



Pain Research Institute

This is the Pain Research Institute newsletter, the purpose of which is to keep researchers and clinicians informed of the current research going on in the institute. We hope this will enable clinicians to identify areas of research that they may be interested in whilst keeping informed about studies opening to recruitment as they may have pain patients they wish to refer.

PRI's Dr Andrew Marshall's new paper Pain Signaling in Humans: A superfast Highway to the Brain Discovered

Pain signals can travel as fast as touch signals, according to a new study from researchers at Liverpool John Moores University's SomAffect Group (somaffect.org), Linköping University (Sweden), and the National Institutes of Health (USA). The study has been published in the scientific journal *Science Advances*. Using a technique to record nerve signals from single nerve cells in awake human participants (microneurography), we now know that humans, in line with most other mammals, are equipped with ultrafast 'pain' neurons (nociceptors) that signal as fast as touch nerves that have a thick layer of myelin. Further, testing in patient groups with rare neurological deficits corroborated the role of this system in pain perception. The discovery will require a rethink of current models of chronic pain. The study is an international collaboration funded by, among others, the Pain Relief Foundation, Swedish Research Council, ALF Region Östergötland, and the Intramural Research Program of the NIH (NCCIH). Full article available using the following link-
<https://advances.sciencemag.org/content/5/7/eaaw1297>

Dr. Andreas Goebel, Reader in Pain Medicine & Director of the PRI



Francis McGlone, Professor in Neuroscience, School of Natural Sciences & Psychology, Liverpool John Moores University



Dr. Bernhard Frank, Consultant in Pain Medicine and Anaesthesia
Walton Centre NHS Foundation Trust



Selina Johnson, Pain Specialist Physiotherapist



Manohar Lal Sharma, Consultant in Pain Medicine, Walton Centre NHS Foundation Trust



Andy Marshall, Senior Lecturer and Honorary Consultant at Walton Centre



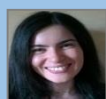
Francis O'Neill, Senior Lecturer and Honorary Consultant in Oral Surgery



Helen Poole, Reader in Applied Health Psychology, Liverpool John Moores University



Serena Sensi, Research Technician at the Rheumatology Laboratory, University Hospital Aintree



Hannah Twiddy, Specialist Clinical Psychologist & Research Lead for Pain Management Programmes



Hayley McCullough, PRI Administrator





Promising treatment option for Complex Regional Pain Syndrome

PRI researchers have found a potential treatment for patients with Complex Regional Pain Syndrome (CRPS).

CRPS is a severe post-traumatic pain condition affecting one or more limbs and is associated with regional pain and sensory, bone and skin changes. The causes of CRPS, however, are yet to be fully understood.

Approximately 15 percent of patients with CRPS still have symptoms one year after onset that severely impact their quality of life. For these patients, prognosis is often poor and drug therapy for pain relief is rarely effective.

A team of international researchers, led by PRI Director Dr Andreas Goebel, conducted a study to better understand the immunological causes for CRPS.

The researchers examined antibodies in the serum of these patients to ascertain the potential role of these proteins for causing the condition; they were particularly interested to assess 'neuroinflammation' - antibody-induced raised levels of inflammatory mediators such as Interleukin 1 (IL-1) in either peripheral tissues or brain.

IL-1 is known to normally induce local and systemic body-responses aimed to eliminate microorganisms and repair tissue damage. However, an increasing number of clinical conditions have been identified in which IL-1 production is considered inappropriate and IL-1 is part of the cause of the disease.

The researchers transferred antibodies from patients with long-lasting CRPS to mice and found that these antibodies consistently caused a CRPS-like condition. An important element of 'transferred CRPS' was glial cell activation, a type of 'neuroinflammation' in pain-related parts of the mouse brains. The team then discovered that 'blocking' of IL-1 with a clinically available drug, 'anakinra' helped to both prevent and reverse all of these changes in the animals.

Also involved in this study were researchers from the University of Pécs (Hungary), University of Budapest (Hungary), University of Manchester, University of Sheffield and The Walton Centre National Health Service Foundation Trust.

Dr Andreas Goebel, said: "Our results support previous clinical observations that patients with persistent CRPS should respond to immune treatments with a reduction of at least some of their disease features.

"This approach has attractive therapeutic potential and could also have a real impact on the treatment of other unexplained chronic pain conditions; we plant now to apply for funds to test the effect of this and similar drugs in patients with CRPS."

The full study, entitled 'Transfer of complex regional pain syndrome to mice via human autoantibodies is mediated by interleukin-1-induced mechanisms', has now been published in the prestigious journal 'Proceedings of the National Academy of Sciences of the United States of America' (PNAS).

