South Bay cancer center opens to first patients

By Sara Wykes

Forty-one months after the Stanford Cancer Center South Bay opened its doors to its first patients, including Trillo, established to serve patients in the populous South Bay, the center is Stanford Health Care’s first off-campus outpatient clinic for the diagnosis and treatment of cancer. It occupies an existing 70,000-square-foot building, located at 2589 Samaritan Drive in San Jose, that is visible from the intersection of highways 17 and 85.

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Checking in once

A patient and family advisory council recommended ways to maximize patient comfort at the new cancer center. “This stunning new facility feels like it’s right in your backyard,” said Trillo.

By Jennie Dusheck

An international team of researchers has found some of the first solid evidence that narcolepsy may be a so-called “hit-and-run” autoimmune disease.

The researchers sought to determine why, of two different flu vaccines widely deployed during the 2009 swine flu pandemic, only one was associated with a spike in the incidence of narcolepsy, a rare sleep disorder.

A paper describing their findings was published July 1 in Science Translational Medicine. Lawrence Steinman, MD, a professor of pediatrics and of neurology and neurological sciences, is the senior author. The first author is Sohail Ahmed, MD, who was global head of clinical sciences at Novartis Vaccines at the time of the study.

Autoimmune diseases, such as multiple sclerosis and rheumatoid arthritis, are well-known for taking decades to ravage the nervous system, joints or other organ systems. But since the late 1990s, researchers have hypothesized a different kind of autoimmune disease, one that may occur rapidly, pinpoint damage and leave virtually no trace of its work. Narcolepsy is suspected of being one of these hit-and-run diseases.

Gene variants increase susceptibility

Narcolepsy is a chronic, incurable and lifelong brain disorder that interferes with normal sleep-wake cycles and causes an array of symptoms, including overwhelming daytime sleepiness and sleep attacks that can strike at any time — even in the middle of a conversation. What causes narcolepsy has been a source of fascination among scientists for decades.

Narcolepsy cases most often occur at random, as opposed to being strictly inherited, although certain gene variants can make people more susceptible to it. For example, nearly everyone who has narcolepsy accompanied by cataplexy, a condition that causes sudden episodes of muscle weakness, carries a gene variant called HLA.

The researchers sought to determine why, of two different flu vaccines widely deployed during the 2009 swine flu pandemic, only one was associated with a spike in the incidence of narcolepsy, a rare sleep disorder.

A new study indicates that adolescents are confused about whether e-cigarettes are harmful.

By Erin Digitale

Teenagers are very familiar with the risks of smoking cigarettes, but are much less sure whether marijuana or e-cigarettes are harmful, according to a new study by researchers at the School of Medicine.

While adolescents get clear messages from their families, peers and the media about the harms of smoking cigarettes, they receive conflicting or sparse information about the harms of marijuana and e-cigarettes, the study showed.

The findings were published online June 23 in the Journal of Adolescent Health.

“The key here is that kids are good at describing the harmful things that happen with cigarette smoking, but when we asked about other products, there was a lot of confusion,” said the study’s lead author, Maria Roditi.

By Krista Conger

DNA from the 8,500-year-old skull of an adult man found in 1996 in Washington, is more closely related to Native American populations than to any other population in the world, according to an international collaborative study conducted by scientists at the University of Copenhagen and the School of Medicine.

The finding challenges a 2014 study that concluded, based on anatomical data, that Kennewick Man was more related to indigenous Japanese or Polynesian peoples than to Native Americans. The study is likely to reignite a long-standing legal dispute regarding the skeleton’s provenance and its eventual fate.

Byiqlov: P. Fujii / Smits/ONIAN

Researchers have gained new insight into how neurons control muscle movement.

See e-Cigarettes, page 6

See CENTER, page 6

See Narcolepsy, page 7

By Jennie Dusheck

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Eating disorders have been described in medical literature since the 1870s, but until now there have been no guidelines that codify the best way to treat children and adolescents affected by these conditions — only guidelines for adults.

**Lock:** There have never been practice parameters that address eating disorders in children and adolescents, and expertise in treating these disorders has been sort of sequestered. Yet eating disorders are so prevalent and so critical of which certainly is true in adolescent girls is around 1 percent, and the disorders have among the highest fatality rates of all mental illnesses.

Teens need treatment approaches that account for their level of physical and emotional development, the fact that they are in a developmental stage where they want and need to be involved in their recovery, and the fact that they have not usually had eating disorders along as adults with the same diagnoses.

