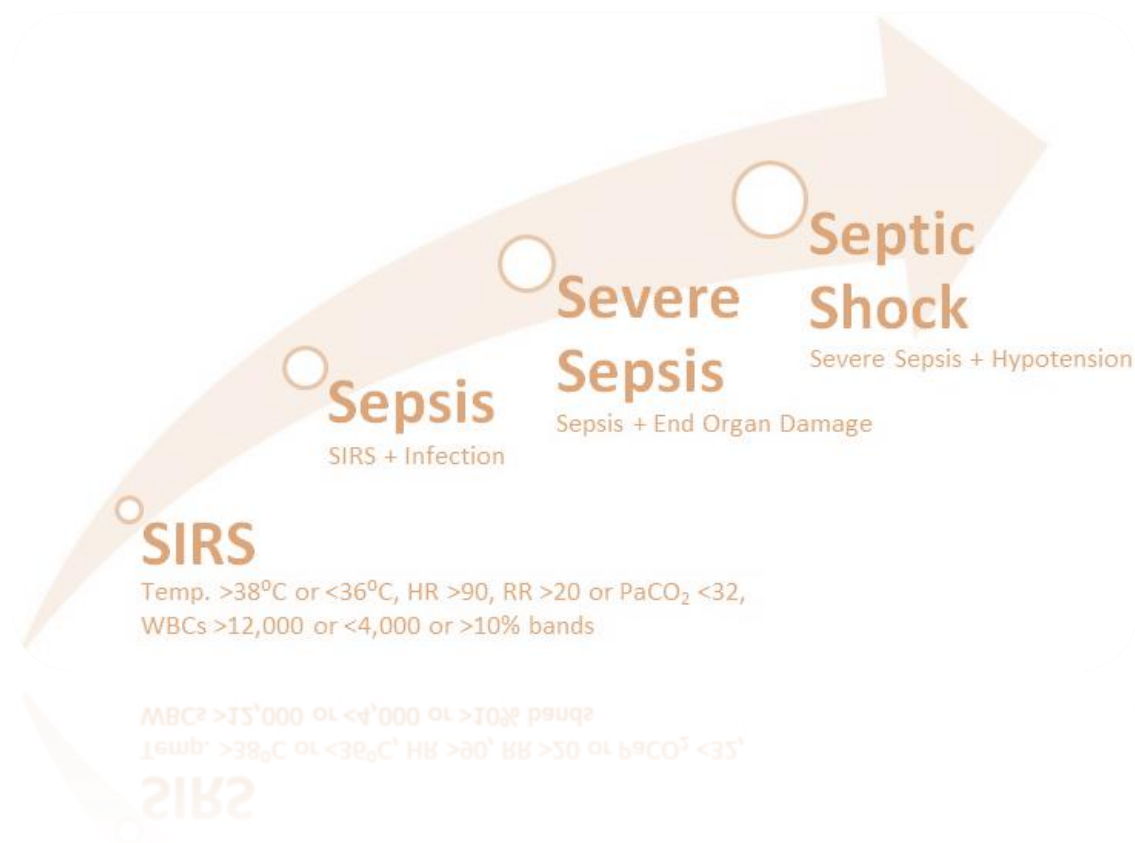


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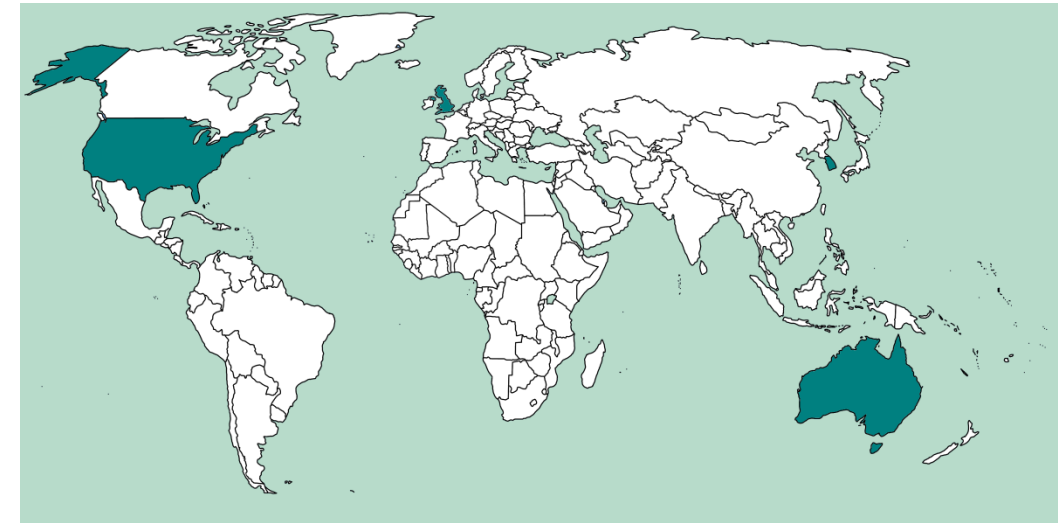
05 August 2013, Volume 2, no. 1



