

PROPOSAL FUNCTION:

$$q(\theta_1, \dots, \underline{\theta_i^{new}}, \dots, \theta_m | \theta_1, \dots, \theta_i, \dots, \theta_m)$$

$$= \pi(\theta_i | \theta_1, \dots, \theta_{i-1}, \theta_{i+1}, \dots, \theta_m)$$

$$\alpha = \min \left(1, \frac{\pi(\theta_1, \dots, \theta_i^{new}, \dots, \theta_m) q(\theta_1, \dots, \theta_i | \theta_1, \dots, \theta_i^{new}, \dots, \theta_m)}{\pi(\theta_1, \dots, \theta_i, \dots, \theta_m) q(\theta_1, \dots, \theta_i^{new}, \dots, \theta_m | \theta_1, \theta_i, \theta_m)} \right)$$

$$= \min \left(1, \frac{\pi(\theta_1, \dots, \theta_i^{new}, \dots, \theta_m) \pi(\theta_1, \dots, \theta_i | \theta_1, \dots, \theta_{i-1}, \theta_{i+1}, \dots, \theta_m)}{\pi(\theta_1, \dots, \theta_i, \dots, \theta_m) \pi(\theta_1, \dots, \theta_i^{new}, \dots, \theta_m | \theta_1, \dots, \theta_{i-1}, \theta_{i+1}, \dots, \theta_m)} \right)$$

$$= \min \left(1, \frac{\pi(\theta_1, \dots, \theta_{i-1}, \theta_{i+1}, \dots, \theta_m)}{\pi(\theta_1, \dots, \theta_{i-1}, \theta_{i+1}, \dots, \theta_m)} \right) = 1$$