Among teens, sleep deprivation an epidemic

Sleep deprivation increases the likelihood teens will suffer myriad negative consequences, including an inability to concentrate, poor grades, anxiety, depression, thoughts of suicide and even suicide attempts.

Enzyme malfunction may be why binge drinking can lead to alcoholism, new study finds

By Bruce Goldman

A malfunctioning enzyme may be a reason that binge drinking increases the odds of alcoholism, according to a study by scientists at the School of Medicine.

The scientists identified a previously unsuspected enzyme, ALDH1a1, in mice. The discovery could help guide the development of medications that extinguish the urge to consume alcohol, said Jun Ding, PhD, assistant professor of neurosurgery.

Ding is the senior author of the study, which was published Oct. 2 in Science. The study’s lead author is postdoctoral scholar Jae-Il Kim, PhD.

Alcoholism is an immense national and international health problem. More than 200 million people globally, including 18 million Americans, suffer from it. Binge drinking substantially increases the likelihood of developing alcoholism. As many as one in four American adults report having engaged in binge drinking in the past month.

Existing medications for treating alcoholism have had mixed results. Disulfiram (Antabuse) and similar substances, for example, work by inducing unpleasant side effects — including shortness of breath, nausea, vomiting and throbbing headaches — if the person taking it consumes alcohol. “But these drugs don’t reduce the craving — you still feel a strong urge to drink,” Ding said.

In the new study, Ding and his associates showed that blocking ALDH1a1 activity caused mice’s consumption of alcohol to rise to levels equivalent to those observed in mice that had experienced several rounds of the equivalent of binge drinking. Restoring ALDH1a1 levels reversed this effect.

Previous studies have shown that mutations in the gene for ALDH1a1 are associated with alcoholism, but the reasons for this effect.

New center looks to define concussion

By Ruthann Richter

Paige Fisher was pedaling along a narrow path on her way to a yoga class last January when she crashed head-on into another bicyclist. When she came to, she was bleeding profusely and surrounded by worried bystanders. Despite a visit to the student health clinic, a scan at the emergency room and appointments with her primary care physician, she continued to feel dizzy, sleepy and sensitive to light weeks after her wounds had healed.

“I was told I had a concussion and to just rest,” said the 22-year-old Stanford graduate. But the lack of activity made her feel lethargic and depressed. “I was not getting better. I felt out of it and not like myself at all.”

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Cancer nanotechnology center receives more than $9 million

By Krista Conger

The National Cancer Institute has awarded nearly $9.5 million to the Center for Cancer Nanotechnology Excellence in Translational Diagnostics at Stanford.

The five-year grant is the third award from the NCI to fund the center. The first award in 2005 was granted by the NCI’s Alliance for Nanotechnology in Cancer, and are meant to bring together researchers from across different disciplines to use emerging nanotechnology advances to aid in early cancer diagnosis, monitoring and therapeutic intervention. Stanford is one of only four institutions across the county that have received three rounds of funding.

“Concordantly, they are all important. I know that patient safety and quality measures, I know we can measure their frequency and severity, and figure out a way to identify diagnostic errors and near misses, which patients deserve from the health-care system: freedom from errors for action from all, in ways that support what is warranted to address this challenge,” according to a recent landmark report from the Institute of Medicine.

In the September report, by a committee of medical experts, found that despite dramatic improvements in patient safety over the last 15 years, diagnostic errors have been the critical blind spot of health-care providers. Kathryn McDonald, executive director of Stanford’s Center for Health Policy/Centers for Primary Care and Outcomes Research, is a member of the committee that wrote the report, “Improving Diagnosis in Health Care.”

Recently, Beth Duff Brown, the communications manager at CHP/CPCOR, asked McDonald some questions about the report and got her suggestions for limiting one of the most overlooked health-care dilemmas today.

