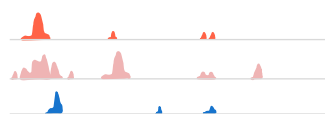
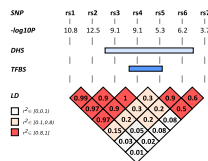
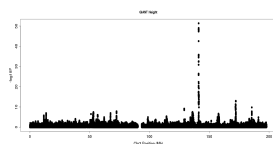
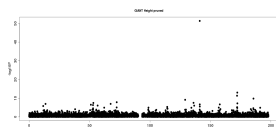


Figure 1

GWAS Summary statistics LD information Regulatory/functional data



1. Greedy *LD pruning* ($r^2 > 0.01$)



2. *LD tagging* ($r^2 > 0.8$)
annotation overlap

A annotations

V variants	1	1	0	1	1	1	0	1
	1	1	0	1	0	1	0	1
	1	1	1	1	0	0	0	1
	0	0	0	0	0	0	0	1
	1	1	1	1	0	1	0	1
	0	0	0	1	0	1	0	1
	1	1	1	1	0	0	0	1
	1	1	1	1	0	1	1	1

3. Generalized linear model with *feature correction*

$$\text{logit } E(y) = 1\alpha + X_{\text{TSS}}\beta_{\text{TSS}} + X_{\text{TAGS}}\beta_{\text{TAGS}} + X_{\text{Ai}}\beta_{\text{Ai}}$$

TSS distance



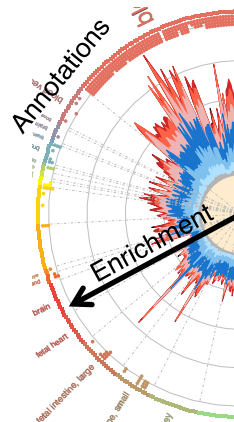
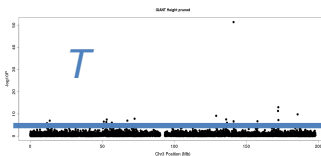
LD proxies
($r^2 > 0.8$)



Annotation j

$$y_{\text{SNPi}} \sim \text{Bernoulli}$$

$$y_{\text{SNPi}} = \begin{cases} 1 & \text{if P-value} < T \\ 0 & \text{otherwise} \end{cases}$$



4. Model selection for multiple annotations

- Sort annotations in order of significance
- Iteratively add another annotation to the model if it improves the model
 $\text{logit } E(y) = 1\alpha + X_{\text{TSS}}\beta_{\text{TSS}} + X_{\text{TAGS}}\beta_{\text{TAGS}} + X_{\text{A1}}\beta_{\text{A1}} + \dots + X_{\text{Ai}}\beta_{\text{Ai}}$
- Report final model and tree of retained/discarded annotations

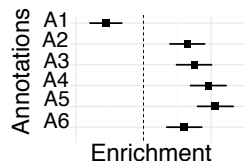
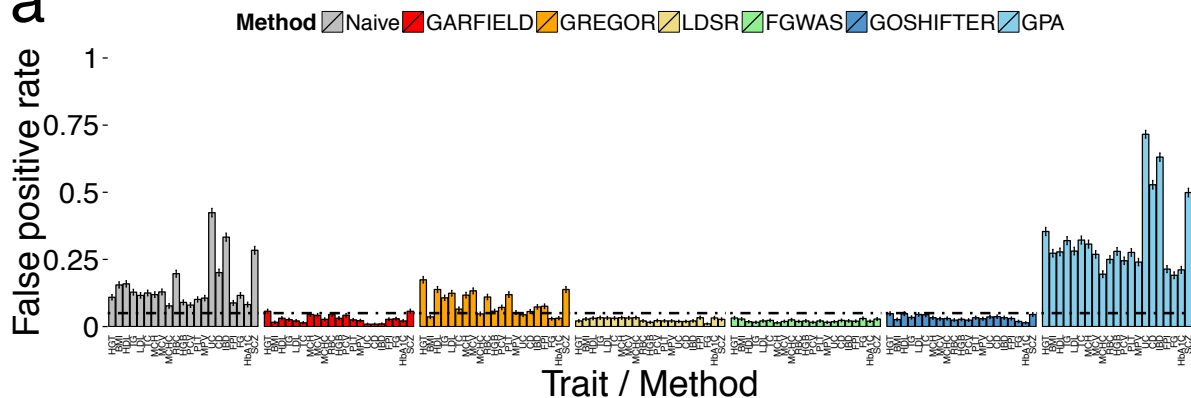


