



**Mutations**


**Coalescent theory**

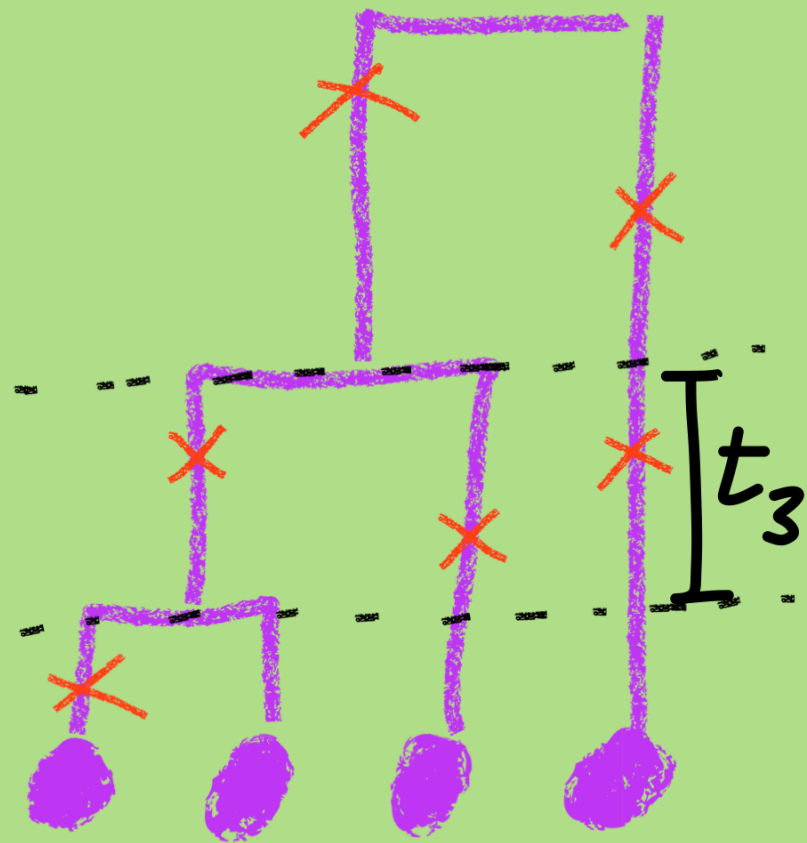
*t*



# mutations on branch of length  $t$   
is Poisson rv w/ mean  $\mu t$

$$IP(k | t) = \frac{(\mu t)^k e^{-\mu t}}{k!}$$

 mutations per genome per generation



# mutations in intercoalescent interval  $i$ , of length  $t_i$ , is Poisson rv w/mean

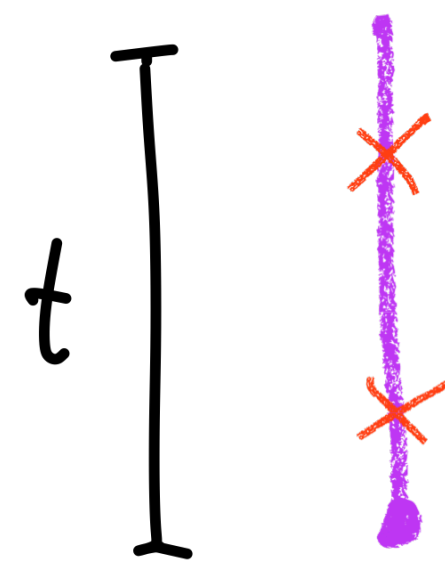
$i \mu t_i$

# lines in  
interval  $i$

duration of  
interval  $i$

# Coalescent theory

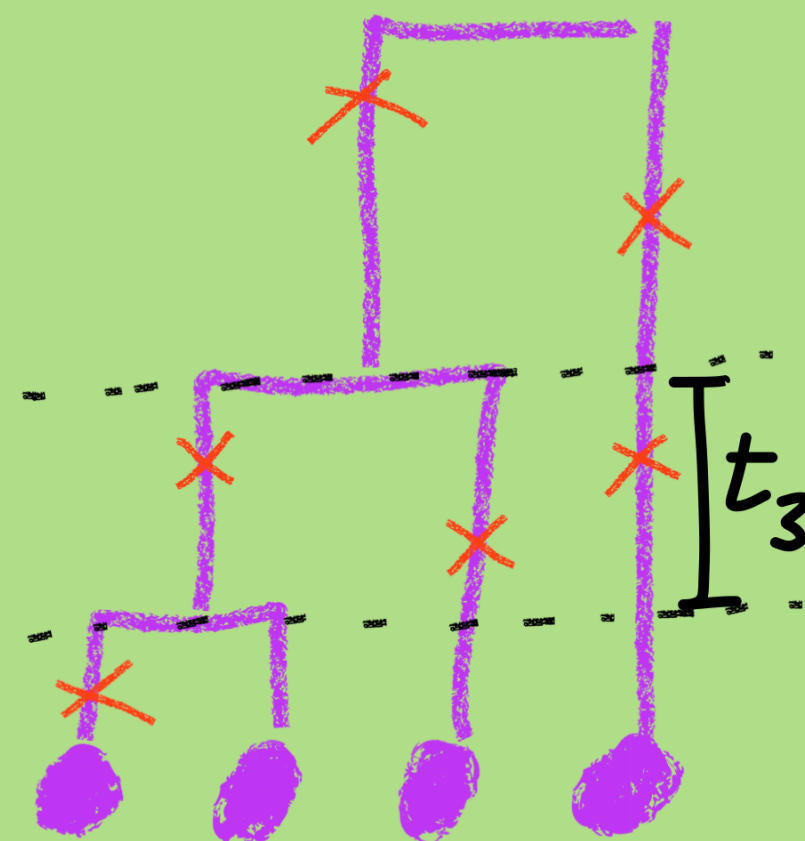
## Mutations



# mutations on branch of length  $t$   
is Poisson rv w/ mean  $\mu t$

$$IP(k | t) = \frac{(\mu t)^k e^{-\mu t}}{k!}$$

$\mu$  mutations per genome per generation



# mutations in intercoalescent interval  $i$ , of length  $t_i$ , is Poisson rv w/mean

$$i \mu t_i$$

$i$  # lines in interval  $i$        $t_i$  duration of interval  $i$

# Coalescent theory

## Genetic diversity

