

## **Research shows correlation between values and salary preferences of business executives**

MANHATTAN, KAN. - Executives who downplay ethics and values in their decision making may also be the ones who prefer extraordinarily high salaries for themselves.

By comparison, those executives who are more inclined to consider ethics and values in their decisions preferred more fair pay throughout their organizations.

Diane Swanson, associate professor of management and the von Waaden business administration professor at Kansas State University, said this is the most significant implication of her recent research.

In addition, Swanson said executives who are more likely to downplay values in decisions and prefer extraordinarily high salaries are also the ones who have received more business education.

"This is yet more evidence of business education teaching greed and self-centeredness instead of service to community," Swanson said. "Business students should learn that business people not only serve themselves but society as well. They've got to have some community mindedness or we'll be stuck with even more ill-effects of corporate scandals in the future.

"One reason these findings are important is that, in the midst of corporate scandals that have racked society and destroyed jobs and trust in business, executives are still paid astronomical salaries," Swanson said. "This should be questioned."

She conducted the research with Marc Orlitzky from the University of Auckland in New Zealand. Swanson said the results are only preliminary and more executives must be surveyed to make stronger assertions.

Swanson and Orlitzky's research was funded by the Australian Graduate School of Management in Sydney, Australia.

Swanson will be speaking at the 2004 Japha Symposium on Business and Professional Ethics Friday, Oct. 29. Swanson's speech will be published as a chapter in a book by Blackwell Publisher.

She submitted a paper based on her research because it related to the theme "The Ethics of Executive Compensation." The symposium is sponsored by the University of Colorado.

Swanson is also chair and founder of the Business Ethics Education Initiative, an effort championing the need for ethics in business school curricula. She holds a doctorate with distinction from the Katz Graduate School of Business at the University of Pittsburgh in Pennsylvania for business administration in strategy, environment and organization. She received her master's in economics from the University of Missouri at Kansas City, with honors, in 1982, and her bachelor's in business from Avila College in 1980. **11-Oct-2004**

## **A Lesson in Linguistics From the Mouths of Babes**

By MICHAEL ERARD

Not by the hair of my chinny chin chin," the three little pigs taunted the big bad wolf. When Anna Van Valin was 4 years old, she pronounced the phrase "not by the chair of my hinny hin hin" and unwittingly advanced the study of children's language when she did.

Anna's talk was often observed. Her mother, Dr. Jeri Jaeger, is a linguist at the State University of New York at Buffalo who collects the speech slips that children make in order to understand how they learn language. For two decades Dr. Jaeger has collected data wherever she found available children (and willing parents): preschools, the supermarket checkout line and at home from her three children, Anna, Alice and Bobby (now 22, 20 and 18).

A photo of Anna as a 6-year-old appears on the cover of Dr. Jaeger's new book, "Kids' Slips," to be published this month..

Anna's first error occurred when she was 16 months old. She rattled out the phrase, "one, two, three," but accidentally pushed "two" and "three" together, which came out something like "twee."

In such an instance, Dr. Jaeger said: "Many parents get freaked out and think their child is making mistakes. But these slips of the tongue are entirely normal. In fact, they show that a child is acquiring language as they should be."

She explained, "You can't make a slip of the tongue with a linguistic unit if you haven't learned that unit." Anna's "twee" indicated that she knew both sound units "th" and "t."

Likewise, if a child says "I'm going to a birthday party yesterday, I mean, tomorrow," that's a slip. But when a child says "yesterday" and "tomorrow" interchangeably on a regular basis, it means he or she doesn't know the meanings of the words.

How consistently an error shows up is one way for a parent to judge a child's development: the rarer the error, the more likely it is to be an accident. To the untrained adult ear, much of children's talking sounds full of mistakes, but Dr. Jaeger says a slip of the tongue occurs when the child deviates from her own language system, not when she doesn't sound like an adult.

When he was nearly 2, Jaeger's son, Bobby, asked for more "tee tuffs" (for cheese puffs). Dr. Jaeger instantly recognized the slip because Bobby usually called them "tee puffs." (The "ch" sound is difficult for young children to pronounce, so it's normal for them to replace it with an easier sound.) To judge what a child's slip is, a scientist must know how the child normally talks. That's why Dr. Jaeger found it easier to collect slips from her three children because she had tracked their language development from an early age.

Collecting slips at home was often a challenge. She tried to be discreet, often excusing herself from the dinner table to go write down a slip, only to hear her husband, Robert Van Valin, himself a linguist, tease the children: "Somebody made a speech slip! Who made a speech slip?"

Dr. Jaeger figures that's how her children came to put a label on a speech behavior.

For her part, Anna Van Valin claims that her mother's subterfuge was as unnecessary as her father's tease. "I remember many moments when I'd say something and she'd very stealthily pull something out to write it down," she said. "She'd pull out her notebook, and I would say, 'What did I say wrong?' She'd sometimes explain what I said if I badgered her, but she really held back from that because she didn't want me to be self-conscious."

"Being a child of linguists is, like, very odd," Ms. Van Valin said, "because your parents get excited about these technical, very boring things. Most 5-year-olds don't know what a phoneme is. I did."

People often ask Dr. Jaeger how she knows that her kids weren't making slips on purpose to make her happy.

"I find that a weird question," Dr. Jaeger said, adding that adults don't intentionally slip to make each other happy (if they live in a household of linguists) because it's difficult to make an intentional but realistic-sounding slip.

Dr. Jaeger points to herself as evidence. "I know everything there is to know about slips of the tongue, and I still make them in great abundance," she said. Her most recent one occurred the night before. After helping her daughter Anna move into an apartment in Brooklyn, Dr. Jaeger, exhausted, announced that "our work done is here," which prompted calls from her husband and Ms. Van Valin to write the slip down.

Dr. Jaeger sought slips from others' children as well, "just to prove it's not just my own kids who make them," she said. Adult slips of the tongue have been studied by linguists for 30 years as evidence of how the brain processes language. But children's slips were "basically uninvestigated," said Dr. Joseph Stemberger, a linguist at the University of British Columbia who also kept a diary of his two daughters' speech development in the 1980's but has moved on to studying slips in the laboratory, where one can control the word types.

Experts like Dr. Jaeger eventually wanted to know if child slips were the same as adult slips. She concludes that children make all the slips that adults do. They make errors that involve individual sounds, whole words and phrases. Moreover, they acquire their ability to slip as their language abilities progress. For instance, "an adult might say 'journicle article,' but little kids don't do that because they don't have the word structure developed yet," Dr. Jaeger said. **12-Oct-2004**

#### ESSAY

### **A Stranger in the Mirror: Should Doctors Transplant Faces?**

By ERIC F. TRUMP and KAREN MASCHKE

This year is the 50th anniversary of the first successful human organ transplant. Over the last half-century, the improved understanding of how to prevent the body's immune system from rejecting foreign tissue has turned what began as an experiment into a routine procedure. Today, bone and bowel, heart and hand are replaceable.

Now we are confronting the imminent possibility that human faces will be transplanted. This month in *The American Journal of Bioethics*, a team of transplant surgeons at the University of Louisville announced their intention to pursue the transplantation of faces. Last year, a task force at the Royal College of Surgeons of England cautioned against them.

The British group concluded that "until there is further research and the prospect of better control of complications, it would be unwise to proceed with human facial transplantation," a procedure that requires review board approval.

The Louisville transplant team, on the other hand, led by Dr. John Barker, argued that caution was a form of dawdling. As Dr. Barker told *New Scientist* magazine: "Caution by itself will not get us any closer. If Christopher Columbus were cautious, I'd probably be speaking with a British accent."

Still, we should be wary of crossing certain frontiers. We now have the ability to excise a face, including nose cartilage, nerves and muscle, from a brain-dead body and suture it to the hairline and jaw of a living person with a disfigured face.

Such a procedure repels and fascinates in equal measure. The face is not like other organs. It twitches, smiles, pouts and squints. It is how we express ourselves to others, and how others recognize us as who we are.

But as grotesque as placing one face over another may seem, surgeons and ethics review boards must confront more than just the "yuck factor" before they enter an international face race, with at least five teams working toward the first face transplant.

Transplanted organs, including the skin (the body's largest), survive because patients are given powerful anti-rejection medications. These drugs can have very toxic side effects, including cancer, kidney failure, diabetes and high blood pressure. For most transplants, the risks of immunosuppression are worth the benefits: the alternative to living without, for example, a lung or liver is death.

But millions of people have learned to live with facial disfigurement, either privately or with the help of counseling. Since disfigured people must try to come to terms with their new appearance anyway, will adjusting to someone else's face be any easier?

Counseling and skin grafts may not be as adventurous as radical surgery for such patients, but at least we know they work, and the risk to patients' survival is minimal. What are the contingency plans if a face transplant fails, for example? About 10 percent of organ recipients reject the transplant within the first year: imagine the horror of losing your face not once, but twice.

Given that a face transplant is not crucial to survival, the risks are simply too great to assume. Ethics review boards would do well to remember the history of hand transplantation. The very first hand transplant was a failure because the patient stopped taking his medications.

In 2003, a group of hand transplant surgeons argued, in an article published in *The New England Journal of Medicine*, that such transplants should be offered only to people who had lost both hands or were blind because the possibility of rejection and the dangers of anti-rejection medications were otherwise too great.

The lack of empirical evidence or long-term studies on face transplantation means that obtaining informed consent for this experimental procedure is highly unlikely. And even if consent is given, where will face donors come from? We are already in the midst of an acute organ shortage, with over 85,000 people on the national waiting list, suggesting an endemic unwillingness among Americans to donate their flesh, even in death.

How many people can we reasonably expect to give up one of their - or their loved one's - most symbolic body parts? Many funerals call for open caskets, and people typically request that the undertaker preserve the face. Before we find face donors, we may first have to reform our death rituals to ease the discomfort that removing faces will generate.

Dr. Barker argues that caution hinders surgical advancement. But what is more important: winning the face race? Or upholding the principle of "do no harm," as the British team suggests?

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### **FSU scientist links iron imbalance to Parkinson's disease**

TALLAHASSEE, Fla. You might want to toss those iron-fortified vitamins, because absent a diagnosed deficiency too much of a good thing can be bad.