London, UK

## Another Obesity Gene

The prevalence of obesity is increasing at an alarming rate in both developed and developing countries. Obesity is a major risk factor for diabetes, heart disease and certain cancers. At least 2.8 million adults die each year as a result of being overweight or obese and more than 40 million children under the age of five were overweight in 2011, according to the World Health Organization (WHO). Scientists have unraveled how a gene long associated with obesity makes people fat by triggering increased hunger, opening up potential new ways to fight a growing global health problem. A common variation in the *FTO* gene affects 1/6 of the population, making them 70% more likely to become obese. British research team led by Dr. Rachel Batterham from



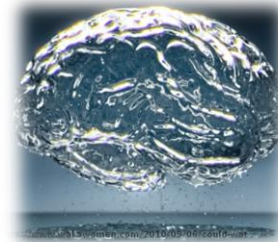
involved. It may be hopeful for developing effective obesity drugs. ■

London, UK

## Water and Mental Boost

Water is the key composition of our body. Of course, no water, no life. New study showed that drinking water can boost our brain activity. The study paid particular attention on thirsty people,

Nonetheless, water may not always improve cognition. In a separate test of rule-learning, participants actually fared better if they did not drink water before the test indicating that drinking water



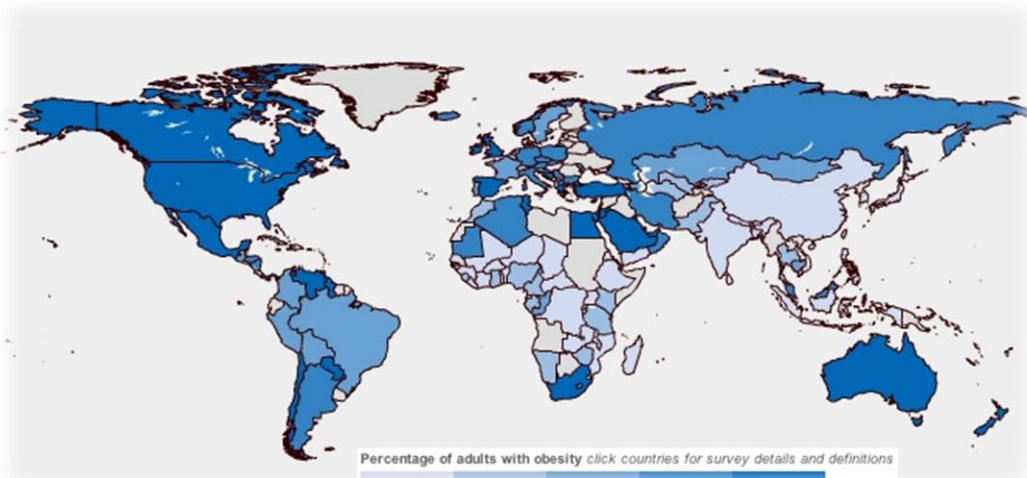
appears to have beneficial effects on some cases, but negative effects in

others. Dr. Caroline Edmonds, of the University of East London School Of Psychology in England said that thirst can lead to better performance on some tasks because vasopressin activates the thirst response, and it has also been linked to attention and arousal. However, it is important to note that it is possible to overdose on water - known as water intoxication - which occurs when water dilutes sodium in the blood. ■

Washington DC, USA

## Guns in America

A total of 270-300 million guns are owned by people in the United States. That's almost half of all privately owned guns worldwide, according to a new essay from the Brookings Institution, Washington, DC. From the essay, we



University College London found that people with the variation not only had higher levels of the "hunger hormone" ghrelin in their blood but also increased sensitivity to the chemical in their brains. *FTO* gene merely explained a small part of the obesity epidemic but the discovery itself was an essential step forward in unraveling the various factors

and they found that the sensation of thirst may take some attention away from the task at hand, and thus impair response time. In the study, participants who drank about three cups of water before taking a battery of cognitive tests performed better on a test that measured reaction times compared with those who did not drink water.

