

Heart Matters

Our Stories of Innovation and Hope



CEDARS-SINAI®
HEART INSTITUTE

For every heart, we pursue better answers,
and in every way, you make our work possible.



What we know about the human heart—and how to keep it healthy—is changing. At the Heart Institute, the exceptional care we bring to patients looks beyond the possibilities of today.

What can we do to prevent heart disease? What can we do to cure it? Daunting questions, to be sure. Yet they inspire how our scientists, physicians, and caregivers take on the number one cause of death in the nation. With a shared vision for ending heart disease, we join with partners like you to advance heart medicine and research because it matters—to all of us.

Fundamental to the Heart Institute is the one-on-one connection that our physicians share with their patients. Cedars-Sinai delivers personalized care with highest levels of quality, and our commitment to patients has never been stronger. Because of excellent outcomes, the Heart Institute continues to earn the confidence of patients and the respect of peers. Recognized as one of the leading heart centers in the nation, we are honored—and committed to doing more.

The high-quality patient care we provide strengthens our research programs, especially clinical trials. In turn, the research we conduct here advances our patient care to the forefront of medical science. Together, these two elements create a synergy that is unique to Cedars-Sinai—a synergy we will intensify when we move into the Advanced Health Sciences Pavilion in 2013.

We have built a dynamic research engine—one that swiftly moves laboratory breakthroughs into the real world of patients' lives. Powered by the philanthropic community, innovative science at the Heart Institute can emerge quickly, gain merit, and attract national funding. Collaboration between our physicians and scientists drives the entire process and is profoundly expanding what we know about the human heart.

For example, the Heart Institute recently shared results from the first-in-human Phase I clinical trial in which a patient's own cardiac stem cells were used to repair damage caused by heart attack. The experimental therapy induced measurable cardiac regeneration in every recipient and immeasurable excitement throughout the medical community. The promising results are a world's first, and they have prompted additional clinical studies to develop this revolutionary treatment.

Our adult heart transplant program has become the largest in the nation, reflecting our immense expertise in helping those with advanced heart disease. We lead all other academic medical centers in clinical trials for heart valve repair and replacements without open-heart surgery. And through our Women's Heart Center, we are advancing research that reveals how women experience heart disease differently than men, so that gender-specific prevention, testing, and treatment can reach women everywhere.

But that is just the beginning of the Heart Institute's story. Beyond the progress that appears in scientific papers and hospital ranking reports are the people who fight heart disease every day. Patients, caregivers, cure finders—and supporters like you—are ultimately what power our efforts, and together, we are changing what is possible.

In the pages that follow, I am excited to share the progress we are making against heart disease. Even more so, I am glad for you to meet the men and women whose lives energize our efforts. I hope our stories of innovation and hope—and our mission to heal the human heart—will become yours as well.

A handwritten signature in dark ink, reading "Eduardo Marbán". The signature is fluid and cursive, with the last name being more prominent.

Eduardo Marbán, MD, PhD
Director, Cedars-Sinai Heart Institute

Discovery begins with our leaders,
who are the best at what they do.

The challenge of heart disease requires more than vision and resources—it takes doing. The individuals who guide the Heart Institute’s efforts have a strong track record in getting things done. They are accomplished experts in their respective disciplines of cardiac medicine and research. As a team, they bring together immense knowledge and experience, and form a powerful force against heart disease.

These nine leaders are dedicated to expanding the frontiers of cardiac medicine. Yet their dedication goes beyond discovering new science. In a tradition that represents the best of Cedars-Sinai, this team actively transforms scientific discoveries into real-world treatments for patients.

They also share what they know with the next generation of physicians through clinical and research fellowships. And by fostering collaboration across every programmatic area and unifying the efforts of our heart doctors, surgeons, imaging experts, scientists, nurses, and other caregivers, they build momentum. That momentum moves cardiac medicine decidedly forward.

These are the leaders of the Cedars-Sinai Heart Institute.

Advanced Heart Disease

Jon A. Kobashigawa, MD

- Director, Heart Transplant Program
- Associate Director, CSHI
- DSL/Thomas D. Gordon Chair in Heart Transplantation Medicine

Imaging

Daniel S. Berman, MD

- Director, Nuclear Cardiology
- Director, Cardiac Imaging

Interventional Cardiology

Raj Makkar, MD

- Director, Catheterization Laboratories
- Associate Director, CSHI
- Stephen R. Corday, MD, Chair in Interventional Cardiology

Regenerative Medicine

Eduardo Marbán, MD, PhD

- Director, Cedars-Sinai Heart Institute
- Mark S. Siegel Family Professor

Women’s Heart Center

C. Noel Bairey Merz, MD

- Director, Women’s Heart Center
- Director, Preventive and Rehabilitative Cardiac Center
- Women’s Guild Chair in Women’s Health

General Cardiology

Prediman K. Shah, MD

- Director, Cardiology Division
- Director, Oppenheimer Atherosclerosis Research Center
- Shapell and Webb Family Chair in Clinical Cardiology

Hypertension

Ronald G. Victor, MD

- Director, Hypertension Center
- Associate Director, CSHI
- Burns and Allen Chair in Cardiology Research

Cardiothoracic Surgery

Alfredo Trento, MD

- Director, Cardiothoracic Surgery Division
- Estelle, Abe, and Marjorie Sanders Chair in Cardiac Surgery

Electrophysiology

Sumeet S. Chugh, MD

- Section Chief, Clinical Cardiac Electrophysiology
- Associate Director, CSHI
- Pauline and Harold Price Chair in Cardiac Electrophysiology Research



Attending physicians are our vital partners
in delivering the best care to patients.



