

Cedars-Sinai's Historic Legacy in Cardiovascular Innovation

The Smidt Heart Institute has a long history of pioneering cardiac research and care. Here are a few highlights.

1924 First electrocardiogram machine in Los Angeles

1952 Pioneered usage of thrombolytic enzymes to dissolve blood clots in the heart

1970 Invention of the Swan-Ganz catheter

1973 Revolutionized heart failure treatment by being the first to use vasodilators to reduce afterload

1981 First use of radioactive isotope Tc-99m to assess blood flow throughout the heart

1994 First to show preclinical efficacy of apo A-1 Milano in atherosclerosis, opening the door to novel treatments for coronary artery disease

1995 Developed Quantitative Gated SPECT, now used worldwide for noninvasive measurement of heart function

2001 First in California—and among the first in the nation—to employ a portable artificial heart in patients unable to receive a heart transplant

2006 Established the Women's Heart Center—the nation's first comprehensive center for heart research, care and education for women, later recognized by a naming gift from Barbra Streisand

2007 Cedars-Sinai Heart Institute established, later becoming the Smidt Heart Institute at Cedars-Sinai in recognition of a gift from Eric and Susan Smidt

2009 First patient enrolled in clinical trial of cardiac-derived stem cells to treat heart attack patients

2012 First full report of a clinical trial showing that cardiac stem cells could heal heart attack injury

2014 Record-breaking 120 heart and two heart-lung transplants performed, surpassing the previous year's benchmark for most heart transplants among U.S. medical centers—also set at Cedars-Sinai

2017 First in the U.S. to perform transcatheter mitral valve replacement with the M3 device

2018 The Los Angeles Barbershop Blood Pressure Study becomes the first effective community intervention for hypertension

2019 FDA approval of device pioneered at Cedars-Sinai to close patent ductus arteriosus at the bedside, sparing many babies the need for surgery

2020 First in the U.S. to perform transcatheter mitral valve replacement with the Eos device

2021 First double lung transplant using a new minimally invasive technique developed at Cedars-Sinai

2023 Investigators find distinctive electrocardiogram changes that herald an increased risk of sudden cardiac arrest

2024 The first institute on the West Coast to use a new ultrasound device designed to target the kidneys and reduce blood pressure.

AI used to predict heart attack risk by analyzing images of plaques causing cardiovascular disease

2025 Cardiologists develop a new class of cardioprotective RNA drugs that repair DNA and tissue damage

2026 Top U.S. center in percutaneous procedures for aortic, tricuspid, mitral and pulmonary valves

Clinical trials confirm a Cedars-Sinai cell treatment, Deramiocel, fights cardiomyopathy in Duchenne muscular dystrophy



We've already made
heart history.
Now we build its *future*.

At the Smidt Heart Institute at Cedars-Sinai, daily clinical excellence is our baseline. Our program seeks to exceed that standard, from the methodical advancement of our homegrown innovations to global collaborations designed to bring our patients the latest technology.

Our success builds on a proud legacy. In the mid-20th century, Cedars Sinai physicians pioneered the use of thrombolytic enzymes to dissolve coronary clots, laying the groundwork for modern reperfusion therapy. Two decades later, faculty members invented the Swan-Ganz catheter, a tool that fundamentally changed the management of critically ill cardiac patients and remains a cornerstone of hemodynamic assessment worldwide.

From the development of RNA-based therapeutics to the application of AI to predict cardiac arrest, that spirit of intentional innovation continues today.

Across decades and disciplines, our clinicians and scientists have created breakthroughs for patients everywhere. We are passionate, curious and determined to make the best heart science and care even better.

For more than a century, our team has been defined by an uncompromising standard of quality everywhere: the operating room, the cath lab, the wards, the clinic and the bench.

That's exactly how we intend to lead as we move forward.



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A 360-Degree Model of Cardiovascular Clinical Care and Research

The Smidt Heart Institute is guided by a clear-cut philosophy: the best organization is one that prioritizes and facilitates the patient experience. A heart patient simply wants to get well. To them, the diverse academic training paths that create cardiologists, cardiac surgeons, vascular surgeons and researchers are less important than the collaboration of those specialists to deliver the very best care.

In creating the Smidt Heart Institute, we have intentionally deconstructed traditional silos:

- Our physical spaces colocate surgeons, cardiologists and researchers to facilitate collaborations and improve the design and delivery of care.
- No artificial distinctions separate pediatrics from adult cardiology. Our pediatric and adult congenital heart programs seamlessly cover the lifespan from the fetus through older adults, without awkward care transitions.
- Smidt Heart Institute cardiologists, surgeons, intensivists, and researchers work together to minimize the time required for full recovery.
- A single administrative structure unites and coordinates all services that touch upon the patient experience.