Figure 2

a



b

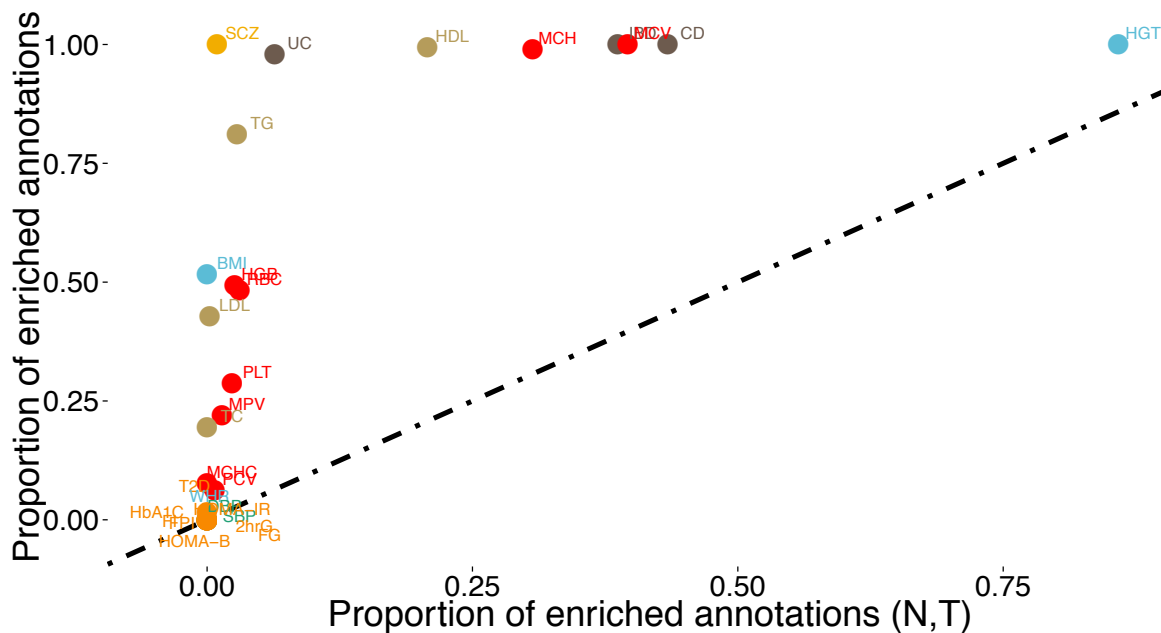


Figure 3