The Cedars-Sinai Heart Institute is home to a vibrant, cross-disciplinary community of academic physician-scientists, basic scientists, and attending physicians who together are redefining the future for patients with heart disease.

Private physicians bring to this dynamic conversation their firsthand experience with the variety of ways that heart disease reveals itself. Such insights spark important new questions that lead back to the laboratory for answers, then back again to the clinic in an energetic collaboration critical to new discoveries.

Dynamic Partnership

“We value our partnership with attending physicians, which lends an irreplaceable perspective to our mission,” says Eduardo Marbán, MD, PhD, Heart Institute director. “The beneficiaries are our patients.”

The Heart Institute’s attending physicians are an accomplished group. They serve on editorial boards of leading cardiology journals, author important scientific papers and books, maintain active community affiliations, hold leadership positions in major medical organizations, and direct the charge for patient education.

Sharing the Challenges

These out-of-the-box thinkers join in the Heart Institute’s commitment to explore the most crucial challenges. Not content with the status quo, they are helping to advance clinical research into a wide range of patient-critical topics, including echocardiography, congestive heart failure, noninvasive cardiac imaging and interventions, new diagnostic tools, and angioplasty.

In many cases, their relationships with Cedars-Sinai span decades of growth and innovation. For example, Stephen Corday, MD, joined the Cedars-Sinai Heart Institute as an attending physician and research scientist in 1979. John Gordon Harold, MD, has been an attending physician since 1982; Sheila Kar, MD, since 1986; and Norman Lepor, MD, since 1988.

Our attending physicians also bring national recognition to the Heart Institute. Dr. Harold is a prime example: he is president-elect of the American College of Cardiology, the world’s largest organization of heart specialists.

The infinite value of this level of experience and dedication cannot be overstated, as the Heart Institute pursues the next generation of treatment strategies.

“I get excited by the opportunity to apply cutting-edge breakthroughs to clinical practice. My ability to do that is enhanced by my partnership with Cedars-Sinai.”

Stephen R. Corday, MD

“The Cedars-Sinai Heart Institute exemplifies the saying, ‘What the world thinks tomorrow, we think today.’ I’m proud to be part of the place that is changing the way we treat heart failure and heart attacks—and changing lives in the process.”

Sheila Kar, MD

“Cardiology brought Cedars-Sinai to international prominence. Now, under the leadership of Dr. Marbán and a team of master teachers and heart pioneers, the Heart Institute is poised for a leap forward.”

John Gordon Harold, MD

“Today, we can assess the relative risk of heart disease—low, intermediate, or high. Patients really want to know, ‘Do I have it or not? And if so, how bad?’ I want to be able to answer those questions, for people in our community and beyond.”

Norman E. Lepor, MD





We are learning whether the human heart can heal itself

through game-changing heart stem cell research.

Adult cardiac stem cells hold a lot of power. These reluctant heroes are small in number in a healthy heart—about 1 in 40,000 heart cells. Yet they serve the heart well over a lifetime, slowly repairing and maintaining a ceaseless engine. Through research under way at the Board of Governors Heart Stem Cell Center, scientists of the Cedars-Sinai Heart Institute are learning how these dynamic cells can be made to step up and rally a regeneration process that has eluded medical science until now—the regrowth of heart muscle by the heart itself.

Headed by Eduardo Marbán, MD, PhD, the Heart Institute is one of the only institutions in the nation leading this type of research.* It is defining a new frontier of cardiac medicine—one that could revolutionize treatments for heart attack and make heart transplants a thing of the past.

A World First

Recently, the Heart Institute presented the highly anticipated results of CADUCEUS, the first-in-human clinical trial in which a patient’s own cardiac stem cells were used in an attempt to regrow heart tissue damaged by heart attack. The study is a good example of how breakthroughs are seamlessly advanced at the Center—from concept to discovery to clinical trials.

Headed by Raj Makkar, MD, CADUCEUS is based on cardiac stem cell research pioneered by Dr. Marbán. It set out to test whether heart regeneration could be induced in patients by introducing millions of their own cardiac stem cells grown in the laboratory from a small sample of their heart. In the trial,

the cells were harvested, cultivated, and returned to 17 patients, targeted at the site of their recent heart attack. For 12 months afterward, researchers watched their hearts for two key changes: the reduction of heart attack scar tissue and the growth of new healthy heart muscle.

Genuine Regeneration

The experimental treatment showed encouraging results. “Every patient who received stem cells experienced positive changes in their heart,” says Dr. Marbán. “On average, scar was reduced by almost half. And as scar decreased, living heart muscle increased even more.”

The average increase in healthy heart tissue translated into 600 million new heart muscle cells—a lot of heart. The results mark the first time in medical history that any treatment has grown healthy heart muscle to reverse heart attack damage.

“These are extraordinary findings because the study is small, yet the differences we’re seeing are big,” Dr. Marbán explains. “It seems the stem cells are providing a wake-up call to the heart to heal itself.”

Additional studies will explore how to make this promising therapy even more potent, so that patients with advanced heart failure might also benefit.

“I’d like to move the frontier to patients who may need stronger, more experimental therapy,” says Dr. Marbán. “That’s going to be our next wave.”

Edward Sukyas: Grateful Pioneer

It happened at the right place, at the right time. Not that Edward Sukyas ever wanted to experience a heart attack. He was less than three blocks from Cedars-Sinai on his daily 4.2-mile speed walk.

Sukyas recalls the moment that took him to his knees: “I had some chest pain, but really it was the nausea. You’re not sure what’s going on, but you know you need help.”

