Behind recently approved cancer drug, a 30-year history of scientific breakthroughs

By Tracie White

Three years ago, 101-year-old Winnie Bazurto noticed a strange growth on her lower eyelid. She didn’t worry about it initially, but in 2012 it started getting bigger, fast — doubling in size every two weeks and growing into the orbit of her right eye, restricting her vision.

Diagnosed as basal cell carcinoma, the most common skin cancer, her main concern was that the painful growth would infiltrate the eyeball, possibly causing blindness. Bazurto’s options for treatment didn’t look good. Although still healthy, her age meant she was not a candidate for the eight-hour surgery necessary to remove the growth or the alternative, six weeks of radiation treatment.

But she was reluctant to lose the sight in her right eye and, along with it, much of her independence — not to mention her ability to watch a fastball on the television set.

Then a third option emerged: a new drug approved by the U.S. Food and Drug Administration in January 2012 called vismodegib (brand name Erivedge) to treat inoperable basal cell carcinomas.

As most patients prescribed a new drug, Bazurto knew little about the treatment of inoperable basal cell carcinomas. Dermatologist Jean Tang chats with Winnie Bazurto, who benefited from a drug recently approved for the treatment of inoperable basal cell carcinomas. The cancer had formed on Bazurto’s lower right eyelid.

In quest to objectively measure pain, researchers take promising new step

By Tracie White

A method of analyzing brain structure using advanced computer algorithms accurately predicted 76 percent of the time whether a patient had lower back pain in a new study by researchers from the School of Medicine.

The study, published online Dec. 17 in Cerebral Cortex, reported that using these algorithms to read brain scans may be an early step toward providing an objective method for diagnosing chronic pain.

“People have been looking for an objective pain detector — a ‘pain scanner’ — for a long time,” said Sean Mackey, MD, PhD, chief of the Division of Pain Medicine and professor of anesthesiology and perioperative medicine, and of neuroscience and neurology.

“We’re still a long way from that, but this method may someday augment self-reporting as the primary way of determining whether a patient is in chronic pain.”

The need for a better way to objectively measure pain instead of relying solely on self-reporting set off a long-term quest to develop an objective method for diagnosing chronic pain.

Scientists have been working on an objective pain detector — a ‘pain scanner’ — for a long time, Mackey said. But this method may provide a new hope for chronic pain sufferers.

Blood test can detect inflammatory condition

By Bruce Goldman

Scientists at the School of Medicine have identified a set of proteins circulating in blood whose levels accurately flag the presence of lymphedema. The findings, reported Dec. 18 in PLoS ONE, spur optimism that this common but relatively neglected condition, which affects an estimated 10 million people in the United States, finally will be amenable to detection (and, eventually, treatment) with 21st-century techniques.

Lymphedema is an often-painful inflammatory condition resulting from the blockage of lymphatic vessels that ordinarily drain fluid from the tissues throughout the body. In the developed world, lymphedema most often arises as an unintended consequence of radiation therapy for cancer. For example, about one in four breast-cancer survivors eventually develops lymphedema, said Stanley Rockson, MD, professor of cardiovascular medicine and the study’s senior author. Numerous other factors, including parasitic infections endemic in some developing countries, can cause it as well, he said.

The blunting of normal immune-cell flow due to lymphatic-vessel blockage helps to trigger the buildup of fluid within the affected area of the body, along with thickening of the skin, profound inflammation, accumulation of fibrous tissue,
Two researchers receive $6 million in state stem cell funds

The California Institute for Regenerative Medicine has awarded two researchers at the School of Medicine about $3.5 million each to pursue translational stem cell research for hearing loss and for correcting dysfuction caused by chemotherapy.

The Dec. 12 awards are part of a total of more than $56 million for the New Faculty Physician Scientist Translational Research Awards, which are intended to support physician-scientists aiming to bring cell therapy to the clinic.

Alan Cheng, MD, assistant professor of otolaryngology, will receive $3.1 million to investigate the biology of hair cells and their progenitors in the inner ear. These cells do not normally regenerate, and their loss is a major cause of hearing disorders, which affect over 278 million people worldwide.

Michelle Monje, MD, PhD, assistant professor of neurobiology and behavioral sciences, was awarded $2.8 million to investigate ways to identify and harness molecules involved in the generation and repair of neural white matter damaged by chemotherapy. Her goal is to create a drug therapy for chemotherapy-induced cognitive dysfunction, also known as "chemo-brain," which affects more than 1 million cancer survivors in California.

These awards help physician-scientists in the critical early stages of their careers, providing them salary and research support for up to five years,” said CIRM president Alan Trounson, PhD, in a statement. "With this support, we are hoping to create a whole new generation of world-class researchers in California."

Stanford has now received a total of almost $6 million from the state stem cell agency.