Dietary iron imbalances either way spell trouble for healthy cells, triggering a chain of cellular events in the brain that increases the odds of developing Parkinson's disease, a degenerative condition affecting movement and balance in more than 1 million Americans each year. But excessive iron levels are worse -- much worse.

The findings from a study by Florida State University scientist Cathy Levenson are described in "The Role of Dietary Iron Restrictions in a Mouse Model of Parkinson's Disease" and will appear in an upcoming edition of *Experimental Neurology*. Levenson is an associate professor of nutrition, food and exercise sciences in FSU's College of Human Sciences and a faculty member in both the Program in Neuroscience and graduate program in molecular biophysics.

"We define our work here at the cellular level," said Levenson from her laboratory at FSU's Biomedical Research Facility. "Our primary research objective is to better understand how trace metal imbalances, which are associated with neuropsychiatric and neurodegenerative diseases, affect the molecular mechanisms that regulate gene expression."

Levenson performed the mouse model portion of the study in collaboration with Mark Mattson, Laboratory of Neurosciences chief at the National Institute on Aging in Bethesda, Md. Mice were fed varying amounts of iron to determine levels that precipitated onset or hastened the progression of Parkinson's-like symptoms such as tremors and balance problems, both in healthy rodents and where risk factors existed.

High levels of iron caused Parkinson's-like symptoms even in healthy mice without apparent risk factors for the illness, while accelerating the decline and death of those already diagnosed with the disease.

In contrast, low levels of iron delayed onset of Parkinson's in mice with risk factors and slowed progress of the disease in those already infected. But the low iron news was mixed.

Levenson also discovered that iron deficiencies in healthy risk-free rodents led to decreasing levels of dopamine, the neurotransmitter critical to relaying brain messages that control both balance and movement. Dopamine levels fall as the brain cells or "neurons" responsible for transporting it begin to "commit suicide" at higher-than-normal-rates, triggering the chain of events that eventually precipitates the onset of Parkinson's disease.

The study confirms that both iron deficiency and toxicity are linked to the specific genes and neuronal suicide that lead to dopamine shortages responsible for development of Parkinson's.

Yet while low levels of iron then delay the onset of the disease once the neurological stage is set or slow the degenerative progress, iron toxicity both precipitates Parkinson's symptoms and hastens decline and death in existing victims.

Until further studies determine optimal levels of the essential nutrient, Levenson advises health-conscious consumers without doctors' orders to forego the mineral in tablet form in favor of natural dietary sources like red meats, dried fruits, dark leafy greens, tofu, cooked dried beans or wheat germ.

"I'd be nervous about just handing someone iron supplements and saying 'have at it,' she said. "Self-medicating may have unintended consequences." **12-Oct-2004**

### **'Junk' DNA may be very valuable to embryos**

A new study sheds light on events orchestrating the changes when mammalian eggs are fertilized and become embryos. Researchers have discovered that expression of genes in mouse eggs and very early embryos is activated in part by regions of DNA called retrotransposons, which may have originated from retroviruses.

These regions, found in DNA of human, mouse, and other mammals in hundreds of thousands of copies, are called retrotransposons because they have the ability to propagate and insert themselves into different positions within the genome. The research, published in the October issue of *Developmental Cell*, suggests that retrotransposons may not be just the "junk DNA" once thought, but rather appear to be a large repository of start sites for initiating gene expression. Therefore, more than one third of the mouse and human genomes, previously thought to be non-functional, may play some role in the regulation of gene expression and promotion of genetic diversity.

Dr. Barbara B. Knowles and colleagues from The Jackson Laboratory in Bar Harbor, Maine, found that distinct retrotransposon types are unexpectedly active in mouse eggs, and others are activated in early embryos. Surprisingly, by acting as alternative promoters, retrotransposon-derived controlling elements drive the coordinated expression of multiple mouse genes. "To our knowledge, this is the first report that such elements can initiate synchronous, developmentally regulated expression of multiple genes," says Dr. Knowles. "Also, random insertions of these elements can introduce variation in genes, potentially altering their function."

The researchers think that expression of retrotransposons during very early stages may contribute to the re-programming of the mammalian embryonic genome, a prerequisite for normal development. **11-Oct-2004**

### **Alcohol consumption may be associated with irregular heart beat in men**

CHICAGO – Alcohol consumption may slightly increase the risk for developing a certain type of irregular heart beat, known as atrial fibrillation, or atrial flutter, according to an article in the October 11 issue of *The Archives of Internal Medicine*, one of the JAMA/Archives journals.

According to the article, evidence for a link between alcohol consumption and atrial fibrillation is conflicting.

Lars Frost, M.D., Ph.D., and Peter Vestergaard, M.D., Ph.D., from Aarhus University Hospital, Aarhus, Denmark, performed a follow-up study among 47,949 participants (average age, 56 years; 22,528 men; 25,421 women) in the Danish Diet, Cancer, and Health Study to investigate associations between alcohol consumption and atrial fibrillation. Patients were recruited for the Danish Diet, Cancer, and Health Study between December 1993 and May 1997. Participants were born in Denmark and had no history of cancer. Part of the study used questionnaires to assess alcohol consumption. Participants were asked what type of alcohol they drank (beer, wine or spirits) and how often.

The researchers found that the average consumption of alcohol per day was 28.2 grams for men and 13.9 grams for women. More than half of the women consumed less than one unit of alcohol per day, or less than 10 grams of alcohol. The percentage of men and women who were abstainers at the beginning of the study was 2.1 percent and 3.0 percent, respectively.

During the follow-up period (average of approximately 5.7 years), 556 participants developed atrial fibrillation (including 374 men [1.7 percent] and 182 women [0.7 percent]). There was a modest increase in risk of atrial fibrillation that corresponded with increasing alcohol consumption in men, but not among women. Compared to men who drank the least amount of alcohol (first quintile), men in the second, third, fourth and fifth quintiles (increasing alcohol consumption), had a 4 percent increase in risk, 44 percent increase in risk, 25 percent increase

in risk and 46 percent increase in risk for atrial fibrillation, respectively. Compared to women in the lowest quintile of alcohol consumption, women in the second, third, fourth and fifth quintiles had a nine percent increase in risk, 27 percent increase in risk, 23 percent increase in risk and 14 percent increase in risk, respectively.

"Consumption of alcohol was associated with an increased risk of atrial fibrillation or flutter in men," the researchers write. "In women, moderate consumption of alcohol did not seem to be associated with risk of atrial fibrillation or flutter." 11-Oct-2004

### **Immune therapy appears to reduce risk of second attack of multiple sclerosis symptoms**

CHICAGO – Intravenous immunoglobulin therapy may reduce the risk of a second attack of symptoms related to multiple sclerosis, according to an article in the October issue of *The Archives of Neurology*, one of the JAMA/Archives journals.

According to the article, multiple sclerosis (MS) is a chronic, inflammatory disease characterized by demyelination of the brain and spinal cord. Myelin is a material that covers and insulates nerve cells, and allows signals to travel from cell to cell. The onset of MS is defined by having neurological impairment related to motor, sensory, cerebellar, visual, brainstem or cognitive functioning, as well as having symptoms of urinary tract dysfunction, the article states. Intravenous immunoglobulin (IVIg) has been reported to diminish the symptoms of MS in patients with relapsing-remitting MS (where symptoms flare up and then disappear later). The progression of MS is affected by the time to occurrence of the second neurological event, as well as the number of events within the first year.

Anat Achiron, M.D., Ph.D., of Sheba Medical Center, Tel-Hashomer, Israel, and colleagues assessed the effect of IVIg treatment in patients after the first neurological event suggestive of MS and evaluated the occurrence of a second attack.

Ninety-one patients (average age, 33.9 years) who experienced neurological symptoms indicative of MS for the first time enrolled in the study within six weeks of their symptoms. Patients were randomly assigned to receive IVIg treatment, or placebo, given once every six weeks for one year. Neurological and clinical assessments were performed every three months, and brain magnetic resonance imaging (MRI) was performed at the beginning and end of the study.

The researchers found that the probability of developing clinically definite multiple sclerosis was significantly lower in the IVIg treated group compared with patients in the placebo group. Patients in the IVIg group also had fewer brain lesions as seen on MRIs.

"Intravenous immunoglobulin treatment for the first year from onset of the first neurological event suggestive of demyelinating disease significantly lowers the incidence of a second attack and reduces disease activity as measured by brain magnetic resonance imaging," the authors write. 11-Oct-2004

### **Plastic surgeons perform first entire face reconstruction**

*Burn victims may soon have face restored with minimal scarring in a single procedure*

PHILADELPHIA – Hundreds of thousands of people are burned in fires each year with many suffering from facial burns as a result. These burn victims not only have severe physical scars, but deep emotional scars, too. A team of plastic surgeons has successfully combined several reconstructive techniques to help burn victims regain some sense of self without undergoing multiple painful procedures and huge scarring often associated with reconstructing the face, according to a study presented today at the American Society of Plastic Surgeons (ASPS) Plastic Surgery 2004 conference in Philadelphia.

"The difficulty with previous techniques was harvesting a thick, uniform piece of skin and closing the wound where the incision was made, to minimize scarring," said Thomas Ray Stevenson, MD, president of the Plastic Surgery Educational Foundation and ASPS member. "Through this combination of surgical techniques, a burn patient has only one operation rather than multiple procedures, reducing pain and recovery time."

In the study, the surgical team used a tissue expander in the back to create a single piece of thick skin, with its own unique blood supply, that would allow for microvascular tissue transfer. Surgeons removed the scarred facial skin, harvested the skin flap from the back, and transferred it to the face. The skin flap was large enough to cover the face completely with extra tissue to create a nose, which otherwise would require a separate surgery. The team closed the donor site on the back without requiring skin grafts from the leg to close the wound, eliminating huge scars that accompanied previous techniques.

Psychologically, burn victims not only have to struggle with their perception of their changed appearance, they also have to deal with how other people perceive them. They often suffer both functional and emotional trauma, which can be alleviated with reconstructive surgery.

"Many burn patients who successfully complete facial reconstruction can close their eyes again, relieving the dryness around their eyes," said Dr. Stevenson. "They stop drooling because their lips have been rebuilt and they can finally smile."

