

HERE AND NOW

Report to the Community | 2017



CEDARS-SINAI®

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LEADERSHIP MESSAGE

crucial neighborhood caregivers. When added to our longstanding partnerships with local schools, homeless shelters and other community organizations, we are doing more than ever to aid all those who need quality healthcare.

Meanwhile, locally and throughout the nation, consumers, payers and employers are asking for better coordination of care to help people get and stay healthy, ensure that patients always get the right amount of care and help keep healthcare affordable for all. You will see many examples in this report of how Cedars-Sinai is pioneering new ways to provide healthcare that is not only of the highest quality, but also has the value and efficiency that the public wants.

Throughout these pages, you also will see how our pioneering biomedical research and education programs are training the healthcare professionals of tomorrow. And you will learn how the support of community donors is essential to our ability to continue meeting our region's needs for years to come.

With your help, Cedars-Sinai continues to evolve as we address the complex and changing healthcare needs of one of the most diverse regions in the nation. We are grateful to have the support of people and organizations who share our longstanding dedication to the people of Los Angeles.

It all began with the spark of an idea. In 1902, a growing Los Angeles community was struggling to get quality healthcare, so a group of civic leaders came together to create the the forerunner of Cedars-Sinai, the 12-bed Kaspere Cohn Hospital in the Angelino Heights neighborhood east of downtown Los Angeles.

Much has changed in medicine and healthcare over the past 115 years, yet Cedars-Sinai is still driven every day by the same fundamental question: "What does the community need?"

One of our top priorities today is to respond to the demand for more accessible, convenient healthcare. As a result, we have been expanding our geographic reach in a variety of ways — establishing new Cedars-Sinai outpatient facilities closer to where people live and work; acquiring and affiliating with outstanding physician groups, community hospitals and outpatient surgical centers; and developing innovative partnerships with other organizations.

We also are meeting community needs by helping improve the health of our region's underserved. Cedars-Sinai's Community Clinics Initiative, for example, expands our partnerships with these

VERA GUERIN
Chair, Board of Directors

THOMAS M. PRISELAC
President and CEO



HERE:

Physicians, nurses and thousands of other healthcare professionals are committed to providing the best care to every patient, from primary to specialized care for complex and advanced diseases.

NOW:

886
LICENSED BEDS

254,668
PATIENT DAYS

242,112
PATIENTS CARED FOR
BY CEDARS-SINAI
MEDICAL NETWORK

2,758
NURSES

2,156
MEDICAL STAFF

PATIENT CARE

REDUCED READMISSIONS

By strengthening clinical support for vulnerable patients during and after transitions to skilled nursing facilities, the Cedars-Sinai Enhanced Care Program significantly reduced the rate of hospital readmissions. The program plays a critical role in safe care transitions, with nurse practitioners closely monitoring patients through regularly scheduled rounds in skilled nursing facilities. These nurses serve as an extra layer of support for patients as well as liaisons between the facility, physicians and family members. They focus on enhancing coordination of care and preventing medical complications. In addition, dedicated pharmacists ensure patients leave the hospital with clear and updated medication lists. The Enhanced Care Program has drawn national attention for its innovative care model.

MEDICATION LITERACY

Cedars-Sinai is enhancing patient safety after discharge by using a novel method to assess the medication literacy of vulnerable patients. Patients leaving the hospital with new prescriptions may not fully understand how to take their medications, and the risk of drug-related problems rises during such transitions in care. Nurses follow up with the patients at highest risk to make sure they are taking the right medication at the right time. In addition, Cedars-Sinai pharmacists review medication lists for high-risk patients and call them within 72 hours. The pilot phase was so effective that the method is being expanded to reach high-risk patients throughout the medical center.

ZERO TOLERANCE

Using a systematic method of strict adherence to a set of evidence-based protocols, Cedars-Sinai surgical teams developed best practices covering the entire care process for every hip- and knee-replacement surgery. Surgical-site infections in bones or joints after orthopedic surgeries can lead to readmissions, longer hospital stays, prolonged antibiotic therapy, reduced mobility, intensive rehabilitation and higher healthcare costs. Although the incidence of such infections at Cedars-Sinai already meets national benchmarks, the medical center aimed to reduce the rate to zero — and keep it there. The Orthopedic Surgical-Site Infection Bundle includes steps such as testing for the common infectious bacterium *Staphylococcus aureus* and measures to maintain a sterile environment throughout surgery.

TOP EMPLOYER

Forbes ranked Cedars-Sinai as one of the nation's best places to work, garnering the institution a top spot on the magazine's 2016 list of America's Best Employers. The health system also earned the 2016 Workplace of the Year Award from The Advisory Board Company. On the *Forbes* list, Cedars-Sinai ranked 87th among institutions with more than 5,000 employees, based on an independent survey of 30,000 U.S. employees who work for large companies and institutions, including U.S. divisions of international firms. The Advisory Board Company award recognizes top-performing hospitals and health systems nationwide for outstanding employee engagement, and Cedars-Sinai was among just 20 organizations receiving the honor.

EQUITABLE CARE

The Human Rights Campaign Foundation recognized Cedars-Sinai as a leader in LGBT healthcare equality. The foundation is the educational arm of the Human Rights Campaign, the country's largest lesbian, gay, bisexual and transgender (LGBT) civil rights organization. The findings were part of the foundation's Healthcare Equality Index 2016, an annual survey that encourages equal care for LGBT Americans by evaluating inclusive policies and practices for patients, visitors and employees. Cedars-Sinai earned top marks in meeting nondiscrimination and training criteria that demonstrate its commitment to equitable care for LGBT patients and their families.

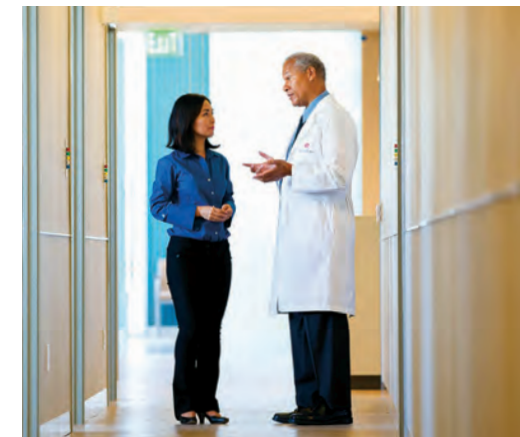
PRESIDENTIAL PRECISION

Cedars-Sinai was among 40 organizations selected by the White House to participate in a Precision Medicine Initiative Summit in Washington, D.C. The event brought together medical researchers, clinicians, community advocates and others from around the country to mark the one-year anniversary of the initiative's launch. It featured remarks from President Barack Obama, patient stories, and roundtable discussions to build momentum and collaborations around precision medicine efforts. Cedars-Sinai Precision Health, a partnership of scientists, clinicians and industry, launched in September 2016. The goal of the partnership is to drive development of the newest technology and best research, coupled with the finest clinical practice, to rapidly deliver precise and personalized healthcare solutions to Cedars-Sinai patients.

PREPARED FOR EBOLA

The U.S. Department of Health and Human Services tapped Cedars-Sinai to become part of a network of 10 regional centers prepared to treat Ebola. The designation means Cedars-Sinai will play a critical role in bolstering the nation's front-line defenses against highly communicable diseases. As a designated Ebola assessment hospital, Cedars-Sinai is committed to maintaining its "always ready" status, and held an extensive drill to prepare medical staff to receive suspected Ebola patients. Cedars-Sinai constantly updates its readiness protocols by learning from other regional centers and with data received from the few hospitals that already have treated Ebola patients.

Cedars-Sinai has expanded services across multiple locations, making it easier for more people to access coordinated, quality care close to home.



Cedars-Sinai now operates primary and urgent care locations in Culver City, as well as Marina Del Rey Hospital.

PATIENT CARE

MARINA MEDICINE	NEW HEART TRANSPLANT RECORD	ORTHOPEDIC STRETCHES	ANTIBIOTIC BEST PRACTICES	CALIFORNIA REHABILITATION INSTITUTE OPENS	HONOR ROLL	CULTURAL COMPETENCE
<p>Cedars-Sinai operates Marina Del Rey Hospital as part of a continuing commitment to increasing access to coordinated, quality care throughout Southern California. The 145-bed hospital, which features a 24-hour emergency room, is now a distinct community affiliate of Cedars-Sinai. In addition to general acute-care medical services and emergency care, Marina Del Rey Hospital offers expertise in a wide range of specialties, including spine, weight loss surgery, orthopedics, minimally invasive surgery, women’s health and internal medicine. As part of the Cedars-Sinai family with nonprofit status, Marina Del Rey Hospital’s mission will focus even more thoroughly on meeting the needs of the local community, including provision of community benefit programs.</p>	<p>With 132 adult heart transplants performed in 2015, the Cedars-Sinai Heart Institute topped its own record for the most such procedures in the U.S. for the third straight year, while continuing to set new standards in care. Cedars-Sinai’s development and use of antirejection therapies, such as new medicines and blood-cleansing procedures, have contributed to high success rates: The national average rejection rate is around 25 percent, while the rate at the Heart Institute is less than 15 percent. The United Network for Organ Sharing, which manages the nation’s transplant system, compiles these statistics annually.</p>	<p>Formerly a section of the Department of Surgery, orthopedics at Cedars-Sinai has achieved record clinical and academic growth over the past several years, prompting the establishment of a new Department of Orthopaedics in 2016. Its board-certified physicians provide comprehensive orthopedic care, including the surgical and nonsurgical treatment of the spine, hand, shoulder and upper extremities, hip and knee — from reconstruction to total joint replacement — foot and ankle disorders and injuries, and trauma and fractures, plus arthroscopic surgery, sports medicine and pediatric orthopedics. Its leading-edge imaging techniques allow clinicians to see bones and joints in detail. Cedars-Sinai has long been recognized as one of the nation’s top orthopedic centers by <i>U.S. News & World Report</i>.</p>	<p>To enhance patient safety, improve outcomes and combat the global threat of drug-resistant infections, Cedars-Sinai is promoting extra measures for the effective use of antibiotics. As part of its “Get Smart About Antibiotics” program, the Antimicrobial Stewardship team implemented best practice alerts in the electronic health records of patients who receive certain antibiotics for three or more days. The alert allows physicians to reassess the antibiotic prescription and evaluate further treatment needs. Antibiotic-resistant infections spread quickly among patients with compromised immune systems. Incorrect use of antibiotics increases hospitalizations, lengths of stay and risks of death. Cedars-Sinai healthcare providers strive to prescribe the right antibiotic at the right dose at the right time and better educate patients.</p>	<p>Cedars-Sinai, UCLA Health and Select Medical partnered to open the largest acute inpatient rehabilitation hospital on the West Coast, located in the Century City area of Los Angeles, less than three miles from the main Cedars-Sinai campus. The new, 138-bed California Rehabilitation Institute greatly expands the area’s acute rehabilitation services. It offers a broad range of highly specialized care and treatment for patients with spinal cord and brain injuries, neurological disorders, strokes, amputations and other acute conditions. The hospital’s physician-led team includes physical therapists, occupational therapists, speech therapists and specialized nursing staff.</p>	<p><i>U.S. News & World Report’s</i> Best Hospitals 2016–17 named Cedars-Sinai to its Honor Roll and ranked the medical center nationally in 11 adult specialties: cardiology and heart surgery; diabetes and endocrinology; ear, nose and throat; gastroenterology and gastrointestinal surgery; geriatrics; gynecology; nephrology; neurology and neurosurgery; orthopedics; pulmonology; and urology. The report also ranked Cedars-Sinai as “high-performing” in nine adult procedures and conditions. Overall, the medical center ranked among the top 20 hospitals nationwide, fourth in California and second in the Los Angeles metro area. Cedars-Sinai also scored high in patient safety.</p>	<p>The Institute for Diversity in Health Management named Cedars-Sinai an Equity of Care Champion and ranked it as one of 20 top-performing hospitals nationally. The institute’s 2015 Diversity and Disparities Benchmarking Survey tracked more than 1,000 hospitals’ measures to tackle healthcare disparities. Cedars-Sinai garnered acclaim for its cultural competency efforts that train staff to focus on the needs of diverse patient populations, including non-native English speakers. The survey also tracked how hospitals provide employee orientation and continuing education to address varying patient beliefs and religious views that may affect treatment. In addition to educating employees about such sensitivities, Cedars-Sinai encourages diversity in its medical, nursing, and other clinical residencies and fellowship programs.</p>

Cedars-Sinai performed the most adult heart transplants in the U.S. for the third straight year.



Retired Marine Corps Staff Sergeant and educator Larry Lewis received a lifesaving heart transplant at Cedars-Sinai.

PATIENT CARE

HEALING GARDENS IN BLOOM

A beautification project has transformed the outdoor Cedars-Sinai Plaza Level into a lush garden refuge, bringing water features, shaded seating, improved lighting and other tranquil features to four areas around the north and south towers. The redesigned exteriors provide a green sanctuary for patients and visitors, serene landscape views from patient rooms, and spaces for physicians and staff to recharge. Each of the four gardens has a unique design and includes specially selected foliage such as bamboo, fruitless olive trees, lavender and aloe. The project also includes built-in concrete pads for future art installations. The Healing Gardens project is part of a comprehensive effort to beautify the campus and improve exterior wayfinding for a more positive patient experience.

SUPERIOR SURGERIES

The medical center is participating in a leading effort to improve the quality of surgical care. Cedars-Sinai is collecting clinical, risk-adjusted outcomes data for a national database as part of the American College of Surgeons National Surgical Quality Improvement Program. Using anonymous clinical data gathered from patients’ medical charts — rather than administrative data — means complications are more likely to be noticed. Results are compared to those of other hospitals, similar in size and type. Tracking 30-day outcomes helps identify complications such as surgical-site infections, urinary tract infections and pneumonia. On average, participating hospitals have prevented 250 to 500 complications and saved two to three dozen lives and millions of dollars each year.

PAIR EXCHANGE

The Cedars-Sinai Kidney Transplant Program performed its third successful paired exchange, with teams in six operating rooms simultaneously performing three laparoscopic nephrectomies on donors and three transplantations in patients. Paired exchange programs allow donor-recipient duos to swap living-donor kidneys with others in need, providing a vital option for patients who are incompatible with the friends or family members who are willing to be their donors. To enable transplantation in patients who are highly sensitized against antigens that cause organ rejection, Cedars-Sinai participates in numerous registries, including the National Kidney Registry and the United Network for Organ Sharing, in addition to employing desensitization strategies.

