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Public release date: 10-Oct-2010

So that's why we're allergic to sun creams

What happens to sunscreens when they are exposed to sunlight? And how is the skin affected by the degradation products that form? This has been the subject of research at the University of Gothenburg and Chalmers University of Technology that will be presented at the upcoming dermatologist conference in Gothenburg.

A growing hole in the ozone layer and a change in sunbathing habits have brought an increase in the number of cases of skin cancer worldwide. One way of dealing with this has been to advocate sunscreens, though greater use of these products has triggered an increase in contact allergy and photocontact allergy to sun protection products.

"We know that sun creams pass through the skin into our bodies, but we don't know what effects they have on us," says Isabella Karlsson, doctoral student at the Department of Chemistry at the University of Gothenburg's Faculty of Science. "Many of them actually break down in the presence of sunlight. We therefore wanted to look at what can happen to the chemical sun protection agents when exposed to UV rays, and how the degradation products that form affect the skin."

In their study, the researchers have come up with an explanation of what happens during this process. "Arylglyoxales, one of the degradation products, turned out to be highly allergenic," says Karlsson. "Which could explain why some people are allergic to creams that contain dibenzoylmethanes, one of the UVA-absorbing substances in sun creams."

This has made for a better understanding of the mechanism behind photocontact allergy, which could lead to a product that does not cause allergy, and could determine which sun creams people are most likely to be sensitive to.

But their discovery is already having an impact. The healthcare system has long found it difficult to test patients with suspected photocontact allergy, but thanks to the study a new test is being developed. "We're just starting to work with various dermatology clinics on assessing the test," explains Karlsson. "So more patients will be able to find out whether they have photocontact allergy, which could help them in their everyday lives and reduce the burden on the healthcare system."

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New findings on autoimmune diseases

A deficiency in one of the immune system's enzymes affects the severity of autoimmune diseases such as MS, and explains why the course of these diseases can vary so much. New findings give an insight into how this enzyme deficiency can be diagnosed, and could lead to new medicines, reveals a thesis from the Sahlgrenska Academy.
Multiple sclerosis (MS) and Guillain-Barré syndrome (GBS) – the two autoimmune diseases covered by the thesis – can follow vastly different courses, with symptoms ranging from insignificant to life-threatening, the reason for which has been largely unknown. In the thesis the researchers have now found a factor in the immune defence that can explain this mechanism.

The immune system's white blood cells play an important role in the fight against invading micro-organisms. They contain an enzyme called NADPH oxidase, which converts oxygen into reactive oxygen radicals. It has long been known that these oxygen radicals stop infections by breaking down micro-organisms. New studies using animal models have shown that inadequate production of oxygen radicals can lead to the development of autoimmune diseases, where a patient's immune system attacks the body's own tissues. This would indicate that oxygen radicals are important for preventing the occurrence of autoimmune diseases.

"We wanted to look at this in humans, and examined the NADPH oxidase in the white blood cells of patients with MS, GBS and recurring GBS (RGBS)," says Natalia Mossberg, doctoral student at the Institute of Neuroscience and Physiology at the Sahlgrenska Academy. "The results show that patients with more severe forms of the illness have lower levels of oxygen radical production in their white blood cells as a result of deficient NADPH oxidase function."

The researchers discovered that the body's ability to produce reactive oxygen radicals at an early stage in the immune defence against infections has a major impact on how these illnesses develop. "We've shown that a strong but controlled production of oxygen radicals by the immune system is important for subduing illnesses such as MS and GBS," says Mossberg.

The researchers think that this method of measuring oxygen radical production in white blood cells can be used for investigating other autoimmune diseases and for diagnosing the severity of these illnesses. The discovery could also lead to a new approach to the treatment of MS in its early stages with medicines that trigger the production of NADPH oxidase or a vaccination for people at risk of developing this type of illness.

**Public release date: 11-Oct-2010**

**Too much light at night may lead to obesity, study finds**

COLUMBUS, Ohio – Persistent exposure to light at night may lead to weight gain, even without changing physical activity or eating more food, according to new research in mice.

Researchers found that mice exposed to a relatively dim light at night over eight weeks had a body mass gain that was about 50 percent more than other mice that lived in a standard light-dark cycle.

"Although there were no differences in activity levels or daily consumption of food, the mice that lived with light at night were getting fatter than the others," said Laura Fonken, lead author of the study and a doctoral student in neuroscience at Ohio State University.

The study appears this week in the online early edition of the Proceedings of the National Academy of Sciences.

If the mice are not less active or eating more, what's causing the bigger weight gain? Results suggest that mice living with light at night eat at times they normally wouldn't.

In one study, mice exposed to light at night – but that had food availability restricted to normal eating times – gained no more weight than did mice in a normal light-dark cycle.

"Something about light at night was making the mice in our study want to eat at the wrong times to properly metabolize their food," said Randy Nelson, co-author of the study and professor of neuroscience and psychology at Ohio State.

If these results are confirmed in humans, it would suggest that late-night eating might be a particular risk factor for obesity, Nelson said.
In one study, mice were housed in one of three conditions: 24 hours of constant light, a standard light-dark cycle (16 hours of light at 150 lux, 8 hours of dark), or 16 hours of daylight and 8 hours of dim light (about 5 lux of light).

The researchers measured how much food the mice ate each day. They also measured how much they moved around their cages each day through an infrared beam crossing system. Body mass was calculated each week.

Results showed that, compared to mice in the standard light-dark cycle, those in dim light at night showed significantly higher increases in body mass, beginning in the first week of the study and continuing throughout.

By the end of the experiment, light-at-night mice had gained about 12 grams of body mass, compared to 8 grams for those in the standard light-dark cycle. (Mice in constant bright light also gained more than those in the standard light-dark cycle, but Nelson said the dim light-at-night mice were better comparisons to the light exposure that humans generally get.)

The dim light-at-night mice also showed higher levels of epididymal fat, and impaired glucose tolerance – a marker of pre-diabetes.

Although the dim light-at-night mice didn't eat more than others, they did change when they ate, results showed. These mice are nocturnal, so they would normally eat substantially more food at night. However, the dim light-at-night mice ate 55 percent of their food during the daylight hours, compared to only 36 percent in the mice living in a standard light-dark cycle.

Since the timing of eating seemed significant, the researchers did a second study, similar to the first, with one important difference: instead of having food freely available at all times, food availability was restricted to either the times when mice would normally be active or when they would normally be at rest.

In this experiment, mice exposed to the dim light at night did not have a greater gain in body mass than did the others when their food was restricted to times when they normally would be active.

"When we restricted their food intake to times when they would normally eat, we didn't see the weight gain," Fonken said. "This further adds to the evidence that the timing of eating is critical to weight gain."

The findings showed that levels of corticosterone, a stress hormone, were not significantly different in dim light-at-night mice compared to those living in a standard light-dark cycle. That's important because corticosterone has been linked to changes in metabolism, Fonken said. This shows there doesn't have to be changes in corticosterone levels to have changes in metabolism in the mice.

So how does light at night lead to changes in metabolism? The researchers believe the light could disrupt levels of the hormone melatonin, which is involved in metabolism. In addition, it may disrupt the expression of clock genes, which help control when animals feed and when they are active.

Overall, the findings show another possible reason for the obesity epidemic in Western countries.

"Light at night is an environmental factor that may be contributing to the obesity epidemic in ways that people don't expect," Nelson said. "Societal obesity is correlated with a number of factors including the extent of light exposure at night."

For example, researchers have identified prolonged computer use and television viewing as obesity risk factors, but have focused on how they are associated with a lack of physical activity.

"It may be that people who use the computer and watch the TV a lot at night may be eating at the wrong times, disrupting their metabolism," Nelson said. "Clearly, maintaining body weight requires keeping caloric intake low and physical activity high, but this environmental factor may explain why some people who maintain good energy balance still gain weight."
Estrogen therapy may be associated with kidney stones in postmenopausal women

Use of estrogen therapy is associated with an increased risk of developing kidney stones in postmenopausal women, according to a report in the October 11 issue of Archives of Internal Medicine, one of the JAMA/Archives journals.

"Nephrolithiasis [kidney stones] is a common condition that affects 5 percent to 7 percent of postmenopausal women in the United States," according to background information in the article. "Because the process of kidney stone formation is influenced by a variety of lifestyle and other health-related factors, the true impact of estrogen therapy on the risk of kidney stone formation is difficult to infer from observational studies."

Using data from the national Women’s Health Initiative study, Naim M. Maalouf, M.D., of the University of Texas Southwestern Medical Center, Dallas, examined data from two trials: 10,739 postmenopausal women with hysterectomy who received either an estrogen-only treatment or matching placebo and 16,608 postmenopausal women without hysterectomy who received either an estrogen plus progestin treatment or matching placebo. Data were collected for an average of 7.1 years in the estrogen-only trial and 5.6 years for the estrogen plus progestin trial.

