

### Additional file 1 - Comparison of the leave-one-out and test performances

The additional figures show the internal leave-one-out (LOO) performances (AUC) corresponding to the optimal number of selected features, ranging from 1 to 35 in steps of 5, for all LS-SVM models based on different combinations of data sources. These boxplots are compared with their respectively test performances. Additional figures 1 to 3 show the comparisons for data set I on rectal cancer, while the results for data set II on prostate cancer are represented in additional figures 4 to 7.

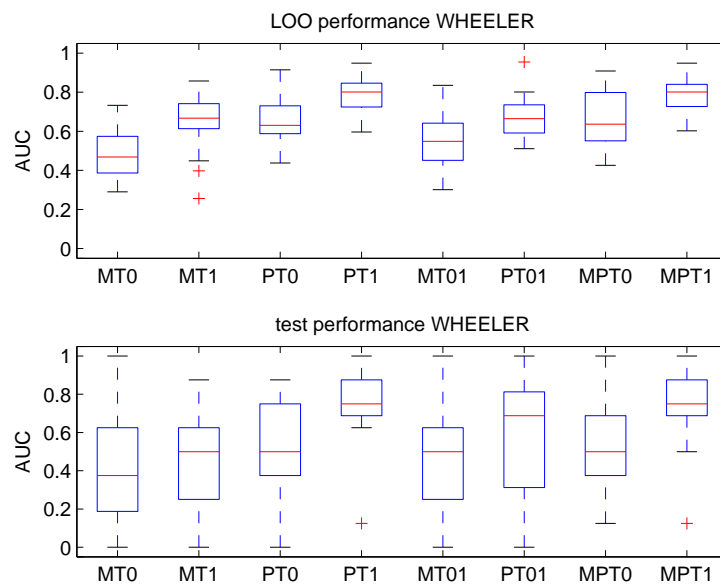


Figure 1: WHEELER – comparison of the internal LOO and test performances of  $MT_0$  (30 genes),  $MT_1$  (25 genes),  $PT_0$  (30 proteins),  $PT_1$  (10 proteins),  $MT_{01}$  (5 genes),  $PT_{01}$  (15 proteins),  $MPT_0$  (5 genes, 35 proteins), and  $MPT_1$  (1 gene, 10 proteins)

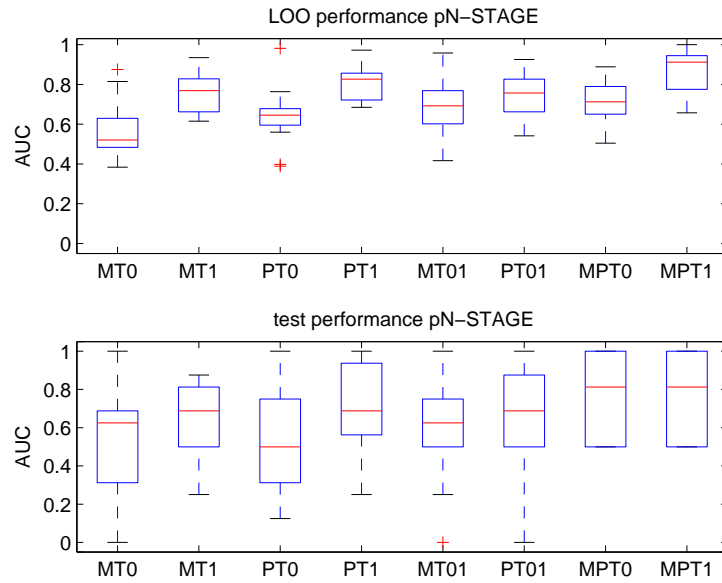


Figure 2: pN-STAGE – comparison of the internal LOO and test performances of  $MT_0$  (30 genes),  $MT_1$  (35 genes),  $PT_0$  (30 proteins),  $PT_1$  (25 proteins),  $MT_{01}$  (35 genes),  $PT_{01}$  (25 proteins),  $MPT_0$  (25 genes, 25 proteins), and  $MPT_1$  (30 genes, 20 proteins)