He quickly dialed his wife on his cell phone, and within minutes she had him in the care of Cedars-Sinai’s Emergency Department. His condition required immediate placement of multiple stents in his coronary arteries to restore blood flow to his heart. Amazingly, the time frame from heart attack to treatment was only 60 minutes—a testament to good fortune and the swift care of the Heart Institute’s cardiac team.

Later invited to participate in the groundbreaking CADUCEUS trial, Sukyas carefully considered the option. A commodities trader

by profession, he consulted both his cardiologist and his family, and later did his own research to decide. “I have an adventurous spirit to begin with,” Sukyas says with a smile. “I thought it was an incredible, mind-boggling opportunity—in my own little way, I would be able to help build quality of life for the future.”

Through CADUCEUS, Sukyas and 16 other patients were the first in the world to receive an experimental infusion of their own cardiac stem cells. “I’m really glad I went forward with this,” Sukyas says. “Now I’m walking those same 4.2 miles daily.”

He also jokes with friends that he is a pioneer. “But it’s the researchers and doctors at the Heart Institute who are the true pioneers,” he says. “They are on a mission.”

We perform the most adult heart transplants in the nation and explore new ways to make all heart surgery less invasive.



Alfredo Trento, MD

It is often a patient’s last hope: the gift of a new heart. Incredibly, the patient relies on the generosity of a stranger, who in death passes on the very foundation for life.

This extraordinary gift is commonplace at Cedars-Sinai. In 2010, the Heart Institute performed more adult heart transplants than anywhere else in the nation. Reflecting this leadership is a corresponding higher-than-average first-year survival rate of nearly 92 percent.

Driving that success is a powerful combination: the well-honed expertise of the Division of Cardiothoracic Surgery, led by Alfredo Trento, MD, and the vital pre- and post-transplant medical management provided by the Advanced Heart Disease team.

Making Hearts Last Longer

One of the biggest transplant challenges is finding a donor heart. That is why the Heart Institute has begun using new technology that keeps donor hearts warm, not frozen, allowing them to stay “in the box” for many more hours. This means that hearts can be procured from farther distances—increasing a patient’s chance of finding a lifesaving match.

Dr. Trento and his team are also partnering with their Advanced Heart Disease colleagues to conduct leading-edge research aimed at extending the life span of a donated heart from 15 to 30 years.

Less Invasive Options

The Division’s surgical prowess extends beyond transplants. When medication or lifestyle changes are not enough, these surgeons step in to unclog arteries, replace or repair valves, correct abnormal heart rhythms, and implant lifesaving devices.

Although Cedars-Sinai annually performs nearly 1,000 open-heart surgeries, it is at the forefront of less invasive surgical options, too. Dr. Trento is a leading expert in the highly specialized field of robotic surgery—a minimally invasive approach offering greater precision, less scarring, and faster recovery times—and pioneered robotics for delicate mitral valve repairs.

Surgeons also work hand-in-hand with the Interventional Cardiology team and are present during catheterization procedures that offer alternatives to surgery. Cedars-Sinai is developing plans to create a hybrid catheterization lab/operating room to ensure seamless transitions when emergency surgery is needed.

“By teaming up with our colleagues, we are able to stay on the forefront of cardiovascular medicine,” Dr. Trento says. “Our vision is to develop more treatments that eliminate open-heart surgery altogether.”

Rex Beaber: A Call for Help

“I knew all my life that I was destined to have heart disease,” says Rex Beaber, PhD, JD, an attorney and clinical psychologist who trained at Cedars-Sinai. Dr. Beaber’s father, uncle, and grandfather both suffered from coronary artery disease—and died before the age of 54.

Rex himself was only 56 when, in 2006, he began gaining weight and having difficulty breathing, despite an active, healthy lifestyle. The culprit? A valve in his heart had completely ruptured. Without immediate open-heart surgery, Rex faced catastrophic heart damage.

Scared, he began researching the best cardiac surgeons in the country, hoping to find someone who could repair, rather than replace, his valve—and do it in a minimally invasive way. There were few options, and time was short. Desperate, he emailed a handful of surgeons, asking for their help.

Only one responded: Alfredo Trento, MD, at Cedars-Sinai. Dr. Trento phoned Rex that evening, and by the end of the call, they scheduled a 6 a.m. appointment for the very next day. “That call meant everything in the universe to me,” Rex says. “For him to respond personally, and then come in early to see me, was just extraordinary.”

Unfortunately, tests revealed that Rex also had two coronary arteries that were 90 percent blocked, eliminating any chance for a minimally invasive procedure. With open-heart surgery the only option, Dr. Trento then performed a double-bypass and valve-repair surgery.

Six months later, Rex resumed swimming in his backyard pool. Today, he swims a half-mile every morning, rides his bike for two miles, and takes frequent walks with his wife, Lucy. He feels great. “It’s as if my chest was touched by a magic wand,” he marvels. Meanwhile, he will celebrate his 62nd birthday this year. “It’s going to be wonderful,” he says, “because I’m going to be alive.”





When a heart is weak, it needs the strongest care:

Our outcomes with advanced heart disease are exceptional.



Jon Kobashigawa, MD

With an aging U.S. population, the incidence of advanced heart failure is on the rise, along with the need for inventive treatment options.

The Cedars-Sinai Heart Institute is a destination for world-class physicians who can care for the most complex heart patients and help them enjoy a better quality of life. The Advanced Heart Disease team, led by Jon Kobashigawa, MD, is helping to change the landscape for advanced heart disease, including improved outcomes for heart transplant.

No longer an experimental procedure, heart transplantation has become a treatment of choice for many patients, providing a second chance at a new future. However, the successes in transplantation are undercut by the scarcity of donor organs, leading Cedars-Sinai to explore other ways of helping patients.

