At Stanford Medicine, the School of Medicine, Stanford Health Care and Stanford Children’s Health work together to provide optimal patient care that often begins before conception and lasts a lifetime—from pioneering fertility treatments to groundbreaking advances in age-related conditions. An integral part of Stanford Medicine, Lucile Packard Children’s Hospital Stanford is taking the opportunity of its 25th anniversary to reflect on the many patients we’ve cared for from birth through adulthood and how this lifetime partnership has helped advance our understanding of disease and longevity.

This lifespan care has proved especially important to patients whose diseases once would have prevented them from living beyond childhood—or in some cases birth—and who now lead lives long enough to inspire new frontiers of research and care delivery. These include patients with congenital heart disease, pediatric cancers, cystic fibrosis or organ transplant, who now are living well into their 40s, 50s and beyond.
25 years of improving health

From the beginning, Lucile Packard Children’s Hospital Stanford stood out. When it opened on June 10, 1991, it was one of very few children’s hospitals in America to incorporate both pediatrics and labor and delivery in one facility.

Now, 25 years later, the hospital is the centerpiece of a preeminent pediatric and obstetric health system that has 65 locations in the Bay Area. Since 1991, the hospital and enterprise have logged more than 3 million clinic visits, 1,600 solid organ transplants and 110,000 births—and found a permanent place on the U.S. News & World Report annual list of America’s best children’s hospitals.

“From the start, our goal has been to fulfill the vision of Lucile Salter Packard, our generous founder and visionary for children’s health,” said Christopher G. Dawes, president and CEO. “She planned a very nurturing environment, one that would make possible medical breakthroughs for our children, our grandchildren and the children of the future.”

Honoring a legacy

“I remember opening day just like it was yesterday,” recalled renowned neonatologist and researcher David Stevenson, MD, professor of pediatrics at the School of Medicine, who helped plan and open the hospital, where he continues to treat premature infants. “It was really exciting to see the whole community come out to celebrate. Their support has played a huge role in our tremendous impact.”

Lucile Packard, long an advocate for the health of children and expectant mothers, passed away before the hospital’s début. She and husband David Packard founded the hospital with a $40 million donation in 1986. “Her magnificent spirit still guides everything we do,” said Dawes. “She would have loved this place and all we’ve achieved.”

Those achievements include a series of notable breakthroughs in academic and clinical excellence, including:

- Launch of the first mobile clinic program in America specifically targeting underserved adolescents
- Development of a nonsteroid, immune-suppressing drug regimen for organ transplant recipients
- Open-heart surgery on the youngest and smallest infant ever to undergo such an operation
- Groundbreaking improvements in pregnancy and newborn care
- Leadership in pre-term birth research
- Pioneering food allergy research
- Studies focused on eradicating disease for children around the world
- Recognition as No. 1 in the nation in solid organ transplant volume

“I know my mother would be extraordinarily proud of everything Lucile Packard Children’s Hospital stands for,” said Susan Packard Orr, vice chair of the hospital’s board of directors. “The breakthrough discoveries, the community service, the family-centered approach and such great care are exactly what she wanted this hospital to be.”

Expanding access

“Major advances in patient care mean that more children today are living into adulthood with serious and chronic diseases that would have been fatal 15–25 years ago,” said Christy Sandborg, MD,
When visitors gaze out the windows of the patient rooms in the new Stanford Hospital, they will be able to look over a vista of rolling hills, rooftop gardens and green landscaping. But what they might not notice are the environmentally sensitive mechanisms designed to make the hospital sustainable and protect those expansive bedside views.

The 15-by-8-foot windows in most of the new hospital’s private patient rooms are among the first in the United States to integrate automated blinds inside tempered-glass panels to help cut down glare and heat from sunlight. A 6-inch air pocket between the inside and outside glass panels holds a Venetian blind controlled by sensors; an automated system opens, closes and raises the slats based on season, time of day and angle of the sun to stabilize room temperature and optimize comfort.

Energy efficiency

The curtain wall units are among the unique features of the new Stanford Hospital that incorporate sustainable design and energy conservation. While the building is designed to accommodate advanced treatments and technologies in a modern and welcoming environment, it also places a premium on environmental health and careful use of resources. Scheduled to open to patients in 2018, the new 824,000-square-foot hospital will use 20 to 30 percent less energy than a comparable hospital.

