GRANT SNAPSHOT

2011 Samuel Stroum – Pancreatic Cancer Action Network – AACR Fellowship

Grantee:	Cosimo Commisso, PhD
Institution:	New York University
Research Project:	*Pancreatic Cancer, Macropinocytosis and Nutrient Internalization*
Award Period:	July 1, 2011 – June 30, 2012
Amount:	$45,000

Biographical Highlights

Dr. Commisso graduated with high distinction from University of Toronto, and then went on to pursue a PhD there in the Department of Molecular Genetics. From 2008 to the present, Dr. Commisso has been a postdoctoral fellow at New York University, working in the laboratory of Dafna Bar-Sagi, PhD. Dr. Bar-Sagi is a current member and former chair of the Pancreatic Cancer Action Network Scientific Advisory Board, and a recipient of a 2008 Pancreatic Cancer Action Network – AACR Pilot Grant.

Dr. Commisso's thesis work examined a process called endocytosis by which cell signaling proteins are internalized by the cell. He studied this phenomenon in fruit flies, which exhibit many pathways that are analogous to those found in humans. Due to a personal connection to the disease, Dr. Commisso was determined to pursue cancer research for his postdoctoral studies. In Dr. Bar-Sagi's laboratory, Dr. Commisso is able to combine his interests in endocytosis and cell signaling with a pancreatic cancer biology project.

Project Overview

A protein called K-Ras is known to be mutated to an active form in nearly all of pancreatic tumors. Pathways activated by K-Ras contribute to the proliferation and survival of pancreatic tumor cells, leading to their characteristic unrestricted growth.

Dr. Commisso proposes to explore another function of K-Ras, stimulating a process called macropinocytosis. Macropinocytosis, also known as fluid-phase endocytosis, allows cells to bring in large volumes of fluid from outside the cell, and often, physiological proteins are included. Dr. Commisso specifically hypothesizes that K-Ras-induced macropinocytosis brings in large quantities of the protein albumin from outside to inside the cell. There, albumin can be broken down and serve as a source of energy to nourish the pancreatic cancer cell. Dr. Commisso's work will lead to a better understanding of the induction of macropinocytosis by K-Ras in pancreatic cancer cells, and explore whether inhibitors of this process may be potential therapeutic agents against pancreatic cancer.