Advancing Alternatives

The Heart Institute’s comprehensive programs in advanced heart failure and mechanical circulatory support are providing viable alternatives to surgery, such as ventricular assist devices (VADs), which can either sustain patients while they await a donor heart or, in some cases, serve as a permanent, or “destination,” therapy.

In 2010, the Cedars-Sinai Heart Institute opened the first inpatient Advanced Heart Failure Unit in California, which provides round-the-clock monitoring, medical management, and patient education.

Now Cedars-Sinai is among an elite group of medical centers nationwide offering another new breakthrough technology: the temporary Total Artificial Heart by SynCardia. A multidisciplinary Cedars-Sinai team was the first in Los Angeles certified to implant this revolutionary device. “I have no doubt the Total Artificial Heart will become an important part of our arsenal going forward,” says Dr. Kobashigawa.

Commitment, Backed by Skill

Whether the solution is a VAD, a heart transplant, or the Total Artificial Heart, these complicated treatment options require substantial experience, technical skill, and the close collaboration of experts from the Advanced Heart Disease team and the Division of Cardiothoracic Surgery.

An ambitious research agenda aims at realizing further advances, focused on new anti-rejection medications and immunosuppressive therapies, VADs, and noninvasive tools to detect organ rejection. Under study is a simple blood test that can replace the standard diagnostic tool: a biopsy.

Such investigations offer new hope for more patients, plus the irreplaceable gift of time.

Georgia and Bob Roth: “We feel blessed.”

Robert (Bob) Roth never imagined he would someday need a heart transplant to save his life—especially after undergoing successful quadruple bypass surgery in 2003 and adhering to a healthy diet and active lifestyle. Despite those efforts, his heart condition worsened. And in 2008, under the care of Jon Kobashigawa, MD, Bob, president of World Oil, received a new heart.

Unfortunately, Bob’s own failing heart had damaged his kidneys. “Dialysis was harder than the heart transplant,” he recalls. Soon, his wife Georgia’s eldest son, Chris, stepped up and donated one of his kidneys. “This was a journey filled with anxiety and challenge, from the wait for a donor heart through the kidney transplant and long-term recovery,” Georgia says.

Bob’s ongoing cardiac care is managed by Dr. Kobashigawa and his expert team in Cedars-Sinai’s Advanced Heart Disease Center. Bob lauds the personal touch of its physicians and staff. “Whether it’s

providing detailed information or moral support, they’ve been there for us at every step,” he says.

“We are grateful to Dr. Kobashigawa and his team, and want to do what we can to help other patients and their families facing similar challenges,” Georgia says.

In 2011, the couple made a gift through the Robert S. Roth and Georgia L. Roth Family Foundation to name the Advanced Heart Disease Center Lobby in the future Advanced Health Sciences Pavilion at Cedars-Sinai. Half of their gift is designated to the Heart Institute Fund for use at the discretion of director Eduardo Marbán, MD.

The Roths are delighted to support the Heart Institute’s bold research and outreach programs. Bob hopes their gift may help make heart transplants more accessible. “If we play even a small part in that,” he says, “it will be a big reward.”

Now the Roths are traveling again and enjoying life. “We feel blessed,” says Georgia. With his new heart beating strong, her husband agrees.

A woman’s heart is different from a man’s,
so we champion sex-specific research to improve care.



C. Noel Bairey Merz, MD

Cardiac medicine is just beginning to recognize how a woman’s heart differs from a man’s. What is clear is that in the United States, more women than men are dying from heart disease—notably, younger women. In fact, heart disease presents a larger threat to women’s lives than all cancers combined.

The initial research that shaped modern heart care missed an important fact: Heart disease can be different in women. With heart attack, women often have symptoms other than classic chest pain, such as chest pressure, nausea, or fatigue. The disease can develop in the smaller arteries of the heart and evade detection by traditional angiograms. Also, a woman’s reproductive hormones play a complex role in maintaining her cardiovascular health.

Led by C. Noel Bairey Merz, MD, the Women’s Heart Center is dedicated to women getting the updated heart care they deserve. In addition to providing state-of-the-art risk assessment, testing, and treatments for women, the Center plays a major role in advancing research and national education. As an advocate and a leader in the field, the Women’s Heart Center champions the health of women everywhere.

The Differences Matter

Research at the Women’s Heart Center is focused on identifying and explaining the distinct sex differences that exist in coronary artery disease, as well as hypertension, stroke, and heart failure.

The goal is to identify the mechanisms of disease and how they occur specifically in women.

Recent work includes a collaborative study with the Board of Governors Heart Stem Cell Center that examined the role that cytokines—proteins that regulate cell health—play in keeping a premenopausal woman’s heart free of coronary artery disease. The research, like many studies under way at the Center, offers insight into the disease process, which can lead to improved prevention and treatment for both sexes.

The Center’s leadership role in the Women’s Ischemia Syndrome Evaluation (WISE) continues as well. Funded by the National Heart, Lung, and Blood Institute, these ongoing studies evaluate the effectiveness of cardiac MRI tests as a noninvasive method of detecting microvascular coronary dysfunction—the evasive form of heart disease that more often affects women. Researchers are also advancing studies that focus on prevention and the aggressive management of a woman’s risk factors, such as cholesterol levels, body weight, hypertension, and smoking.

Insights That Help Everyone

Importantly, the work at the Women’s Heart Center is sex-specific, but not one-sided. “The science we are exploring can help optimize care for both genders,” Dr. Bairey Merz says. “Through the Center’s research, through the care we provide, and through our programs that teach women and healthcare providers about heart health—we are advancing heart medicine. And that benefits everyone.”