CIRM was established with the passage of Proposition 71, the California Stem Cell Research and Cures Act. The statewide ballot measure provided $3 billion in funding for stem cell research at California universities and research institutions and required setting up the agency, CIRM, to oversee allocations of the money.

The California Institute for Regenerative Medicine has awarded two researchers at the School of Medicine about $3.5 million each to pursue translational stem cell research for hearing loss and for correcting dysfunction caused by chemotherapy.

The Dec. 12 awards are part of a total of more than $56 million for the New Faculty Physician Scientist Translational Research Awards, which are intended to support physician-scientists aiming to bring cell therapy to the clinic.

Alan Cheng, MD, assistant professor of otolaryngology, will receive $3.1 million to investigate the biology of hair cells and their progenitors in the inner ear. These cells do not normally regenerate, and their loss is a major cause of hearing disorders, which affect over 278 million people worldwide.

Michelle Monje, MD, PhD, assistant professor of neurobiology and behavioral sciences, was awarded $2.8 million to investigate ways to identify and harness molecules involved in the generation and repair of neural white matter damaged by chemotherapy. Her goal is to create a drug therapy for chemotherapy-induced cognitive dysfunction, also known as "chemo-brain," which affects more than 1 million cancer survivors in California.

These awards help physician-scientists in the critical early stages of their careers, providing them salary and research support for up to five years,” said CIRM president Alan Trounson, PhD, in a statement. "With this support, we are hoping to create a whole new generation of world-class researchers in California."

Stanford has now received a total of almost $6 million from the state stem cell agency.

CIRM was established with the passage of Proposition 71, the California Stem Cell Research and Cures Act. The statewide ballot measure provided $3 billion in funding for stem cell research at California universities and research institutions and required setting up the agency, CIRM, to oversee allocations of the money.

The California Institute for Regenerative Medicine has awarded two researchers at the School of Medicine about $3.5 million each to pursue translational stem cell research for hearing loss and for correcting dysfunction caused by chemotherapy.

The Dec. 12 awards are part of a total of more than $56 million for the New Faculty Physician Scientist Translational Research Awards, which are intended to support physician-scientists aiming to bring cell therapy to the clinic.

Alan Cheng, MD, assistant professor of otolaryngology, will receive $3.1 million to investigate the biology of hair cells and their progenitors in the inner ear. These cells do not normally regenerate, and their loss is a major cause of hearing disorders, which affect over 278 million people worldwide.

Michelle Monje, MD, PhD, assistant professor of neurobiology and behavioral sciences, was awarded $2.8 million to investigate ways to identify and harness molecules involved in the generation and repair of neural white matter damaged by chemotherapy. Her goal is to create a drug therapy for chemotherapy-induced cognitive dysfunction, also known as "chemo-brain," which affects more than 1 million cancer survivors in California.

These awards help physician-scientists in the critical early stages of their careers, providing them salary and research support for up to five years,” said CIRM president Alan Trounson, PhD, in a statement. “With this support, we are hoping to create a whole new generation of world-class researchers in California."

Stanford has now received a total of almost $6 million from the state stem cell agency.

CIRM was established with the passage of Proposition 71, the California Stem Cell Research and Cures Act. The statewide ballot measure provided $3 billion in funding for stem cell research at California universities and research institutions and required setting up the agency, CIRM, to oversee allocations of the money.
A national drug shortage has been linked to a higher rate of relapse among children, teenagers and young adults with Hodgkin lymphoma enrolled in a national clinical trial, according to research led by St. Jude Children’s Research Hospital and Lucile Packard Children’s Hospital; Dana-Farber/Children’s Hospital Cancer Center in Boston, is working as the Pediatric Oncology Service’s director of communications for the School of Engineering.

Andrew Myers is associate director of communications for the School of Engineering.

Report offers first evidence of a drug shortage adversely affecting outcomes in specific patients, putting ‘face on the problem’

A national drug shortage has been linked to a higher rate of relapse among children, teenagers and young adults with Hodgkin lymphoma enrolled in a national clinical trial, according to research led by St. Jude Children’s Research Hospital.

Estimated two-year-cancer-free survival for patients enrolled in the study fell from 88 to 75 percent after May 2009. No study patients have died, but those who relapsed received additional intensive therapy that is associated with higher odds for infertility and other health problems later on.

Past shortages have been resolved in a variety of ways and always before a drug shortage became necessary, said Michael Link, MD, the senior author of the new report. Link is a professor of pediatrics in hematology-oncology at Stanford and a member of the pediatric hematology-oncology service at Pack ard Children’s. He is also the former past president of the American Society of Clinical Oncology.

