Cedars-Sinai is proud to be the #1 choice for cardiology and cardiac surgery patients.

Ranked #1 for Cardiology and Cardiac Surgery in California by U.S. News & World Report

Find out more
To refer a patient, please call 310-423-3300.
To schedule a consult, please call 1 800 CEDARS1 (1-800-233-2771).
Please visit our website: cedars-sinai.org/heart

Adult Heart Transplant
* More adult heart transplants than any other U.S. program 2016–2021
* The No. 1 choice for complex heart transplant patients in the U.S. and around the world

Lung Transplant
* The leading program for minimally invasive lung transplantation
* More thoracic organ transplants than any other program in California in 2021

Mechanical Circulatory Support
* 135 total artificial hearts 2012–2021
* Over 30,000 hours of ECMO care in 2021

Advanced Heart Failure
* The best outcomes nationally for patients with advanced heart failure

Robotic Cardiac Surgery
* >1,000 robotic mitral repairs with >99% success rates
* The largest robotic cardiac surgery team in the U.S.

Structural Heart Disease
* The No. 1 choice for complex and high-risk structural heart disease in the U.S.
* >5,000 TAVR procedures performed to date
* >1,000 MitraClip procedures performed 2017–2021
* >200 transcatheter tricuspid repairs and replacements

Aortic Disease
* >3,000 aortic valve replacements and repairs 2011–2021

Coronary Disease
* Top outcomes nationally for patients with coronary artery disease
* National leaders in advanced percutaneous, surgical and hybrid coronary revascularization

Electrophysiology
* National leaders in cardiac arrest prevention

Pediatric and Congenital Heart Disease
* First-in-Man with novel percutaneous pulmonary valve replacement
* The first choice for congenital cardiac care, from conception to advanced age

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Dear Colleagues,

It is with considerable pride that we share our annual report for 2022. We are particularly proud that the Smidt Heart Institute takes exceptional care of the patients with the most complex and challenging conditions, which have often been deemed too risky for intervention elsewhere. We don’t always succeed in turning the tide of disease, but we never stop trying. We are here for you and your patients. Please feel free to reach out if we can help, at any time.
**Transformative Research Themes**

**HEART FAILURE**
- **Team Leaders:** Joshua Goldhaber, MD; Jon A. Kobashigawa, MD; Fardad Esmaillian, MD
- **Questions:** How can we reverse “inreversible” injury to the heart? Can cells and their products be used to create new biological agents?
- **Accomplishments:** Cutting-edge clinical trials of cell therapy in Duchenne muscular dystrophy and in heart failure. Major discovery program for novel RNA-based drugs based on exosome contents.

**NOVEL THERAPIES FOR CARDIAC ARRHYTHMIAS**
- **Team Leaders:** Eugenio Cingolani, MD; Peng-Sheng Chen, MD
- **Questions:** Are there viable alternatives to devices and ablation for heart rhythm disorders?
- **Accomplishments:** First biological pacemakers in clinically relevant animal models. Novel nondestructive treatment of refractory ventricular tachycardia by biologics. New approaches to autonomic system modulation.

**VASCULAR BIOLOGY**
- **Team Leaders:** Prediman K. Shah, MD; Ali Azizzadeh, MD
- **Questions:** Can atherosclerosis be prevented or reversed? How can we spare major surgery in vasculopathic patients?
- **Accomplishments:** Proof of principle for anti-cholesterol vaccine strategy. Proteomics-based discovery of novel pathways mediating vascular injury. Clinical testing of new percutaneous approaches to complex bifurcating lesions.

**BIOMARKER DISCOVERY AND VALIDATION**
- **Team Leaders:** Jennifer Van Eyk, JPH
- **Questions:** How can we detect disease before it is clinically apparent?
- **Accomplishments:** Bench-to-bedside approach implemented to facilitate biomarker discovery. Use of inflammatory biomarkers to monitor coronary disease progression in large populations.