RADIATION ON POINT

With the recently installed TrueBeam Radiotherapy System, radiation oncologists at the Cedars-Sinai Samuel Oschin Comprehensive Cancer Institute can deliver treatments twice as fast as previously possible. The system integrates imaging, beam delivery and motion management to provide precise control for targeting even the tiniest of tumors. TrueBeam is the most advanced linear accelerator in the field. The accelerator — which particularly is suited for treating tumors of the lung, abdomen, breast, prostate, head and neck — allows patients to receive briefer, more intense, yet safer treatments in fewer sessions, while minimizing the impact on surrounding tissues.

TOPS IN PATIENT SATISFACTION

Cedars-Sinai Health System® received top scores in the national Hospital Consumer Assessment of Healthcare Providers and Systems hospital survey. Developed by National Research Corp. and adopted by the Centers for Medicare & Medicaid Services, the survey provides the public with information on inpatient and outpatient care from the patient’s perspective. In overall inpatient satisfaction, 83.7 percent of patients rated Cedars-Sinai a 9 or 10 on a 10-point scale (with 10 being the “best hospital possible”), while 94.3 percent of patients rated Cedars-Sinai a 9 or 10 for overall outpatient satisfaction. In the medical group patient satisfaction ratings, 80 percent of Cedars-Sinai patients said their doctor listens carefully and provides explanations that are easy to understand, and 80 percent said the office staff is respectful.

PRENATAL DESTINATION

Cedars-Sinai is primed to become a destination for pregnant women in California who are seeking sophisticated prenatal screening. The Cedars-Sinai Cytogenetics Laboratory became the first to gain approval from the California Department of Public Health for administering chromosomal microarray (CMA) testing to women participating in the state’s Prenatal Screening Program, which includes some 400,000 prospective mothers annually. CMA testing, a DNA-based method of genetic analysis that can catch abnormalities overlooked by traditional cytogenetic testing, is the gold standard for detection of alterations in the submicroscopic chromosome that flag for potential birth defects, developmental delays and genetic disorders. Cedars-Sinai has offered CMA testing to private patients since 2010.

INNOVATION CHALLENGE

More than 20 teams of registered nurses and physicians tested their competitive and entrepreneurial skills to improve the patient experience at Cedars-Sinai in the MD/RN Patient Experience Innovation Challenge. The nurse/physician teams pitched their ideas to a panel of executive judges after brainstorming and creating prototypes. The winning team designed an app that allows tracheostomy or intubated patients to communicate more easily in a variety of languages. The idea will be implemented and tested system-wide.

“Innovation at Cedars-Sinai is not limited to a select few; it’s happening every day in all of our units.”

— Dr. Christopher Ng, co-chair of the MD/RN Patient Experience Innovation Challenge



Bhargavi Simhadri, RN, Lauren Smith, RN, and Dr. Kuang-Yuh Chyu, won the MD/RN Patient Experience Innovation Challenge for their app that allows intubated patients to communicate more easily.

**NAVIGATORS
CHART COURSE**

Cedars-Sinai clinical trial navigators are essential to the continued success of the nearly 500 clinical trials underway in FY2016. The trials have led to groundbreaking discoveries for conditions from heart disease to inflammatory bowel disease. Among their wide range of duties, navigators help recruit patients and sort through calls and emails to find the right volunteers for these vital studies. They also help guide the participants through the ins and outs of the process and serve as coordinators for patients, researchers and staff.

TYPING TEST

A new technique at Cedars-Sinai called extended blood matching goes beyond the standard typing of A, B, O and AB, and positive or negative Rh factor, to match donor and recipient blood types precisely for transfusions. Cedars-Sinai is a pioneer in testing for genetically based variations in antigens — the proteins and sugars that reside on red blood cells. Blood types A and B and the Rh factor are the only antigens most hospital transfusion services test for. But additional antigens can trigger an immune reaction in the recipient. Patients receiving multiple transfusions, or who have conditions such as sickle cell disease, are at highest risk. The Cedars-Sinai blood bank now can identify 32 antigens with a single blood test.

**THE PEOPLE'S
CHOICE**

For the 20th year in a row, Cedars-Sinai won the National Research Corp.'s (NRC) Consumer Choice Award for providing the highest-quality medical care in the Los Angeles region based on a survey of area households. Every year NRC conducts an independent survey about hospitals. Cedars-Sinai has ranked No. 1 in best overall quality of healthcare and has been awarded the NRC's prestigious Consumer Choice Award every year since 1996, when the rankings began. NRC's surveys are considered the gold standard in healthcare information. In 2015-16, Cedars-Sinai was the only medical center in the Los Angeles area to win the Consumer Choice Award.

LABOR DAY READY

Changes in the childbirth education program at Cedars-Sinai are helping expectant mothers feel even closer to the nurses who care for them. The same nurses who will be with the mother as she delivers now are teaching the classes that help parents-to-be prepare for labor and birth. The courses are evidence-based, realistic and family-centered, with content drawn from a variety of methods and approaches. The classes welcome all pregnant women and their partners, but parents who plan to have their babies delivered at Cedars-Sinai gain the additional benefit of forging a care relationship with the medical center's caregivers that continues through the postpartum period.

HEART ALERT

Cedars-Sinai is the first hospital in the nation to use electronic health records to identify patients at risk for congestive heart failure. The CS-Link™ system automatically alerts an interdisciplinary healthcare team to address a patient's specific heart-health needs. When information signaling the potential for heart failure is activated through CS-Link, the patient receives education on improving heart health, a dietary consultation and medication reconciliation. Patients receive scales to weigh themselves daily at home and have a post-discharge follow-up appointment. Optimizing electronic health records in this way helps prevent readmissions, improves outcomes and ensures that patients have the necessary tools to be discharged safely.

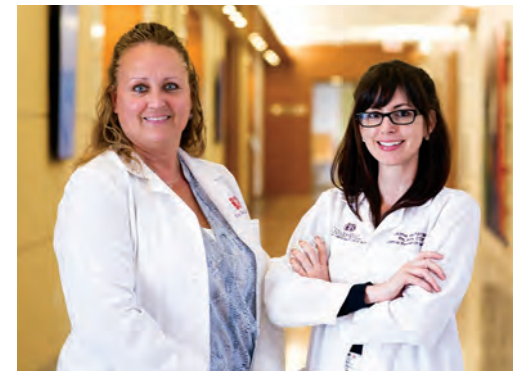
SMART IV PUMPS

It was long standard procedure for nurses to manually program IV pumps for medication infusions, punching in numbers such as the correct dose, concentration and infusion rate. Each press of a button represents a risk of error that could cause harm. Automated, standardized procedures for administering IV drugs now are used in 42 inpatient units to make medication infusions safer at Cedars-Sinai. Smart IV pumps replaced 1,300 infusion devices and were integrated to the CS-Link™ electronic health record to standardize nursing practice to reduce the potential for programming errors at the bedside.

**ADVANCED CARE
CONSIDERATIONS**

Patients with progressive conditions sometimes receive aggressive treatments near the end of life that offer little or no benefit — and can even cause harm. A Cedars-Sinai initiative is sparking cultural changes in such treatment to ensure that patients' wishes are honored. Steps include appropriate use of feeding tubes in patients with advanced dementia, early palliative care consultations for patients with high-mortality rate cancers and reduction of ineffective chemotherapy in the last two weeks of life. The push for advance care planning also is expanding, with a targeted approach focusing on patients in the advanced stages of serious, progressive illnesses. Cedars-Sinai's approach to end-of-life care is so comprehensive that other hospitals are using it as a model.

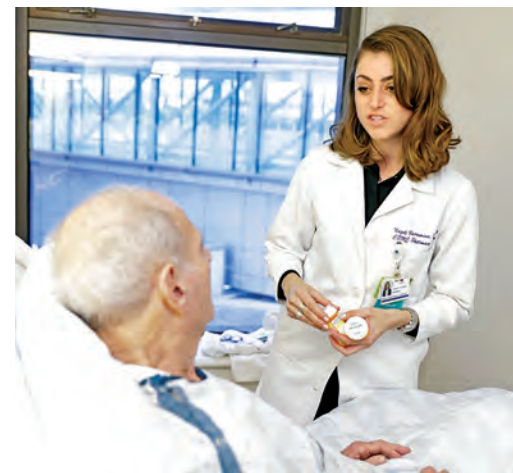
Clinical trial navigators serve as a connection between patients and scientists.



Tracey Early, patient care coordinator for the Regenerative Medicine Clinic at the Cedars-Sinai Heart Institute, and Jaime Richardson, the cancer clinical trial navigator at the Cedars-Sinai Samuel Oschin Comprehensive Cancer Institute

SCORE!	MOVEMENT AGAINST PARKINSON'S	INTERNATIONAL EFFORT	A BETTER PATIENT EXPERIENCE	PREGNANCY PROBLEMS PINPOINTED	PRESCRIPTION FOR BETTER CARE	CARDIAC MONITORING EXPANDS
<p>For three years, teams across Cedars-Sinai have engaged caregivers around the concept of “Safe Care in the OR. Every time” (SCORE). Led by surgeons, anesthesiologists, nurses and technicians, in partnership with administrative leadership, SCORE’s unit-based interdisciplinary teams emphasize surgical quality and improvements in patient safety. SCORE is changing more than processes; it’s also promoting a culture in which people feel comfortable speaking up about issues and getting constructive feedback from colleagues. Teams have worked with the Performance Improvement Department’s Lean Six Sigma management tools to develop projects such as the OR Sweep, which removes all previous patient identifiers from the operating room, helping avoid mislabeled specimens.</p>	<p>An innovative tool resembling a wristwatch could improve quality of life for Parkinson’s disease patients and better inform the neurologists who treat them. A team in the Movement Disorders Program in the Cedars-Sinai Department of Neurology is one of the first in the nation to test a device that tracks patient movements every two minutes over six to 10 days, showing symptom fluctuations throughout the day. The device — the size, weight and shape of a wristwatch — vibrates to remind patients to press a button indicating that they have taken medication prescribed to reduce body movements. The gadget provides a quantitative way to monitor patients in between physician visits to optimize care and more fully understand the disease.</p>	<p>Recognizing how difficult it can be for patients to come from other countries to the U.S. for medical care, Cedars-Sinai is committed to making this transition as easy as possible with its Center for International Health. Through computerized telemedicine links, doctors and their patients may exchange medical information and advice with experts at Cedars-Sinai within minutes from anywhere in the world. The multilingual International Health Services team assists in coordinating arrangements, housing during treatment and itineraries for families traveling with the patient.</p>	<p>Cedars-Sinai has recommitted to putting its patients and their needs first with a program to foster teamwork and continually ensure exceptional service. That ever-expanding effort now includes a dedicated patient-experience team to coordinate formal training programs for all Cedars-Sinai employees. Enhanced service can have a powerful effect on patient satisfaction and overall health outcomes.</p>	<p>A faster, more accurate and less invasive test to help detect premature rupture of membranes during pregnancy was launched at Cedars-Sinai in May. Standard diagnostic methods, including ultrasound, are often not sufficient or accurate when diagnosing pregnant patients suspected of having ruptured membranes. By identifying a protein called placental alpha microglobulin-1 in vaginal fluids, the new test can help determine whether a rupture has occurred. The test also detects related complications, which can include infection, umbilical prolapse, placental abruption and risk of preterm delivery.</p>	<p>Inpatients now can have their discharge prescriptions delivered to their bedside before going home. Caregivers request the medications through the Cedars-Sinai Outpatient Pharmacy prior to patient discharge. Outpatient pharmacists review the patient’s medication lists and reconcile them with discharge orders to ensure that all prescriptions are complete, safe and appropriate. Pharmacists work closely with prescribers to resolve any identified issues and recommend affordable alternatives to any coverage issues. Patients pay the same prescription copay for delivery to the bedside as at a retail pharmacy. The service supports continuity of care, improves medication adherence, enhances the patient experience and potentially reduces drug-related readmissions.</p>	<p>The Centralized Monitoring Center, which continuously checks inpatient cardiac activity across Cedars-Sinai, recently moved to a larger space, adding the capacity to cover an additional 66 patients. Other enhancements include eight new monitoring stations, software upgrades allowing greater access to the information needed to make critical decisions, better clinical support tools, stronger technology security and faster hardware. In addition, 10 clinical partners are being added to the center’s roster. Since it was established in 2011, the center has improved patient safety by implementing telemetry monitoring on individual units, which enables nurses and clinicians to watch for life-threatening arrhythmias specific to each patient’s diagnosis rather than keeping all patients in cardiac observation units.</p>

The Outpatient Pharmacy delivers prescriptions to patients at bedside before discharge to support continuity of care.



Nazeli Bairamian, PharmD, is among the Cedars-Sinai pharmacists delivering discharge medications to patients at the bedside.

GO WEST, YOUNG MAN

As part of an effort to bring high-quality care closer to where people live and work, Cedars-Sinai is extending its reach in Southern California with the opening of medical offices in the fast-growing Playa Vista community — a key hub in the region’s technology industry that boasts offices for Facebook, Google and YouTube. The new facility will accommodate some 500 patients per day and be staffed by two dozen physicians, whose expertise encompasses primary care, urgent care and specialties such as internal medicine, dermatology, and obstetrics and gynecology. Set to open in summer 2017, the expansion will serve Culver City, Mar Vista, Marina del Rey, Playa del Rey and Westchester.

BEST IN SHOW

The Barbara Cowen Pets Offering Ongoing Care and Healing (POOCH) Volunteer Program at Cedars-Sinai, which brings gentle and affectionate dogs to Cedars-Sinai for patient visits, was honored with a Health and Safety Recognition Award from the city of Beverly Hills’ Health and Safety Commission. The award celebrates groups and individuals that demonstrate leadership and creativity in promoting health and safety in the city. Volunteers whose dogs have passed the rigorous POOCH screening process bring their pets to the medical center to offer a special source of comfort and support to pet-loving patients, families and staff.