To publish a story in our newsletter please contact Hayley.McCullough@Liverpool.ac.uk

Research Studies... a few to mention

- **Investigating Diabetic Neuropathy During Initiation of Intensive Glycaemic Control**
- **The Utility of Non-Invasive Ocular Imaging in Diabetic Foot Disease**
- **A Multicentre, double-blind, centre-stratified multi-period crossover trial to evaluate the efficiency of the Optimal Pathway for Treating neuropathic pain in Diabetes Mellitus (OPTION-DM)**
- **Pain Relief Foundation Studentship**-A study looking into validity of confocal corneal microscopy in patients with painful chemotherapy induced and idiopathic small fibre neuropathy.

For more information on all of the above studies please contact the Principal Investigator on Ualam@Liverpool.ac.uk

- **Serum IgG autoantibodies in patients with Fibromyalgia**-We require 100 patients with a diagnoses of FMS (>1year), without other conditions, we will be collecting blood to be used in laboratory experiments. Principal investigator at andreasgoebel@rocketmail.com
- **Doctorate Clinical Psychology trainee project**- 8 participants post PMP who may not have shown significant change. It is hypothesised that those who do not respond well to Cognitive Behavioural based intervention may respond better to therapy such as PIT. Principal Investigator Hannah.Twiddy@thewaltoncentre.nhs.uk
- A study for long term benefit of Spinal Cord Stimulator –Principal Investigator Bernhard.frank@thewaltoncentre.nhs.uk



BNA Christmas Symposium 2019 - Pain, Pleasure and the Agony of Christmas

Bush House, King's College London - Monday 16th December 2019

In collaboration with King's College London

The day will start by giving delegates a 'grand tour' of pain, from its place in our history and culture, through the molecular neuroscience of nociception, the neural circuitry involved, the clinical challenge of managing pain, and the latest treatments available.

We will go to explore strange pains: phantom limb pain, congenital lack of pain, the placebo effect and the curious relationship of pain with pleasure.

Finally, Professor Irene Tracey will bring together all the components of the symposium in a plenary session and panel discussion.

For Full details please see www.bna.org.uk

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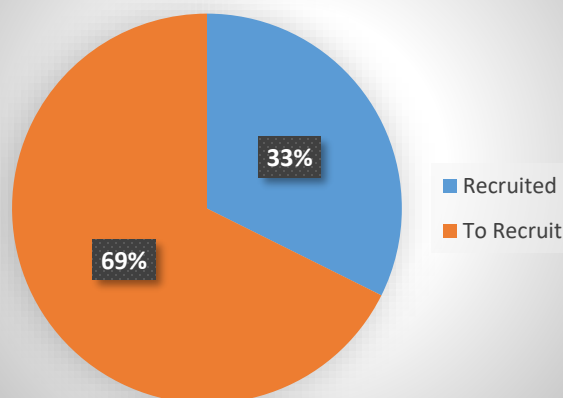
Recruitment now 1/4 of the way in APIF study

Back in April 2019 we published an article on Autoimmunity-informed Phenotyping In patients with Fibromyalgia syndrome (APIF)

We are pleased to say we are now well on our way with the study and have successfully recruited 33% of our target.

Although we still have a fare way to go we are confident we will continue to reach our target numbers. Please see PRI webpage for more info

Recruitment Chart



Pain Relief Foundation Social Group

Do you fancy a chat & a cuppa with those who also suffer with chronic pain?

Come & join us on the Last Thursday of every month at PRF, 2nd floor, Clinical Sciences building, L9 7AL.

Contact Jo Stephens on 0151-529-5820 for more info



SUCCESSFUL COMPLETION OF THE 35TH ANNUAL 'CLINICAL MANAGEMENT OF CHRONIC PAIN COURSE 2019

The 35th Liverpool Course Annual Pain Course on Management of Chronic Pain was held 4th – 6th July. Organised under the new leadership of Dr Rajiv Chawla, along with Dr Manohar Sharma both Consultants in pain Medicine at the Walton Centre NHS Foundation Trust.

The course consisted of a varied range of educational activities including workshops, clinics, and grand round with patient interaction and was attended by a number of disciplines which included, Consultants, GP's, Anaesthetists, Nurses and Physiotherapists from both the UK and internationally.

The Course was very well supported in terms of logistics by The Walton Centre Management Team, the Pain Service and other disciplines with additional support from secretaries, PMP team, Radiology, Theatres, Jefferson ward, OPD in Sid Watkins and of course not forgetting the many patients who also took part. PRI Director Andreas Goebel delivered the "Sam Lipton Lecture" with his presentation "Autoantibodies in primary chronic Pain" made the evening most educational and entertaining

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