Recycled resources

The building features innovative heating, ventilation and air-conditioning systems that maximize efficiency and minimize demands on energy and water. Air will be brought in through low wall registers and circulate up to ceiling vents to make room temperatures more stable. Forty-five automated air-handling units will recycle about 80 percent of the building’s air; the automated systems will change air six times an hour in patient rooms and 12 times an hour in the operating rooms to maintain a sterile environment.

The windows were constructed in Austria since no U.S. factory could accommodate their size, according to Bert Hurlbut, vice president of construction for the new Stanford Hospital. The curtain wall units are slated for three levels on the south, east and west sides of the building to control the sunlight. In addition to reducing the risk of infection, the high-efficiency curtain wall glass will cut 97 percent of ultraviolet light and diffuse sunlight for comfort.

“We’ve introduced new systems for lighting, sunlight, water, heating, landscaping and infection control,” Hurlbut said. “We estimate the hospital will use 20 to 30 percent less energy than a comparable hospital.”

Electrical equipment, data servers and other heat-producing services are located below ground level, where they will be cooled by air drawn from a “moat” built around the 35-foot-deep foundation walls. Lights in conference rooms and multipurpose team rooms will be activated by sensors only when the rooms are in use.

Indoor air quality is a key component of sustainable concepts incorporated into the hospital’s design. Adhesives, sealants, paint, coatings, carpet systems and composite wood products were selected to reduce emissions. The building will be tested to verify optimal indoor air quality, and a combination of enhanced ventilation and a green cleaning protocol will maintain healthy indoor air quality.

A collection system on the third floor for condensate water—water extracted from cooled indoor air—will store up to 2,600 gallons to supplement the irrigation system of the five rooftop gardens. Four acres of native and low-water plants will create a living roof to provide a green retreat for relaxation. The gardens help to insulate the building and improve overall air quality.

Construction efforts

Even the building’s construction incorporates green practices. “The goal is to use 10 percent recycled content and 10 percent regional recycled resources,” said Adele Houghton, the project sustainability consultant. “The new Stanford Hospital building is twice the size of the current one.

BY THE NUMBERS

- 25% less energy than the average hospital
- 30% reduction in irrigation water
- 4 acres of gardens
- 15 by 8 feet average size of curtain wall units
- 540 curtain wall units covering 99,474 square feet
- 97% ultraviolet light diffused in patient rooms
- 10% construction material from recycled sources
- 1+ million gallons of water saved by recycling water used to wash trucks
starting an outbreak in the Bay Area. The traveler would have to have an active infection, which occurs within two to seven days after being bitten by an infected mosquito, and would have to be bitten by an Aedes mosquito in the Bay Area. The Aedes mosquito density is much lower in the Bay Area than it is in South and Central America and other tropical regions of the world. Also, we spend more time indoors here, decreasing outbreak risk. If there were an outbreak locally, county officials would likely monitor it and keep the public informed of needed precautions and developments.

Are there specific precautions people should take to protect themselves from the virus?

The Centers for Disease Control and Prevention (CDC) suggests avoiding travel to areas affected by the current outbreak. For people planning on travel to Latin America or the Caribbean, we highly suggest mosquito repellent. Pack clothing with adequate coverage (long sleeves and long pants), treat your clothing with mosquito repellent (like permethrin) before traveling, and apply mosquito repellent (DEET, picaridin) liberally and often. Avoiding the mosquito vector is your best chance of minimizing your risk of infection.

If you are concerned about being exposed at home despite the low risk, survey your house and yard for containers that collect water. Standing water in small containers—flowerpots, bird baths, garden fixtures, children’s toys or play structures, for example—is the preferred environment for Aedes mosquito breeding. Dumping out standing water will reduce mosquito breeding around your home.

What are the health risks associated with Zika?

Typically, Zika virus can cause a broad range of symptoms that have been described as “dengue-like syndrome.” Symptoms may include fever, headache, rash, muscle and arthritic joint pain, conjunctivitis (red eyes) and eye pain. These symptoms are usually mild and last a few days. About 80 percent of people who have been infected experience no symptoms, though symptoms may be worse in children or people with compromised immune systems.

The CDC is conducting an extensive investigation to determine whether microcephaly in newborns—children born with unusually small brains—and a severe neurologic disorder known as Guillian-Barré syndrome are linked to Zika virus and what may increase a patient’s likelihood of experiencing these serious problems. During a previous Zika virus outbreak in French Polynesia, the incidence of Guillian-Barré syndrome increased 20 times.

