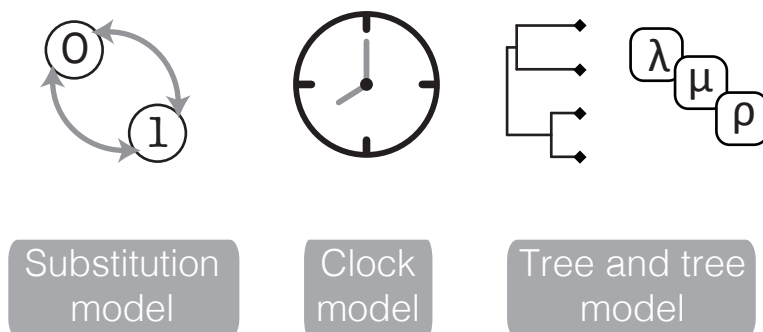


Tripartite model components



Bayes theorem

$$P(\text{model} \mid \text{data}) = \frac{P(\text{data} \mid \text{model}) P(\text{model})}{P(\text{data})}$$

likelihood priors

posterior marginal likelihood of the data

Putting everything together

posterior

$$P(\text{tree, fossil ages, model parameters} \mid \text{data}) =$$

$$\frac{P(\text{data} \mid \text{tree, fossil ages, model parameters}) P(\text{tree} \mid \text{fossil ages}) P(\text{fossil ages}) P(\text{model parameters}) P(\text{tree}) P(\text{model parameters})}{P(\text{data})}$$

likelihood of the data given the model probability of the timetree given the tree model priors on fossil ages priors on model parameters

marginal likelihood of the data