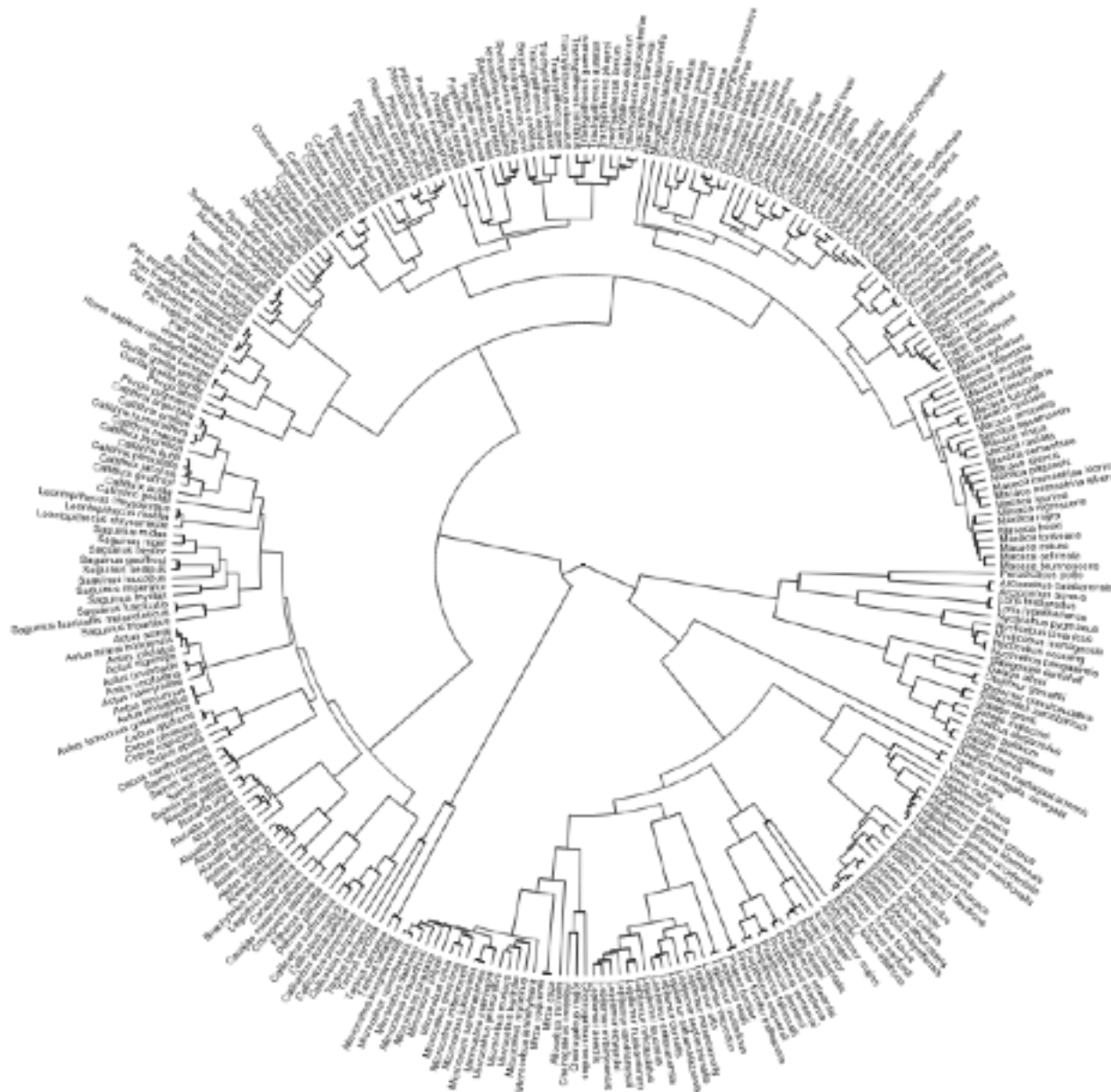


MORE COMPLEX STRUCTURING OF THE DEPENDENCY ACROSS COEFFICIENTS

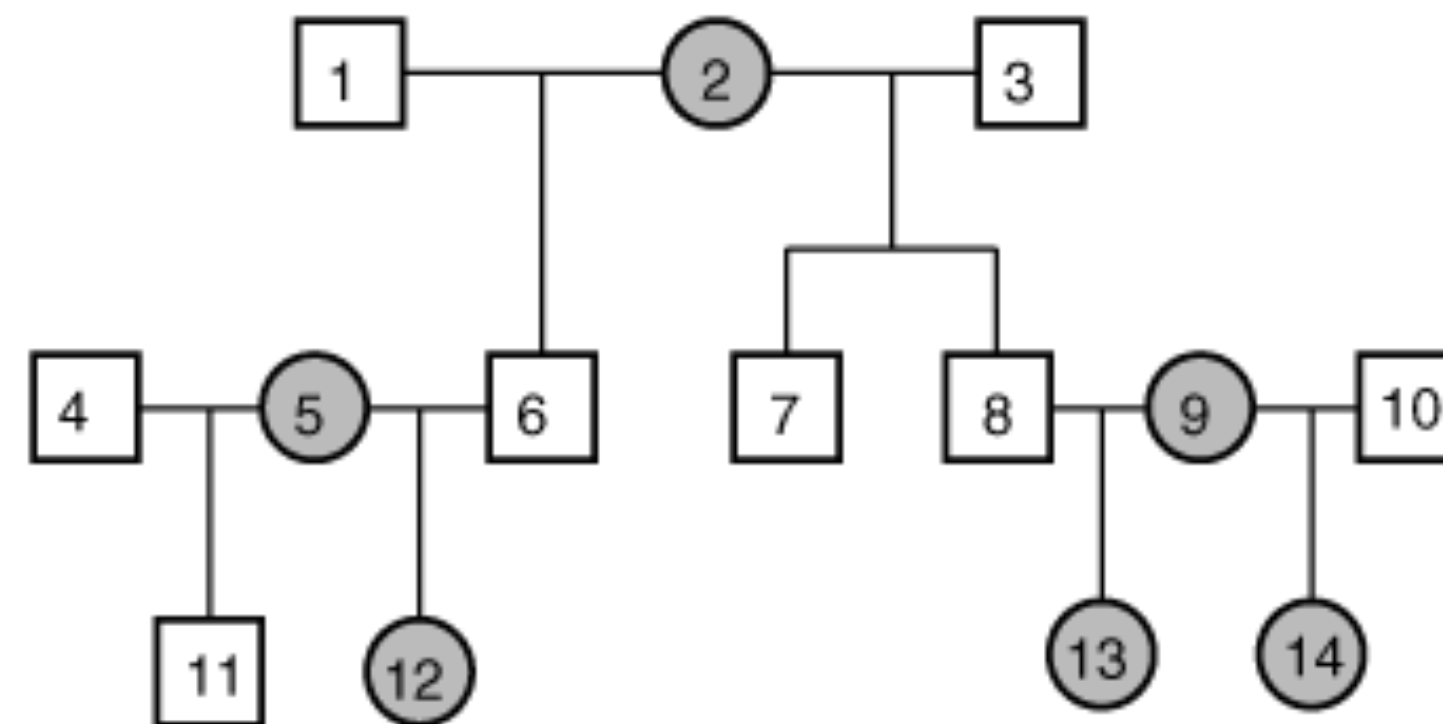
Phylogenetic models

Evolutionary relatedness



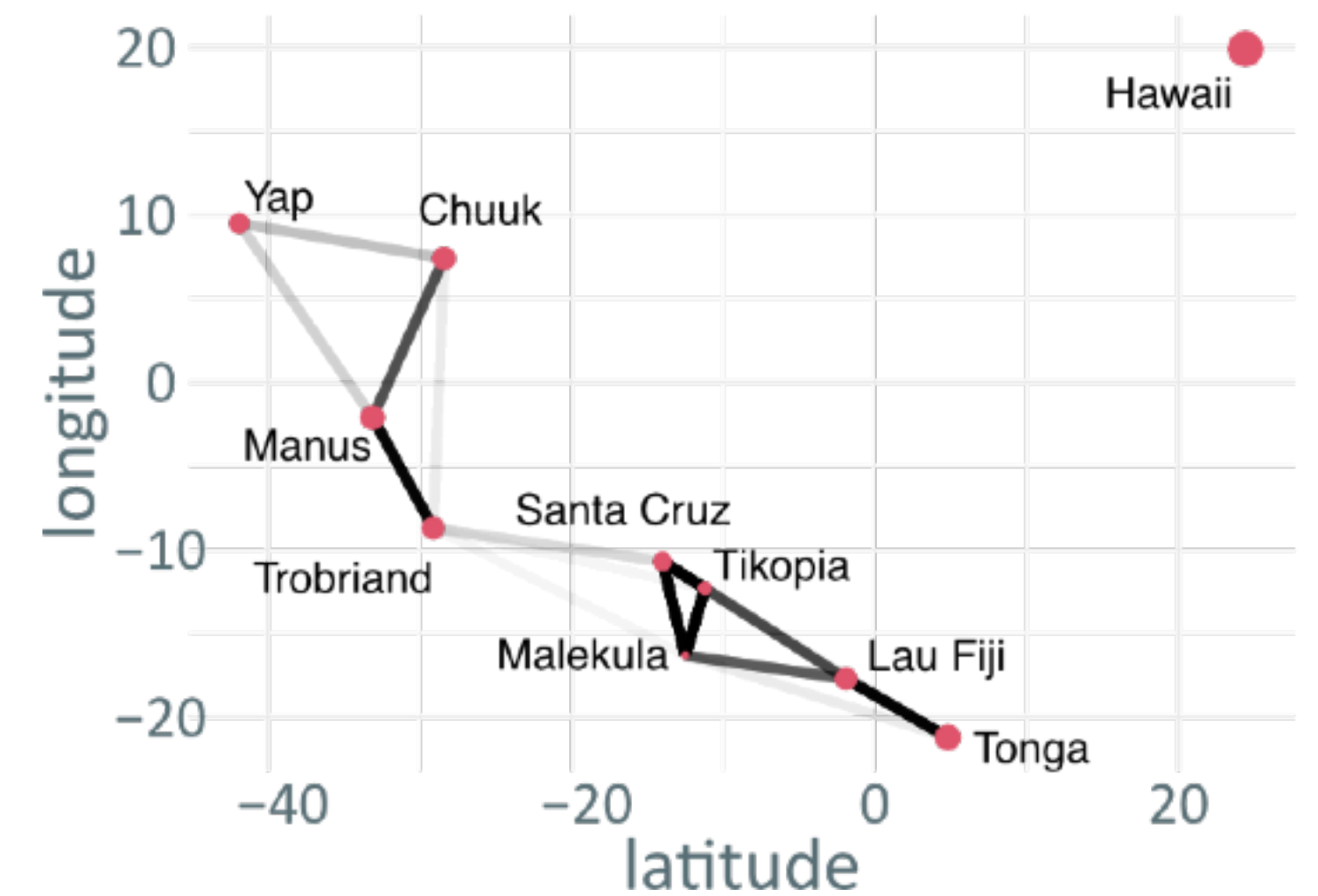
Animal models

Genetic relatedness

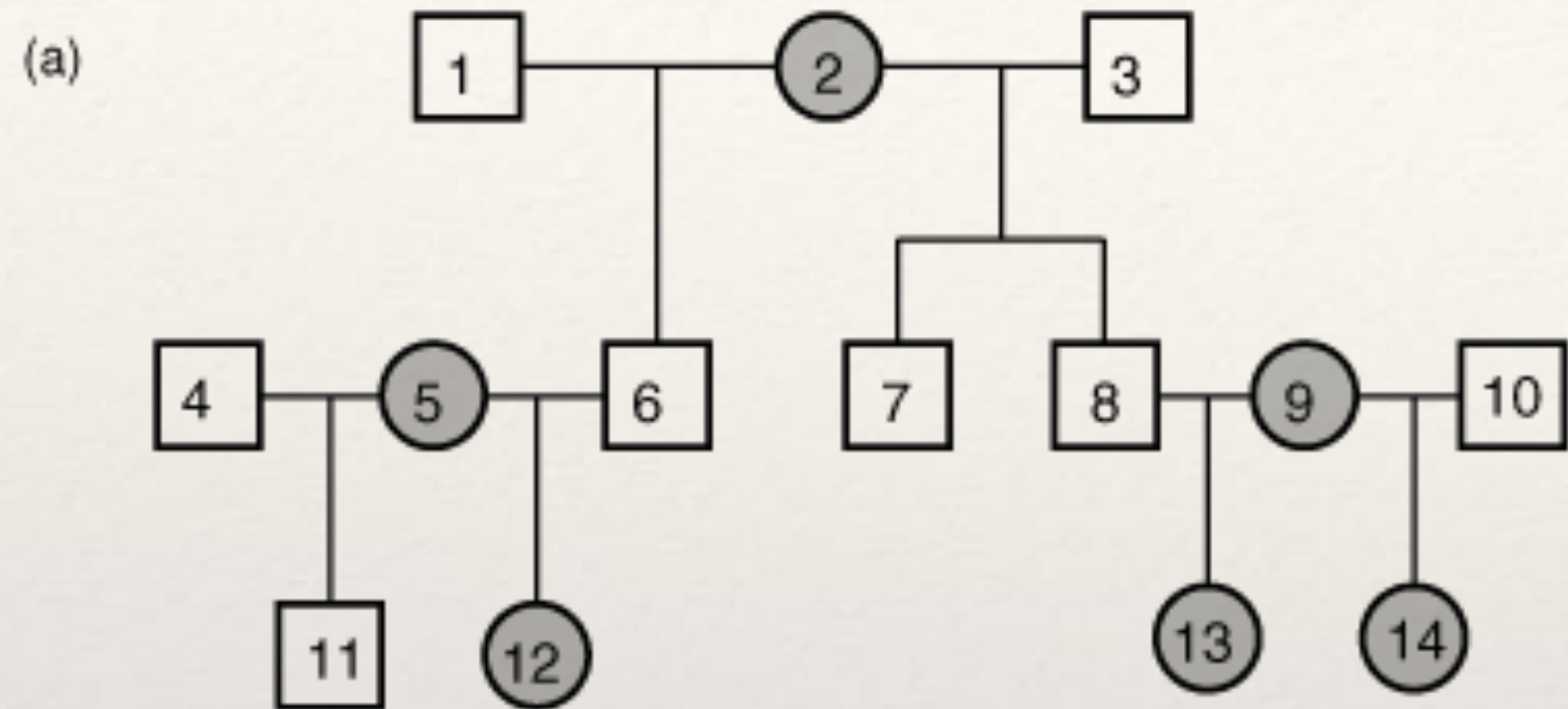


Spacial auto-correlation

Spacial proximity



EXAMPLE: ANIMAL MODEL



(b)

