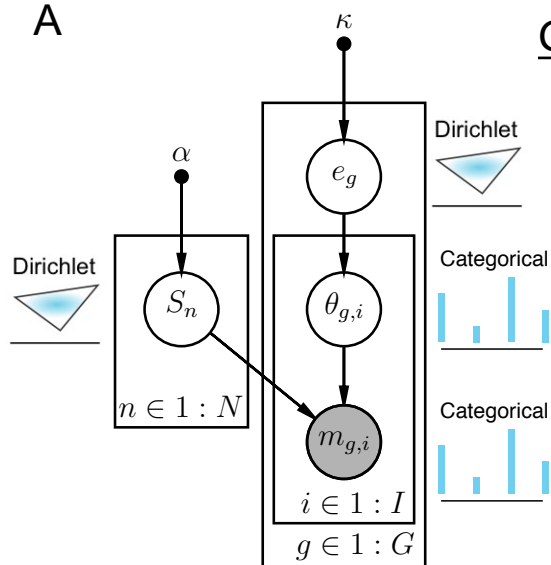


A Generative mutational model



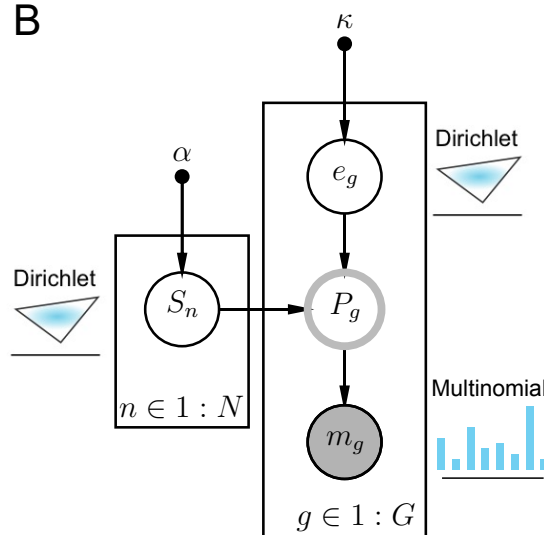
$$e_g \sim \text{Dir}(\kappa)$$

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

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

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

B NMF model



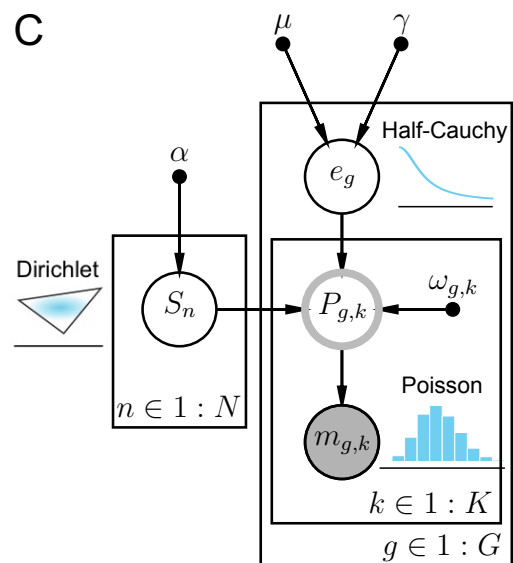
$$e_g \sim \text{Dir}(\kappa)$$

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

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

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

C EMu model



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



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

$$P_{g,k} = \omega_{g,k} \times \sum_n e_{g,n} S_{n,k}$$

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

Legend

- Fixed value
- Random variable
- Observed data
- Deterministic value

- Dependency
-  Poisson
-  Plate – indicates repeated elements within the model