Nicole Lawson: A Woman’s Heart

Nicole Lawson spent years suffering from daily chest pain, going from doctor to doctor—only to be told her problem was stress, acid reflux, or worse, all in her head.

Nicole’s training as a nurse told her something was physically wrong. Yet each time she had an electrocardiogram or cardiac catheterization, the results came back “normal.” Frustrated and frightened, she says, “I started to question myself.”

Then Cedars-Sinai’s Women’s Heart Center invited her to participate in an innovative clinical trial conducted by its director, C. Noel Bairey Merz, MD. The focus: women with “normal” catheterizations and no blockages in their large coronary arteries who still had symptoms of heart disease.

Nicole underwent specialized diagnostic tests available at a select few cardiac centers nationwide. Dr. Bairey Merz told Nicole she had coronary microvascular disease. More common in women, this condition affects the tiny coronary arteries, the walls of which become diseased or damaged.

Knowing that what was wrong with her heart had a name came as a relief to Nicole. “That diagnosis changed the quality of my life,” she says. With medical management, her incidence of chest pain dropped from several times a day to once every few months.

Just being heard was a comfort. “I want every woman to know there’s someone out there who will listen to you and investigate what’s wrong,” says Nicole, 50. “The staff at the Women’s Heart Center won’t dismiss you; they will validate you. It’s wonderful.”





We are pioneers in minimally invasive heart valve surgery

that gives lifesaving options to more patients.



Raj Makkar, MD

The traditional state-of-care for a leaky heart valve or one that no longer opens fully is an operation that involves stopping the patient’s heart and cutting open the chest with a 12-inch incision. For many people, this surgery is risky or unwise, due to age or medical condition.

Picture instead a minimally invasive procedure that uses the body’s arterial highways and a flexible, hollow tube called a catheter to repair or replace a faulty valve. The largest incision: about one inch.

Extending the Options

Cedars-Sinai offers the nation’s most comprehensive percutaneous valve program, with initiatives in aortic, mitral, and pulmonary valves. Led by Raj Makkar, MD, the Heart Institute team has performed more transcatheter aortic valve replacements and mitral valve repairs than any other medical center in the United States. “In this new era, we are increasingly able to offer more noninvasive options for structural heart defects,” says Dr. Makkar.

Patients treated by Cedars-Sinai’s interventional cardiologists benefit from a wide range of nonsurgical procedures, including angiography to measure blood flow in the heart, angioplasty to open blocked or narrowed arteries, and pacemaker and defibrillator implantation to control heart rhythm.

Aortic Valve Clinical Trials

More advances are on the horizon as the Heart Institute team continues to play a leading role in the PARTNER clinical investigation into the Edwards SAPIEN™ Aortic Valve. In this procedure, doctors insert a balloon catheter through the groin to the heart, then inflate the balloon to replace the narrowed valve with a healthy substitute.

Earlier studies involving patients at high risk for surgery found this procedure equal to open surgery in one-year survival. A two-year follow-up showed increased survival as well as quality of life and economic benefits. A new Phase III study will, for the first time, include patients at intermediate risk—potentially opening this minimally invasive option to more people.

Mitral Valve Investigation

Patients with leaky mitral valves also have the opportunity to explore new options at Cedars-Sinai, lead investigator in a Phase II clinical trial of a novel investigational device—the MitraClip®. Again inserted by a catheter through an artery, this tiny clip is deployed to grasp the mitral valve flaps together.

Such next-generation procedures require orchestrated teamwork, including cardiac imaging specialists, surgeons, and anesthesiologists—a collaborative approach being pioneered at Cedars-Sinai.

Ralph Akyuz: Breathing Easier

Organic chemist Ralph Akyuz has 50 years of experience in creating products to beautify and protect the body’s exterior—from skin creams to hair coloring. When it came time to fix something inside his own body, he turned to a place he trusts: Cedars-Sinai.

In 1982, he launched a consulting laboratory for the cosmetics industry. Raffaello Research Labs in Torrance (where Akyuz was photographed at left—no affiliation to Cedars-Sinai) provides R&D assistance to entrepreneurial cosmetic companies and multi-billion-dollar international firms.

Several years later, Ralph had a minor heart attack and began taking blood thinners. Even so, over the next two decades, his aortic valve narrowed so much, “I couldn’t walk 10 steps without being out of breath,” he recalls. Soon he was forced to use an oxygen tank and a wheelchair.

He lived in fear of another heart attack. Yet, at age 82, he didn’t want open-heart surgery, having seen friends experience tough recoveries. He heard about an experimental procedure being performed at the Cedars-Sinai Heart Institute—minimally invasive transcatheter aortic valve replacement. The idea appealed to him immediately.

So did being at Cedars-Sinai, where he previously had back surgery and also recovered from pneumonia. Each time, he says, “I was impressed with the care I received.”

In July 2011, Raj Makkar, MD, threaded a catheter through an artery to Ralph’s heart and gave him a new aortic valve. Immediately, Ralph could breathe more easily, and two days later, he was home from the hospital. Equally important, the fear is gone, he says. “I have a sense of security I didn’t have before.”

Advanced imaging gives us a clear view of the heart

that dramatically improves prevention and care.



Daniel S. Berman, MD

How do we see inside the human heart without opening up the body so we can determine not only what is wrong, but how to fix it, and whether our treatments have been effective?

High-tech, noninvasive cardiac imaging tools—many being developed or refined at Cedars-Sinai—create a vivid roadmap that can expose heart disease in its earliest stages.

