



# Evolutionary Processes in Finite Populations

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We consider the evolution of large but finite populations on arbitrary fitness landscapes. We describe the evolutionary process by a Markov, Moran process. We show that to  $O(1/N)$ , the time-averaged fitness is lower for the finite population than it is for the infinite population. We also show that fluctuations in the number of individuals for a given genotype can be proportional to a power of the inverse of the mutation rate. Finally, we show that the probability for the system to take a given path through the fitness landscape can be non-monotonic in system size.

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