroke. Every minute counts.”

—M. Shazam Hussain, MD

Mobile Stroke Treatment Unit: Faster is Better



In August 2014, Linda Brown was doing laundry in her basement when she collapsed. She crawled upstairs, and her sister-in-law called 911. About 20 minutes later, Cleveland Clinic’s Mobile Stroke Treatment Unit (MSTU) arrived and did a CT scan inside the truck parked at her house.

Dr. M. Shazam Hussain, Director of Cleveland Clinic’s Cerebrovascular Center, read the scan remotely and diagnosed a stroke. The mobile team then administered tPA (an intravenous drug that breaks down blood clots) only 32 minutes after Linda entered the unit.

“Usually a patient like Linda would be taken to the closest hospital, but by assessing her in the MSTU, we could see that she was having a severe stroke,” Dr. Hussain says.

They bypassed the nearest center and took Linda directly to Cleveland Clinic. When additional tests revealed blockage in two major brain vessels and her carotid artery, Dr. Hussain performed endovascular therapy, placing catheters in her arteries and removing a clot from her brain blood vessels.

After being discharged, Linda spent time in rehabilitation to improve her movement and coordination and address the weakness on her left side. Today, she can do most everything for herself.



“If Linda had gone to the closest hospital, she would have needed another transfer to an interventional center, which leads to, on average, an additional three-hour delay,” Dr. Hussain says. Because she was assessed at her house after the CT scan and by using telemedicine, Dr. Hussain was able to recommend transport to the nearest hospital that would address her complex needs.

The MSTU, one of the first in the nation, is the result of a gift by Tamar and Milton Maltz. “Cleveland Clinic never stops in its quest to better serve mankind,” Mr. Maltz says. “How fortunate we are to live here in Cleveland in the very heart of medical breakthroughs.”

“There is no better or faster way to treat stroke,” says Peter Rasmussen, MD, Director of Distance Health at Cleveland Clinic. “This really was a catalyst gift from the Maltzes. It has the potential to impact stroke treatment in other cities all over the world.”

Diverse Student Body Trains to Lead Healthcare

Every year, the White Coat Ceremony tops off orientation week for new medical students at Cleveland Clinic Lerner College of Medicine. During the ceremony last July, members of the Class of 2022 read aloud the Oath of Professionalism, which they wrote themselves.

“We will address disparities in care,” they said. “We stand as lifelong students, educators, and advocates for all people.”

The new medical students concluded with these inspiring and humble words:

“To our patients, we seek to empower you, partner with you, and respect your dignity. We will provide care beyond treatment for illness and disease. We are grateful for the honor and privilege to serve you.”

TWO OF THIS YEAR’S CLASS MEMBERS, **JOAN NAMBUBA** AND **DANIEL SANTANA**,



Born in Kampala, Uganda, Joan moved to the United States with her family when she was 9 years old. They settled in northern Virginia. Joan went on to receive her Bachelor of Science in neuroscience, with minors in chemistry and English, from Duke University. As an undergraduate, Joan was selected for the Duke Engage program as well as a Resident Assistantship. After college, Joan took two gap years, during which she received the Postbaccalaureate Intramural Research Training Award, allowing her to conduct research at the National Institutes of Health. She then returned to her alma mater’s School of Medicine to obtain a master’s degree in biomedical sciences. During that time, Joan became a semi-finalist for the Fulbright U.S. Student Program Research Award.



Photo: Daniel Milner

By eliminating many of the financial barriers that aspiring physicians face, the Key Minority Medical Student Scholarship enables promising students to pursue a medical career and change lives. Each year with KeyBank Foundation's philanthropic commitment, increasing numbers of minority students graduate from Cleveland Clinic Lerner College of Medicine. The College is able to leverage scholarship opportunities to actively recruit a diverse student body, one soundly prepared to lead the future of healthcare.

ARE RECIPIENTS OF THE KEY MINORITY MEDICAL STUDENT SCHOLARSHIP.