1 What surprised or enlightened you most in your findings?

MCDONALD: I learned a lot about the ways that the legal system sets up barriers to transparency even as it tries to protect patients. For example, the current approach to resolving medical liability claims sets up barriers to transparency needed to learn from diagnostic errors. In the aftermath of devastating errors that arise from failures in the diagnostic process and teamwork, many patients want to help make the delivery system safer. Concerns about medical liability prevent clinicians from disclosing medical errors to patients and their families, despite calls from numerous groups that full disclosure is an ethical requirement. Early on, we need to understand the multiple forces that result in a diagnostic error.

Learning is important to patients and physicians to prevent repeat problems. We made recommendations about medical malpractice reforms that might be designed to prevent problems. We hope that professionals will become allies in trying to make health care safer by encouraging transparency about such errors. We need approaches that would allow patients to be promptly and fairly compensated for injuries that were avoidable while at the same time turning errors into lessons to improve subsequent performance. It’s a real shame that we are not there yet, and that evidence is lacking about exactly how to get there. We need folks with medical, law, patient safety, and patient safety backgrounds to work on research in this area.

2 What do you believe is the most significant message and mission of the report?

MCDONALD: The report is packed with reasons and directions foraction from all, in ways that support what is warranted to address this challenge. For example, there is a solid stream of evidence that confidence and communication of the patient’s needs, values and preferences.

“Improving diagnosis is quite challenging, partly because making a diagnosis is a collaborative effort and involves many, often iterative, steps — few simple ones. These steps can unfold over time, across different health-care settings, and usually involve diagnostic uncertainty. All the moving parts, all the different types of expertise, all the different professionals involved, well that’s a call for teamwork. This IOM report and the challenge of improving diagnosis puts health-care organizations on the hook for ensuring that health-care professionals have knowledge and skills to engage in effective teamwork — both interprofessionally and intraprofessionally. And the goal doesn’t stop there. We also recommended, as part of this first effort, that health-care professionals and organizations should partner with patients and their families as diagnostic team members, and facilitate patient and family engagement in the diagnostic process, aligned with their needs, values and preferences.

3 How did the committee define a ‘diagnostic error’ and how might this differ from previous definitions?

MCDONALD: We defined diagnostic error from a patient’s perspective, and brought together experts from very far away that clearly shows the opportunity and grave need to improve the current situation. The definition has two parts, both focusing on what patients want and need. Part 1 states that diagnostic error is the failure to establish an accurate and timely explanation of the patient’s health problem. Part 2 states that diagnostic error is not measurable and that the challenge of measuring them well enough to help those who want to improve diagnosis.

Part of the challenge is figuring out where to direct energies for the biggest payoff from a public health perspective, while also fostering the culture change needed to focus on learning and improving, sooner rather than later. Definition and measurement are central to this work.

4 You outline eight goals that physicians and health-care providers should follow in their diagnostic practice. Which do you believe are the most significant?

MCDONALD: They are all important. I know that if I were to pick one, I’d point to the teamwork one. There is a growing evidence base that the benefits of teamwork accrue to all members of the team, so this recommendation has the potential to be a win-win for all involved. Improving diagnosis is quite challenging, partly because making a diagnosis is a collaborative effort and involves many, often iterative, steps — few simple ones. These steps can unfold over time, across different health-care settings, and usually involve diagnostic uncertainty. All the moving parts, all the different types of expertise, all the different professionals involved, well that’s a call for teamwork. This IOM report and the challenge of improving diagnosis puts health-care organizations on the hook for ensuring that health-care professionals have knowledge and skills to engage in effective teamwork — both interprofessionally and intraprofessionally. And the goal doesn’t stop there.

5 What is the video that was released with the report very powerful. I think many of us don’t realize how often a misdiagnosis can occur and how significant the impact can be.

MCDONALD: The video has two patients for whom things went poorly and one who had a first-class diagnostic experience because of excellent teamwork. And this was one of the committee’s recommendations. We need less of the old model of diagnosis from one expert to more of a teamwork approach to the diagnostic process. It is well worth watching the video to understand the human side, and the unique patient perspective on this important issue.

To watch the video released with the report, visit https://www.youtube.com/watch?v=7pZs8BDW719E.

