



SIEF supports John Stocker Postdoctoral Fellow studying the impact of psychological stress and malnutrition on genome stability and telomere integrity

the challenge Telomeres cap and protect the ends of our chromosomes. Shorter telomeres are associated with increased risk of degenerative diseases; psychological stress is a factor consistently associated with accelerated telomere shortening. With lifestyle stresses on the rise, it is important to know whether stress causes chromosomal damage, and whether and how this can be prevented.

the response A SIEF John Stocker Postdoctoral Fellowship supported Dr Caroline Bull to study the impact of stress hormones and malnutrition on human telomere integrity and genomic stability, and whether nutrition can be a source of protection. Dr Bull used DNA methylation and fluorescence microscopy testing with *in vivo* and *in vitro* methods, and found that cortisol was unlikely to be a mediating factor in telomere shortening. Dr Bull also compared stress and nutritional intake of primary carers of dementia patients, to non-carers. She found a highly significant, positive association between psychological stress and DNA damage and a negative relationship between stress hormones and telomere length.

the collaboration Dr Bull was supervised by Professor Michael Fenech, CSIRO, and Professor Helen Christensen, Black Dog Institute, University of NSW (formerly ANU).

the impact The outcomes of this project will have important projected impacts, including:

- Helping researchers identify the risks of psychological stress and more accurately target prevention methods and treatments, leading to increased quality of life and reduced healthcare burden on the community.
- Supporting the career development of a promising Australian early career researcher in the field of immunology, including presenting her work in an international forum; publishing in high impact, peer reviewed journals; and gaining skills in grant and proposal writing, communication, and project and budget management.

Contact us For Further Information
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What is SIEF?

Spanning a history of over 90 years, the Science and Industry Endowment Fund (SIEF) provides grants to science and scientists for the purposes of assisting Australian industry, furthering the interests of the Australian community and contributing to the achievement of Australian national objectives. This unique and esteemed funding arrangement received a substantial gift from CSIRO made possible from proceeds of its fast wireless local area network (WLAN) technology, facilitating the rejuvenated Fund to be a mechanism for significant support of science in Australia.