a

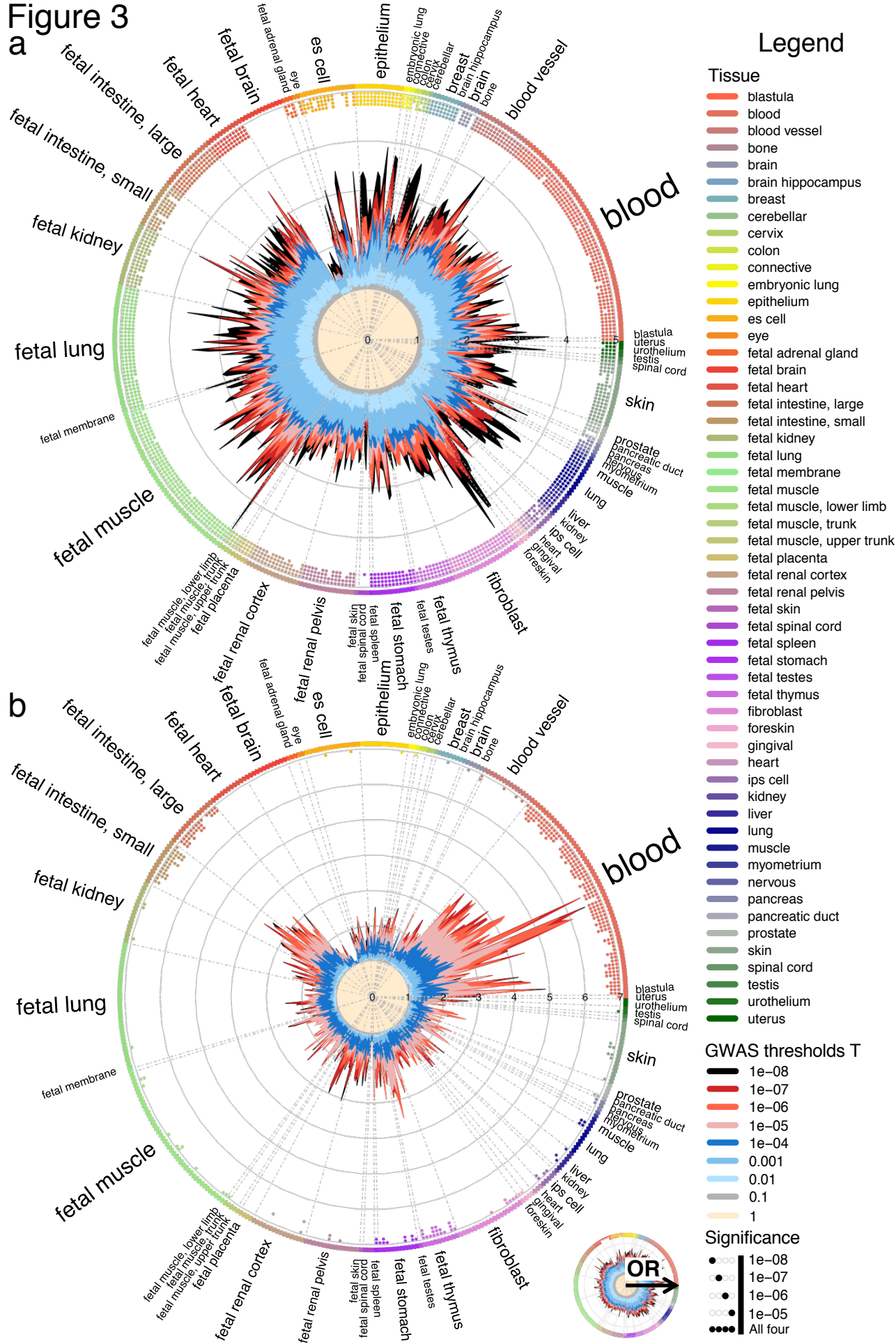