A total of 335 cases of kidney stones were reported in the active treatment groups, while 284 cases occurred in the placebo groups. The beginning demographic characteristics and risk factors for kidney stones were similar in the two groups, and the authors found that estrogen therapy was associated with a significant increase in risk of kidney stones. The corresponding annualized incidence rate per 10,000 women per year was 39 in the treatment group and 34 in the placebo group. Development of kidney stones was five times more common in women with a history of kidney stones at the beginning of the study, but was not significantly altered by estrogen therapy. In this trial, estrogen therapy increased the risk of development of kidney stones irrespective of age, ethnicity, body mass index, prior hormone therapy use or use of coffee or thiazide diuretics.

The authors conclude that their results "indicate that estrogen therapy increases the risk of nephrolithiasis in healthy postmenopausal women. The mechanisms underlying this higher propensity remain to be determined. In view of the sizable prevalence of nephrolithiasis in this segment of the population, these findings need to be considered in the decision-making process regarding postmenopausal estrogen use."

Patients and doctors are being misled by published data on medicines

Research: Reboxetine for acute treatment of major depression: systematic review and meta-analysis of published and unpublished trials controlled with placebo and selective serotonin reuptake inhibitors

The drug reboxetine is, overall, an ineffective and potentially harmful antidepressant, according to a comprehensive study of the evidence published on bmj.com today.

The study also shows that nearly three quarters of the data on patients who took part in trials of reboxetine were not published until now, and that the published data on the drug overestimate the benefits and underestimate the harms of treatment - all underlining the urgent need for mandatory publication of all clinical trial results.

Reboxetine has been approved for the treatment of major depressive disorder in many European countries since 1997, but doubts have been raised about its effectiveness on the basis of recent studies and rejection of the application for approval in the United States in 2001. Published trials, however, show a favourable risk-benefit profile for reboxetine.
So a team of researchers at The German Institute for Quality and Efficiency in Health Care (IQWiG) set out to assess the benefits and harms of reboxetine compared with placebo or other antidepressants, known as selective serotonin reuptake inhibitors (SSRIs), for treating adults with major depression.

They also measured the impact of potential publication bias in trials of reboxetine (where positive trial results are more likely to be published than unfavourable results).

They analysed the results of 13 trials, including eight previously unpublished trials from the manufacturer of reboxetine (Pfizer). The overall quality of the trials was good, but the researchers noted that data on 74% of patients were unpublished.

They show that reboxetine is, overall, an ineffective and potentially harmful antidepressant. They found no significant difference in benefit (remission and response rates) versus placebo and inferior benefit versus SSRIs, as well as a higher rate of patients affected by adverse events than with placebo and higher withdrawal rates owing to adverse events than with placebo and the SSRI fluoxetine.

A further comparison of published and unpublished trials shows that published data overestimated the benefit of reboxetine and underestimated harm.

This, say the authors, is a striking example of publication bias, resulting in a distorted public record of a treatment. Publication bias can affect health policy decisions and the content of clinical guidelines, they warn. "Our findings underline the urgent need for mandatory publication of trial data."

In an accompanying analysis, the same authors argue that current regulations on the publication of trial results are insufficient. They believe several measures are required in order to provide patients, clinicians, and health policy makers with unbiased and verified evidence on which to base decisions.

These include mandatory public disclosure of data for all drugs, even for those never approved, public access to trials of older drugs not covered by current law, greater data sharing between regulatory authorities, as well as re-evaluation of a drug if approval is declined elsewhere, and a legal obligation for manufacturers to provide all requested data to official bodies without restrictions to publication.

In a second analysis, senior researchers Robert Steinbrook and Jerome Kassirer highlight several recent examples that illustrate the problems of trusting drug companies to provide the complete picture about the clinical trials they sponsor. They propose that journals should define full access to all the trial data and require that investigators and journal editors have full access. Editors should also take appropriate action if concerns about data arise after publication. "Trust in the medical literature, not just in industry sponsored trials, is at stake," they conclude.

In an accompanying editorial, BMJ Editors Dr Fiona Godlee and Dr Elizabeth Loder, argue that "the medical evidence base is distorted by missing clinical trial data" and that "urgent action is needed to restore trust in existing evidence."

They believe it is important to re-evaluate the integrity of the existing base of research evidence and, as such, the BMJ will devote a special theme issue to this topic in late 2011.

"Full information about previously conducted clinical trials involving drugs, devices and other treatments is vital to clinical decision-making," they say. "It is time to demonstrate a shared commitment to set the record straight."

Ralph’s Note - Why has there been a criminal Investigation of Pfizer, after multiple repeated blatant offenses?

**Public release date: 13-Oct-2010**

**Walk much? It may protect your memory down the road**
ST. PAUL, Minn. – New research suggests that walking at least six miles per week may protect brain size and in turn, preserve memory in old age, according to a study published in the October 13, 2010, online issue of Neurology®, the medical journal of the American Academy of Neurology.

"Brain size shrinks in late adulthood, which can cause memory problems. Our results should encourage well-designed trials of physical exercise in older adults as a promising approach for preventing dementia and Alzheimer's disease," said study author Kirk I. Erickson, PhD, with the University of Pittsburgh in Pittsburgh.

For the study, 299 dementia-free people recorded the number of blocks they walked in one week. Then nine years later, scientists took brain scans of the participants to measure their brain size. After four more years, the participants were tested to see if they had developed cognitive impairment or dementia.

The study found that people who walked at least 72 blocks per week, or roughly six to nine miles, had greater gray matter volume than people who didn't walk as much, when measured at the nine-year time point after their recorded activity. Walking more than 72 blocks did not appear to increase gray matter volume any further.

By four years later, 116 of the participants, or 40 percent, had developed cognitive impairment or dementia. The researchers found that those who walked the most cut their risk of developing memory problems in half.

"If regular exercise in midlife could improve brain health and improve thinking and memory in later life, it would be one more reason to make regular exercise in people of all ages a public health imperative," said Erickson.

Public release date: 13-Oct-2010

Study demonstrates pine bark naturally improves tinnitus

Pycnogenol is effective in relieving tinnitus symptoms and improving inner-ear blood flow

HOBOKEN, N.J. (Sept. 13, 2010) – More than 50 million Americans will experience some degree of tinnitus in their lifetime, according to the American Tinnitus Association. Tinnitus is a hearing condition that causes the constant misperception of sound, including hissing, ringing and rushing noises. A study recently published in Panminerva Medica reveals that Pycnogenol® (pic-noj-en-all), an antioxidant plant extract derived from the bark of the French maritime pine tree, is effective in relieving tinnitus symptoms by improving blood flow in the inner ear.

"Impaired blood flow to the ear is a common cause for tinnitus, a disturbing and very debilitating condition that can considerably impact overall health and quality of life," said Dr. Gianni Belcaro, a lead researcher on the study along with his team from Irvine3 Vascular labs, Chieti-Pescara University. "With few options available for treatment, this study gave us the opportunity to explore a natural solution to tinnitus symptoms and its causes."

In a study conducted by the Chieti-Pescara University in Italy, 82 patients between the ages of 35 and 55 with mild-to-moderate tinnitus in only one ear, while the other remains unaffected, were studied throughout a four-week period. Tinnitus in all subjects was a result of restricted blood supply to the inner ear, as measured by high resolution ultrasonography imaging of their cochlear blood flow. Patients were assigned to one of three groups: A, B and control. Group A consisted of 24 patients who were administered 150 mg/day of Pycnogenol®, group B consisted of 34 patients who were administered 100 mg/day of Pycnogenol®, and the control group consisted of 24 patients who received no Pycnogenol®. None of the patients had previously used medication for their tinnitus symptoms.

At the beginning of the study, patients' average initial systolic and diastolic blood flow velocities were 14.3 and 4.22 cm/sec in the low dose Pycnogenol® group and 13.2 and 3.2 cm/sec in the high dose Pycnogenol® group, indicative of insufficient blood perfusion of the ear in both groups. The study found that after four weeks of treatment with Pycnogenol®, inner ear systolic and diastolic blood flow velocities in the affected ear rose to an average of 21.2 and 8.23 cm/sec in the low dose group and to 24.3 and 12.5 cm/sec in the high dose group. Not only are these results significant for the improvement of inner ear blood micro-circulation and, consequently reduction of tinnitus symptoms, but they also indicate the potentially dose-related effect of
The study also examined in detail the effects of Pycnogenol® on the symptoms of tinnitus. Using a Subjective Tinnitus Scale (STS) at the inception of the study, subjects were instructed to rate their symptoms from "zero" (low intensity of symptoms) to "fifteen" (constant and severe symptoms). The initial STS average value was approximately 8.8 among patients in the Pycnogenol® group and 7.9 in the control group. After four weeks, STS scores reduced to 5.2 in the low dose group and 3.3 in the high dose group, demonstrating a dramatic reduction of the disturbing background noise in the effected ear. There were no significant changes within the control group.

"The study clearly indicates Pycnogenol®'s ability to improve vascular function and restore cochlear blood perfusion, which in turn relieves the severity of tinnitus symptoms" said Dr. Belcaro. "The results provide further evidence of the supplement's natural efficacy for a variety of vascular health symptoms."