"By rebuilding the face, they can feel better about themselves and are more accepted socially once their abnormality is less dramatic," continued Dr. Stevenson. "This procedure is an important step to help burn patients overcome their trauma. As plastic surgeons, we will continue to refine this combination of techniques to help our patients not only rebuild their bodies but also their lives." 13-Oct-2004

### **Melanin makes skin vulnerable to harmful ultraviolet rays**

Blondes and redheads not only are more susceptible to skin cancer, but the source of their skin and hair pigmentation, melanin, actually magnifies the damaging effects of ultraviolet (UV) rays, according to a study published online this week in the Proceedings of the National Academy of Sciences.

Melanin filters out UV radiation, but the melanin in hair follicles, particularly in light hair, actually increases the sun damaging effects of UV rays and causes cell death in the hair follicle, said Douglas Brash, principal investigator and professor of therapeutic radiology, genetics and dermatology at Yale School of Medicine.

Brash said he had been curious why people with dark hair and fair skin were not as vulnerable to skin cancer as fair skinned blondes and redheads. "I wondered if it was related to the melanin," he said.

Brash's laboratory used mice engineered with pigmentation for yellow or black hair, as well as albino mice with no pigment at all. The researchers then irradiated the mice with UV rays that are about the same as what breaks through the ozone layer, affecting humans.

The cell death was concentrated around the hair follicles, which are the only location of melanin in mice. Dying cells were particularly pronounced in the yellow-haired mice and was absent in albinos.

"What this tells us is that melanin is not only good for you, it also can be bad. It depends on the color of your particular melanin," Brash said. "Even red melanin can vary widely, depending on whether your ancestors were Irish, Swedish or Dutch, and some of these variations are known to be associated with greater risk for skin cancer." 13-Oct-2004

### **Mobile phone use and acoustic neuroma**

A study from the Institute of Environmental Medicine (IMM) at Karolinska Institutet, Sweden, found that 10 or more years of mobile phone use increase the risk of acoustic neuroma and that the risk increase was confined to the side of the head where the phone was usually held. No indications of an increased risk for less than 10 years of mobile phone use were found.

At the time when the study was conducted only analogue (NMT) mobile phones had been in use for more than 10 years, and therefore we cannot determine if the results are confined to use of analogue phones, or if the results would be similar also after long term use of digital (GSM) phones.

In close collaboration with the clinics where these patients are treated all new patients with acoustic neuroma were identified during a three year period in certain parts of Sweden. Persons without the disease were randomly selected from the population registry (controls). A nurse contacted all patients and controls and asked them if they wanted to participate in the study. All who agreed participated in a personal interview where detailed questions were asked about their mobile phone use and other issues of importance for the study.

A total of about 150 acoustic neuroma patients and 600 healthy controls participated in the study. The risk of acoustic neuroma was almost doubled for persons who started to use their mobile phone at least 10 years prior to diagnosis. When the side of the head on which the phone was usually held was taken into consideration, we found that the risk of acoustic neuroma was almost four times higher on the same side as the phone was held, and virtually normal on the other side.

Acoustic neuroma is a benign tumour on the auditory nerve that usually grows slowly over a period of years before it is diagnosed. It occurs in less than one adult per 100,000 per year. 13-Oct-2004

### **Summa study finds portion control induces greatest weight loss**

*Summa Health System researchers' results published in September issue of Obesity Research*

(Akron, Ohio) – The journal, Obesity Research, today published an article on the results of a 24-month federally funded obesity study led by Summa Health System researchers in Akron, Ohio. The study is the first to document that patients who spend a longer time in the action and maintenance stages for portion control or planned exercise were more likely to lose weight. The reverse was also true. Patients who spend less time in the action and maintenance stages for portion control or planned exercise were more likely to gain weight.

According to lead Summa researcher Everett E. Logue, Ph.D., the greatest weight loss in the study was related to portion control. "Although we saw similar patterns of weight loss related to reduced dietary fat consumption,

increased fruit and vegetable consumption, increased physical activity and increased planned exercise, the target behavior that induced the greatest weight loss was portion control."

While Logue points out portion control showed the greatest weight loss, the study also suggests planned exercise induced the least. This however, does not surprise Logue.

"Portion control may be behaviorally easier to change than increasing planned exercise for many obese individuals," Logue said. "However, other research suggests that planned exercise is an important component of long-term weight management."

The study found that 38 percent of obese patients who consistently spent two years practicing food portion control lost five percent or more of their baseline weight. Conversely, they concluded that 33 percent of patients who did not consistently practice portion control gained five percent or more of their baseline weight.

"The message in the study is that you have to eat fewer calories and/or burn more calories if you want to lose weight," Logue said. "There are no short cuts. However, there are multiple ways of eating fewer calories and/or burning more calories. The trick is to find a way of eating and exercising that works for you that you can maintain for a lifetime. Since we live in an obesogenic environment, you can not rely on the overeating and sedentary signals that the environment is constantly sending. You have to block these signals out (cognitive restructuring) and change your personal environment (change the way that you shop for food, where you eat, and how you spend your non-work time). You cannot follow the crowd, because the crowd is getting more overweight each year."

Patients who inquired about the study and were primary care patients, ages 40 to 69, with elevated body mass indices greater than 27 or elevated waist/hip ratios greater than 0.950 for men or 0.800 for women were eligible for the study.

The data for the study called Reasonable Eating and Activity to Change Health (REACH) was obtained from 329 overweight or obese primary care patients from 15 primary care practices in Northeastern Ohio from July 1998 to December 2002. Eighty-four percent of the participants were between the ages of 40 and 59 years; 30 percent were males; 28 percent identified themselves as African Americans; and 45 percent had body mass indices (BMI) over 34.9 kg/m<sup>2</sup>. **13-Oct-2004**

### **Binge drinking: red wine and alcohol have different effects on platelets**

Moderate alcohol consumption is believed to reduce mortality from cardiovascular disease.

Binge drinking, on the other hand, is known to increase mortality from all causes.

Recent findings indicate the differences in consequences may be due, in part, to the different effects that alcohol can have on platelet adhesion and aggregation.

Numerous studies have shown a link between moderate alcohol consumption, versus abstinence or heavy consumption, and decreased mortality from cardiovascular disease. Conversely, the rapid consumption of large amounts of alcohol within a short period of time – also known as binge drinking – is associated with increased mortality from all causes, including cardiovascular ones. Alcohol's effects on platelet adhesion and aggregation may provide part of the answer to this riddle, as shown by findings published in the October issue of *Alcoholism: Clinical & Experimental Research*.

"In large studies containing thousands of healthy people, it was observed that people who drank alcohol on a regular basis appeared to have less cardiovascular disease," said Dylan W. de Lange, a researcher at the Thrombosis and Haemostasis Laboratory of the University Medical Center in Utrecht, the Netherlands and corresponding author for the study. "In these large studies, overall mortality was lowest among people who drank two to five glasses daily, compared to people who abstained from alcohol or drank excessively.

This became known as the 'U-shaped curve.' The French adopted this concept, trying to prove that drinking red wine was beneficial for one's health. This became known as the 'French Paradox,' that consumers of red wine had a low mortality from cardiovascular diseases despite smoking and consuming dietary fat."

De Lange said that the "French Paradox" does not actually exist, because consumption of dietary fat takes years before it leads to a heart attack, a realization that has led to creation of the "time-lag hypothesis."

"Perhaps the French paradoxical bubble has been burst," he said, "but the interest it has generated is enormous. We have learned, for example, to take into account differences in socioeconomic factors. To put it bluntly, rich people drink red wine and are healthier than poor whiskey-addicted bums, which might account for some of the beneficial effects of red wine consumption. However, even when these confounders are accounted for, some of the differences in beneficial effects of alcohol and red wine still stand."

For this study, healthy volunteers (n=20) were asked to drink either three glasses of alcohol (Bacardi Breezer®) or red wine during a 45-minute period of time, after which 45 minutes were allowed for alcohol absorption. Ninety minutes after the start of the experiment, blood was collected from all participants. This entire

cycle was then repeated once, resulting in consumption of six alcoholic drinks in three hours. Researchers then measured levels of platelet aggregation, induced by a modest stimulatory substance called adenosine-diphosphate (ADP), platelet adhesion to fibrinogen, and collagen.

Binge consumption of alcohol both increased platelet aggregation and inhibited platelet adhesion to fibrinogen-coated surface under flow. In contrast, binge consumption of red wine did not increase platelet aggregation.

Simplistically speaking, excess platelet aggregation is bad whereas inhibited platelet adhesion tends to be good. "Platelet adhesion, rolling platelets that stick to a vessel wall, is the first step to repairing a damaged vessel wall," said de Lange. "This is then followed by platelet aggregation, platelets sticking to each other, to form a plug that clogs the hole in a vessel. Thus, adhesion and aggregation of platelets are very important for the repair of vessels. However, clog formation in vessels can also prevent delivery of blood and oxygen to tissues beyond the clog, which will die as a result of oxygen and energy shortage. This is called 'infarction,' which can be life threatening if it occurs in your heart or brain."

De Lange and his co-authors speculate it is doubtful, at these binge-consumption levels, that alcohol's beneficial effects of diminished adhesion completely compensate for the increase in platelet aggregation. "Maybe drinking regularly two to five glasses a day results in inhibition of platelets," said de Lange, "but drinking large quantities of alcohol in a short period of time, like in our binge-drinking volunteers, actually agitates platelets. This might explain why more people die from heart attacks after a night of binge drinking."

De Lange said there are two take-home messages from his study. "First, modest daily consumption of an alcohol-containing beverage – perhaps red wine is superior to other beverages because of its high polyphenol count – might be beneficial to cardiovascular diseases, however, it appears that drinking large quantities in a short period can have detrimental effects through agitation of platelets. This might explain the increased cardiovascular mortality associated with binge drinking," he said.

"Second, we showed that alcohol was able to inhibit platelets adhering to fibrinogen at high-flowing speed. This might prevent occlusion of damaged vessels, thus preventing infarction. In short," he added, "we did find opposing results, one beneficial and one detrimental to 'atherosclerosed' vessels. We cannot predict which of these prevails in the human body; this must be explored in further scientific studies." **14-Oct-2004**

### **Not all beers are created equal**

*Per capita consumption of ethanol derived from alcohol sales can indicate a population's overall alcohol-drinking behaviors.*

New research shows that more alcohol is being consumed in the form of beer than previously thought, and the national mean alcohol content of beer is higher than previously thought.