Daniel, from Long Island, New York, graduated from Dartmouth College in 2016 with a Bachelor of Science in biomedical engineering with high honors, due to his commitment to biomedical research. In addition, Daniel served as a teaching assistant, an on-campus emergency medical technician, a leader of humanitarian engineering projects, and a member of the Outing Club. He is passionate about the outdoors and loves to escape into the wilderness, especially on a bike or snowboard. Dan enjoys hands-on projects and hopes to integrate many of his interests into his future career as a physician and scientist.

Harnessing the Power of 3-D Printing

Ethan Bradley, a 10-year-old with congenital heart disease, had numerous surgeries throughout his young life, starting when he was just 1 month old. After each one, he would go home hooked up to monitors, oxygen and feeding tubes. It wouldn't be long, however, before he was back in the hospital with heart failure.

This went on for years. "Ethan spent all of second grade wearing oxygen in a little special backpack, all day, every day," says his mom, Katrina Bradley. "He wasn't able to run around and play because he would be out of breath and tired."

In July 2016, Ethan experienced severe oxygen deficiency, and his care team knew that nothing short of an innovative procedure would improve his condition.

Fortunately, Cleveland Clinic Children's Department of Pediatric Cardiology, in collaboration with the Lerner Research Institute and supported by philanthropy, can make 3-D printed models based on patients' cardiac MRI and CT scans.

Prior to his innovative surgery, Ethan's surgical team was able to hold his heart model and make an incision in it, confirming the feasibility of successfully performing the procedure.

Ultimately, the surgery was executed exactly as planned. Ethan is doing better than ever with oxygen levels he never before had achieved. "He's running around and exploring and wants to be outside," his mom says. "It's absolutely incredible."



3-D Technology: Endless Possibilities

At the Sydell and Arnold Miller Family Heart & Vascular Institute, adult patients also receive enhanced care through the use of 3-D technology.

Funding from the John and Rosemary Brown Endowed Chair in Cardiovascular Medicine supported general cardiology fellow Serge Harb, MD, who specializes in imaging and valve disease.

“The Brown Chair allowed us to send Dr. Harb to a course to learn more about 3-D technology and how it may be used clinically,” says chair holder Brian Griffin, MD.

Dr. Griffin adds that Dr. Harb is a creative researcher whose interests include the use of 3-D imaging to help understand complex cardiac diseases and injuries.

“He received the highest marks ever achieved by a fellow on the Board Examination in Cardiovascular Disease and has been instrumental in expanding our ability to use 3-D imaging to envision the best treatment approaches,” Dr. Griffin says.

“He used a 3-D model based on images derived from both CT and 3-D echo to help us envision the best approach to repairing leaky tricuspid valves percutaneously,” meaning through the skin, using minimal incisions. “In fact, we used his prototype to do this for our first in-human tricuspid valve replacement as well.”

Expanding the number of treatments that can be performed with such minimally invasive techniques means many things for so many more patients: less trauma and pain, decreased use of pain medication, shorter hospital stays, less bleeding, decreased risk of infection and overall shorter recoveries, all of which lead to a quicker return to daily activity.