This study further corroborates Pycnogenol®'s prominence for improvement of vascular function which spans from the large arteries and veins to the tiniest micro-vessels.

Pycnogenol® is a proprietary, patented pine bark extract and the research findings detailed here and in other published journals may not be applied to other pine bark extracts on the market.

Public release date: 13-Oct-2010

Compound in celery, peppers reduces age-related memory deficits

CHAMPAIGN, Ill. — A diet rich in the plant compound luteolin reduces age-related inflammation in the brain and related memory deficits by directly inhibiting the release of inflammatory molecules in the brain, researchers report.

Luteolin (LOOT-ee-oh-lin) is found in many plants, including carrots, peppers, celery, olive oil, peppermint, rosemary and chamomile.

The new study, which examined the effects of dietary luteolin in a mouse model of aging, appears in the Journal of Nutrition.

The researchers focused on microglial cells, specialized immune cells that reside in the brain and spinal cord. Infections stimulate microglia to produce signaling molecules, called cytokines, which spur a cascade of chemical changes in the brain. Some of these signaling molecules, the inflammatory cytokines, induce “sickness behavior”: the sleepiness, loss of appetite, memory deficits and depressive behaviors that often accompany illness.

Inflammation in the brain also appears to be a key contributor to age-related memory problems, said University of Illinois animal sciences professor Rodney Johnson, who led the new study. Johnson directs the Division of Nutritional Sciences at Illinois.

“We found previously that during normal aging, microglial cells become dysregulated and begin producing excessive levels of inflammatory cytokines,” he said.

“We think this contributes to cognitive aging and is a predisposing factor for the development of neurodegenerative diseases.”

Johnson has spent nearly a decade studying the anti-inflammatory properties of nutrients and various bioactive plant compounds, including luteolin. Previous studies – by Johnson’s lab and others – have shown that luteolin has anti-inflammatory effects in the body. This is the first study to suggest, however, that luteolin improves cognitive health by acting directly on the microglial cells to reduce their production of inflammatory cytokines in the brain.

The researchers showed that microglial cells that were exposed to a bacterial toxin produced inflammatory cytokines that could kill neurons. When the microglia were exposed to luteolin before they encountered the toxin, however, the neurons lived.
“The neurons survived because the luteolin inhibited the production of neurotoxic inflammatory mediators,” Johnson said.

Exposing only the neurons to luteolin before the experiment had no effect on their survival, the researchers found.

“This demonstrated that luteolin isn’t protecting the neurons directly,” he said. “It’s doing it by affecting the microglial cells.”

The researchers next turned their attention to the effects of luteolin on the brains and behavior of adult (3- to 6-month-old) and aged (2-year-old) mice. The mice were fed a control diet or a luteolin-supplemented diet for four weeks. The researchers assessed their spatial memory and measured levels of inflammatory markers in the hippocampus, a brain region that is important to memory and spatial awareness.

Normally, aged mice have higher levels of inflammatory molecules in the hippocampus and are more impaired on memory tests than younger adult mice. Aged mice on the luteolin-supplemented diet, however, did better on the learning and memory task than their peers, and the levels of inflammatory cytokines in their brains were more like those of the younger adult mice.

“When we provided the old mice luteolin in the diet it reduced inflammation in the brain and at the same time restored working memory to what was seen in young cohorts,” Johnson said.

Studies have shown that plant compounds such as luteolin can get into the brain, Johnson said. “We believe dietary luteolin accesses the brain and inhibits or reduces activation of microglial cells and the inflammatory cytokines they produce. This anti-inflammatory effect is likely the mechanism which allows their working memory to be restored to what it was at an earlier age.”

“These data suggest that consuming a healthy diet has the potential to reduce age-associated inflammation in the brain, which can result in better cognitive health,” he said.

**Public release date: 13-Oct-2010**

**New evidence that fat cells are not just dormant storage depots for calories**

Scientists are reporting new evidence that the fat tissue in those spare tires and lower belly pooches — far from being a dormant storage depot for surplus calories — is an active organ that sends chemical signals to other parts of the body, perhaps increasing the risk of heart attacks, cancer, and other diseases. They are reporting discovery of 20 new hormones and other substances not previously known to be secreted into the blood by human fat cells and verification that fat secretes dozens of hormones and other chemical messengers. Their study appears in ACS’ monthly Journal of Proteome Research.

Anja Rosenow and colleagues note that excess body fat can contribute to heart disease, diabetes, cancer and other diseases. Many people once thought that fat cells were inert storage depots for surplus calories. But studies have established that fat cells can secrete certain hormones and other substances much like other organs in the body. Among those hormones is leptin, which controls appetite, and adiponectin, which makes the body more sensitive to insulin and controls blood sugar levels. However, little is known about most of the proteins produced by the billions of fat cells in the adult body.

The scientists identified 80 different proteins produced by the fat cells. These include six new proteins and 20 proteins that have not been previously detected in human fat cells. The findings could pave the way for a better understanding of the role that hormone-secreting fat cells play in heart disease, diabetes, and other diseases.

**Public release date: 13-Oct-2010**
Florida State study finds watermelon lowers blood pressure

Results are published in the American Journal of Hypertension

No matter how you slice it, watermelon has a lot going for it — sweet, low calorie, high fiber, nutrient rich — and now, there's more. Evidence from a pilot study led by food scientists at The Florida State University suggests that watermelon can be an effective natural weapon against prehypertension, a precursor to cardiovascular disease.

It is the first investigation of its kind in humans. FSU Assistant Professor Arturo Figueroa and Professor Bahram H. Arjmandi found that when six grams of the amino acid L-citrulline/L-arginine from watermelon extract was administered daily for six weeks, there was improved arterial function and consequently lowered aortic blood pressure in all nine of their prehypertensive subjects (four men and five postmenopausal women, ages 51-57).

"We are the first to document improved aortic hemodynamics in prehypertensive but otherwise healthy middle-aged men and women receiving therapeutic doses of watermelon," Figueroa said. "These findings suggest that this 'functional food' has a vasodilatory effect, and one that may prevent prehypertension from progressing to full-blown hypertension, a major risk factor for heart attacks and strokes.

"Given the encouraging evidence generated by this preliminary study, we hope to continue the research and include a much larger group of participants in the next round," he said.

Why watermelon?

"Watermelon is the richest edible natural source of L-citrulline, which is closely related to L-arginine, the amino acid required for the formation of nitric oxide essential to the regulation of vascular tone and healthy blood pressure," Figueroa said.

Once in the body, the L-citrulline is converted into L-arginine. Simply consuming L-arginine as a dietary supplement isn't an option for many hypertensive adults, said Figueroa, because it can cause nausea, gastrointestinal tract discomfort, and diarrhea.

In contrast, watermelon is well tolerated. Participants in the Florida State pilot study reported no adverse effects. And, in addition to the vascular benefits of citrulline, watermelon provides abundant vitamin A, B6, C, fiber, potassium and lycopene, a powerful antioxidant. Watermelon may even help to reduce serum glucose levels, according to Arjmandi.

"Cardiovascular disease (CVD) continues to be the leading cause of death in the United States," Arjmandi said. "Generally, Americans have been more concerned about their blood cholesterol levels and dietary cholesterol intakes rather than their overall cardiovascular health risk factors leading to CVD, such as obesity and vascular dysfunction characterized by arterial stiffening and thickness — issues that functional foods such as watermelon can help to mitigate.

"By functional foods," said Arjmandi, "we mean those foods scientifically shown to have health-promoting or disease-preventing properties, above and beyond the other intrinsically healthy nutrients they also supply."

Figueroa said oral L-citrulline supplementation might allow a reduced dosage of antihypertensive drugs necessary to control blood pressure.

"Even better, it may prevent the progression from prehypertension to hypertension in the first place," he said.

While watermelon or watermelon extract is the best natural source for L-citrulline, it is also available in the synthetic form in pills, which Figueroa used in a previous study of younger, male subjects. That investigation showed that four weeks of L-citrulline slowed or weakened the increase in aortic blood pressure in response to cold exposure. It was an important finding, said Figueroa, since there is a greater occurrence of myocardial infarction associated with hypertension during the cold winter months.
"Individuals with increased blood pressure and arterial stiffness — especially those who are older and those with chronic diseases such as type 2 diabetes — would benefit from L-citrulline in either the synthetic or natural (watermelon) form," Figueroa said. "The optimal dose appears to be four to six grams a day."

**Approximately 60 percent of U.S. adults are prehypertensive or hypertensive.** Prehypertension is characterized by systolic blood pressure readings of 120-139 millimeters of mercury (mm Hg) over diastolic pressure of 80-89 mm Hg. "Systolic" refers to the blood pressure when the heart is contracting. "Diastolic" reflects the blood pressure when the heart is in a period of relaxation and expansion.

Findings from Figueroa's latest pilot study at Florida State are described in the American Journal of Hypertension. A copy of the paper ("Effects of Watermelon Supplementation on Aortic Blood Pressure and Wave Reflection in Individuals With Prehypertension: A Pilot Study") can be accessed online.