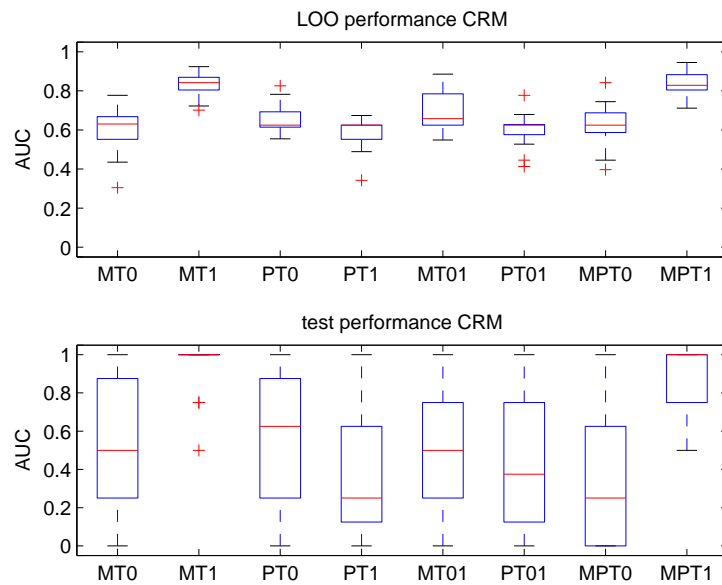


Figure 3: CRM – comparison of the internal LOO and test performances of  $MT_0$  (30 genes),  $MT_1$  (25 genes),  $PT_0$  (30 proteins),  $PT_1$  (30 proteins),  $MT_{01}$  (15 genes),  $PT_{01}$  (15 proteins),  $MPT_0$  (20 genes, 10 proteins), and  $MPT_1$  (30 genes, 1 protein)

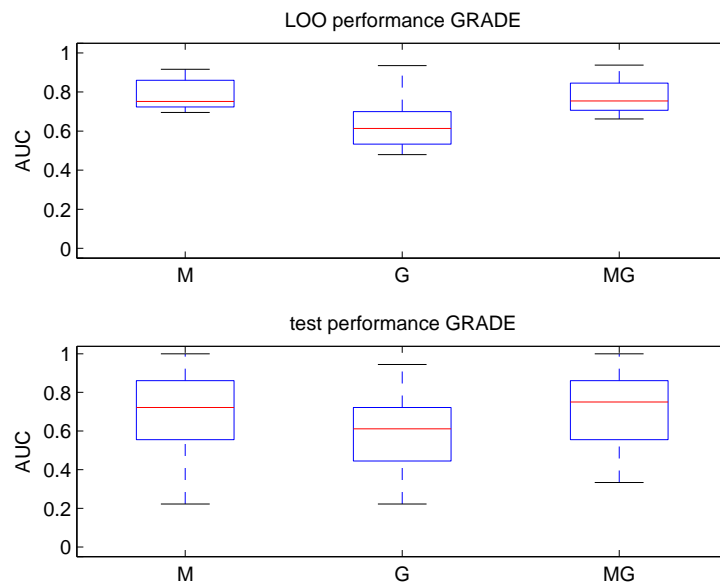


Figure 4: GRADE – comparison of the internal LOO and test performances of  $M$  (30 genes),  $G$  (20 CNVs), and  $MG$  (35 genes, 1 CNV)