“This puts a face on the problem of drug shortages and shows how real and theoretical. This is about a curative therapy that we were unable to administer because the treatment plan we developed for our patients was disrupted,” Link said. Despite heroic efforts by the drug shortage office of the Food and Drug Administration to solve the shortages of a number of medically necessary drugs, it is clear that limits on drug availability are still affecting treatment of lymph node involvement, plus the presence of unfavorable symptoms of fever, night sweats and unexplained weight loss.

The strategy involved 12 weeks of the seven-drug chemotherapy regimen. Patients also received radiotherapy with the dose based on their response to chemotherapy. When mechlorethamine became unavailable, the protocol was revised to allow the cyclophosphamide substitution. Changes for treatment of patients from 2010 to 2011 included intensive chemotherapy followed by a stem cell transplant using the patient’s own blood-producing stem cells.

Karl Deisseroth

"This is a devastating example of how drug shortages affect patients and why these shortages must be prevented," said Monika Metzger, MD, an associate member of the St. Jude Department of Oncology and the study’s principal investigator. "Our results demonstrate that, for many chemotherapy drugs, there are no adequate substitutes to ensure that patients receive the necessary treatment."

Past shortages have been resolved in a variety of ways and always before a drug shortage became necessary, said Michael Link, MD, the senior author of the new report. Link is a professor of pediatrics in hematology-oncology at Stanford and a member of the pediatric hematology-oncology service at Packard Children’s. He is also the former past president of the American Society of Clinical Oncology.

“This puts a face on the problem of drug shortages and shows how real and theoretical. This is about a curative therapy that we were unable to administer because the treatment plan we developed for our patients was disrupted,” Link said. Despite heroic efforts by the drug shortage office of the Food and Drug Administration to solve the shortages of a number of medically necessary drugs, it is clear that limits on drug availability are still affecting treatment of lymph node involvement, plus the presence of unfavorable symptoms of fever, night sweats and unexplained weight loss.

The strategy involved 12 weeks of the seven-drug chemotherapy regimen. Patients also received radiotherapy with the dose based on their response to chemotherapy. When mechlorethamine became unavailable, the protocol was revised to allow the cyclophosphamide substitution. Changes for treatment of patients from 2010 to 2011 included intensive chemotherapy followed by a stem cell transplant using the patient’s own blood-producing stem cells.

Karl Deisseroth

"This is a devastating example of how drug shortages affect patients and why these shortages must be prevented," said Monika Metzger, MD, an associate member of the St. Jude Department of Oncology and the study’s principal investigator. "Our results demonstrate that, for many chemotherapy drugs, there are no adequate substitutes to ensure that patients receive the necessary treatment."

Past shortages have been resolved in a variety of ways and always before a drug shortage became necessary, said Michael Link, MD, the senior author of the new report. Link is a professor of pediatrics in hematology-oncology at Stanford and a member of the pediatric hematology-oncology service at Packard Children’s. He is also the former past president of the American Society of Clinical Oncology.

“This puts a face on the problem of drug shortages and shows how real and theoretical. This is about a curative therapy that we were unable to administer because the treatment plan we developed for our patients was disrupted,” Link said. Despite heroic efforts by the drug shortage office of the Food and Drug Administration to solve the shortages of a number of medically necessary drugs, it is clear that limits on drug availability are still affecting treatment of lymph node involvement, plus the presence of unfavorable symptoms of fever, night sweats and unexplained weight loss.

The strategy involved 12 weeks of the seven-drug chemotherapy regimen. Patients also received radiotherapy with the dose based on their response to chemotherapy. When mechlorethamine became unavailable, the protocol was revised to allow the cyclophosphamide substitution. Changes for treatment of patients from 2010 to 2011 included intensive chemotherapy followed by a stem cell transplant using the patient’s own blood-producing stem cells.
They don't think I'll live long enough to pay for it," see clearly out of her right eye. Now Tang had a healthy baby boy, and Bazurto could in a white lab coat. When they first met in April, Tang zurto seated in her wheelchair at the Stanford Medi- 

"Is your vision OK?" "Oh, certainly," Bazurto said, rolling her eyes. "She's been the toughest thing ever," Tang said, shak- ing her head with admiration.

Today, there are six or seven labs on the Stanford campus that conduct research in the hedgehog path- 

"Hopefully, we will develop more of these types of drugs for other cancers in a faster cycle time."

In 1996, Scott and a team at UC-San Francisco led by Ervin Ep- 

"Scientists wanted to discover how all the molecu- lar switches, gears, pipes, transport systems — all sorts of machinary — worked to control the organization of embryos during their development. The hardware — genes and proteins like hedgehog — is deployed somewhat differently in different animals, like species-specific software, to give rise to the vast diversity of ani- mal forms," Scott said.

