

Introduction to molecular evolution

Lecture 13, Statistics 246

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Evolution using molecules: implicit assumptions

Our DNA is inherited from our parents more or less unchanged.

Molecular evolution is dominated by mutations that are neutral from the standpoint of natural selection.

Mutations accumulate at fairly steady rates in surviving lineages.

We can study the evolution of (macro) molecules and reconstruct the evolutionary history of organisms using their molecules.

Some important dates in history (billions of years ago)

Origin of the universe	15 ±4
Formation of the solar system	4.6
First self-replicating system	3.5 ±0.5
Prokaryotic-eukaryotic divergence	1.8 ±0.3
Plant-animal divergence	1.0
Invertebrate-vertebrate divergence	0.5
Mammalian radiation beginning	0.1

86 CSH Doolittle et al.