Researchers call for consumers to pay more attention to the alcohol content of the beer they consume, and for the provision of more lower-strength beers.

The apparent per capita consumption of ethanol derived from sales of beer, wine and spirits is the most comprehensive and reliable measure of a population's overall alcohol-drinking behaviors. New findings, published in the October issue of *Alcoholism: Clinical & Experimental Research*, indicate that more alcohol is being consumed in the form of beer than previously thought, and the national mean alcohol content of beer is higher than previously thought.

"Alcohol consumption in the U.S. comes from three main beverage types," said William C. Kerr, associate scientist with the Alcohol Research Group at the Public Health Institute and first author of the study, "beer, wine and spirits. Beer is the largest source of alcohol consumption, though the share of each beverage type varies by state and changes over time. Market share can help better understand aspects of drinking culture related to beverage choice. For example, France and Italy are wine-preferring countries, while Russia is a spirits-preferring country."

"It may seem strange, but it has been found again and again that a small percentage change in the overall alcohol consumption of a nation predicts similar changes in the number of serious problems caused by drinking, such as deaths, injuries and illnesses," said Tim Stockwell, professor and director of the Centre for Addictions Research of B.C. at the University of Victoria. "This means a seemingly small increase in the total amount of ethanol consumed in beers can translate into a few more people dying from one of the 37 plus alcohol-related causes of death."

Researchers gathered national estimates for the years 1988 - 2001 and state-specific estimates for the years 1993 - 2001 using several different sources, including the Adams Beer Handbooks, the Washington State Liquor Control Board price lists, and the Seibel Institute of Technology Survey of Retail Market Beers and Market Beer Review.



"We found that there have been significant shifts in the types of beers consumed by Americans between 1988 and 2001," said Kerr. "Market shares of each type have varied by state, and specific brands have changed their alcohol percentage on occasion. These changes and differences have resulted in overall differences in the average alcohol percentage of beer in each state and in each year. This means that the proportion of the beer sold that is pure alcohol also differs."

Kerr and his colleagues found that the national mean alcohol content of beer was higher than the 4.5 percent figure typically used in aggregate-level research, ranging from 4.58 percent in 1993 to 4.75 percent in 1996.

"While these differences may seem small when considered in terms of a single bottle of beer," said Kerr, "they appear more substantial when applied to the six million gallons of beer sold each year in the US. For example, in 2000, using the corrected percentages results in about 10 additional standard drinks yearly for each person aged 14 or older in the U.S. State differences range from half a drink less in Iowa, where light beer is especially popular, to more than 14 drinks more in Mississippi, where malt liquor and premium beer are more popular than the average for all states."

"This study has set a new standard in estimates of per capita consumption," said Stockwell. "It is noteworthy that the method used follows guidelines first outlined by a World Health Organization expert-working group and published in 2000. The research also highlights the relatively limited range of beer strengths in the U.S.A. compared with other countries. Most of the beer consumption falls within a relatively narrow range of alcoholic strengths; there are very few low- or middle-strength varieties with nearly all brands falling in the narrow range of 4.1 to 5.1 percent alcohol content. In other countries where tax incentives have been given to producers, retailers and consumers to give preference to lower-strength beers, there is much greater variety. In Australia, for example, beers with a strength of less than four percent make up 40 percent by volume of the beer market, and there are close to 40 varieties from 0.9 percent to 3.8 percent to choose from."

Kerr concurs. "An important message is that not all beer is the same and that consumers should consider the percentage of alcohol in the brand of beer they drink when deciding how many beers to consume. For example, the light version of a particular brand may contain 4.2 percent alcohol, while the ice version of the same brand may contain as much as 5.9 percent alcohol, which is 40 percent more alcohol per can."

"Future research should study variations in alcoholic strengths in the U.S.A. and their relationship to levels of serious alcohol-related harm," said Stockwell. "Again, in Australia, strong relationships have been found between the alcohol content of beer in different regions and the local levels of night-time violence and hospital admissions for alcohol-related reasons. This study signals that more could be done to promote better public health and safety through the promotion of lower strength beers." **14-Oct-2004**

### **Study: Brain battles itself over short-term rewards, long-term goals**

*Implications range from economic theory to addiction research*

You walk into a room and spy a plate of doughnuts dripping with chocolate frosting. But wait: You were saving your sweets allotment for a party later today. If it feels like one part of your brain is battling another, it probably is, according to a newly published study.

Researchers at four universities found two areas of the brain that appear to compete for control over behavior when a person attempts to balance near-term rewards with long-term goals. The research involved imaging people's brains as they made choices between small but immediate rewards or larger awards that they would receive later. The study grew out of the emerging discipline of neuroeconomics, which investigates the mental and neural processes that drive economic decision-making.

The study was a collaboration between Jonathan Cohen and Samuel McClure at Princeton's Center for the Study of Brain Mind and Behavior; David Laibson, professor of economics at Harvard University; and George Loewenstein, professor of economics and psychology at Carnegie Mellon University. Their study appears in the Oct. 15 issue of *Science*.

"This is part of a series of studies we've done that illustrate that we are rarely of one mind," said Cohen, also a faculty member at the University of Pittsburgh. "We have different neural systems that evolved to solve different types of problems, and our behavior is dictated by the competition or cooperation between them."

The researchers examined a much-studied economic dilemma in which consumers behave impatiently today but prefer/plan to act patiently in the future. For example, people who are offered the choice of \$10 today or \$11 tomorrow are likely choose to receive the lesser amount immediately. But if given a choice between \$10 in one year or \$11 in a year and a day, people often choose the higher, delayed amount.

In classic economic theory, this choice is irrational because people are inconsistent in their treatment of the day-long time delay. Until now, the cause of this pattern was unclear, with some arguing that the brain has a single decision-making process with a built-in inconsistency, and others, including the authors of the *Science* paper, arguing that the pattern results from the competing influence of two brain systems.

The researchers studied 14 Princeton University students who were asked to consider delayed reward problems while undergoing functional magnetic resonance imaging (fMRI), a procedure that shows what parts of the brain are active at all

times. The students were offered choices between Amazon.com gift certificates ranging from \$5 to \$40 in value and larger amounts that could be obtained only by waiting some period, from two weeks to six weeks.

The study showed that decisions involving the possibility of immediate reward activated parts of the brain influenced heavily by brain systems that are associated with emotion. In contrast, all the decisions the students made -- whether short- or long-term -- activated brain systems that are associated with abstract reasoning.

Most important, when students had the choice of an immediate reward but chose the delayed option, the calculating regions of their brains were more strongly activated than their emotion systems, whereas when they chose the immediate reward, the activity of the two areas was comparable, with a slight trend toward more activity in the emotion system.

The researchers concluded that impulsive choices or preferences for short-term rewards result from the emotion-related parts of the brain winning out over the abstract-reasoning parts. "There are two different brain systems and one of them kicks in as you get really proximate to the reward," McClure said.

The finding supports the growing view among economists that psychological factors other than pure reasoning often drive people's decisions.

"Our emotional brain has a hard time imagining the future, even though our logical brain clearly sees the future consequences of our current actions," Laibson said. "Our emotional brain wants to max out the credit card, order dessert and smoke a cigarette. Our logical brain knows we should save for retirement, go for a jog and quit smoking. To understand why we feel internally conflicted, it will help to know how myopic and forward-looking brain systems value rewards and how these systems talk to one another."

The findings also may cast light on other forms of impulsive behavior and drug addiction.

"Our results help explain how and why a wide range of situations that produce emotional reactions, such as the sight, touch or smell of a desirable object, often cause people to take impulsive actions that they later regret," Loewenstein said. Such psychological cues are known to trigger dopamine-related circuits in the brain similar to the ones that responded to immediate rewards in the current study.

Concerning addiction, said Loewenstein, the findings help explain some aspects of the problem, such as why addicts become so focused on immediate gratification when they are craving a drug. The dopamine-related brain areas that dominated short-term choices among the study subjects also are known to be activated when addicts are craving drugs.

The researchers are now trying to pin down what kinds of rewards and how short a delay are needed to trigger the dopamine-related reaction. Their ultimate goal is to better understand how the emotion-related and calculating systems interact and to understand how the brain governs which system comes out victorious. **14-Oct-2004**

### **Drug companies should disclose adverse events before licensing**

*Editorial: lessons from the withdrawal of rofecoxib BMJ Volume 329, pp 867-8*

Following the withdrawal of the painkiller and anti-inflammatory drug rofecoxib (Vioxx), researchers in this week's BMJ argue that patients would be safer if drug companies disclosed adverse events before licensing.

Single phase III drug trials are simply not big enough to detect relatively uncommon but important adverse events, which may affect large numbers of people in routine clinical use, writes Paul Dieppe and colleagues.

Furthermore, the impact of undetected adverse events is likely to be made worse if widely marketed new drugs are prescribed haphazardly and rapidly to large numbers of people. Within five months of the launch of rofecoxib, more than 42,000 patients had been prescribed the drug in England.

To prevent further similar episodes, drug companies should be legally required to make all data on serious adverse events from clinical studies available to the public immediately after completion of the research, say the authors. This will allow independent, timely, and updated systematic reviews of serious adverse events.

They also suggest phased introduction of new drugs in independent, large-scale, randomised trials before licensing, together with better postmarketing surveillance.

"Although these measures will not be popular with pharmaceutical companies, they will limit the numbers of patients exposed to unknown hazards and provide robust and unbiased evidence on adverse events before a drug is fully licensed," they conclude. **14-Oct-2004**

### **UF study: Brown-nosing works better than boasting in job interviews**

GAINESVILLE, Fla. - Sucking up or apple polishing are more likely to work in a job interview than boasting of one's accomplishments, a new University of Florida study finds.

"Kissing up, being nice and agreeing more than disagreeing do seem to be effective tactics for people to use when looking for a job," said Timothy Judge, a UF management professor who did the research. "This approach succeeds because it leads recruiters and interviewers to believe the applicant will fit into the organization."