Real-Time Tools

Using 3D images, interventional cardiologists view the heart’s byways in real time as they thread a catheter inside an artery to repair a faulty valve. Stem cell researchers call on imaging to determine whether an injection of cardiac stem cells has reduced heart scar tissue after a heart attack.

Imaging experts at the Cedars-Sinai Heart Institute use their renowned expertise in multimodality imaging to deploy such next-generation technologies as coronary calcium scanning, coronary CT angiography (CTA), cardiac MRI, and nuclear cardiology.

“Learning how such tests can best be used to help doctors and patients take the right actions against heart disease is

critical,” says Daniel S. Berman, MD, chief of Cardiac Imaging and Nuclear Cardiology. “For people at risk, seeing evidence of plaque in their coronary arteries can go a long way in helping them change their behavior.”

More Research

In pioneering research, Cedars-Sinai investigators have studied how the coronary calcium scan can help change patient outcomes, demonstrating that four years later, patients who had the scan lost more weight, achieved lower blood pressure, and lowered their cholesterol compared to patients not having scans. They have also found that fatty tissue around the heart seen on the calcium scan aids in prediction of heart attacks, and have developed software to automatically measure this fat.

The prognostic value of coronary CTA has been supported by a growing registry involving 32,000 patients at 18 global sites, led by James K. Min, MD, director of Cardiac Imaging Research and co-director of Cardiac Imaging at Cedars-Sinai.

Data from the CONFIRM registry show that coronary CTA reduces the need for more expensive and more invasive tests. “The findings we see on CT angiography can help us stratify the heart disease risk of patients,” says Dr. Min, “which can lead to improved treatment decisions.” The team is now investigating images to determine what features of plaques in the coronary arteries predispose patients to having heart attacks, and are developing first-of-its-kind software to automatically measure these features.

Jonathan Schwartz: A Picture Worth a Lifetime

At age 42, Jonathan Schwartz felt he was at the peak of his health. A fitness buff, he played softball and basketball and worked out regularly.

So seeing an X-ray at the Cedars-Sinai Heart Institute with a nearly 100 percent blockage in one of his major coronary arteries was “definitely surreal,” recalls Jonathan.

He had been motivated to schedule the noninvasive coronary computed tomography (CT) angiogram because a childhood friend had recently died of a sudden heart attack. Jonathan hadn’t expected to confront a picture of his own compromised heart.

His first reaction: “I was scared,” he says. In the next moment, he saw in that angiogram “an opportunity to make myself healthier. I chose a path of extreme optimism.” He then underwent a minimally

invasive procedure to implant a stent that opened his blocked artery. Since then, Jonathan has adopted a strict plant-based diet that has slashed his “bad” LDL cholesterol levels.

To help others who are at risk without symptoms, Jonathan founded the HeartView Global Foundation, whose mission is to advance cardiac imaging research and to underwrite the coronary CT angiogram—not normally covered by insurance—for patients who otherwise could not afford it.

“I’ve been given the gift of time with my family,” he says of wife, Meredith, and sons Logan, Austin, and Blake. “I want to give back to the community. I’m confident that over time we can save not just one life but thousands.”





Preventing arterial plaque is the foundation of heart health and the focus of new therapies we are developing.



Prediman K. Shah, MD

Imagine having a vaccine that can shrink plaque in the heart's arteries, prevent the formation of aneurysms, and lower blood pressure. That trifecta may be closer than ever, thanks to groundbreaking research led by Prediman K. Shah, MD, from the Division of Cardiology at the Cedars-Sinai Heart Institute.

The Division of Cardiology is helping to redefine the standard of care for patients with heart disease through a multifaceted program of treatment, prevention, research, and education of the next generation of cardiologists.

As division director, Dr. Shah is exploring multiple approaches to prevent and treat heart disease—from basic science explorations into the biology of plaque to gene therapy and vaccination. His overriding goal: to gain insights into the mechanisms that underlie clogged arteries. "Once you understand the mechanisms," says Dr. Shah, "you can identify new targets for therapy."

Powerful Genetics

Nearly two decades ago, Dr. Shah discovered that a mutant gene—apo A-1 Milano—might protect against heart disease by producing a form of HDL (high-density lipoprotein, or "good" cholesterol) that pulls fat out of the vessels. Now, in the

laboratory, his team has found a way to successfully deliver apo A-1 Milano, a gene transfer that reduces arterial plaque after a single injection.

Atherosclerosis Vaccine

Dr. Shah and his colleagues are also zeroing in on the potential benefits of a vaccine they created from low-density lipoprotein (LDL, or "bad" cholesterol). In preclinical studies, one component of the vaccine (a designer antibody against oxidized cholesterol), jointly developed by Dr. Shah and his Swedish colleague, Jan Nilsson, MD, PhD, has been shown to rapidly decrease plaque. It has now been tested for safety in humans in a Phase I clinical trial and is currently undergoing a Phase II human trial.

Another component of the vaccine (the active component) stimulates the immune system to produce an antibody and reduce inflammation in the arteries—one source of plaque buildup. Tomoyuki Honjo, MD, PhD, a research fellow from Dr. Shah's team, has found in preclinical studies that the same vaccine can decrease blood pressure and inhibit aneurysm, a balloon-like bulge in an artery caused by weakening of the artery wall and aneurysm rupture.

If the vaccine proves effective in humans, as it has in the lab, Dr. Shah envisions a day when it might be part of a childhood vaccination program. "It's a big jump over our traditional way of treating cardiovascular disease," he says.

Nadine Glauberman: Devoted Volunteer

Sometimes what you need to stay healthy is a helping hand, especially when it is offered by an expert cardiologist.

