

# SCMS Seminar



## **MATHEMATICAL MODELING AND COMPUTATIONAL INVESTIGATION OF HETEROGENEITY IN BREAST CANCER CELLS**

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**Time:** 10:00-11:00, Thursday, May 30<sup>th</sup>, 2019

**Venue:** Room 102, Shanghai Center for Mathematical Sciences

**Abstract:** Solid tumors are heterogeneous in composition. Cancer stem cells (CSCs) are a highly tumorigenic cell type found in developmentally diverse tumors that are believed to be resistant to standard chemotherapeutic drugs and responsible for tumor recurrence. Thus understanding the tumor growth kinetics is critical for development of novel strategies for cancer treatment. For this talk, I shall introduce mathematical modeling to study Her2 signaling for the dynamical interaction between cancer stem cells (CSCs) and non-stem cancer cells, and our findings reveal that two negative feedback loops are critical in controlling the balance between the population of CSCs and that of non-stem cancer cells. Furthermore, the model with negative feedback suggests that over-expression of the oncogene HER2 leads to an increase of CSCs by regulating the division mode or proliferation rate of CSCs.