Some researchers believe that people in these regions may have a genetic or physiological susceptibility to a more severe form of Zika disease. Others believe that the strain of virus that is causing the current outbreak has mutated to be particularly virulent. Another thought is that previous exposure or co-infection with another virus, such as dengue virus, that is endemic in currently affected regions may increase the risk for severe Zika disease.

Are there Zika-prone areas of the world that travelers should avoid?

Zika virus transmission was documented in a total of 57 countries and territories. The current outbreak has been reported in 33 countries across South and Central America and throughout the Caribbean islands. Brazil has experienced a significantly large outbreak since May 2015. Six countries (Argentina, Chile, France, Italy, New Zealand and the United States) have reported locally acquired infection through sexual transmission. Vietnam is the most recent to report mosquito-borne Zika virus transmission.

What makes certain species of mosquitoes such powerful transmitters of Zika?

Aedes mosquitoes, specifically Aedes aegypti and Aedes albopictus, are the vectors for Zika virus and many other viruses. The female mosquitoes take blood meals from larger mammals to stimulate the development of eggs. These mosquitoes are anthropophilic, which means they prefer to feed on people. They bite during the day, making people more susceptible to bites. Aedes mosquitoes breed near the home environment, where often there are objects with small amounts of rainwater or pooled water, such as tires, containers used for water collection, empty planters and bowls. Breeding near the home makes them more likely to bite humans, as they do not need to travel far for a blood meal. Aedes aegypti females are nervous feeders, so any movement during feeding will make them fly off. This means that it takes an average of four or five human feedings for them to have a full blood meal to lay eggs, and the mosquito can infect during all of them. That means she can transmit viruses very efficiently.

There is some intensive research underway to characterize the virus and its impact on humans. What have been some of the most important developments thus far?

The most pressing research investigations on the current outbreak in South and Central America have focused on determining whether or not infection with Zika virus is causing the increased incidence of microcephaly or Guillian-Barré syndrome. Additionally, there is a large effort to develop faster and more accurate diagnostic tests, which will help monitor the spread of the outbreak without any laboratory lag time.

Research investigating the characteristics of the virus and mechanisms involved with the host immune response will assist with the development of a potential vaccine and targeted therapeutics.
Domino effect
Two patients benefit from rare transplant procedure

The first thing Linda Karr asked her doctor after her heart transplant surgery at Stanford Health Care was, “How is my heart donor doing?”

That question is as exceptionally rare as the surgery that made it possible. On Feb. 1, as part of a “domino” procedure, Karr received the heart of Tammy Griffin, who received a new heart and lungs from a deceased donor.

A little more than six weeks later, on March 17, the two women met for the first time. Griffin listened to her old heart beat in Karr’s chest as their families and Stanford Medicine doctors looked on. “I feel as though a world of possibilities opens up now for my future—kind of a second chance in life,” Karr told Griffin.

“Me too. I feel the same way,” Griffin said.

Karr, 53, promised Griffin, 51, that she’d take good care of her new heart, adding, “Even though we were strangers before today, you’ll always be part of me.”

Exchanging organs
Organs available for transplant are in short supply. Heart-lung combinations are even rarer because a set of heart and lungs is usually split up so that the organs can benefit two people instead of just one. Domino transplantation of a heart-lung and heart does, however, benefit two people. A highly unusual procedure, it has been performed at Stanford Medicine only eight times, the last one in 1994.

Griffin’s lungs had been critically affected by cystic fibrosis. Her lung capacity had diminished so much that she was on oxygen full time, unable to do much at all. She had so little energy that she couldn’t get through a shower without sitting down to rest.

Her heart, however, was still functioning well. “Her heart was an innocent bystander pushed out of its normal position in the middle of the lungs as her right lung shrank and the left one expanded,” said Joseph Woo, MD, a cardiothoracic surgeon at Stanford Health Care who oversaw and coordinated the surgical teams that conducted the domino procedure. That displacement made a heart-lung transplant the only viable option for Griffin, said Woo, who is also professor and chair of cardiothoracic surgery at Stanford School of Medicine.

Karr was diagnosed almost 20 years ago with right ventricular dysplasia, a genetic disease that causes a dangerously abnormal heart rhythm. Over time, it became difficult for her to walk down a hall at work without having to stop and rest. Even so, she wasn’t very high on the transplant waiting list.

