Modeling cancer stem cells and tumor growth - what can we learn

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007 Kemeny Hall, 4:00 pm
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Abstract

Cancer is a complex disease, and mathematical models have been proposed to identify key mechanisms that underlie dynamics and events at every scale of interest. With the increasing availability of data at each scale and the awareness of the need to link these efforts, increasing attention is now being paid to developing multi-scale predictive models that bridge these scales. We propose novel models of tumor growth that link the cellular scale with macroscopic population behavior. We model the so-called cancer stem cell hypothesis, which assumes that cancer cells have differential ability to initiate and sustain tumors. Interactions of cancer stem cells and non-stem cancer cells lead to complex, unexpected population dynamics that inform about current and future treatment approaches.

This talk should be accessible to graduate students.