have more than 10 firearm deaths per 100,000 Americans every year; 600 annual accidental shootings; 11,400 murders; about 31,000 total gun deaths. The most common age of people who commit gun crimes is 19, then 20, then 18. That's despite regulations that bar licensed dealers from selling handguns to anyone under the age of 21. Almost 100 million adults live in a home with a gun. ■



<http://www.brookings.edu/research/essays/2013/sandy-hook-promise-gun-safety>

## Seoul, SOUTH KOREA

### Cyber attacks by North Korea

South Korea accused North Korea of mounting cyber attacks on the websites of its presidential office and other government agencies. The cyber attacks took place last month, on the anniversary of the beginning of the 1950-53 Korean War. North Korea has repeatedly denied responsibility for such attacks saying it has also been a



victim of hacking. South Korea has not confirmed findings by the US online security company McAfee that a group of hackers was behind a string of cyber attacks on South Korea dating back to 2009 aimed at spying on its military. A hacker collective known as Anonymous said it had attacked North Korean websites on the anniversary of the Korean War. ■

## Brisbane, AUSTRALIA and Ann Arbor, USA

### New Language in Australia

It is a new discovery. Linguist Dr. Carmel O'Shannessy from University of Michigan and his research team published their findings in *Language* and said that a new language has been found in the town of Lajamanu in Australia for a decade and found that about 350 of the town's residents, nearly all under the age of 35. The researchers named it as "Light Warlpiri, a mix of English and two other local dialects, Kriol and Warlpiri". Lajamanu is an isolated enclave. There are no fully paved roads, and a small plane delivers the mail each week. A supply truck also visits once a week to deliver goods to the town's only store. Warlpiri itself is spoken by only about 6,000 people in the region, according to the *Daily Telegraph*. Kriol is another language recently created in Australia, first spoken in the country's Northern Territory and Western Australia in the 1800s. Dr. O'Shannessy said that Light Warlpiri likely originated when workers from Lajamanu were employed on nearby cattle ranches. When those workers returned home, they began speaking in a mixture of Warlpiri, English and Kriol that eventually evolved into its own language. One interesting thing is that many of the first speakers of this language are still alive. ■



## Bowling Green, USA

### Marriage or Keep Single

"I have no idea about my wedding," and "I am still waiting for my wedding." All these can be heard every day. New

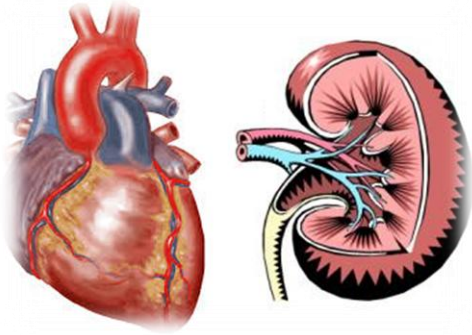


study showed that the marriage rate in the United States is continuing its decades-long downward slide. Now, researchers report that the marriage rate has dropped to a new low of 31.1 per 1,000 unmarried women. In 1950, that number was 90.2, and in 1920, it was 92.3. Susan Brown, the co-director of the National Center for Family and Marriage Research (NCFMR) at Bowling Green State University, said

that Marriage was no longer compulsory, and it was just one of an array of options. Increasingly, many couples choose to cohabit and still others prefer to remain single. Besides, the divorce rate remains high in the U.S., and individuals today are

less likely to remarry than they were in the past. Interestingly, only 26% of black women are married today, compared with 56% of Asian women. Moreover, among women with a bachelor's degree, 60% are married, compared with less than 30% among those who never graduated high school. ■





## MEDICINE

## Kidney Stones and Coronary Heart Disease

Nephrolithiasis is a common condition, with the prevalence varying by age and sex. Associations between nephrolithiasis and systemic diseases have been recognized, including subclinical atherosclerosis, hypertension, diabetes, metabolic syndrome, and cardiovascular disease. Dr. Pietro Manuel Ferraro from Catholic University of the Sacred Heart, Italy analyzed a total of 242,105 participants, 19,678 reported a history of kidney stones. After up to 24 years of follow-up in men and 18 years in women, 16,838 incident cases of CHD occurred. After adjusting for potential confounders, among women, those with a reported history of kidney stones had an increased risk of CHD than those without a history of kidney stones in NHS I and NHS II. There was no significant association in men. Although a history of kidney stones was associated with a modest but statistically significant increased risk of CHD, and there was no significant association in a separate cohort of men, it is uncertain whether the association is sex-

specific and to establish the pathophysiological basis of this association. – FW

*JAMA* 2013; 310(4):408.

