



ME/CFS and Long COVID: blood relatives?

Emeritus Professor Paul Fisher, La Trobe University

ME/CFS research has been neglected and is the elephant in the room of Long COVID and post-infection disease research

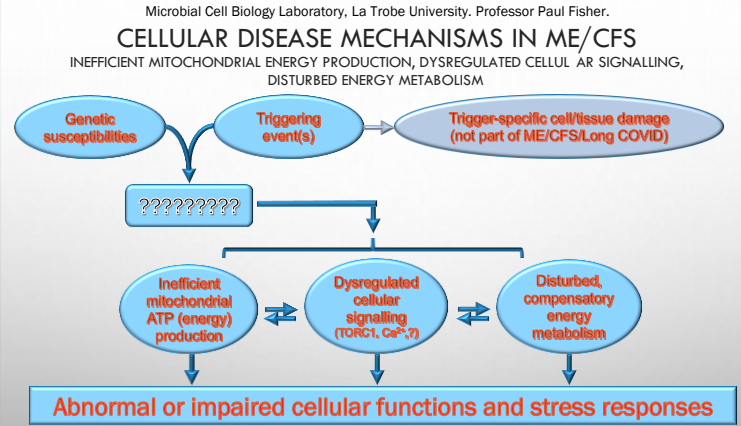
ME/CFS and Long COVID: Blood relatives ?

Prof. Paul Fisher (BScHons, MSc, PhD), Emeritus Professor of Microbiology, La Trobe University

Understanding ME/CFS and Long COVID is a large, complex problem with many parts. ME/CFS is the elephant in the room of Long COVID research and discussion



IMPORTANT Note: Long COVID is NOT an ongoing, active Sars-Cov-2 infection. Much can be learned by studying blood samples and cells from the elephant, not just its external features.



So far, ME/CFS and Long COVID share the same clinical presentation and underlying biology

Comparison of symptoms in ME/CFS and Long COVID

(modified from Komoroff and Lipkin, 2023)

Symptom	ME/CFS	Long COVID	Symptom	ME/CFS	Long COVID
Fatigue	✓	✓	Poor appetite	✓	✓
Post-exertional malaise	✓	✓	Orthostatic intolerance	✓	✓
Headaches	✓	✓	Palpitations	✓	✓
Sleep disorder	✓	✓	Breathlessness	✓	✓
Impaired reasoning	✓	✓	Nausea and diarrhea	✓	✓
Impaired memory	✓	✓	Chills	✓	✓
Impaired attention	✓	✓	Cough	✓	✓
Secondary depression	✓	✓	Decreased smell and taste	✓	✓
Secondary anxiety	✓	✓	Rash and hair loss	✓	✓
Reduced activity	✓	✓	Painful lymph nodes	✓	✓
Myalgia/arthritis	✓	✓	Chemical sensitivities	✓	✓
Muscle weakness	✓	✓	Tinnitus	✓	✓
Hot and cold spells	✓	✓			

ME/CFS, myalgic encephalomyelitis/chronic fatigue syndrome. Adapted from Wong DJ (17).

- Notes:
- Excludes known long term damage/scarring from acute infection or triggering event.
 - Decreased smell and taste in Long COVID have now been attributed to SARS-CoV-2 causing damage/loss of cells that support sensory neurons in the nasal mucosa, so not part of the Long COVID
 - Every individual experiences a different constellation of symptoms
- ✓ Present but less common

Underlying biological abnormalities in ME/CFS and Long COVID

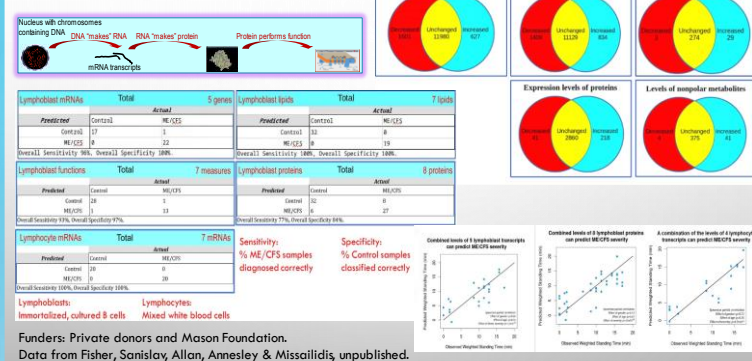
(Data from Komoroff and Lipkin, 2023 and other sources)

Abnormality	ME/CFS (With number of abnormal subcategories)	Long COVID (With number of abnormal subcategories)
Neurological/neuromuscular abnormalities	✓ 23/24 (1 not tested)	✓ 20/24 (1 -ve, 3 not tested)
Immunological abnormalities	✓ 18/18	✓ 11/18 (1 -ve, 6 not tested)
Viral reactivation (EBV, HHV6, HHV7, CMV)	✓	✓
Gut microbiome dysbiosis	✓	✓
Metabolic and cell signalling abnormalities (energy metabolism, hypometabolic state, redox imbalance, kynurenine pathway, cell stress signalling, Ca ²⁺ signalling)	✓ 15/15	✓ 10/15 (5 not tested)
Cardiopulmonary/vascular abnormalities	✓ 14/14	✓ 6/14 (8 not tested)

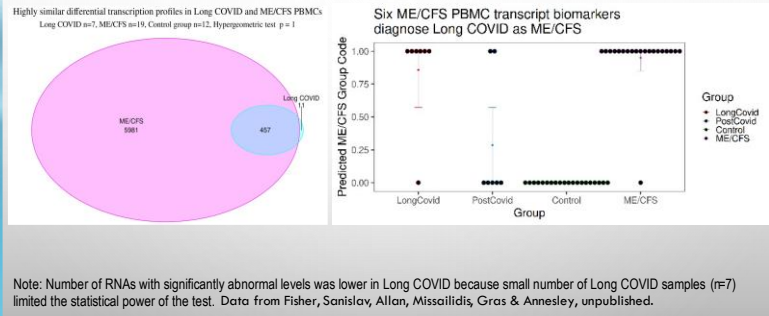
- Notes:
- In most subcategories there were a minority of dissenting studies for one or both illnesses
 - From a total of 73 subcategories of biological abnormality, only 2 not present in both illnesses (each tested in a single Long COVID study), 22 not yet tested in Long COVID and 1 not yet tested in ME/CFS.

Small panels from thousands of blood markers of ME/CFS predict illness severity and diagnose ME/CFS and Long COVID

CELLULAR BIOMARKERS FOR DISEASE AND SEVERITY IN ME/CFS



ME/CFS AND LONG COVID MOLECULAR SIGNATURE MAY BE IDENTICAL – ME/CFS BIOMARKERS WORK FOR LONG COVID.



The AusME Registry and Biobank (La Trobe Uni, Emerge Australia et al, Mason Foundation funds) provides an easier path into Australian ME/CFS/Long COVID research - 13 active research projects from 5 states/territories, 3 blood processing sites, partnering 9 current funding applications, 1520 registrants, 126 blood samples.....and growing.

All that is needed to hasten progress in diagnosis, understanding and treatment of ME/CFS (and Long COVID) is a fair share of biomedical research funds.