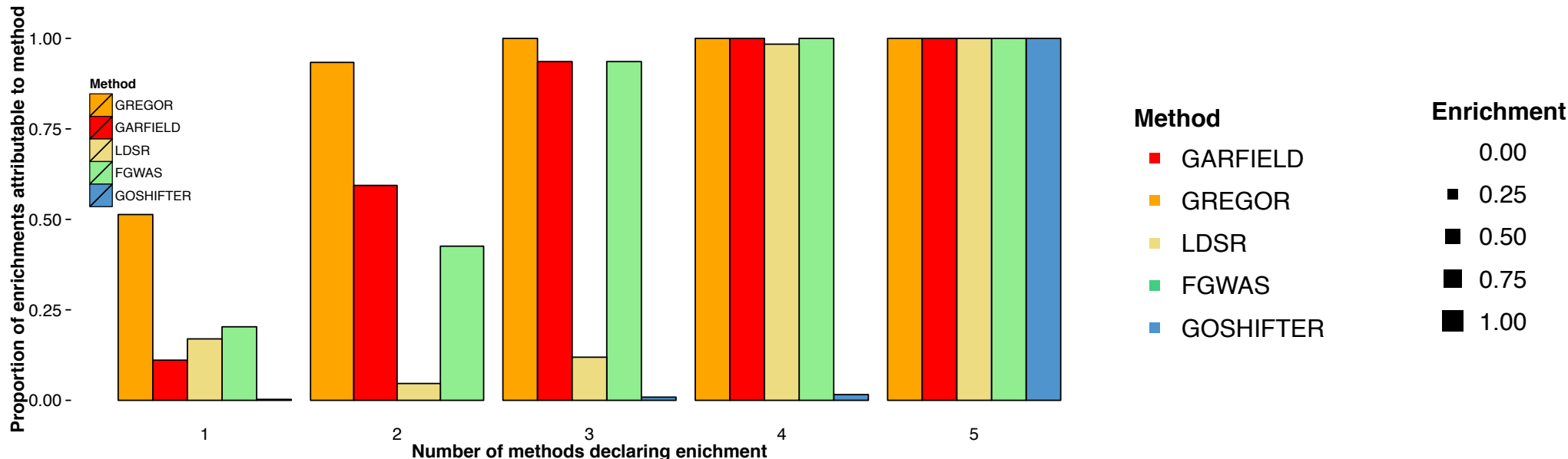
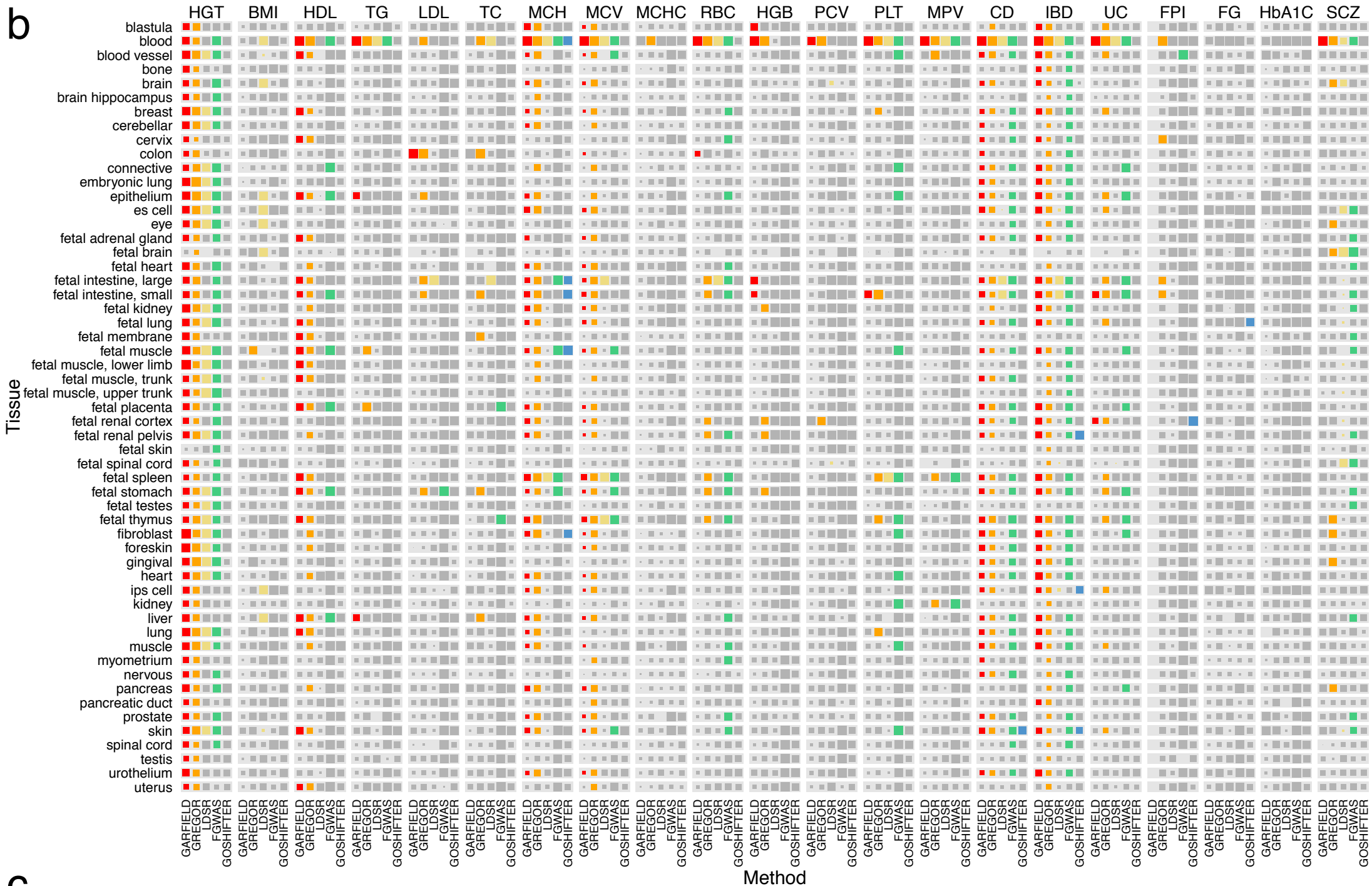


