GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

A widespread family of "Hero" proteins protect against protein instability and aggregation

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Proteins are typically denatured and aggregated by heat. Exceptions to this principle include highly hydrophilic and heat-resistant proteins found in extremophiles, which help these organisms tolerate extreme conditions such as drying, freezing, and high salinity. In contrast, the functions of heat-soluble proteins in mesophilic organisms including mammals remain largely unexplored. Here we report that heat-resistant obscure (Hero) proteins, which remain soluble after boiling at 95ºC, are widespread among animals such as Drosophila and humans. Hero proteins stabilize various "client" proteins, protecting them from denaturation even under stress conditions such as heat shock, desiccation, and exposure to organic solvents. Hero proteins can also block several different types of pathological protein aggregations in cells and in Drosophila strains that model neurodegenerative diseases. Our study reveals that organisms naturally use Hero proteins as molecular shields to stabilize protein functions, highlighting their biotechnological and therapeutic potential.

Host: Dr. Julie Claycomb

Date: Thursday, January 16th, 2020
Time: 3:30 PM
Place: MaRS 2, Room 1522
661 University Ave.