Our unified approach yields fruitful partnerships across subspecialties, ensuring that faculty members flourish and patients receive optimal care.



#1 in California (highest *U.S. News* ranking in the region) and #6 in the U.S. for Cardiology, Heart & Vascular Surgery.

Robust Research Expertise

\$44,809,788

total grants awarded to Smidt Heart Institute in FY25

85%

of research funding is from peer-reviewed sources

1,769

total patents awarded to Smidt Heart Institute investigators

680

publications in FY25

Direct-to-Patient Progress

129%

growth in ambulatory clinic visits from 2016-2025

226

ongoing clinical trials

7,000+

transcatheter aortic valve replacements performed to date

2,410+

heart transplants performed to date

2,293

MitraClips performed to date

178

robotic mitral valve repairs performed to date, with an exceptionally high success rate in FY25

Full-Spectrum Clinical Specialties

The cardiologists, cardiac surgeons, vascular surgeons and specialized care teams at the Smidt Heart Institute treat the full spectrum of heart disease and disorders. From intrauterine life through advanced age, we meet our patients at their point of need. Whenever possible, we offer patients access to clinical trials of the latest therapeutic approaches—whether novel drugs, leading-edge interventions or new surgical techniques.

Clinical heart specialty programs include:

Congenital Heart Disease

Our Adult Congenital Heart Disease Program is one of only 50 in the nation to earn accreditation from the Adult Congenital Heart Association, which is the organization's top distinction. We develop long-term relationships with our patients, beginning with infants and children who visit the Cedars-Sinai Guerin Family Congenital Heart Program, and provide seamless care across the lifespan—unlike typical medical institutions with separate children's hospitals. The practices of our surgeons and our congenital cardiologists are purposely colocated to facilitate coordinated care.

Advanced Heart Disease

We provide the full spectrum of care, from medical management through mechanical circulatory support and transplantation. Patients trust our clinicians and surgeons to treat the most rare, advanced and complex disorders, and to provide comprehensive and personalized care options. We lead the field in adapting methods to expand the donor pool and in improving results with antirejection innovations, particularly in patients with antibody sensitization—who are often excluded as transplant candidates elsewhere.

Aortic Disease

Our program is an international leader in procedural innovation for aortic dilatation and/or dissection, continually expanding the reach of minimally invasive techniques using endovascular approaches.

Cardiac Imaging

Our cardiac imaging team provides expertise in multimodal imaging: CT, MRI, PET, nuclear and echo. We have pioneered the use of AI to review and analyze images to detect heart disease.

Cardiac Rehabilitation

Cardiologists collaborate closely with exercise physiologists, psychologists and nutritionists to provide personalized attention to each cardiac rehabilitation patient.

Cardiac Surgery

We perform more heart, lung and multi-organ transplants than any other center in the western United States. Other programs of excellence include robotic surgery and mitral valve repair (with a >97% success rate for degenerative mitral disease). Referring providers and patients from coast to coast trust our surgery team to deliver the best outcomes and lowest complication rates nationwide.

Cardio-Oncology

Cardiologists work hand in glove with Cedars-Sinai's oncology teams to identify and offer personalized therapies to patients who may be at higher risk of heart disease due to cancer treatment.

Electrophysiology

As experts in all aspects of heart rhythm disorders, the Smidt Heart Institute is particularly renowned for repeated breakthroughs in the prediction and prevention of sudden cardiac arrest. We offer all care options, from medical management through ablations and surgical maze procedures.

General Cardiology

Our physicians leverage advanced diagnostic technology and deep experience to identify, prevent and treat the full spectrum of heart conditions.

Genetic Heart Disease

Medical geneticists partner with our cardiac surgeons, electrophysiologists, and interventional cardiologists to provide care for patients with a family or personal history of heart disease. We have particular interest in Marfan syndrome, dilated cardiomyopathy, hypertrophic cardiomyopathy and heritable rhythm disorders. Our dedicated genetics counselor is available as needed as a patient and family resource.

Regenerative Medicine Clinic

The Regenerative Medicine Clinic at the Smidt Heart Institute develops investigative stem cell therapies and offers them to eligible patients, moving stem cell science forward year over year. Deramiocel, a heart-derived cell therapy product with demonstrated benefits in various forms of cardiomyopathy, was developed at Cedars-Sinai.

Hypertension

Certified as a Comprehensive Center of Excellence by the American Heart Association, we develop and advance new treatments or even cures for severe, uncontrolled or unexplained hypertension. Our team includes cardiologists who specialize in blood pressure management, endocrinologists and endocrine surgeons, interventional radiologists expert in renal venous sampling, and interventionalists experienced in renal denervation.

Interventional Cardiology

We excel in minimally invasive structural heart procedures that accelerate healing. Our team has performed more transcatheter valve repair and replacements than any other center in the U.S., and invents new approaches to care.