Sixteen years after the fruit fly discoveries, in 1996, Scott was named a Nobel laureate for his work as a key player in the history of hedgehog gene research, noted that the cancer drug based on that research was approved by the Food and Drug Administration in 2009. "It's not until the dots are connected 30 years later that it begins to make sense." For many of the basic scientists involved in this re- search, the clinical use of hedgehog-inhibiting drugs to treat patients like Bazurto — while not the original goal of their research — is the ultimate success. "I can't imagine a better birthday pres- ent. Even though I had nothing directly to do with vis- modgeg, to see the culmination of 30 years of research help patients live their lives better is enormously gratify- 

Twin who shared amniotic sac, a potenial source of high-risk pregnancies.

By Winter Johnson

Allison and Kevin Carlson got to take home two great Christmas gifts from Lucille Packard Children's Hospital — a set of rare monoamniotic twins named Kate and Annie, delivered on Nov. 7 at just 30 weeks gestation. "Twin who share the same amniotic sac, a condi- tion that occurs in less than 1 percent of all U.S. twin pregnancies, face serious risks — including cord en- tanglement, which can cut off the blood flow from the placenta to the fetus. With Kate and Annie, the girls' cords created a perfect but alarming knot and their heart rate was dropping, leading to an emer- gency cesarean section at Packard Children's Hospital. "Having a set of monoamniotic twins can be dan- gerous and unpredictable," said Susan Crowe, MD, who led the delivery team and noted that around 20 percent of these twins die from complications due to sharing the same sac. "With no membrane dividing them, the obstetrician has to balance the risk of pre- maturity with the risk of a cord event. But, thanks to the excellent care our NICU gives our high-risk cases and preemies, we expect very good outcomes if we can get them here."

Twins who are monoamniotic, like these, are delivered at 30 delivery date to minimize the risk of lung disease and other complications associated with prematurity, doctors determined on Nov. 7 that the twins' rapidly declining heart rate could not wait another 10 to 15 minutes — about 10 weeks before the babies would hit a full 40-week term. "Our doctors, nurses and neonatologists were just watching and waiting for the best possible care at a moment's notice for cases like this," Crowe said.

On one of the scariest days a new mom could ever imagine, "One of the nurses held my hand and spoke to me in a soothing voice as I was getting my anesthe- sia," Allison said. "She calmly walked me through the start procedure."

Neonatologist William Rhine, MD, was among those monitoring the preemies once they were suc- cessfully delivered and arrived in the neonatal inten- sive care unit, where the babies — weighing in at just 3 pounds for Kate, and 3 pounds, 2 ounces for Annie when they arrived — "It was a testament to the skill of the obstetricians to allow the twins to grow in the womb as much as they did, so that their lungs were able to
With ‘snorkel’ technique, Stanford vascular surgeons advance safe treatment of complex aortic aneurysms

By John Sanford

Geraldine Vitullo lay anesthetized on an operating table in a Central Valley hospital. Her surgery had come to an unexpected stop. “I don’t think I can proceed,” the surgeon told Vitullo’s husband.

The plan that day, in late 2011, had been to repair an aneurysm, a balloon-like bulge, in Vitullo’s abdominal aorta using a synthetic graft. The small tube was to replace the section of weakened arterial wall to prevent it from bursting.

But there was a problem: The aneurysm extended above branch arteries leading to her kidneys and intestines. This made the operation a much more complex challenge; the surgery to implant the stents he had made in her abdomen. When she woke up, she discovered her husband, the surgeon closed the long incision he had made in her abdomen.

For complex aortic aneurysms, “snorkel” stents enable blood flow to branch arteries that otherwise would be obstructed by the main stent graft.

Aneurysms are dangerous because they can rupture after a period of prolonged growth, causing large amounts of blood to leak into the abdominal cavity. When this happens, the overall mortality rate is about 50 percent even if the patient makes it to the operating room.

Vitullo’s aneurysm was only detected by happenstance; it showed up on an X-ray taken to identify the source of an ache in her back.

Lee is one of the world’s most experienced physicians in endovascular repair of complex aneurysms using this technique, which involves placing the snorkel stents next to the main stent to create pathways for blood to reach branch arteries. Lee uses similar combinations of stents to treat aneurysms that sit alongside other aortic branch arteries ranging from the heart down to the legs.

Lee used the snorkel technique to repair Vitullo’s aneurysm, which was more than 7 centimeters in diameter. First, he deployed the snorkel stents into the main aortic artery, just above her right thigh, through the small incision he had made in her abdomen. When she woke up, she discovered her husband, the surgeon closed the long incision he had made in her abdomen. When she woke up, she discovered her husband, the surgeon closed the long incision he had made in her abdomen.

Aneurysms are dangerous because they can rupture after a period of prolonged growth, causing large amounts of blood to leak into the abdominal cavity. When this happens, the overall mortality rate is about 50 percent even if the patient makes it to the operating room.

