

National Centre for Neuroimmunology and Emerging Diseases



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Agencies, Benefactors and Fundraisers

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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 Professors Sonya Marshall-Gradisnik and Donald Staines, 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.



The NCNED team would like to wish you all a very Merry Christmas and Happy New Year. Thank you to all our supporters and volunteers who make our research possible.



RESEARCH VOLUNTEERS

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 (7 Tesla) for 45 minutes and 3 Tesla for 30 minutes. The MRI Scanner is located at UQ, 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.



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.



HEALTH INSTITUTE QUEENSLAND

ME/CFS INTERNATIONAL CONFERENCE 2021: RID

The second ME/CFS International Conference 2021: RID—Research, Innovation and Discovery took place on 16 and 17 November 2021 at Sea World Resort and Conference Centre, Gold Coast, Queensland, This was a highly successful hybrid conference – a mixture of both in person and virtual presentations from national and international speakers. Together with our on-site delegates, over 200 on-line guests joined us virtually to hear the latest research outcomes in ME/CFS incorporating international and patient perspectives and challenges, research innovations, ion channel physiology, clinical presentations and treatments, ME/CFS applications in MRI imaging, research evaluation and translation, and COVID19 and ME/CFS. We were extremely pleased to see so many of our ME/CFS patients joining our conference this year, both in person and virtually.



We sincerely thank the Stafford Fox Medical Research Foundation, the National Health and Medical Research Council, ME Research UK, Ian and Talei Stewart, the McCusker Charitable Foundation, The Buxton Foundation, the Mason Foundation, the Henty Community and The Alison Hunter Memorial Foundation for their significant support for this conference.

CONGRATULATIONS



Congratulations to NCNED team member, Dr Jiasheng Su, who recently graduated with a PhD from the University of Queensland. Dr Su continues his research focusing on the analysis of the functional MRI signals to study the pathophysiology of ME/CFS.



WELCOME



Chandi Magawa joined us at NCNED this year and she has been working on TRPM3 isotyping where we are now analysing our first pilot data from this wonderful pioneering study. We are excited to see in 2022 these findings and expand this research worldwide.

We also welcomed Etianne Martini Sasso to the team earlier in the year and she has been recently awarded a very prestigious University and overseas tuition scholarship to undertake TRPM3 pharmacology investigations in ME/CFS patients. NCNED is excited with Etianne's current data from which two publications will be coming in the first quarter of 2022.



TRP Researchers in Nobel Prize for Physiology or Medicine for 2021

NCNED congratulates Drs David Julius and Ardem Patapoutian for being awarded the Nobel prize in Physiology or Medicine for 2021 and their discoveries in TRP and Piezo receptors. As well as being receptors for many environmental stimuli/stressors, TRP ion channels regulate and/or respond to a plethora of physiological processes and are being increasingly recognised in their contribution to pathology and disease. The Nobel Prize winners' identification of these TRP receptors has paved the way forward for researchers to demonstrate the importance of TRP ion channels in the pathophysiology of ME/CFS.

Press Release link: https://www.nobelprize.org/.../medicine/2021/press-release/

PUBLICATIONS



Mr Stanley Du Preez and NCNED Researchers have just published an important paper – **Characterization of IL-2 Stimulation** and **TRPM7 Pharmacomodulation in NK Cell Cytotoxicity and Channel Co-Localization with PIP2 in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome Patients.** The findings were published in the International Journal of Environmental Research and Public Health. This study examined the effect of IL-2 stimulation, PIP2 and TRPM7 pharmacomodulation on NK cell cytotoxicity. These findings report TRPM7 and actin was significantly increased in ME/CFS patients compared with Healthy Controls. Findings further suggest a potential compensatory cellular mechanisms in an attempt to maintain TRPM7 calcium influx. Importantly, NCNED is expanding their ion channel research to provide further insight into ion channel dysfunction for the pathomechanism and possible intervention of ME/CFS. Authored by Du Preez S, Eaton-Fitch N, Cabanas H, Staines D, Marshall-Gradisnik S: https://doi.org/10.3390/ijerph182211879

Stanley Du Preez and our researchers have also published another significant paper: **Potential Implications of Mammalian Transient Receptor Potential Melastatin 7 in the Pathophysiology of Myalgic Encephalomyelitis/Chronic Fatigue**