“My doctor told me I’d have to be hospitalized to move up—and if my deterioration was rapid, I might not get a heart in time,” she said. Now she’s making good progress toward recovery, hoping to run a 10K again, ride a mountain bike or even just jog. “When I think about my future,” she said, “I am optimistic.”

A brighter future
Griffin is progressing in her recovery, too. “Now I can walk and talk at the same time,” she said. For the first time in more than two years, she said, she was able to walk with her husband on a beach.

Knowing that she was able to help someone else gives Griffin great joy. “I didn’t want my heart thrown away,” she said, “and I thought, I’ll be able to meet the person who has my heart! How many people can say that?”

“We hope this story will raise awareness of how scarce organs are,” said Woo. “People are waiting and dying on those transplant lists. We would like to see that change.”

Stanford Medicine surgeon Jack Boyd, MD, said he would remember one particular moment from the domino procedure: Once Griffin’s heart was sutured into Karr’s chest, blood flow through the aorta was restored. “Sometimes hearts don’t start up on their own,” Boyd said, “but in Karr’s case, Griffin’s heart started right up—and in a pretty normal rhythm,” he said. “It was truly awesome.”

The next 25
In the last 25 years, Lucile Packard Children’s Hospital has helped to lead the world in advancing pediatric research, care and training for the benefit of countless children, said Lloyd Minor, MD, dean of the School of Medicine. “As an integral part of Stanford Medicine, the hospital remains indispensable to our overarching vision for precision health, through which we win the race against childhood and adult disease before it even begins—preventing conditions before they strike and curing them decisively if they do,” Minor said. Learn more about the hospital’s history at 25years.stanfordchildrens.org.
Health spotlight at community event

More than 1,300 community members visited the medical center campus in May to learn about nutrition, wellness and other health topics at the annual Health Matters event. The day’s activities included an interactive pavilion featuring the best of Stanford Medicine.

Stanford Health Care names new CEO

David Entwistle has been named the new president and chief executive officer of Stanford Health Care, effective July 5. The chief executive officer at University of Utah Hospitals & Clinics since 2007, Entwistle will succeed Mariann Byerwalter, who has served as interim president and CEO since January 2016.

“David Entwistle has a distinguished record of accomplishment and dedication to the critically important role of academic medical centers in advancing human health,” said John Levin, chair of the board of Stanford Health Care. “As we plan for the opening of the new Stanford Hospital in 2018 and continue to innovate across the entire continuum of care, his commitment to combining the highest levels of quality with outstanding patient experience will help achieve an inspiring vision for the future.”

As the only academic medical center in a region that includes Utah and five surrounding states, University of Utah Hospitals & Clinics comprises 1,100 board-certified physicians who staff four university hospitals, 10 community clinics and several specialty centers.

“We are on the brink of an amazing transformation in how we approach health,” said Lloyd Minor, MD, dean of the School of Medicine. “David Entwistle is a proven leader who will collaborate effectively with Stanford Medicine physicians and with all our partners as we pursue the tremendous potential of the biomedical revolution in Precision Health to predict, prevent and treat disease as never before.”

Before joining the Utah system, Entwistle served as senior vice president and chief operating officer, as well as senior vice president of operations, for University of Wisconsin Hospital & Clinics. Previously he was vice president of professional services and joint venture operations at City of Hope National Medical Center, where he also served as president and chief executive officer for oncology management services.

“At this transformative time in health care, Stanford continues to raise the bar,” Entwistle said. “I am thrilled to be joining a premier institution on the leading edge of discovery, education and clinical care. I look forward to working with the Stanford Health Care board, executive team, physicians and staff, as well as with partners at Stanford School of Medicine and Stanford Children’s Health, to provide outstanding care and outcomes matched by exemplary patient experience.”

Community Matters from Page 1

For these patients, our unified efforts across Stanford Medicine become both lifesaving and life-defining, empowering patients with a broad set of unique medical, surgical, personal and emotional supports to treat their illness and help them live their best lives possible. For example, our patients with almost any congenital heart defect routinely have postsurgical survival rates higher than 98 percent. Our Adult Congenital Heart Program—one of the first programs of its kind—specifically addresses these patients’ unique needs as they grow and change to help them do much more than outlive their disease by improving their quality of life.