Ruptured AAA’s are highly associated with death even when treated appropriately, so early diagnosis prior to rupture and prompt intervention at the appropriate size are necessary to improve mortality from aneurysms," said Lee, who is also director of endovascular surgery at Stanford Hospital. "AAA’s are five times more common in men than women. Incidence increases with age. There is roughly a 20 percent chance that aneurysms larger than 5.5 centimeters in diameter will rupture over the course of several years. That risk increases to 50 percent when the diameter is greater than 7 centimeters. Lee said. Smoking, high blood pressure, obesity, high cholesterol and hypertension are all risk factors for the disorder. Individuals also may be genetically predisposed to it.

Lee used the snorkel technique to repair Vitullo’s aneurysm, which was more than 7 centimeters in diameter. First, he made a small puncture in her femoral artery, just above her right thigh, through which he guided the main stent graft.

See SNORKEL, page 6

Winter Johnson is a media relations manager for Packard Children’s Hospital. Winter Johnson is a media relations manager for Packard Children’s Hospital.

For Kevin and Allison Carlson, Christmas came early: Their twins were delivered Nov. 7, 10 weeks ahead of term. “Packard Children’s really put us at ease with their experience and expertise,” Kevin Carlson said.

Kate and Annie Carlson shared the same amniotic sac for 30 weeks. Monoamniotic twins account for less than 1 percent of all U.S. twin pregnancies. The condition poses risks for fetuses.

For Kevin and Allison Carlson, Christmas came early: Their twins were delivered Nov. 7, 10 weeks ahead of term. “Packard Children’s really put us at ease with their experience and expertise,” Kevin Carlson said.

Kate and Annie Carlson shared the same amniotic sac for 30 weeks. Monoamniotic twins account for less than 1 percent of all U.S. twin pregnancies. The condition poses risks for fetuses.
Many children with chronic disease or serious health conditions are at risk of cardiac arrest. Teaching their parents to perform cardiopulmonary resuscitation can save kids’ lives and prevent brain damage caused by delayed resuscitation. But ensuring that these parents receive time-efficient training before they leave the hospital with their child has been challenging.

Now, new research from Lucile Packard Children’s Hospital shows that a video-based, self-instructional take-home CPR kit provides these families with effective, efficient CPR training. The kit tested, called CPR Anytime, includes an instructional video and a mannequin for practicing CPR techniques, and is endorsed by the American Heart Association. Parents reported that this method of providing CPR improved their lasting knowledge of CPR techniques and improved their confidence in their ability to perform CPR, the study found. The kits also decreased the time nurses spent teaching CPR at hospital discharge, making discharge procedures more efficient. And for families in the study, the information parents learned may have saved their children’s lives.

The findings were published Jan. 8 in the Journal for Healthcare Quality.

“Parents felt empowered,” said senior author Lynda Knight, RN. “It allowed them to feel secure that they knew what to do if something ever happened and their child required CPR after hospital discharge. Knight and the resuscitation educator for Packard Children’s Center for Nursing Excellence and the director of the hospital’s AHA training center.

If a child’s breathing stops and his or her heart rate drops, prompt CPR can improve survival and prevent neurologic problems caused by oxygen deprivation, Knight said. But it usually takes 7 to 10 minutes for paramedics to arrive after a 911 call, a dangerously long time for the brain to go without oxygen, so it’s important for parents to initiate CPR prior to paramedics’ arrival.

The study examined 117 families whose children, age 18 or younger, were discharged from Packard Children’s after receiving care for serious medical conditions, including premature birth; episodes of interrupted breathing or an unstable heartbeat during the newborn period; solid-organ transplant; and several types of congenital problems. Parents of patients who went home from the hospital using oxygen, a ventilator or a tracheostomy tube to help them breathe were also included in the study.

During their hospital stay, each family received a CPR Anytime kit and used the video and mannequin to learn basic CPR skills. The kit follows principles shown to be effective for adult learning, allowing simultaneous CPR instruction and hands-on practice.

When these young patients left the hospital, the families took the kits and were encouraged to review them again at home. The research team called the parents at one, three and six months after discharge for brief telephone surveys about their use of the kits.

Six months after hospital discharge, the majority of parents in the study felt confident in their CPR skills. Eighty-two percent of parents had watched the video at least once after leaving the hospital, and 77 percent had shared the kit with at least two other family members or friends, suggesting that the kits were also helping spread CPR skills in the community.

The fact that families could review the material at home is especially useful in light of the many other skills they had to learn in the hospital, Knight said. Children with serious medical conditions may leave the hospital with complex medication regimens or medical equipment that parents must learn to manage. Nurses, who were also questioned in the study, liked that the CPR kits reduced the amount of material they had to teach families, and appreciated that the information was consistent and that the kits prevented families from having to wait for a nurse to become available for CPR instruction before hospital discharge.