Insider Stanford Medicine

McDonald on need to learn from diagnostic errors

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Seven scientists have received awards totaling $11.5 million to pursue high-risk, high-reward research, the National Institutes of Health announced Oct. 12.

They are among the 78 recipients of the 2015 Pioneer, New Innovator, Transformative Research and Early Independence awards from the NIH. The awards are designed to encourage researchers to pursue projects with the potential of leading to big improvements in health care.

“Outsiders exemplify the spirit of excellence and innovation for which Stanford’s research program is known,” said Lloyd Minot, MD, dean of the School of Medicine, which is home to six of this year’s Stanford recipients. “I congratulate all of the award winners on this tremendous honor and thank them for helping Stanford Medicine lead the biomedical revolution in precision health.”

This year, the NIH handed out 13 Pioneer Awards, 41 New Innovator Awards, eight Transformative Research Awards and 16 Early Independence Awards. The total funding came to about $121 million.

“These programs support research that revolutionized scientific fields by giving investigators the freedom to take risks and explore potentially groundbreaking concepts,” said NIH director Francis Collins, MD, PhD. “We look forward to the remarkable advances in biomedical research the 2015 awardees will make.”

**Pioneer Award**

**TONY WYSS-CORAY**, PhD, professor of neurology and neurological sciences and a senior research scientist at the Palo Alto Veterans Administration, received a Pioneer Award. The $2.5 million grant, dispensed over five years, goes to scientists proposing creative, potentially high-impact research in the biomedical and behavioral sciences.

Wyss-Coray’s group studies the role of immune and injury responses in brain aging and neurodegeneration, with a focus on Alzheimer’s disease. Wyss-Coray’s research has revealed insights into how functional defects in the brain’s own immune cells, microglia, can contribute to neurodegeneration, as well as how factors in blood can advance or retard cognitive decline.

Wyss-Coray plans to use his award to repurpose the genetic code in mice so that specific cells or tissues will synthesize proteins containing “designer” amino acids that can be chemically tagged. Researchers can then identify, track or isolate these proteins. This will allow researchers to study the collection of proteins within specific cell types and tissues during aging and in neurodegenerative diseases, including Alzheimer’s disease.

**New Innovator Award**

The New Innovator Award provides $1.5 million over five years to fund innovative research by an investigator who has not yet received a research project grant or the equivalent from the NIH.

**JAYA BASU**, PhD, assistant professor of medicine, specializes in the development of mathematical models that help improve disease-prevention programs, in part by predicting unexpected or adverse health consequences of public health, fiscal and regulatory policies. He investigates how such programs can prevent chronic diseases, especially obesity and Type 2 diabetes, that disproportionately affect low-income populations around the world.

For example, his recent work on the Supplemental Nutrition Assistance Program found that adding grocery stores well-stocked with fresh produce in inner-city “food deserts” does not increase the amount of fruits and vegetables that people buy and eat. But preliminary work suggests that delivering food stamp benefits weekly instead of monthly may increase how much people spend on fruits and vegetables by encouraging weekly shopping at local stores instead of monthly shopping at big box stores. With his New Innovator Award, Basu plans to bring in two new postdoctoral scholars and purchase some expensive data sets that would otherwise be unavailable.

Basu is a member of the Stanford Prevention Research Center, an affiliate of the Stanford Center for Poverty and Inequality and a senior fellow of the Stanford Center for Global Health and Security.

**JESSICA FELDMAN**, PhD, assistant professor of biology, studies cell specialization, which is a critical step in development and a hallmark of normal physiology. Cells specialize by expressing different proteins that give them unique identities, but they must also shape and form themselves in unique ways to be able to carry out specific functions.

A critical regulator of cell form is the microtubule cytoskeleton, a network of polymers that becomes spatially patterned during development. Feldman studies how this cytoskeleton forms in *C. elegans*, a tiny, transparent worm. She aims to understand the mechanisms that regulate microtubule organization during development, specifically the molecules that control and contribute to microtubule formation and how specific microtubule organization is coupled to the cell cycle and cell polarization.