In addition, so many training programs in psychology and psychiatry don't really give opportunities for training in how to treat eating disorders. It's a terrible limitation of many training programs; they should all provide training opportunities for learning about eating-disorder patients in a systematic way. I hope the new practice parameters will help facilitate that.

The fact that these guidelines were very thoroughly vetted should give caregivers confidence in them. There is consensus around these recommendations. Practice guidelines also became really important for patients and caregivers when they're thinking about what to pay for and how to organize care.

**Lock:** For many decades, the idea was that to treat eating disorders — especially anorexia nervosa, which has had a specific diagnosis since 1874 — it was necessary for medical and psychiatric specialists to take children out of their usual lives and put them in the hospital for long periods. But over the last 15-20 years, we've seen emerging alternatives, such as day and outpatient programs. So there's no different in outcome between the two types of treatment. That means inpatient treatment is not necessary, but on average, how much treatment do people receive. It's a strong statement that runs contrary to the history of treating kids and adults who have anorexia nervosa with prolonged hospitalization.

**Lock:** When families are involved in their child's eating-disorder treatment, what are they actually doing and how do they learn what to do?

**Lock:** Families should be involved in the care of their eating-disorder patients. It's important to prevent eating-disordered behaviors and promote normalization eating, and do so in a supporting and loving fashion. If the behaviors and thinking associated with eating disorders are often not well-understood by parents, our team of professionals helps parents learn how to address them.

3. ** Loch:** There is a long history of removing young patients from their families as part of treatment for eating disorders, particularly anorexia nervosa. But that's not what the new parameters recommend. Why the shift?

**Lock:** The odd thing was leaving parents out in the first place. At our Comprehensive Eating Disorders Program, parents help by learning how to help prevent eating-disordered behaviors and promote normal eating, and do so in a supporting and loving fashion. The behaviors and thinking associated with eating disorders are often not well-understood by parents, our team of professionals helps parents learn how to address them.

4. **Lock:** The changes to the DSM don't really change recommendations for care. But what's important about the DSM-5 is that it allows people who treat children and adolescents who have anorexia nervosa but has missed two menstrual periods instead of three, or a teen who meets most criteria for anorexia nervosa but doesn't have the history of treating kids and adults who have anorexia nervosa with prolonged hospitalization.

**Lock:** First, that outpatient treatment is the best line of treatment. It's a strong statement that runs contrary to the history of treating kids and adults who have anorexia nervosa with prolonged hospitalization.

**Lock:** The most prominent and convincing evidence for this, the authors wrote, “Even if total consumption of antimicrobial resistance in low- and middle-income countries used in the study, 49 percent of health expenditures were, on average, private. And the majority of those patients who meet criteria for anorexia nervosa but has missed two menstrual periods instead of three, or a teen who meets most criteria for anorexia nervosa but doesn't have the history of treating kids and adults who have anorexia nervosa with prolonged hospitalization.

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Cystic fibrosis deadlier for Hispanics than non-Hispanics

By Erin Digitale

Cystic fibrosis is more deadly for Hispanic than non-Hispanic patients, a disparity that is not explained by differences in access to health care, according to a new study from the School of Medicine.

The study, published online June 18 in Chest, tracked more than 1,700 California residents with cystic fibrosis. Between 1991 and 2010, Hispanic CF patients were almost three times as likely to die as non-Hispanic CF patients, the study found. The gap in survival existed in spite of the fact that both groups visited CF specialty clinics equally often. Furthermore, the study uncovered genetic differences between the two groups that may have put Hispanic patients at a disadvantage when it came to being able to benefit from new CF therapies.

"We need to ask if the care model for patients with CF is working for this minority group," said MyMy Buu, MD, the study’s lead author and an instructor in pediatric pulmonary medicine. "We want to work toward the idea that what we are doing is not inadvertently causing disease.

In California, Hispanic patients with cystic fibrosis were three times as likely to die from the disease as their non-Hispanic counterparts.

Though no previous research has examined the reasons behind this disparity, the authors wrote, "Common bacterial pathogens have increasingly developed resistance to most of the currently available antibiotics. This phenomenon, coupled with a dry antibiotic pipeline, has led the World Health Organization to warn of a "post-antibiotic era," in which common infections and minor injuries can kill."