“We have a large percentage of children with chronic conditions, and these families are very time-sensitive,” Knight said. “We want to make sure that they go home and know what to do. Our research suggests that the kit can be very helpful.”

The kits may even have saved the lives of a few children in the study. Five parents who received the kits reported performing CPR on their children at home, and four of the five children survived without neurologic damage. In contrast, overall survival rates for people who receive CPR in non-hospital settings tend to be quite low; one estimate put the survival rate at 5 to 10 percent. The five parents who performed CPR said that if they had not received the kits they would not have had time to attend CPR classes. They attributed knowing what to do in this scary situation to reviewing the materials in the kit.

Knight’s collaborators at Packard Children’s were Alan Schroeder, MD, a former fellow in the pediatric intensive care unit; nurse educator Stephanie Wintch, RN; respiratory care practitioner Vickie Arnold, RCP; and Amy Nichols, RN, EdD, director of the Center for Nursing Excellence at Packard Children’s.

The research was funded by an Innovation in Patient Care grant from Packard Children’s.

By Erin Digitale

Pain

continued from page 1

on self-reporting has long been acknowledged. But the highly subjective nature of pain has made this an elusive goal. Advances in neuroimaging techniques have initiated a debate over whether this may be possible. Such a tool would be particularly useful in treating very young or very old patients, or others who have difficulty communicating, Mackey said.

In a study published in 2011 in PLoS ONE, Mackey and colleagues used computer algorithms to analyze magnetic resonance imaging scans of the brain to accurately measure thermal pain in research subjects 81 percent of the time. But the question remained whether this could be a successful method for measuring chronic pain.

The goal of the new study was to accurately identify patients with lower back pain versus healthy individuals on the basis of structural changes to the brain and the brain’s response to potential pathological differences across the brain.

Researchers conducted MRI scans of 47 subjects who had severe chronic back pain and 47 healthy subjects and then used computer algorithms to analyze the brain scans and classify pain in a completely new set of individuals.

“The method successfully predicted the patients with lower back pain 76 percent of the time,” Mackey said. “Lower back pain is the most common chronic condition we deal with,” Mackey said. “In many cases, we don’t understand the cause. What we have learned is that the problem may not be in the back, but in the amplification coming from the back to the brain and nervous system. In this study, we did identify brain regions we think are playing a role in this phenomena.”

An estimated 100 million Americans suffer from chronic pain, and chronic low back pain, in particular, is the most common cause for activity limitation in those younger than 45, according to the study. The prevalence of lower back pain among the U.S. population has also risen significantly, from 3.9 percent in 1992 to 10.2 percent in 2006.

Previous studies have shown that there are functional changes in the brain of a chronic pain patient, and we show that structural changes may be used to differentiate between those with chronic lower back pain and those without,” said former research assistant Hoangeng Ung, the first author of the study who is now an MD/PhD student at the University of Pennsylvania School of Medicine. “This observation also suggests a role of the central nervous system in chronic pain, and that these changes may impact chronic pain management procedures of any center in the state,” Dalman said.

In addition to the snorkel technique and because of the extensive experience acquired by the Stanford vascular team in treating complex aortic aneurysms, Stanford Hospital was one of the first U.S. hospitals to have access to the Cook Zenith Fenestrated Aortic Endograft to treat complex AAAs near the renal arteries, which supply the kidneys. This stent graft, which was recently approved by the Food and Drug Administration, has fenestrations, or holes, on the side to provide blood flow to the renal arteries. Selection of hospitals to have unrestricted access to this technology was competitive, and Lee was the first U.S. physician to complete the proctoring and approval process to obtain full access to it.

Carrying on the Stanford vascular surgery team’s pioneering efforts, Lee is now studying which aneurysms are better treated by the snorkel technique and which are better treated by fenestrated grafts. New aortic disease management procedures of any center in the state,” Dalman said. This work was supported by a grant from the NIH, an International Association for the Study of Pain collaborative research grant and the Redlich Pain Research Endowment.

Other Stanford authors included former graduate student Justin Brown, PhD; postdoctoral scholar Kevin Johnson, PhD; and Jared Younger, PhD, assistant professor of anesthesiology, pain and perioperative medicine.

Stanford’s Department of Anesthesiology, Pain and Perioperative Medicine also supported the work.

Snorkel,

continued from page 5
Twins receive lifesaving kidney transplants from parents at Packard Children's Hospital

By Robert Dicks

Twins Addie and Max Graham will never have a birthday like this again. When they surrounded themselves with family and cupcakes at Lucile Packard Children's Hospital for their second birthdays just before Christmas, they celebrated a whole lot more than just a new red milestone. They also received a gift of life—what's wrapped forever in the love of parents.

