National Centre for Neuroimmunology and Emerging Diseases

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In this issue:-

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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), long COVID and Gullf War Illness (GWI).

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 and long COVID but also other immune disorders.

MERRY CHRISTMAS

The team at NCNED would like to wish all our supporters a very Merry Christmas and Happy 2025.

2024 has seen another year of dedication and focus in our endeavours to achieve ground breaking research in the discovery of the pathomechanisms and therapeutic possibilities for ME/CFS, long COVID and Gulf War Illness sufferers. We thank you all for your continued encouragement, engagement and support as we move into 2025.

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

Thank you to the Stafford Fox Medical Research Foundation, McCusker Charitable Foundation, the Mason Foundation, 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, Dr John Hamwood and the National Health and Medical Research Council.

GRIFFITH UNIVERSITY

PUBLICATIONS

The NCNED team have had a very successful few months with publications in the following journals:

PhD candidate, Sofia Jimenez Sanchez, (pictured right) and NCNED researchers discuss the role and safety profile of a multiple sclerosis (MS) therapy in their recent Journal of Neuroinflammation publication ***"The role of alemtuzumab in the development of secondary autoimmune disease: a systematic review"***. This article examines the therapeutic effect of alemtuzumab in the treatment of MS and further analyses the mechanisms and potential risk factors that lead to the development of secondary autoimmunity in 40% of people treated with this MS therapy. These findings serve to guide future research aimed at improving the safety profile of alemtuzumab, ultimately contributing to improved patient outcomes. You can read the full article here: **https://doi.org/10.1186/s12974-024-03263-9**

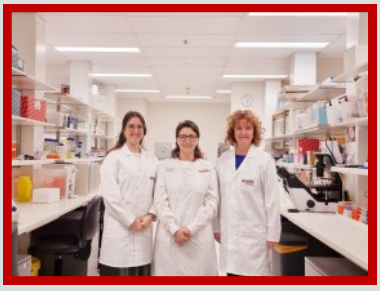
Dr Natalie Eaton-Fitch and NCNED researchers have revealed new insights into the immune mechanisms behind Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) and long COVID. These conditions are both known for resulting in serious multi-systemic symptoms and previous research has demonstrated the potential role of immune system exhaustion. A new publication entitled "***Immune Exhaustion in ME/CFS and long COVID"*** published in JCI Insights is the first to concurrently analyse immune gene expression in both ME/CFS and long COVID patients. Read the full article here: **https://insight.jci.org/articles/view/183810**

NCNED researchers and guest researcher, Professor James Baraniuk from Georgetown University, Washington DC, USA, investigated differences in cognitive function between long COVID, ME/CFS and healthy control subjects. The Scientific Reports pre-print article, ***Stroop and practice effects in cognitive dysfunction of Long COVID and Myalgic Encephalomyelitis/ Chronic Fatigue Syndrome***, is available to read via the following link: **https://doi.org/10.21203/rs.3.rs-4783876/v1**

Prof James Baraniuk, in collaboration with the NCNED, Prof Sonya Marshall-Gradisnik and Dr Natalie Eaton-Fitch, have undertaken a meta-analysis to assess the reliability and sensitivity of NK cell cytotoxicity as a research model to investigate ME/CFS pathomechanisms and potential treatments—***Meta-analysis of Natural Killer (NK) cell cytotoxicity in Myalgic Encephalomyelitis / Chronic Fatigue Syndrome (ME/CFS),*** Frontiers in Immunology.

Using a total of 28 peer-reviewed articles, NK cell cytotoxicity was consistently and significantly impaired in ME/CFS compared with controls. Data demonstrates that the NK cell cytotoxic levels of people with ME/CFS were approximately half the levels found in healthy controls. Receiver operating characteristics were used to generate thresholds for putative ME/CFS diagnosis. The full article can be accessed via this link: **https://doi.org/10.3389/fimmu.2024.1440643**

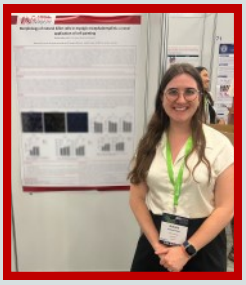
"How To" Myalgic Encephalomyelitis Resource for Health Practitioners