Resistant organisms are more difficult to treat and associated with higher morbidity and mortality than their susceptible counterparts. The Centers for Disease Control and Prevention estimates that resistance to antibiotics causes 2 million illnesses and 23,000 deaths a year in the United States. Estimates of the impact of antimicrobial resistance on the U.S. economy include $25 billion a year due to lost productivity.

The concern over rising antimicrobial resistance is not limited to the developed world, the authors wrote, noting that "both the prevalence of resistance among intestinal, respiratory and sexually transmitted pathogens is increasing in developing countries."

Alsan and her co-authors believe that controlling the spread of resistant bacterial pathogens is an urgent global public health priority.

Though no previous research has examined the relationship between out-of-pocket payments and antibiotic resistance in low- and middle-income countries, the authors wrote that their findings are consistent with the work of researchers who have found that supplier-induced demand is an important determinant for excess use of health care.

Most developing economies have a robust, informal, private health-care sector that operates alongside the more traditional one. If the public and private health care sectors fail to properly reward or punish one another to reduce drug overuse, the prediction from consumer theory is that higher copayments for medication will shift more consumers to the private sector in search of cheaper drugs. The authors developed a mathematical economic model to demonstrate this point.

They used the recently published data set collected by the WHO to assess the role of such out-of-pocket payments, while adjusting for other key predictors, on the prevalence of antimicrobial resistance across a sample of low- and middle-income countries.

The authors found that out-of-pocket health expenditures were statistically more important than any other health system-level environmental factors — including economic growth, livestock production, access to sanitation and other institutional features of the health sector — in predicting antimicrobial resistance across low- and middle-income countries. Moreover, this pattern was driven by countries that require copayments for medication.
Cause of kidney failure key when planning future treatment

By Tracie White

As a new physician in Galway, Ireland, and then as a nephrology fellow at Stanford’s School of Medicine, Michelle O'Shaughnessy, MD, began to wonder whether similar treatment plans for all patients whose kidneys had failed was necessarily the best practice.

"I was struck by my patients, who were often young and on dialysis at the age of 23 or 24," O’Shaughnessy said, referring to patients whose kidneys had failed because of glomerulonephritis, a group of rare disorders that damage the kidney’s ability to filter the blood.

"I thought there should be other avenues for them," she added. "They were trying to get to a new career, going to keep their life together. We should be able to treat them better."

Currently, the standard of care is to follow a similar treatment plan for most kidney-failure patients, whatever the initial cause of their kidney failure. The two leading causes in the United States are hypertension and diabetes, followed by the rarer glomerulonephritis, which is also called glomerular disease.

"The cause of the kidney failure and the side effects of prior treatments are often disregarded," O’Shaughnessy said. "All these patients receive the same kind of generic treatment approach: a transplant or dialysis. The original cause of kidney failure is not usually taken into account."

O’Shaughnessy set out to research whether it might be more beneficial to tailor treatment plans individually for kidney failure patients. For example, a patient with a high risk for infections may benefit from a certain type of vascular access for dialysis, or a patient at increased risk for cancer may benefit from more regular cancer screening before and after kidney transplantation.

Subtype of disease matters

In a resulting study, published online June 19 in the *Clinical Journal of the American Society of Nephrology*, O’Shaughnessy and colleagues used big data to determine that mortality rates for patients whose kidney failure was attributed to glomerulonephritis vary significantly according to which subtype of the disease they had. These results suggest that treatment plans should vary according to root causes of kidney failure, she said.

"We showed that a patient’s cause of kidney failure is strongly associated with their risk of dying after starting dialysis or receiving a kidney transplant," she said. "This suggests that the cause of kidney failure should not be forgotten even after a patient’s kidneys fail; instead, treatment should be tailored toward disease-specific risks, and research should be carried out to determine why these survival disparities exist.

Researchers examined data from 84,301 patients who, between 1996 and 2011, suffered end-stage kidney disease attributed to one of the six major glomerular disease subtypes. They followed these patients to see what their survival was like," O’Shaughnessy said. "We observed quite significant differences in survival."

Results showed that the specific type of glomerular disease determined how long a patient lived after developing kidney failure. For example, mortality ranged from 4 percent per year for patients with the subtype IgA nephropathy to 16 percent per year for patients with the subtype vasculitis. After adjusting for various differences among patients — such as their age, whether they had diabetes or had received a kidney transplant — the researchers found that patients with lupus nephritis were almost twice as likely to die as patients with IgA nephropathy.

"When you divide patients according to their glomerular disease subtype, you actually see a whole spectrum of outcomes," O’Shaughnessy said.