Figure 4

a



b



c

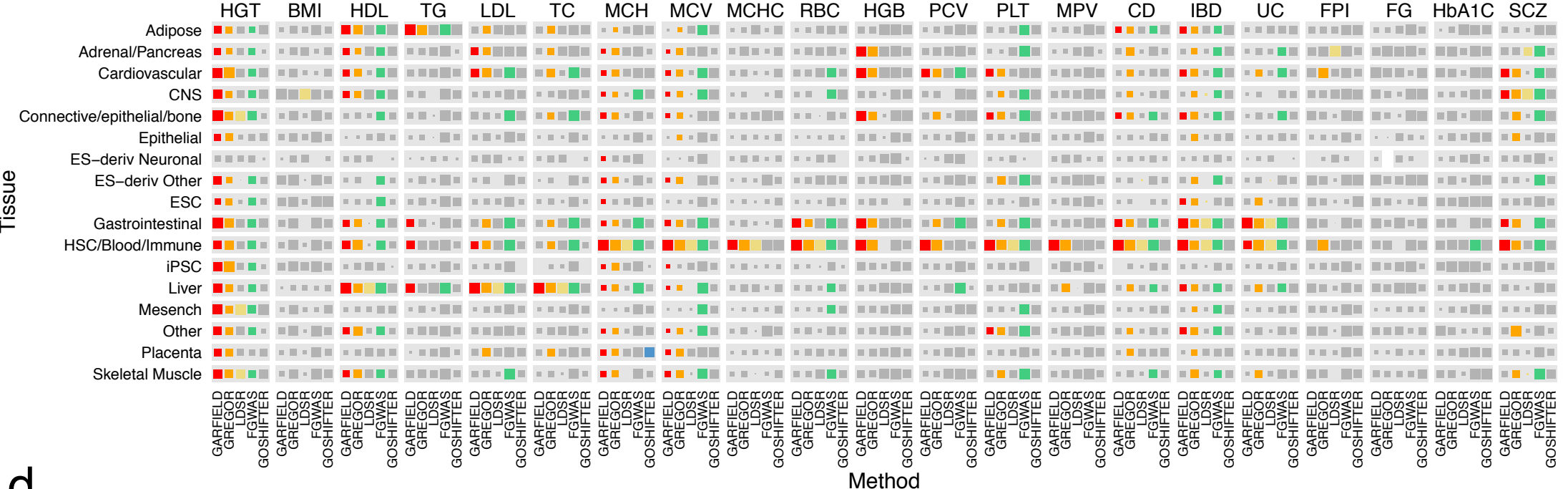
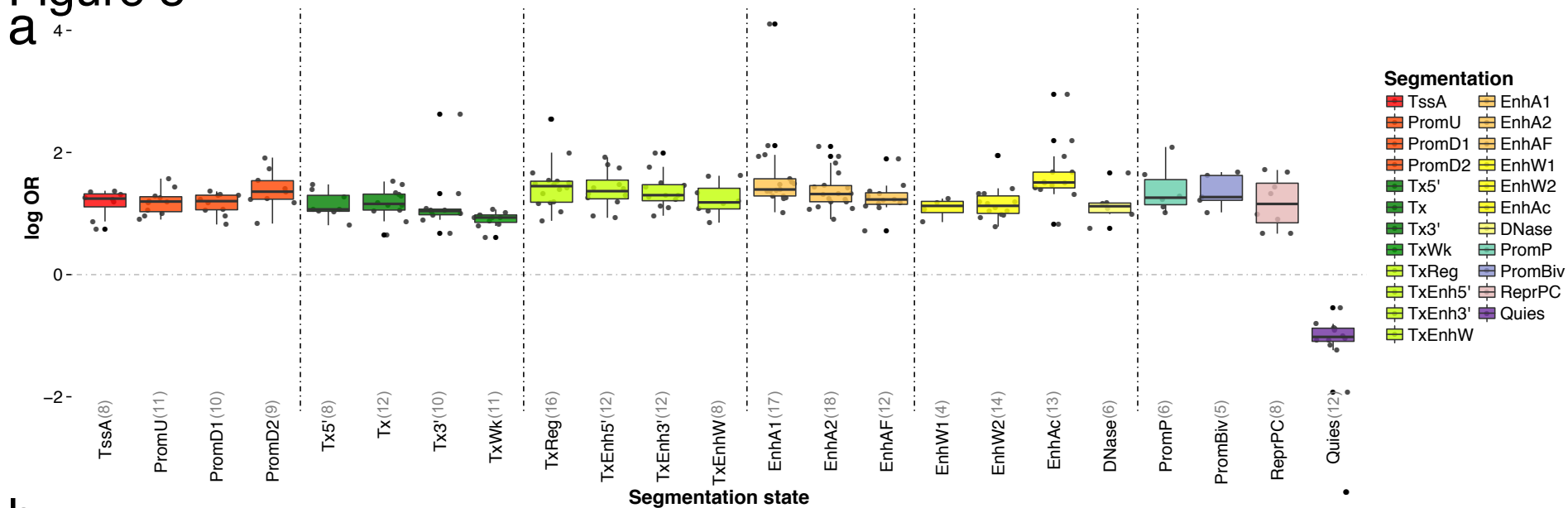
