

Functional Pharmacogenomic Characterization of Chemotherapy Adverse Drug Reactions

PROJECT DESCRIPTION

"Cisplatin is a highly effective chemotherapeutic widely used to treat solid tumours in children. Unfortunately, over half of treated children develop treatment-related toxicities. Ototoxicity is a frequent adverse drug reaction to cisplatin treatment that causes permanent hearing loss in both ears. This can have a significant impact on speech and language development in children, as well as a prolonged socio-economic impact.

This research project will study cisplatin toxicity using in vitro models. Cellular responses to cisplatin treatment will be characterized in cultured ear cell lines. These responses will be used as reporters of cisplatin-signaling. Drug-gene interactions, e.g. transcriptomic changes, induced by cisplatin treatment will be used to identify genes and pathways required for cisplatin signaling that may contribute to the development of ototoxicity. Signaling components identified through these analyses will be validated by gene silencing and tested in the cisplatin response assays characterized above. Genes critical to cisplatin signaling will be examined as candidates for the development of protectant therapies that prevent the development of ototoxicity. Existing small molecules targeting these candidates will be leveraged in this regard.

Otoprotective agents are in demand given the high rates of ototoxicity in cisplatin-treated patients but currently none are approved for clinical use. Otoprotectants identified through this research project would be fit for preclinical animal studies of cisplatin-induced ototoxicity and would serve as a proof-of-principle for this research program."

FACULTY-DEPARTMENT

Medicine & Dentistry- Medical Microbiology and Immunology

DESIRED FIELD OF (STUDENT) STUDY

The student should have a background in biological sciences and be familiar with molecular biology and biochemical concepts. Experience with tissue culture and cell-based assays would be an asset. The student must be an effective communicator and well-organized. The student should be comfortable with, and have the ability to, work largely independently after initial training. A high degree of critical thinking skills is expected.

INTERNSHIP LOCATION

University of Alberta Main Campus - Edmonton

Contact: Brendan Cavanagh, Internship Coordinator (Inbound)
University of Alberta International
intern@ualberta.ca

NUMBER OF INTERNSHIP POSITIONS

1

INTERNSHIP START DATE

July 4

INTERNSHIP END DATE

October 4

ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.