**Daniel Jarosz**, PhD, assistant professor of molecular and cell biology, uses yeast as a model system to study the effects of disease-related mutations and develop new therapeutic strategies. During the course of his work, he plans to develop new tools that might also find applications in a variety of biological systems.

Feldman will use the award to identify new molecules that link microtubules to specific sites in the cell, and also to uncover the regulatory mechanisms that control microtubule organization during development. She hopes that by understanding these basic principles, scientists will be able to understand the cause and consequences of aberrant microtubule organization that occurs in specific birth defects and in cancer.

**LIANG FENG**, PhD, assistant professor of molecular and cellular physiology, will use his award to study the molecular mechanisms of Alzheimer’s disease and to explore new therapeutic strategies. During the course of his work, he plans to develop new tools that might also find applications in a variety of biological systems.

The Feng group has focused on proteins embedded in or anchored on biological membranes. These membranes act as selective barriers separating the interior of cells from their outside environment. Membrane proteins play crucial roles in a wide range of biological and physiological processes and are targeted by a large number of pharmacologically active compounds.

Feng’s research interest lies primarily in understanding the mechanism and regulation of these dynamic membrane proteins, and in developing new tools and approaches to understand their functions. To further that understanding, his group employs biochemical, biophysical, structural, computational and engineering approaches.

**JULIANA IYODAYA**, PhD, assistant professor of microbiology and immunology, wants to create better treatments for autoimmune diseases. As many as 24 million Americans are affected by autoimmune diseases. There are currently no clinically approved therapies that can cure or prevent these diseases without causing side effects due to generalized immunosuppression.

Iyodaya’s research focuses on the function and biology of dendritic cells, which are specialized antigen-presenting cells that initiate and modulate our body’s immune responses. She aims to use her award to design new immunotherapies that harness the natural capacity of dendritic cells to generate antigen-specific regulatory T cells. These regulatory T cells can silence the undesired immune responses that lead to autoimmunity. She has found strong evidence in experimental models that engaging selected dendritic cell subsets can be used as a safe therapeutic approach for autoimmune diseases.

As a graduate student at the Massachusetts Institute of Technology, New Innovator Award recipient **Daniel Jarosz**, PhD, investigated how mutations are made in DNA. After graduating in 2007, he pursued postdoctoral training at the Whitehead Institute with Susan Lindquist, a pioneer in the field of protein folding. Jarosz joined the Stanford faculty in 2013 as an assistant professor of chemical and systems biology and of developmental biology. His research explores how organisms balance competing needs to retain their genetic integrity yet also adapt to new environments. Jarosz’s work has revealed that links between protein folding and environmental stress strongly influence the evolution of new traits, the effects of disease-related mutations and developmental processes.

Recently the team has investigated whether wrongly folded proteins are always a problem. Proteins, which are misfolded proteins that act as templates to create more misfolded proteins, are best known for causing neurodegenerative disease. But Jarosz’s work in fungi suggests that they can also drive beneficial traits. Jarosz plans to use his award for new research characterizing prion-like complexes formed by molecules that regulate cellular information flow: transcription factors and RNA binding proteins.

**MANU PRAKASH,** PhD, assistant professor of bioengineering, works in the broad area of organismic biosciences and frugal science, developing low-cost, precision measurement tools for the masses. For example, he and his group invented the Foldscope, a $1 origami microscope assembled out of folded paper. Foldscopes are now being used by a worldwide community in applications ranging from environmental monitoring to science education (http://microcosmos.foldscope.com). Foldscopes can also be configured for diagnostic applications, with ongoing field-validation studies in Kenya for a number of diseases including helminth infections and schistosomiasis.

For his latest work, Prakash is studying disease vectors such as mosquitoes that transmit deadly diseases such as malaria and dengue. These vector-borne diseases take a huge toll on human health. Yet no high-throughput, high-resolution tools exist for mosquito surveillance and the pathogens they harbor. With the support of this new award, Prakash aims to bring his low-cost, scalable design approach to creating a toolbox to enable the assessment of spatial-temporal population dynamics of mosquitoes and corresponding human pathogens in field conditions. His portable breadboard microscopes could provide a new window into host-pathogen dynamics in mosquitoes at ecological scales.
Hospital expansion to tap sustainable water practices

By Ruth Schechter

Hospitals by their very nature require massive amounts of water to maintain complex medical systems and equipment critical to patient care. Heating and cooling systems, and specialty services such as laundry, sterilization, sanitation, food service and integrated computer systems, call for an ongoing source of water. And lots of it.

