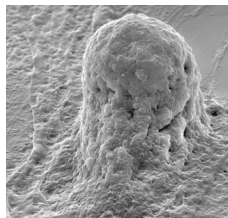


**MEDWIRES** ARE BRIEF SUMMARIES OF RECENT BREAKTHROUGHS IN HEALTH SCIENCE RESEARCH AT MCMASER AND AROUND THE WORLD.

New DNA sequencers track DNA polymerase as it adds fluorescent bases to synthesize DNA. Each base corresponds to a different colour that flashes when it is added into a DNA strand.

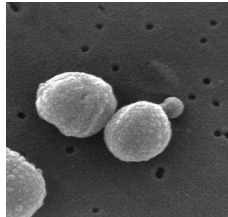


A recent study reveals that fast food consumers are not easily persuaded to change their high calorie choices. Researchers found no differences in consumer preferences before and after the display of nutritional information, thereby highlighting the addictive properties of popular fast food items.

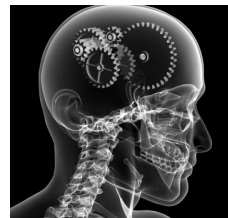


With an already massive and ever-growing store of knowledge on stem cells, scientists have begun exploring their potential usage in screening new drugs. By harvesting stem cells from individuals who suffer from genetic disease, researchers can now grow selectively defective tissues in vitro for testing purposes.

A novel imaging agent, florbetapir, may allow scientists to determine whether dementia is caused by Alzheimer's disease and may help diagnose Alzheimer's before onset of obvious symptoms such as memory loss.



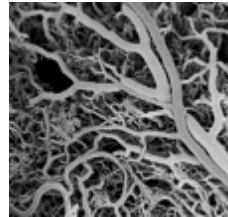
A vaccine for the pneumococcal virus will be released simultaneously in rich and poor countries without the 15 year lag period that developing countries normally experience. It is expected to prevent over 7 million deaths by 2030



An enzyme, protein kinase M (PKM), is implicated in long-term memory formation and may be used to treat diseases where long-term memory is lost. Conversely, blocking PKM may allow sufferers of Post Traumatic Stress Disorder to overcome traumatic memories.



The recent suicide of footballer Dave Duerson has brought renewed attention on chronic traumatic encephalopathy (CTE) in athletes. Duerson willed that his brain be left to the NFL Brain Bank for study. Scientists at the Brain Bank hope to use Duerson's brain for research on how to identify CTE before symptoms begin to manifest.



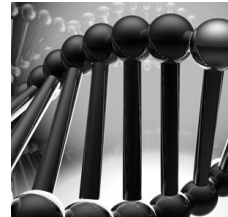
Dr. Shannon Dahl and her team have discovered a novel technique of synthesizing blood vessels for bypass surgeries using donor cells instead of the patient's own cells. This enables a whole library of blood vessels to be created and used in medicine on demand.



Oncology has taken another small step forward today with the characterization of the activity of a novel regulator of cancer development. SCF(FBW7) was shown to induce the destruction of a key protein associated with the development of several cancers.



A cure to diabetes may lie in harvesting spermatogonial stem cells. These can be converted into pluripotent stem cells that are able to differentiate into any cell type, and then implanted inside pancreatic islets where they differentiate into the insulin-producing islet cells



A single Daphnia, dubbed "The Chosen One" by the researchers involved, became the first crustacean to have its genome sequenced. Shockingly, Daphnia has a genome 8,000 genes larger than our own. 36% of these genes are uncharacterized and may be important for the field of environmental genetics.



When we see people move in ways we cannot, mirror neurons allow the brain to imagine ourselves performing that action. Thereafter, the brain's extrastriate body area allows us to predict that the action is indeed unrealistic.



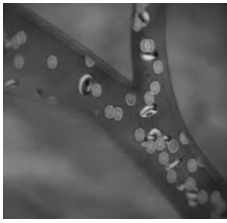
Researchers have visualized the B-adrenergic receptor, a key transport protein activated by many pharmaceuticals. An understanding of the structure of these proteins will aid in the discovery of new drugs for heart and lung disease.



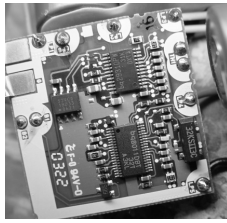
Soft drinks across Canada will soon be sporting a new look. Under the newly devised Clear on Calories initiative, major beverage manufacturers nationwide will be posting calorie counts on their packaging.