**COVID-19**
- **Team Leader:** Susan Cheng, MD, MHF, MMSc
- **Questions:** What factors predispose to bad outcomes in COVID-19?
- **Accomplishments:** First major population-based prospective study, CORALE, used to detect autoimmune activation in COVID-19-hospitalized patients.

**HYPERTENSION**
- **Team Leader:** Natalie Bello, MD, MPH
- **Questions:** How can we best treat high blood pressure in vulnerable populations?
- **Accomplishments:** Clinical trials of community-based intervention. Mechanisms of hypertension in women and minorities.

**REGENERATIVE MEDICINE**
- **Team Leader:** Eduardo Marbán, MD, PhD
- **Questions:** How can you reverse “irreversible” injury to the heart? Can cells and their products be used to create new biological agents?
- **Accomplishments:** Cutting-edge clinical trials of cell therapy in Duchenne muscular dystrophy and in heart failure. Major discovery program for novel RNA-based drugs based on exosome contents.

**Nature and Nature Journals**

**Science, Cell, The Lancet, Journal of Clinical Investigation, Proceedings of the National Academy of Science**
**Advanced Heart Failure**

**EXPERTISE**
- Advanced Heart Failure
- Valvular Cardiomyopathy
- Implantable Monitors
- Amyloidosis
- Constrictive Pericarditis
- Mechanical Support
- Hypertrophic Cardiomyopathy
- Non-Compaction Cardiomyopathy
- Gene Therapy
- Ischemic Cardiomyopathy
- Pulmonary Hypertension
- Heart Transplantation
- Sarcoïdosis
- Chemotherapy
- Cardiomyopathy
- Mechanical Support
- Postpartum Cardiomyopathy
- Amyloid deposition on conventional RV Dysplasia
- Gene Therapy
- Cardiomyopathy
- Chemotherapy
- Pulmonary Hypertension
- Heart Failure Program
- Advanced Heart Failure Program
- Myocarditis
- Postpartum Cardiomyopathy
- Mechanical Support
- Cardiac Tumors
- Advanced Outpatient Therapy
- Diastolic Heart Failure
- Adult Congenital Heart Disease

**MAJOR PROGRAMS**

- Advanced Heart Failure Program
  - Director: Michele Hamilton, MD, Vice-Chair of Clinical Affairs, Department of Cardiology, Director of the Heart Failure Program and Professor of Cardiology

- Hypertrophic Cardiomyopathy Program
  - Director: Robert J. Siegel, MD, S. Rexford Kennamer, MD Chair in Cardiac Ultrasound, and Professor of Cardiology

- Cardiac Amyloid Program
  - Director: Jignesh S. Patel, MD, PhD, Clinical Professor of Medicine

- Pulmonary Hypertension Program
  - Directors: Antoine Hage, MD; Michael Lewis, MD

- Cardio-oncology Program
  - Director: C. Noel Barney Merz, MD, Irwin and Sheila Allen Chair in Women’s Heart Research, and Professor of Cardiology

- Coronary Care Unit
  - Director: Bojan Cercek, MD, PhD, Eleanore and Harold Foonberg Chair in Cardiac Care from hospital to home.

- Cardiac Surgery Intensive Care Unit
  - Medical Director: Michael Nunuk, MD, Associate Professor of Cardiac Surgery
  - Surgical Director: Dominic Emerson, MD, Assistant Professor of Cardiac Surgery

**SURVIVING HEART FAILURE**

Patients with heart failure treated at Cedars-Sinai experience a survival experience among the best outcomes in the nation,* thanks to an integrated heart team creating unique care plans for over 18,000 patients each year, state-of-the-art diagnostics and therapeutics, and seamless supportive care from hospital to home.

