



$$\begin{aligned}
 y_i &\sim \text{Poisson}(\lambda) \\
 s_i &\sim \text{MultiNormal}(0, \Sigma_s) \\
 \Sigma_s &= \sigma^2 * (D - p * A) \\
 \sqrt{(\sigma^2)} &\sim \text{half-Cauchy}(2.5) \\
 p &\sim \text{Uniform}(0, 1) \\
 h_i &\sim \text{MultiNormal}(0, \Sigma_p) \\
 \Sigma_p &= v \times \text{VCV}_{phy} \\
 v &\sim \text{half-Cauchy}(2.5) \\
 \beta &\sim \text{Normal}(0, 10)
 \end{aligned}$$