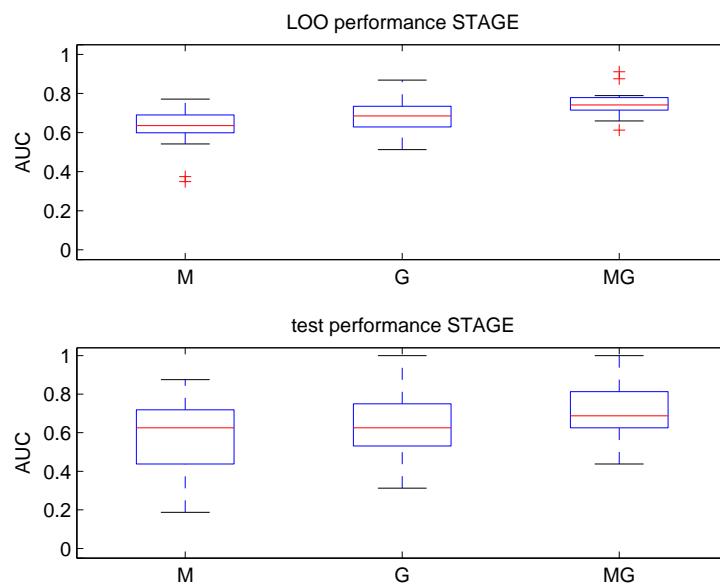


Figure 5: STAGE – comparison of the internal LOO and test performances of  $M$  (35 genes),  $G$  (35 CNVs), and  $MG$  (30 genes, 35 CNVs)

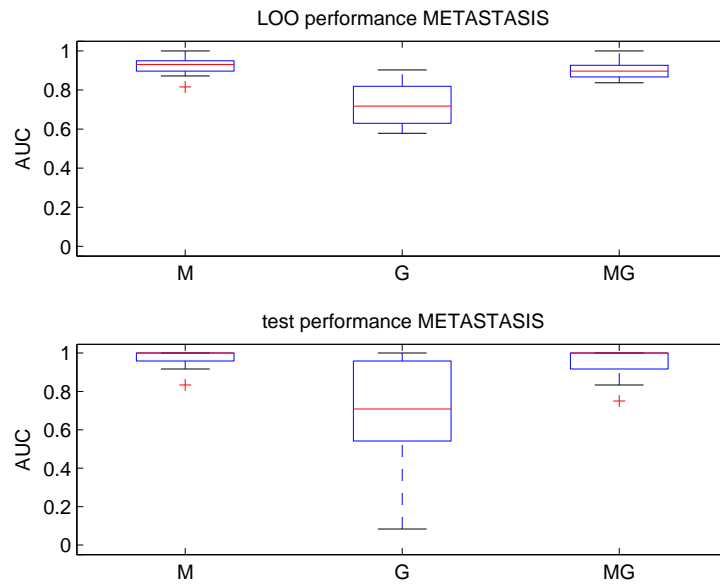


Figure 6: METASTASIS – comparison of the internal LOO and test performances of  $M$  (20 genes),  $G$  (35 CNVs), and  $MG$  (25 genes, 1 CNV)

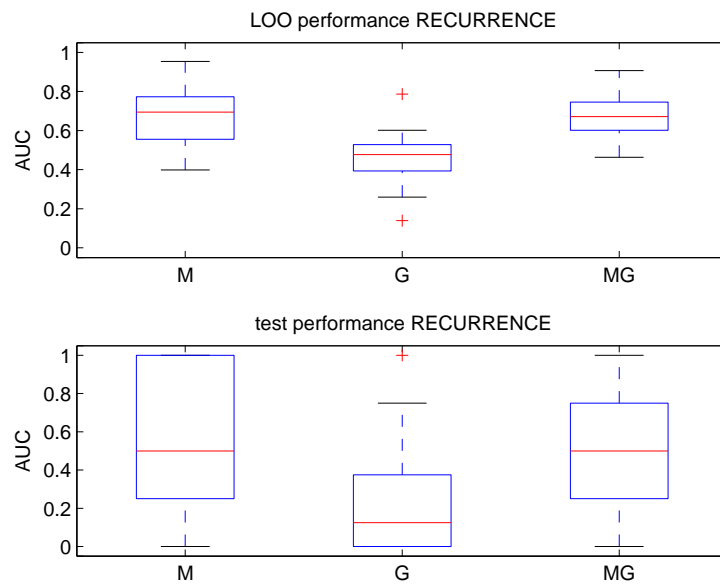


Figure 7: RECURRENCE – comparison of the internal LOO and test performances of  $M$  (25 genes),  $G$  (20 CNVs), and  $MG$  (25 genes, 1 CNV)