*Source: Hospital Compare. Learn more at cedars-sinai.com/heartfailure

**Highest-Impact Publications**

- **Nature**
  - New England Journal of Medicine
  - The Lancet
  - Journal of the American College of Cardiology
  - Circulation
Heart and Lung Transplant and Mechanical Circulatory Support

MAJOR PROGRAMS
Heart Transplant and Mechanical Circulatory Support Program
Director: Jon A. Kobashigawa, MD, DSL/Thomas D. Gordon Chair in Transplantation Medicine and Professor of Cardiology
Surgical Director: Farhad Esmaillian, MD, Professor of Cardiac Surgery
Medical Directors: Jignesh Patel, MD, PhD, Professor of Medicine
Lawrence Czer, MD, Professor of Medicine

Lung Transplant Program
Surgical Director: Dominick Megna, MD, Assistant Professor of Cardiac Surgery
Medical Director: Reinaldo Rampolla, MD, Associate Professor of Medicine

EXPERTISE
Heart Transplantation
Lung Transplantation
Minimally Invasive Lung Transplantation
Heart-Kidney Transplantation
Multi-Organ Lung Transplantation
Heart-Liver Transplantation
Heart-Lung Transplantation
Circulatory Support
Heart and Lung Transplantation
COVID-19 Acute Respiratory Distress Syndrome
Emphysema
Next-Generation Ventricular Assist Devices
Pulmonary Fibrosis
Percutaneous Mechanical Circulatory Support
COVID-19 Pulmonary Fibrosis
Pulmonary Hypertension

Highest-Impact Publications
from the Smidt Heart Institute at Cedars-Sinai

New England Journal of Medicine

The Lancet

Circulation

American Journal of Transplantation

Journal of the American College of Cardiology

Journal of Heart and Lung Transplantation
Mitral and Tricuspid Valve

MAJOR PROGRAMS
Department of Cardiac Surgery
Chair: Joanna Chikwe, MD, Irma and George Schaeffer Distinguished Chair in Cardiac Surgery in honor of Alfredo Trento, and Professor of Cardiac Surgery
Director Emeritus: Alfredo Trento, MD, Estelle, Abe and Marjorie Sanders Chair in Cardiac Surgery and Professor of Cardiac Surgery

Cardiac Interventions Services
Director: Raj Makkar, MD, Stephen R. Corday, MD Chair in Interventional Cardiology, Vice President of Cardiovascular Innovation and Intervention and Professor of Cardiology

Robotic Cardiac Surgery Program
Director: Danny Ramzy, MD, Associate Professor of Cardiac Surgery

EXPERTISE
Robotic Mitral Repair
Tricuspid Catheter Repair
Mitral Valve Prolapose
Barlow’s Mitral Repair
Transcatheter Mitral Replacement
Mitral Valve Endocarditis
Reto-Mitral Repair
Transcatheter Tricuspid Repair
Mitral Annular Calcification
Tricuspid Repair
Transcatheter Tricuspid Replacement
Tricuspid Regurgitation
Atrial Ablation
Left Atrial Appendage Closure
Valvular Carcinoid

MITRAL VALVE REPAIR
>1,000
robotic mitral repairs
with >99% success rates
Highest national STS 3-star ratings for mitral surgery quality 2017–2021

TRANSUCATHETER VALVE REPAIR
1,033
MitraClips performed 2017–2021

>200
transcatheter tricuspid repairs and replacements

Highest-Impact Publications from the Smidt Heart Institute at Cedars-Sinai

**New England Journal of Medicine**

**The Lancet**

**European Heart Journal**

**Journal of the American College of Cardiology**

**JAMA Cardiology**
Aortic Valve

EXPERTISE
Aortic Valve Repair
TAVR
Ross Procedure
Valve-in-Valve TAVR
Valve-Sparing Root Replacement
Bicuspid Aortic Valve
Minimally Invasive Aortic Replacement
Aortic Insufficiency
Redo-Aortic Valve and Root Reconstruction

MAJOR PROGRAMS
Cardiac Interventional Services
Director: Raj Makkar, MD, Stephen R. Corday, MD Chair in Interventional Cardiology, Vice President of Cardiovascular Innovation and Intervention and Professor of Cardiology
Aortic Surgery Program
Director: Pedro Catarino, MD, Professor of Cardiology

