

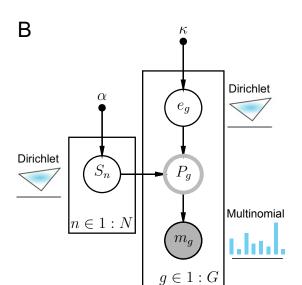
## Generative mutational model

$$e_g \sim \mathrm{Dir}(\kappa)$$

$$S_n \sim \text{Dir}(\alpha)$$

$$\theta_{g,i} \sim \operatorname{Cat}(e_g)$$

$$m_{g,i} \sim \operatorname{Cat}(S_n | \theta_{g,i} = n)$$



## NMF model

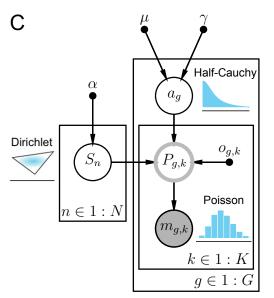
$$e_g \sim \text{Dir}(\kappa)$$

$$S_n \sim \text{Dir}(\alpha)$$

$$P_{g,k} = \sum_{n} e_{g,n} S_{n,k}$$

$$m_g \sim \text{Mult}(P_g | E, S)$$

$$m_g \sim \text{Mult}(P_g | E, S)$$



## EMu model

$$a_g \sim \text{HalfCauchy}(\mu, \gamma)$$

$$S_n \sim \text{Dir}(\alpha)$$

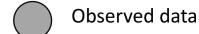
$$P_{g,k} = o_{g,k} \times \sum_{n} a_{g,n} S_{n,k}$$

$$m_{g,k} \sim \text{Pois}(P_{g,k} | o, A, S)$$

$$m_{g,k} \sim \operatorname{Pois}(P_{g,k} | o, A, S)$$

Fixed value









Dependency



Probability distribution

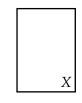


Plate - indicates repeated elements within the model