In fact, hospitals today are the third most water-intensive public buildings, behind senior care facilities and hotels, using an average of 570 gallons of water per staffed bed per day, according to Healthcare Design magazine. In comparison, the U.S. Environmental Protection Agency estimates that an average person uses about 80 to 100 gallons of water per day.

In this era of water conservation, architects, designers and planners for the Lucile Packard Children’s Hospital Stanford expansion are working to significantly reduce water consumption. The facility, scheduled to open in the summer of 2017, will add 521,000 square feet to the approximately 300,000-square-foot existing hospital, streamlining care for children, expectant mothers and their families.

**Landscaping priorities**

An inherent sense of environmental responsibility is a driving force behind the children’s hospital expansion, which makes sustainability and ‘green’ systems a top priority. The building integrates nature seamlessly into its layout, with almost four acres of gardens and green space for patients, families, visitors and staff to enjoy. The landscapes also will provide natural habitats for local birds and insects.

A water-sensitive approach to the expansion was factored in long before California’s current drought made low-water landscaping and reduced water usage a major concern. “Seven years ago, when we started planning, we knew there was not enough rainfall to sustain even the most efficient hospital’s needs,” said Robin Guenther, principal at Perkins+Will and the lead designer of the hospital expansion. “That presented the option of finding ways to reuse water as much as possible.”

The landscaping will feature native and hardy adapted plants that require minimal water, such as drought-tolerant varieties of yarrow, flax lily, mountain lilac, lavender and sage. A specially designed blend of grasses that require little or no water will be planted instead of a traditional lawn. Expanses of greenery and permeable paving allow rain to be absorbed into the region’s groundwater rather than run off into the bay.

“Nature is an important part of the hospital’s identity, and landscape has been embraced as a central design concept,” Guenther said. “Everything from the selection of plant material and retention of trees to the form and functionality of the gardens is customized to the ecological setting of the site, the climate and the users.”

Designed with attention to the demands of security, comfort and safety, the Discovery Garden, now under construction as part of the hospital expansion, will incorporate underground cisterns for its watering needs.

The centerpiece will be the Discovery Garden, which will feature private meditation niches and nooks framed by hedges for privacy and quiet. The Emerald Garden will feature an open lawn, a children’s play area, stone retaining walls and shaded walkways. The Rainbow Garden, a respite for physicians and staff, will be linked to the campus shuttle system. Courtyards and roof gardens will be easily accessible and allow natural light to filter into the corridors.

**Underground storage**

These water-efficient landscapes will be irrigated with rainwater and condensate water — water that is extracted from dehumidifying indoor air — that will be collected in two 55,000-gallon underground cisterns. The distilled water that is used continuously in dialysis equipment also will be routed to the cisterns, ensuring that water will be available even when there is no rainfall. Constructed of steel-reinforced polyethylene, each cistern is 70 feet long and 40 feet wide — about half as big as an Olympic-size swimming pool — and 10 feet deep.

“Because we are using water from multiple, constant sources, we do not need to rely on storm-water runoff, which is inconsistent, especially during an extended drought,” said Henry Phillips, project manager at Sandia, a civil engineering firm that specializes in sustainable design. “Water is routed to the cisterns through a pumping system and can be diverted to an integrated bypass system if the tanks are full.”

These tanks for irrigation will save as much as 800,000 gallons of water per year, said Michele Charles, project engineer for the expansion, adding that the system can be adapted to add more cisterns in the future. Hospital designers did an extensive analysis before construction to determine how much water the gardens would require so they could set the baseline for the expected supply of condensate water, Phillips said.