The paper’s lead author, Figueroa holds a medical degree, a doctoral degree in physiological sciences, and a master’s degree in sports medicine. He has been a faculty member in the Florida State University Department of Nutrition, Food and Exercise Sciences since 2004. Figueroa's coauthor and colleague Arjmandi serves as chairman of the department, which is a part of Florida State's interdisciplinary College of Human Sciences. Arjmandi also is the author or coauthor of an extensive body of published research on the health benefits of prunes and other functional foods.

**Public release date: 15-Oct-2010**

**Study confirms: Whatever doesn't kill us can make us stronger**

Psychologists say we fare better after some life difficulties, than if we've had many or none at all

BUFFALO, N.Y. -- We've all heard the adage that whatever doesn't kill us makes us stronger, but until now the preponderance of scientific evidence has offered little support for it.

However, a new national multi-year longitudinal study of the effects of adverse life events on mental health has found that adverse experiences do, in fact, appear to foster subsequent adaptability and resilience, with resulting advantages for mental health and well being.


It examined a national sample of people who reported their lifetime history of adverse experiences and several measures of current mental health and well being.

Authors are Mark Seery, PhD, assistant professor of psychology at the University at Buffalo; E. Alison Holman, PhD, assistant professor of nursing sciences, University of California, Irvine; and Roxane Cohen Silver, PhD, professor of psychology and social behavior and medicine at UC Irvine.

Seery, senior author of the study, says previous research indicates that exposure to adverse life events typically predicts negative effects on mental health and well-being, such that more adversity predicts worse outcomes.

But in this study of a national survey panel of 2,398 subjects assessed repeatedly from 2001 to 2004, Seery and co-researchers found those exposed to some adverse events reported better mental health and well-being outcomes than people with a high history of adversity or those with no history of adversity.

"We tested for quadratic relationships between lifetime adversity and a variety of longitudinal measures of mental health and well-being, including global distress, functional impairment, post-traumatic stress symptoms and life satisfaction," Seery says.
"Consistent with prior research on the impact of adversity, linear effects emerged in our results, such that more lifetime adversity was associated with higher global distress, functional impairment and PTS symptoms, as well as lower life satisfaction.

"However," says Seery, "our results also yielded quadratic, U-shaped patterns, demonstrating a critical qualification to the seemingly simple relationship between lifetime adversity and outcomes.

"Our findings revealed," he says, "that a history of some lifetime adversity -- relative to both no adversity or high adversity -- predicted lower global distress, lower functional impairment, lower PTS symptoms and higher life satisfaction."

The team also found that, across these same longitudinal outcome measures, people with a history of some lifetime adversity appeared less negatively affected by recent adverse events than other individuals.

Although these data cannot establish causation, Seery says the evidence is consistent with the proposition that in moderation, experiencing lifetime adversity can contribute to the development of resilience.

"Although we studied major lifetime adversity," he says, "there is reason to believe that other relatively mundane experiences should also contribute to resilience.

"This suggests that carefully designed psychotherapeutic interventions may be able to do so, as well, although there is much work that still needs to be done to fully understand resilience and where it comes from."

Public release date: 18-Oct-2010

Vitamin B12 may reduce risk of Alzheimer's disease

ST. PAUL, Minn. – A new study shows that vitamin B12 may protect against Alzheimer's disease, adding more evidence to the scientific debate about whether the vitamin is effective in reducing the risk of memory loss. The research will be published in the October 19, 2010, issue of Neurology®, the medical journal of the American Academy of Neurology.

"Our findings show the need for further research on the role of vitamin B12 as a marker for identifying people who are at increased risk of Alzheimer's disease," said study author Babak Hooshmand, MD, MSc, with Karolinska Institutet in Stockholm, Sweden. "Low levels of vitamin B12 are surprisingly common in the elderly. However, the few studies that have investigated the usefulness of vitamin B12 supplements to reduce the risk of memory loss have had mixed results."

For the seven-year study, researchers took blood samples from 271 Finnish people age 65 to 79 who did not have dementia at the start of the study. During that time, 17 people developed Alzheimer's disease. Blood samples were tested for levels for homocysteine, an amino acid associated with vitamin B12, and for levels of the active portion of the vitamin, called holotranscobalamin. Too much homocysteine in the blood has been linked to negative effects on the brain, such as stroke. However, higher levels of vitamin B12 can lower homocysteine.

The study found that for each micromolar increase in the concentration of homocysteine, the risk of Alzheimer's disease increased by 16 percent, whereas each picomolar increase in concentration of the active form of vitamin B12 reduced risk by two percent. The results stayed the same after taking into account other factors, such as age, gender, education, smoking status, blood pressure and body mass index. The addition of folate did not appear to raise or lower the risk of Alzheimer's disease.

"More research is needed to confirm these findings before vitamin B12 should be used solely as a supplement to help protect memory," said Hooshmand.

Public release date: 18-Oct-2010

Soy intake associated with lower recurrence of breast cancer in hormone-sensitive cancers
Post-menopausal breast cancer patients with hormone-sensitive cancers who consumed high amounts of soy isoflavones had a lower risk of recurrence, found a research study published in CMAJ (Canadian Medical Association Journal) (pre-embargo link only) http://www.cmaj.ca/embargo/cmaj091298.pdf.

**Soy isoflavones are similar to estrogen in chemical structure and may stimulate or inhibit estrogen-like action in tissues.** Consumption of soy isoflavones, found in soybeans and soy products, has increased in recent years and there are concerns about the effect of soy consumption on women with estrogen and progesterone receptor positive breast cancer as tumour growth is dependent on estrogen.

The study, by researchers at the Cancer Hospital of Harbin Medical University, Harbin, China, involved 524 women who had surgery for breast cancer and were followed afterwards for between five to six years. Since little is known about the effects of soy isoflavones on breast cancer patients receiving adjuvant endocrine therapy, the researchers sought to understand its impact in these patients.

"Compared with postmenopausal patients in the lowest quartile of soy isoflavone intake (less than 15.2 mg/day), **those in the highest quartile (more than 42.3 mg/day) had a significantly lower risk of recurrence,**" writes Dr. Qingyan Zhang with coauthors.

"The recurrence rate of estrogen- and progesterone- positive breast cancer was 12.9% lower among patients in the highest quartile of soy isoflavone intake than among those in the lowest quartile and was 18.7% lower for patients receiving anastrozole therapy in the highest quartile," they state.

However, there was no effect on overall survival in postmenopausal women and no association between soy intake and survival in premenopausal women.

The authors conclude that while this finding is potentially important regarding soy intake, large multicentre clinical trials are needed to provide more data.

**Public release date: 18-Oct-2010**

**Western diet exacerbates sepsis**

**High fat diets cause a dramatic immune system overreaction to sepsis**, a condition of systemic bacterial infection. An experimental study in mice, published in the open access journal BMC Physiology, has shown that a diet high in saturated fat, sugars and cholesterol greatly exaggerates the inflammatory response to sepsis.

Chantal Rivera, PhD Associate Professor of Molecular and Cellular Physiology at Louisiana State University Health Sciences Center-Shreveport, said that "Mortality due to sepsis in morbidly obese subjects is estimated to be 7 times more prevalent compared to mortality in lean individuals. Morbidity in obese patients is also more severe. Results from our recent studies suggest that this adverse outcome may be caused by consuming a high-fat diet, which predisposes the immune system to react more strongly to infection".

Dr. Rivera lead a team of researchers to carry out the surgical induction of sepsis in mice that had been fed normal chow or western diet for 3 weeks. **Mice on the western diet, which was enriched in saturated fat, showed exacerbated inflammation that was found to be mediated by signaling via the toll-like receptor 4 (TLR-4) pathway.** According to Dr Rivera, "These results suggest that targeting the TLR signaling pathway as a therapeutic approach to the medical management of sepsis may be especially beneficial in obese patients".

**Public release date: 18-Oct-2010**

**Fructose intolerance common in children with functional abdominal pain**
Low-fructose diet is an effective treatment

San Antonio, Texas (October 18, 2010) – Fructose intolerance, or fructose malabsorption, is common in children with recurrent or functional abdominal pain, but the condition can be effectively managed with a low-fructose diet, according to the results of a new study unveiled today at the American College of Gastroenterology’s (ACG) 75th Annual Scientific meeting in San Antonio, Texas.

The study, "Fructose Intolerance/Malabsorption and Recurrent Abdominal Pain in Children," investigated a total of 245 patients with unexplained chronic abdominal pain alone or associated with constipation, gas or bloating and/or diarrhea – 150 of them female (62.1 percent) – who ranged in age from 2 to 18 years old, with a median age of 11.

Fructose intolerance is typically diagnosed by exclusion, according to researchers Daniel Lustig, M.D. and Bisher Abdullah, M.D., pediatric gastroenterologists with the Mary Bridge Children's Hospital and Health Center in Tacoma, WA, who explained that once other GI conditions like Crohn's disease and ulcerative colitis are ruled out, a hydrogen breath test is given to the patient. If the patient's breath hydrogen exceeds 20 points above baseline, then the patient is likely fructose intolerant.

