

## **A Gut Feeling about Pain and Childhood Stress**

Stress, especially that occurring in early life and childhood, is a major predisposing factor to developing pain symptoms associated with Irritable Bowel Syndrome according to a study by UCC scientists to be published in the prestigious academic journal *Gastroenterology* in June.

Irritable bowel syndrome (IBS) is the most common functional gastrointestinal disorder referred to gastroenterologists. It has an unknown cause and is characterized by gastrointestinal dysfunction and abdominal pain. Research in the NeuroGastroenterology group of the Alimentary Pharmabiotic Centre (APC) at UCC is focused on understanding the mechanisms underlying brain-gut communications in gastrointestinal disorders such as IBS.

Dr John Cryan and Professor Ted Dinan and their colleagues have unravelled a novel mechanism underlying how such early-life stress can alter the levels of a specific protein involved in controlling the amount of chemical glutamate which transmits nerve impulses in the spinal cord. If there is too much glutamate pain signals can occur. Decreased levels of the glutamate transporter, which normally mops up excess glutamate, results in an increased level of glutamate which contributes to the increased experience of abdominal pain seen in IBS patients. The researchers then used the drug riluzole which is used clinically in the treatment of motor neuron disease, to activate this protein and reverse these effects.

Dr Cryan, who is a Senior Lecturer in the School of Pharmacy and in Department of Pharmacology & Therapeutics, says “we are very excited about these data as they give fundamental insight into the molecular mechanisms underlying visceral pain and clearly identifies the spinal glutamate transporter as a possible therapeutic target in disorders such as IBS where there is an immense medical need. The ineffectiveness of current medications against pain in IBS can be in part attributable to our lack of knowledge regarding the chain of events generating pain and this remains an ongoing challenge for the pharmaceutical industry” Dr Cryan says.

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The research was co-authored by APC researchers at UCC, Dr Romain-Daniel Gosselin, Richard O’Connor, Dr Monica Tramullas and Dr Marcela Julio-Pieper

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Ireland and industry partners. The APC, a partnership between University College Cork and Teagasc, the Irish Agriculture and Food Development Authority, focuses on research in gastrointestinal health. Pharmabiotic is a neologism devised by the APC to represent any material (including molecules and microbes) originating from the gut ecosystem that can be exploited for a health benefit, and includes probiotics, prebiotics, metabolites, and potential new anti-microbials and anti-inflammatories.