**Conserving resources**

The existing hospital facility also maintains its grounds in a water-wise manner. Designed during a drought in the late 1980s and opened in 1991, the gardens consist primarily of drought-tolerant plants. An ongoing program to monitor and maintain broken sprinkler heads limits runoff, while use of mulch to protect plantings helps retain moisture, said Patrick Connor, administrative director of support services. “No-mow” turf with an efficient irrigation system, which looks and feels like traditional lawn, invites families and visitors to lounge and play, he said.

The new building incorporates an extensive external shading system, and windows are positioned to avoid direct sunlight throughout the year. Limiting direct sunlight helps to reduce solar gain — the increase in temperature caused by the sun — while reducing the need for air conditioning, which has energy and water needs of its own. The hospital also has located its data center on the roof rather than in the basement, so that it can be cooled by ambient air rather than air conditioning. That move alone has reduced energy needs by 60 percent compared with other Northern California hospitals, Guenther said.

The hospital also plans to install water-conserving dishwashers and sterilizers, which are projected to use about 80 percent less water than their standard counterparts. Water-cooled pumps and air compressors will be replaced, and on-demand sinks and low-flow bathroom fixtures, both of which also are being phased into the existing hospital, are expected to save 2.5 million gallons of water a year. Together, these systems in the new building are expected to use 58 percent less water than in a comparable standard hospital, according to Guenther. An electronic dashboard in the main lobby will display the building’s on-going water and energy usage.

“Throughout the design process, we looked at sustainability as a key feature,” said Jill Sullivan, RN, MSN, vice president of hospital transformation and space planning. “Using water wisely makes an impact on the whole community and saves money in the long term. Plus, it’s simply the right thing to do.”

More about the Stanford University Medical Center Renewal Project can be found at http://sumc.org.

Ruth Schechter is a freelance writer and journalist.
Supercharges the machinery of the brain’s 
ing motion and motivation. Dopamine potentially restore the balance in neural 
compartments through this 
circuitry — looked anatomically identi-
that produces dopamine in mice 
seemingly increases GABA's effects by blocking its produc-
time — while stimulating only do-
produce dopamine in cells in mice's brains. To their surprise, these tried-and-tested methods failed to reduce GABA levels in the dopamine-producing neurons of the reward circuit. Ding's team verified that the specific family of dopaminergic neurons that produce dopamine in mice has only one member at work in those dopamine-producing nerve cells. Ding also had another question. “Are we normally contactless reward 
other neurotransmitters, too, includ-
activity in mice, the scientists saw 
who had a concussion are three times more likely to have a similar event and to experience slower neurologi-
which was puzzling.

“Every time I publish a paper, my dopamine-producing nerve 
cells go crazy, but I don’t get addicted. Why not?”

An alternative assembly line 
While GABA is produced widely 
the brain, the novel GABA-
production assembly line identified by 
its role in countering addiction.

GABA is the brain’s main inhibi-
tory neurotransmitter. It was previ-
ously known for being involved in the break-
ning systems may be at work in other forms of 
addiction.

Ding did say that GABA’s co-
release with dopamine, and GABA’s inhibitory 
characteristic, may be what prevents everyday pleasurable sensations from 
becoming addicted.

Additional Stanford co-authors of the study were postdoctoral scholars So-
hashree Ganesan, PhD, Yu-Wei, PhD, and Esther Park, PhD; and Lu Chen, PhD, associate professor of neu-
surgery and of psychiatric and behavioral sciences.

The study was funded by National In-
stitutes of Health, the National Institute of Mental Health and the Klingenstein Foundation.

INSIDE STANFORD MEDICINE october 12, 2015

Concussion

Concussion injuries are gaining attention because of 
their prevalence among young athletes. Approximately 
all athletes do not report feeling 
and making 
their prevalence among young athletes. Approximately 
many scientists believe concussions are additive 
and make the condition more likely to occur on 
repetitive head trauma. 