TAVR performances and results from the Smidt Heart Institute at Cedars-Sinai

3,000
TAVRs performed to date

TAVRs FY2017–2021

>3,000
Aortic valve replacements and repairs 2011–2021

>5,000
TAVRs performed to date

Highest-Impact Publications from the Smidt Heart Institute at Cedars-Sinai

New England Journal of Medicine
The Lancet

JAMA
Journal of the American College of Cardiology
Coronary Disease

**MAJOR PROGRAMS**

**Atherosclerosis and Prevention**
Director: Prediman K. Shah, MD, Shapell and Webb Family Chair in Clinical Cardiology. Director of the Oppenheimer Atherosclerosis Research Center, Professor of Medicine

**Coronary Care Unit**
Director: Bojan Cerovec, MD, PhD, Eleonore and Harold Foonberg Chair in Cardiac Intensive Care in honor of Prediman K. Shah, MD, and Professor of Cardiology

**Cardiac Interventional Services**
Director: Raj Makkar, MD, Stephen R. Corday, MD Chair in Interventional Cardiology, Vice President of Cardiovascular Innovation and Intervention and Professor of Cardiology

**Department of Cardiac Surgery**
Chair: Joanna Chikwe, MD, Irina and George Schaeffer Distinguished Chair in Cardiac Surgery and Professor of Cardiac Surgery

**Director Emeritus:** Alfredo Trento, MD, and Professor of Cardiac Surgery

**Chair:** Department of Cardiac Surgery

**Vice President of Cardiovascular Innovation and Intervention and Professor of Cardiology**

**Director:** Cardiac Interventional Services

**Coronary Care Unit**
Director of the Oppenheimer Atherosclerosis Research Center, Professor of Medicine

**Atherosclerosis and Prevention**

**SURVIVING MYOCARDIAL INFARCTION**

Patients with acute myocardial infarction treated at Cedars-Sinai experience among the best outcomes in the nation thanks to an integrated heart team with specific expertise in all aspects of ischemic heart disease and coronary revascularization, and seamless supportive care from hospital to home.

*Sourcet: Hospital Compare.

**Highest-Impact Publications from the Smidt Heart Institute at Cedars-Sinai**

**Nature Journals**

**New England Journal of Medicine**


**The Lancet**

**JAMA**
- Wei J, Cheng S, Bairey Merz CN. Coronary Microvascular Dysfunction Causing Cardiac Ischemia in Women. JAMA 2019; 322: 2334-2335

- Bairey Merz CN. Testing for Coronary Microvascular Dysfunction. JAMA 2019; 322: 2358

**Journal of the American College of Cardiology**


**Circulation**
**Women’s Heart**

### MAJOR PROGRAMS

The Barbra Streisand Women’s Heart Center
Director: C. Noel Bairey Merz MD, Irwin and Sheila Allen Chair in Women’s Heart Research and Professor of Cardiology

### Basic Science Research

Director: Jennifer Van Eyk, PhD, Erika J. Glazer Chair in Women’s Heart, Director of Advanced Clinical Biosystems in the Department of Biomedical Sciences and Professor of Cardiology

### Public Health Research

Director: Susan Cheng, MD, MPH, MMSc, Erika J. Glazer Chair in Women’s Cardiovascular Health and Population Science, Director of Cardiovascular Population Sciences and Professor of Cardiology

### Women’s Hormone and Menopause Program

Director: Chrissandra Shufelt, MD, MS, Anita Dann Friedman Endowed Chair in Women’s Cardiovascular Medicine and Research and Professor of Medicine

### EXPERTISE

Personalized Risk Assessment and Evaluation
Arhythmia Diagnosis
Cardio-Oncology
Cardiovascular Diagnostic Intervention
Post-Partum Health Program
Cardiot Intima Media
Thickness Scan
Women’s Hormone and Menopause Program
Coronary Calcium Scan
Risk Management in Women’s Health
Coronary Reactivity Testing
Exercise Stress Testing
Enhanced External Counter Pulseation (EECP)
Endothelial Function Testing

### Highest-Impact Publications

- **The Lancet**

- **JAMA**

- **European Heart Journal**
  - Lüscher TF, Miller VM, Bairey Merz CN, Crea F. Diversity is richness: why data reporting according to sex, age, and ethnicity matters. Eur Heart J 2020 Sep 1;41(13):3117-3121.

