

METAvivor Final Report

Date: 4-29-2019

PI Name: David R. Soto-Pantoja, PhD

Grant title: **Anti-CD47 Immunotherapy as a treatment for metastatic breast cancer**

Public lay description of outcomes:

In 2018 invasive breast cancer remained one of the leading causes of death among women in the US. The formation of metastatic breast cancer can occur for many reasons including bypassing the immune system ability to clear cancer cells. Therefore, the objective of our METAvivor proposal was to find novel therapeutic strategies to enhance immune cells known as T cells to clear distant cancerous lesions. Through the work funded by the METAvivor foundation we show that expression of CD47 can impair cytotoxic T cell migration towards the tumor. Furthermore, we show for the first time that targeting the receptor CD47 reduces tumor burden of established metastasis by enhancing the abscopal effect of ionizing radiation. Experiments on both aims suggest that blocking CD47 on T cells autonomously regulates the ability of these cells to kill cancer cells indicating a new pathway by which this protein can affect immune cell activity against tumors. We have submitted letters of Intent proposing anti-CD47 immunotherapies for clinical trial studies. Thus, the work supported by the METAvivor has served as a basis to potentially launch trials that will impact the treatment of metastatic disease in the future.

Awards:

1. Invited talk and travel support *ASTRO-AACR Targeting the tumor microenvironment in Radiation Oncology Workshop*.
2. Selected talk from abstracts & Early Career Investigator Award, Keystone Symposia "Cancer Metastasis: The Role of Metabolism, Immunity and the Microenvironment"

Publications:

1. Manuel U. Ramirez, Elizabeth Stirling, Nancy J. Emenaker, David D. Roberts, **David R. Soto-Pantoja**. Thrombospondin-1 interactions regulate eicosanoid metabolism and signaling in cancer-related inflammation. *Cancer & Metastasis Reviews* June 16 2018.
2. McGee HM, Jiang D, **Soto-Pantoja DR**, Nevler A, Giaccia AJ, Woodward WA. Targeting the Tumor Microenvironment in Radiation Oncology: Proceedings from the 2018 ASTRO-AACR Research Workshop. *Clin Cancer Res*. 2019 Feb 5;PubMed PMID: [30723144](#).

Funding: Data generated with METAvivor support resulted in the award of a P30 CA012197 Cancer Center Pilot Grant Award (Co-PI Dr. Aleck Skardal Wake Forest Institute of Regenerative Medicine). The data generated was also used for submission to other foundations to continue the study of metastatic disease and will be used to R01 type applications to NCI and DOD.