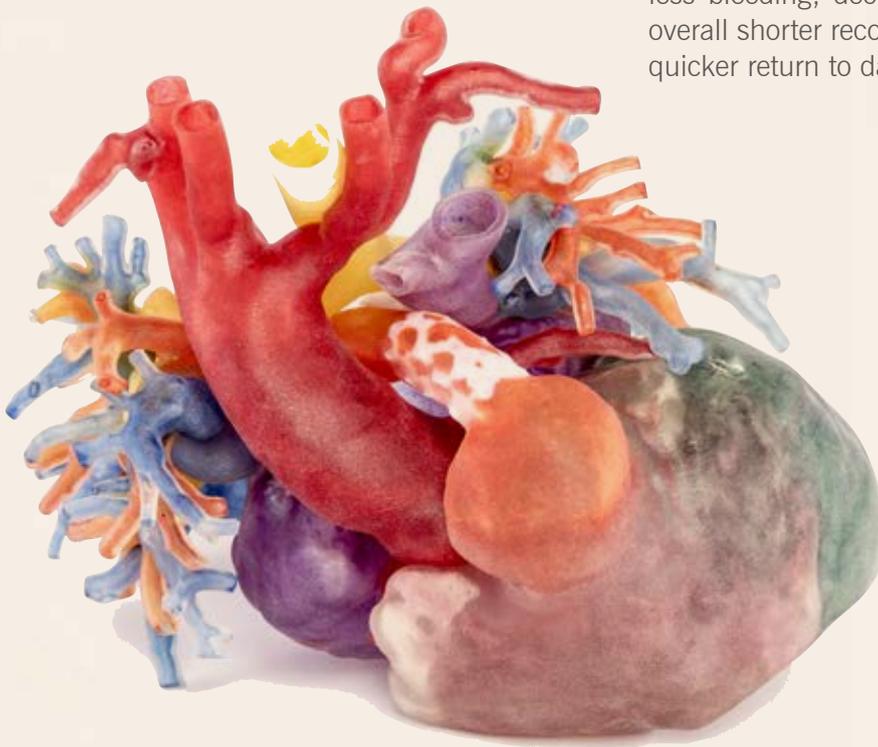


Photo: Russell Lee



Cleveland Clinic

Lennon Diabetes Center | Center for Geriatric Medicine

Diabetes Programs Provide Life-Saving Resources



When Elmer Graham first learned he had diabetes, his blood glucose reading was 377. “Now, I’m running in the 80s and 90s,” he says.

For patients like Mr. Graham, it’s critical to have access to the care and resources needed to manage diabetes. He found the help he needed at Cleveland Clinic’s Lennon Center for Diabetes Care, Research and Education. “They explain everything to you,” he says. “They have free classes, and you feel like you’re getting educated to what your problem really is.”

The center was created by a grant from the Fred A. Lennon Charitable Trust, which also supports Cleveland Clinic’s Metabolic Translational Research Center (MTRC). Like the Lennon Center, the MTRC has made great strides on behalf of patients with diabetes.

Specific MTRC initiatives supported by the trust include enhanced care coordination for patients; enterprise-wide diabetes education and outreach through classes and self-care guides; and education and training for the next generation of endocrinologists.

James B. Young, MD, former Chair of Cleveland Clinic’s Endocrinology & Metabolism Institute and recently named Chief Academic Officer, promotes the importance of education in diabetes care. As holder of the George M. and Linda H. Kaufman Endowed Chair, Dr. Young stresses that “research repeatedly demonstrates how rigid control of a



person's blood sugar, which can be accomplished through educational self-management programs in addition to medication, drastically reduces the incidence of severe and costly complications."

For patients who don't have the financial resources to pay for their medication, Cleveland Clinic's Diabetes Assistance Initiative (DAI) is there to help. Since its inception in 2009, the DAI has provided financial assistance to 430 uninsured and underinsured individuals.

Cleveland Clinic covers personnel costs for the program, which otherwise relies entirely on private funding and grants from organizations like the Three Arches Foundation, formerly the Lakewood Hospital Foundation. Data shows that the DAI improves participants' ability to manage diabetes. On average, their blood sugar levels significantly decreased, drastically reducing incidences of costly diabetes-related complications and hospitalizations.

Philanthropic partners are helping Cleveland Clinic physicians provide comprehensive care to patients with diabetes. "Between the doctor, the nurse, the dietitian and the pharmacy, they all work together." Mr. Graham says. "My blood pressure is down, my weight is down, my sugar readings are down. I'm a much healthier person."

Program Addresses ‘Pockets of Needs’

Over half of Cleveland’s children live in poverty and lack access to primary healthcare. To help address this problem, in 2014, Cleveland Clinic launched the School Based Health Care Program for grades K–12.

Recently, a grant from the Hearst Foundations helped expand the program’s services, which include a mobile health unit and a variety of educational services, into East Cleveland.

To date, 23 schools in six districts participate.

School Based Health Care Medical Director Dr. Genevive Falconi describes the mobile unit as a pediatric office on wheels, which can provide immunizations, sports physicals, well-child checks, mental health assessments and acute care. “This allows parents to remain at work rather than take time off for their children’s doctor visits, which especially helps parents in jobs that pay by the hour. The program offers health education, linkages to community resources and helps children establish a medical home that represents a pantheon of services.”