Breath hydrogen test (BHT) for fructose was performed in all patients in the study and it was positive for fructose intolerance in 132 of 245 patients (53.9 percent). A total of 113 of 245 (46.1 percent) of patients had a negative BHT for fructose intolerance. All of the 132 patients with a positive BHT for fructose had a nutritional consult with a registered dietician and were placed on a low-fructose diet. Using a standard pain scale for children, 88 of the 132 patients (67.7 percent) reported resolution of symptoms on a low-fructose diet.

"With fructose in so many foods, ranging from apples to packaged foods with the widespread use of high fructose corn syrup, it is difficult to avoid, so the challenge is finding those foods with low fructose and still maintain a healthy nutritional balance that patients will adhere to," said Dr. Lustig, "especially teenagers." He said fructose intolerance seems to be more prevalent in teenage girls with chronic abdominal pain. In his practice, Dr. Lustig said he typically sees three or four teenage girls a week with either a new diagnosis of fructose intolerance or for follow-up.

"But the good news is that over half of patients who are fructose intolerant and are able to maintain a low-fructose diet will notice an immediate improvement in their symptoms," concluded Dr. Lustig.

**Public release date: 18-Oct-2010**

**Intestinal enzyme helps maintain population of beneficial bacteria**

Potential therapy could prevent some antibiotic-associated health problems

An enzyme that keeps intestinal bacteria out of the bloodstream may also play an important role in maintaining the normal microbial population of the gastrointestinal system. Since the loss of beneficial bacteria that usually results from antibiotic therapy can sometimes lead to serious health problems, a treatment that maintains microbial levels could have significant benefits.

"Our mouse studies confirmed that giving this enzyme by mouth keeps the gut healthy, in terms of the microbes that usually live there," says Richard Hodin, MD, of the Massachusetts General Hospital (MGH) Department of Surgery, senior author of the report in the November issue of the journal Gut. "This could prevent infection with dangerous bacteria like Salmonella and C. difficile, which can occur when the normal bacterial population becomes depleted, and may lead to development of a supplement to maintain intestinal health whenever someone takes an antibiotic."

Virtually all higher animals maintain a population of microbes – primarily bacteria – in their digestive tracts. These organisms are not only harmless, they also benefit their host by helping with digestion, and their presence prevents the more pathogenic bacteria that may be present from proliferating. Because antibiotics kill all non-resistant bacteria, including those residing in the intestines, the usual balance of beneficial versus harmful microbes is destroyed, leading to problems ranging from diarrhea to infections with dangerous antibiotic-resistant organisms.
A 2008 study by members of Hodin's team that investigated why intestinal bacteria and their toxins do not pass into the bloodstream found that intestinal alkaline phosphatase (IAP), an enzyme produced by the intestinal lining, blocks the activity of a toxic molecule found on many pathogenic bacteria. Because that study and findings by other groups showed that IAP acts against several bacterial toxins, the MGH researchers looked at whether the enzyme directly interacted with intestinal bacteria.

Studies of mice lacking the gene for IAP revealed that the animals had reduced levels of all intestinal bacteria and practically none of the common beneficial strains of E. coli. In fact, the most common E. coli strain would not grow if introduced into these knockout mice. But when the animals received oral doses of IAP, beneficial E. coli proliferated quickly after other microbial species were killed by antibiotics. Experiments with normal mice infected with an antibiotic-resistant Salmonella strain showed that IAP treatment significantly reduced Salmonella levels in the animals' feces. Although only 20 percent of animals not treated with IAP survived, 70 percent of those receiving the enzyme were alive 7 days later.

"We believe that IAP rapidly restores E. coli and other beneficial bacteria after antibiotic treatment and that the higher numbers of these bacteria prevent colonization by Salmonella or other pathogens by competing for nutrients and attachment sites," says Mahdu Malo, PhD, MBBS, of MGH Surgery, corresponding and first author of the Gut paper. "We need to test this approach in larger animals before planning a human clinical trial, but this approach has the potential of solving a common, often serious health problem."

Public release date: 18-Oct-2010

No standard for the placebo?

Much of medicine is based on what is considered the strongest possible evidence: The placebo-controlled trial. A paper published in the October 19 issue of Annals of Internal Medicine – entitled "What's In Placebos: Who Knows?" calls into question this foundation upon which much of medicine rests, by showing that there is no standard behind the standard – no standard for the placebo.

The thinking behind relying on placebo-controlled trials is this: to be sure a treatment itself is effective, one needs to compare people whose only difference is whether or not they are taking the drug. Both groups should equally think they are on the drug – to protect against effects of factors like expectation. So study participants are allocated "randomly" to the drug or a "placebo" – a pill that might be mistaken for the active drug but is inert.

But, according to the paper's author, Beatrice Golomb, MD, PhD, associate professor of medicine at the University of California, San Diego School of Medicine, this standard has a fundamental problem, "there isn't anything actually known to be physiologically inert. On top of that, there are no regulations about what goes into placebos, and what is in them is often determined by the makers of the drug being studied, who have a vested interest in the outcome. And there has been no expectation that placebos' composition be disclosed. At least then readers of the study might make up their own mind about whether the ingredients in the placebo might affect the interpretation of the study."

Golomb pointed out these limitations to the placebo in a pair of letters to the journal Nature 15 years ago.

"A positive or negative effect of the placebo can lead to the misleading appearance of a negative or positive effect of the drug," she said. "And an effect in the same direction as the drug can lead a true effect of the drug to be lost. These concerns aren't just theoretical. Where the composition has been disclosed, the ingredients of the placebo have in some instances had a likely impact on the result of the study – in either direction (obscuring a real effect, or creating a spurious one). In the cases we know about, this is not because of any willful manipulation, but because it can in fact be difficult to come up with a placebo that does not have some
kind of problem."

Since 15 years have elapsed, the situation might have improved. Therefore, Golomb and her colleagues analyzed just how often randomized trials published in the past two years in each of the top four general medical journals actually disclosed the makeup of placebos.

The answer is not reassuring, according to the researchers, who found that the placebo ingredients for pills were disclosed in fewer than 10 percent of cases. (The nature of the "control" was significantly more likely to be stated for other types of treatments – like injections, acupuncture, or surgery – where people are more likely to question what "placebo" actually means.)

"How often study results are affected by what's in the placebo is hard to say – because, as this study showed, most of the time we have no idea what the placebo is," Golomb concluded.

Public release date: 18-Oct-2010

Major component in turmeric enhances effect of chemotherapy drug in head and neck cancer

Curcumin, the major component in the spice turmeric, when combined with the drug Cisplatin enhances the chemotherapy's suppression of head and neck cancer cell growth, researchers with UCLA's Jonsson Cancer Center have found.

A naturally occurring spice widely used in South Asian and Middle Eastern cooking, Turmeric has long been known to have medicinal properties, attributed to its anti-inflammatory effects. Previous studies have shown it can suppress the growth of certain cancers, said Dr. Marilene Wang, a professor of head and neck surgery, lead author of the study and a Jonsson Cancer Center researcher.

"Head and neck cancers, particularly cases diagnosed in a later stage, are terrible cancers that often require very radical surgeries and chemotherapy and radiation," Wang said. "They often don't present until late, and the structures in the head and neck are so vital that our treatments often cause disfigurement and severe loss of function. So using non-toxic curcumin as a treatment was a very appealing idea."

The study, done in cells in Petri dishes and then in mouse models, appears in the October issue of the journal Molecular Cancer Therapeutics.

In India, women for years have been using turmeric for medicinal purposes, as an anti-aging agent rubbed into their skin, to treat cramps during menstruation, as a poultice on the skin to promote wound healing and as an additive in cosmetics, said scientist Eri Srivatsan, an adjunct professor of surgery and a Jonsson Cancer Center researcher who, along with Wang, has been studying curcumin and its anti-cancer properties for six years.

A 2005 study by Wang and Srivatsan first showed that curcumin suppressed the growth of head and neck cancer cells, first in cells and then in mouse models. In the animal studies, the curcumin was applied directly onto the tumors in paste form because it did not dissolve in saline, which would have allowed it to be injected.

In need of a better way to deliver the curcumin, the team collaborated with Dr. Kapil Mehta of M.D. Anderson Cancer Center and found that encapsulating the curcumin in a liposome, an artificially prepared vehicle that enclosed the spice component within its membrane, made the treatment injectable. The curcumin was injected into the tail vein of a mouse, where it circulated into the bloodstream, slowing down and eventually stopping the cancer growth, a study in 2008 found.

"This was a very positive finding, developing an efficient way to deliver the treatment," Wang said. "Our study also showed that the curcumin was very well tolerated."

In this study, the team wanted to combine the curcumin with the chemotherapeutic drug Cisplatin, which is very toxic at the doses needed to fight head and neck cancers, damaging kidneys, the ears and the bone marrow. They hoped that if they added curcumin
to the mix, they might be able to lower the Cisplatin dose and cause less organ damage. Their finding, that the curcumin made the Cisplatin work better, was very promising, Wang said.