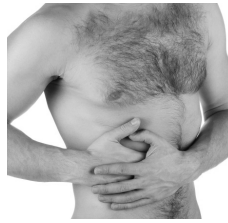
Genetically modified chickens have been developed that do not transmit the H5N1 strain of influenza to other birds. These chickens could help countries such as Egypt and Indonesia where this strain of influenza is widespread



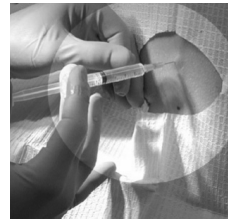
Microbubbles are emerging as a promising way to treat neurodegenerative disease. This technique involves creating perforations in the blood-brain barrier using bubbles of gas. The result is a significant increase in the effectiveness of CNS-targeted drugs



In 2007, Harvard researchers constructed a microchip that trapped cancer cells from blood samples. Johnson & Johnson has now teamed up with the researchers to further develop the chip for use as a cancer detector. If standardized as a blood test, this technique could increase the efficacy of cancer treatment and rate of recovery.



Scientists at Johns Hopkins University have discovered that pancreatic cancer appears almost 10 years after the first oncogenic mutations arise. This discovery challenges the belief that pancreatic cancers grow too quickly for screening to be effective.



Although often described as “putting a patient to sleep,” anaesthesia is, in reality, more similar to inducing a coma. The ethics behind anaesthetic procedures and the explanation offered to patients is currently under debate. Neuroscientists believe further research is required to model the nuances of the unconsciousness that develops.



During pregnancy, 10% of DNA found in the mother’s blood is from the fetus. Scientists have recently sequenced the first fetal genome, raising the possibility of non-invasive genome-wide screening for fetal genetic disorders.



A new study shows that groups of friends tend to be more genetically similar than average. However, the study only used 2 genes (DRD2 and CYP2A6) to test for similarity and hence, its validity is still questioned.



Researchers at Cornell University have developed a robot that uses a trial-and-error method to understand how its body was put together. This feature allows the robot to think for itself and adapt appropriately to novel situations. The ultimate aim is to elucidate how humans develop their sense of self-awareness.



Research at the US National Institute on Drug Abuse has implicated a group of neurons, the ventral medial prefrontal cortex (mPFC) neurons, in relapse to heroin addiction. Scientists found that reactivation of mPFC neurons after detox provoked drug-seeking behaviour in a rat model.



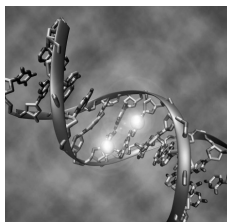
Scientists at the University of Tuebingen, Germany recently became the first to partially restore eyesight in humans using an artificial eye implanted subretinally. Although external cameras have been used to achieve similar results, the subretinal approach requires less processing of received images.



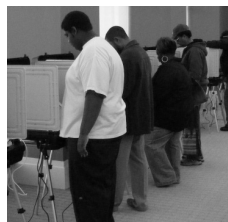
Many observational studies demonstrate a link between high vitamin D intake and reduced risk of chronic disease. However, upon review of randomized controlled trials, the Institute of Medicine has advised physicians that vitamin D supplements are unnecessary and potentially detrimental to one’s health.



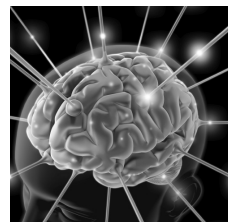
The perceived value of empathy in patient-doctor communication has led to the development of courses that attempt to teach empathy to medical residents. However, a recent ethics research paper suggests that the importance of empathy is simply assumed and that it is not a necessary component of good medical practice.



Research into adult stem cells has recently suffered a setback. Adult stem cells have been found to differ in DNA methylation patterns compared to their embryonic counterparts, indicating that they may not be suitable for modelling or treating disease.



In a recent study on voting behaviours, researchers found that students who conversed with volunteers that mimicked their body language were more likely to vote for a leftist party if an election was held at that moment. These findings suggest imitation may initiate feelings of empathy and compassion, resulting in a prosocial viewpoint.



The protein hormone, insulin-like growth factor II (IGF-II), has been shown to enhance memories and memory retention when injected into the hippocampus of rats, highlighting the key role of IGF-II in memory processes.



The season in which a baby is born may have a bearing on their life-long health. Mouse pups raised in winter sunlight conditions developed defective biological clocks. In humans this could translate into disorders such as schizophrenia or depression