GRANT SNAPSHOT

2012 The Daniel and Janet Mordecai Foundation – Pancreatic Cancer Action Network – AACR Career Development Award

Grantee:	Mikala Egeblad, PhD
Institution:	Cold Spring Harbor Laboratory
Research Project:	*Dynamics of Tumor-Stroma Interactions in Pancreatic Cancer*
Award Period:	July 1, 2012 – June 30, 2014
Amount:	$200,000

Biographical Highlights

Dr. Egeblad received a bachelor's degree in medicine, a master's degree in human biology, and a PhD in cancer biology from the University of Copenhagen. She trained as a postdoctoral fellow in Zena Werb's laboratory at University of California, San Francisco. There, she employed mouse models to understand how the microenvironment (tissue surrounding a tumor) influences tumor progression, in particular with respect to roles of innate immune cells and matrix metalloproteinases. During her postdoctoral training, Dr. Egeblad developed techniques for using a complex microscope to perform imaging of tumor-microenvironment interactions in live mice. She went to Cold Spring Harbor Laboratory in 2009. Her work is now mainly focused on understanding how different components of the microenvironment influence response to chemotherapeutic drugs. Dr. Egeblad's interest in pancreatic cancer is grounded in both scientific curiosity about its unusual microenvironment and in the devastating experiences of two close friends whose parents succumbed to the disease.

Project Overview

It has been shown that pancreatic tumors are surrounded and infiltrated by a variety of non-cancer cells and proteins. This dense "microenvironment" is thought to support, nourish, and protect the tumor from therapies or an immune response. Therefore, drugs that target cancer cells directly may be ineffective if they do not penetrate the microenvironment, almost like a shell, surrounding the pancreatic tumor.

Dr. Egeblad is planning on utilizing her experience with state-of-the-art microscopy to "watch" the interaction between components of the microenvironment and pancreatic cancer cells, in a living mouse model of the disease. Specifically, she will focus her studies on collagen type I, a protein commonly expressed highly in the pancreatic tumor microenvironment, and how it interacts with cancer cells and cells of the immune system that migrate to the tumor's surroundings. Since collagen is known to provide structure for tissues, Dr. Egeblad and her colleagues will evaluate whether collagen type I is involved in the physical makeup of the microenvironment, and how that influences cancer cells' ability to move from the tumor, a necessary step in metastasis (tumor spread). The ability to watch the cells' interactions in real-time will provide valuable clues to the role of the tumor microenvironment, with hopes of designing ways to target this tissue and render the tumor vulnerable to treatment modalities.