



COLLOQUIUM

Arkadz Kirshtein

Department of Mathematics

University of Massachusetts Amherst

**Data Driven Mathematical Model for Colon Cancer
Progression**

Friday November 13th at 3pm on Zoom

<https://csuohio.zoom.us/j/91945126460>

Bio: Arkadz is interested in mathematical modeling of biological and physical systems. He graduated from Penn State with his Ph.D. in Mathematics in 2019 and is currently working as a postdoctoral research associate at University of Massachusetts Amherst. Starting in Spring 2021, Arkadz will be joining the Tufts University Mathematics department as Norbert Wiener Assistant Professor. More details about me and my research can be found on my web page: <https://sites.google.com/site/akirshtein/>

Abstract: Every colon cancer has its own unique characteristics, and therefore may respond differently to identical treatments. In a recent article we develop a data driven mathematical model for the interaction network of key components of the immune microenvironment in colon cancer. We estimate the relative abundance of each immune cell from gene expression profiles of tumors, and group patients based on their immune patterns. Then we compare the tumor sensitivity and progression in each of these groups of patients and observe differences in the patterns of tumor growth between the groups. In this talk I will explain methods used for modeling, immune pattern estimation, and sensitivity analysis of the resulting system. Then I will present the results of the model and its analysis.

This is a Joint work with Leili Shahriyari, Wenrui Hao, Shaya Akbarinejad, Trang Le, and Rachel Aronow. See the preprint for more details: <https://www.biorxiv.org/content/10.1101/2020.11.02.365668v1>