GRANT SNAPSHOT

2014 Samuel Stroum – Pancreatic Cancer Action Network – AACR Fellowship

Grantee:	Barbara Grüner, PhD
Institution:	Stanford University
Research Project:	*Multiplexed in vivo drug screening: Inhibitors of metastatic seeding*
Award Period:	July 1, 2014 – June 30, 2015
Amount:	$45,000

Biographical Highlights

Originally from Germany, Dr. Grüner received her Diploma in Molecular Medicine from the Friedrich-Alexander University of Erlangen in 2008. Her PhD studies at the Technical University of Munich focused on the molecular mechanisms of pancreatic tumorigenesis. To continue her studies in pancreatic cancer she moved to the US in 2013 and joined the laboratory of Monte Winslow, PhD as a postdoctoral fellow in the Department of Genetics at Stanford University. Dr. Winslow received the Skip Viragh – Career Development Award from the Pancreatic Cancer Action Network in 2013.

Dr. Grüner's graduate work resulted in several scientific publications in the field of pancreatic cancer. Her postdoctoral training now focuses on the mechanisms that drive pancreatic cancer metastasis with an emphasis on developing new in vivo screening methods to identify new drugs to target metastatic pancreatic cancer.

Project Overview

Dr. Grüner seeks to identify drugs that specifically block the metastatic spread of pancreatic tumors. One of the key features that makes pancreatic tumors so difficult to treat is the propensity to metastasize, or spread, elsewhere in the body. Dr. Grüner has identified 1,440 compounds that could potentially block the metastasis of pancreatic cancer cells. To test these, she has devised a method to utilize pancreatic cancer cells grown in dishes that are then injected intravenously into a mouse, where they form a tumor. The specific pancreatic cancer cells that Dr. Grüner will utilize have been shown to spread to the mouse lungs. Since it would not be feasible to test each drug in a separate mouse, Dr. Grüner's strategy involves testing many drugs simultaneously in the same mouse.

The pancreatic cancer cells will be plated in a dish divided into 96 wells. Each well will contain the same pancreatic cancer cells, "barcoded" with a small piece of DNA to differentiate those cells from the others (the barcode not affect any characteristics of the cells). Each sample in the dish will be treated with a separate drug, and then the cells will be mixed together and injected into a mouse. Then, Dr. Grüner will be able to monitor which barcoded cells proceed to metastasize to the lung of the mouse. If particular cells are missing from the lung, then there is a chance that the drug they were treated with was effective at blocking metastasis, and further experiments will be conducted. This work has the potential to identify novel drugs that could be used in the treatment of pancreatic cancer and prevention of metastatic spread, as well as to expand the understanding of the process by which pancreatic cancer cells metastasize.