Nadine Glauberman understands this—as a patient of P.K. Shah, MD, and as an active member of The Helping Hand of Los Angeles, a longtime volunteer support group at Cedars-Sinai.

Nadine joined The Helping Hand in 1998, after a 25-year career in garment manufacturing. She is a past president and current board member, co-chair of its annual Mother's Day luncheon, and a buyer for The Helping Hand Gift Shop. "I have been blessed with a wonderful life," she says.

Nadine began seeing Dr. Shah several years ago, when her cholesterol levels spiked. Her husband, Charles ("Chuck") Glauberman, is also one of Dr. Shah's patients. "He's an extraordinary doctor with a very special bedside manner that always makes you feel that he cares," notes Nadine. "He's committed to his patients, and it shows."

Her cholesterol is in check, thanks to a change in medication, a Mediterranean diet, and exercise. "Together," she says, "Dr. Shah and I are keeping me healthy."

Both her daughters, as well as her grandson, were born at Cedars-Sinai. "Being able to show my gratitude by giving back to the hospital and the community has been very important to me," says Nadine. "Cedars-Sinai has been a big part of my life—this is my town square."

Life depends on the continuous rhythm of the heart,
so we lead global research to help it keep the beat.



Sumeet S. Chugh, MD

Most of us take our heartbeat for granted. But every year, for 300,000 Americans, a sudden electrical chaos brings that beat to an abrupt halt, often with no warning.

Called sudden cardiac arrest, the condition kills 95 percent of its victims almost instantly. That is unacceptable to Sumeet S. Chugh, MD, who has devoted much of his career to understanding why it happens and who is at risk.

“If we wait until someone has a sudden cardiac arrest, it is usually too late,” says Dr. Chugh, section chief of Clinical Cardiac Electrophysiology. “We really must get a handle on predicting it, so we can intervene before it happens.”

First Genetic Link to Sudden Cardiac Arrest

Dr. Chugh is getting closer to his goal. In 2011, Dr. Chugh and an international consortium of physician-scientists published new findings that identified the first-ever genetic link to sudden cardiac arrest happening in the community. This link, a variation in the BAZ2B gene, appears to double an individual’s risk for the disorder.

Dr. Chugh and his team also are continuing the decade-long Oregon Sudden Unexpected Death Study, a groundbreaking epidemiological study of more than 3,000 cases of

sudden cardiac arrest in Portland, Oregon. The study has revealed several potential risk factors, including specific electrical abnormalities of the heart, lower socioeconomic status, and heredity.

These findings could pave the way for an eventual screening test to better pinpoint patients who need an implantable defibrillator—a battery-powered device that can detect abnormal electrical activity and shock the heart back into rhythm if needed.

Expanding Research for Atrial Fibrillation

At Cedars-Sinai, the electrophysiology team uses a multi-disciplinary approach to manage and treat a full spectrum of conditions related to heart rhythm disorders, including irregular heartbeats, as well as heartbeats that are too slow or too fast.

The most common heart rhythm disorder is an irregular heartbeat called atrial fibrillation. Although not as lethal as sudden cardiac arrest, atrial fibrillation leaves patients vulnerable to stroke and heart failure.

In 2011, the Heart Institute began participating in the first large multicenter trial to compare two treatments for atrial fibrillation: catheter ablation and drug therapy. Meanwhile, Cedars-Sinai has been designated as the international core center for the World Health Organization’s effort to study the disease’s global impact.

Drew Logan: Sudden Cardiac Arrest Survivor

It was October 4, 2004, and fitness coach Drew Logan was making vacation plans with his girlfriend when he felt sudden, severe pain in his head. Then he collapsed. Incredibly, his heart had stopped beating.

Just as suddenly, though, he woke up. His shaken girlfriend thought he had suffered a seizure. But before she could take him to the hospital, it happened again. Drew, then 30, had one thought before he fell to the floor: “I’m dying.”

He was right. By the time paramedics arrived and restarted his heart with a defibrillator, six dangerously long minutes had passed. That night, in the hospital, his heart stopped for a third time. Again, doctors shocked him back to life.

Why would a healthy 30-year-old, especially an athlete and nutritionist, have three sudden cardiac arrests? Doctors do not know. But Drew is thankful that his own doctor, Sumeet S. Chugh, MD, at Cedars-Sinai, is trying to find out.

“It makes me feel good that Dr. Chugh is one of the world’s foremost experts on this,” says Drew, 37, who fully recovered and has an apparently healthy and normal heart. “If anyone can figure out a way to better predict sudden cardiac arrest, it’s Dr. Chugh.”

Although he has not had another cardiac arrest, Drew lives with an implanted defibrillator, as well as a cardiac therapy dog, Lucky, who is trained to alert him to any potential warning signs. Meanwhile, Drew and several friends have raced in relay in triathlons to raise awareness about sudden cardiac arrest and heart disease.

“I was always a big proponent of health and fitness, but this experience put it in a different light,” he adds. “I think of it as a second chance to make a difference.”





We know that hypertension can damage health, and we empower high-risk communities to prevent it.



When it comes to hypertension, ignorance is definitely not bliss. Left uncontrolled, this “silent killer” increases the risk of stroke, aneurysm, heart failure, heart attack, and kidney damage.

But because hypertension (high blood pressure) can progress for years with no symptoms, many people assume they are healthy—and do not receive vital treatment. Ironically, this lack of treatment is most prevalent in the group that has the highest death rate from hypertension: African-American men.

A Healthy Haircut

Led by Ronald G. Victor, MD, the goal of the Cedars-Sinai Hypertension Center is not only to provide advanced, comprehensive care for patients, but also to research potential new treatments—and educate the community, too.