Kidney failure in children

Glomerulonephritis is the leading cause of kidney failure in children. It is most commonly an autoimmune disease that is characterized by inflammation of the glomeruli, tiny blood vessels in the kidneys that remove waste and excess fluids from the body. But each of the many glomerular disease subtypes is unique. In certain subtypes, the immune system attacks the kidneys; in others, it damages the kidney in a different way.

As a result, the various subtypes are treated using different methods before the kidneys begin to fail. The treatments may include steroids or stronger immunosuppressant medications. The resulting side effects can range from severe infections to diabetes to cancer.

"The rest of the body, apart from the kidneys, has had different degrees of damage from the disease itself and the types of treatments it has undergone prior to kidney failure," O’Shaughnessy said.

"When the patients go to dialysis or have a kidney transplant, it’s still important for us to remember that — and to treat accordingly," O’Shaughnessy thought about this when she was making her rounds as a new physician caring for young patients on dialysis.

"It occurred to me that when I saw those patients, they weren’t telling me how they were worried about the fact that they’ve got glomerular disease," she said. "When I saw them at the clinic or at the dialysis center, they were bothered by the fact that they were getting infections or cancer, or developing other side effects from their medications."

It’s important to know why one kidney patient does well and another does poorly, she said. If physicians take it into consideration what caused the kidneys to fail in the first place and what types of treatments patients received prior to kidney failure, it could possibly improve the patients’ quality of life or increase their life span, she added.

Wolfgang Winkelmayer, MD, a former Stanford faculty member who is now professor of nephrology at Baylor College of Medicine, is senior author of the study. Other Stanford authors are Maria Montez-Rath, PhD, research associate, and Richard Lafayette, MD, associate professor of nephrology.

The study was supported by funding from the ASN Foundation for Kidney Research and the National Institutes of Health.

Stanford’s Department of Medicine also supported the work.
Researchers shed light on how neurons control muscle movement

By Barbara Feder Ostrov

Stanford University researchers studying how the brain controls movement in people with paralysis, related to their diagnosis of Lou Gehrig’s disease, have found that groups of neurons work together, firing in complex rhythms to signal muscles about when and where to move.

“We hope to apply these findings to create prosthetic devices, such as robotic arms, that better understand and respond to a person’s thoughts,” said Jamie Henderso, MD, professor of neurology and neuroscience, and a Howard Hughes Medical Institute investigator.

The study builds on groundbreaking Stanford animal research that fundamentally has changed how scientists think about how motor cortical neurons work to control movements. “The earlier research with animals showed that many of the firing patterns that seem so confusing when we look at individual neurons become clear when we look at large groups of neurons together as a dynamical system,” Pandarinath said.

Previously, researchers had two theories about how neurons in the motor cortex might control movement: One was that these neurons fired in patterns that represented more abstract commands, such as “move your arm to the right,” and then neurons in different brain areas would translate those instructions to guide the movements. The other was that the motor cortex neurons would actually send signals to specific targets in the arm muscles, telling the arms how to contract.

But in a 2012 Nature paper, Shenoy and his colleagues reported finding that much more is going on: Motor cortical neurons work as part of an interconnected circuit—a so-called dynamical system—to create rhythmic patterns of neural activity. As these irregular patterns are sent to the arm, they drive muscle contractions, causing the arm to move. “What we discovered in our preclinical work is evidence of how groups of neurons coordinate and cooperate with each other in a very particular way that gives us deeper insight into how the brain is controlling the muscles,” Shenoy said.

He and his colleagues wanted to know whether neurons fired similarly in humans.

Recording human brain activity

To conduct the study, the researchers recorded motor cortical brain activity of two research participants with the degenerative neurological condition called amyotrophic lateral sclerosis, or ALS. The condition, which also is known as Lou Gehrig’s disease, damages neurons and causes patients to lose control over their muscles.

The participants, a 51-year-old woman who remained some time in her fingers and wrists, and a 54-year-old man who could still move one of his index fingers slightly, are participants in the BrainGate2 trial, which is testing a neural interface system allowing thoughts to control computer cursors, robotic arms and other assistive devices.

These participants had electrode arrays implanted in their brains’ motor cortex for the trial. That allowed researchers to record electrical brain activity from individual neurons while the participants moved or tried to move their fingers and wrists, which were equipped with sensors to record physical movement. Typically, such mapping in humans can only occur during brain surgery.

