National Centre for Neuroimmunology and Emerging Diseases

April 2022

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Our Mission

The National Centre for Neuroimmunology and Emerging Diseases (NCNED) is a research team located at Griffith University on the Gold Coast. Led by Professor Sonya Marshall-Gradisnik, the team has a focus on Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS).

Our mission is to translate research findings into preventative medicine, social and clinical care, and public health outcomes. By collaborating with local, national and international research institutes, we aim to create sustained improvements in health and health care for not only those affected by ME/CFS but also other immune disorders.

PUBLICATIONS

Natalie Eaton-Fitch, NCNED researchers and collaborators have published a new paper - **Impaired TRPM3-dependent calcium influx and restoration using Naltrexone in natural killer cells of myalgic encephalomyelitis/chronic fatigue syndrome patients** in the Journal of Translational Medicine. This new study is pivotal as it reports the influx of calcium via TRPM3 ion channel into cells was significantly reduced in ME/CFS patients when compared with healthy controls.
This paper measured the speed and maximum response of calcium -TRPM3 function using a new ion channel-calcium immunofluorescent technique developed at NCNED. Importantly, this calcium influx data was collected in real-time using a specific time lapse camera that provides insight to calcium influx into cells and complements our gold standard patch clamp ion channel work that has identified TRPM3 ion channel dysfunction in ME/CFS patients.
The significance of this new study provides further evidence the pathomechanism of ME/CFS is a TRP ion channel disorder, where calcium influx into cells is significantly impeded, resulting in downstream cell functions being affected.
Finally, treatment of NK cells with NTX significantly improved and restored TRPM3 ion channel function in ME/CFS patients providing further evidence for the potential clinical benefit of Low Dose Naltrexone for ME/CFS patients. Authored by: Eaton -Fitch N, Du Preez S, Cabanas H, Muraki K, Staines D, Marshall-Gradisnik S: *https://doi.org/10.1186/s12967-022-03297-8*

Rebekah Maksoud, NCNED researchers and other collaborators have published a new paper - **Analysis of post COVID-19 condition and its overlap with myalgic encephalomyelitis/chronic fatigue syndrome** in the Journal of Advanced Research. This study reviewed COVID-19 clinical presentation and associated post-infection sequelae (post-COVID-19 condition) and compared this with ME/CFS symptomatology. There are reports of a later debilitating syndrome onset three months post COVID-19 infection (often described as long-COVID-19), marked by the presence of fatigue, headache, cognitive dysfunction, post-exertional malaise, orthostatic intolerance and dyspnoea. Acute inflammation, oxidative stress, immune dysfunction and increased levels of interleukin-6 (IL-6) and tumor necrosis factor α (TNFα), have been reported in SARS-CoV-2 infected patients. Longitudinal monitoring of post COVID-19 patients is warranted to understand the long-term effects of SARS-CoV-2 infection and the pathomechanism of post COVID-19 condition.
Importantly, the onset, progression and symptom profile of post COVID-19 condition patients have considerable overlap with ME/CFS, and it is possible that large groups of post COVID-19 patients may meet the criteria for ME/CFS diagnosis. There is opportunity for future research incentives for ME/CFS patients and post COVID-19 patients. Future investigations in post COVID-19 may benefit from existing knowledge on ME/CFS. Also, due to increasing public interest in post COVID-19 condition, this may increase research efforts and contribute to research in ME/CFS.
Authored by: Sukocheva O, Maksoud R, Beeraka M, Madhunapantula S, Sinelnikov M. Nikolenko V, Neganova, M, Klochkov S, Kamal M, Staines D, Marshall-Gradisnik S: https://doi.org/10.1016/j.jare.2021.11.013

Professor Sonya Marshall-Gradisnik and the NCNED research team have published a new article in Research Features Magazine, titled **Understanding the intricacies of ion channels in ME/chronic fatigue syndrome.** The article was published in Research Features Magazine 139 - please find the link below.
https://cdn.researchfeatures.com/3d_issues/RF139/index.html

The article discusses the pathological processes that underly ME/CFS and how TRPM3 ion channel functioning is impaired. Present in various organs and tissues throughout the body, TRPM3 ion channels are a part of pain transmission and heat sensing pathways and any dysfunction in these ion channels has widespread multi-system effects, helping to explain the variety of symptoms presented by ME/CFS patients. The article discusses the NCNED research team's whole cell patch-clamp experiments to explore TRMP3 function and using Naltrexone as a treatment for ME/CFS.

Griffith UNIVERSITY Queensland, Australia

MENZIES HEALTH INSTITUTE QUEENSLAND

ME/CFS MEDIA COVERAGE

Professor Sonya Marshall-Gradisnik was recently interviewed by the ABC regarding NCNED research investigating links between Long COVID and ME/CFS. You can read the article via the following link: https://www.abc.net.au/news/2022-03-18/long-covid-and-chronic-fatigue-links/100916990?fbclid=IwAR0nfmBYEsIFDalq8wXNz-UhAsUaemGJAnTPnWRbkSJk_k0Gi4K07MNOJrc

ABC's Triple J Hack segment also featured an interview with Professor Marshall-Gradisnik on possible Long COVID and ME/CFS links. You can listen to the podcast commencing at 00.35 by pasting the link https://www.abc.net.au/triplej/programs/hack/hack/13798766 into your browser.