Our first glimpse of a patient may begin when parents undergo prenatal screening or genetic testing. Specialists follow high-risk pregnancies closely, relying on our diverse institutional resources to help counsel parents on what to expect not only for their newborn’s care but also for their child’s needs as he or she grows older. Even as a specially appointed care team is assembled to support the safest delivery, we’ve already planned ahead to provide the most advanced care in the years to come.

As a child grows, the care adapts to his or her changing needs. For teenage patients living with cystic fibrosis or congenital heart disease, who have undergone organ transplants or survived cancer, transition clinics support a seamless leap from pediatric care at Lucile Packard Children’s Hospital Stanford into adult care at Stanford Health Care. These clinics teach teens how to adapt to their condition as they grow into adulthood and how to navigate the health care system as independent adults.

This transition is an increasingly important aspect of lifespan care as we recognize that the number of young people aged 15 to 25 who fit the categories of survivor or living with chronic illness will soon rise to 10 percent, up from 1 percent before these lifesaving innovations were introduced.

At Stanford Medicine, lifespan care lies at the heart of our broad vision for Precision Health, through which we are not only preventing illness and perfecting treatment when it’s necessary but also supporting each individual’s unique needs across the years. This continuum of care allows our physicians and nurse scientists to learn the many presentations of disease across a lifetime and to deliver the predictive, preventive and personalized care each patient needs to live the fullest life possible.

Mothers of Sons: Guiding Your Son Through Adolescence

Speaker: Robert Lehman, MD
Co-founder, Heart-to-Heart Program
Date: Friday, June 17, 7 pm
Location: Freidenrich Auditorium, Lucile Packard Children’s Hospital Stanford, 725 Welch Road, Palo Alto
Fee. Register online at classes.stanfordchildrens.org.

Preparing for Multiples

A class for those expecting twins, triplets or more
Date: Saturday, July 16, noon–4:30 pm
Location: Community Programs Classroom, 4100 Bohannon Drive, Menlo Park
Fee. Register online at classes.stanfordchildrens.org.

Grandparents Seminar

Date: Monday, Aug. 2, 6–8:30 pm
Location: Community Programs Classroom, 4100 Bohannon Drive, Menlo Park
Fee. Register online at classes.stanfordchildrens.org.
New center brings unique services closer to families

In May, Stanford Children’s Health opened the doors to a new pediatric specialty center to expand access to outpatient care for children and adolescents and couples dealing with fertility issues.

Stanford Children’s Health Specialty Services – Sunnyvale brings Stanford Medicine’s world-class expertise closer to patients so that families don’t have to travel as far to receive the highest standards of care. Outpatient procedures and follow-up care are offered close to South Bay homes, reducing travel time and stress and opening more slots to see a specialist.

The 80,000-square-foot building houses more than 20 clinical subspecialties, including dermatology, urology, neurology and pediatric development. Designed for flexibility and comfort, it features large and comfortable exam rooms, adjacent changing rooms, adaptable meeting spaces and plenty of family-friendly design.

The new center also is home to unique medical and therapeutic services that feature the latest technology available. This includes an EEG and pulmonary function lab, a phototherapy room and a radiology suite with ultrasound, fluoroscopy and bone density scanning. A high-tech lab is dedicated to the diagnosis and rehabilitation of sports injuries, including concussions, in young athletes.

“Bringing access to specialty care closer to home is part of our response to an evolving health care environment,” said Kim Roberts, chief strategy officer and chief administrative officer of physician practices at Stanford Children’s Health. “Many kids may be treated initially at the hospital, but their follow-up can be done close to where they live. Stanford Children’s Health Specialty Services – Sunnyvale represents the next generation of how we are putting the family experience first.”

Unique features

To address the growing number of injuries among young athletes, the center includes a 6,000-square-foot Pediatric Motion and Sports Performance Lab to analyze and rehabilitate children with neuromuscular disorders or sports injuries, including concussions. Its state-of-the-art equipment includes an antigravity treadmill, virtual reality simulation, an adaptive gait analysis machine and electromyography, a diagnostic procedure to assess the health of muscles and nerve cells. The lab also will allow researchers to study the science of movement in young people.

For couples seeking fertility treatment, the building houses the center for Stanford Medicine Fertility and Reproductive Health, which consolidates reproductive endocrinology and infertility services into one site. Open seven days a week, the expanded service includes 10 exam rooms, five consultation rooms, two treatment suites and a telemedicine suite. The IVF lab suite houses embryology and micro-manipulation equipment and features a state-of-the-art air filtration system.