ARTHRITIS GAME-CHANGER

A groundbreaking procedure developed by Cedars-Sinai physicians can bring relief and mobility to patients who have damaged finger joints or severe arthritis in their hands and wrists. The technique uses the meniscus from a cadaver knee to reconstruct joints, alleviating pain and allowing patients to recapture critical mobility. It improves on the traditional approach of inserting a hard silicone implant, which can become infected or break over time. The meniscus, a spongy cartilage that prevents joints from rubbing against one another, is far more resilient and durable than silicone. Its malleability also ensures a neat fit into the joint. A Cedars-Sinai study of patients who underwent the meniscus repair found that none experienced postoperative complications or required follow-up surgeries.

DETECTIVE STORY

Cedars-Sinai neurologists and rheumatologists are teaming up to better detect a rare variant of multiple sclerosis called neuromyelitis optica (NMO). The two departments have been working together because multiple sclerosis shares similar symptoms with lupus, which is usually treated by rheumatologists. Because of symptom similarity, many NMO patients see rheumatologists before they are referred to a neurologist. NMO is very difficult to detect, but it’s a manageable and treatable condition. Awareness and diagnostic testing are the key to knowing how to treat NMO patients. In the past two years, this collaborative effort led to the diagnosis of patients whose disease could have gone unrecognized or who could have ended up having unnecessary and invasive brain biopsies.

BETTER HEALTHCARE BY DESIGN

An esteemed group of healthcare organizations has formed the Innovation Learning Network to offer insights and methodologies for problem solving while encouraging companies to share best practices. The network includes Cedars-Sinai and other select healthcare systems, health foundations, safety-net providers, design and innovation firms, and tech companies with a common goal: to make healthcare better through good design. By participating in twice-monthly webinars and periodic in-person meetings, members connect, share knowledge and gain inspiration.

ACCURATE LABELING

Mislabeled laboratory specimens can result in mistaken diagnoses, delayed treatment and unnecessary procedures, and put the safety of blood transfusions at risk. Cedars-Sinai is combining the Six Sigma strategy of performance improvement with nurses’ bedside observations to reduce these critical errors. The effort has led to such changes as eliminating manual entry of patient IDs for lab test labels and requiring two barcodes — one for medications and one for lab tests — to be printed on patient ID bands. A solution implemented in medical and surgical units requires that two caregivers verify patient identifiers during the specimen-labeling process. These and other advanced techniques are being shared with hospitals nationwide through scientific publications and presentations at national quality meetings.

NOT JUST FOR KIDS

The need to stay up to date with vaccines does not end at age 18. Although many people believe that their childhood vaccines will continue protecting them, adults actually need new vaccines and boosters to maintain immunity from a variety of diseases. The Injection Center at Cedars-Sinai educates patients and providers about vaccines for adults, while the Cedars-Sinai Travel Clinic recommends specific vaccines for those planning global travel. Based on the patient’s itinerary, pharmacists provide vaccines against diseases such as hepatitis A, typhoid and yellow fever. They also offer antibiotics for treating travelers’ diarrhea and prescriptions to prevent altitude sickness and malaria.

Dogs and their owners in the Barbara Cowen POOCH Volunteer Program provide comfort and support throughout Cedars-Sinai.



Tucker, a POOCH volunteer, passed the rigorous screening process to offer a special source of support to pet-loving patients, families and staff.

RESEARCH



HERE:

Investigators in the Van Eyk Laboratory study the molecular basis behind a variety of cardiovascular disorders, with projects ranging from basic discovery research to clinically relevant analytical studies.

NOW:

482
ACTIVE CLINICAL TRIALS

1,519
RESEARCH PROJECTS

\$30,500,000
TECHNOLOGY TRANSFER
ROYALTY INCOME
REINVESTED IN RESEARCH

OVER
1,400
PUBLICATIONS

MORE THAN
200
PRINCIPAL
INVESTIGATORS

STORM CHASERS

Predicting sudden cardiac arrest — which is fatal to 90 percent of its victims within 10 minutes — has been as perplexing to cardiologists as forecasting the perfect storm is to meteorologists. Now, Cedars-Sinai Heart Institute investigators have demonstrated that more than half of all patients experience advance warning symptoms for up to a month. Their landmark study, published in the *Annals of Internal Medicine*, outlines the most common signs, including intermittent chest pain and pressure, shortness of breath, palpitations, and ongoing influenza-like indicators such as nausea and abdominal and back pain. Approximately 350,000 people in the U.S. die each year from sudden cardiac arrest — accounting for 50 percent of all cardiovascular deaths nationally.

TO BE PRECISE

Through the Cedars-Sinai Precision Health partnership, scientists, clinicians and industry experts are leveraging emerging knowledge about the human genome, insights into the body's complex chemical activity (metabolomics), protein function and structure (proteomics), and billions of microorganisms (the microbiome). With the help of ever-faster computing, the immense data generated by these discoveries can be combined into a comprehensive profile of an individual's total biology that allows the rapid delivery of personalized healthcare solutions to each patient. With mobile applications and sensors, patients at home can generate their own data, such as heart rates and blood-glucose levels, for transmittal to their physicians — an advance known as “near-patient technologies.”

PROSTATE PROGNOSIS

A Cedars-Sinai scientist is leading a multi-institutional effort to investigate how prostate cancer spreads to bone with the aim of finding where in the treatment process lifesaving chemotherapies could be used. A five-year, \$8.2 million grant from the National Cancer Institute will help fund the project, which focuses on interactions between the tumor microenvironment and prostate epithelial tissue, the site of prostate cancer development. The disease affects one in seven men in the United States, most older than 65. While the prognosis for most patients is excellent, with a five-year relative survival rate of nearly 100 percent, that figure drops to only 28 percent when prostate cancer metastasizes to bone and other sites.

RESEARCH RENOWN

Among the nation's hospitals not affiliated with universities, Cedars-Sinai rose to a ninth-place ranking, with a total of nearly \$140 million in extramural research support and \$56 million in federal grant awards from the National Institutes of Health. Royalty revenues topped \$23 million, with 90 invention disclosures, seven license agreements and 16 patents issued. Cedars-Sinai investigators also shared their discoveries with other scientists around the world, publishing more than 1,400 articles in medical journals and welcoming more than 120 visiting scientists to conduct and observe research.

IT'S COMPLICATED

Inflammation may be a culprit driving increased prostate cancer risk that results from obesity. To unravel this complex relationship, Cedars-Sinai investigators are performing in-depth analysis of inflammatory tissue markers, which enables characterization of the specific inflammatory cell types present in the prostates of men with and without prostate cancer. They also are exploring whether race modifies this risk, given that African-American men have a 67 percent higher prostate cancer risk than white men — and more than twice the mortality risk. Identifying the roles of socioeconomic, lifestyle, genetics and other factors may lead to solutions for alleviating increased risk.

SHAPESHIFTING TUMOR CELLS

A novel genetic biomarker that drives the progression of many breast and prostate cancers has been identified by Cedars-Sinai scientists. The discovery could replace standardized treatments by identifying patients who will respond positively to chemotherapies. The biomarker is part of a protein-interaction process that makes cells rigid. The investigation found that, when this biomarker is lost or lowered, cells become “deformable,” squeezing through tissue spaces and enabling the cancer to grow. Investigators can utilize this knowledge to identify patients who will respond to a class of chemotherapy drugs that damage cancer cell protein structures. The study is the first to devise a targeting strategy for tumor cells that exhibit amoeboid shape-altering properties.

ALS INSIGHTS

Brain immune cells play a direct role in the development of amyotrophic lateral sclerosis (ALS). Mouse models provided insights into how faulty cellular components may cause the fatal disorder, which gradually destroys nerve cells that control muscle function. This Cedars-Sinai research also suggests how these faulty components might be repaired. The investigators developed two genetic strains of mice that lacked a gene known as C9orf72, which their previous work showed was important for brain immune function. Instead of developing ALS, mice lacking the gene unexpectedly suffered immune system abnormalities. Structures within brain immune cells — known as lysosomes — that normally dispose of unwanted cellular material stopped functioning properly without the C9orf72 gene.

Investigators found that more than half of all sudden cardiac arrest patients experience advance warning symptoms for up to a month.



IBD TREATMENT MAP

A study co-authored by a Cedars-Sinai physician explores the role of genetic variations in patients with inflammatory bowel disease (IBD) and could provide a map for more effective treatments. The international investigation — the largest of its kind — examined the records of 35,000 patients with the two most common forms of the illness, Crohn's disease and ulcerative colitis. The genetic information provided new insights into IBD progression and the rate at which the disease develops and damages the gastrointestinal tract. The findings, published in *The Lancet*, show that IBD actually may be a wider spectrum of bowel disorders than previously thought and that genetic analysis might identify patients who could benefit from earlier interventions with more aggressive treatments.

YOU GO HIGH, WEIGHT GOES LOW

Investigations led by the Cedars-Sinai Diabetes and Obesity Research Institute suggest the higher your home, the healthier your weight. The study analyzed data from 31,549 adults in Peru. The prevalence of obesity among men residing at elevations of at least 9,843 feet was 50 percent less than in those living no higher than 1,640 feet. These men also had less abdominal obesity, which is strongly associated with cardiovascular disease. Women, however, demonstrated no measurable difference. Obesity is a global epidemic carrying increased risks of diabetes, cardiovascular disease, hypertension and several types of cancer. The World Health Organization estimates that 500 million adults are obese.

GOOD TO THE BONE

Studies at Cedars-Sinai are opening up new possibilities for regenerative treatments of osteoporosis, a chronic condition of lost bone mass that leaves people vulnerable to fractures. In a landmark study, scientists showed that a combination of adult stem cells and a specific hormone may speed up the rate at which osteoporosis-caused fractures mend. The investigators helped repair spinal fractures in animal models by injecting parathyroid hormone, along with injections of stem cells. The combination significantly enhanced stem cell migration to bone fractures and increased formation of new, healthy bone.

TARGET: BREAST CANCER

A project led by the Cedars-Sinai Samuel Oschin Comprehensive Cancer Institute assembled a new nanoparticle aimed at revealing and then eliminating breast cancer tumors. The scientists assembled the nanoparticle, HerMn, by attaching a genetically engineered protein to a synthetic compound that enhances contrast in MRI. Previously developed at the institute, the protein targets and penetrates HER2+ tumors, a highly aggressive type of breast cancer resistant to standard chemotherapy. In animal models, the resulting nanoparticle enhanced MRIs of breast tumors and destroyed the cancer cells. If successful in humans, this two-pronged attack could produce positive results with less damage to healthy tissue than current therapies.

IDEAL MATCH

Thanks to a transatlantic collaboration between Cedars-Sinai and Saint-Louis Hospital in Paris, physicians soon could determine whether a transplanted organ will be rejected before the procedure even begins. The protein human leukocyte antigen (HLA) is essential to matching organ donors to transplant patients. But rejection of the transplanted organ still may occur because of donor-specific HLA antibodies, which some patients have in their systems due to previous transplants or exposure to blood products. The findings could help safeguard transplanted organs by enabling doctors to plan appropriate clinical interventions. This approach also could avoid using costly immunotherapy to suppress what might be largely benign HLA antibodies.

SUDDEN IMPACT

African Americans are twice as likely as whites to die from sudden cardiac arrest, and they tend to be younger when it occurs, according to Cedars-Sinai Heart Institute investigators. The findings arose from a comprehensive, 16-hospital, multiyear assessment of cardiac deaths among the million people of Portland's metropolitan area. Led by scientists at the Cedars-Sinai Heart Institute, the team reviewed medical records of 126 African Americans and 1,262 whites with sudden cardiac arrest over a 10-year period. The effort represents the first scientific analysis to compare the detailed medical histories of patients of different races who were stricken by the fatal condition, which kills about 350,000 Americans annually. The study has expanded to include Southern California.

BIOBANK DEPOSITS

A biobank that can store millions of tissue and blood samples, analyze them and generate an array of digital images to advance scientific discovery has opened at Cedars-Sinai. The nearly 7,000-square-foot facility, built with support from the National Institutes of Health, is divided into three units that connect aspects of discovery into one seamless process. The first unit is devoted to collecting and preserving biospecimens, the second to pathology testing and the third to digital image analysis. Operated by the Biobank and Translational Research Core, the complex will enable Cedars-Sinai patients to become part of a living laboratory, benefiting themselves and future generations.

Cedars-Sinai's Biobank can store millions of tissue and blood samples.



Dr. Ayesha Sherzai, co-director of the Alzheimer's Prevention Program, in the Cedars-Sinai Biobank and Translational Research Core complex

WAIT STAPH

Commonly prescribed beta-lactam antibiotics for methicillin-resistant *Staphylococcus aureus* (MRSA) may worsen the condition, according to findings by Cedars-Sinai scientists. These findings pose a potential dilemma for physicians because the overall effectiveness of beta-lactam treatments frequently makes these antibiotics the first line of defense when severe bacterial infections are of unknown origin. Further, culturing MRSA can take a day or more, making early diagnosis difficult. MRSA is a virulent form of staphylococcal infection that causes more than 11,000 deaths per year.

A BOOST FOR LUNG RESEARCH

The National Institutes of Health has awarded a grant to Cedars-Sinai's Women's Guild Lung Institute to investigate mechanisms driving pulmonary fibrosis, a poorly understood disorder. The effort aims to improve understanding of the role that beta-arrestin proteins play in regulating lung inflammation and scarring. The project could help scientists turn beta-arrestins into targets for experimental therapies to treat the lung-scarring disease, for which no cure currently exists. The work builds upon previous Lung Institute discoveries that lack of beta-arrestin genes demonstrated decreased lung fibrosis. An estimated 140,000 Americans have pulmonary fibrosis, which affects mainly middle-aged and older people, and patients only survive for three to five years after diagnosis.

SAFE CARE

Cedars-Sinai nurses will study the transition of older adults from the hospital to the home with a grant from UniHealth Foundation. The Systems Addressing Frail Elders (SAFE) Care study is a nurse-led, interprofessional initiative that rapidly identifies and provides inpatient care to high-risk older adults and helps support their successful transition back into the community. The 4-year-old program has proven to reduce lengths of stay as well as patient complications. The funding enables Cedars-Sinai Nursing Research to implement SAFE Care in three partnering Magnet hospitals throughout Los Angeles County. The collaborations involve training nurses and executives with the goal of sustaining and expanding the model to yet more hospitals.