The findings show there is a large social component to the workplace, despite business schools spending a great deal of time and effort training people to master technical skills, said Judge, whose study appears in the August Journal of Applied Psychology. People like being complimented and having others agree with them, and practicing such social niceties can't help but make a favorable impression in the workaday world, he said.

"One might view these ingratiation behaviors negatively as apple polishing or bootlicking, but by the same token one could consider them social skills," he said. "In fact, one social psychologist once said that one of the key findings in the history of psychological research is the 'similar-to-me bias,' which means, 'We like people who are like us.'"

That similarity-attraction theory suggests people are attracted to those with whom they have something in common, so when an applicant agrees with a recruiter's opinions, the recruiter may believe they share many beliefs and attitudes, he said.

"Judge's paper is a well-conducted study that gives insight into the fact that it is more useful to compliment others than it is to compliment ourselves," said Daniel Cable, professor of management and organizational behavior at the University of North Carolina at Chapel Hill, who has studied the job choice process for nearly a decade. "On the other hand, agreeing outwardly with an interviewer when you really disagree could wind you up with a job where you don't really fit the culture of the organization."

For their research, Judge and Chad Higgins, a University of Washington management professor, studied 116 undergraduate students majoring in business or liberal arts at the University of Iowa who were interviewed for jobs they sought through the college placement service.

The applicants completed surveys asking them to rate on a seven-point scale their use of various ingratiation and self-promotion tactics. Examples of ingratiation behaviors included agreeing outwardly with the recruiter's opinion while disagreeing inwardly, and complimenting the interviewer's appearance. Self-promotion tactics included playing up one's accomplishments or experience levels and overstating one's qualifications.

In turn, the recruiters were asked to assess the applicants, including stating how strongly they agreed or disagreed with statements such as, "This applicant is a good match or fit with my organization and its current employees" and "This applicant's values reflect the values of my organization." Ultimately, recruiters were asked to rate how likely they would be to recommend hiring the applicant, using a seven-point scale ranging from 'strongly agree' to 'strongly disagree.'

While the results showed a strong relationship between the use of ingratiation behaviors and favorable attitudes on the part of recruiters, self-promotion techniques had no effect, Judge said.

"We know that on the job, self-promotion has never seemed to work too well, probably because the supervisor has much more of an opportunity to find out the reality," he said.

On the other hand, studies have found the use of ingratiation behaviors to be effective in influencing performance ratings, he said. Complimenting supervisors or co-workers and agreeing with their opinions may not be as dishonest as it would appear; some people are simply more agreeable by nature, Judge said.

In order to ensure they get the best-qualified applicants, though, recruiters should strive to get more detailed information from prospective job candidates rather than simply accepting comments that are designed to please, he said.

"A certain level of agreement and trying to get along is fine, but I think the interviewer needs to be careful that there's substance behind the style," Judge said. "There are questions that can test that. For example, if you asked an applicant, 'Have you broken a rule?' that may be a way to test whether a person is agreeing with everything that is said or is just an agreeable person." The results, showing that ingratiation tactics have such a strong effect during the interview process, raise the question about whether businesses are really looking for people with their own ideas.

"Probably if you were to ask most managers, 'Do you want "yes" people?' they would say, 'No, I want people who disagree and represent themselves,'" he said. "But if you look at what they actually mean, you get a different picture." **14-Oct-2004**

### **Herbal, nutritional supplements linked to ocular side effects**

#### *Review of agents used for the eye finds multiple adverse reactions*

PORTLAND, OR – An estimated 42 percent of Americans use herbal medicines or nutritional supplements. Many people taking these products and their physicians are unaware of the adverse reactions they can cause. An Oregon Health & Science University researcher reviewed reported cases of ocular side effects associated with these products. His findings are published in the American Journal of Ophthalmology this month.

The researcher, Frederick W. Fraunfelder, M.D., assistant professor of ophthalmology in the OHSU School of Medicine and the OHSU Casey Eye Institute, found side effects ranging from dry eye to retinal hemorrhages and transient visual loss. Most of the side effects were associated with higher doses and topical application. While none of the reported cases caused permanent damage, many could have if the patient had not discontinued use of the product.

"A large segment of the population uses herbal medicines and nutritional supplements, many times without the treating physician's knowledge," said Fraunfelder, who also is director of the National Registry of Drug-Induced Ocular Side Effects based at the Casey Eye Institute. "These products can cause ocular side effects and clinicians need to recognize these adverse events."

Herbal medicines and nutritional supplements are not regulated by the Food and Drug Administration (FDA) as prescription and over-the-counter medications are. The World Health Organization (WHO) published guidelines on the use of herbal medicines in 2004, including recommendations on cultivating, collecting, classification, quality control, storage, labeling and distribution. However, there are no official standards governing the production of herbal medicines in the United States and the potency and purity of these products vary widely.

Fraunfelder reviewed cases of adverse ocular side effects reported to the WHO, the FDA and the National Registry of Drug-Induced Ocular Side Effects, and reviewed world literature for reported instances of adverse ocular side effects caused by herbal medicines and nutritional supplements. Out of 323 reported cases he found eight products associated with clinically significant ocular side effects: ginkgo biloba, Echinacea purpurea, chamomile, licorice, canthaxanthine, Datura, niacin and vitamin A.

One of the best-selling herbal medicines in the United States and worldwide is ginkgo biloba, which is used to treat tinnitus, asthma and tonsillitis among other things. Fraunfelder found two cases of hemorrhaging in the anterior chamber of the eye as well as reports of retinal hemorrhages in patients taking this agent. Ginkgo biloba inhibits platelet aggregation, and should be used with caution in patients taking aspirin because the effects could be amplified.

Echinacea purpurea is used to treat colds, coughs, fevers, urinary tract infections, burns and influenza. Reports of eye irritation and conjunctivitis have been associated with its topical use.

Chamomile is used to treat eye disease as well as insomnia, indigestion, migraine headaches, bronchitis, fevers, colds, inflammation and burns. Chamomile tea is used by some topically in and around the eyes to treat styes and runny, irritated eyes. Fraunfelder found reported cases of severe conjunctivitis related to chamomile's topical use.

Licorice is used to treat upper respiratory tract infections, ulcers, appendicitis and constipation. American Indians use licorice to treat inflammatory eye diseases. Fraunfelder found cases of transient vision loss after licorice ingestion, similar to what one might see with an ocular migraine without headache. The side effects appear to be associated with large doses.

Canthaxanthine, a carotenoid used in cosmetics, as a food coloring and to produce an artificial suntan when taken orally, causes deposits of the drug in the retina. The deposits appear to be absorbed over time, but take years to disappear. Visual changes from this nutritional supplement are related to retinal abnormalities detected with visual field testing and electroretinography (a test of retinal function).

Jimson Weed is the most common member of the genus Datura. The dried leaves of this flower are used to treat eye inflammation as well as asthma, bronchitis, influenza and coughs. Fraunfelder found several instances of mydriasis, a prolonged dilation of the pupil.

Niacin can cause some of the most severe ocular reactions of all the products reviewed. Its cholesterol-lowering effects have proved successful in treating cardiovascular and cerebrovascular disease. It also is used for treatment of schizophrenia, diabetes, arthritis, hypertension, sexual dysfunction and migraine headaches. A comprehensive review of ocular side effects from niacin indicates a possible association with decreased vision, cystoid macular edema (CME), dry eyes, discoloration of the eyelids, eyelid edema and loss of eyebrows and eyelashes, among others. The ocular side effects appear to be dose related, but some instances would require discontinuation of niacin therapy.

Vitamin A is used primarily as an oral dietary supplement for vitamin A deficiency and for treatment of acne. Fraunfelder found reports linking high doses of vitamin A to cases of intracranial hypertension. In the majority of cases this condition resolves when vitamin A is discontinued.

Many herbal medicines interact with prescription medicines, and if the treating physician doesn't know what a patient is taking, it can be detrimental. For example, a patient taking ginkgo biloba plus aspirin or a nonsteroidal anti-inflammatory medication such as ibuprofen, may thin the blood too much, leading to ocular hemorrhage or even intracranial hemorrhage.

"Herbal medicines and nutritional supplements are being used without strong evidence of efficacy or safety. Ocular side effects from these products are often undiagnosed and unreported," said Fraunfelder. "Physicians must remain vigilant in recognizing adverse ocular side effects and inquiring whether a patient is using alternative therapies." **14-Oct-2004**

## Ancient Chinese folk remedy packs anti-cancer punch

*University of Washington licenses potential cancer treatment from wormwood*

A group of promising cancer-fighting compounds derived from a substance used in ancient Chinese medicine will be developed for potential use in humans, the University of Washington announced today.

The UW TechTransfer Office has signed a licensing agreement with Chongqing Holley Holdings, a Chinese company, and Holley Pharmaceuticals, its U.S. subsidiary.

The compounds, all developed through the research of UW scientists Henry Lai and Narendra Singh of the Department of Bioengineering and Tomikazu Sasaki of the Department of Chemistry, make use of a substance known as artemisinin, found in the wormwood plant and used throughout Asia since ancient times to treat malaria.

Although the compounds are promising, potential medical applications are still years away, officials say.

"We are very excited about the UW's discovery and an opportunity to develop an artemisinin-based cancer drug," Kevin Mak, chief scientist at Holley, said. "The technology is very promising, but it's in its early stages. Further research and clinical trials are needed."

The company, located in Chongqing, China, has been in the artemisinin business for more than 30 years, and is a world leader in farming, extracting and manufacturing artemisinin, its derivatives and artemisinin-based anti-malaria drugs, officials say.

Lai said he became interested in artemisinin about 10 years ago. The chemical helps control malaria because it reacts with the high iron concentrations found in the single-cell malaria parasite. When artemisinin comes into contact with iron, a chemical reaction ensues, spawning charged atoms that chemists call "free radicals." The free radicals attack the cell membrane and other molecules, breaking it apart and killing the parasite.

Lai said he began to wonder if the process might work with cancer, too.

"Cancer cells need a lot of iron to replicate DNA when they divide," Lai explained. "As a result, cancer cells have much higher iron concentrations than normal cells. When we began to understand how artemisinin worked, I started wondering if we could use that knowledge to target cancer cells."