Continued

Sports Cardiology

Launched in 2025, the Sports Cardiology Program serves athletes and athletic enthusiasts with specialized care, ensuring safety whether or not a patient has been diagnosed with heart disease.

Vascular Surgery

Cedars-Sinai treats more patients with vascular disease than any other medical center in California. The Smidt Heart Institute is internationally recognized for minimally invasive treatment of vascular disease, and continues to set the pace for innovations in surgical techniques and vascular devices.

Renowned Expertise

The Smidt Heart Institute's successes in patient care are acknowledged globally and have been recognized by national medical organizations:

- Ranked as Best in California and #6 in the U.S. for Cardiology, Heart & Vascular Surgery by *U.S. News & World Report*
- Certified as Comprehensive Hypertension Center of Excellence by the American Heart Association
- Largest robotic cardiac surgery team in the U.S.
- Among the best outcomes nationally for patients with advanced heart failure and coronary artery disease
- Largest thoracic program transplant volume in the western U.S.
- Adult Congenital Heart Disease Program accredited as a comprehensive care center

Embedded in a Thriving Health System

Cedars-Sinai Medical Center is one of the largest and fastest-growing nonprofit academic medical centers in the nation, with 919 licensed beds and 2,500+ physicians on medical staff. Clinical services extend from primary prevention to the care of rare and advanced disease. Our mission to advance care

Women's Heart Disease

The Barbra Streisand Women's Heart Center at the Smidt Heart Institute was the nation's first comprehensive center for heart research, care and education for women, and remains a leader in all aspects of women's cardiac care. Our clinical investigators first demonstrated the importance of ischemia with normal coronary arteries—INOCA—as a contributor to angina in many women, and also in some men.

for all patients is amplified through the Cedars-Sinai Health System, a regional network that includes two additional top-ranked Southern California hospitals, with more than 2,100 total beds and dozens of outpatient locations.

Robust Research Opportunities at Health Sciences University

Discovery is central to Cedars-Sinai's mission and vision. As the largest private teaching hospital in the western U.S., Cedars-Sinai is home to Health Sciences University, which has **18** academic departments that support more than **700** active clinical trials. Across laboratories and clinics, investigators drive biomedical progress through more than **2,600** active research projects spanning the full continuum of discovery to translation. Annual research funding includes more than **\$116** million in federal awards, and the institution ranked **10th** nationally in NIH funding among independent hospitals in FY25.

Dedicated to Development in Every Sense of the Word

The Smidt Heart Institute at Cedars-Sinai is a premier destination for clinicians and scientists who want to see their ideas and efforts make real-world impact.

- **Technology Commercialization.** A national leader in translational entrepreneurship, Cedars-Sinai is managing nearly 700 technologies in various stages of development. Smidt Heart Institute inventors are on the leading edge of emerging discoveries, including new RNA drugs for heart failure, biological pacemakers as alternatives to electronic devices, novel applications of wearable technologies to improve heart care, new means to minimize organ rejection after transplantation, and better heart valves to facilitate minimally invasive procedures.
- **Education.** Cedars-Sinai Health Sciences University promotes a culture of inquiry, embedding faculty and learners in a healthcare-first academic setting. Cedars-Sinai's fully accredited Graduate School of Biomedical Sciences, extensive residency and fellowship programs, NIH-funded training grants, and thriving postdoctoral and Clinical Scholars programs support current and future physicians, scientists and healthcare leaders.
- **Faculty Development.** Faculty members benefit from a supportive environment that encourages productive interactions between clinicians and investigators, and offers clear pathways for continued education, leadership and career advancement.
- **Community Impact.** Anchored in Los Angeles, Cedars-Sinai offers faculty opportunities to conduct impactful population research. Our tangible efforts include PRESTO, a large community-based study of sudden cardiac death, and an ongoing longitudinal study of health risk in professional firefighters.

Located in the Heart of Los Angeles

Cedars-Sinai sits within one of the most diverse metropolitan areas in the country, allowing clinicians and investigators to study cardiovascular disease as it presents across race, gender, socioeconomic status and comorbidity, rather than as a controlled abstraction. Continually informing work in health equity, population science and implementation research, this environment has supported projects such as the Los Angeles Barbershop Blood Pressure Study, a study that demonstrates how community-based interventions could substantially improve blood pressure in Black men.

Los Angeles also provides an exceptional quality of life, with its mild climate conducive to year-round outdoor activity. With more than 270 unique communities, 100+ museums, 12 professional sports teams, world-class dining and a county footprint spanning the coast, San Fernando Valley, desert and mountains, Los Angeles is a dynamic place to call home, and helps make Cedars-Sinai an extraordinary place to build a career.