SHALOM STEM CELLS

A major agreement advancing U.S.-Israeli collaboration on stem cell research was signed at a Cedars-Sinai event. The pact, between the California Institute for Regenerative Medicine and Israel's Ministry of Science, Technology and Space, provides a new framework to foster global partnerships and joint funding opportunities in regenerative medicine. The institute, created by a 2004 statewide voter initiative, has provided millions of dollars to Cedars-Sinai and other institutions to develop new therapies for deadly diseases and disorders. Cedars-Sinai's selection as host for the signing affirms its role as a key player in experimental stem cell technology, which has shown promise in regenerating tissue in bone fractures, reversing heart attack damage and stimulating other types of healing once limited to the imagination.

HEART STRONG

The Cedars-Sinai Heart Institute and Women's Ischemia Syndrome Evaluation (WISE) study are targeting heart failure with preserved ejection fraction (HFpEF), an all-too-common condition that leads to extreme fatigue and breathing difficulties. HFpEF predominantly affects women but also occurs in men with diabetes, obesity and hypertension. The Heart Institute showed that, weeks after experimental infusions of cardiac stem cells, the heart-pumping function of those with hypertension and HFpEF returned to normal. The U.S. Food and Drug Administration has awarded Cedars-Sinai clearance to apply for the technique's use in patients. WISE also has begun a five-year clinical study of 120 women at risk for the condition, monitoring them with cardiac MRI and a high-technology catheter that measures pumping and resting heart functions.

VISIONARY EDITING

Using a revolutionary gene-editing technique called CRISPR/Cas9, Cedars-Sinai scientists removed the genetic mutation that causes retinitis pigmentosa, an inherited eye disease that can lead to blindness. This condition currently has no known cure and affects some 80,000 people in the U.S. Animal models were engineered to exhibit inherited blindness, and when the mutated gene causing blindness was excised, retinal degeneration was hindered and vision improved. This technique may lead to treating patients with retinitis pigmentosa and other genetic disorders.

MEMORIES ARE MADE OF THIS

Memories are essential to our decisionmaking abilities, but why are we so sure they are accurate? Seeking an answer, Cedars-Sinai investigators have identified a unique set of neurons in the medial temporal lobe, the brain's memory-processing plant for facts and events. The study, published in *Nature Neuroscience*, recorded electrical signals of 1,049 individual neurons in each of 28 study volunteers to reveal which cells corresponded to memories, the accuracy of memory retrieval and which cells reported visual information but were not influenced by memory. While no treatments for failing memory currently exist, distinguishing these two types of cells could help future therapies target the correct neurons for maximum effectiveness.

Investigators seek to understand the underlying mechanisms that cause various lung diseases, and ultimately translate those findings to improve patient health.



Dr. Victor Tapson, a pulmonary medicine specialist, examines a patient.

#SIDE EFFECTS

The first-ever study analyzing social media for data about gastrointestinal side effects from narcotics was spearheaded by the Cedars-Sinai Center for Outcomes Research and Education. Investigators reviewed a vast collection of patient entries on Twitter and other forums as well as postings on health-related websites. They examined millions of tweets and hundreds of thousands of posts with keywords such as “pain meds,” “bloating” and “nausea.” They also searched for references to several pain-controlling narcotics. Analysis of these unfiltered sentiments revealed that many people using narcotics for pain relief are not warned about potential side effects. Some patients also turn to over-the-counter remedies or other solutions of unproven value without first consulting physicians.

BLADDER BIOMARKERS

A grant from the U.S. Department of Defense is helping a multidisciplinary Cedars-Sinai team develop biomarkers for interstitial cystitis, also known as painful bladder syndrome, a condition affecting millions of people in the U.S. Interstitial cystitis patients typically experience serious pelvic pain plus an urgent need to urinate as often as 30 times during the day and 20 times at night. The team is comparing urine samples of interstitial cystitis patients treated at the Cedars-Sinai Center for Women’s Continence and Pelvic Health with control group samples. The investigators are seeking biomarkers to improve diagnosis, predict chances of symptom recurrence and identify therapeutic targets for future clinical trials.

GUT FEELINGS

A disposable biosensor, developed at Cedars-Sinai to help doctors predict which abdominal surgery patients will experience postoperative complications, has received approval from the FDA. This acoustic gastrointestinal surveillance biosensor monitors and assesses intestinal activity to provide real-time information for better-informed feeding decisions. Scientists found that the biosensor predicted the abdominal condition with more than 80 percent accuracy, allowing physicians to confidently delay food intake when necessary. Patients not at risk for digestive difficulties can begin eating, which promotes faster wound healing. Previously, no reliable means existed for prospectively diagnosing postoperative abdominal complications.

MATRIX MYSTERY SOLVED

A study co-authored by a Cedars-Sinai lung expert revealed how certain infectious bacteria resist antibiotic therapy. The results could open up new approaches to combating chronic infections, especially in patients with cystic fibrosis. The study examined formation of biofilms, communities of bacteria encased in matrixes of organic compounds known as polymers. Experiments showed that the viruses piece together polymers into highly ordered, liquid crystals to shelter them from antibiotic attacks. This way, infectious bacteria can survive to produce lingering infections, and even cling to catheters and other medical devices to spread disease to other patients.

MEDICAL CROSSOVERS

Even 10 years ago, a gut physician and a joint specialist might not have found common ground beyond their shared drive to improve health. Now, with the understanding that many immune-mediated diseases share a genetic architecture, Cedars-Sinai investigators in these areas are combining their expertise to address both Crohn’s disease — a form of inflammatory bowel disease — and ankylosing spondylitis, an inflammatory spine disorder. The scientists have found that some Crohn’s patients have genetics closer to people with ankylosing spondylitis than are found in others with the same disease — and vice versa. The team is exploring treatments that can benefit both groups of patients. Importantly, the physicians also are finding out which therapies should be avoided in treating certain patients.

A CLOSER LOOK AT EYE DISEASE

A gene controlling development of human macula has been discovered in investigations led by a retina specialist at the Cedars-Sinai Board of Governors Regenerative Medicine Institute. The macula, the central portion of the retina, is needed for normal vision. The findings represent the culmination of more than two decades of work and ultimately required an international team of 20 investigators, who used data from the Human Genome Project and computer analysis to identify mutations that cause North Carolina macular dystrophy, which prevents macular formation. Understanding how the gene works could put improved treatments for macular diseases within sight.

COGNITION CONSERVATION

Cedars-Sinai scientists successfully tested a new method for preserving cognition in experimental models of Alzheimer’s disease using bone marrow-derived white blood cells. Immune cells are critical for healthy brain function, but as Alzheimer’s disease progresses, they become defective. The study found that the number of immune cells passing through the blood and brain increased and that immune cells infiltrating the brain from the blood resisted abnormalities associated with Alzheimer’s, providing an encouraging step toward human trials to further test these treatment strategies.

Cedars-Sinai specialists collaborate to distinguish between two diseases with similar symptoms.



Dr. Nancy Sicotte, director of the Multiple Sclerosis Program, and Dr. Michael Weisman, director of the Division of Rheumatology

SMOKING GUN FOR PANCREATIC CANCER

Cigarette smoking can cause pancreatic cancer, and a multi-center study led by Cedars-Sinai scientists demonstrates how. The study also uncovered a potential treatment for the lethal disease. The investigators developed mouse models that showed development of pancreatic adenocarcinoma precursors. When exposed to cigarette smoke, cancerous cells grew and multiplied. Fortunately, a drug, suberoylanilide hydroxamic acid, can counter this destructive process. When administered to experimental animals, the drug reversed effects of smoking and suppressed development of pancreatic cancer.

BIOINFORMATICS BOUNTY

As part of the International Cancer Genome Consortium, the Cedars-Sinai Center for Bioinformatics and Functional Genomics is participating in the largest-ever effort to systematically analyze cancerous tumors. The project leverages secure, cloud-based services to analyze vast quantities of genetic data. The center also ensures optimal computing speed by running different sections of the genome across hundreds of computer servers at once. Maximizing new technologies allows Cedars-Sinai experts to investigate changes across thousands of cells within an affected tissue — or across thousands of people.

MODEL BEHAVIOR

Historically, patients with glioblastoma multiforme — the most aggressive type of brain tumor — have a survival rate of just 14–15 months after diagnosis. Now, scientists in the Cedars-Sinai Center for Neurosurgical Outcomes Research are harnessing big data and virtual modeling to create a comprehensive profile of each individual's cancer, furthering the quest for personalized treatments of this pernicious disease. The process starts with a biopsy to obtain cells from the brain tumor that are grown and used to build a mathematical model of the tumor. By running the virtual tumor through genomic sequencing, the scientists can test for millions of genetic mutations. Once the cellular culprits are discovered, the team can devise treatments that target only the abnormal proteins driving the cancer.

NANODRUG'S BIG POTENTIAL

A grant from the National Cancer Institute will facilitate development of new generations of nanomedicines that reduce harmful side effects of anti-cancer drugs. Such submicroscopic therapies attack the cancer cells directly, leaving surrounding non-tumor cells intact. Cedars-Sinai scientists are focusing on forms of the disease that have a poor prognosis or against which current therapies are mostly ineffective. Nanodrugs have been shown to successfully treat tumors that originate in the brain as well as certain metastatic breast cancers. Nanoimaging MRI diagnostic agents engineered at Cedars-Sinai carry the potential to replace invasive tissue biopsies — particularly in patients with multiple brain lesions.

BIRTH OF HEART DISEASE

Preterm delivery and other adverse pregnancy outcomes significantly increase the potential for women's cardiovascular disease. Cedars-Sinai researchers are examining how these outcomes can be used to identify women at risk so that appropriate prevention strategies can be implemented. For new mothers who deliver early and agree to join the study, blood is drawn and vascular testing performed. Additional tests are conducted six months later. Using leading-edge technology, scientists are searching for biochemical markers as well as examining blood pressure and cholesterol levels. The project also accurately assesses blood-vessel health noninvasively. Data generated by this National Institutes of Health-funded study will help create a heart disease risk-stratification system for women of childbearing age.

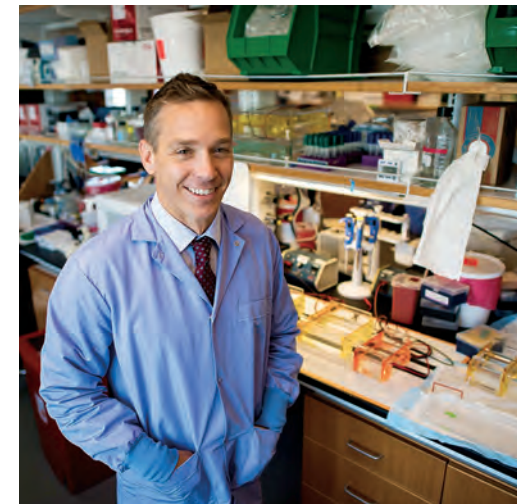
BETTER WITH AGE

Stem cell models used for studying amyotrophic lateral sclerosis (ALS) may be improved by aging motor neurons to show how the disease damages cells later in life. Cedars-Sinai scientists are building an enhanced model of ALS by creating induced pluripotent stem cells (iPSCs) derived from patients' skin cells. For ALS, the process is used to grow and examine iPSC-derived motor neurons. To help age the cells, the group identified a series of genetic markers to assess cell maturity. No treatment currently exists for ALS, and most patients suffer paralysis and usually succumb to the disease within five years of diagnosis.

MAP OF THE BACK

A major, longstanding challenge in diagnosing back disorders has been pinpointing the exact disc causing a patient's pain. Now an advanced imaging technique and the power of precision medicine are giving doctors a detailed roadmap to spinal symptoms. The approach, developed at Cedars-Sinai, employs a biomarker associated with disc degeneration that is tracked with a sophisticated MRI imaging platform. With a precision medicine approach, investigators use induced pluripotent stem cells derived from a patient's own skin to engineer skeletal tissue repair, and are assessing this method as a back pain therapy.

Investigators have found that immune cells in the brain play a direct role in the development of ALS.



Dr. Robert Baloh, director of Neuromuscular Medicine in the Department of Neurology and the multidisciplinary ALS Program

HEALTHCARE ACCELERATOR

The health system launched an extremely successful startup incubator program in collaboration with the global company Techstars to foster innovations to improve patient outcomes. Cedars-Sinai medical and scientific experts mentored young companies whose ideas have the potential to transform health and healthcare delivery. Faculty members and executives worked closely with entrepreneurs at the 10,000-square-foot Cedars-Sinai Innovation Space. Selected companies began mentorships in March and presented to potential investors and the public during a demonstration day in June. Selected from nearly 500 applicants worldwide, the inaugural class featured 11 startup companies, all of which signed commercial agreements with Cedars-Sinai.

ANTI-INFLAMMATORY SURVIVAL STRATEGY

Cedars-Sinai investigators have discovered an anti-inflammatory survival strategy employed by bacteria that could potentially be applied to treating inflammatory diseases in people. In *Cell Host & Microbe*, they explain that invading bacteria face many of the same challenges as humans with inflammatory diseases do. The findings represent an important step toward developing effective treatments for inflammatory diseases such as diabetes, rheumatoid arthritis and pulmonary emphysema that affect millions worldwide. Current treatments for Crohn's disease, hepatitis and other inflammatory conditions are aimed at diminishing symptoms but may not address the root cause or prompt inflammation to subside.

MATERNAL INSTINCT

Each year, approximately 50,000 American women experience pregnancy complications — including hypertension, sepsis and hemorrhaging — that put mother and baby at risk for serious illness and even death. Cedars-Sinai led a study of women suffering from the most severe maternal illnesses and found that 41 percent of these mothers deliver early, and, of the women who experienced placental hemorrhaging, 63 percent had previously given birth via cesarean section and experienced a higher rate of placental abnormality, suggesting that placental hemorrhage strongly correlates with early births. Results of the study suggest avoiding unnecessary cesarean section delivery and ensuring quality hospital care for symptomatic mothers to manage their health and that of their premature babies.

