

# Understanding sympathetic triggering of inherited cardiac arrhythmia: clinical and cellular studies

**Project Code: 10481358**

**Faculty:** Faculty of Medical and Health Sciences

**Department:** Physiology

**Main Supervisor:** Dr Annika Winbo (awin063)

**Co supervisors:** Dr James Fisher (jfis749), Associate Professor Martin Stiles (msti025)

**Application open date:** 17 Nov 2021

**Application deadline:**

**Enrolment information:** NZ Citizens, NZ Permanent Residents, International

## Introduction

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The long QT syndrome (LQTS) is the most common identifiable cause of sudden death <40 years of age in New Zealand. LQTS is an inherited cardiac disease characterized by life-threatening arrhythmias, typically triggered by the sympathetic "fight-or-flight" response.

In this project, we use a bench-to-bedside approach to understanding sympathetic triggering of inherited cardiac arrhythmia. In LQTS patients, we study the physiological response to typical everyday sympathetic triggers, such as exercise and water immersion. We also use patient-derived induced pluripotent stem cells to study the interaction between heart cells and sympathetic neurons in LQTS.

## What we are looking for in a successful applicant

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The successful applicant will be a high-achieving and motivated student who is interested in clinical and cellular cardiovascular and neurocardiac research. All applicants would need to meet the University of Auckland criteria for admission into the PhD program.

Additional skills and preferred qualities include:

- Interest/Experience in electrophysiology, tissue culture, and/or live cell imaging
- Motivation to learn new experimental techniques
- Experience of working with data analysis/ image processing (e.g., MATLAB, Python) and academic writing
- Willingness to gain experience, or existing experience of working with human volunteer study participants
- Preference for applicants with a connection to the Māori and Pasifika community

## Objective

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The aim of this project is to better understand sympathetic triggering of arrhythmia in patients with LQTS. The project includes clinical experimental studies in patients, as well as cellular experimental studies in patient-derived cells (induced pluripotent stem cells differentiated into cardiomyocytes and sympathetic neurons). Our methods span from clinical experimental techniques to cellular electrophysiology and live cell imaging techniques.

## Other information

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The project has confirmed funding including a PhD scholarship offered by MedicAlert in collaboration with Manaaki Mānawa Centre for Heart Research and the New Zealand Cardiac Inherited Disease Group. The PhD project, supervised by Dr Annika Winbo, Assoc. Professor James Fisher, and, Assoc Professor Martin Stiles, will be undertaken at the Department of Physiology, The Faculty of Medical and Health Sciences, The University of Auckland.

We provide a vibrant and supportive research environment, which aspires to undertake high quality research addressing clinically-relevant questions.

Our students are strongly encouraged to actively participate in science communication events such as conferences during their studies with us. Skills taught include; human clinical physiology experiments, induced pluripotent stem cell tissue culture techniques, human cellular electrophysiology experiments (calcium imaging), analysis and interpretation of data, critical analysis of publication, oral and written communication skills.

The PhD Scholarship will comprise a fortnightly stipend, compulsory domestic tuition fees, plus \$10,000 research expenses up to a total of \$47,000 per annum.

## Application details

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Please send a CV, academic record, and the names and contact details of two Referees to [a.winbo@auckland.ac.nz](mailto:a.winbo@auckland.ac.nz) with PhD, LQTS research in the subject line. Please note only short-listed candidates will be notified.