The participants’ implants provided an “opportunity to ask important scientific questions,” Shenoy said. The researchers found that the ALS patients’ neurons worked very similarly to the preclinical research findings.

Researchers now plan to use their data to improve the algorithms that translate neural activity in the form of electrical impulses into control signals that can guide a robotic arm or a computer cursor.

Other Stanford co-authors of the paper are former research associate Vikash Gilja, PhD; research assistant Christine Blake; and postdoctoral scholar Paul Nuyujukian, MD, PhD.

The study was funded by the Stanford Institute for Neuro-Innovation and Translational Neuroscience, Stanford BioX/NeuroVentures, the Stanford Office of Postdoctoral Affairs, the Gurkich Foundation, the Reeve Foundation, the Craig H. Neilsen Foundation, the National Institutes of Health, the Department of Veterans Affairs and the MGH-Deane Institute for Integrated Research on Attrial Fibrillation and Stroke.

Stanford’s Department of Neurosurgery, Department of Neurology and Neurological Sciences and Department of Electrical Engineering also supported the work.

Inga Goodnight worked to return to her normal life, managing her husband’s business and dedicating herself to a family that had expanded from two to seven children. She employed a full-time housekeeper and a chauffeur to ferry her between appointments. Inga realized the power of her new kidney, which had been transplanted after a severe accident. As a result of the accident, Inga and her family had moved to Arizona, where she worked as a Lockheed Martin satellite contractor.

Inga returned to work and cared for her family. She learned to drive—previously she had relied on her husband—and her choice of car, a 1965 Mustang, earned her the nickname “Mustang Sally” from her sons. She took an active role in raising several of her grandchildren.

“As it was a difficult and uncertain time for the Goodnight family. Fortunately, the operation went smoothly, and Gary’s new kidney started producing urine right away. The transplant was a success, and the difference for Gary was immediate. “After the surgery, Gary was able to leave the hospital knowing that he had a chance to live a normal life,” said Jane Tan, MD, PhD, associate professor of medicine at Stanford and a physician with Stanford Health Care’s kidney transplant clinic for the past 15 years. “It really transforms their lives,” she added.

After his surgery, Gary was able to return to his hobby of drag racing and rejoin his team for a National Hot Rod Association-sponsored trip to introduce the sport to Australia. Later he lived in England, where he worked as a Lockheed Martin satellite contractor.

Inga earned the nickname “Mustang Sally” from her sons. She took an active role in raising several of her grandchildren.

Inga lived such a healthy, long life, and that’s what we hope for all donors,” Tan said.

Today there are more than 100,000 people in the United States on the kidney transplant waiting list, according to the National Kidney Foundation, with someone being added to the list every 14 minutes. Last year, over 40 percent of the kidney donors were live donors, of whom half were relatives of the recipient. “Kidney donors are just incredibly altruistic humans beings,” Tan said. “It’s a pleasure to work with them.”

Besides restoring Gary’s health, Inga’s donation has had more subtle effects on the Goodnights. Bill said that his family’s experience has inspired him to reach out to others who need transplants. He tells them about Gary’s struggles and the difference that Inga’s donation made for Gary and for the family.

“The kidney transplant has always been a big thing in the Goodnight family,” he said.

Barbara Feder Ostrov is a freelance writer.

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― Barbara Feder Ostrov is a freelance writer.
E-cigarettes continued from page 1

PhD, a postdoctoral scholar in adolescent medicine. “We’re good at delivering messaging that cigarettes are harmful, but we need to do a better job with other products that teens may smoke,” added Bonnie Halpern-Felsher, PhD, professor of pediatrics in adolescent medicine and the study’s senior author. “We don’t want the message to be ‘cigarettes are bad, so everything else might be OK.’”

Tripling of e-cigarette use

Halpern-Felsher and Roditis compared teens’ knowledge of cigarettes, e-cigarettes and marijuana because they heard from teachers, parents and youth that anti-smoking efforts needed to address more than just conventional cigarettes. The need is borne out by other research: A recent study from the Centers for Disease Control shows that middle- and high-school students’ use of e-cigarettes tripled from 2013 to 2014, eclipsing conventional cigarettes as the most common tobacco product in this age group. Halpern-Felsher and Roditis studied 24 adolescents who attended high school in a Northern California school district known to have high rates of substance use. The students participated in small-group discussions about their perceptions of the risks and benefits of conventional cigarettes, e-cigarettes and marijuana. They also discussed how they learned about these products. The researchers analyzed the themes that emerged in the discussions.