DAMAGE CONTROL

A rheumatoid arthritis drug may prevent artery damage from Kawasaki disease, the most commonly acquired cardiac disorder in children in the U.S., affecting nearly 4,000 children each year. Cedars-Sinai investigators found that administering anakinra — a drug for rheumatoid arthritis — reduced coronary artery inflammation and injury and abdominal aortic aneurysms in animal models. The cause of Kawasaki disease is unknown, and the disorder typically is preceded by fever and produces inflammation and injury of blood vessels. Life-threatening complications may occur, including aneurysms that can lead to thrombosis (blood clots), stenosis (artery narrowing) or aortic rupture.

DOUBLE DOWN ON HEART STEM CELLS

Through technologies previously developed at the Cedars-Sinai Heart Institute, investigators have shown that therapeutic stem-cell-based tissue regeneration is effective. Two clinical trials are underway to examine the use of cardiac-derived stem cells to repair or reverse damage to cardiovascular tissue. One trial infuses stem cells into heart attack patients to assess whether the treatment decreases heart muscle damage and improves cardiac function. The other study investigates whether cardiac-derived stem cells can be used to treat dilated cardiomyopathy, a condition in which the heart's pumping ability is compromised as the left ventricle is enlarged and weakened.

BANANAS ABOUT A PROTEIN

A banana-shaped molecule discovered by investigators at the Cedars-Sinai Heart Institute may hold the key to predicting heart failure. Dubbed the "banana protein" but scientifically known as BIN1, the molecule plays a significant role in disease and in the strength of contraction during a heartbeat. BIN1 can be detected in the bloodstream, so scientists developed a test to use it to identify cardiac disease. The Heart Institute team aims to obtain Food and Drug Administration approval for the blood test so physicians can use it to help determine heart health and forecast patient outcomes. The investigators also are studying methods to restore or replace BIN1 as a potential treatment for heart failure.

HOPE AGAINST DMD

Scientists at the Cedars-Sinai Heart Institute have devised a novel therapeutic approach that might slow or even reverse the muscle-destroying process of Duchenne muscular dystrophy (DMD). DMD primarily affects males, robbing them of their ability to walk and leaving them with an average life expectancy of just 25 years. Most DMD studies focus on skeletal muscle deterioration, but the disease inexorably weakens cardiac muscle, culminating in heart failure. Investigators discovered that mice with muscular dystrophy benefit strikingly from treatment with cardiac stem cells. This work at Cedars-Sinai forms the basis for a clinical trial — Halt cardiomyopathy progression (HOPE) Duchenne — that is the first to examine whether cardiac stem cell therapy can reverse heart muscle damage from the disease.

The Cedars-Sinai Accelerator, powered by Techstars, fosters startup companies and innovations in patient care.



Dr. Brennan Spiegel, director of Health Services Research at Cedars-Sinai, is leading studies into whether virtual reality goggles can ease patients' stress.

**COMMUNITY
OUTREACH**



HERE:

Students at Arlington Heights Elementary have fun learning about healthy food choices with Cedars-Sinai Healthy Habits Coordinator Angela Armijo.

NOW:

\$695,634,000
CONTRIBUTION FOR
COMMUNITY BENEFIT

33
PARTNERSHIPS WITH
COMMUNITY CLINICS

\$5,000,000
TO LOS ANGELES
NONPROFITS TO IMPROVE
COMMUNITY CLINICS AND
MENTAL HEALTHCARE

>25,000
ADULT AND SENIOR
ENCOUNTERS
IN COMMUNITY
EDUCATION SCREENING/
IMMUNIZATION
PROGRAMS AND HEALTH
FAIRS

**COMMUNITY
OUTREACH**

**GRANTS AID
L.A.'S HOMELESS**

While Los Angeles grapples with a growing homelessness crisis, Cedars-Sinai is providing financial support to a number of local nonprofit organizations that address the health needs of homeless individuals. Among recipients of 2016 grants totaling nearly \$400,000 were Step Up on Second, a multisite housing agency that provides street-based health services to individuals experiencing chronic homelessness; United Way, to support the organization's comprehensive efforts to move the chronically homeless into permanent housing; New Directions for Veterans, for mental health services for homeless veterans or those at risk of homelessness; and JWCH Institute, to support expansion of a new clinic in an area where the need for homeless healthcare services far exceeds capacity.

**STOP DOMESTIC
VIOLENCE**

A grant from Cedars-Sinai enables the Los Angeles LGBT Center to meet the complex needs of domestic violence survivors. The funding bolsters the center's comprehensive STOP Partner Abuse/Violence Program. Cedars-Sinai's support comes at a time when state and federal aid for domestic violence programs — which has never been substantial for the LGBT community — has declined precipitously. Among those assisted were a transgender woman who has since escaped her abusive partner, holds a steady job and plans to attend college. The LGBT Center is one of nearly two dozen nonprofit community organizations across Los Angeles receiving Cedars-Sinai grants to expand free or low-cost mental health services.

**TRAUMA SUPPORT
TO SCHOOLS**

Students at 28 elementary, middle and high schools in the Los Angeles Unified School District received essential, on-site support from the Cedars-Sinai Share and Care program, care that teachers are not trained to deliver. The rising demand for psychological services for students coincides with a steep decline in state funding for school-based counseling. Cedars-Sinai counselors teach anger management and social skills, and use art therapy and other methods to help parents and students cope with issues such as bullying, divorce and incarcerated parents. The free services are an extension of Cedars-Sinai's decades-old Share and Care program, which provides numerous services to district schools, including a new effort to retain teachers who may suffer burnout during their first two years on the job.

**STRENGTHENING
L.A.'S HEALTH
SAFETY NET**

Cedars-Sinai has launched a multifaceted initiative to help L.A.'s community clinics better serve those in greatest need and alleviate health disparities across Los Angeles. The Community Clinic Initiative: Strengthening L.A.'s Safety Net focuses on major projects to enhance leadership and effectiveness in Federally Qualified Health Centers and "lookalike" clinics. Cedars-Sinai provided \$2.28 million in funding to help enhance local clinics' capabilities with yearlong programs in three key areas: quality improvement, leadership and financial strength. Community clinics in L.A. County care for about 1.4 million patients who are among our most vulnerable residents.

**SUPERMARKET
SWEEP**

Choose the most colorful fruits and vegetables. Resist high-sugar impulse buys. Read food labels carefully and go for the products with the fewest ingredients. These are some of the tips South Los Angeles residents took home from a grocery store tour at a Ralphs supermarket, offered by the Cedars-Sinai Healthy Habits program in collaboration with the Los Angeles Urban League. About 18 women participated in the two-part program, which began with a classroom session at Sunnyside Baptist Church and concluded with hands-on education at Ralphs, learning how to read food labels and make healthy choices on a budget.

SWIM COACH-ING

To help celebrate the newly reopened 109th Street Pool in Watts, a team from Cedars-Sinai COACH for Kids® — a program of the Maxine Dunitz Children's Health Center — distributed hundreds of free swimsuits in partnership with the Children's Health Fund. COACH health educators also provided children with sunscreen and shared information with families about sun and pool safety. The event was just one of numerous summer gatherings and health fairs in low-income Los Angeles neighborhoods at which COACH gave away thousands of swimsuits while offering tips on how to enjoy fun in the sun safely. COACH provides no-cost services to thousands of families living without access to essential medical care and basic social services throughout Los Angeles County.

**NO LANGUAGE
BARRIER TO CARE**

Hypertension, diabetes and heart disease are among the major health issues facing older Korean Americans. A team of Cedars-Sinai nurses, doctors and support staff provided free health screenings and flu shots in Koreatown, breaking down a language barrier that often prevents residents from receiving the healthcare they need. Korean-speaking Cedars-Sinai staff put community members at ease, answering questions and providing blood pressure, cholesterol and blood glucose tests to the 212 people who took advantage of the event, which was sponsored by the Los Angeles Koreatown Senior and Community Center, Cedars-Sinai and the Los Angeles Department of Aging.

“Our goal is to give more kids access to public pools so they can increase their physical activity.”

— Michele Rigsby Pauley, RN, MSN, CPNP, program director of Cedars-Sinai COACH for Kids



Kids celebrate the newly reopened 109th Street Pool in Watts with free swimsuits distributed by Cedars-Sinai COACH for Kids.

**COMMUNITY
OUTREACH**

LATINO HEALTH IN FOCUS	FINANCIAL AID	GOALS FOR END OF LIFE	COLON CANCER EDUCATION	HEALTHCARE CAREERS UP CLOSE	BRAINWORKS INSPIRES YOUNG SCIENTISTS	SURGERY SIMULATION
<p>Nearly 500 Cedars-Sinai physicians, nurses, dietitians, pharmacists, podiatrists and educators staffed Telemundo 52-KVEA's 12th annual Health and Wellness Fair at the Los Angeles Convention Center. Cedars-Sinai provided 6,400 health screenings at the fair, the largest of the many community events Cedars-Sinai participates in throughout the year. Cedars-Sinai COACH for Kids® — a program of the Maxine Dunitz Children's Health Center — offered immunizations, weighed and measured children, and provided nutrition education. Blood Donor Services and the Breast Cancer Risk Reduction Program also took part, as did Cedars-Sinai researchers, who surveyed attendees on their healthcare decisionmaking process.</p>	<p>As a not-for-profit academic health system, Cedars-Sinai is committed to providing compassionate, quality healthcare to everyone in the community, regardless of their ability to pay. Cedars-Sinai offers financial assistance to eligible community members who cannot afford to pay for their care, including the uninsured and those with limited means. The unreimbursed cost of providing direct medical care for the poor and underserved in FY2016 exceeded \$93.5 million.</p>	<p>"Who Shall Live and Who Shall Die and Who Decides?" That was the subject of a Yom Kippur discussion at Temple Emanuel of Beverly Hills, just one of the Los Angeles community organizations that Cedars-Sinai collaborates with to make advance care planning a standard part of healthcare. Such forums are an opportunity for the public to learn about tough but important end-of-life discussions and how to complete advance healthcare directives. Community members also heard about the challenges and responsibilities physicians face in caring for the terminally ill. The effort by Cedars-Sinai physicians and local religious leaders was inspired by stories out of La Crosse, Wisconsin, where some 96 percent of residents have put their end-of-life wishes in writing.</p>	<p>The American Cancer Society estimates that 17,240 new cases of colorectal cancer will be diagnosed among African Americans in 2016. In fact, this population is more likely to die from colorectal cancer than any other ethnic group, due largely to the lack of access to care and the stigma associated with screening. Cedars-Sinai is attacking the disease with education. Experts from the medical center visited Temple Church of God in Christ and other African-American institutions across Los Angeles to deliver the message that the disease is preventable and that screening is harmless and can save lives.</p>	<p>The Cedars-Sinai Youth Employment and Development (YED) program welcomed 45 Fairfax High School students, the latest high school juniors and seniors whom YED has helped prepare for college and careers in healthcare over the past 23 years. Participating students earn money while job-shadowing Cedars-Sinai employees in departments across the medical center as part of the two-year program, a collaboration of Cedars-Sinai, Fairfax High, Los Angeles Unified School District and the Regional Occupational Program. Some 70 percent of YED students graduate from college and pursue careers in healthcare, with many landing jobs at Cedars-Sinai.</p>	<p>Nearly 200 middle school students experienced up-close science opportunities at Cedars-Sinai's 18th annual Brainworks program. The event featured numerous learning stations, including virtual surgery with 3-D imaging, microscopes and a phantom skull; surgical instrumentation; neuropathology with microscope slides of various tumors; rehabilitation, where students learned therapeutic applications for brain tumor patients; brain and spine surgical instruments; and advanced research, where students learned about sheep brains. For the first time, Brainworks also used the Women's Guild Simulation Center for Advanced Clinical Skills, where students practiced medicine on a "patient" with real-life features such as breathing and blinking.</p>	<p>The 10,000-square-foot Women's Guild Simulation Center for Advanced Clinical Skills regularly gives students from Los Angeles-area schools a chance to experience something more challenging than dissecting frogs in biology class. Among those taking advantage of the opportunity was a group of some 45 students from Francisco Bravo Medical Magnet High School in Boyle Heights, who got a firsthand look at how surgical teams troubleshoot in the operating room. The teenagers — who were assigned the roles of surgeons, nurses and anesthesiologists in the simulated operating room — had to figure out quickly why a baby's oxygen level suddenly dropped. They also practiced surgery on virtual reality simulators, learned CPR and interacted with a mannequin that talks, breathes and bleeds.</p>

Cedars-Sinai and the Los Angeles Rams host events that encourage young fans to be active for at least 60 minutes a day.



Six hundred participants from Cienega Elementary School in Los Angeles helped kick off the inaugural Play 60 Challenge Assembly Program, sponsored by Cedars-Sinai and the Los Angeles Rams.

**COMMUNITY
OUTREACH**

**CALMER
CLASSROOMS**

Tibetan singing bowls. Native American talking sticks. Feathers and beads. These are the rather unusual tools the team from the Cedars-Sinai Share and Care program takes to stress-reduction workshops for new Los Angeles Unified School District teachers. The workshops — part of three weeklong summer training events for teachers — were spun out of the Share and Care art therapy program offered by Cedars-Sinai at 28 Los Angeles schools. Participants learned tips such as getting enough rest and confiding in a friend when the going gets tough. Teachers also learned how to use unconventional tools to create a calm classroom atmosphere, which has the potential to reduce stress for students and staff alike.

SCREEN SAVER

More than 115 people received free head and neck cancer screenings performed by physicians from the Cedars-Sinai Samuel Oschin Comprehensive Cancer Institute and the Department of Surgery as well as the medical center’s dental residents. Medical professionals recommend that adults undergo regular screenings for head and neck cancers, which occur in more than 50,000 Americans annually. The most common types are throat, larynx, tongue and thyroid cancers, but malignancies also can occur in the nasal cavities, sinuses, lips, mouth and salivary glands. While many cases are without symptoms, others can include a neck lump, persistent sore throat, hoarseness, pain when swallowing or unexplained weight loss.

**ONE-STOP SERVICE
FOR OLDER ADULTS**

Older adults received free blood pressure, cholesterol and blood glucose screenings from a team of 35 Cedars-Sinai healthcare professionals during the 14th annual West Hollywood Senior Health Fair at Plummer Park Community Center. Cedars-Sinai also provided podiatry screenings, nutrition counseling and education on stroke prevention. The event is a vital link to health services for older adults who are underinsured and face other challenges that limit access to care.