- **The Journal of the American College of Cardiology**

- **Circulation**

**Women’s Hormone and Menopause Center**
Director: Richard Kim MD, Professor of Cardiology

### Congenital Heart Disease

### MAJOR PROGRAMS

The Gwirin Family Congenital Heart Program
Director: Evan Zahn MD, Professor of Cardiology

### Congenital Heart Surgery Program

Director: Richard Kim MD, Professor of Cardiology

### EXPERTISE

- **Atrial and Ventricular Septal Defect**
  - Adult Congenital Heart Disease Coordination of the Aorta
  - Pediatric Congenital Heart Disease
  - Double Outlet Right Ventricle
  - Pregnancy with Congenital Heart Disease
  - Hypoplastic Left Heart Syndrome
  - Fetal Cardiac Evaluation and Diagnosis
  - Patent Ductus Arteriosus
  - Genetic Testing and Counselling
  - Tetrology of Fallot
  - Fontan Procedure
  - Transposition of the Great Arteries
  - Glenn Shunt
  - Truncus Arteriosus
  - Double Switch Repair
  - Aortic Stenosis and Bicuspid Aortic Disease
  - Atrial Septal Defect Closure
  - Ebstein Anomaly
  - Ventricular Septal Defect Closure
  - Mitral Regurgitation
  - Norwood Procedure
  - Anomalous Pulmonary Venous Drainage
  - Percutaneous intervention
  - Pulmonary Atresia and Stenosis
  - ECMO
  - Tricuspid Atresia and Regurgitation

### Highest-Impact Publications

- **Circulation**

- **J Am Coll Cardiol**

- **Catheter Cardiovasc Interv.**

- **Circulation**

- **Catheter Cardiovasc Interv.**
No. 1

* in the Western U.S. for Cardiology and Heart Surgery by U.S. News & World Report

* in expertise for percutaneous valve procedures in the nation

* in the nation for adult heart transplants 2016–2021
## Cardiac Interventions

### Invasive Cardiac Procedures FY18–21

<table>
<thead>
<tr>
<th>Procedure</th>
<th>FY18–21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary Angiography</td>
<td>24,616</td>
</tr>
<tr>
<td>Percutaneous Intervention (PCI)</td>
<td>8,022</td>
</tr>
<tr>
<td>Transcatheter Valve Replacements</td>
<td></td>
</tr>
<tr>
<td>- Aortic (TAVR)</td>
<td>2,421</td>
</tr>
<tr>
<td>- Mitral (TMVR)</td>
<td>103</td>
</tr>
<tr>
<td>- Tricuspid (TTVR)</td>
<td>48</td>
</tr>
<tr>
<td>- Pulmonary (TPVR)</td>
<td>47</td>
</tr>
<tr>
<td>- Re-Do TAVR (valve-in-valve)</td>
<td>140</td>
</tr>
<tr>
<td>- MitraClip</td>
<td>834</td>
</tr>
<tr>
<td>- Tricuspid Clip</td>
<td>171</td>
</tr>
<tr>
<td>Valvuloplasty</td>
<td></td>
</tr>
<tr>
<td>- Aortic</td>
<td>27</td>
</tr>
<tr>
<td>- Mitral</td>
<td>24</td>
</tr>
<tr>
<td>- Pulmonary</td>
<td>7</td>
</tr>
<tr>
<td>Carotid Angiography/Carotid Stent</td>
<td>68</td>
</tr>
<tr>
<td>Endomyocardial Biopsy</td>
<td>4,259</td>
</tr>
<tr>
<td>Intracoronary Stem Cell Injection/Therapy</td>
<td>44</td>
</tr>
<tr>
<td>Intravascular Ultrasound</td>
<td>2,768</td>
</tr>
<tr>
<td>Coronary Reactivity Testing</td>
<td>101</td>
</tr>
<tr>
<td>Percutaneous Alcohol Septal Ablation for Hypertrophic Cardiomyopathy</td>
<td>77</td>
</tr>
<tr>
<td>Percutaneous Closure of Paravalvular Leak</td>
<td>77</td>
</tr>
<tr>
<td>Percutaneous Closure of Septal Defects</td>
<td></td>
</tr>
<tr>
<td>- Atrial Septal Defect (ASD)</td>
<td>89</td>
</tr>
<tr>
<td>- Patent Foramen Oval (PFO)</td>
<td>208</td>
</tr>
<tr>
<td>- Ventricular Septal Defect (VSD)</td>
<td>18</td>
</tr>
<tr>
<td>- Percutaneous closure of Patent Ductus Arteriosus</td>
<td>36</td>
</tr>
<tr>
<td>- Percutaneous Left Ventricular Assist Devices</td>
<td>288</td>
</tr>
<tr>
<td>- Percutaneous Closure of Left Atrial Appendage Occlusion</td>
<td>511</td>
</tr>
<tr>
<td>Electrophysiology Studies</td>
<td>2,428</td>
</tr>
<tr>
<td>Catheter Ablation Procedures</td>
<td>2,338</td>
</tr>
<tr>
<td>Cardiac Electronic Implantable Device (CIED) Implantations</td>
<td>3,167</td>
</tr>
<tr>
<td>Leadless Pacemaker Implantations</td>
<td>327</td>
</tr>
</tbody>
</table>