Students perceived little or no benefit, as well as several detrimental effects, of smoking conventional cigarettes, such as yellowed teeth, bad breath and long-term disease risk. They also said their social norms often discouraged smoking conventional cigarettes. For instance, even smoking marijuana rolled in paper was considered weird because it looks like a cigarette.

Perceptions versus reality

However, students saw getting high as a benefit to smoking marijuana, and perceived it as safer and less addictive than tobacco. They were unsure whether marijuana posed health risks, and also described being under peer pressure to smoke marijuana.

With respect to e-cigarettes, students perceived some benefits, including thinking e-cigarettes looked good, and were unsure of the risks. Students’ sources of information about the three products varied. The media, families and teachers all warned against the use of conventional cigarettes. Students also got messages from these sources discouraging use of marijuana, but said it was difficult to refuse the drug because its use was so prevalent among their peers. Students received few, mostly informal, messages about e-cigarettes. They said they saw family members using them to try to quit conventional cigarettes, and also saw peers using them.

The findings could help shape future messages about marijuana and e-cigarettes, the study’s authors said. For instance, students need to hear about the addictive potential of both products; about the risks of smoking any form of plant matter, which is similar between conventional cigarettes and marijuana; and about the presence of nicotine in e-cigarettes. In addition, flavonoids in e-cigarettes may raise the risk of obstructive lung disease.

“Students hear a lot of talk about conventional cigarettes, some about marijuana and very little about e-cigarettes,” Halpern-Felsher said. “That gap needs to be filled in classrooms and by health-care providers, parents and the media. We don’t want to leave one product behind and leave teens with the impression that, maybe this is the product I can use.”

Roditis was a postdoctoral scholar at the University of California–San Francisco while the data was being collected. The study was funded by National Cancer Institute. The Department of Pediatrics also supported the research.
Narcolepsy
continued from page 1

The researchers wondered whether this difference could be explained by the fact that Pandemrix and Focetria were made from two different strains of the H1N1 virus. The team focused on the Focetria samples and those whose structure partially mimics a portion of a human hypocretin receptor. This H1N1 protein was contained, as expected, in the Pandemrix vaccine, but at much higher amounts than that found in the Focetria vaccine. Could antibodies normally generated to this flu protein by Pandemrix vaccination also be mounting on the hypo-
cretin receptors and causing an autoimmune reaction?
“IT was a really exciting moment,” Steinman said.
To find out if narcoleptic patients even had such an-
tibodies, the team tested sera from 20 individuals
who developed narcolepsy after Pandemrix vaccination. Seventeen of them had elevated antibodies to the hypo-
cretin receptor. However, these were not individuals immu-
nized with Focetria, none had these antibodies.

How H1N1 and Pandemrix may cause narcolepsy
The authors propose a hit-and-run autoimmune mechanism for how both swine flu and Pandemrix might cause narcolepsy. They suggest in genetically
closest people, high levels of the H1N1 protein stimulate the production of large amounts of antibodies to both the virus and the hypocretin receptor. These anti-
bodies may persist in the blood for months. Either the large numbers of antibodies or inflammation from an unrelated infection could alter the blood-brain barrier, allowing the antibodies to enter the brain. There, the antibodies may latch onto hypo-
cretin receptors, possibly directing the immune system to destroy or suppress brain cells critical to regu-
late sleep-wake cycles.

Indeed, compared to Pandemrix, Focetria contains 72 percent less of the H1N1 protein and, for this rea-
novation, it doesn’t appear to have stimulate-
dated specific flu antibodies capable of binding to the receptor, according to the researchers.

Because Pandemrix was associated with an increased risk of narcolepsy, it was withdrawn from the market. But lymphocytes are quick to pick up that, even with that risk, the vaccine was far safer than being infected with swine flu. In the United States alone, in 2009, the swine flu pandemic re-
resulted in 274,304 hospitalizations and 12,469 deaths.
The work advances the understanding of narcolepsy, but Steinman said he isn’t claiming they have nailing the cause of the disease. But it does put forward the proposed mechanism “an inviting possibility.” Future work could include comparisons of different vaccines and in vivo studies to confirm the proposed mechanism.

Other Stanford co-authors of the paper are senior research scientist Jonathan Rothbard, PhD, and Chris-
toph Adams, MD, director of immunology at the Stanford University Mass Spectrometry Laboratory. A mass spectrometer used in this study was acquired through a National Center for Research Resources grant.

