GRANT SNAPSHOT

2013 Pancreatic Cancer Action Network – AACR Career Development Award

Grantee:	Daolin Tang, MD, PhD
Institution:	University of Pittsburgh
Research Project:	*Role of HMGB1 in Pancreatic Cancer Initiation and Progression*
Award Period:	July 1, 2013 – June 30, 2015
Amount:	$200,000

Biographical Highlights

Dr. Tang is currently an Assistant Professor (tenure track) within the Department of Surgery at the University of Pittsburgh and its Cancer Institute. In 2000, he obtained his medical degree (equivalent to an MD degree in the US) from the Norman Bethune College of Medicine, Jilin University, China. In 2007, he obtained his PhD from the Xiangya School of Medicine, Central South University, China. In 2007, he joined Dr. Michael Lotze's Damage Associated Molecular Pattern Molecule (DAMP) Laboratory at the University of Pittsburgh as a Postdoctoral Associate. Now heading his own laboratory, he is studying the function of HMGB1-dependent and -independent autophagy pathways in inflammation, immunity, and pancreatic tumorigenesis. His major findings on HMGB1, autophagy, and cancer have been presented at national and international meetings, as well as published in 60 research and review articles in high impact factor journals. Currently, Dr. Tang is an essential member of the international DAMPs and HMGB1-related research community. He and his associates have active clinical protocols targeting the process of autophagy in pancreas cancer.

Project Overview

Dr. Tang's work examines the role of high mobility group box 1 protein (HMGB1) in the initiation and progression of pancreatic cancer. The primary function of HMGB1 is to interact with DNA in the nucleus and regulate expression of genes. The role of HMGB1 in cancer has not been elucidated, but it is thought to behave as a tumor suppressor, limiting programmed cell death and promoting autophagy (breakdown of cellular components for nutrition). Tumor suppressor genes typically code for proteins whose function is to prevent or slow the growth of tumors. Similarly, when HMGB1's location is altered, its tumor suppressor activity is limited, facilitating and promoting tumor formation.

Dr. Tang and colleagues created the first mouse model of pancreatic cancer that includes the activation of K-Ras (which plays a pivotal role in pancreatic cancer precursors) with inactivation of HMGB1 specifically within the pancreas. These mice develop pancreatic tumors essentially at birth, faster than any other animals that are programmed to develop the disease. For his funded work, Dr. Tang plans on further evaluating the potential role of HMGB1 as a tumor suppressor. He will analyze how and when HMGB1 exerts its effects on pancreatic tumor formation. In addition, his work will focus on the biological outcomes of HMGB1 inactivation in pancreatic cells. Dr. Tang's central hypothesis is that intracellular HMGB1 functions as a previously unrecognized tumor suppressor gene based on its location and is a key regulator of pancreatic cancer initiation and progression. This research aims to elucidate how HMGB1 acts to promote pancreatic tumorigenesis, with the ultimate goal of devising better prevention as well as treatment strategies for patients with pancreatic cancer.