Supplementary material to the paper:
Rank-based Bayesian variable selection for genome-wide transcriptomic analyses

Emilie Eliseussen, Thomas Fleischer and Valeria Vitelli

S1.

Figure 1: Results from the top-rank simulation experiments described in Section 3.1: heatplots of the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_{A^*}$ on the x-axis. Left $\alpha = 3$, right $\alpha = 10$. The rainbow grid indicates the true $\rho_{A^*}$, and the bar plot indicates the proportion of times the items were selected in $A^*$ over all MCMC iterations. $n = 20$, $N = 50$, $n^* = 8$, $L = 1$ and $l = 2$.

S2.

Figure 2: Results from the sensitivity study described in Section 3.2 each panel displays boxplots of the proportion of correct items selected, $\bar{p}$, over 20 runs on different datasets, for varying values of the tuning parameters on the x-axis. From left to right: varying $L$, $l$ and $n^*_\text{guess}$, respectively. $n = 100$, $N = 10$, $n^* = 10$, $\alpha = 5$, $M = 5000$. 
Figure 3: Results from the top-rank simulation experiments described in Section 3.2. Each panel displays the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_{A^*}$ on the x-axis. From left to right $l = 1, 2, 3$, and from top to bottom $L = 1, 2, 3$. The rainbow grid indicates the true $\rho_{A^*}$, and the bar plot indicates the proportion of times the items were selected in $A^*$ over all MCMC iterations. $n^* = 8$, $n = 20$, $N = 50$, $\alpha = 3$. 

S3.
Figure 4: Results from the top-rank simulation experiments described in Section 3.2. Each panel displays the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_A$ on the x-axis. From left to right $l = 1, 2, 3$, and from top to bottom $L = 1, 2, 3$. The rainbow grid indicates the true $\rho_A$, and the bar plot indicates the proportion of times the items were selected in $A^*$ over all MCMC iterations. $n^* = 8, n = 20, N = 50, \alpha = 10$. 
Figure 5: Results from the top-rank simulation experiments described in Section 3.2 with $n_{\text{true}}^* = 8$, $n_{\text{guess}}^* = 4$: each panel displays the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_{\text{true}}^*$ on the x-axis. From left to right $l = 1, 2, 3$, and from top to bottom $L = 1, 2, 3$. The rainbow grid indicates the true $\rho_{\text{true}}^*$, and the bar plot indicates the proportion of times the items were selected in $\mathcal{A}^*$ over all MCMC iterations. $n = 20$, $N = 50$, $\alpha = 3$. 

S5.
Figure 6: Results from the top-rank simulation experiments described in Section 3.2 with $n_{\text{true}}^* = 8$, $n_{\text{guess}}^* = 4$: each panel displays the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_{A^*}$ on the x-axis. From left to right $l = 1, 2, 3,$ and from top to bottom $L = 1, 2, 3$. The rainbow grid indicates the true $\rho_{A^*}$, and the bar plot indicates the proportion of times the items were selected in $A^*$ over all MCMC iterations. $n = 20$, $N = 50$, $\alpha = 10$. 

S6.
Figure 7: Results from the top-rank simulation experiments described in Section 3.2 with \( n_{\text{true}} = 8 \), \( n_{\text{guess}} = 12 \): each panel displays the marginal posterior distribution of \( \rho \), where the items have been ordered according to \( \hat{\rho}_{A^*} \) on the x-axis. From left to right \( l = 1, 2, 3 \), and from top to bottom \( L = 1, 2, 3 \). The rainbow grid indicates the true \( \rho_{A^*} \), and the bar plot indicates the proportion of times the items were selected in \( A^* \) over all MCMC iterations. \( n = 20, N = 50, \alpha = 3 \).
Figure 8: Results from the top-rank simulation experiments described in Section 3.2 with $n_{\text{true}}^* = 8$, $n_{\text{guess}}^* = 12$: each panel displays heatplots of the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_{A^*}$ on the x-axis. From left to right $l = 1, 2, 3$, and from top to bottom $L = 1, 2, 3$. The rainbow grid indicates the true $\rho_{A^*}$, and the bar plot indicates the proportion of times the items were selected in $A^*$ over all MCMC iterations. $n = 20$, $N = 50$, $\alpha = 10$. 

S8.
Figure 9: Results from the top-rank simulation experiments described in Section 3.1 with $n^* = 50$. Each panel displays the trace plot of the top-15 items in $\rho_{A^*}$. From left to right: $L = 1$ and $L = 5$. $n = 1000$, $N = 50$, $\alpha = 10$ and $l = \text{round}(n^*/5)$.

Figure 10: Results from the simulation experiments described in Section 3.4: comparison of the BayesMallows model on the complete set of items to lowBMM with $n^* = 8$, $n = 20$, $N = 50$. Heatplots of the marginal posterior distribution of $\rho$, where the items have been ordered according to $\hat{\rho}_{A^*}$ on the x-axis, for BMM on the left and lowBMM on the right. The rainbow grid indicates the true $\rho_{A^*}$, and the bar plot indicates the proportion of times the items were selected in $A^*$ over all MCMC iterations. Parameters for lowBMM: $\alpha = 3$, $L = 1$, $l = 2$. 

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S10.