Concussion remains the most 
derunderestimated, underdiagnosed and 
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Center was established last year to define objective crite-
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The center used metrics, measurements and data 
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A growing concern
Dr. Daniel T. Aaronson, a psychologist and director of the Sleep and Dreams Shuttle, a research team at Stanford University, has been studying the effects of sleep deprivation on adolescents for over two decades. He has published extensively on the topic and has conducted numerous studies to better understand the impact of sleep deprivation on adolescent health.

One of the key findings of Aaronson’s research is that sleep deprivation can have serious consequences for adolescent health. For example, sleep-deprived adolescents are more likely to engage in risky behaviors, such as substance abuse, and have a higher risk of suicide. Additionally, adolescents who sleep less also tend to perform worse academically, have more difficulty concentrating, and are more likely to suffer from mood disorders.

Aaronson believes that sleep deprivation is a major public health issue and that more needs to be done to address it. He recommends that schools and parents work together to create a sleep-friendly environment for adolescents. This includes ensuring that schools start later in the morning, providing enough time for adolescents to sleep, and implementing policies that reduce课外 activities that interfere with sleep.

In conclusion, sleep deprivation is a serious problem for adolescents and has far-reaching consequences for their health and well-being. It is important for schools, parents, and communities to work together to address this issue and ensure that adolescents get the sleep they need to thrive.
Pregnant women with elevated blood-sugar levels are more likely to have babies with congenital heart defects, even if their blood-sugar levels were normal during their first trimester of pregnancy, according to a new study from the School of Medicine and Stanford Children’s Health.

The study, which was published online today in JAMA Pediatrics, examines the scope of prior findings on the connection between maternal blood-sugar levels and fetal heart defects. It is the first to show the link in women without a diabetes diagnosis.

“Diabetes is the tail end of a spectrum of metabolic abnormalities,” said James Priest, MD, the study’s lead author and professor of pediatrics in neonatal and developmental medicine, added, "The research was supported by the National Institutes of Health, the Stanford Cardiovascular Institute and the American Heart Association. Biospecimens and data used in the study were obtained from the California Biobank and managed by the California Biobank Program through a grant from Stanford Health Care’s board of directors."
Stanford Medicine reports on why a healthy childhood matters, including some surprises

By Rosanne Spector

You’ve forgotten most of your childhood experiences. That’s normal. But your body remembers many of those experiences without you knowing it, and that’s normal, too. Medical researchers are discovering your body doesn’t forget, and that some of those early events will have far-reaching consequences for your health.

In the new issue of Stanford Medicine, produced with the support of Lucile Packard Children’s Hospital Stanford, you’ll read how researchers are developing techniques to prepare children for the healthiest possible adulthood.

“Some people think kids are protected by virtue of being kids. In fact, the opposite is true,” said pediatric psychiatrist Victor Carrion, MD, in the issue, which includes the special report “Childhood: The road ahead.” Carrion, a professor of psychiatry and behavioral sciences and director of the Stanford Early Life Stress and Pediatric Anxiety Program, discussed the long-term effects of childhood trauma, but the same goes for other types of early damage: Kids might seem resilient, but they carry hidden scars.

Certain consequences of childhood hardship or disease are easily predicted: Children with diabetes, for example, are likely to develop foot sores or eye disease when they grow up — a result of the nerve destruction diabetes is known to cause. Other reverberations emerge because survivors of once-fatal conditions are living longer: Those who’ve come through childhood cancer are at higher risk of infertility, early-onset bone weakness and development of other cancers, among other problems, all because of the long-term effects of the treatment that saved them. And there are some repercussions that defy traditional medical expectations — like heart disease, liver disease and obesity affecting survivors at higher rates than others.

The magazine also includes a Q&A with former President Jimmy Carter on discrimination against women and girls, which he considers the most serious human rights problem on Earth. “The human rights issue was brought to a highly public personal level when we saw the horrible and surprising abuse of women and girls all around the world, including in the United States,” he said in the interview. The online version of the magazine includes audio of the Carter conversation.

A feature about three Outreach-combustion experts teaming up with a pediatrician to analyze the breath of critically ill children at warp speed.

An article on blending Western medicine into traditional culture to reduce newborn mortality in the developing world.

