STRONG CHILDREN'S RESEARCH CENTER

Summer Research Scholar

Name: Rachael Chen

School: Cornell University

Mentor: Dr. George Porter Jr. M.D., Ph.D.

ABSTRACT

Title: MPL 6.8 Protein Expression in Mouse Tissues and Modified HEK293 Cells

Background:

The mitochondrial permeability transition pore (mPTP), a transmembrane pore located in the inner mitochondrial membrane, regulates membrane potential and the proton gradient necessary to synthesize ATP. Normally closed, cellular changes such as increased Ca^{2+} ion concentration, oxidative stress, or binding of regulatory proteins can open the pore, dissipating the membrane potential and inducing cell death. Cyclophilin D (CypD), a peptidyl-prolyl cis/trans isomerase mitochondrial matrix protein expressed in all mammalian tissues is a known key regulator

kidney tissue (N=1). Results indicate that ATP5G (c-ring subunit of ATP synthase) co-precipitated with MPL6. 8 in all HEK293 samples and abundantly in WT and CypD -/- mice heart mitochondria.

Conclusion:

CypD mutations do not affect MPL6.8 protein expression in both HEK293 cancer cells and mice tissue, more experimental trials are needed for statistical analysis. MPL6.8 expression was not detected prior to P7 in the developing heart of WT and CypD-/- mice. MPL6.8 may be associated with ATP5G (c-subunit ring of ATP synthase), supporting the hypothesis it is a plug for the mPTP in ATP synthase.