

**Table S1:** Number of regions identified by a single marker analysis with a p-value  $< 1 \times 10^{-6}$  and the number of these regions that are recapitulated by each other method.

disease	Method									
	SMA	Conditional	VBAY	Lasso	Adaptive Lasso	2D-MCP	LOG	NEG	1D-MCP	perm-MCP
CD	9	9	7	6	5	8	6	7	6	6
RA	1	1	1	1	1	1	1	1	1	1
T1D	9	9	3	4	4	4	4	0	4	4
Total	19	19	11	11	10	13	11	8	11	11