“By consolidating into one suite, we will be more comfortable for patients and more efficient in our procedures, which may lead to better outcomes.”

Support services

The building incorporates another unique feature: a radio-frequency identification system to streamline care and improve the patient experience, including a more efficient check-in and less waiting time.

Other services, such as Recreation Therapy & Child Life, social services, nutrition and on-call interpreters, are available onsite for immediate access for families. For staff, the center offers ongoing shuttles to and from the nearby Caltrain station, a private lactation room and spacious locker rooms with showers.

“The center strikes a balance, where we are close to the community and create a contemporary space to support physician practice,” Roberts said. “The building is flexible enough to grow in areas where demand is greatest. It’s not so much about square footage as it is about patient flow to make a positive experience for both visitors and staff.”

Stanford Children’s Health Specialty Services – Sunnyvale is located at 1195 W. Fremont Ave. The building is located close to both Highway 85 and Interstate 280, with plentiful parking.

SUSTAINABILITY FROM PAGE 3

materials from within 500 miles of the state of California,” Houghton said. “More than 75 percent of the construction waste is being diverted from landfill, including some of the structural steel and rebar, as well as metal framing and decking, acoustical ceiling panels, doors and aluminum louvers.”

Hurlbut estimates that more than 1 million gallons of water have been saved to date by recycling the water used to wash down truck wheels at the end of the workday. Copper pipes and ductwork for the operating rooms’ medical gas consoles were constructed offsite as one unit and brought into place, a system that is more efficient, safe and sustainable, he added. The project also incorporates an indoor air quality management plan, which reduces dust during construction and protects the ventilation system from construction dust.

“Everyone on the project is committed to sustainability,” Hurlbut said. “It’s a top priority to conserve resources, energy and water, and minimize our environmental impact on the community.”

Learn more about the Stanford University Medical Center Renewal Project at sumc.renewal.org.
His dear Watson
Chihuahua makes explaining narcolepsy look elementary

The family, including Jackson’s school-aged sister, came to the clinic early for the opportunity to meet Watson. As they crowded into the small room, Mignot lifted up an unzipped dog carrier (Watson’s “Cadillac”), and Watson—all ears and muzzle—tentatively stepped out.

“It’s a bit early for him,” Mignot apologized, pressing the dog against his chest and cooing to him in French. Although Watson is a bit shy around newcomers, Mignot takes him into the clinic when he treats children with narcolepsy, a growing population that can develop particularly severe symptoms, such as almost constant sleepiness or sudden episodes of muscle paralysis that occur with specific emotions.

As the children gingerly reached out to pet the Chihuahua, Mignot pulled out several small baggies packed with chicken. Watson watched eagerly, his tail wagging frantically. Mignot placed a slice of chicken on his finger, holding it in front of Watson’s twitchy, wet nose. Watson inhaled, then staggered backward, struggling to remain standing as he scarfed up the meat.

To this crowd, Mignot had no need to explain what was happening. Excited by the food, Watson was having cataplectic attacks. When he experienced strong emotions, the dog’s muscles went limp and his eyelids drooped. Within seconds, Watson would regain command and lunge for the food. Then, he’d struggle again. To cope with the attacks, Watson sometimes backs into a surface he knows will support him.

Jackson nodded knowingly. He tries to ward off his own attacks by shaking or smacking his lips, he said. But Watson doesn’t receive medication, Mignot said. He doesn’t have to go to school or work, and he can nap frequently during the day.

Jackson, like many who visit the Stanford Center for Narcolepsy, has been treated elsewhere. The disease is relatively rare—afflicting one in 2,000 people—and most physicians don’t receive adequate (or any) training in narcolepsy, Mignot said. In humans, it results when immune cells mistakenly attack nerve cells that produce hypocretin, a compound that promotes wakefulness in the brain.

There currently is no way to correct the disorder, so doctors treat the symptoms, which include daytime sleepiness, sleep disturbances and cataplectic attacks, with a combination of sedatives, stimulants and antidepressants. This balancing act can leave patients amped up on powerful stimulants, which can produce new behavioral symptoms.

Mignot is hopeful that a drug will be developed that promotes wakefulness in the cells that need it. Several groups are making inroads testing substances using animal models, he said. Until then, Watson assists him in inroads testing substances using animal models, he said. Until then, Watson assists him in