Stanford’s Department of Neurology and Neuro-
sciences, Department of Pediatrics and De-
partment of Immunology and Allergy also supported the work.

Alzheimer’s
continued from page 3

increasing in prevalence. By 2050, the number of Alz-
heimer’s patients in the United States is expected to reach 13.8 million. The center will home in on com-
mon underlying mechanisms occurring in Alzheimer’s and Parkinson’s.

The center will also provide educational opportuni-
ties for community members, patient caregivers, stu-
dents and professionals.

Victor Henderson, MD, professor of health research and policy and of neurology and neurological sciences, will direct the center. Tony Wyss-Coray, PhD, profes-
sor of neurology and neurological sciences, will serve as co-director. Longo and Jerome Yesavage, MD, pro-
fessor of psychiatry and behavioral sciences, will be associate directors. Michael Greicius, MD, associate professor of neurology, will direct the imaging core of the new center.

“This center’s activities will draw on the university’s unique strengths in imaging; neuroimmunity; synapse biology; biostatistics and bioinformatics; clinical assess-
ment and research; epidemiology; and caregiver out-
reach,” said Henderson. “We plan to study patients at early stages of illness, as well as healthy older adults, and to follow them over a long time — in many instances to autopsy. At the same time, we hope to foster new research collaborations that advance knowledge about Alzheimer’s, Parkinson’s and similar disorders in order to treat them more effectively and help prevent them from occurring.”

With this award, Stanford joins the ranks of more than two dozen NIH-funded Alzheimer’s Disease Centers at major medical institutions throughout the United States. There are two types of these centers: Alz-
heimer’s Disease Core Centers provide core services in support of research and education, and they sup-
port small pilot projects; Alzheimer’s Disease Research Centers, in addition, support to call the large-scale research projects.

The Stanford center’s two research projects will be led by Nobel laureate Thomas Südhof, MD, profes-
sor of molecular and cellular physiology, and Kathleen Ponton, MD, assistant professor of neurology and neu-
roimmunology.

“This is a major accomplishment for Stanford,” Longo said. “Our patients will benefit from enhanced trial capability, while their contributions will aid in the study the nature of our disease.”

In addition to NIH support, the center’s found-
ing was made possible by donations from Stanford supporters and the Stanford Department of Neurology and Neurological Sciences, the School of Medicine and Stanford Health Care.

The center’s clinical research will be coordinated through the Stanford Center for Memory Disorders. Those interested in participating in research can contact Christina Wyss-Coray, RN, at cwysscoray@stan-
fordmed.org for more information.

Alzheimer’s
continued from page 1

Leyland Steinman, and his collaborators believe narcolepsy may be a “hit-and-run” autoimmune disease, meaning that it can cause rapid, painstaking damage and leave virtually no trace of its work. Narcolepsy is a brain disorder that interferes with normal sleep-wake cycles.

Kennewick
continued from page 1

Rasmussen, PhD. “Due to the massive controversy sur-
rounding the origins of this sample, the ability to ad-
dress this will be of interest to both scientists and tribal members.”

Rasmussen is the lead author of the study, which was published online June 18 in Nature. The senior author of the study is Eske Willerslev, PhD, from the University of Copenhagen’s Center for GeoGenetics. Rasmussen initiated the study at the Centre for GeoGenetics and completed the analysis of the DNA sequences at Stanford, working with Carlos Bustamante, PhD, professor of genetics.

The skeleton, known as Kennewick Man, is called the Ancient One by Native American
groups, which believe the bones are their ancestors. Indeed, the Kennewick Man was found at the site of a Native American tribe of the Pacific North-
west requested repatriation of the remains for that area, the Kennewick Man proceedings were halted to allow further investigation into the skeleton’s origins.

Bits of ancient DNA
Now an exhaustive genetic study of the tiny bits of ancient DNA from a bone in the skeleton’s hand refutes the conclusions of the 2014 study. The researchers used the techniques of ancient DNA sequencing and ancient genotyping to pick out and analyze the skeleton’s DNA.

Although the exterior preservation of the skeleton was pristine, the DNA in the sample was highly de-
derated and dominated by DNA from soil bacteria and other environmental sources,” said Rasmussen. “With the little material we had available, we applied the newest methods to squeeze every piece of information out of the bone.”

The researchers compared the DNA sequences from the skeleton with those of modern Native Americans.

They concluded that, although it is impossible to as-
sign Kennewick Man to a particular tribe, he is closely related to members of the Confederated Tribes of the Colville Reservation in Washington.