### Cardiac Surgery

#### Operations FY17–21

<table>
<thead>
<tr>
<th>Procedure</th>
<th>FY17–21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart and Lung Transplantation, and Mechanical Circulatory Support</td>
<td></td>
</tr>
<tr>
<td>Heart Transplants (single and multi-organ)</td>
<td>602</td>
</tr>
<tr>
<td>Lung Transplants (single and double)</td>
<td>131</td>
</tr>
<tr>
<td>Ventricular Assist Devices and Total Artificial Hearts</td>
<td>427</td>
</tr>
<tr>
<td>Extracorporeal Membrane Oxygenation</td>
<td>378</td>
</tr>
<tr>
<td>Robotic Cardiac Surgery</td>
<td></td>
</tr>
<tr>
<td>Mitral Valve Repair</td>
<td>486</td>
</tr>
<tr>
<td>Coronary Revascularization (stand-alone and hybrid)</td>
<td>145</td>
</tr>
<tr>
<td>Valvular Heart Surgery</td>
<td></td>
</tr>
<tr>
<td>Mitral Valve Reconstruction (repair and replacements)</td>
<td>1,018</td>
</tr>
<tr>
<td>Aortic Valve Reconstruction (repair, valve sparing and replacements)</td>
<td>1,114</td>
</tr>
<tr>
<td>TAVR</td>
<td>3,000</td>
</tr>
<tr>
<td>Aorta, Coronary and Other Cardiac Surgery</td>
<td></td>
</tr>
<tr>
<td>Thoracic Aortic Open and Endovascular Surgery</td>
<td>822</td>
</tr>
<tr>
<td>Coronary Revascularization</td>
<td>1,201</td>
</tr>
<tr>
<td>Surgical Endocardial Ablation (concomitant and stand-alone)</td>
<td>948</td>
</tr>
<tr>
<td>Other (congenital, septal myectomy, pericardiectomy)</td>
<td>199</td>
</tr>
</tbody>
</table>

>1,000 robotic mitral repairs performed to date, with >99% repair rate
1,165 donors supported the Smidt Heart Institute in FY21

ENDOWED CHAIRS

Eduardo Marbán, MD, PhD
Mark SIEgel Family Foundation Distinguished Chair and Executive Director of the Smidt Heart Institute

Christine M. Albert, MD, MPH
Lee and Harold Kapelovitz Distinguished Chair in Cardiology Chair, Department of Cardiology