**RAMS JOIN
THE TEAM**

The Los Angeles Rams have become official partners with Cedars-Sinai in promoting health and wellness in local communities. The partnership includes community outreach programs highlighting the importance of exercise, healthy eating, preventive healthcare and health education for school-age children as well as adults. The Rams and Cedars-Sinai also are co-hosting events as part of Play 60, the NFL’s national youth health and fitness campaign that focuses on increasing the wellness of young fans by encouraging them to be active for at least 60 minutes a day. In addition, at all Rams home games, Cedars-Sinai sponsors the Kids Zone, an interactive play area just outside the Los Angeles Memorial Coliseum.

**TEEN RESEARCH
SCENE**

Nineteen high school students from throughout Southern California participated in the fourth annual Research Week, a program of the Cedars-Sinai Board of Governors Regenerative Medicine Institute that gives young scholars hands-on exposure to stem cell research. More than 40 students from 16 schools applied for the program, the culmination of a yearlong outreach effort. Participants, who were chosen by Cedars-Sinai Volunteer Services and the Cedars-Sinai Youth Employment and Development program, conducted experiments using state-of-the-art equipment, attended scientific lectures and presented the results of their investigations.

**PLAN AHEAD
FOR SAFETY**

How do you stay safe during an earthquake or other disaster? And how do you create an emergency kit that takes into account your health needs? These are the questions members of Disaster Preparedness and Response at Cedars-Sinai and the medical center’s Environmental Health and Safety department helped answer at health fairs around L.A. They provided information about how long medications last without refrigeration, how to control diabetes through diet if medications run out and how to plan ahead for alternative places to receive dialysis.

A GOOD FIT

Los Angeles elementary school teachers learned how to make fitness more fun for students during a free, daylong seminar on physical education training provided by Cedars-Sinai. About 75 educators participated in the training, led by a facilitator from Coordinated Approach to Child Health, an organization dedicated to preventing childhood obesity. The teachers came primarily from the 15 Mid-City elementary schools that the Cedars-Sinai Healthy Habits program partners with to provide workshops on nutrition and fitness. The training, which included a rigorous workout for the teachers themselves, also inspired participants to find their own ways of engaging kids in indoor and outdoor physical activities at school.

Head and neck cancers can be symptom-free, so doctors recommend regular screenings. Cedars-Sinai physicians performed free examinations for more than 115 people.



Dr. Allen Ho, director of the Head and Neck Cancer Program, performs a free head and neck cancer screening.



HERE:

Medical residents gain valuable experience through rotations at free clinics throughout Los Angeles, including the Saban Community Clinic.

NOW:

15
RESIDENCY PROGRAMS

74
FELLOWSHIP PROGRAMS

944
MEDICAL STUDENTS
ON ROTATIONS IN
11
DEPARTMENTS

125
NURSING RESIDENTS
TRAINED

STRENGTH IN NUMBERS

Educating future clinicians and medical scientists is a vital part of Cedars-Sinai's mission as an academic medical center. Medical students completed nearly 950 rotations in 11 departments during FY2016, while more than 400 residents and fellows joined Cedars-Sinai's highly competitive training programs that span in excess of 50 specialty and subspecialty areas. These future physicians and investigators gain exposure to a wide range of procedures, patient populations, state-of-the-art equipment and novel research protocols as well as academic faculty who provide both mentorship and leadership. Cedars-Sinai also offers an innovative Clinical Scholars Program that supports residents, fellows and young faculty who aspire to become clinical scientists.

DEGREES OF GROWTH

Cedars-Sinai's dynamic graduate school, which trains scientists to pursue discoveries that shed light on diseases and inspire new therapies, added a master's program in Biomedical Science and Translational Medicine. The two-year degree allows participants to continue working full time while pursuing their studies. In their first year, master's and doctoral students take the same courses, learning the fundamentals of biomedical research and how to translate that work into tangible therapeutics. During the second year, working with mentors, both groups choose research projects to satisfy degree requirements. But while PhD candidates have several years to complete their projects, master's students have just one, so their projects are more modest in scope while remaining rigorous.

EXPANDED SCOPE

By nearly every metric, the third Inter-Institutional Graduate Research Symposium at Cedars-Sinai was the best yet. The all-day symposium, sponsored by the Cedars-Sinai Graduate Program in Biomedical Science and Translational Medicine, drew 100 participants, who had opportunities to network with speakers, share ideas and research, and collect career advice. In addition to two keynote speeches, the agenda included expert panels, two poster sessions and several student presentations. Awards were given for the best student research. Students were urged to eschew "easy, facile" online data searches and instead seek out original studies. Ten California institutions of higher learning took part in the event, which is expected to expand in scope and participation in subsequent years.

ASK A LIBRARIAN

A pilot project with the departments of Internal Medicine and Surgery embedded a librarian from the Cedars-Sinai Medical Library into a patient care team. The librarian reviewed current literature to provide the healthcare team with relevant studies to support evidence-based medicine. In addition, the library offered classes on preparing to publish, research analysis, and citation retrieval and management. The library continues to expand its digital holdings to meet the needs of clinicians, researchers and educators throughout Cedars-Sinai, now providing access to more than 23,465 e-journals and nearly 20,000 e-books. It also supports clinicians with mobile apps that improve access to library content at the point-of-care decisionmaking process.

SCHOLARLY PURSUITS

Residents, fellows and young faculty who are transitioning to clinical science receive two years of valuable training through the Cedars-Sinai Clinical Scholars Program, which welcomed its largest incoming class in three years. The program offers career guidance, skills acquisition, and a curriculum in translational medicine and clinical research. This year, it added a new course of study in health services research, a scientific discipline devoted to improving efficiency in healthcare delivery. Participants submit a funding proposal for a research project, which is then supervised by a mentor. Recent projects included studies that sought to make radiation more effective against cancer, prevent organ rejection in transplants, measure risk for cardiovascular disease and treat angina.

OPERATION LEADERSHIP

The Cedars-Sinai Medical Staff Leadership Development Program welcomed 28 participants. The program introduces participants to practical insights provided by department chairs, members of the Medical Executive Committee and medical staff leadership. The curriculum, delivered through monthly lectures, emphasizes the basics of Cedars-Sinai medical staff governance and understanding of the organizational structure and operations of the medical center. The program also discusses how Cedars-Sinai can best prepare for changes in healthcare. Participants manage a project that allows them to apply the tools and concepts learned in the program. They're also offered continuing medical education credits and significant networking opportunities.

UNDER ADVISEMENT

Key Cedars-Sinai personnel are taking part in the Advisory Board Fellowship, an 18-month, MBA-style program aimed at helping healthcare leaders stay ready to confront the challenges posed by a rapidly changing medical landscape. Topics addressed include improving care while reducing hospital stays and enhancing the synergy of office-support functions. The fellowships are offered through The Advisory Board Company, which combines research, technology and consulting services to improve the performance of healthcare organizations around the world. Cedars-Sinai is currently one of the more than 5,200 organizations partnering with the firm to improve healthcare services, value and efficiency.

This year's Graduate Symposium was the largest yet, drawing 100 participants from 10 higher-learning institutions.



Cedars-Sinai graduate student Hannah Park at the third Inter-Institutional Graduate Research Symposium

EDUCATION

PRIMARY CARE PATHWAY

The Internal Medicine Residency offers a primary care pathway designed to teach the unique aspects of outpatient medicine and population health that are essential in the dramatically evolving healthcare system. Residents choose among a community-based indigent patient clinic, a full-service Veterans Administration outpatient clinic or a large, multispecialty medical group to serve as home base, where they receive ongoing mentorship. All Cedars-Sinai primary care residents have the opportunity to train at multiple sites to experience different patient populations and systems of practice. They also are introduced to extensivist medicine, a newly defined field in internal medicine that focuses on providing comprehensive and coordinated care to patients with multiple complex medical conditions.

MULTINATIONAL COOPERATION

Biomedical research has gone global, with multinational teams cooperating on large-scale studies. To keep ahead of the curve, Cedars-Sinai built a research consortium that reaches throughout Central and Eastern Europe. Known as the Regional Cooperation for Health, Science and Technology (RECOOP HST) Association, the partnership includes 15 higher education, healthcare and research organizations in eight countries: Croatia, Czech Republic, Denmark, Hungary, Poland, Romania, Slovak Republic and Ukraine. This year, the association welcomed its first administrative fellow. RECOOP HST investigators tackle disorders such as prenatal health issues and their effects on child health; obesity; and metabolic, cardiovascular and neurodegenerative diseases.

GREAT EXPECTATIONS

Seven students received doctorates at the fourth commencement of the Cedars-Sinai Graduate Program in Biomedical Science and Translational Medicine. Powerful messages delivered during the ceremony reminded graduates to shun shoddy science, cast skeptical eyes on published research and embrace the unexpected. The students were reminded that medicine is a high calling, that serious laboratory research is tremendously demanding and that they should not lose sight of scientific principles. The graduate program combines extensive classroom learning with long, rigorous hours of laboratory work. It is accredited by the Western Association of Schools and Colleges.

PERIOPERATIVE PREPARATION

In perioperative care, the nurse’s role begins at admission, includes preparing the patient physically and emotionally for surgery, extends through the procedure and lasts until the patient is ready to return home. The aim is to help ensure a positive patient experience at every stage, resulting in optimal outcomes. Cedars-Sinai is a leader in perioperative training, and, this past year, the medical center partnered with California State University, Los Angeles, to offer two 10-week electives focusing on both didactic and clinical practice, sponsored by Cedars-Sinai’s Geri and Richard Brawerman Nursing Institute. The first 10 students graduated from the program in June 2016, with 20 more enrolling in the fall.

SMELLS LIKE TEAM SPIRIT

A 10-week, 30-shift Pediatric Intensive Care Unit (PICU) training class included five additional nurses from Cedars-Sinai who were chosen for their positive team spirit and desire for continuous learning. The class requires an 18-month commitment to working in the PICU. The unit provides an ideal training ground, as it cares for more than 400 infants, children and adolescents each year. Nurses gain experience in aiding patients who are undergoing treatment for conditions ranging from asthma to cancer. The PICU is accredited by California Children’s Services, and Cedars-Sinai is designated as a Pediatric Critical Care Center by the California Department of Health.

LEAN INTO HEALTHCARE

More than 200 Cedars-Sinai employees enrolled in Lean for Healthcare courses to enhance their ability to identify, quantify and eliminate wasteful workplace practices — and benefit patients. Based on the Toyota Production System and increasingly adopted by healthcare providers to improve efficiency and effectiveness, the classes are aimed at leaders and staff — from nurses to lab techs — who work directly or indirectly with patients. Trainees learn how to break complex tasks into manageable segments, collect and analyze data, and propose solutions based on the results. They “walk in patients’ shoes,” prioritizing activities of greatest value to those the medical center serves. Benefits include reduced wait times for test results, elimination of unnecessary administrative steps and improved safety.

SIMULATED SCENARIOS

The Women’s Guild Simulation Center for Advanced Clinical Skills enables new interns, residents and nursing graduates to practice their clinical and communications skills before working with real patients. A two-day experience teaches newly minted doctors to use resuscitation equipment, work with needles, drill into bone, monitor simulated patients in cardiac distress and manage sepsis. The opportunity to train in a risk-free environment helps doctors and nurses build the confidence to deal with actual patients — and can result in lower stress when real-life emergencies unfold. It also reinforces the collaborative spirit needed to deliver effective care, including appreciating nursing skills, as nurses often serve as instructors during the simulations.

New interns, residents and nursing graduates practice their clinical and communications skills before working with real patients.



Dr. Deven Patel, a surgical resident, in the Women’s Guild Simulation Center for Advanced Clinical Skills

**THE CAMPAIGN
FOR
CEDARS-SINAI**



HERE:

Generous donors to the *Campaign for Cedars-Sinai* provide the funding that sparks innovation and boosts Cedars-Sinai's ability to improve the health of its community, from one generation to the next.

NOW:

\$600,000,000

CAMPAIGN GOAL BY
2018, THE BIGGEST
FUNDRAISING EFFORT IN
CEDARS-SINAI'S HISTORY

5,245

NEW DONORS

8,411

GRATEFUL PATIENTS

Leading-edge, next-generation research leads to extraordinary patient care.

The Campaign for Cedars-Sinai is ambitious — with the objective of raising \$600 million — but is built on a tradition of excellence. It's a legacy honored and cultivated each day throughout the medical center, the community and, more and more frequently, the world. Research and discovery are central to this legacy. Leading-edge innovation expands Cedars-Sinai's ability to provide excellent patient care that extends and improves lives.

As both a global leader and a community hospital, Cedars-Sinai partners with dedicated supporters. Every breakthrough, every discovery, every improvement ultimately begins with donors. With support for key areas, clinicians and scientists can continue to pursue new treatments and technologies that shape the future of medicine.

The Campaign for Cedars-Sinai is a commitment to uphold and advance the institution's rich legacy of research, and honor the compassion and generosity of its donors.

OVERVIEW

Disease Prevention and Control

Cedars-Sinai's scientific mission is built on two goals: finding cures and preventing disease. The institution is committed to making discoveries that quickly benefit people with diabetes, cancer, heart disease and other illnesses. Its investigators and physicians work hard day after day to provide real solutions for people confronting disease right now, while searching for ways to eliminate and prevent these ailments in the future.

Precision Health and Targeted Therapies

Health conditions often are referred to by a single name, but the more science reveals about how diseases work and how they affect our bodies, the more clear it becomes that what is considered one disease may actually be dozens. Precision health at Cedars-Sinai is an important tool to fight the many manifestations of cancer and other illnesses. The institution's investigators use genetics, new and developing technologies, and data in innovative ways to match the right treatment to the right patient at the right time for the best outcomes.

Aging and Longevity

Treatments for cancer, diabetes and other illnesses are becoming so effective that they are transforming what were once life-threatening diseases into chronic conditions. Still, while we are living longer than ever, these added years can come with significant health challenges. Cedars-Sinai is dedicated to making discoveries that will ensure that we live healthier, not just longer, lives. The institution's vibrant scientific programs also are examining ailments that affect us as we age, including Alzheimer's and cardiovascular disease.

