
NATALIA KOMAROVA, University of California
Mathematical methods in evolutionary dynamics

Evolutionary dynamics permeates life and life-like systems. Mathematical methods can be used to study evolutionary processes, such as selection, mutation, and drift, and to make sense of many phenomena in the life sciences. How likely is a single mutant to take over a population of individuals? What is the speed of evolution, if things have to get worse before they can get better (aka, fitness valley crossing)? Can cooperation, hierarchical relationships between individuals, spatial interactions, or randomness influence the speed or direction of evolution? Applications to biomedicine will be discussed.