"We knew that both the curcumin and the Cisplatin, when given alone, had an effect against head and neck cancers," Wang said. "This finding that curcumin enhances Cisplatin means that, in the future, we may be able to give this chemotherapy in lower doses."

The study noted that "the mechanisms of the two agents through different growth signaling pathways suggest potential for the clinical use of sub-therapeutic doses of Cisplatin in combination with curcumin, which will allow effective suppression of tumor growth while minimizing the toxic side effects."

The study found that curcumin suppressed head and neck cancer growth by regulating cell cycling, Srivatsan said. It binds to an enzyme and prevents the enzyme IKK, an inhibitor of kappa B kinase, from activating a transcription factor called nuclear factor kappa B (NFκB), which promotes cancer growth. Cisplatin's suppressive action involves a different pathway through the tumor suppressor proteins p16 and p53, both proteins that again inhibit the activity of cancer growth promoter NFκB.

"We needed to know the mechanism to help us translate this from the lab into the clinic," Wang said. "That information will help us make better decisions on how to design therapies."

The next step in the clinical setting is to give patients oral curcumin prior to surgery and, after surgery, study the excised tumors to determine curcumin's effect on tumor markers, specifically whether there is reduced expression of markers such as growth promoting NFκB. They also will be monitoring to determine if the curcumin results in any side effects. After that, the team would give curcumin to patients also getting chemotherapy and radiation to see if the tumor suppression found in the cells lines and mouse models can be replicated in humans.

Although turmeric is used in cooking, the amount of curcumin needed to produce a clinical response is much larger, about 500 milligrams. Expecting a positive effect through eating foods spiced with turmeric is not realistic, the researchers said.

Curcumin also has a suppressive effect on other cancers, Wang said, including breast, colon and pancreatic cancers. However, the mechanism of suppression in those cancers has not yet been uncovered. It also may be effective against Alzheimer's and aging, Wang said.

Public release date: 18-Oct-2010

Vitamin E in front line of prostate cancer fight

Survival rates of the world's most common cancer might soon be increased with a new vitamin E treatment which could significantly reduce tumour regrowth.

Queensland University of Technology (QUT) prostate cancer researchers are leading the fight against a disease which kills 3000 Australian men a year.

Dr Patrick Ling, whose research will be a centrepiece of the new $354 million Translational Research Institute (TRI) when it opens in Brisbane, is leading a team of researchers who have identified a particular constituent of vitamin E, known as tocotrienol (T3), which can inhibit the growth of prostate tumours.

Construction of TRI officially began today (October 19) at the Princess Alexandra Hospital. The world-class facility brings together some of Queensland's best medical researchers from four leading Australian research facilities to turn their work into accessible and potentially life-saving health treatments.
Dr Ling’s research has been funded by Davos Life Science in Singapore, who recently awarded him a further $128,000 to undertake a one-year study of the long-term effectiveness of T3 to prevent the recurrence of treated prostate cancer tumours.

"Prostate cancer is the most common type of cancer in developed countries," Dr Ling said.

"It is responsible for more male deaths than any other cancer, except lung cancer."

Dr Ling said existing chemotherapy and hormonal therapy treatment of prostate cancer was insufficient because it failed to kill off the prostate cancer stem cells (CSCs) which were believed to be responsible for the regrowth of tumours.

However, the research team have discovered a particular form of T3, called gamma-tocotrienol (γ-T3), can successfully kill off the prostate cancer CSCs.

"Currently there is no effective treatment for metastatic prostate cancer, because it grows back after conventional therapies in more than 70 per cent of cases," he said.

"But with γ-T3, QUT researchers have found a better way to treat prostate cancer, which has the potential to inhibit recurrence of the disease."

Dr Ling said in animal trials, γ-T3 completely inhibited tumour formation in more than 70 per cent of the mice implanted with prostate cancer cells and fed the vitamin E constituent in water. In the remaining cases, tumour regrowth was considerably reduced, while tumours reformed in 100 per cent of the control group.

The findings were published recently in the International Journal of Cancer.

The next stage of Dr Ling’s study has begun and will determine the long-term effectiveness of the γ-T3 treatment, with plans to progress to clinical trials in the future.

"Previous clinical trials using another vitamin E constituent to inhibit prostate cancer development were unsuccessful, but these trials did not use the vitamin E constituent γ-T3," he said.

"Other research has found γ-T3 is also effective in suppressing other types of cancer, including breast, colon, liver and gastric."

Dr Ling said while not all vitamin E preparations had the active constituent, natural vitamin E obtained from palm oil was rich in γ-T3.

Professor Ross Young, from QUT’s Institute of Health and Biomedical Innovation (IHBI), said one of TRI’s greatest strengths was to bring together leading researchers.

"Collaboration, which combines the expertise of researchers from different disciplines and institutions to achieve common goals, will lead to better solutions," Professor Young said.

QUT Vice-Chancellor Professor Peter Coaldrake said TRI would greatly benefit Queensland's and Australia's economy and ability to attract the world's best researchers to our shores.

"By having this world-class facility producing research of the highest quality, we will be increasing Queensland's international competitiveness in research," Professor Coaldrake said.

TRI is a collaboration of QUT, the University of Queensland, Princess Alexandra Hospital and the Mater Medical Research Institute, with funding from the Australian Government, Queensland Government, The Atlantic Philanthropies, QUT and UQ.

Dr Ling is based at IHBI and the Australian Prostate Cancer Research Centre - Queensland, a comprehensive research centre to investigate new ways to treat prostate cancer established by QUT and the Princess Alexandra Hospital with funding from the federal government.
His research is funded by world-leading tocotrienol manufacturer Davos Life Science. The Singapore-based company produces γ-T3 from sustainable palm plantations.

Public release date: 19-Oct-2010

Professional sports persons should drink more water

Top sports persons must always perform to their maximum capacity, making them the most vulnerable to the effects of dehydration. Now, a new study conducted by researchers from the Universidad de Castilla la Mancha (UCLM) reveals that 91% of professional basketball, volleyball, handball and football players are dehydrated when they begin their training sessions.

"Dehydration negatively affects sporting performance, even when the level of dehydration is low (such as a 2% loss of body weight through perspiration)", UCLM researcher and author of the article Ricardo Mora-Rodríguez explained to SINC.

Many studies have tested dehydration in outdoor sports, but little scientific information is available on indoor sports. This new study, which has been published in the European Journal of Sport Science, calculates the loss of body fluids and salts on behalf of professional basketball, volleyball, handball and indoor football players.

"Despite being indoor sports, the pace these professionals play at makes them sweat a great deal", Mora-Rodríguez added. In this sense, it is worth highlighting indoor football players, who lose approximately 1.8 litres per hour through perspiration.

The researchers analysed how sports persons replenish lost body fluids by drinking liquids between workouts and the degree of dehydration "inherited" from the previous day that they begin their training sessions with.

Four professional men’s sports teams were studied (Benetton de Treviso basketball and volleyball teams, the Ciudad Real handball team and the Boomerang indoor football team), from which 43 players re-hydrated, recovering 63% of the fluid they had lost through perspiration. As a result, their level of dehydration remained below 2%.

How to sweat 1.4 litres per hour

According to urine specific gravity data, 91% of the players began their training sessions "slightly dehydrated". Furthermore, total sodium losses through perspiration amounted to an average of 1.3 grams per person.

"Professional indoor sports persons sweat profusely when playing their sports (1.4 litres/hour on average), but their rehydration habits prevent them from reaching levels of dehydration that would affect their sporting performance," the research underlined.

The authors insist how important it is to recover body fluids and sodium after training sessions.

Public release date: 19-Oct-2010

Docs not immune to drug marketing: Study co-authored by York U prof

TORONTO, October 19, 2010 – Pharmaceutical promotion may cause doctors to prescribe more expensively, less appropriately and more often, according to a new study co-authored by York University professor Joel Lexchin.

The findings, published today in the journal, PLoS Medicine, offer a broad look at the relationship between doctors' prescribing habits and their exposure to information provided by drug companies. Researchers analyzed 58 separate studies of this phenomenon from Canada, the United States, Europe and Australia, dating from the 1960s.
"Many doctors claim they aren't influenced by the information provided by pharmaceutical companies. Our research clearly shows that they are – and the influence is negative," says Lexchin, a professor in the School of Health Policy & Management in York's Faculty of Health and an emergency physician in Toronto.

"Unfortunately, patients are the ones getting a raw deal. If doctors are inundated with advertising from brand name companies, they are more likely to prescribe that brand name, regardless of whether it's best for the patient," Lexchin says.

Overall, researchers found no evidence that drug companies' promotional efforts improve prescribing behaviour in any way. All but one of the studies suggested that exposure to promotional information was associated with lower prescribing quality; others detected no association. Findings also show that promotional information led to more frequent prescribing; studies dealing with this correlation either showed a spike in prescribing or detected no association. Researchers also established a link between promotion and higher prescribing costs.

