

Australia

Sunlight Found to Affect Serotonin Levels

Researchers from the Baker Heart Research Institute in Melbourne has reported recently that the mood changes many people experience during winter with short daylight have a physiological impact in the brain.

In a recent issue of *The Lancet*, the researchers report that concentrations of a chemical messenger, serotonin, in the brain fluctuate proportionally to the amount of sunlight.

This chemical has been linked to depression and the findings have demonstrated the importance of serotonin in seasonal affective disorder, sometimes simply called the winter blues.

The report cites other evidence about the role of serotonin in the disorder, including improvements that patients experience when they are given antidepressants that affect serotonin.

In addition, autopsy studies have shown that serotonin levels are lowest in the winter. However, no evidence of seasonal serotonin changes in samples of spinal fluid has been reported in the past.

This study was performed on a hundred volunteers, age between 18 to 79, with a different approach whereby jugular veins (closest to the brain) blood samples collected at different times of the year were used. The volunteers were described as healthy and with no history of psychological problems.

The levels of serotonin and other brain chemicals were correlated with a range of weather data, including temperature, air pressure, rainfall and sunlight. Only sunlight appeared to play a role, the study found. Serotonin levels were lowest in the three months of winter, but varied depending on how bright any given day was.

The researchers wrote, "Our findings are further evidence for the notion that changes in release of serotonin by the brain underlie mood seasonality and seasonal affective disorder."

The researchers noted that serotonin levels are independent of the weather from the day before, suggesting that the brain quickly adjusts to each day's level of sunshine. They also said that they did not know whether patients predisposed to the disorder reacted to sunlight in the same way that healthy people did. 🌞

Brisbane Researchers to Lead Study on HPV Skin Cancer Link

Prof. Adele Green, from the Queensland Institute of Medical Research (QIMR) located in Brisbane, will lead an international study on the possible correlation between skin cancer and a virus known to cause cervical cancer.

Prof. Green, will work with researchers in Europe on a two-year study of 600 people in Brisbane, Rockhampton and Townsville of Australia

The project will test the hypothesis, already peer-reviewed in Europe, that exposure to sunlight may suppress the immune system enough to allow Human Papilloma Virus (HPV) carried on the skin to cause non-melanoma skin cancers.

HPV has already been shown to cause cervical cancer and researchers are developing vaccines against it.

Health Minister Senator Ms. Kay Patterson announced A\$300 000 (US\$172 610) in National Health and Medical Research Council funding for the Queensland arm of the project.

QIMR director Prof. Michael Good said that QIMR was recently awarded a grant of A\$1.4 million (US\$0.8 million) from the Australian Cancer Research Foundation. This would pay for new equipment.

The annual NHMRC funding for Prof. Green's study comes as part of an Australian-European Union agreement, and will double in three years to a total of A\$12 million (US\$6.9 million) next year. This is to allow Australian scientists to work jointly with their European counterparts.

The center is already working on new cancer therapies and Q-Pharm, a joint initiative with the University of Queensland, will start its first clinical trials of new drugs in the new year.

Ms. Patterson said that statistics gathered by the National Cancer Control Initiative showed that 315 000 cases of non-melanoma skin cancer were diagnosed in Australia last year. Men were more likely to develop it than women.

Ms. Patterson said, "Non-melanoma skin cancer is one of the most commonly diagnosed cancers in Australia."

Prof. Green led the world's largest community-based skin cancer study which proved the rate of squamous cell carcinomas was significantly reduced in people using daily sunscreen.

Besides, Adele has also participated in several studies responsible for raising awareness of likely cancer causes. One of the most recent studies found that women who smoke have a 50 percent higher risk of ovarian cancer than those who do not smoke.

Prof. Green was also involved in a study, which found that talcum powder use increased the risk of women getting ovarian cancer. ●

China

China Develops its First Automatic Biochemical Analyzer

The Changchun Institute of Optical Devices and Physics has recently developed an automatic biochemical analyzer based on its own technology.

The analyzer, a medical measurement instrument commonly used in clinical treatment, is the first of its kind developed from Chinese technologies as the result of a research program carried out since 1999 by the institute under the Chinese Academy of Sciences (CAS) and the Ministry of Science and Technology.

Automated biochemical analyzer is an efficient medical diagnostic device, with multiple functions, capable of providing prompt data indicating the condition of a patient's blood, heart and liver. Although widely used in western countries, it is only affordable by large Chinese hospitals due to its high price.

The institute will be introducing this Chinese product at an affordable price in order to enter the world's medical biochemical analyzer market, which has always been dominated by American and Japanese companies.