A quick look at a new way to study the toll of childhood disease on bones.

The issue also included an article on a surprising role for viruses in human nervous system diseases and congenital hand problems by applying new techniques in tissue engineering and microsurgery. Chang will automatically become ASSH president in 2017.

SUSAN HINKER, MD, an instructor of radiation oncology, will receive an Annual Meeting Travel Award from the American Society for Radiation Oncology in recognition of the scientific abstract she submitted to its 57th annual meeting. Hinker will receive the $1,000 award to offset travel costs to the Oct. 18-21 meeting in San Antonio.

CHIA-SUI (SUNNY) KAO, MD, was appointed assistant professor of pathology, effective July 1. Her clinical specialty is in diseases of the genitourinary tract, and her research interests are in testicular and bladder neoplasms.

MICHAILONGAKER, MD, the Deane P. and Louise Mitchell Professor in the School of Medicine and director of the Institute for Stem Cell Biology and Regenerative Medicine, was honored by the American College of Surgeons on Oct. 6 in Chicago. The ACS dedicated its 2015 Scientific Forum to Longaker in recognition of his accomplishments in surgical research and for his work in the areas of developmental biology, epithelial biology and tissue repair, tissue engineering and stem cell biology.

KARL LORENZ, MD, MSHS, was appointed professor of medicine, effective July 1. Lorenz will serve as the new section chief of the Veterans Health Administration-Stanford programs in palliative care. His prior research includes developing simple measures of pain for use in the clinic, improving the quality of patient care and improving end-of-life care for people living with advanced chronic illnesses. His work focuses on providing more patient- and family-centered care for the seriously ill, as well as on ways to encourage health providers to engage in simple yet often-neglected clinical practices, such as speaking to patients about their prognoses, health goals and pain management.

STEPHEN MONTGOMERY, PhD, assistant professor of pathology and of genetics, will receive a $1.4 million grant over three years from the National Human Genome Research Institute and the National Cancer Institute to develop methods for interpreting non-coding genetic variation and for identifying disease-causing variants in genomes. Montgomery, the study’s principal investigator, and his team plan to develop various statistical models based on large amounts of information from thousands of individuals and identify variants that contribute to hundreds of diseases and traits.

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Susan Hinker

Michael Longaker

Karl Lorenz

Stephen Montgomery

Blair Howard Chang

James Chang

HELEN BLAU, PhD, the Donald E. and Delia B. Baxter Professor and director of the Baxter Laboratory for Stem Cell Biology and Developmental Biology in Biological Mechanisms of Aging from the Glenn Foundation for her contributions as a leader in the field. Blau will receive the $60,000 prize to augment research in her laboratory. She has developed molecular approaches to rejuvenating diverse cell types, counterfacting fundamental mechanisms of aging and identifying therapeutic strategies for increasing the regenerative capacity of muscle stem cells and restoring muscle strength in the elderly.

JAMES CHANG, MD, PhD, professor of dermatology and director of the National Institutes of Health Center of Excellence in Genomic Science, was awarded the Paul Marks Prize for Cancer Research by the Memorial Sloan Kettering Cancer Center for discovering a new class of genes called long noncoding RNAs and for revealing their role in cancer. He is the first Stanford researcher to receive this prize. Chang will receive $50,000 and will speak at a scientific symposium Dec. 3 at the center in New York. The prize was created to honor Paul Marks, MD, president emeritus of the center.

JAMES CHANG, MD, the Johnson & Johnson Distinguished Professor in Surgery and chief of the Division of Plastic Surgery, was elected vice-president of the American Society for Surgery of the Hand. The ASSH is the oldest and largest professional organization in hand surgery, with more than 2,500 members around the world, including in the United States, “He cited in the interview. The online version of the magazine includes audio of the Carter conversation.

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One of the most important advances in global health today. The online version includes a video showing the ambulance system in action. The magazine is online at http://stanfordmed.stanford.edu. Print copies are being sent to subscribers. Others can request a copy at (650) 725-0311 or by sending an email to medmag@stanford.edu.