

Step 1

Matrix of the mean value over PS samples

$$\begin{bmatrix} 0.35 & -0.39 & -0.12 \\ -0.92 & 0.73 & -0.73 \\ 0.34 & 0.39 & 0.00 \end{bmatrix}$$

convert

Discretize into topology matrix

$$\begin{bmatrix} 1 & -1 & -1 \\ -1 & 1 & -1 \\ 1 & 1 & 0 \end{bmatrix}$$

Step 2

Use CV matrix to determine backbone motif.

Coefficient of Variance (CV)=std/|mean|

$$\begin{bmatrix} 1.27 & 0.89 & 4.77 \\ 0.07 & 0.18 & 0.31 \\ 0.51 & 0.54 & 161.14 \end{bmatrix}$$

check

CV(i,j) > cut-off large dispersion of data,
discard from backbone motif

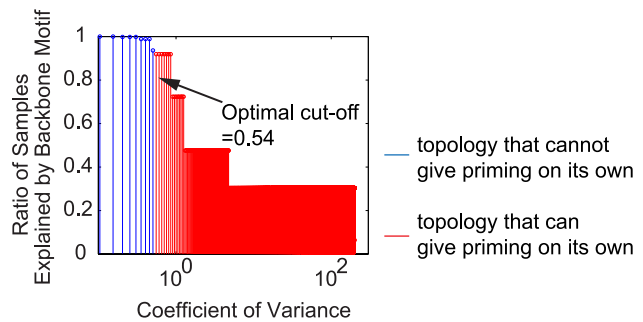
CV(i,j) < cut-off small dispersion of data,
stay in the backbone motif.

Backbone motif depends on an optimal cut-off value, which is determined in Step 2.1

Step 2.1

Find an optimal cut-off of CV that defines the backbone motif:

1. contains the simplest topology
2. able to give priming on its own
3. common in most samples



Step 2.2

Getting the backbone motif from the optimal cut-off in the CV.

links < optimal cut-off are kept

$$\begin{bmatrix} 1.27 & 0.89 & 4.77 \\ \underline{0.07} & \underline{0.18} & \underline{0.31} \\ \underline{0.51} & \underline{0.54} & 161.14 \end{bmatrix}$$

$$\begin{bmatrix} Go & Go & Go \\ Stay & Stay & Stay \\ Stay & Stay & Go \end{bmatrix}$$

get the corresponding backbone motif

$$\begin{bmatrix} 1 & -1 & -1 \\ -1 & 1 & -1 \\ 1 & 1 & 0 \end{bmatrix}$$

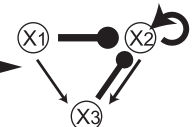


Figure S3. Statistical method used to identify backbone motifs from priming/tolerance data.