“We didn’t think twice about donating a kidney to our kids,” said mom and ninth-grade teacher Stephanie Graham of Houston, who gave one of her kidneys to Addie in a “live donor” transplant last May at Packard Children's and Stanford Hospital. Then, last month on Dec. 11, dad Al was in Palo Alto donating a kidney to son Max. “We were thrilled to discover we were a match and could save our babies’ lives,” Al said.

Addie and Max were born nine weeks premature to the first-time parents on our babies’ lives,” Al said.

“Twin therapy...”

first time ever,” said Stephanie, who led Al’s surgery at Stanford Hospital. T wins Addie and Max Graham will be the second set of twins to undergo a kidney transplant at Packard Children’s Hospital in the last year. The procedure was done by removing one of Stephanie’s kidneys at Stanford. The operation was successful and the twins are recovering

Waldo Concepcion, MD, performed double duty by removing one of Stephanie’s kidneys at Stanford and then flasking over to Packard Children's to give Addie her new kidney. Max's health turned around drastically. Afterward, Addie started walking for the first time ever, and Stephanie was recovered from her own surgery quickly.

Then, last month, Al went through the same life-saving drill. A 16-year-old, Al had led Al’s surgery at Stanford Hospital, and Concepcion took the handoff of dad’s kidney for Max’s surgery at Packard Children’s later. Addie and Max were born in Texas with her parents in 1995. Among the patients included in the study are adults and their families in the hospital, clinic and home. As a part of developing services for aging adults, Stanford has invested in intensive work to become certified as a NICHE hospital.

curate assay for lymphedema could help to pave the road for future human clinical trials of drugs to treat it.” Monitoring trial subjects at the molecular level with a lymphedema-detecting blood test could provide early evidence regarding whether an experimental treatment was working. Rockson is involved in conducting clinical trials of pharmaceutical agents for lymphedema, and hopes to use the new test in those trials.

The National Heart, Lung and Blood Institute funded the study, whose first author was postdoctoral scholar Shin Lin, MD, PhD, MHS. Additional co-authors were Philip Tuan, PhD, professor of cardiovascular medicine; staff scientist Jeanne Kuo; former postdoctoral scholar Mi-Joong Lee, PhD (now at the University of Sydney); Leslie Roche, RN, clinical research coordinator at the Stanford Center for Lymphatic and Venous Disorders; and life science associate Nancy Yang. The school’s Department of Medicine also supported the work.

Twins receive ‘senior-friendly’ status for instituting program

Stanford Hospital & Clinics has achieved “senior-friendly” status for its aging adults program, strengthening its commitment to excellence in the care of patients who are age 65 and older.

The “senior-friendly” status recognizes Stanford for implementing the NICHE Geriatric Resource Nurse model and aging-sensitive policies, as well as for including input from patients, families and community-based providers in planning and implementation of program initiatives.

The status was assigned following a rigorous self-evaluation of the current state and future goals of the NICHE program at Stanford.

The hospital will be able to implement best practices for the care of aging adults at Stanford is so gratifying,” said Rita Ghatak, PhD, director for Packard Children’s Hospital.

Stanford Hospital & Clinics has achieved “senior-friendly” status for its Aging Adult Services Program. “With the promise of longevity upon us, improving the care of aging adults is now an imperative,” said Rita Ghatak, PhD, director of the Aging Adult Services Program. “With the promise of longevity upon us, improving the care of aging adults is now an imperative.”

With its staff of elder-care experts and geriatricians, SHC’s Aging Adult Services Program has recognized and addressed the needs and concerns of aging adults and their families in the hospital, clinic and home. As a part of developing services for aging adults, Stanford has invested in intensive work to become certified as a NICHE hospital.

In the meantime, there were endless surgeries and near-death moments. Both children desperately needed a kidney transplant, especially Addie. But unhappily, most transplant centers have no experience transplanting kidneys in children weighing less than 33 pounds. Both Addie and Max were smaller than that. That’s when the Grahams found the nephrology and kidney transplant team at Packard Children’s, one of the top three in volume, outcomes and treatment. “We have exceptional experience and success transplanting small kidneys like Addie and Max,” said Gerri James, RN, kidney transplant coordinator.

“Al and I were so relieved to find Packard Children’s,” Stephanie said.

On May 8, 2012, surgeon Waldo Concepcion, MD, performed double duty by removing one of Stephanie’s kidneys at Stanford and then flasking over to Packard Children’s to give Addie her new kidney. Max's health turned around drastically. Afterward, Addie started walking for the first time ever, and Stephanie was recovered from her own surgery quickly.

Then, last month, Al went through the same life-saving drill. A 16-year-old, Al had led Al’s surgery at Stanford Hospital, and Concepcion took the handoff of dad’s kidney for Max’s surgery at Packard Children’s later. Addie and Max were born in Texas with her parents in 1995. Among the patients included in the study are adults and their families in the hospital, clinic and home. As a part of developing services for aging adults, Stanford has invested in intensive work to become certified as a NICHE hospital.