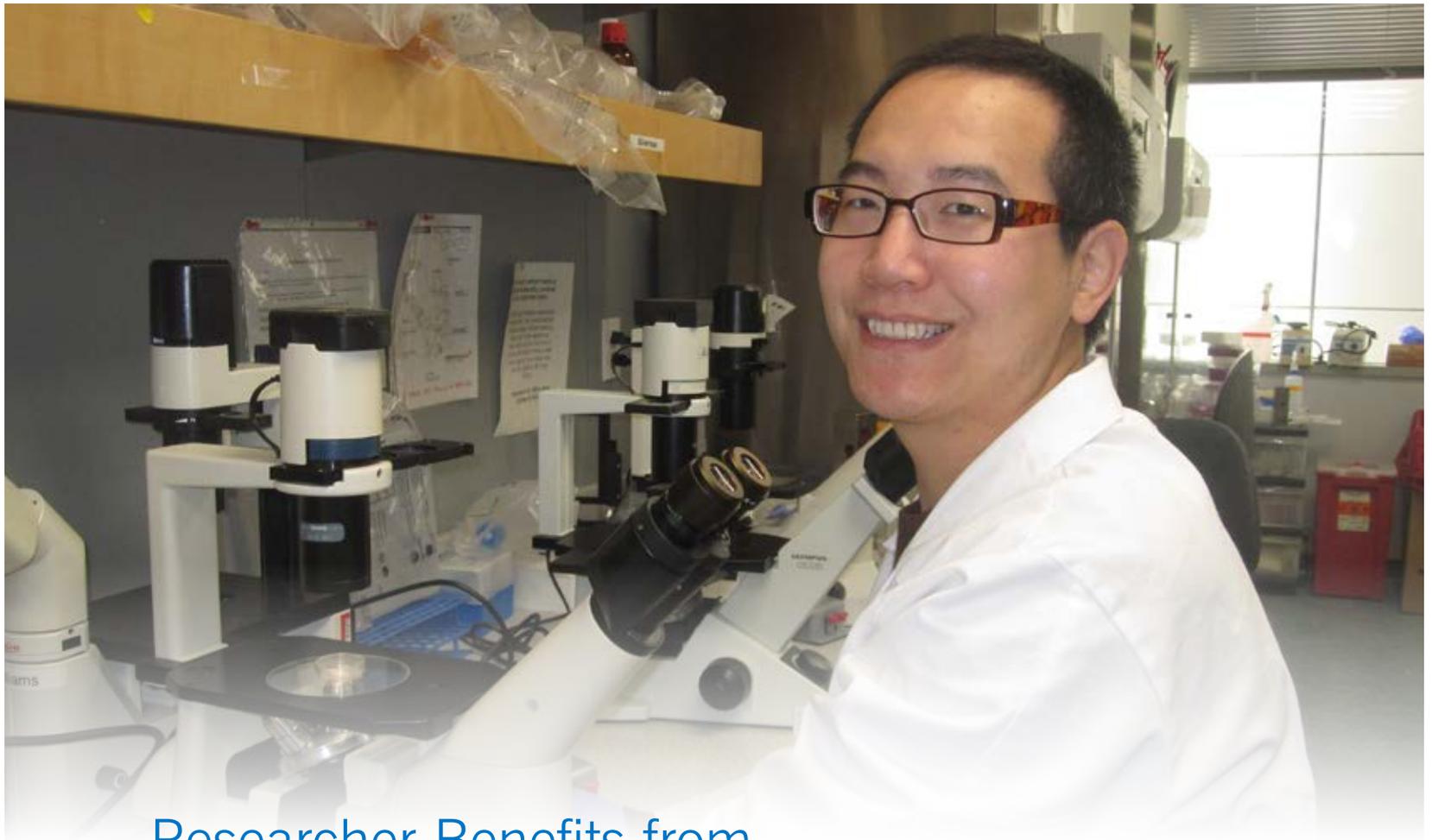
Recent educational efforts include a kickboxing demonstration to promote heart health awareness, which was aimed at fourth- and fifth-graders, who also received free water bottles, towels and stretch bands. Other programs include a diabetes support group for teens and educational talks on topics including nutrition, ADHD, sickle cell disease and asthma, as well as Stroke 101 and Diabetes 101 classes. Through collaborative efforts with civic stakeholders, the program resulted in such diverse benefits as free eyewear and eye exams, epinephrine prescription and training program, and bike safety education and free helmets.