Robert J. Siegel, MD
S. Rexford Kennamer, MD Chair in Cardiac Ultrasound Medical Director, Clinic for Hypertrophic Cardiomyopathy and Aortopathies Professor of Cardiology

Jon A. Kobashigawa, MD
DLS/Thomas D. Gordon Chair in Heart Transplantation Medicine Director, Heart Transplant Program Professor of Cardiology

Raj Makkar, MD
Stephen R. Corday, MD, Chair in Interventional Cardiology Vice President, Cardiovascular Innovation and Intervention Executive Director, Cardiac Interventional Services

C. Noel Bairey Merz, MD
Irwin and Sheila Allen Chair in Women's Heart Research Director, Barbra Streisand Women's Heart Center Professor of Cardiology

Sumeet Chugh, MD
Pauline and Harold Price Chair in Cardiac Electrophysiology Research Division Chief, Clinical Electrophysiology Director, Center for Cardiac Arrest Prevention

Alfredo Trento, MD
Estelle, Abe and Marjorie Sanders Chair in Cardiac Surgery Director Emeritus, Cardiothoracic Surgery Professor of Cardiac Surgery

Joanna Chikwe, MD
Inna and George Schaeffer Distinguished Chair in Cardiac Surgery in honor of Alfredo Trento, MD Chair, Department of Cardiac Surgery

Bojan Cercek, MD, PhD
Eleanor and Harold Foonberg Chair in Cardiac Intensive Care (in honor of Prediman K. Shah, MD, FACC, FACP, FCCP) Director, Coronary Care Unit Co-Director, Atherosclerosis Research Center Professor of Cardiology

Susan Cheng, MD, MPH, MMSc
Erika J. Glazer Chair in Women’s Cardiovascular Health and Population Science Director, Public Health Research Director, Cardiovascular Population Sciences in the Barbra Streisand Women’s Heart Center Associate Professor of Cardiology

Jennifer Van Eyk, PhD
Erika J. Glazer Chair in Women’s Heart Health Director, Advanced Clinical Biosystems Institute in the Department of Biomedical Sciences Director, Basic Science Research in the Women’s Heart Center Professor, Medicine Professor, Biomedical Sciences

Prediman K. Shah, MD
Shapell and Webb Family Chair in Clinical Cardiology Director of Atherosclerosis Prevention and Management Center Professor of Cardiology

Intellectual Property

Intellectual Property FY21

<table>
<thead>
<tr>
<th>Intellectual Property</th>
<th>FY21</th>
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<tbody>
<tr>
<td>U.S. Patent Applications Filed</td>
<td>255</td>
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<tr>
<td>U.S. Patents Issued</td>
<td>60</td>
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<tr>
<td>International Patent Applications Filed</td>
<td></td>
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<tr>
<td>Center</td>
<td>184</td>
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<tr>
<td>International Patents Issued</td>
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<tr>
<td>Copyright Registrations</td>
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Research Funding FY12–FY21

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<td>$39,729,490</td>
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Peer-Reviewed Articles FY12–FY21

<table>
<thead>
<tr>
<th>Peer-Reviewed Articles FY12–FY21</th>
</tr>
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<tbody>
<tr>
<td>1,794</td>
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<tr>
<td>2,261</td>
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U.S. Patent Applications Filed FY17–FY21

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Copyright Registrations FY12–FY21

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Cedars Sinai
Smidt Heart Institute
1-800-CEDARS-1
heartinstitute@cshs.org
cedars-sinai.org/heart

Contact Us
If you have a patient you would like to refer to one of our programs, please contact us at 310-423-3300 or visit cedars-sinai.org/heart.

Our physicians will work with you to understand the unique needs of your patient and develop the best treatment plan, and will be available for additional consultations and procedures as needed.

Aortic Disease
310-423-3851
The Aortic program is an interdisciplinary team that detects and treats the full range of diseases that affect the artery and provides access to groundbreaking surgical techniques and leading-edge clinical trials.