This launch of this product has a potential to yield a turnover of 100 million yuan (US\$12.4 million) by the year 2005. The institute has already begun production to meet rising local demand. ●

Hepatitis Biochip Marks Breakthrough in China

China's Ministry of Health and the State Drug Administration (SDA) have selected progress in hepatitis treatment as one of the top ten China medical breakthroughs in 2002

Chinese scientists have successfully developed a biochip that can quickly detect the virus that causes hepatitis C. According to Prof. Wang Shengqi, who led a team of researchers from the Chinese Academy of Military Medicine, this silica-origin protein chip is more accurate in detecting the hepatitis C virus in blood samples than the method of enzyme-linked immunoadsorbent assay (ELISA).

In October, SDA had approved this hepatitis C detection kit for marketing. Beside making an impact upon the epidemics of hepatitis C at a national level, this kit will also boost the local biochip industry.

About 40 million people in China, or around 3.2 percent of its population, are infected with hepatitis C, mainly through contaminated blood transfusion, reported by the Shenzhen-based Yishengtang Biological Products Co. Ltd., the company that developed the biochip.

China also has high incidence of hepatitis B, affecting nearly ten percent of its population. About 25 percent of the hepatitis B patents are likely to develop chronic hepatitis B. ●

Chinese Scientists Successfully Breeds Ten Pandas in 2002

Chinese scientists succeeded in breeding ten giant pandas, one of the endangered species in the world, in 2002.

Last spring, there were four baby pandas born via natural or artificial insemination at the China Giant Panda Breeding and Research Center in Wolong, southwest China's Sichuan Province, and all have survived, said Prof. Zhang Anju, director of the Giant Panda Breeding Technology Committee.

At the Chengdu Giant Panda Breeding and Research Base and Chengdu Zoo, five of ten mated

pandas gave birth to six babies of which four survived. Two more pandas were born in Chongqing and Japan last year. China owns the baby panda born in Japan.

Giant pandas, the world's oldest and most endangered species, often encounter difficulties in mating and pregnancy, and suffer high infant mortality when in confinement.

China began artificial breeding of giant pandas in the 1960s. Since then, scientists have solved key problems in mating, pregnancy and survival. In the past five years, 78 giant pandas were bred artificially, of which more than 50 have survived.

Some 1000 giant pandas are living in the wild, scattered in the mountains of Sichuan, Shaanxi, Gansu and Qinghai provinces.

According to forestry authority statistics, about 110 giant pandas are raised in artificial environments throughout the world. 🌍

Hong Kong

Damaged Hearts Treated with Stem Cells

A team from the University of Hong Kong's department of medicine has recently claimed a world-first in treating heart attack patients using transplanted stem cells from bone marrow.

The procedure — which can be performed under local anesthetic in a day — has helped relieve symptoms and rebuild muscle tissue damaged by heart attacks in nine patients.

The research as outlined in the international medical journal "The Lancet" claims to provide the first human evidence that bone marrow stem-cell transplantation can regenerate damaged cells.

Heart disease is Hong Kong's second common killer, accounting for 20 000 admissions to hospital every year while resulting in about 3300 deaths.

Stem cells come from the patient's own marrow so there is no risk of rejection. Survivors usually suffer disabling symptoms because of tissue damage that affects blood flow to the heart. These include chest pain and breathlessness, which can result in poor quality of life.

The new procedure involves harvesting stem

cells — types of cells present in bone marrow capable of developing into different kinds of tissue and muscle — from the patient and then transplanting them directly into the damaged heart tissue via a special catheter.

The researchers claimed all the patients who took part in the study failed to respond to traditional methods and surgical procedures. After the stem cell transplant, all had strikingly improved blood flow to the heart and heart functions.

A/Prof. Hung-Fat Tse said that because the stem cells came from the patient's own marrow, there was no risk of rejection. Being a day-case procedure, it also avoided the risks of open-heart surgery.

"We have demonstrated that catheter-based technology percutaneous delivery of the patient's own bone-marrow stem-cells into the heart muscle for blood vessel regeneration is a safe and feasible procedure in coronary heart diseases not amenable to medical or interventional therapy." Prof. Tse added.

Further research involving more patients is ongoing. 🌍

India

Genetically Modified Potatoes to Combat Malnutrition

A team of Indian scientists at the Jawaharal Nehru University in New Delhi has recently developed a genetically modified (GM) potato, called "protato".

The AmA1 gene from the aramant plant, native to South America and sold in Western healthfood stores, was added to the GM potato, which causes it to produce one third more protein and substantial amounts of essential amino acids.

The Indian government is keen on using GM potatoes to solve malnutrition problems among India's poorest children. The use of GM potatoes forms part of a three-pronged approach (which includes providing clean water, better food and vaccines) contained in a 15-year plan to tackle malnutrition and reduce childhood mortality in India.

