



Research

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GRANT SNAPSHOT

2009 Samuel Stroum – Pancreatic Cancer Action Network – AACR Fellowship

Grantee:	Eric W. Humke, MD, PhD
Institution:	Stanford University
Research Project:	A Novel Paracrine Hedgehog Signaling Loop in Pancreatic Adenocarcinoma
Award Period:	July 1, 2009 – June 30, 2010
Amount:	\$45,000



Biographical Highlights

Dr. Humke earned his MD and PhD from University of Michigan in 2004. He conducted his doctoral research while a visiting scientist at Genentech, Inc. His graduate work led to the identification of several novel and important mediators involved in cell death and resulted in seven publications which focused on the role of caspases, a type of protein, in cell disposal. After completing his residency in internal medicine at Washington University, St. Louis, he joined Stanford University as a clinical oncology fellow. During his first year as an oncology fellow, Dr. Humke spent a significant amount of time seeing patients with pancreatic cancer. Experiencing first-hand how poor our tools are to treat the disease and having lost an uncle to pancreatic cancer, Dr. Humke decided to study how pancreatic cancer forms. Currently, he is performing laboratory work in the Departments of Developmental Biology and Biochemistry, where he is examining how pathways important for normal human embryogenesis are usurped during pancreatic cancer pathogenesis.

Project Overview

This project represents an important opportunity for Dr. Humke to apply his expertise in molecular oncology and cell signaling pathways to the study of pancreatic cancer. Hedgehog is a key pathway that has been found to drive pancreatic cancer. Important during embryonic development, the Hedgehog pathway is normally inactive in most adult cells but has been found to be reactivated in patients with pancreatic cancer. It appears from recent research that pancreatic tumors release the protein Sonic hedgehog (Shh) to activate the Hedgehog pathway in surrounding non-cancerous stroma, or support cells. The reception of Shh by the non-cancerous environment results in the release of a yet unidentified growth signal that creates a paracrine loop that feeds back to the pancreatic cancer, fueling it to grow even faster. This leads to many critical questions about how pancreatic cancer develops.

In this highly promising project, which is funded in memory of Samuel Stroum, Dr. Humke will closely examine the interplay between pancreatic cancer and its microenvironment, focusing on the following three key questions. First, what is the genetic basis for switching on the expression of Shh in pancreatic cancer? Second, what is the feedback signal from the stroma that supports tumor growth? Third, does inhibition of the paracrine loop inhibit pancreatic tumor growth? The results of this study are expected to advance our understanding of the relationship between the tumor and its surrounding stroma, and the genetic changes that lead to the production of Shh. These findings may be also applicable to other cancers that are characterized by aberrant activation of the Hedgehog pathway.

As a medical oncologist, Dr. Humke is driven to make discoveries in the laboratory that will have patient benefits. According to Dr. Humke, the Fellowship award will “allow me to combine my passion for basic science with patient care, and fosters my career development as a clinical scientist in cancer research.”