

Supplementary material to

Improving genomics-based predictions for precision medicine through active elicitation of expert knowledge

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1 Metabolite concentration prediction from genomic data – supplementary results

Table 1: Metabolite concentration prediction from genomic data, MSE results by metabolite.

	HDL-C	LDL-C	TC	TG
Data mean	0.996	1.028	0.996	1.049
Elastic net	0.984	1.028	0.996	1.033
No feedback	0.978	1.009	0.984	1.025
All feedback	0.960	0.998	0.970	1.010

Table 2: Metabolite concentration prediction from genomic data, C-index results by metabolite.

	HDL-C	LDL-C	TC	TG
Data mean	0.500	0.500	0.500	0.500
Elastic net	0.534	0.500	0.500	0.542
No feedback	0.541	0.537	0.537	0.546
All feedback	0.561	0.555	0.552	0.564

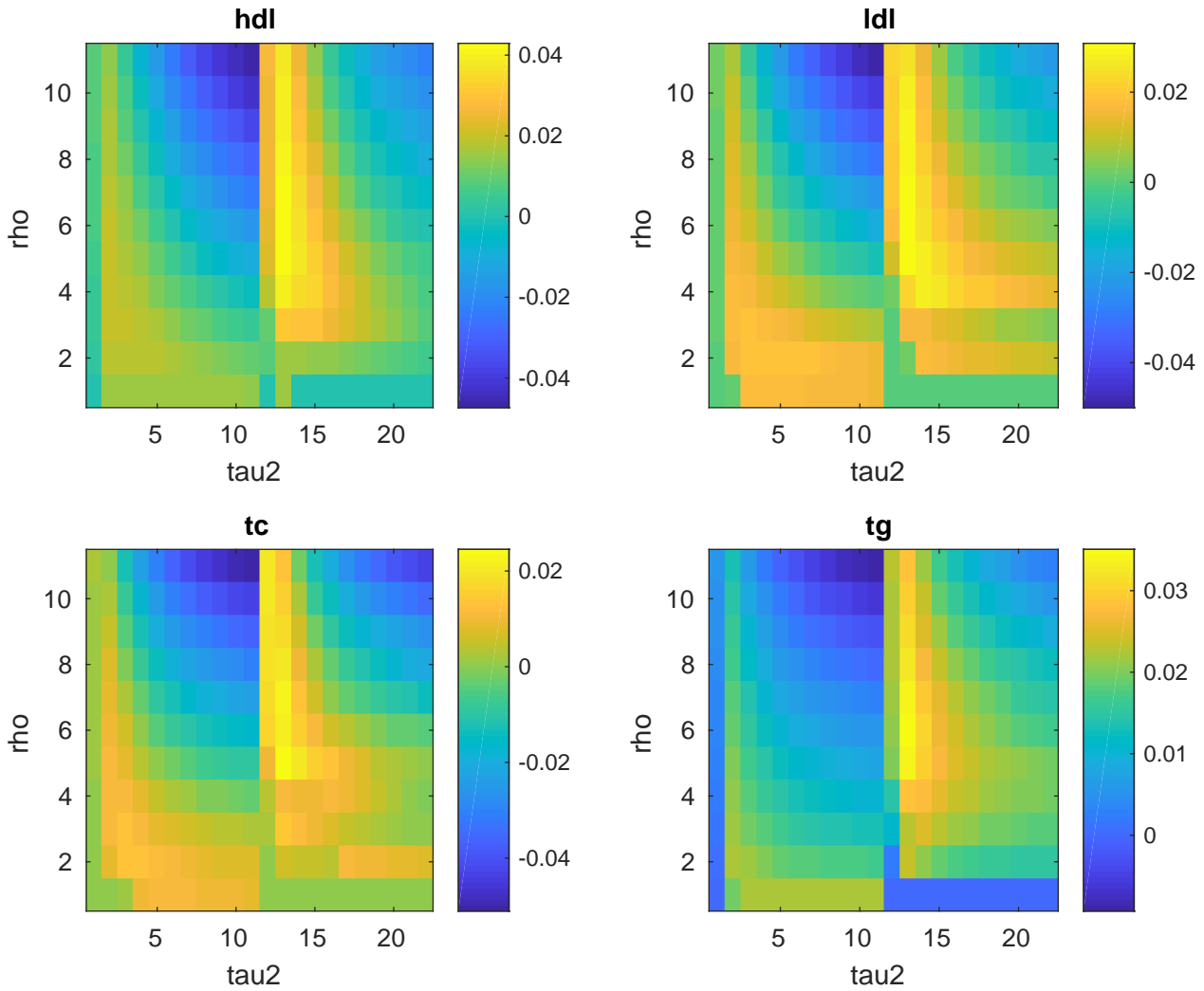


Figure 1: A sensitivity analysis with regard to the sparsity parameter ρ and the effect size parameter τ^2 . The heatmap shows the proportion of variance explained on the test set for no feedback (left part of each heatmap) and all feedback (right part) models. ρ values are 0.001, 0.006, 0.011, 0.016, 0.021, 0.026, 0.030, 0.035, 0.040, 0.045, 0.050 and τ^2 values are 0.001, 0.011, 0.021, 0.031, 0.041, 0.051, 0.060, 0.070, 0.080, 0.090, 0.100.

2 Drug sensitivity prediction for Multiple Myeloma (MM) patients – supplementary results

Table 3: Drug sensitivity prediction for Multiple Myeloma (MM) patients, MSE results by drug.

	Pimasertib	Refametinib	Trametinib	Dexamethasone	Methylprednisolone	AZD2014	Dactolisib	Idelalisib	PF-04691502	Pictilisib	Temsirolimus	Venetoclax
Data mean	1.083	1.080	1.081	1.093	1.090	1.056	1.057	1.131	1.065	1.052	1.074	1.084
Elastic net	1.084	1.172	1.070	1.127	1.204	1.185	1.219	1.215	1.212	1.179	1.041	1.133
No feedback	1.031	1.030	1.019	1.080	1.079	1.034	1.025	1.138	1.059	1.042	1.003	1.055
All feedback DC	1.026	1.030	1.011	1.075	1.078	1.013	1.004	1.134	1.043	1.022	0.992	1.055
All feedback SR	0.982	0.989	0.970	1.082	1.087	0.985	0.982	1.174	1.028	1.011	0.954	1.057

Table 4: Drug sensitivity prediction for Multiple Myeloma (MM) patients, C-index results by drug.

	Pimasertib	Refametinib	Trametinib	Dexamethasone	Methylprednisolone	AZD2014	Dactolisib	Idelalisib	PF-04691502	Pictilisib	Temsirolimus	Venetoclax
Data mean	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Elastic net	0.509	0.493	0.557	0.484	0.448	0.520	0.451	0.527	0.493	0.441	0.565	0.574
No feedback	0.605	0.632	0.629	0.542	0.542	0.569	0.580	0.502	0.536	0.536	0.617	0.632
All feedback DC	0.556	0.572	0.605	0.554	0.533	0.594	0.583	0.548	0.589	0.576	0.638	0.638
All feedback SR	0.619	0.637	0.657	0.564	0.520	0.638	0.626	0.443	0.597	0.604	0.665	0.596