CALLING FOR NATIONAL PARTICIPATION

Brisbane, Queensland

NCNED is inviting patients formally diagnosed with ME/CFS and healthy controls (aged between 18 to 65 years old) to participate in continuing research using magnetic resonance imaging (MRI) of the brain. Interested participants will be asked to undergo MRI scanning with an advanced ultra-high field MRI scanner for 45 minutes (7 Tesla) followed by an additional 30 minutes (3 Tesla). The MRI Scanner is located at the University of Queensland, St Lucia so participants need to be able to travel to Brisbane to complete the scan. In addition to this, participants will complete 7 questionnaires for evaluation of fatigue symptoms, life quality, etc; wear a blood pressure cuff on their arm for 24 hours; and wear an activity monitor on their wrist for 3-4 days to record physical activity, heart rate and sleep/wake information. Please see inclusion criteria on our Facebook page.

SE Queensland, Northern New South Wales

NCNED is inviting patients formally diagnosed with ME/CFS and healthy volunteers (aged between 18 and 65) to participate in an upcoming investigation to continue NCNED research in the area of calcium channels, signalling and pharmaceutical intervention. Immunological dysfunction is a consistent feature of ME/CFS and many patients report onset following an infection. Further, there is significant overlap with chronic fatigue (CF) and post-viral syndromes (PVS). Transient receptor potential (TRP) ion channels have been implicated in the pathomechanism of ME/CFS and recent data suggests this channel provides a potential therapeutic target and may benefit ME/CFS patients. This project aims to investigate the role of ion channel dysfunction in ME/CFS and PVS patients as potential diagnostic and therapeutic drugs. The study involves a donation of 84ml of blood and completion of an online questionnaire. Please see inclusion criteria on our Facebook page.

Australia Wide

While TRP ion channel dysfunction has been reported in ME/CFS patients, researchers continue to learn more about the structure and genes encoding for TRP proteins. NCNED is recruiting participants around Australia who have been formally diagnosed with ME/CFS and healthy controls (reporting no health concerns). Eligible participants must be able to travel to pathology collection centres including Queensland pathology, Sullivan Nicolaides Pathology, QML Pathology, Australian Clinical Laboratories, Melbourne Pathology and Clinipath Pathology to donate 14ml of blood. The inclusion criteria are as follows: (i) aged 18 to 65 years; (ii) non-smoker; (iii) no current diagnosis of other chronic illness (e.g., autoimmune, cancer, cardiovascular disease, or diabetes); and (iv) not pregnant or breastfeeding. Sample donation appointments is ongoing and will be arranged in stages according to location.

If you are interested in being part of these studies or would like more information, please contact NCNED on 07 56789283 or email ncned@griffith.edu.au.

WELCOME

NCNED would like to welcome Bimbishar Bhattarai to the team.

Bimbishar has recently submitted his PhD thesis and will be working on designing a survey using Research Electronic Data Capture (REDCap) and also importing data from LimeSurvey (online statistical survey web app) to REDCap.

RID CONFERENCE PRESENTATIONS ON FACEBOOK

Viewing of the presentations conducted by NCNED researchers at the ME/CFS International Conference 2021:RID are available on our Facebook page. Commencing in posts from January 2022, Dr Kiran Thapaliya: Mapping of pathological changes in ME/CFS using MRI; Associate Professor Leighton Barnden: MRI manifestation of brainstem regulatory deficits in ME/CFS; Natalie Eaton-Fitch: Effect of IL-2 stimulation and treatment of TRPM3 ion channels: co-localisation with PIP2 and NK cell function in ME/CFS; Breanna Weigel: Gastrointestinal symptoms, diet, and health-related quality of life in ME/CFS; Rebekah Maksoud: Disability Measures and their potential applications for ME/CFS patients.

APPRECIATION AND ACKNOWLEDGEMENT OF GRANTING ORGANISATIONS, AGENCIES, BENEFACTORS AND FUNDRAISERS

Thank you to the Stafford Fox Medical Research Foundation, McCusker Charitable Foundation, Mr Douglas Stutt, the Mason Foundation, Mr and Mrs Ian and Talei Stewart, the Alison Hunter Memorial Foundation, the Blake Beckett Foundation, Mr Adrian Flack, the Buxton Foundation, the Henty Community, Change for ME Charity, ME/CFS/FM Support Association QLD Inc., the ACT ME/CFS Society, ME/CFS and Lyme Association of WA Inc., MERUK, and the National Health and Medical Research Council.