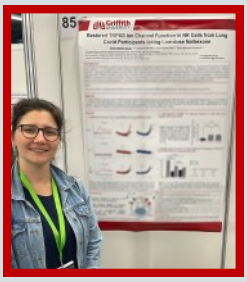


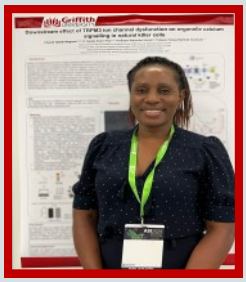
Australian Doctor recently invited Professor Sonya Marshall-Gradisnik, Etianne Martini Sasso and Dr Natalie Eaton-Fitch (pictured right to left) to produce a resource for Australian health practitioners. This resource offers a comprehensive overview of the pathology, diagnosis, treatment, and prognosis for people with ME/CFS, offering valuable educational guidance to improve understanding and healthcare practices for those impacted by this condition. This resource is freely available to health practitioners in Australia with an AHPRA.

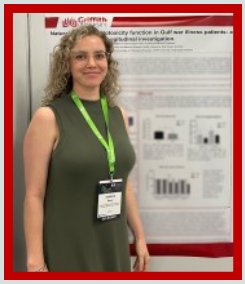
At the NCNED, we are committed to advancing health practices and health outcomes for people with ME/CFS. We were appreciative of this opportunity provided by *Australian Doctor* and aim to continue our work in hopes of improving access to healthcare for many Australians with ME/CFS.

CONFERENCES









NCNED Researchers, Dr Natalie Eaton-Fitch, Ms Etianne Martini Sasso, Ms Chandi Magawa, Ms Jessica Dwyer and Ms Sofía Jimenez Sanchez (pictured from left to right above) recently presented at the *Australian and New Zealand Society for Immunology (ASI) Annual Scientific Meeting* in Sydney from November 25th to 29th.

Natalie's poster documents preliminary, unpublished data from a large database tracking the morphological changes of the Natural Killer cells of people with ME/CFS using a novel microscopy application. Stay tuned for an update on this publication in the coming months.

Etianne reported on recent unpublished research data on the potential role of Low Dose Naltrexone (LDN) in TRPM3 restoration and the treatment of long COVID. This data, in addition to previous laboratory findings, supports the LDN clinical trials currently being undertaken at the NCNED. To complement this work, interstate data collected in collaboration with the University of Western Australia was also presented, demonstrating multi-site replication of TRPM3 dysfunction among people with ME/CFS.

Chandi's poster demonstrates changes in calcium influx within a specific compartment of Natural Killer cells dependent on TRPM3 ion channel activity. Chandi's PhD research has proved vital to further investigating the role of TRPM3 in the pathomechanism of ME/CFS.

Jessica presented preliminary data from a large longitudinal study examining Natural Killer cell function among veterans with GWI over time. This Australian-first investigation aims to further elucidate the pathophysiology of GWI.

Sofía's presentation provided an interim update on the findings of the RAMBLE clinical trial. This collaborative initiative undertaken at the NCNED led by Professor Simon Broadley aims to mitigate autoimmunity in people with Multiple Sclerosis treated with Alemtuzumab.

NCNED research fellow, Dr.Kiran Thapaliya, was invited to present at the "Mechanical Basis of ME/CFS, Focusing on the Brainstem and ME/CFS Part 2" event, organised by Renegade Research. In his presentation, titled "Imaging the Invisible: Multi-Modal MRI Reveals Brainstem Abnormalities in ME/CFS", Dr Thapaliya shared NCNED's findings from 3T and 7T MRI studies that highlight brainstem impairments in both people with ME/CFS and people with long COVID.

The recording of Dr Thapaliya's presentation can be accessed via the following link: https://youtu.be/IIK7-mBA7Pc?si=kxggVplohxoV-u90

We are grateful for the opportunity to share our research with the broader scientific community and appreciate the insightful discussion that followed. A big thank you to the organisers and all the attendees.

Griffith University's National Centre for Neuroimmunology and Emerging Diseases' research team express their appreciation to all our supporters.