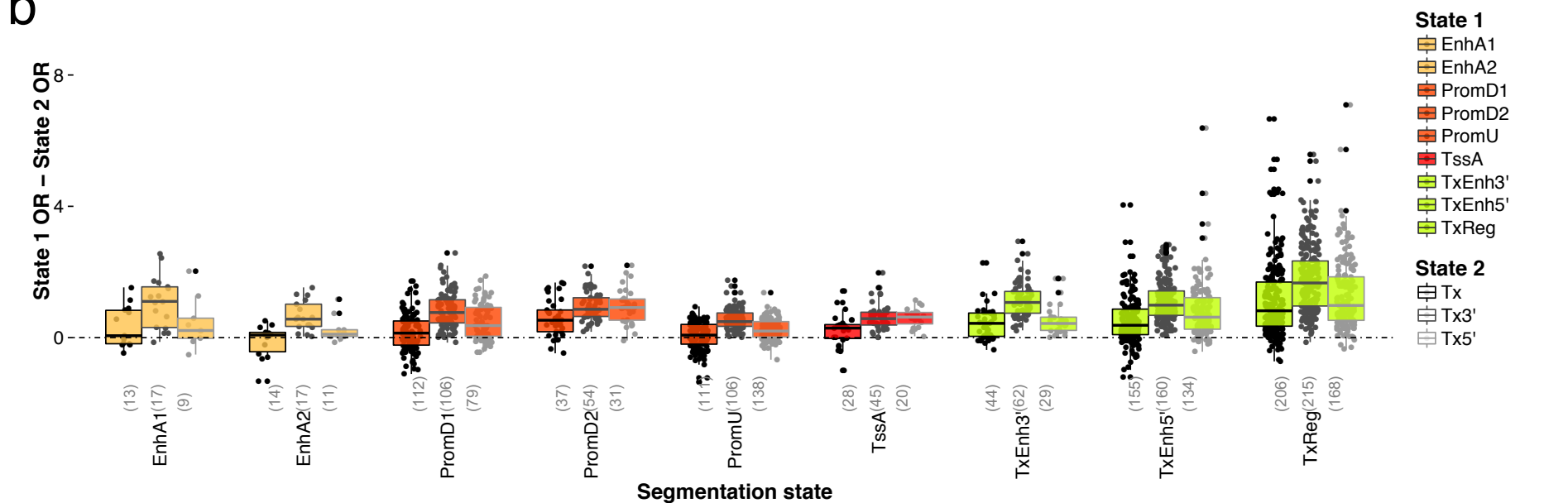


Figure 5

a



b



c

