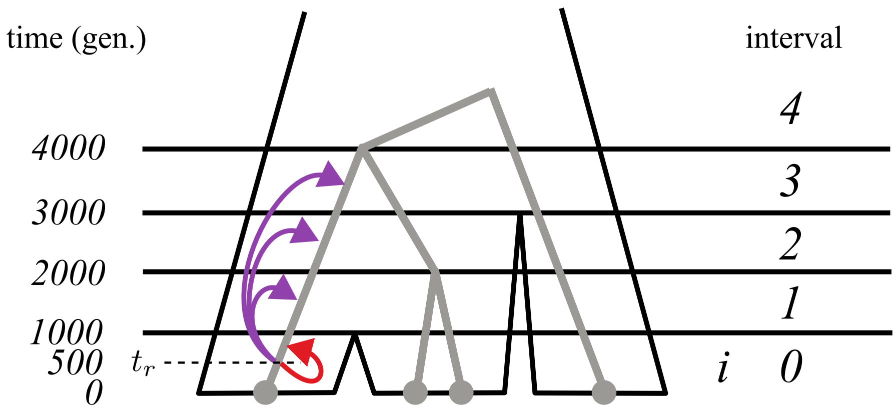


The probability of no-change given recombination on a given branch at a given time:

$$\mathbb{P}(\text{no-change}|\mathcal{S},\mathcal{G},b,t_r) = \frac{1}{a_i} + f(i,i)\exp\left\{\frac{a_i}{2n_i}t_r\right\} + \sum_{j\in\mathcal{J}_b} f(i,j)\exp\left\{\frac{a_i}{2n_i}t_r\right\}$$

In this example, recombination occurs on branch $b$ in interval 0 ($i$=0) at time $t_r$=500, and we will assume all $N_e$=1000. We can plug these values into the equation:

$$\mathbb{P}(\text{no-change}|\mathcal{S},\mathcal{G},b,t_r = \frac{1}{1} + {\color{red}f(0,0)}\exp\left\{\frac{1}{2(1000)}500\right\} + \sum_{j\in\{1,2,3\}} {\color{purple}f(0,j)}\exp\left\{\frac{1}{2(1000)}500\right\}$$

Then expand the piecewise constant functions *f(i,j)* for each interval on $b$:

$${\color{red}f(i,i) = -\frac{1}{a_i}\exp\left\{-\frac{a_i}{2n_i}\mu_i\right\}}$$

$${\color{red}f(0,0) = -\frac{1}{1}\exp\left\{-\frac{1}{2(1000)}1000\right\}}$$

$${\color{purple}f(i,j) = \frac{1}{a_j}\left(1-\exp\left\{-\frac{a_j}{2n_j}d_j\right\}\right)\exp\left\{-\frac{a_i}{2n_i}\mu_i - \sum_{q\in\mathcal{Q}_b}\frac{a_q}{2n_q}d_q\right\}}$$

$${\color{purple}f(0,1) = \frac{1}{3}\left(1-\exp\left\{-\frac{3}{2(1000)}1000\right\}\right)\exp\left\{-\frac{1}{2(1000)}1000\right\}}$$

$${\color{purple}f(0,2) = \frac{1}{2}\left(1-\exp\left\{-\frac{2}{2(1000)}1000\right\}\right)\exp\left\{-\frac{1}{2(1000)}1000-\left(\frac{3}{2(1000)}1000\right)\right\}}$$

$${\color{purple}f(0,3) = \frac{1}{3}\left(1-\exp\left\{-\frac{3}{2(1000)}1000\right\}\right)\exp\left\{-\frac{1}{2(1000)}1000-\left(\frac{3}{2(1000)}1000+\frac{2}{2(1000)}1000\right)\right\}}$$

And sum to get final result: (colored to correspond with the figure above):

$$\begin{aligned}\mathbb{P}(\text{no-change}|\mathcal{S},\mathcal{G},b,t_r) &= 1 + {\color{red}f(0,0)}\times 1.284 + \sum_{j\in\{1,2,3\}}{\color{purple}f(0,j)}\times 1.284 \\ &= 1 + {\color{red}(-0.6065\times 1.284)} + {\color{purple}(0.1571\times 1.284)} + {\color{purple}(0.0428\times 1.284)} + {\color{purple}(0.0129\times 1.284)} \\ &= 0.4944\end{aligned}$$