Perhaps the most promising of the methods licensed involves the use of transferrin, to which the researchers bind artemisinin at the molecular level. Transferrin is an iron-carrying protein found in blood, and is transported into cells via transferrin receptors on a cell's surface.

Iron-hungry cancer cells typically have significantly more transferrin receptors on their surface than normal cells, which allows them to take in more of the iron-carrying protein. That, according to Lai, is what seems to make the compound so effective.

"We call it a Trojan horse because a cancer cell recognizes transferrin as a natural, harmless protein and picks up the tagged compound without knowing that a bomb – artemisinin – is hidden inside."

Once inside the cancer cell, the iron is released and reacts with the artemisinin. That makes the compound both highly toxic and, because of cancer's rapacious need for iron, highly selective. Surrounding, healthy cells are essentially undamaged.

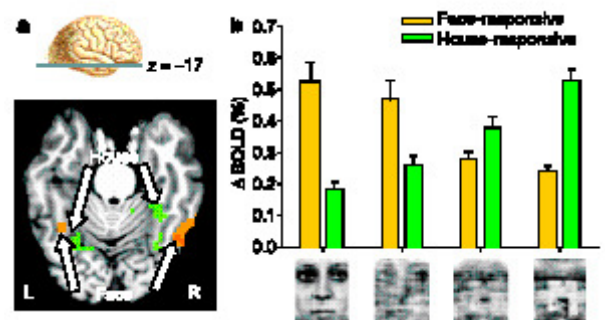
"Our research in the lab indicated that the artemisinin-tagged transferrin was 34,000 times more effective in selecting and killing the cancer cells than normal cells," Lai said. "Artemisinin alone is 100 times more effective, so we've greatly enhanced the selectivity." 14-Oct-2004

## Perceptual decision-making hub pinpointed in human brain

A perceptual decision-making hub at the front of the brain makes the call on whether you're looking at a face or a house – and likely many other things – scientists at the NIH's National Institute of Mental Health (NIMH) have discovered. It works by gauging the strength of competing signals from lower brain areas specialized for recognizing different objects, report Drs. Hauke Heekeren, Leslie Ungerleider, and colleagues, in the October 14, 2004 *Nature*.

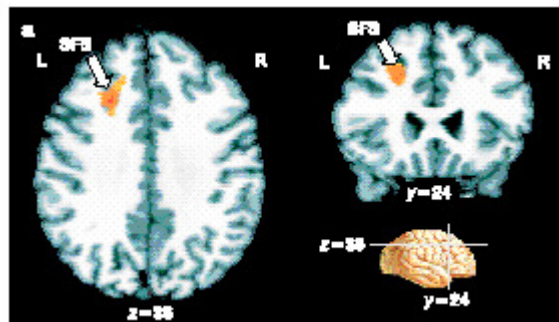
Although earlier studies in monkeys had suggested that such a decision-making hub exists, its location in the human brain was not previously known.

Researchers identified specialized visual processing regions low in the brain's temporal lobe that responded selectively to faces (yellow) and houses (green). Activity in response to the noisiest/hardest images was less clear-cut than to less noisy/easy ones, leading to a slower and dampened response by the decision-making area in the frontal cortex.



The researchers took advantage of the fact that it takes the brain longer to figure out what it's looking at when an image is very blurred or obscured – like trying to recognize people standing on a street corner in a downpour versus on a clear day. Hard to discern images evoke a relatively slower and reduced response in the decision-making area, as it mulls the strength of competing signals from specialized visual processing areas, where neurons fire only to the extent that they see certain objects or features, the monkey studies showed.

While their brain activity was monitored with functional magnetic resonance imaging (fMRI), twelve healthy subjects pressed buttons to indicate whether they saw a face or a house, as images flashed on a computer monitor. Some of the images were so noisy that they were barely discernable, reducing accuracy from 95 percent to 82 percent.



**fMRI images show decision-making area in left dorsolateral prefrontal cortex.**

The researchers looked for a site in the brain's frontal cortex showing the telltale reduced activity during hard trials that coincided with activity in temporal lobe visual processing circuits that they had determined are specialized for responding to faces and houses, respectively. An area in the left front of the brain (dorsolateral prefrontal cortex) responded with more activity when images were easier to identify than when they were hard to discern. These responses also jibed with the difference between the signals emanating from the face and house specialized regions, indicating that it was the likely hub of perceptual decision-making. **14-Oct-2004**

### **Smarter ways to measure intelligence than IQ, says University of Alberta researcher**

Measuring a child's IQ is an obsolete way to determine intelligence, and in fact, labels youngsters unfairly, according to a University of Alberta professor.

Building on a theory he began researching almost 20 years ago, Dr. J.P. Das has developed 'rules and tools of intelligence' which point to factors other than IQ (Intelligence Quotient) in measuring how 'smart' a child is.

"A child growing up in the slums or in a household with no literacy or books could be very street-smart, yet not have the school learning required for the traditional measurement of IQ," says Das, Professor Emeritus in educational psychology at the University of Alberta.

Das presented his Rules and Tools of Intelligence: How IQ became obsolete in a keynote address at the 28th International Congress of Psychology held in Beijing, China in August, and the system is now being used all over the world, and is being translated into several languages. Using a grant from the Social Sciences and Humanities Research Council of Canada, Das is currently working with children in an Alberta aboriginal community to explore learning problems.

Das identifies four 'rules of intelligence' that go into information processing. The rules include a belief that intelligence is not fixed, but is influenced by such factors as learning and cultural demands, cognitive abilities, even school attendance, as well as individual ability to process information such as language and face recognition.

The rules guide the research on PASS theory, developed by Das and two colleagues in 1994. PASS (an acronym for Planning, Attention, Simultaneous and Successive processing) has shown that intelligence should not be measured alone by school learning and IQ testing, but by information processing that occurs during this learning. "What goes into intellectual abilities and how a person solves a problem is more important than a score itself," said Das.

A system for cognitive assessment based on PASS has been available since 1997, following standardized testing on 3,000 children and teens, and has been adopted by school districts in the United States, including Los Angeles.

IQ testing can stigmatize a child permanently, causing more harm than good, Das said. "When a child is labelled as gifted, you are happy. But when he is labelled as borderline intelligent, as a parent you think, 'What did I do? I must have committed a sin.'"

Using the PASS rules of intelligence, teachers in the classroom can individualize their program planning for students, Das says. "Rather than categorizing and labelling, a teacher can explore the different thought process of each child as unique."

**15-Oct-2004**

### **Organic farming boosts biodiversity**

Organic farming increases biodiversity at every level of the food chain – all the way from lowly bacteria to mammals. This is the conclusion of the largest review ever done of studies from around the world comparing organic and conventional agriculture.

Previous studies have shown that organic farming methods can benefit the wildlife around farms. But "the fact that the message is similar all the way up the food chain is new information", says agricultural scientist Martin Entz of the University of Manitoba in Winnipeg, Canada.

The study reviewed data from Europe, Canada, New Zealand and the US. Neither of the two groups of researchers who did the study – one from English Nature, a government agency which champions wildlife conservation, and one from the Royal Society for the Protection of Birds – has a vested interest in organic farming.

**11/29/2008**



“It’s good to have independent people add their voice to the debate,” says Nic Lampkin, director of the Organic Centre Wales, part of the University of Wales Aberystwyth.

Typically, each of the 76 studies reviewed measured biodiversity in groups of organisms ranging from bacteria and plants to earthworms, beetles, mammals and birds. Of 99 separate comparisons of groups of organisms, 66 found that organic farming benefited wildlife, eight concluded it was detrimental and 25 produced mixed results or suggested no difference between the farming methods.

### **Mixed farming**

According to the researchers, organic farming aids biodiversity by using fewer pesticides and inorganic fertilisers, and by adopting wildlife-friendly management of habitats where there are no crops, including strategies such as not weeding close to hedges, and by mixing arable and livestock farming.

Mixed farming particularly benefits some bird species. Lapwings, for example, nest on spring-sown crops, but raise their chicks on pasture. Intensive agriculture has been blamed for the 80% decline in lapwing numbers in England and Wales since the 1960s. One of the reviewed studies from the UK also points to benefits for bats. Foraging activity was up 84% on organic farms and two species, the greater and lesser horseshoe bats, were found only on organic farms.

The studies might even have underestimated the benefits to wildlife, says Phillip Grice of English Nature. Some looked at farms shortly after they turned organic, so wildlife numbers may just have started increasing.

Some argue that farms that adopt a few organic practices, swapping chemical weeding for mechanical, for example, may help wildlife flourish just as much as completely organic farms. And it is possible that farmers who switched to organic farming may have been predisposed towards environmentally friendly methods. So the biodiversity on their farms may have been higher than average before conversion. The current studies are not detailed enough to answer these questions. Journal reference: *Biological Conservation* (vol 122, p 113)

James Randerson **11 October 04**

### **Harmful bacteria shown up by nanoparticles**

A new nanoparticle test for dangerous bacteria such as *Escherichia coli* O157:H7 is so sensitive it can detect a single bacterial cell within minutes. The food industry, medicine and the fight against bioterrorism could all eventually benefit from it, researchers say.

Even a few cells of the *E. coli* strain in food can be dangerous so it is important to be able to detect them in low numbers. Current tests, however, need a higher number of bacteria to be present before they can detect it, which can lead to long delays.

The new test, developed by Weihong Tan and colleagues from the University of Florida, US, could offer a sharper and faster way of detecting contamination. “If you can give us one bacterial cell in a sample then we can detect it,” says Lisa Hilliard, one of the team. “Most people have to grow it and then detect it.”

The whole test can be carried out in just 20 minutes, compared with up to 48 hours for conventional tests. “Other tests could be as sensitive but you would need to perform an enrichment first,” says Mike Peck from the Institute of Food Research in the UK. “You would have to pop the food into a growth media for 24 hours,” he explains.

### **Shelved beef**

Waiting a day or two for the results can be costly and inconvenient, says Andrew Brabban, who works on *E. coli* at the Evergreen State College, Washington. “One of the basic problems at the moment is what is called ‘Test and Hold’. Samples are held at US plants until they are shown to be free of O157:H7. This is obviously expensive for the industry, having large quantities of beef as shelved stock,” he told *New Scientist*.