“The City of Cleveland has pockets of need that are deep,” says Alison Yu, Program Officer with the Hearst Foundations. Cleveland Clinic’s telehealth program allows a Cleveland Clinic Children’s doctor and nurse practitioner in the mobile unit to connect a student with other Cleveland Clinic experts or easily submit health information electronically.

The program is making a big difference in the health and well-being of students who might otherwise be unable to come to their doctor due to predominantly economic factors. Regardless of insurance status, students are able to be seen in the program with the assistance of a financial counselor.

“We see an innovation like telehealth as a way of addressing the problem of access,” Alison Yu says.





Researcher Benefits from Alumni Professional Development Award

Qiang Wang, PhD, of the Department of Cellular and Molecular Medicine at Cleveland Clinic's Lerner Research Institute, is thrilled to have presented at the American Society of Hematology (ASH) Annual Meeting.

"It is the world's premier event in malignant and non-malignant hematology," he says.

"With the support of the Alumni Association Postdoctoral Fellow Professional Development Award, I gave an oral presentation at the 58th ASH Annual Meeting & Exposition (Dec. 3-6, 2016) in San Diego, and was honored to get the 'Abstract Achievement Award' from the ASH Program Committee."

Dr. Wang gained "invaluable education and the opportunity to review thousands of scientific abstracts highlighting updates in the hottest hematology topics," he says. "I also networked with top minds in the field and a larger, global community of more than 20,000 hematology professionals from every subspecialty."

Thanks to the Alumni award, "My study at Cleveland Clinic is now known by other myeloma professionals all over the world."



“Because of philanthropy I have been able to help members of our community find their best voice possible.”

– Melissa Grassia-Chisholm

Voice Treatment Fills a Need in Parkinson’s Care

Numerous patients with Parkinson’s disease experience firsthand the pivotal role of philanthropy in building robust programs and providing important therapies.

Cleveland Clinic Florida Speech Language Pathologist Melissa Grassia-Chisholm also has firsthand knowledge of the importance of philanthropy. Thanks to generous support, she was trained as a Lee Silverman Voice Treatment (LSVT) clinician.

LSVT is the only research-based program that the American Speech-Language-Hearing Association recognizes for Parkinson’s patients.

Ms. Grassia-Chisholm says that the program fulfills a great need to better the lives of patients at Cleveland Clinic Florida. In research studies, LSVT has been shown to improve vocal loudness, intonation and voice quality for individuals with Parkinson’s disease, with improvements maintained up to two years after treatment.

Recent studies also have documented the effectiveness of this therapy in improving the common problems of disordered articulation, diminished facial expression and impaired swallowing.

“Because of philanthropy,” Ms. Grassia-Chisholm says, “I have been able to help members of our community find their best voice possible, and as a result find their best life possible.”

Dr. Serpil Erzurum:

Investing in Research to Advance Care



Some believe—to paraphrase Charles Dickens—that this is the best of times and the worst of times to be a medical researcher.

On the one hand, technology is helping medical researchers make leaps and bounds in the areas of surgical procedures, pharmacological advancements and advanced diagnostics. But on the other hand, medical researchers feel constrained by an increasingly complex medical insurance system and highly competitive government funding for research.

While some may see these challenges as obstacles, we prefer to view them as opportunities to meld innovative funding models that can redefine how research gets done.

At Cleveland Clinic, we leverage our strengths by focusing our research dollars increasingly on those disciplines we are particularly good at. By prioritizing where and how we invest in research, we are more likely to make the most impact.

And we have wonderful philanthropy partners who are committed to helping us bridge the funding gap.

We believe this is absolutely the most exciting and productive time for medical research. If we think and act more strategically, and partner with those who are as excited as we are by the vast possibilities of the inspired research of today, the best of times will most certainly continue.

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Cleveland Clinic Centennial Campaign