

# DNA Evolution Models

Estimating true substitution rate

Based on observed substitution rate

# Jukes-Cantor Model

- Markov models
- Uniform rate for all substitutions
- Stationary distribution
- Continuous time approximation
- Solving differential equations
- Relationship between  $\lambda$  and  $\alpha$
- Distance formula: rate of change

# Kimura Model

- Different rates for transitions and transversions
- Distance formula (Felsenstein, 2004)