The new test consists of silica nanoparticles, each housing thousands of fluorescent dye molecules, and each attached to an antibody for a given bacterium.

The nanoparticles are added to a solution of the test sample, such as ground beef. If the bacterium sought is present the nanoparticles will quickly attach to it. The sample is then separated by weight in a centrifuge. The target bacteria, being heavier than the nanoparticles, will separate away from them. But those dye molecules already attached will fluoresce in this heavier sample, identifying the bacteria.

### **Diluted samples**

The new test differs from other dye tests in that thousands of dye molecules will fluoresce if only one bacterium is present because they are all attached to the same antibody. Other tests contain only a few dye molecules for each test antibody used so that one bacterial cell will not cause enough fluorescence to be observed. Using samples so diluted that only one in four of them contained any bacteria at all, the researchers showed their test could detect a single bacterial cell.

Although the test was developed using *E. coli* O157:H7, it could be adapted to many different bacteria. The group are already looking at ways to identify more than one type of bacteria at a time, using different coloured dyes for each.

If this can be achieved quickly and accurately it could have great potential. “The need to detect single cells is real,” says Brabban. “Any method that is fast, accurate and has [such a sensitive] detection level would certainly be very useful,” he says.

Journal reference: *Proceedings of the National Academy of Sciences* (DOI: 10.1073/pnas.0404806101) **Katharine Davis 11 October 04**

## **Survival of genetic homosexual traits explained**

Italian geneticists may have explained how genes apparently linked to male homosexuality survive, despite gay men seldom having children. Their findings also undermine the theory of a single “gay gene”.

The researchers discovered that women tend to have more children when they inherit the same - as yet unidentified - genetic factors linked to homosexuality in men. This fertility boost more than compensates for the lack of offspring fathered by gay men, and keeps the “gay” genetic factors in circulation.

The findings represent the best explanation yet for the Darwinian paradox presented by homosexuality: it is a genetic dead-end, yet the trait persists generation after generation.

“We have finally solved this paradox,” says Andrea Camperio-Ciani of the University of Padua. “The same factor that influences sexual orientation in males promotes higher fecundity in females.”

### **Relative differences**

Camperio-Ciani's team questioned 98 gay and 100 straight men about their closest relatives - 4600 people in total. They found that female relatives of gay men had more children on average than the female relatives of straight men. But the effect was only seen on their mother's side of the family.

Mothers of gay men produced an average of 2.7 babies compared with 2.3 born to mothers of straight men. And maternal aunts of gay men had 2.0 babies compared with 1.5 born to the maternal aunts of straight men.

“This is a novel finding,” says Simon LeVay, a neuroscientist and commentator on sexuality at Stanford University in California. “We think of it as genes for ‘male homosexuality’, but it might really be genes for sexual attraction to men. These could predispose men towards homosexuality and women towards ‘hyper-heterosexuality’, causing women to have more sex with men and thus have more offspring.”

Camperio-Ciani stresses that whatever the genetic factors are, there is no single gene accounting for his observations. And the tendency of the trait to be passed through the female line backs previous research suggesting that some of the factors involved are on the male “X” chromosome, the only sex chromosome passed down by women. “It's a combination of something on the X chromosome with other genetic factors on the non-sex chromosomes,” he says.

### **Immune system**

Helen Wallace, of the UK lobby group GeneWatch, welcomes the new research that moves away from the controversial single-gene theory for homosexuality. “But it's worth noting that the data on the sexuality of family members may be unreliable, so more studies are likely to be needed to confirm these findings,” she says.

Even if the maternal factors identified by Camperio-Ciani's team are linked with male homosexuality, the research team's calculations suggest they account for only about 14% of the incidence.

Their findings also support earlier findings that when mothers have several sons, the younger ones are progressively more likely to be gay. This might be due to effects changes to the mother's immune system with each son they carry.

But Camperio-Ciani calculates the contribution of this effect to male homosexuality at 7% at most. So together, he says, the “maternal” and “immune” effects only account for 21% of male homosexuality, leaving 79% of the causation still a mystery.

This leaves a major role for environmental factors, or perhaps more genetic factors. “Genes must develop in an environment, so if the environment changes, genes go in a new direction,” he says. “Our findings are only one piece in a much larger puzzle on the nature of human sexuality.”

Journal reference: Proceedings of the Royal Society B: Biological Sciences (DOI: 10.1098/rspb.2004)

Andy Coghlan 13 October 04

## **Radical rethink of Huntington's disease**

Clumps of defective proteins, long implicated in killing off part of the brain in Huntington's disease, may actually be helping these neurons to survive.

The discovery could redirect efforts to develop treatments for Huntington's disease (HD) - a disorder that slowly kills brain cells involved in movement and higher cognitive function.

HD is triggered by mutations in a protein called huntingtin which cause the protein to aggregate and ultimately form large cellular blobs known as inclusion bodies. These insoluble blobs are visible under a microscope and may contain thousands of mutant proteins.

Scientists had believed that inclusion bodies help destroy neurons, since animals sick with HD have these blobs in their brain cells while healthy animals do not. And, in general, the sicker animals become with the disease, the more inclusion bodies are found in the neurons of damaged brain areas.

### **True culprits**

"This is a seminal paper," says Harr Orr who studies brain diseases at the University of Minnesota in Minneapolis. "It compromises one of the major theories of how huntingtin causes disease." Orr says the work also



suggests that the smaller, soluble groups of huntingtin - that ultimately create the large inclusions - may be the true culprits behind the disease.

Until now, it had not possible to follow the effects of inclusions on individual neurons, so it was not clear if they were in fact responsible for neuron death, says Steve Finkbeiner of the University of California, San Francisco, US, who led the study.

For example, the inclusion bodies may have been a by-product of the true pathogenic process, and actually harmless themselves. Or, even more intriguing, the blobs could actually have been a protective mechanism by which cells fought to limit the damage done by the mutant protein.

"The possibilities kept me up at night," says Finkbeiner. "The more I thought about it, the more I realised we needed a new way to address this problem."

### **Clear-cut results**

So his team developed a way to track the life, death and history of inclusion body formation in a large number of individual rat neurons, grown in dishes. The rat cells were genetically engineered to produce mutant huntingtin proteins, and each neuron was scanned regularly by an automated microscope.

The results were clear-cut: increased levels of the mutant protein meant a cell was more likely to die but the appearance of inclusion bodies predicted the cells would actually survive for longer than their peers.

While Finkbeiner admits it is possible that neurons in the brain respond differently to inclusion bodies than neurons in a dish, the rat neuron model has already proven to faithfully mimic more than a dozen different cellular aspects of HD.

He also points out that the aggregation of huntingtin might still play a detrimental role in the disease. But the extremely large protein clumps that form inclusion blobs appear to be a sign of cells fighting back, he says.

The result could change the development of HD therapy. Researchers are already looking for drugs that keep huntingtin from aggregating. But some of these drugs might prevent the formation of protective inclusion bodies while allowing the smaller – and possibly lethal - groups of huntingtin to form. "One prediction of ours is that some of these drugs could actually make the disease worse," he says.

Journal reference: Nature (vol 431, p 805)

Philip Cohen 13 October 04

### **Antibiotic-boosting drug kills superbugs**

A UK company claims to have discovered a compound that renders the MRSA superbug vulnerable to the antibiotic it normally resists.

MRSA – methicillin-resistant *Staphylococcus aureus* – is defined by its ability to resist the antibiotic methicillin. Like penicillin, methicillin works by blocking bacterial enzymes called PBPs, which normally strengthen cell walls by forming cross links.

The first MRSA strains appeared in 1961, just two years after methicillin was launched. These bacteria got their resistance by picking up the gene for another PBP enzyme, PBP2a, to which methicillin cannot bind.

MRSA strains now cause up to 60% of all “staph” infections in some hospitals. Some MRSA strains are also becoming resistant to other antibiotics – including vancomycin, the antibiotic doctors resort to when nothing else works.

But Michael Levey’s team at Pharmaceutica in Worcestershire, UK, may have discovered a way to restore methicillin’s killing power. Following on from work done in the 1990s, his team found that certain compounds containing the amino acid glycine greatly increased 20 different MRSA strains’ susceptibility to methicillin. The dose needed to kill them dropped from 256 milligrams per litre to just 4 mg/l.

### **Mysterious workings**

The problem was that the concentrations of these glycine compounds had to be very high. “You cannot drown yourself in glycine to treat infection,” points out Brigitte Berger-Bachi at the University of Zurich, Switzerland.

Then Levey got lucky. He learned of another glycine compound that has already been approved for human use in diagnostic tests. Lab tests show that the compound, which Levey calls BTA19976a, makes MRSA susceptible to methicillin at concentrations regarded as safe.

How it works remains mysterious, but it is thought that the glycine alters the composition of the cell wall’s building blocks, preventing PBP2a reinforcing it. Pharmaceutica has now begun testing the compound in mice infected with MRSA.

If it proves effective, BTA19976a could be given to patients along with methicillin to treat MRSA infections, reducing the need for other antibiotics such as vancomycin. Other teams are taking similar approaches, such as trying to design new antibiotics that block the PBP2a enzyme.

But the long-term strategy should be to prevent MRSA infections, points out Dan Jernigan of the US Centers for Disease Control. "No matter what we do, bacteria will find a way around it. But there are some things that always work. Resistant bacteria are not resistant to hand washing."

Anna Gosline 15 October 04

### **Timing, preconditions critical for post-conflict elections, UN University experts warn**

*Elections can undermine as well as consolidate democratic process; new book examines UN's role in promoting democracy*

Ill-timed elections risk producing the direct opposite of the intended outcome, fuelling chaos and reversing progress towards democracy, according to United Nations University (UNU) experts who have analyzed recent efforts to promote democracy in post-conflict societies.

"Experience in several countries studied shows that ill-timed or poorly designed elections in volatile situations can be dangerous," says UNU researcher Edward Newman, co-editor of the new book *The UN Role In Promoting Democracy*, published by UNU Press and launched Monday Oct. 18. "They can exacerbate existing tensions, result in support for extremists or encourage patterns of voting that reflect wartime allegiances. An election will not of itself resolve deep seated problems, particularly in a society deeply traumatized by conflict.