Dr. Govindarajan Padmanaban, a biochemist at the Indian Institute of Science in Bangalore, who

outlined the plan at a recent meeting of the Royal Society in London, said that he hoped Western-based environmental groups and charities would not demonize the GM potato as they did to AstraZeneca's "golden rice", a strain modified to create more vitamin A.

"The requirements of developing countries are very different from those of rich countries. I think it would be morally indefensible to oppose it," said Dr. Padmanaban.

The protein rich "protato" is still in its final stages of testing, and will be submitted for approval soon.

Mr. Siddharth Deva, policy advisor for south Asia for the British-based charity Oxafam, welcomed the GM potato with caution. He called for GM crops to be independently assessed by panels of experts so as to avoid any adverse environmental implications. 🌱

Japan

Japan to Start Genetic Data Project

The Japanese government will start building a bio database that consolidates genetic information from blood samples later this year. It is hoped that this will eventually help create customized medication and determine the side effects of drugs.

The database project will draw blood samples from 300 000 people afflicted with "lifestyle-related" diseases such as high blood pressure, diabetes and cancer.

The blood sample databank will address the fact that while people lead similar lifestyles, some can be more susceptible than others to certain diseases. Also, genetic analysis will determine why certain drugs are more effective treatments for some people, but not for others.

The way people respond differently to medicines is believed to be due to subtle differences in SNPs (single nucleotide polymorphisms), the most common form of DNA sequence variation.

Blood samples will be taken (with the approval of the participants and their hospitals) and sent for testing for the relationships between diseases and SNPs. The issue of confidentiality is ensured by the use of encrypted IC cards that will store each participant's data securely. From the genetic information, researchers will seek ways

to determine the effects of drugs or radiation, and will look for genetic characteristics that are susceptible to certain diseases. This information will be used to create tailor-made treatments for individual participants.

Similar bio data collection projects are already under way in countries like the US, Britain and Singapore.

This blood sample collection project is one of the three biotechnology programs to be undertaken by the Japan Ministry of Education, Culture, Sports, Science and Technology in the fiscal year of 2003 with the aim of propelling Japan to the forefront among advanced countries in life science research.

Japan will also engage in regenerative medicine research, using stem cells from umbilical cord blood to produce tissue and restore organ functions lost due to injury or disease.

The third project is the creation of cell-by-cell computer simulation of the functions of primary organs, such as the heart and liver, to determine how diseases occur and how medicines work to combat them. 🌱

Japanese Researchers Link Kidney Disease to Rat Virus

Eight people living in the Kinki and Chugoku regions in Japan who received dialysis for chronic renal insufficiency were found to have been infected with the Hantaan virus, which is carried by rats, according to the Health, Labor and Welfare Ministry's research division.

The virus causes acute kidney disorders, but the research division said that it suspected the virus might also trigger chronic renal insufficiency, with which it had not been associated until now, and called for the extermination of rats.

The research is the first to compare the living environments of dialysis patients with those of disease-carrying rats. It was conducted on 530 patients who received dialysis in 2000 or 2001, selected at random from eight hospitals in the Kinki and Chugoku regions.

The research division took blood samples from the

patients and tested them for Hantaan virus antibodies, the presence of which would indicate the patient had been infected by the virus.

Humans are infected by the Hantaan virus by inhaling the airborne virus from dried feces or when bitten by an infected rat, but the virus does not spread between humans. Those infected by the virus exhibit symptoms such as fevers and headaches, but also can develop a condition called hemorrhagic fever with renal syndrome, in which a build-up of poisonous gases inside the body causes acute kidney disorders and other health problems.

The research division, therefore, is focusing its attention on these findings, as they believe some victims of chronic renal insufficiency have been affected by the Hantaan virus.

The research is the first to compare the living environments of dialysis patients with those of disease-carrying rats. The virus caused an epidemic in Osaka in the 1960s, when 120 people were infected, two of whom died.

The virus caused an epidemic in Osaka in the 1960s, when 120 people were infected, two of whom died. At the time, the cause of the epidemic was unknown and the disease was referred to as "Umeda fever." However, after the virus was identified in South Korea in 1976, an inspection of preserved blood samples of Umeda fever victims revealed they had indeed been infected by the Hantaan virus.

Since then, a worker who handled domestically bred research rats was killed by the virus in 1981, but there have been no reports of infections in open environments since the Osaka epidemic.

Dr, Yasuhiro Yoshikawa, a Tokyo University professor and chief researcher in the research division, said, : "Now that we have determined some dialysis patients live and work where rats carrying the virus also live, we will need to ascertain whether the virus triggers chronic renal insufficiency. We have currently expanded our research to cover eastern Japan to try to identify similar cases." 

Singapore

Researchers Achieve Diagnostic Breakthrough Using Optical Fiber

A portable diagnostic device has been developed by Singapore scientists, which will enable doctors to assess patient's susceptibility to diseases such as stroke and Alzheimer, within minutes.