Syndrome: A Review: International Journal of Environmental Research and Public Health. This paper examines TRPM7 as a potential candidate in the pathomechanism of ME/CFS, as TRPM7 is increasingly recognized as a key mediator of physiological and pathophysiological mechanisms affecting neurological, immunological, cardiovascular, and metabolic processes. A focused examination of the biochemistry of TRPM7, the role of this protein in the aforementioned systems, and the potential of TRPM7 as a molecular mechanism in the pathophysiology of ME/CFS is discussed in this review. TRPM7 is a compelling candidate to examine in the pathobiology of ME/CFS as TRPM7 fulfils several key roles in multiple organ systems, and there is a paucity of literature reporting on its role in ME/CFS. Authored by: Du Preez S, Cabanas H, Staines D, Marshall-Gradisnik S: https://doi.org/10.3390/ijerph182010708

Together with our research partners in Poland and the UK, an important paper has recently been published as a result of a study exploring the co-occurrence of symptoms in a cohort of Polish CFS patients using network analysis: **Network Analysis of Symptoms Co-Occurrence in Chronic Fatigue Syndrome**, The findings were published in the International Journal of Environmental Research and Public Health. The study explores the co-occurrence of symptoms in a cohort of Polish CFS patients using network analysis. A total of 110 patients with CFS were examined, with 75 of these being female. Post-exertional malaise (PEM) was present in 75.45% of patients, unrefreshing sleep was noted in 89.09% and impaired memory or concentration was observed in 87.27% of patients. The least prevalent symptom was tender cervical or axillary lymph nodes, noted in 34.55% of the total sample. Three of the most densely connected nodes were the total number of symptoms, sore throat and PEM. PEM was positively related with impairment in memory or concentration presence are related to more severe fatigue measured by CFQ and FIS. PEM presence was positively related with the presence of multi-joint pain and negatively with tender lymph nodes and muscle pain. Sore throat was related with objective and subjective autonomic nervous system impairment. This study helps define symptom presentation of



CFS with the pathophysiology of specific systems and links with multidisciplinary contemporary molecular pathology, including comparative MRI. Link: https://www.mdpi.com/1660-4601/18/20/10736

Authored by: Kujawski, S, Slomko J, Newton J, Eaton-Fitch N, Staines D, Marshall-Gradisnik S, Zalewski P.



Rebekah Maksoud, Dr Cassandra Balinas and NCNED Researchers recently published an important paper - Impact of Life Stressors on Myalgic Encephalomyelitis/Chronic Fatigue Syndrome Symptoms: An Australian Longitudinal Study. The findings were published in the International Journal of Environmental Research and Public Health. This paper reports muscle pain and weakness, orthostatic intolerance and intolerance to extreme temperatures were experienced and fluctuated over time. Sleep disturbances were likely to present as severe. Work and household income were associated with worsened cognitive, gastrointestinal, body pain and sleep symptoms. Increased access to healthcare services was associated with improved symptom presentation. Life stressors such as work and financial disruptions may significantly contribute to exacerbation of ME/CFS symptoms. Access to support services correlates with lower symptom scores. Authored by: Balinas C, Eaton-Fitch N, Maksoud R, Staines D, Marshall-Gradisnik - Link: https://www.mdpi.com/1660-4601/18/20/10614/htm

NCNED researchers have recently published a paper in 'Food and Nutrition Research' investigating Australian ME/CFS patients' nutritional intake, supplement use, and their effect on health-related quality of life: "A preliminary investigation of nutritional intake and supplement use in Australians with myalgic encephalomyelitis/chronic fatigue syndrome and the implications on health-related quality of life". This paper reports that most Australian ME/CFS patients were taking at least one supplement (87.5%) compared with only 31.9% of the general Australian population. Multi-vitamins and multi-minerals were the most common supplements among ME/CFS patients and were taken by close to three-quarters of the study participants. Interestingly, significant increases in the daily intakes of total fats and caffeine (P = 0.009 and P = 0.033 respectively) and significant decreases in the daily intakes of total carbohydrates and alcohol (both P < 0.001) were observed among ME/CFS patients when compared with the Australian population. Patients' daily intakes were also significantly different from that of the general population in every major and sub-major food group category. No definitive conclusions could be drawn on the relationship between supplement use and nutritional intake with HRQoL.



This paper concludes that supplement use is highly prevalent among Australian ME/CFS patients and that patients' daily diet varies considerably to that of the general Australian population. Thus, dietary supplementation and modification are of value to patients and may be important in the management of ME/CFS: <u>https://foodandnutritionresearch.net/.../article/view/5730</u> Authors: Breanna Weigel, Natalie Eaton-Fitch, Rachel Passmore, Hélène Cabanas, Donald Staines, Sonya Marshall-Gradisnik.

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