Lexchin says Canadian drug companies spend big money on marketing their products to physicians, to the detriment of other priorities such as research and development.

"In Canada, companies are estimated to be spending anywhere between $2.4 and $4.75 billion annually on promotion, one of the major reasons why spending on brand name drugs was rising at a rate of just under 10 per cent annually until two years ago," he says.

A limitation of the research is that most studies were observational in nature, meaning that the majority of physicians who participated were not randomly selected.

"Although we didn't find any evidence of improvements in prescribing due to promotional information, that doesn't entirely exclude the possibility that prescribing might sometimes be improved," Lexchin says. "As a precaution, we recommend that physicians avoid exposure to the information provided by pharmaceutical companies."

Public release date: 19-Oct-2010

New theory links depression to chronic brain inflammation

Chronic depression is an adaptive, reparative neurobiological process gone wrong, say two University of California, San Diego School of Medicine researchers, positing in a new theory that the debilitating mental state originates from more ancient mechanisms used by the body to deal with physical injury, such as pain, tissue repair and convalescent behavior.

In a paper published in the September online edition of Neuroscience and Biobehavioral Review, Athina Markou, PhD, professor of psychiatry, and Karen Wager-Smith, a post-doctoral researcher, integrate evidence from diverse clinical, biological and behavioral studies to create a novel theory they hope will lead to a shift in thinking about depression.

"In contrast to other biological theories of depression, we started with a slightly different question," said Wager-Smith. "Other theories address the question: 'What is malfunctioning in depression?' We took a step back and asked the question: 'What is the biology of the proper function of the depressive response?' Once we had a theoretical model for the biology of a well-functioning depressive response, it helped make sense of all the myriad differences between depressed and non-depressed subjects that the biomedical approach has painstakingly amassed."

According to the new theory, severe stress and adverse life events, such as losing a job or family member, prompt neurobiological processes that physically alter the brain. Neurons change shape and connections. Some die, but others sprout as the brain rewire itself. This neural remodeling employs basic wound-healing mechanisms, which means it can be painful and occasionally incapacitating, even when it's going well.

"It's necessary and normal so that an individual can adapt, change behavior and deal with altered circumstances," Markou said.
Real problems occur only "when these restructuring processes go into overdrive, beyond what is necessary and adaptive, and for longer periods of time than needed. Then depression becomes pathological."

The theory extends findings made by other researchers that the neurobiological substrates of physical and emotional pain overlap. Just as the body's repair mechanisms for physical injury can sometimes result in chronic pain and inflammation, so too can the response to psychological trauma, resulting in chronic depression.

Markou and Wager-Smith argue that existing, conflicting views about depression actually describe different aspects of the same phenomenon. Psychoanalytic and sociological theories refer to the psychological transformation that occurs during a productive depressive episode. Biomedical theories relate to the neural remodeling that underlies this psychological change. And neurodegenerative theories account for remodeling malfunctions.

"The big question, of course, is why aren't all people affected the same way," said Markou. "Why do some people deal effectively with stress, but others perpetuate a pathological state? This is an interesting question for future research."

The researchers' findings may have clinical ramifications as well. If psychological and physical pain responses share similar biological mechanisms, then analgesic agents could be useful in treating at least some symptoms of depression. Similarly, if chronic depression is proven to be a neuroinflammatory condition, then anti-inflammatory treatments should also have some antidepressant effects. Several small trials with depressed patients have already been published that support this possibility, though Markou cautioned that much more specific research and larger clinical trials are required.

**Public release date: 20-Oct-2010**

### Black rice bran may help fight disease-related inflammation

Scientists are reporting evidence that black rice — a little-known variety of the grain that is the staple food for one-third of the world population — may help soothe the inflammation involved in allergies, asthma, and other diseases. Their study appears in ACS' bi-weekly Journal of Agricultural and Food Chemistry.

Mendel Friedman and colleagues point out that their previous research showed several potential health benefits of eating black rice bran. **Bran is the outer husk of the grain,** which is removed during the processing of brown rice to produce the familiar white rice. Those experiments, which were done in cell cultures, hinted that black rice bran suppressed the release of histamine, which causes inflammation.

In the new study, they tested the effects of black rice bran extract on skin inflammation in laboratory mice. When they injected the extract into the mice, **it reduced skin inflammation by about 32 percent compared** to control animals and also decreased production of certain substances known to promote inflammation. Brown rice bran extract did not have these effects, they say. **When the scientists fed the mice a diet containing 10 percent black rice bran, it reduced swelling associated with allergic contact dermatitis, a common type of skin irritation.** The findings "further demonstrate the potential value of black rice bran as an anti-inflammatory and anti-allergic food ingredient and possibly also as a therapeutic agent for the treatment and prevention of diseases associated with chronic inflammation," the article notes.

**Public release date: 20-Oct-2010**

### Obsessing Over Strep Throat in Kids

TAU research links obsessive-compulsive disorder to common childhood illness

A common infection in children, strep throat can lead to problems with a child’s heart, joints or brain if left untreated. And when the brain is involved, motor and mental functioning may be compromised, leading to syndromes such as attention deficit disorder and obsessive-compulsive disorder (OCD).
While scientists have speculated on a link between OCD and childhood infections like strep for more than two decades, Prof. Daphna Joel and her team of researchers at Tel Aviv University’s Department of Psychology have now scientifically demonstrated that strep can lead to brain dysfunction and OCD. Dr. Joel says their breakthrough could lead to new drugs for treating OCD, and may in the future prevent the psychiatric disorder altogether.

Conducted by the PhD student Lior Brimberg and in collaboration with Prof. Madelaine W. Cunningham of the University of Oklahoma, the research, recently presented at the 13th Congress of the European Federation of Neurological Societies in Florence, Italy, is expected to be published by the beginning of next year.

How strep attacks the brain

“It’s almost impossible to show how strep can lead to OCD in humans — almost all of us, even very young children, have been exposed to the bacterium at one time or another,” says Prof. Joel. “But childhood seems to provide a distinct window of opportunity for the disorder to take root through strep infection,” she warns.

Working with the world’s leading specialist in strep-related heart disease, Prof. Cunningham, the researchers developed a new animal model to show how exposure to strep affects the brain and leads to a number of physical and mental ailments.

In her Tel Aviv University laboratory, Prof. Joel and Brimberg created an animal model using rats exposed to the strep bacteria. Comparing them to a strep-free control group, Prof. Joel measured a distinct difference in behavior in the strep-exposed animals.

First, the strep-exposed rats developed a strep antibody which deposited in their brain, confirming the suspicions of previous researchers. Those exposed also developed balance and coordination difficulties, as well as compulsive behaviors such as increased and repetitive grooming.

More important, they also found that the strep antibody binds itself to dopamine D1 and D2 receptors in the brain. This finding is in harmony with the fact that one of the main drugs for treating Sydenham’s Chorea, a motor disorder associated with strep, targets these same dopamine D2 receptors.

“We were able to show that these antibodies are binding to receptors in the brain and changing the way certain neurotransmitters operate, leading to brain dysfunction and motor and behavioral symptoms,” Prof. Joel says.

Prevention before the cure

This breakthrough finding could lead to new modes of diagnosis of the disease and provide a new platform for drug developers seeking to treat or cure OCD.

According to the American Academy of Child and Adolescent Psychiatry, OCD affects up to 2% of all children and adolescents in the U.S. The disorder is characterized by recurrent intense obsessions and/or compulsions that may cause severe discomfort, anxiety and stress, and interfere with day-to-day functioning.

Prof. Joel stresses how important it is for parents who notice signs of strep throat to ensure that their children get treated with the appropriate antibiotics in a timely fashion.

Strep-induced OCD will likely continue to be a major problem in the developing world where strep is not treated adequately, she concludes.

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Burn injuries rapidly deplete vitamin E

CORVALLIS, Ore. – Severe burn injuries in children have been shown to rapidly deplete the levels of vitamin E in their body's
adipose, or fat tissues, a new clinical study has found.

Stored levels of this important antioxidant were reduced more in a few weeks than might normally be possible in years.

An analysis of eight children with third-degree burns over much of their body found they lost almost half of their stored vitamin E in three weeks, even though they were being given about 150 percent of the recommended daily allowance of vitamin E and other nutrients in a high-calorie diet.

Researchers are not certain what the implication of such rapid vitamin E depletion may be, but concluded in their report that "the depletion of vitamin E may be a very significant problem in patients with burn injury" and other forms of severe trauma.

One particular concern may be the possibility of peripheral neuropathy, since nerve damage is common in patients with severe burn injuries, and has also been associated with vitamin E deficiency in humans. Studies have not yet been done to determine whether heavier supplementation with vitamin E after a burn injury would help address this or other health and healing issues.

The findings of this clinical study were just published in the American Journal of Clinical Nutrition, a professional journal, by scientists from the Linus Pauling Institute at Oregon State University; the Shriners Hospital for Children in Galveston, Texas; the University of Texas Medical Branch in Galveston, and other researchers.