"Experience shows that adding a national election to an already volatile political situation can be a recipe for escalating violence and continuing chaos."

According to contributor Benjamin Reilly of Australian National University: "The important issue is under what circumstances elections help to build a new democratic order and under what circumstances they can undermine democracy and pave the way for a return to conflict.

"Elections are a defining characteristic of democracy but the timing and method of electoral processes are critical. It is one of the perverse realities of post-conflict elections that this lynchpin of the democratic process can also be its undoing."

Reilly notes that variations in electoral procedures can play a key role in determining whether political competition evolves along extremist or centrist lines, and hence in developing moderate and broad-based political parties. Three main areas of variation are crucial influences on the shape of post-conflict politics in most countries.

Timing. Should post-conflict elections be held as early as possible, so as to fast-track the process of establishing a new regime? Or should they be postponed until peaceful political routines and issues have been able to come to prominence?

Election mechanics: Who runs the elections? How are voters enrolled? What electoral formula is used?

Political parties. Especially in cases of weak civil society, political parties are the key link between masses and elites and play a crucial role in building a sustainable democratic polity.

Reilly says elections had become an integral element of many United Nations peace-keeping missions over the past decade. "The reason is clear. The focus of most UN missions has shifted from pure peace-building to state rebuilding. . . in such cases elections provide a clear signal that the role of the international community may be coming to an end."

Despite the growth of this kind of electoral assistance since the end of the Cold War, elections have had mixed success in meeting the broader goals of democratization.

"In some cases, such as Namibia and Mozambique, elections clearly played a vital role in making a decisive break with the past. In others, such as Angola, flawed elections created more problems than they solved. And in Bosnia premature elections helped to kick-start the façade of democratic politics but also helped nationalist parties cement an early grip on political power."

Reilly says it is still too early to judge how elections have influenced the peace-building process in other post conflict societies such as Kosovo, East Timor and Afghanistan.

However, one of the most important lessons learned from recent UN missions is that imposing elections too early, while a country is still in conflict for example, can act as a catalyst for the development of parties and other organizations whose sole purpose is to help local elites gain access to power.

"In contrast to Bosnia, Angola and other countries, pressure to hold instant post-conflict national elections in Kosovo, East Timor and now Afghanistan has been resisted. Instead, a two-year period of political development has been used to prepare the ground for elections as part of the much longer process of democratization.

"Although questions remain as to whether even two years is time enough, there is now little doubt about the benefits of a more gradual approach," Reilly says.

In the final analysis, says co-editor Roland Rich, director of the Centre for Democratic Institution at Australian National University, the UN and other players must decide how to balance the impulse and pressure for democracy with local realities.

"Whatever the balance, promoting and assisting democracy in post-conflict situations is ambitious and sometimes hazardous," Rich says. "In examining the work of the United Nations in the field, the greatest pressure comes from the inescapable priority to assure a certain level of security before any efforts of democratization can take hold.

"Democracy needs a functioning state in which to operate and it needs security at least sufficient to allow a free and fair vote to take place. Where it is not possible to assure a workable level of security there can be no effective democratization process."

Other contributors to *The UN Role in Promoting Democracy* explore the methods, effectiveness and controversies surrounding the international body's work in promoting and assisting democracy and even question why the UN should be involved in this task in the first place.

One of the principal driving forces behind the UN's work in favour of democracy is its mandate to save succeeding generations from the scourge of war. The so-called democratic peace theory, supported by a study of wars over the past two centuries, concludes that while democratic states often go to war against non-democratic states, they generally remain at peace with each other. In fact, the study suggests that between 1816 and 1991, of the 353 pairings of nations fighting in major international wars, none occurred between two democracies. **17 October 04**

### **Knowledge may be hazardous to web consumers' health**

People who use their computers to find information about their chronic disease often wind up in worse condition than if they had listened to their doctor, according to a University College London (UCL) review of studies on internet health.

Using interactive computer tools does improve the medical knowledge of people with diabetes, asthma or other chronic conditions, and does provide them with positive feelings of social support, according to researchers reviewing 28 randomized controlled trials involving 4,042 participants. But there was no evidence that cyber-medicine helps people change their behavior and startling evidence that it may leave them in worse health.

"This whole finding confounds conventional wisdom," says lead author Dr Elizabeth Murray of UCL's Department of Primary Care and Population Sciences. The authors looked at studies that measured the effectiveness of Interactive Health Communication Applications (IHCAs) on people's information gain, feelings of social support, self-efficacy, behavior change and overall clinical outcomes.

IHCAs had a positive effect on people's information gain and feelings of social support; no effect on self-efficacy (the belief that behavior change is possible) or on actual behavior change; and a strikingly negative effect on outcomes.

Dr Murray said there are two possible reasons for the paradox between active knowledge-seekers and their seemingly worsening health.

One reason may be that when they learn of small, but important, statistical effects of a treatment they become less frightened and thus unmotivated to change the way they might if a doctor bluntly told a person with diabetes to control her sugar or face death. "But actually," Murray explains, "if you become more knowledgeable you realize it's all rather a long way off. They are less frightened and that reduces their motivation to be really strict in their control."

A second reason might be because knowledge-seekers become so steeped in information from the Internet they make treatment choices on their own, contradicting advice from their doctors. For instance, a diabetic person might be told by a doctor to lower blood sugar but decide, based on his own interpretation of data, that the short-term tradeoffs of not complying are worth the long-term risks.

"We found that people who use these things (IHCAs) had more sugar in their blood than those who didn't," Dr Murray said.

The researchers cannot explain the finding that the interventions had no effect on behavior change but nevertheless resulted in worse outcomes. Murray and her team conclude that more research is needed to fully understand the negative effect of interactive health applications on clinical outcomes and whether some computer health programs can be designed to improve them.

The review appears in the October issue of the Cochrane Collaboration, an international organization that evaluates medical research. Systematic reviews draw evidence-based conclusions about medical practice after considering both the content and quality of existing medical trials on a topic.

In this review, the definition of an Interactive Health Communication Application was a computer-based information source combined with one or more additional services, such as an on-line support group, chat room or tailored advice based on data provided by the user. Murray says, however, that some researchers "worry that the friends you make on computer are not right sort of friends, won't be there for you and may not be good for your social well being."

The authors suggest that other assumptions about interactive health care are flawed. For example, they say, "If knowledge was all that was needed to promote healthy behavior, smoking would not be as prevalent as it is." Further, well-informed health consumers may not, as expected, drive down the use of health care but may increase it by demanding specific and possibly more costly treatments.

The review bolstered previous conclusions that computer-assisted learning is at least as effective, if not more so, than traditional methods of conveying information. But the past studies did not yield evidence favoring or opposing computer health information as a means of achieving behavior change.

The authors caution that the results of this review are more important for policy rather than for practice, particularly in Western, highly developed health care systems although they should not yet be viewed as a method of cost-containment. .

**17 October 04**

## **Study confirms link between head and neck cancer and common Asian nut**

*Disease prevalence in Taiwan corresponds to increased production of betel quid, a nut common to Asia and infamous for its intoxicating effects upon chewing*

SEATTLE -- Over the past couple of decades, scientists have been perplexed by a substantial rise in the incidence of head and neck cancers among Taiwanese men. According to cancer statistics, the disease increased by 85 percent among men there from 1981 to 2000.

A new study, presented today at the American Association for Cancer Research Third Annual International Conference on Frontiers in Cancer Prevention Research, now suggests that the increased incidence may be linked to increased domestic production of a popular legal stimulant in Asia called betel quid.

"Recent findings have spurred a great debate about whether the government should curb the expansion of domestic betel quid cultivation," said Dr. Chiun Hsu, from the Department of Oncology, National Taiwan University Hospital. "It is our hope that these findings will prove helpful in shaping future public health policy on this issue."

Chewing betel quid, traditionally practiced in many parts of Asia and in Asian-immigrants around the world, can be likened to tobacco use in the states. It is often rolled like a cigar or intricately folded and generally consists of a betel palm leaf spread with lime paste (calcium hydroxide) wrapped around a slice of areca nut. Betel quid is chewed for many reasons, including for its stimulant effects, to satisfy hunger, to sweeten the breath, and as a social or cultural practice.

However, betel quid also is considered a nuisance in Asia where the reddish juice, generated by the act of chewing betel quid, can be found all over the ground and on public buildings. Also considered a major public health risk, it is believed to be a leading cause of mouth cancer in this part of the world.

In this study, researchers used the age-period-cohort (APC) model to examine the incidence trends for men and women in Taiwan of nasopharyngeal carcinoma versus head and neck cancer. The APC model was designed to estimate the relative effects of patient age, calendar year at diagnosis and patient birth cohort on the incidence trend of a specific disease. Age-specific incidences of nasopharyngeal carcinoma and head and neck cancer were plotted by calendar year at diagnosis and by birth cohort.

Data revealed that for head and neck cancers, the relative risk for men who were born in the 1972-1980 cohort is 45.67 compared with men born in 1932-1940, indicating a strong cohort effect. By contrast, the relative risk is 0.69 for nasopharyngeal carcinoma. A trend of positive period effect was recorded for head and neck cancer, whereas the period effect for nasopharyngeal carcinoma was not significant. The birth cohort effect indicates factors that may have different exposure levels in different birth cohorts and require prolonged time to manifest their effects on the body. Period effects, on the other hand, usually reflect factors that affect all age groups equally at a given period of time, such as introduction of new diagnostic or therapeutic techniques. The strong cohort effect for head and neck cancer was associated with a 6.85 fold increase in the domestic production of betel quid for the same time period, suggesting a strong correlation between betel quid usage and the incidence of head and neck cancer.

According to the World Health Organization, oral cancers are more common in parts of the world where betel quid is chewed. Of the 390,000 oral and oro-pharyngeal cancers estimated to occur annually in the world, 228,000 (58%) occur in South and South-East Asia. In some parts of India, oral cancer is the most common cancer. Striking evidence has emerged from Taiwan and China, where the incidence of oral cancer in men has tripled since the early 1980s, coinciding with a steep rise since the early 1970s and predominantly among men, in the practice of chewing betel quid. **17 October 04**