Twins receive ‘senior-friendly’ status for instituting program

Stanford Hospital & Clinics has achieved “senior-friendly” status for its Aging Adult Services Program. “With the promise of longevity upon us, improving the care of aging adults is now an imperative,” said Rita Ghatak, PhD, director of the Aging Adult Services Program. “With the promise of longevity upon us, improving the care of aging adults is now an imperative.”

With its staff of elder-care experts and geriatricians, SHC’s Aging Adult Services Program has recognized and addressed the needs and concerns of aging adults and their families in the hospital, clinic and home. As a part of developing services for aging adults, Stanford has invested in intensive work to become certified as a NICHE hospital.
Hospital safety engineer knows how to rock ‘n’ roll

By John Sanford

By day, John Vaughan is a senior safety engineer, responsible for initiatives and programs aimed at protecting Stanford Hospital & Clinics and Lucile Packard Children’s Hospital employees from job-related injuries. By night and on weekends, he is a maestro of the pedal steel guitar and band member of Them Slack Jawed Sons of Bitches. “We say that we play rubber-burning honky-tonk,” Vaughan said. Vaughan, 68, has played many kinds of music — country, rock, bossa nova — with many different bands. He is a serious musician. From 1967 to 1970, he played lead guitar for Mind Garage, a psychedelic, proto-Christian-rock group that recorded two albums and two singles for RCA. Its music was dubbed “theo-rock” by The Village Voice, including Canned Heat, Sly and the Family Stone and Paul Butterfield. Its “Electric Liturgy” was the first known Christian rock worship service.

Vaughan grew up in Summersville, W.Va., listening to the Grand Ole Opry and Christian music on the radio show WWVA Jamboree, now called The Wheeling Jamboree. His father was a Baptist preacher, so he also was exposed to choral and other church music at an early age. “I was 7 or 8 years old,” he said. “I played a ukulele. After about a year, I got my first guitar.”

But he was converted to the pedal steel guitar after hearing it played on an album by the Flying Burrito Brothers in the early 1970s. It’s a complicated instrument. One or more guitar necks are mounted horizontally on a stand. You pluck the strings with one hand and, with the other, run a steel tone bar up and down the strings to control pitch, which you also control with pedals and knee levers. The sound is recognizable to anyone familiar with country music.

“Education-wise, I have a kind of checkered history,” he said. He earned a bachelor’s degree in horticulture in 1973. Then, in 1983, he earned master’s degree in engineering. “That was the best move I ever made,” he said. He took a job helping businesses throughout the United States make their workplaces accessible for employees with disabilities.

Today, he and his wife, Cynthia, live in San Jose. A member of the Risk Management Department, Vaughan, who manages workplace ergonomics, the Safe Patient Handling Program and Slip/Trip & Fall Prevention Initiative, said he enjoys his work for the hospitals. “I mean, it keeps my interest at all times, and the people in Risk Management are wonderful to work with,” he said. “I’ll probably keep doing this until I can’t.” For more information about Them Slack Jawed Sons of Bitches, visit http://www.themslackjawedsongsofbitches.com.

Vaughan formerly played lead guitar for Mind Garage, a rock group that recorded two albums and two singles for RCA.

Future of primary care focus of panel tonight

Amir Dan Rubin, president and CEO of Stanford Hospital & Clinics, and Lloyd Minor, MD, dean of the School of Medicine, will discuss their visions for the future of primary care at Stanford and across the nation from 5:30 to 7 p.m. today in room 120 of the Li Ka Shing Center for Learning and Knowledge. The event is free and open to the public. Sang-ick Chang, MD, MPH, assistant dean for clinical affairs, will moderate and participate in the panel discussion, which kicks off a medical school lecture series titled “The Future of Primary Care.” Audience members will have the opportunity to ask questions of the panelists.

In the past year, the hospital and the medical school have jointly launched strategic initiatives to position Stanford as a leader in helping to create the nation’s primary care system of the future — one that will better meet patients’ needs, improve the overall health of the population and reduce health-care costs.

When in Sweden...

Brian Kobilka, MD, winner of the 2012 Nobel Prize in Chemistry, arrived with his family in Stockholm Dec. 4 for a week of pomp and circumstance, starting with a fitting at a local haberdashery for the ceremony’s formal white tie and tails dress requirement. Kobilka was seated next to the Swedish Crown Princess Victoria at a banquet (left) following the awards ceremony Dec. 10 at the Stockholm Concert Hall. After receiving the award earlier that day from His Majesty King Carl XVI Gustaf of Sweden, Kobilka paused for photos (right). The week was filled with receptions, lectures, interviews and audiences with the Swedish royal family. Kobilka was chauffeured through the snow-covered city in a BMW and stayed at a suite in the Grand Hotel.

When in Sweden...