A Nanyang Technological University (NTU) research team, under the leadership of A/Prof. Lim Chu-Sing, deputy director of Biomedical Engineering Research Center, has developed a portable diagnostic kit, which reduces conventional diagnostic procedures time frame.

The device essentially consists of optical fibers coated with various chemicals that will stain the bacteria, allowing the fibers to function as bio-sensors for the detection of tiny quantity of bacteria.

According to Dr. Chan Yew Weng, clinical A/Prof. and senior consultant at the Department of Anesthesia and Surgical Intensive Care, Singapore General Hospital (SGH), the device is capable of differentiating mutated bacterial strain from normal flora.

The tailor-made device has also been shown to be capable of isolating antibiotic-resistant strains from non-resistant bacterial pool, using specimens collected from the SGH Intensive Care Units, reducing routine three-day procedures to minutes. The hospital is collaborating with NTU to create database containing information on bacteria and proteins for the fibers.

Dr. Chan is very excited about the diagnostic kit that can attain a high level of accuracy and sensitivity. From patients' perspectives, prompt treatment will be made possible, even in remote location, while healthcare workers can anticipate reduced level of occupational health hazard.

The device may be calibrated for applications in the domain of other clinical conditions. For example, the routine diagnosis procedures for Alzheimer involves consultation, brain scan and a set of several tests, and may take more than one day. It is found that Alzheimer sufferers exhibit different protein structures such as beta-amyloids, which are absent in the nose of normal human subjects. These beta-amyloid form fragments and abnormal structures, termed as "amyloid plaque", suspected to be the key factors for observed brain cells destruction. The device may be tailor-calibrated

accordingly, hence disclose susceptible patients to doctors, and early treatment could be made possible.

Associate Prof. Lim said that the device could be modified for studying level of bacterial activity, severity of disease as well as the disease's progress. The team is also targeting at stroke, a condition that has been ranked as the third most common killer of Singaporeans after cancer and heart diseases, and a major cause of disabilities, with an estimated 9000 case per year. 🌐

Alternative Medicine

China

Xiamen TCM Company Launches New Product

Xiamen Traditional Chinese Medicine Co. Ltd. has recently announced the development of a new product, Xin Huang Pian, a traditional medicine that can relieve pain and inflammations.

"The product is used for the treatment of inflammations involving rheumatoid arthritis, acute jaundice hepatitis, cholecystitis, injury and unknown pyogenic infections," said Mr. Qiang Shifa, general manager of the company, "It can also clear inflammation and relieve the pain of tumors or inflammations of the esophagus and cardia, relieving the symptoms of pharyngeal obstruction."

Xin Huang Pian is produced from natural ingredients including Calaulus Bovis, Pulvis Fellis Suis, Pearl Shell Powder, Urena Lobata, Sarcandra Glaber, Radix Pseudoginseng and Amylum.

Founded in 1965, Xiamen Traditional Chinese Medicine Co. Ltd., a Good Manufacturing Practice (GMP) certified company approved by China's State Drug Administration (SDA), is engaged in the research and development of new types of patented traditional Chinese medicines and healthcare products.

It produces more than 40 kinds of traditional Chinese medicine and healthcare products. The company also sells and promotes its products to Europe, Japan, Southeast Asia, and the US. 🌐

Education

Japan

New Biotech University to Boost Japanese Biosciences

A new university that specializes in bioscience and biotechnology will open in April 2003 in Nagahama, Shiga Prefecture, as part of the Japanese government's efforts to further develop its bio-related industry.

Named the Nagahama Institute of Bioscience and Technology, the tertiary institute will not only train people in advanced biotech knowledge and skills, but also help generate new bio-related businesses.

The Shiga Prefectural Government and the Nagahama Municipal Government, both of which had been seeking ways to revive the local economy, gave their full support to the setting up of the university. The university will be located on a four hectare plot within the 12.5 hectare Bioscience Park, which was developed by the city of Nagahama.

In bioscience and biotechnology, Japan is far behind other industrialized nations in terms of having people with expertise who are also able to apply it to business. The new university will provide education and training with emphasis on research that can be applied in the real business world.

Mr. Tamotsu Yoshida, chairman of the board of trustees of a foundation preparing to set up the school, said, "In the rapidly evolving field of bioscience and biotechnology, Japan is far behind other industrialized nations in terms of having people with expertise who are also able to apply it to business. I hope the new university will help improve the situation."

Mr. Yoshida said that the university will provide education and training with emphasis on research that can be applied in the real business world. The study of "bio-informatics," which unites information and bioscience technologies, will also be offered.

The university plans to promote cooperation with overseas universities, including Beijing University and Stanford University.

The success of the school success largely depends on