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# Cell population models with explicit cell cycle length

Péter Boldog

Wigner Research Centre for Physics; Bolyai Institute, University of Szeged, Hungary
boldogpeter@gmail.com

Cells are mesoscopic discrete entities within a multicellular organism, existing on a scale much larger than the molecules they are composed of, yet much smaller than the organism itself. Our expectations for mathematical models are that they can describe a wide range of cell numbers, including extremely low counts, enable the investigation of various phenotypes, and account for the cell cycle.

The cell cycle refers to the series of events that occur in a cell as it grows, replicates its DNA, and divides into two daughter cells. It is a highly regulated process that ensures the accurate duplication and distribution of genetic material. The cell cycle consists of several distinct phases, and its duration can vary depending on the cell type. Typically, the length of the cell cycle is measured in hours.

In this presentation, we will introduce novel stochastic and deterministic models that allow for easy modeling of the impact of the cell cycle on population dynamics. This is a joint work with Gergely Röst.