## ASTRONOMY

## Suppression of Star Formation

*Who made the heavens? It is the Lord.* A group led by Dr. Alberto D. Bolatto from University of Maryland, USA reported that observations of NGC 253, a nearby 15 starburst galaxy (distance ~3.4 megaparsecs) known to possess a wind, that trace the cool molecular wind at 50-parsec resolution. At this resolution, the extraplanar molecular gas closely tracks the H $\alpha$  filaments, and



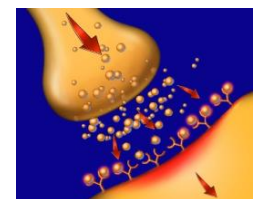
it appears to be connected to expanding molecular shells located in the starburst region. These observations allow us to determine that the molecular outflow rate is greater than 3 solar masses per year and probably about 9 solar masses per year. This implies a ratio of mass-outflow rate to star-formation rate of at least 1, and probably ~3, indicating that the starburst-driven wind limits the star-formation activity and the final stellar content. The work showed that the mass loading of the starburst-driven wind is substantial, supporting the importance of recycling. – KH

*Nature* 2013; 499(7459): 450.

## NEUROSCIENCE

## Dopamine Receptor and Cocaine-Induced Glutamatergic Synaptic Potentiation

Acute and long-term exposure to cocaine, results in adaptations in both NMDA receptors (NMDAR) and AMPA receptors (AMPA) in ventral tegmental area (VTA) neurons. In a study led by Dr. Jennifer L. Whistler, Ernest Gallo Clinic and Research Center, USA presented that repeated cocaine treatment causes loss of D2 dopamine receptor functional responses via interaction with lysosome-targeting G-protein-associated sorting protein 1 (GASP1). The researchers also showed that the absence of D2 downregulation in GASP1-KO mice prevents cocaine-induced potentiation of NMDAR currents, elevation of the AMPA/NMDA ratio, and redistribution of NMDAR and AMPAR subunits to the membrane. As a pharmacological parallel, co-administration of the high-affinity D2 agonist, aripiprazole, reduces not only functional down-regulation of D2s in response to cocaine but also potentiation of NMDAR and AMPAR responses in wild-type mice. As thus the authors concluded that functional loss of D2 receptors is a critical mechanism mediating cocaine-induced glutamate plasticity in VTA neurons. – DAL



*J Neurosci* 2013; 33(30): 12329.

# Keep Away From Mosquitoes: Science Evidence-based Suggestion

**I**T is mid-summer, and it is also the time for mosquitoes. How can we prevent to be bitten by the little bloodsuckers? It is a question we really want to be answered. Let us listen to the experts how we can do that.

## No more beer

Beer drinking can markedly boost your risk of being bitten. Mosquitoes can land on volunteers significantly increased after beer ingestion compared with before ingestion. Oh dear, please take care before swigging beer. Yes, you need make a choice between enjoying beer drinking and being bitten by mosquitoes.

## Do not run

The mosquitoes know you are scared. If you are running for escaping being bitten, you are wrong. Because the more frequent you running, the easies for mosquitoes to find you due to the carbon dioxide you exhaled and substances in sweat, these can help mosquitoes home in on their prey. According to a study, physical activity can increase risk for bites by as much as 50%.

## No dark clothes

Dark-colored clothing ups your risk of falling victim to the little vampires. Researchers said that black is the most attractive and then the red and then the grey and blue, and then khaki, green, light khaki, and yellow. Ok, right now you know what kind of clothes you need choose.

## Do not naked your feet



The little bugs like the pungent aroma of dirty feet. In a study, scientists found that 75% of the mosquitoes homed in on his feet, but after he washed them with deodorant soap, the bugs bit randomly. Believe it not, it is the bug, yes, it is. They like the stinking smell.

## No activity at full-moon night

Full moon, it is the time for reunion as the Chinese culture goes. Thinking what a bad time if being bitten by the the tiny bloodsuckers at full-moon time. According to the American Mosquito Control Association, the mosquitoes are about 500 times more active when the moon is full. One recommendation is that avoid outside activities at dusk and dawn.

## If you are pregnant

Keep away from mosquitoes is not that easy for the moms-to-be. A study showed that pregnant women can get bitten almost twice as often as women who are not that consequently increase the risk for parasite-borne diseases. Three reasons can explain this: 1) increased exhale volume at later in their

breath; 2) warmer of the pregnant women's abdomens; 3) changed endocrine system. So if you are pregnant, you also can prevent yourself from being bitten by avoiding above-mentioned tips.