Barbra Streisand
Women's Heart Center
310-423-9680
The Barbra Streisand Women’s Heart Center plays a leading role in identifying female-pattern heart disease, developing diagnostic tools and advancing specialized care for women.

California Heart Center
310-248-8300
The center, affiliated with the Cedars-Sinai Smidt Heart Institute, offers the full spectrum of cardiology care, including cardiac evaluation, heart failure management, interventional cardiology, nuclear cardiology, echocardiography and hypertension management.

Cardio-Oncology
310-423-2726
Cardiologists diagnose and treat heart disease in patients who are undergoing cancer treatment or who are cancer survivors.

Cardiogenetics
310-423-2726
The Cardiogenetics program provides a multidisciplinary approach for the treatment of patients and families afflicted with familial cardiac conditions. Patients are evaluated by a cardiologist who specializes in these conditions, together with a cardiac genetic counselor, to help clarify the patient’s diagnosis, create a personalized management of care plan based on genetic test results and provide a risk assessment for other family members afflicted with these conditions.

Cardiovascular Surgery
310-423-3851
Our cardiac surgeons are national leaders in robotic, minimally invasive and complex cardiac surgery.

Congenital Heart Program
310-423-1153
The Congenital Heart program offers state-of-the-art treatment for congenital heart patients from birth through their entire adult life.

Electrophysiology
310-248-6679
The Clinical Electrophysiology program provides state-of-the-art technology in patients with abnormal heart rhythms (cardiac arrhythmias and atrial fibrillation).

General & Preventive Cardiology
310-423-2726
The General and Preventive Cardiology program provides patients access to medical professionals nationally recognized for their skills in the detection, prevention and treatment of heart disease.

Heart Failure and Cardiomyopathy
310-423-2077
As the anchor of the Advanced Heart Disease program at the Smidt Heart Institute, the specialized Heart Failure program provides a comprehensive assessment and treatment plan for people with congestive heart failure and all types of heart muscle disease (cardiomyopathy).

Heart Transplant
310-423-5460
For the past several years, Cedars-Sinai has led the nation in the number of adult heart transplants completed. The program offers advanced options in cardiac support devices, surgical techniques and anti-rejection technologies.

Hypertension
310-423-2726
The Hypertension program takes a multispecialty approach to the evaluation and management of patients with complex hypertension. The program has been identified by the American Society of Hypertension as a certified Hypertension Center of Excellence.

Interventional Cardiology
310-423-3977
The Interventional Cardiology program uses innovative nonsurgical techniques for treating coronary and valvular heart disease.

Lipid Disorders
310-423-2726
Cardiologists provide a full range of diagnostics and treatments for patients with cholesterol and triglyceride disorders.

Mechanical Circulatory Support
310-423-7338
The program provides complete care for patients with heart failure. Mechanical devices that help the heart pump blood can save the lives of patients awaiting a transplant. For others, they are a permanent treatment.

Preventive and Rehabilitative Cardiac Center
310-423-9660
The center gives cardiology patients tools to improve their health and fitness. Services include monitored exercise programs, nutrition advice and stress management.

Regenerative Medicine
310-423-1231
The Regenerative Medicine program is composed of a multidisciplinary team of physicians and allied health professionals who provide the largest worldwide experience in cardiac stem cell therapy, including more than 10 different cell types and methods of delivery.

Valvular Heart Disease
Interventional: 310-423-3977
Surgical: 310-423-3851
The valve team, comprised of highly specialized interventional cardiologists and cardiac surgeons, is at the forefront of providing novel, minimally invasive procedures to repair and replace heart valves. We offer a full spectrum of innovative procedures, ranging from completely percutaneous approaches to minimally invasive and traditional open-heart surgery. Treatment plans are individually tailored to the patient’s condition to ensure the best possible outcome.

Vascular Surgery
310-423-5400
The Vascular Surgery program provides expert diagnosis and management of all arterial and venous disorders and offers a full spectrum of advanced open, endovascular and hybrid procedures.