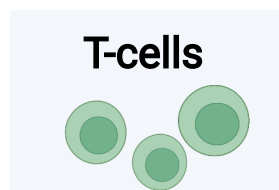


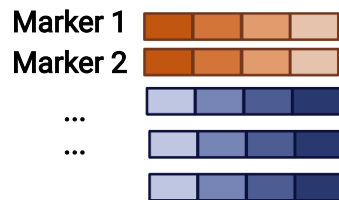
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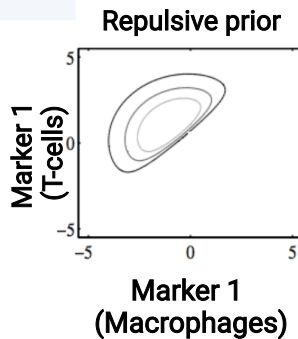
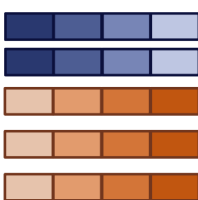
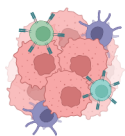
Macrophages



T-cells



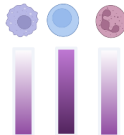
Macrophages

Bulk
Tumor

BayesDeBulk

 π_1 $+$ π_2 Fraction of
immune cells

Genes

Markers
expression
for different
cells

B

Bulk Data

Proteome



RNA

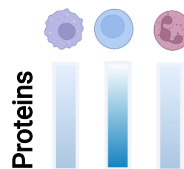
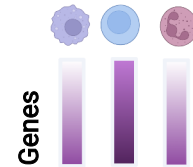


BayesDeBulk

$$\begin{pmatrix} Y_i \\ Z_i \end{pmatrix} \sim N \left(\begin{pmatrix} \theta_i^Y \\ \theta_i^Z \end{pmatrix}, \begin{pmatrix} \Sigma^Y & 0 \\ 0 & \Sigma^Z \end{pmatrix} \right)$$

$$\theta_i^Y = \pi_{1,i}\mu_1^Y + \dots + \pi_{K,i}\mu_K^Y$$

$$\theta_i^Z = \pi_{1,i}\mu_1^Z + \dots + \pi_{K,i}\mu_K^Z$$

Protein expression
for different cellsRNA expression for
different cellsFraction of
immune cells