"This is one of the first studies we've done that measures vitamin E in the body tissues of children," said professor Maret Traber, a principal investigator in the Linus Pauling Institute, and one of the world's leading experts on vitamin E. "Vitamin E in adipose tissue does not fluctuate much on a short-term basis. To find this level of vitamin E loss in such a short time was dramatic, unexpected and somewhat alarming."

Of some concern, Traber said, is that of eight burn patients studied, three of them already had tissue levels of vitamin E that would be considered deficient upon admission to the hospital, shortly after their injury.

Some diet surveys of healthy children have concluded that up to 90 percent of them have vitamin E intake below that which nutrition experts recommend. This essential nutrient is an important antioxidant, plays a role in the immune system, nervous system, and performs many other metabolic functions. It is commonly found in fats, nuts, and some vegetables and seafood products.

"Unfortunately, with the modern American diet too many people are getting most of their vitamin E from foods that aren’t particularly good for them, things like ice cream or potato chips." Traber said. "It's probable that most people don't get enough of this vitamin at all, and that's one of the reasons we're looking at people who have suffered severe illness or injury, in which vitamin E deficiencies may complicate other health problems."

With the issue of burn injuries, expert say, one common result is a huge increase in metabolic rate as the body works overtime to deal with the trauma of burns, skin loss and oxidative stress. The patients in this study all had major injuries, with burns over 29 percent to 93 percent of their body. They were treated at the Shriners Hospital for Children in Texas, however, which has one of the leading burn treatment centers in the world, and all of them survived.

In the United States, about 100,000 people each year suffer burn injuries that are sufficient to require hospitalization, and 5,000 deaths occur as a result. Severe burns are associated with a systemic inflammatory response, increased production of reactive oxygen species and severe depletion of plasma antioxidants, previous research has shown.

Prior to this, it was not known that any mechanism existed that would so rapidly draw down body tissue levels of vitamin E. Low tissue levels of vitamin E are ordinarily observed only after years of inadequate absorption caused by certain genetic defects or diseases.

The report concluded that burn patients may not be receiving adequate vitamin E nutrition, and theorized that increased vitamin E supplementation may decrease the neuropathy, or nerve damage, that is often associated with severe burns. Further studies to address the mechanism and consequences of this issue are planned, they said.
The recommended daily allowance for vitamin E for children ages 4-8 is 10 I.U. per day. Traber said she would recommend performing studies with burn victims and giving them the "tolerable upper limit" of vitamin E as defined by the National Academy of Sciences Institute of Medicine, which would be 400 I.U. per day. This is 40 times higher than the RDA but also a level of supplementation that many people take routinely. Vitamin E, a fat-soluble vitamin, must also be consumed with some amount of fat-containing food in order to be absorbed by the body.

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Number of diabetic Americans could triple by 2050

ATLANTA – As many as 1 in 3 U.S. adults could have diabetes by 2050, federal officials announced Friday in a dramatic new projection that represents a threefold increase.

The Centers for Disease Control and Prevention estimate that 1 in 10 have diabetes now, but the number could grow to 1 in 5 or even 1 in 3 by mid-century if current trends continue.

"This is alarming," said Ann Albright, director of the CDC's Division of Diabetes Translation.

The agency's projections have been a work in progress. The last revision put the number at 39 million in 2050. The new estimate takes it to the range of 76 million to 100 million.

An estimated 24 million Americans have diabetes currently.

The new CDC calculation accounts for people who have diabetes but are undiagnosed — a group that wasn't figured into earlier estimates, explained Edward W. Gregg, chief of the CDC branch that handles diabetes epidemiology and statistics.

Also, the researchers used new population growth estimates for the elderly and minorities, who have higher rates of Type 2 diabetes, he said.

One more factor: Diabetics are living longer, thanks to improvements in medical care, he added.

"Not all of the increase in prevalence is a bad thing," said Dr. Sue Kirkman, the American Diabetes Association’s senior vice president of medical affairs and community information.

Diabetes is a disease in which the body has trouble processing sugar. It was the nation's seventh leading cause of death in 2007.

In the classic form of diabetes, traditionally diagnosed in children or young adults, the body does not produce enough of a hormone called insulin to help sugar get into cells. That's Type 1 diabetes.

Another form of diabetes, Type 2, now accounts for about 95 percent of cases. In that kind, the body's cells resist insulin's attempts to transport sugar. Type 2 is most common in people who are overweight and obese, in people 60 and older, and in African-Americans and other minority groups.

The growth in U.S. diabetes cases has been closely tied to escalating obesity rates. Recent CDC data suggests obesity rates may have recently leveled off. But the new estimates should hold up even if obesity rates remain static, CDC officials said.

The CDC is the main source for national disease statistics, and the agency seems to have done a thoughtful job in putting together these latest projections, Kirkman said. Still, she acknowledged being a little startled by the size of the new numbers.

"The magnitude is a bit surprising. But the trend is not" she said.

The new estimates were published online Friday by the journal Population Health Metrics.
Alarms over radiation from thyroid cancer patients

WASHINGTON – Reports of thyroid cancer patients setting off radiation alarms and contaminating hotel rooms are prompting the agency in charge of nuclear safety to consider tighter rules.

A congressional investigation made public Wednesday found that patients sent home after treatment with radioactive iodine have contaminated unsuspecting hotel guests and set off alarms on public transportation.

They’ve come into close contact with vulnerable people, including pregnant women and children, and trash from their homes has triggered radiation detectors at landfills.

The Nuclear Regulatory Commission is considering new rules to address the problem, in particular curbs on sending patients to hotels after treatment, a spokesman said Wednesday.

"The assumption was that patients would be going home," said David McIntyre. "Now that we see there are some who are not, we are developing new guidance." It's unclear whether the radiation exposure occurs at levels high enough to cause harm.

The agency is also looking to make sure that risks of exposing pregnant women and children are more clearly communicated to patients, McIntyre said, after a commission meeting on the issue.

Rep. Edward Markey, D-Mass., says the problem stems from a decision years ago by the NRC to ease requirements that thyroid cancer patients remain in the hospital a few days after swallowing doses of radioactive iodine to shrink their tumors.

"There is a strong likelihood that members of the public have been unwittingly exposed to radiation from patients," Markey wrote in a letter to the NRC that details findings by investigators on his staff. "This has occurred because of weak NRC regulations, ineffective oversight of those who administer these medical treatments, and the absence of clear guidance to patients and to physicians."

About 40,000 people a year develop thyroid cancer, which generally responds well to treatment. Certain types are treated by swallowing radioactive iodine, or iodine-131. It concentrates in the thyroid, but small amounts are excreted through urine, saliva and sweat.

People given high doses may be kept in the hospital, but many patients are sent home with instructions on how to minimize exposure to others over the next few days. Most of the radiation is gone in about a week, says the National Cancer Institute's website for patients.

Traditionally such patients were kept in the hospital, but treatment has now shifted to less costly outpatient facilities. Patients sent home are supposed to follow specific precautions, such as sleeping alone in their beds and not giving hugs and kisses to young children. Markey's investigation indicates that's where the breakdown is occurring.

Staffers on the House Energy and Environment subcommittee that Markey chairs sent detailed questionnaires to states that enforce the NRC rules and conducted an online survey of more than 1,000 thyroid cancer patients.

The investigation found that:

• A patient who had received a dose of radioactive iodine boarded a bus in New York the same day, triggering radiation detectors as the bus passed through the Lincoln Tunnel heading for Atlantic City, N.J., a casino Mecca. After New Jersey state police found the bus and pulled it over, officers determined that the patient had received medical instructions to avoid public transportation for two days, and ignored them. The 2003 case highlighted that NRC rules don't require patients to stay off public transportation.

• About 7 percent of outpatients said in the survey they had gone directly to a hotel after their treatment, most of them with
their doctors’ knowledge. Hotel stays are a particular concern, since the patient can expose other guests and service workers. In 2007, an Illinois hotel was contaminated after linens from a patient's room were washed together with other bedding. The incident would probably have gone unreported but for nuclear plant workers who later stayed in the same hotel and set off radiation alarms when they reported to work.

• About one-fourth of outpatients said in the survey they never discussed with their doctors how to avoid exposing pregnant women and children to radiation. The survey found 56 cases in which a patient shared a bathroom or bedroom with a pregnant woman or a child, or had other close contact, which is strongly discouraged in medical guidelines.

• At least two states — Maryland and Massachusetts — said they had encountered problems with household trash from the homes of patients treated with radioactive iodine. Garbage trucks set off radiation alarms at landfills, requiring loads to be unpacked and examined, exposing sanitation workers to a range of hazards.

Markey urged the agency to revise its rules so that more patients are kept in the hospital. Patient advocates say insurance companies routinely refuse to pay for a hospital room because it's not required. He's also calling for a ban on letting patients take public transportation after treatment with radioactive iodine.

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These reports are done with the appreciation of all the Doctors, Scientist, and other Medical Researchers who sacrificed their time and effort. In order to give people the ability to empower themselves. Without the base aspirations for fame, or fortune. Just honorable people, doing honorable things.