$$\mathbf{A} = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0.5 & 0 & 0 & 0 & 0 & 0 & 0.25 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0.5 & 0.5 & 0.5 & 0 & 0 & 0 & 0.25 & 0.25 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0.5 & 0.5 & 0 & 0 & 0 & 0 & 0.25 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0.5 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0.5 & 0.5 & 0 & 0 \\ 0.5 & 0.5 & 0 & 0 & 0 & 1 & 0.25 & 0.25 & 0 & 0 & 0 & 0.5 & 0.125 & 0 \\ 0 & 0.5 & 0.5 & 0 & 0 & 0.25 & 1 & 0.5 & 0 & 0 & 0 & 0.125 & 0.25 & 0 \\ 0 & 0.5 & 0.5 & 0 & 0 & 0.25 & 0.5 & 1 & 0 & 0 & 0 & 0.125 & 0.5 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0.5 & 0.5 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0.5 \\ 0 & 0 & 0 & 0.5 & 0.5 & 0 & 0 & 0 & 0 & 0 & 1 & 0.25 & 0 & 0 \\ 0.25 & 0.25 & 0 & 0 & 0.5 & 0.5 & 0.125 & 0.125 & 0 & 0 & 0.25 & 1 & 0.0625 & 0 \\ 0 & 0.25 & 0.25 & 0 & 0 & 0.125 & 0.25 & 0.5 & 0.5 & 0 & 0 & 0.0625 & 1 & 0.25 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.5 & 0.5 & 0 & 0 & 0.25 & 1 \end{pmatrix}$$

$$y_i \sim \text{Normal}(\mu_i, \sigma_R)$$

$$\mu_i = \alpha_0 + \alpha_i$$

$$\alpha \sim \text{MVNormal}(0, \sigma_G \times \mathbf{A})$$

$$\sigma_G, \sigma_R \sim \text{Exponential}(1)$$