NIH Award from the National Cancer Institute

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- Project: Developmental Aspects of Sexual Dimorphism of Hepatic Tumors: Zebrafish Model
- Start Date: July 1, 2009
- Total Award Amount: $167,752

How the results of this project will benefit society:
Hepatocellular carcinoma, which originates in the liver, accounts for 80 – 90 percent of all liver cancers. This type of cancer occurs more often in men than women. The survival rate for people with hepatocellular carcinoma is poor in part because of its typical discovery at a late stage and significant initial or acquired chemoresistance. This research will attempt to highlight the dominant role of the microenvironment in the regulation of the sexual differences in liver tumors. Further understanding the complex interaction between the tumor cell and its microenvironment is essential in order to develop focused therapeutic strategies to improve tumor treatment outcomes.

The problem the project is trying to solve:
Epidemiological data demonstrate strong gender bias in hepatocellular carcinomas. This phenomenon cannot not be attributed to gender differences in life style factors. Moreover, there is no evidence implicating direct effect of sex hormones in the tumor growth and dissemination. We hypothesize that a “feminization” of the phenotype of hepatocellular carcinoma is a result of reciprocal interaction between tumor and metabolic milieu of the host organism mediated through yet unknown pathways independent of sex hormones.

How this project will work:
In order to dissect molecular mechanisms responsible for sexually dimorphic behavior of hepatocellular carcinoma we will use serially transplantable tumors in a clonal zebrafish model recently developed in our lab. A second and closely related goal is to use this novel system as a tool for investigation of developmental aspects of tumor-host relationships focusing on changes in the tumor behavior and gene expression signatures in different developmental contexts of the host organism.

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