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Statistical Mechanics of Stem Cells

Wednesday 31 May 2017 08:00 (15 minutes)

Much of complex biology results from interactions among a large number of individually simpler elements. Behavior of large collection of cells from microbes to stem cells are no different. In this talk I will describe how theoretical ideas from statistical mechanics are being used to understand behavior of such heterogeneous populations, focusing on two examples. In first, I will present a coarse-grained model of blood regeneration, which provides a framework to understand large variations (˜3 orders of magnitude) among contributions from individual stem cells without active competition. In contrast, the second describes how competition plays a central role in understanding dynamics of reprogramming population of somatic cells.

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