Innovations in Healthcare and Technology

Cedars-Sinai is pushing the frontiers of medicine, developing new technologies and innovations that change the way disease is diagnosed and treated. Top scientists in cardiology, cancer, neurosciences, gastrointestinal disease, metabolic disease and regenerative medicine routinely work together at Cedars-Sinai with the understanding that a breakthrough against one condition also may apply to many others. Nanotechnology, biomedical imaging, reconstructing model organs from stem cells and precision approaches are among the unique collaborations that transcend specific medical specialties.

Education and Training

Funding for education is essential to providing patient care that is based on the most current medical advances. More than 400 residents and fellows work and learn in over 35 accredited training programs at Cedars-Sinai, and scientists in the PhD and master's programs are trained in the field of translational research, taking discoveries from the laboratory bench to the patient bedside. These investigators will produce the insights and make the breakthroughs that will define the future of medicine.

DISEASE PREVENTION AND CONTROL

Andrew and Patricia McIntyre

Andrew and Patricia McIntyre are longtime supporters of research into pediatric infectious diseases at Cedars-Sinai, and the work of Moshe Ardit, MD, director of the Infectious and Immunological Diseases Research Center and the Division of Pediatric Infectious Diseases. His laboratory investigates innate immunity and host-pathogen interactions as they relate to inflammatory diseases, with particular focus on the lungs and the cardiovascular system. Ardit's research program has been at the cutting edge of advancing our knowledge of the mechanisms behind infection-induced asthma, pulmonary infections, atherosclerosis and Kawasaki disease, the leading cause of acquired heart disease among children in the U.S. and developed countries. With support from donors like the McIntyres, Cedars-Sinai aims to improve the lives of countless children and give hope to millions of families worldwide.

Robert and Elaine Falk

For decades, Robert and Elaine Falk served as unofficial healthcare advocates for their family and friends, caring for them in times of need and helping them navigate medical institutions. The Falks recently took this caregiving to a new level by supporting research into heart disease, stem cells and gastroenterology. They cite several reasons for investing, including their personal connections to the institution, the quality of care provided and the medical center's acceptance of people from all backgrounds. Robert was treated at Cedars-Sinai following a heart attack, and Elaine's grandfather was a cantor at Cedars of Lebanon. "Cedars-Sinai is like the family who cares for you and keeps you healthy, just like we've done in our family," Elaine says.

PRECISION HEALTH AND TARGETED THERAPIES

Esper A. Petersen Foundation

As therapists and philanthropists, husband and wife Leslie Pam, PhD, and Ann Christie Petersen, PhD, have spent a lifetime fostering health in body and spirit. In gratitude for receiving "the most amazing care," when Pam was diagnosed with stage 4 lymphoma and with an eye toward the future, the couple now supports research at Cedars-Sinai through the Esper A. Petersen Foundation — named after Petersen's father — as well as annual gifts to cancer research. Their most recent gift went to health services research in rheumatology. The gift supports the development of a smartphone app for rheumatic disease patients and will help foster understanding of how mobile technology can empower patients to better manage their symptoms, enhance their relationship with their healthcare provider, improve early detection of serious disease and positively influence health outcomes.

The Maurice Amado Foundation

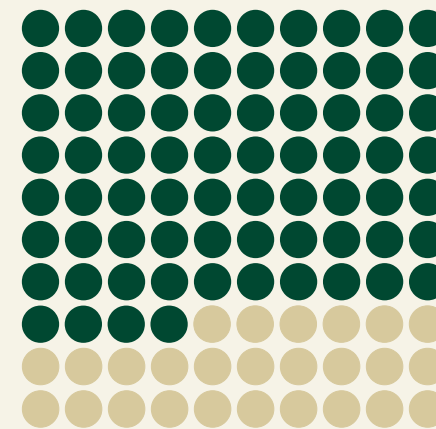
When Micah Amado was diagnosed with kidney failure, his mother, Honey, helped Cedars-Sinai rescue him by donating her own kidney. Through the Maurice Amado Foundation, Honey and her late husband, Ralph, directed a gift to Cedars-Sinai to support kidney research. Honey directed a second gift for research, the Maurice Amado Foundation Kidney Transplant Research Fund in Memory of Ralph Albert Amado. Both gifts have supported the work of Stanley C. Jordan, MD, director of the Division of Nephrology, medical director of the Kidney Transplant Program, and medical director of the Human Leukocyte Antigen and Transplant Immunology Laboratory. Jordan is studying intravenous immunoglobulin therapy, a process that prevents the body from attacking a newly transplanted kidney in highly sensitized patients, who comprise approximately 40 percent of all kidney-transplant recipients.

FY2016 FUNDRAISING HIGHLIGHTS

(July 1, 2015 - June 30, 2016)

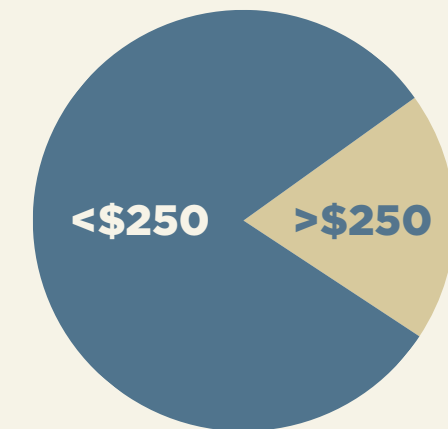
Giving back:

74 percent of donors are **grateful patients**.



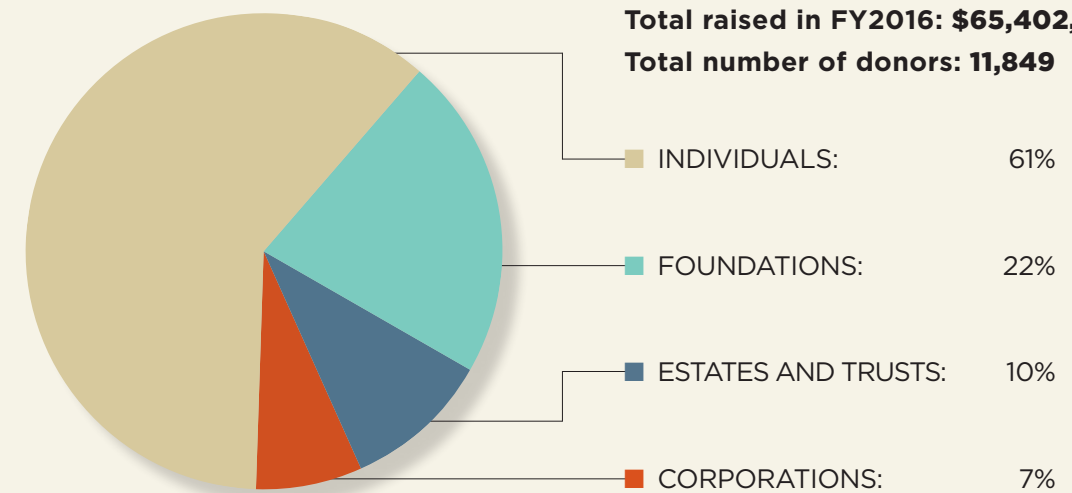
Every gift counts:

81 percent of donors gave less than \$250.



Revenue by source:

(July 1, 2015 - June 30, 2016)



Total raised in FY2016: \$65,402,185

Total number of donors: 11,849

AGING AND LONGEVITY

Joseph Drown Foundation

The Joseph Drown Foundation, a longtime supporter of Cedars-Sinai, recently helped fund Parkinson’s disease research at the Board of Governors Regenerative Medicine Institute. Cedars-Sinai investigators study a variety of neurological diseases using stem cell technology as their primary research tool. “We are excited about the promise of regenerative medicine, and we recognize that Cedars-Sinai is particularly nimble in bringing new discoveries to life in ways that offer maximum benefit to patients,” Joseph Drown Foundation President Wendy Wachtell says. Parkinson’s disease research stands to benefit greatly from stem cell technology, and, with philanthropic support, Cedars-Sinai scientists can make a major impact on how the condition is diagnosed and treated.

Vicki Reynolds Pepper and Murray Pepper

To help build a healthier future, Vicki Reynolds Pepper and Murray Pepper established the Vicki Reynolds Pepper and Murray Pepper Endowed Fund in Regenerative Medicine in honor of Simon and Rose Pepper. The fund supports the research of Clive Svendsen, PhD, director of the Board of Governors Regenerative Medicine Institute, and the Kerry and Simone Vickar Family Foundation Distinguished Chair in Regenerative Medicine at Cedars-Sinai. Regarding what his mother and father would think about the breakthroughs that will be accomplished in their names, Pepper says: “My parents always were interested in Cedars-Sinai but never really had enough money during their lifetime to make a meaningful gift. So I wanted to make this gift in their name. They would be very pleased, I’m sure.”

**INNOVATIONS IN HEALTHCARE
AND TECHNOLOGY**

Barbara Herman

Longtime supporter Barbara Herman witnessed Cedars of Lebanon’s merger with Mt. Sinai Hospital and its subsequent growth into the world-renowned medical center known as Cedars-Sinai. More recently, she provided the seeds for even more growth with a gift that kicked off the campaign to raise \$10 million for the Women’s Guild Simulation Center for Advanced Clinical Skills. Dedicated to training medical professionals with the newest tools and technology, the simulation center features fully functioning operating rooms, an intensive care unit and a trauma treatment area populated by high-tech, lifelike mannequins that act as patients. In this realistic and rigorous training environment, more than 2,000 surgeons, physicians, nurses and allied healthcare professionals receive training every month to master advanced skills.

Robert Wood Johnson Foundation

As part of its efforts to build a culture of health, the Robert Wood Johnson Foundation provided a grant to Cedars-Sinai to explore how data generated in real time and in the real world can transform how we think about and experience health and healthcare. The grant supports the work of Brennan M. Spiegel, MD, director of Health Services Research in Academic Affairs and Clinical Transformation, who is examining whether the language people use in tweets to describe their health could provide clinically meaningful insights into a patient’s quality of life. This innovation could ultimately help caregivers understand, in a cost-effective and timely manner, the comparative value of prescribed therapies and ensure patients receive the treatments most appropriate for their individual needs.

EDUCATION AND TRAINING

The Fleischaker Family Foundation

After receiving heart and kidney transplants at Cedars-Sinai, Pam Fleischaker worked with her loved ones to support the Fleischaker Family Foundation Fellow in Heart Transplantation. Fleischaker had lived a productive life with a genetic condition that causes the walls of the heart to thicken, restricting blood flow. At age 62, she had her first heart transplant but never felt well. Six years later, she needed another heart as well as a kidney. That’s when she was referred to Cedars-Sinai. Speaking of her family’s decision to support this fellowship, she says: “We wanted to help other people and other families. It’s extraordinary what they do at Cedars-Sinai — and they do it really well and with great care.”

Selkowitz Family Foundation

Diagnosed with lupus at age 16, Adam Selkowitz is committed to helping spare others from the effects of this chronic disease, in which the body’s immune system attacks normal, healthy tissue. In 2000, working with Daniel J. Wallace, MD, associate director of the Cedars-Sinai Rheumatology Fellowship Program, Selkowitz launched the nonprofit Lupus LA, which funds the work of the Cedars-Sinai Division of Rheumatology. Recently, the Selkowitz Family Foundation also made a leadership gift to recruit lupus investigator Caroline Jefferies, PhD, to Cedars-Sinai. “Lupus is a tricky disease, with many variations, and it can be an underdog when it comes to funding,” Selkowitz explains. “What spoke to us about Cedars-Sinai was that it could have a local impact, and then grow into something else, something global.”

**MILESTONE GIFTS
TO CEDARS-SINAI**

(July 1, 2015 – June 30, 2016)

Luke Wu-Jei Chang*

Patricia S. Gordon, MD, and Leonard F. Hill*

Loretta and Victor Kaufman

Lippman Family Foundation

Vicki Reynolds Pepper and Murray Pepper

Sheri and Marc Rapaport

John F. Whelan

The Shuangwang Zhang Family

* Deceased



Visit us online at giving.cedars-sinai.edu to learn how you can partner with Cedars-Sinai to improve patients’ lives.

THE NUMBERS

JULY 1, 2015 -
JUNE 30, 2016



886
LICENSED BEDS



1,519
RESEARCH PROJECTS



254,668
PATIENT DAYS
(approximately 698 per day)



12,057
FULL-TIME EMPLOYEES



751,920
OUTPATIENT VISITS
(approximately 2,060 per day)



2,156
**PHYSICIANS ON
MEDICAL STAFF**



49,690
ADMISSIONS



473
**ENROLLED RESIDENT
AND FELLOW POSITIONS**



89,371
EMERGENCY VISITS



2,843
VOLUNTEERS
173,425
VOLUNTEER HOURS



242,112
**PATIENTS CARED FOR
BY CEDARS-SINAI
MEDICAL NETWORK**



\$695,634,000
**CONTRIBUTION FOR
COMMUNITY BENEFIT**

FINANCIAL SNAPSHOT

INCOME AND EXPENSES

Revenue from patient care and other sources	\$ 3,262,577,000
Expenses	<u>\$ 2,879,764,000</u>
Operating income	\$ 382,813,000
Gain on extinguishment of debt	\$ 6,144,000
Investment income	<u>\$ (87,518,000)</u>
Net income to reinvest in Cedars-Sinai's mission	<u>\$ 301,439,000</u>

USES OF NET INCOME

Long-term debt to be repaid	\$ 980,067,000
Capital expenditures for facilities, renovation, technology and other	\$ 164,570,000
This year's payment on long-term debt	\$ 48,135,000

COMMUNITY BENEFIT CONTRIBUTION

Unreimbursed cost of direct medical care for the poor and underserved (excludes the unreimbursed cost of caring for Medicare patients)	\$ 95,344,000
Charity care (\$14,779,000)	
Unreimbursed cost of caring for Medi-Cal patients (\$78,937,000)	
Unreimbursed cost of caring for patients in specialty government programs (\$1,628,000)	
Unreimbursed cost of direct medical care for Medicare patients	\$ 315,627,000
Community benefit programs, charitable contributions, and education and training for physicians and other health professionals (includes hundreds of free community education and medical screening/immunization programs offered at the medical center and in local schools, homeless shelters and community centers)	\$ 106,558,000
Research programs (includes translational and clinical research and studies on healthcare delivery)	
Total cost of research	\$ 178,105,000
Research funding from grants (\$102,003,000)	
Research net of funding from grants (\$76,102,000)	
Total quantifiable community benefit	<u>\$ 695,634,000</u>

