

MEDPULSE

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Coming Soon: A Psychedelic Prescription CANADA | October 2022

Alberta is the first province in Canada to introduce therapeutic regulations for psychedelic drugs: a class of psychoactive substances that alter perception, mood, and cognition. While many of these drugs—such as magic mushrooms or LSD—remain illegal in Canada, new policies would allow physicians and researchers to utilize them for special interventions, clinical trials, and other specific circumstances. While it is still unclear which individuals would be eligible for prescribed psychedelics, doctors believe that treatment could best address post-traumatic stress disorder, anxiety, and opioid addictions. However, psychedelics remain a risky drug; the government will require medical professionals to apply for a license and supervise patients for the duration of the drugs' effects. Despite this, there remains optimism in the potential of psychedelics in the future of healthcare.^{3,4}



Maple Tree
(Canada)

Unsuspecting Risk Factor for Inflammatory Bowel Disease USA | October 2022

As rates of inflammatory bowel disease (IBD) rise, investigators at Harvard University are searching for environmental causative factors. The investigators uncovered a positive correlation between a common herbicide, propyzamide, and intestinal inflammation. They found that propyzamide impacts anti-inflammatory signalling pathways involving dendritic cells and T lymphocytes. Although propyzamide is used on crops and athletic turfs, the pathogenesis of IBD remains unclear and researchers emphasize that more work is required to confirm the correlation.^{5,6}



English Oak
(USA & Germany)

Molecular Structure of B-Cell Antigen Receptor GERMANY | October 2022

Researchers at the University of Freiburg have published the exact three-dimensional structure of an IgM-class B-cell antigen receptor (BCR). The BCR consists of a membrane-bound immunoglobulin molecule and two smaller proteins (Ig- α and Ig- β) responsible for signal transduction. The nature of the connection between these elements was previously unknown.¹¹ Using cryo-electron microscopy, researchers revealed that the Ig- α and Ig- β chains are bound to the immunoglobulin on only one side, forming an asymmetrical complex similar to that of the T-cell receptor. They also discovered conserved amino acids on the surface of the BCR, suggesting that the receptor is part of a larger complex.¹² These findings help explain the quiescent behaviour of the BCR. Continued study can help develop therapies against BCR-mediated diseases.

Therapeutic Resistance Mechanism Inhibited in HER-2 Positive Breast Cancer SPAIN | June 2022

Researchers at the Hospital del Mar Medical Research Institute have discovered how to overcome treatment resistance in an aggressive form of breast cancer. In human epidermal growth factor receptor 2 (HER2)-Positive Breast Cancer, tumours are enclosed in fibroblast-saturated microenvironments, in which fibroblast activation protein (FAP) shields tumours from immune cells. Researchers have shown that targeting fibroblast-expressed FAP molecules via immunotherapy can suppress treatment-resistance in microenvironments, restoring the effectiveness of several drugs. These findings may guide the design of future clinical trials, highlighting the importance of precision oncology in translational medicine.^{13,14}



Evergreen Oak
(Spain)

**The Push for Nutritional Education
 UK | October 2022**

Aston University and the Association of Nutrition have designed a new nutritional education program for medical students in Britain. The curriculum illustrates the importance of nutrition in health and disease. The developers hope to highlight the connection between nutrition and other systems —something that is not explored within the few hours of nutrition education in medical training. Such a program will ensure that doctors can provide more holistic treatment to their patients. Students can look forward to learning content guided by thirteen key nutritional competencies, facilitated through educational activities and practical-skills workshops.^{9,10}



English Oak
 (UK)

**'Eye-Opening' Therapy for Depression and Dementia
 HONG KONG | August 2022**

According to the University of Hong Kong, non-invasive electrical stimulation of corneal surface can alleviate depression-like symptoms and improve cognitive function in animal models. Transcorneal electrical stimulation (TES), when used in rat models of retinal degeneration, induces antidepressant-like effects through neurogenesis-independent and -dependent mechanisms.^{15,16} One hallmark of Alzheimer's disease is the presence of beta-amyloid deposits in the hippocampus. Findings show that TES reduces these deposits and improves memory. This study warrants further investigation of TES as a potential treatment for cognitive dysfunction in patients with depression and/or dementia.¹⁷



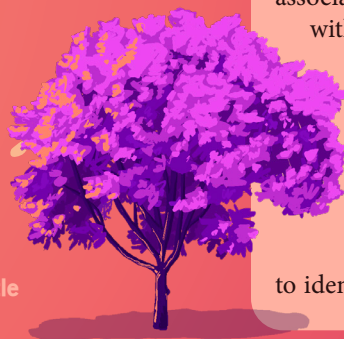
Orchid Tree
 (Hong Kong)



**Genetic Link Between Alzheimer's Disease and
 Gastrointestinal Disorders
 AUSTRALIA | July 2022**

A study from Edith Cowan University uncovered significant genomic overlaps between Alzheimer's disease (AD) and gastrointestinal tract disorders (GIT). Analysis of existing genome-wide association studies uncovered that genes associated with metabolism and autoimmunity increase susceptibility to AD and GIT. Findings also revealed a significant, positive correlation between the diagnosis of AD and gastroesophageal reflux disease and irritable bowel syndrome.¹ Though observational studies have long suggested a relationship between the two, this publication is the first to identify the specific loci shared by AD and GIT.²

Golden Wattle
 (Australia)



**A Worm's Perspective on Human Aging
 SINGAPORE | September 2022**

Roundworms may be an asset in the future of aging research, according to Nanyang Technological University's discoveries regarding roundworm longevity. Researchers found that inciting a stress response in mature worms via a high-glucose diet results in longer life spans compared to a normal diet, an effect that is reversed in younger worms. Scientists focused on the unfolded protein response, which removes problematic unfolded proteins formed during periods of stress. Although the response runs normally in juvenile worms, inducing stress exacerbates the mechanism and shortens their lifespan. However, when the response slows significantly in older roundworms, the high-glucose diet returns the mechanism to normal speeds. Further studies are needed to understand the biology behind the observed effects of a high-glucose diet.^{7,8}



Tembusu (Singapore)