Canterbury Medical Research Foundation

Final report for Grant in Aid GIA2019-3

Grant recipient

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Grant details

GRANT TYPE	Grant in Aid	FUNDING ROUND	2019 Grant In Aid
GRANT REFERENCE	GIA2019-3	GRANT AMOUNT	$5,000

Final report

1. Scientific Assessing Committee report

Brief background: This CMRF grant in aid focused on changes that occur during infection and inflammation, and investigated whether oxidative stress generated by immune cells could change the pattern of chemical modifications that are added onto the DNA of human cells (the methylome).

Original objectives: To design and develop a series of tissue culture assays which probe the cellular mechanisms of how environmental stimuli, such as oxidative stress can cause epigenetic changes to the human methylome.

Purpose of the grant: This grant supplied additional salary funding to facilitate two part time Research Technicians in the experimental set up and maintenance of extensive tissue culture experiments. The two research technicians employed for this project were PhD students Annika Seddon, and Yusmiati Liau of the University of Otago, Christchurch, Department of Pathology and Biomedical Science.

Grant progress: All objectives of this project were achieved, and the funding supplied through this CMRF grant was pivotal in this successful outcome. This work has now been integrated as a substantial part of a PhD thesis and the results of this research are currently being written into a manuscript. The Doctoral student is Annika Seddon, and the thesis title is “Neutrophil death pathways and their effect on the tumour microenvironment”.

Outcomes: Epigenetic mechanisms can modulate health and disease development, and DNA methylation is an important modification that directs how genes are expressed, however, it can also be altered through interactions with environmental stimuli. Therefore, understanding epigenetic processes, such as methylation of genomic DNA is crucial for understanding how health and disease states are related to environmental interactions. This CMRF grant-in-aid facilitated the gathering of crucial preliminary data which will now guide development of a larger project that aims to understand whether activated neutrophils modify the epigenome of human immunological cells by excreting high levels of oxidants.

Professional value: The process of managing two employees has provided Dr. Stevens with valuable career experience. This has been an important process in ensuring competitive placement to further develop an independent career in biomedical research, and has also allowed him to commit to the co-supervision of a PhD student. This grant also aided two PhD students in their career development by expanding their laboratory skills, employment history and subsequently their publication record, as they are both named authors on the prepared manuscript.

4. Feedback

Publication

Date

11/11/2019