In 2012, Dr. Victor plans to begin his second community-based clinical trial offering free blood pressure screenings at 20 African-American barbershops in Los Angeles. Patrons who are found to have elevated blood pressure receive a free haircut if they return with evidence of a doctor’s visit.

The study comes on the heels of his first pilot program, which showed markedly improved blood pressure control among barbershop patrons in Dallas. This time, he is adding a research pharmacist to the team, who will work with patrons’ physicians to optimize blood pressure treatment regimens.

“There’s a dramatic degree of under-treatment of hypertension by office-based physicians across the country,” explains Dr. Victor. “Our goal this time is not only to educate patients, but to educate their doctors as well.”

Advancing Future Treatments

Another vexing problem facing physicians is how to treat so-called “resistant hypertension”—or blood pressure that cannot be controlled with medication.

Partnering with the Heart Institute’s Interventional Cardiology team, Dr. Victor will co-lead a clinical trial, starting in 2012, to study a catheter-based intervention for hypertension. The minimally invasive procedure aims to control resistant hypertension by ablating key nerves around the kidney arteries.

Meanwhile, Center investigators are exploring how a genetic defect in fat tissue may play a role in obesity-related heart disease and how a centrally acting drug could help treat high blood pressure in patients with cocaine overdose.

“Controlling hypertension is such an important factor in heart disease,” he notes. “From the community to the bedside to the lab, we’re leaving no stone unturned in our fight.”

Opposite:

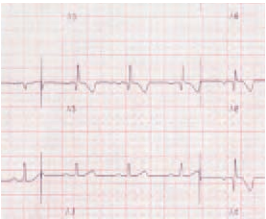
At Wally’s, the oldest and most respected barbershop in Altadena, California, Dr. Ronald Victor gets a blood pressure check from owner Wally Riddle.

Firsts on the Frontiers of Discovery

The Cedars-Sinai Heart Institute is known around the world for its commitment to translating leading-edge research into routine patient care. Through the years, our innovations and discoveries have improved the prognosis and quality of life for patients battling heart disease.


1924

First electrocardiogram machine installed in Los Angeles



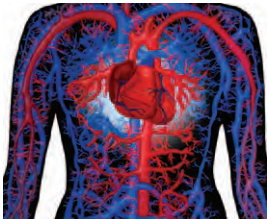
1959

First description of the syndrome of vasospastic angina²




1973

First use of drugs to dilate blood vessels in heart failure patients, revolutionizing the way severe heart disease is treated⁴



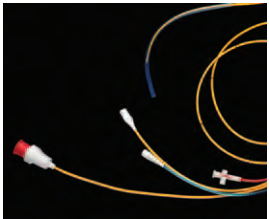
1952

First use of thrombolytic enzymes to dissolve blood clots in the heart¹



1970

Invention of the Swan-Ganz catheter to measure blood flow and heart pressures³



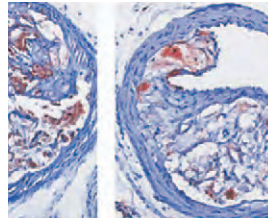
1981

First use of radioactive isotope Tc-99m to assess blood flow throughout the heart⁵



1994

First use of mutant gene-based therapy (apo A-1 Milano) to fight atherosclerosis in mice—a step toward new treatments for coronary artery disease⁶




1995

Developed imaging software used worldwide for noninvasive quantification of heart function⁷




2005

Top enrolling center in a national trial of percutaneous mitral valve repair⁸



2006

First comprehensive women's heart center in the United States encompassing clinical care, research, and education



2010

First hospital unit in California dedicated solely to treating advanced heart failure patients¹⁰



2010

National leader in clinical trials of new catheter procedure to replace aortic valves nonsurgically⁹



2011

First complete results from cardiac stem cell trial, showing stem cells reverse heart attack damage¹¹



When you join forces with the Heart Institute,
you give your hope to many hearts.

The strength of the human heart is a gift. In a lifetime, it beats more than 2.5 billion times, making each dream, each hope, each one of us—possible.

It can be undone, though, by disease that is equal in force. Together with people who share our vision, the Heart Institute faces the challenge of heart disease with the power of the human spirit.

Your collaboration with us is potent. Through donor-based seed funding for research, we can explore promising ideas, ask better questions, and guide new science into the realm of great heart medicine. And we can do so at an accelerated pace.

The Heart Institute is dedicated to bringing patients and their families the benefits of medical research combined with the exceptional care of Cedars-Sinai. Together, these two elements propel cardiac medicine forward and expand what is possible.

Powerful giving opportunities that provide a direct path to making a difference are available now. From establishing endowed chairs and research fellowships to supporting discovery funds and clinical trials, you can help advance research at the Heart Institute. As we build our new home in the Advanced Health Sciences Pavilion, capital naming opportunities for laboratories, patient lobbies, and treatment suites are also available. As unique as the individual, support for the Heart Institute can take many wonderful forms.

If you care about ending heart disease—if you or someone you love has fought it—then you are in good company with us. We lead the fight to end heart disease every hour of every day, and we are determined to win.

With partners like you, we will.



References

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*Dr. Eduardo Marbán invented the methods used to grow and expand stem cells from heart biopsies. Dr. Marbán filed patents regarding those innovations, which are licensed by Capricor, Inc. Dr. Marbán and his wife, Linda Marbán, PhD, are both founders of Capricor, Inc. Dr. Eduardo Marbán serves on its Board of Directors, and owns equity in the company. Dr. Linda Marbán serves as a consultant to Capricor.

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