WHERE WE ARE

**PATIENT CARE
Locations and Affiliates**

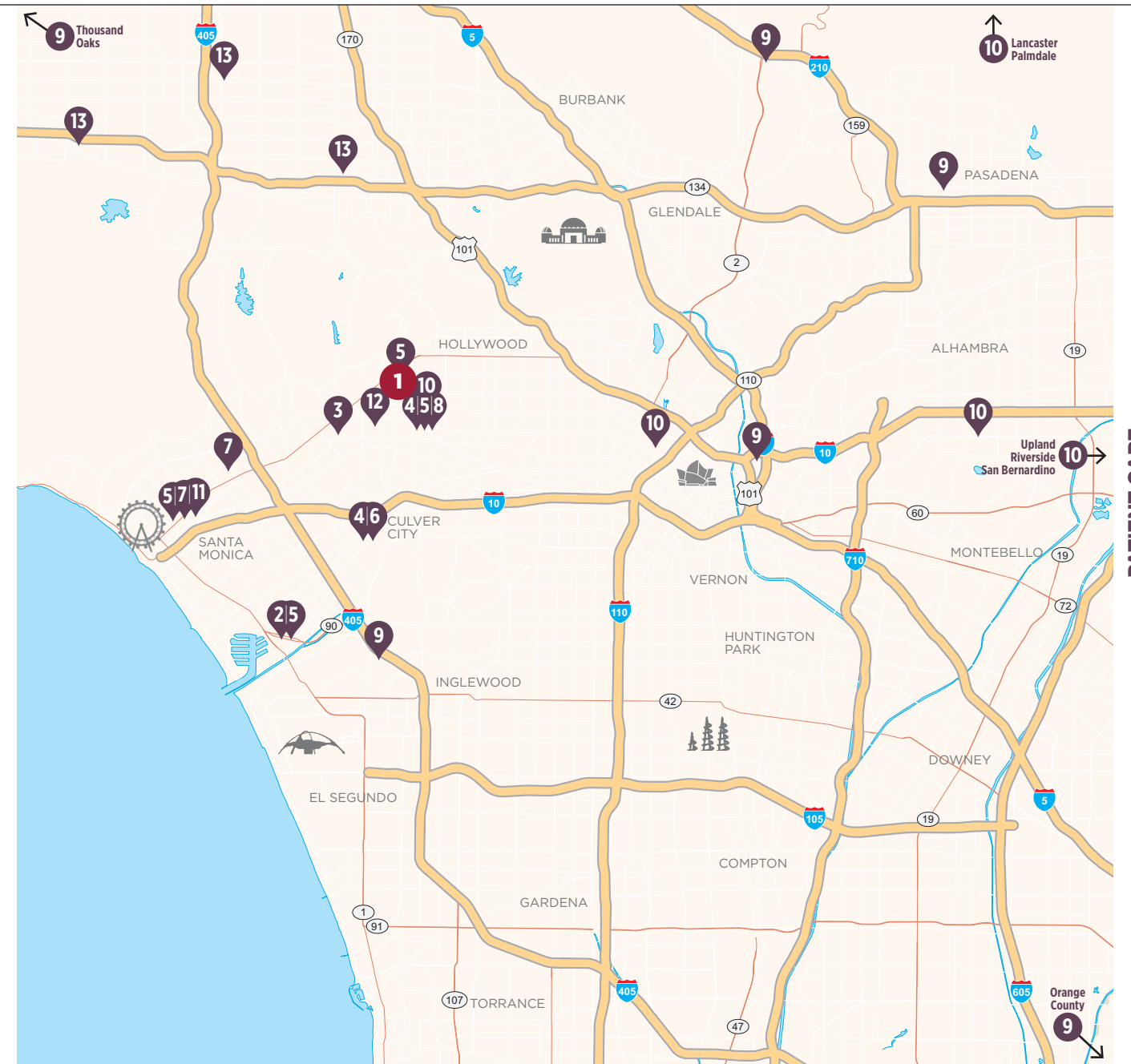
- 1** Cedars-Sinai Medical Center
- 2** Marina Del Rey Hospital
- 3** California Rehabilitation Institute
- 4** Urgent Care (Beverly Hills and Culver City)
- 5** Cedars-Sinai Medical Group and Cedars-Sinai Health Associates (multiple locations)
- 6** Primary Care, Culver City
- 7** The Angeles Clinic and Research Institute (2 locations)
- 8** California Heart Center
- 9** Kerlan-Jobe Orthopaedic Clinic (6 locations)
- 10** Los Angeles Cardiology Associates (8 locations)
- 11** Santa Monica Orthopaedic & Sports Medicine Group
- 12** Tower Hematology Oncology Medical Group
- 13** Valley Internal Medicine (3 locations)

**EDUCATION
Residents and Fellows**

- 1** Cedars-Sinai Medical Center
- 9** Kerlan-Jobe Orthopaedic Clinic
- 14** Children's Dental Center of Greater Los Angeles
- 15** Eisner Pediatric Family Medical Center
- 16** The KHEIR Center
- 17** Los Angeles Christian Health Centers
- 18** Planned Parenthood Los Angeles
- 19** Saban Community Clinic (2 locations)
- 20** Venice Family Clinic

**COMMUNITY OUTREACH
Health and Education Programs**

- CC** Community Clinic Initiative (50+ partners and grantees)
 - CO** Cedars-Sinai COACH for Kids (51 sites)
 - HH** Cedars-Sinai Healthy Habits (30 sites)
 - SC** Cedars-Sinai Share and Care (28 sites)
 - CH** Cedars-Sinai Community Health and Education (17 sites)
 - YE** Cedars-Sinai Youth Employment and Development (1 site)
- plus dozens of other health and education programs



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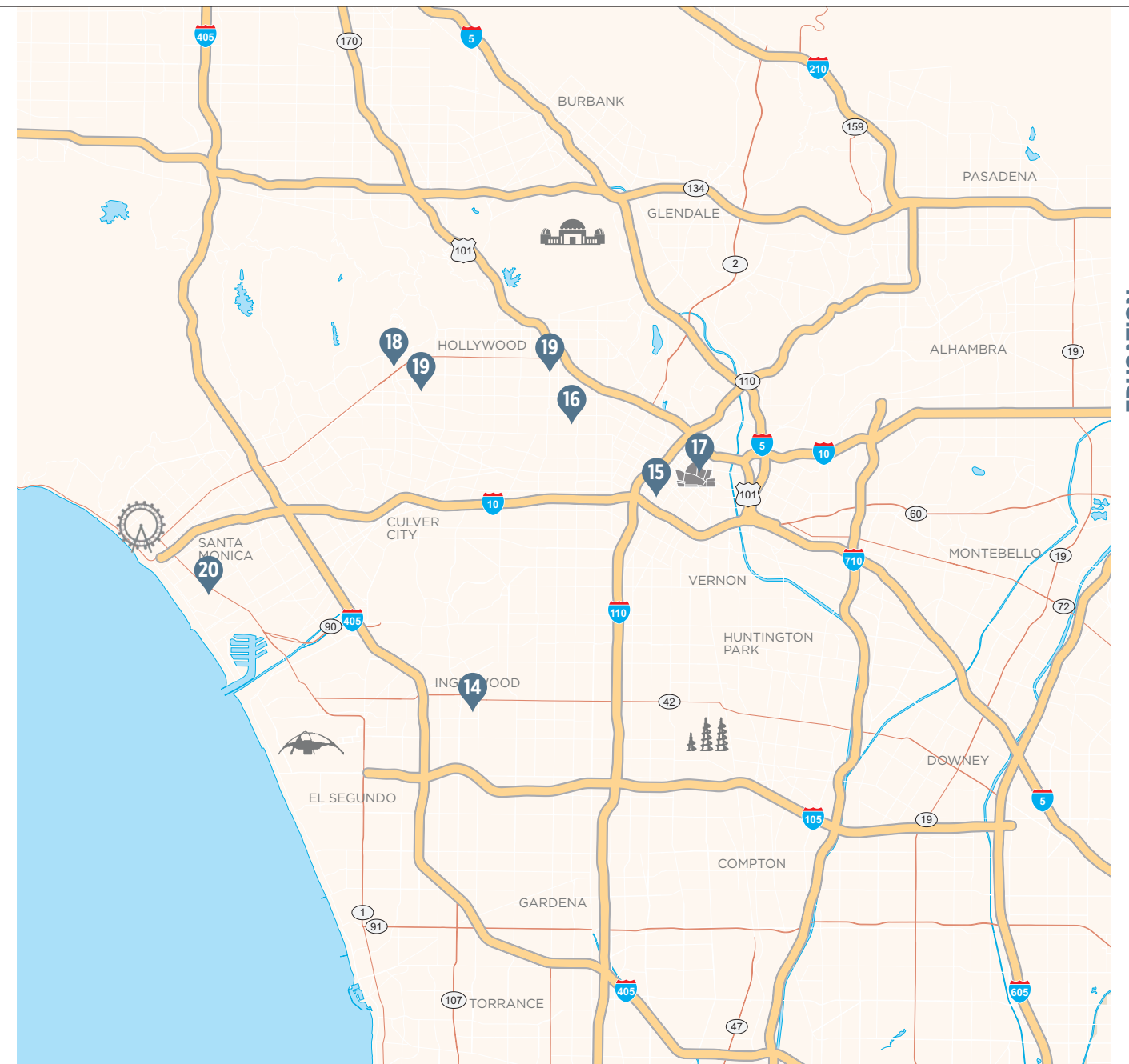
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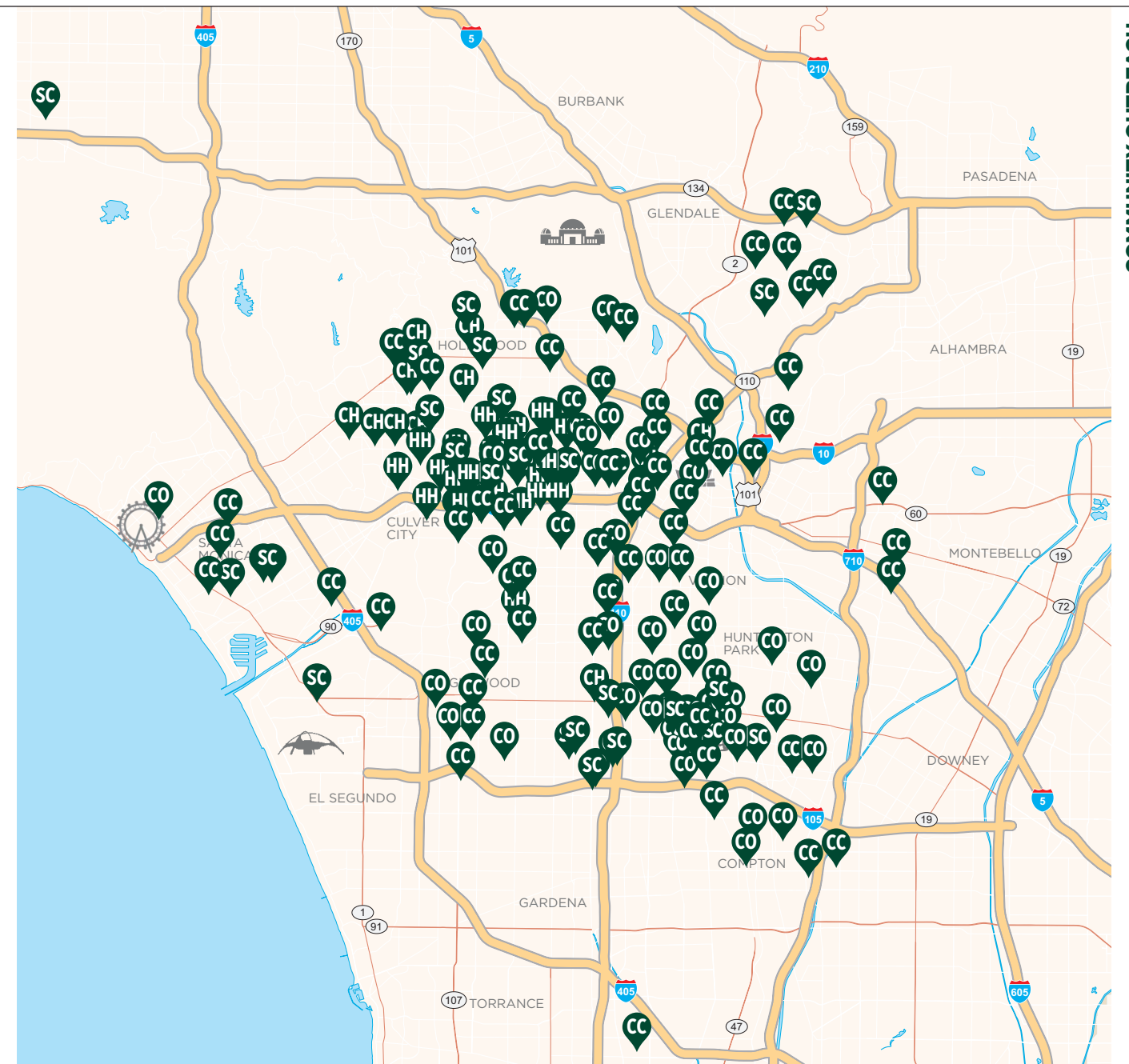
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COMMUNITY OUTREACH

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and Chief Financial Officer

Scott Weingarten, MD
Senior Vice President and
Chief Clinical Transformation Officer

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independent healthcare organization, is
committed to:**

- **Leadership and excellence in delivering
quality healthcare services**
- **Expanding the horizons of medical
knowledge through biomedical research**
- **Educating and training physicians and
other healthcare professionals**
- **Striving to improve the health status of
our community**

**Quality patient care is our priority.
Providing excellent clinical and service
quality, offering compassionate care,
and supporting research and medical
education are essential to our mission.**

**This mission is founded in the ethical and
cultural precepts of the Judaic tradition,
which inspires devotion to the art and
science of healing, and to the care we
give our patients and staff.**

* Past Chair of the Board
** Honorary Life Trustee
*** Chief of Staff
**** Deceased



CEDARS-SINAI®

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Los Angeles, California 90048

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cedars-sinai.edu