

# Discovery Profile



## MitoCanada funds research to support the **development of novel therapies** to treat mitochondrial diseases

*Exerkines™ are a recently discovered class of biologically active compounds, such as peptides and RNA, that are released into the circulatory system when we exercise. These compounds, which were discovered and named by Dr. Mark Tarnopolsky, have beneficial effects on various tissues and organs.*

While exercise has been associated with numerous health benefits for decades, there may be additional advantages we had not considered. In 2016, MitoCanada supplemented a research grant from the Canadian Institutes of Health Research (CIHR) provided to Dr. Tarnopolsky and his then Ph.D student, Dr. Justin Crane. The purpose of the research was to look at the effects of exercise on the release of exerkine™ proteins into the circulation.

Through their research, they discovered that Interleukin-15 (IL-15) went up in response to acute exercise. IL-15 plays a major role in the development of inflammatory and protective immune responses.



**Dr. Mark Tarnopolsky**  
Professor of  
Pediatrics and Medicine  
McMaster University

New discoveries like exerkines™ offer hope of new treatments for those living with mitochondrial disease.

Perhaps more important to our community, they also found that very tiny pulses of IL-15 released in response to acute exercise led to the production of mitochondria in skin and muscle of mice.

Applying this new knowledge that exercise can impact mitochondrial function, this discovery could be used in future therapies for treating mitochondrial disease. Specifically, IL-15 could potentially be part of an injectable therapy (like an insulin pen) that delivers some of the mitochondrial benefits of exercise in those who cannot perform exercise.

Discoveries like this offer hope to our mitochondrial community.

*Thank you to our supporters.  
Your donations allow us to support life-changing researcher and offer hope to those living with -- or at risk of developing -- mitochondrial disease.*