## If you are a blood type O

I cannot choose my blood type. Of course, nobody can. So keep in mind that you

are more attractive than others if you are a type-O blood human because mosquitoes are nearly twice more likely to land on your skin that others. It is the nature. Mosquitoes can identify blood type before they bite by smelling the substances people secreted.■

## Conflict of Interests

None

**Drs. Xiaofeng Shen  
Qingsong Zhao**

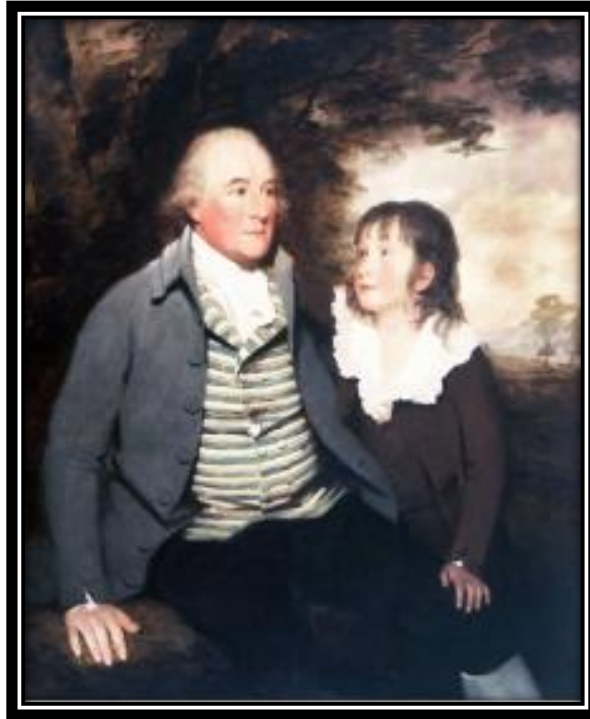
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**Portrait of William Ferguson and His Son**

By Henry Raeburn (1756 – 1823)  
Oil on canvas

Sir Abe Bailey Bequest, Iziko South African National Gallery, South Africa



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# New Definition of Sepsis

Xiaofeng Shen, \* Fuzhou Wang \*<sup>Δ</sup>

**SEPSIS OR SEPTIC shock is one of the major causes of mortality in intensive care medicine. How to define and how to make an accurate diagnosis possess critical implications for patients and intensive caregivers. With the development of modern medical science, new challenges rose for how to re-define sepsis and also revision is needed. Should we add organ dysfunction to the diagnostic criteria of systemic inflammatory response syndrome, and whether are there early symptoms or signs of organ dysfunction need to be considered critically. May be the new definition of sepsis can save more lives.**

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## To the Editor,

**W**E strongly agree the perspective from Drs Vincent *et al.* on the definition of sepsis as “a systemic response to infection with the presence of some degree of organ dysfunction” that was published on March 02 2013 in *The Lancet* (1). We believe such an addition of some degree of organ dysfunction to the conventional definition will make it more precise in defining a patient whether developed sepsis or not merely on the criteria of sys-

drome (SIRS) bases. The beneficial effect for such a change would be on 1) patients’ outcomes because we would become alert to patient’s real situation but not only the SIRS if organ dysfunction was added to the diagnostic criteria, which will subsequently make critical care physicians considered more carefully when treating these patients because they had some degree of organ dysfunction, 2) clinical trials’ reliability, the enrolling criteria based on SIRS definition is pretty sensitive if without such a change that would result in many patients were recruited without de-facto sepsis. Beside these good aspects, we still consider that what degree of the organ dysfunction should be defined as pointed out by Drs Vincent *et al.* that “some degree of organ dysfunction”, i.e. how to define the “some degree”. In fact, it is a continual sequential process from

SIRS to sepsis to severe sepsis to septic shock to multiple organ dysfunction syndromes (2). Therefore, it is difficult to give a precise definition of the “some degree’s organ dysfunction” for each of the period of the whole disease development.

## Conflict of Interests

None

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1. Vincent JL, Opal SM, Marshall JC, Tracey KJ. Sepsis definitions: time for change. *Lancet* 2013; 381: 774-5.
2. Fry DE. Sepsis, systemic inflammatory response, and multiple organ dysfunction: the mystery continues. *Am Surg* 2012; 78: 1-8.