Wyllerslev and Rasmussen are well-known for their studies of ancient DNA. Willerslev and Rasmussen recently published the genome of a young child, known as the Anzick boy, buried more than 12,000 years ago in Montana. That study showed that the boy was also closely related to modern Native American groups, in particular those of South and Central America. In 2012, Bustamante and colleagues used DNA from the 5,300-year-old Iceman mummy called Otzi to show the land likely hailed from the Mediterranean island of Sardinia rather than the frigid Alps, where his body was found.

Advances in DNA sequencing technol-
ogy, a larger number of samples, and better tech-
niques for analyzing ancient DNA have been key to understanding the great human diasporas and the history of indigenous populations,” said Rasmussen. “Now we are seeing its applic-
ation in new areas, including forensics and archeology. The case of Kennewick Man is the latest to reveal the secrets surrounding the origins of Native American popu-
lations. Morten’s work aligns beautifully with the oral traditions of the region and will help to confirm the existing genetic analyses.”

The work advances the understanding of indigenous populations.” said Rasmussen. “Advances in DNA sequencing technol-
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Morten Rasmussen

Alzheimer’s
continued from page 1

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7

Inside Stanford Medicine

July 13, 2015

INSIDE STANFORD MEDICINE

July 13, 2015

7
OF NOTE
report on organizational features and awards for faculty, staff and students.

ROSA BACCHETTA, MD, was appointed associate professor of pediatrics, effective May 1. She studies mechanisms of immune regulation and of early onset diseases with immune deficiency and dysregulation. She is currently working to link genetic autoimmune abnormalities with patient phenotypes, with the goal to identify new therapeutic targets.

BERÉNICE BAYOUNOU, PhD, a postdoctoral scholar in genetics, was awarded honorable mention and $10,000 in the 2015 Regeneron Prize for Creative Innovation contest. This award acknowledges early-career biomedical scientists.

ADAM DE LA ZERDA, PhD, an assistant professor of structural biology, has been named a 2015 Pew-Stewart Scholar for Cancer Research by the Pew Charitable Trusts. He will receive $600,000 a year for four years to support his research. He is working to develop a molecular imaging technique that can characterize and monitor individual cells in breast cancer tumors.

MATTHEW FITZGERALD, PhD, was appointed assistant professor of otolaryngology—head and neck surgery, effective Jan. 1. His research investigates how individuals understand speech and sound. He also develops tools and methods to improve the outcomes of cochlear implant patients and to aid language development in hearing-impaired children.

SANJIV GAMBHIR, MD, PhD, the Virginia and D.K. Ludwig Professor for Innovation in Cancer Research and chair and professor of radiology, will be awarded the 2015 J. Allen and Helen B. Synder International Prize in Medicine. The annual $25,000 prize is given by the University of Western Ontario's Research Institute, with a focus this year on cellular and molecular imaging in cancer. The award will be presented Nov. 19 in London, Ont. Chadway directs Stanford’s Molecular Imaging Program.

HOLBROOK KOHRT, MD, PhD, and PAMELA KUNZ, MD, both assistant professors of medicine, have been awarded a $100,000 grant from the Caring for Our Future—Seeking a New Balance for America’s Aging population. They will examine the role and impact of technology in the lives of older adults. The online version includes a video of an interview with Smith.

An interview with Smith.

A story about two young men coping with one of the world’s most painful diseases — the skin-blistering condition epidermolysis bullosa — including news about an experimental treatment to replace their broken genes. The online version includes a video of a patient at home and interviews with experts on the condition.

A report on progress being made after years of stagnation in treating the most deadly skin cancer: melanoma.

A look at one of Stanford Medicine’s great accomplishments in dermatology: successful treatment of a rare and dangerous rash — cutaneous lymphoma, a form of blood cancer that spreads to the skin.

Tips on keeping skin safe from the sun.

A feature on research seeking to answer the question: Why does skin age?

The story of a young woman who literally lost her skin and had it restored through a cosmetic procedure.

The issue also includes a story considering the rise in number of castoff donor hearts, despite a shortage of organs for transplants, and an excerpt from Joanne Salt’s Life, a new biography of the polio-vaccine pioneer, written by Charlotte Jacobs, MD, professor emerita of medicine at Stanford.

The magazine is available online at http://stanfordmed.org. Print copies are being sent to subscribers. Others can request a copy at 725-6911 or by sending an email to medmag@stanford.edu.