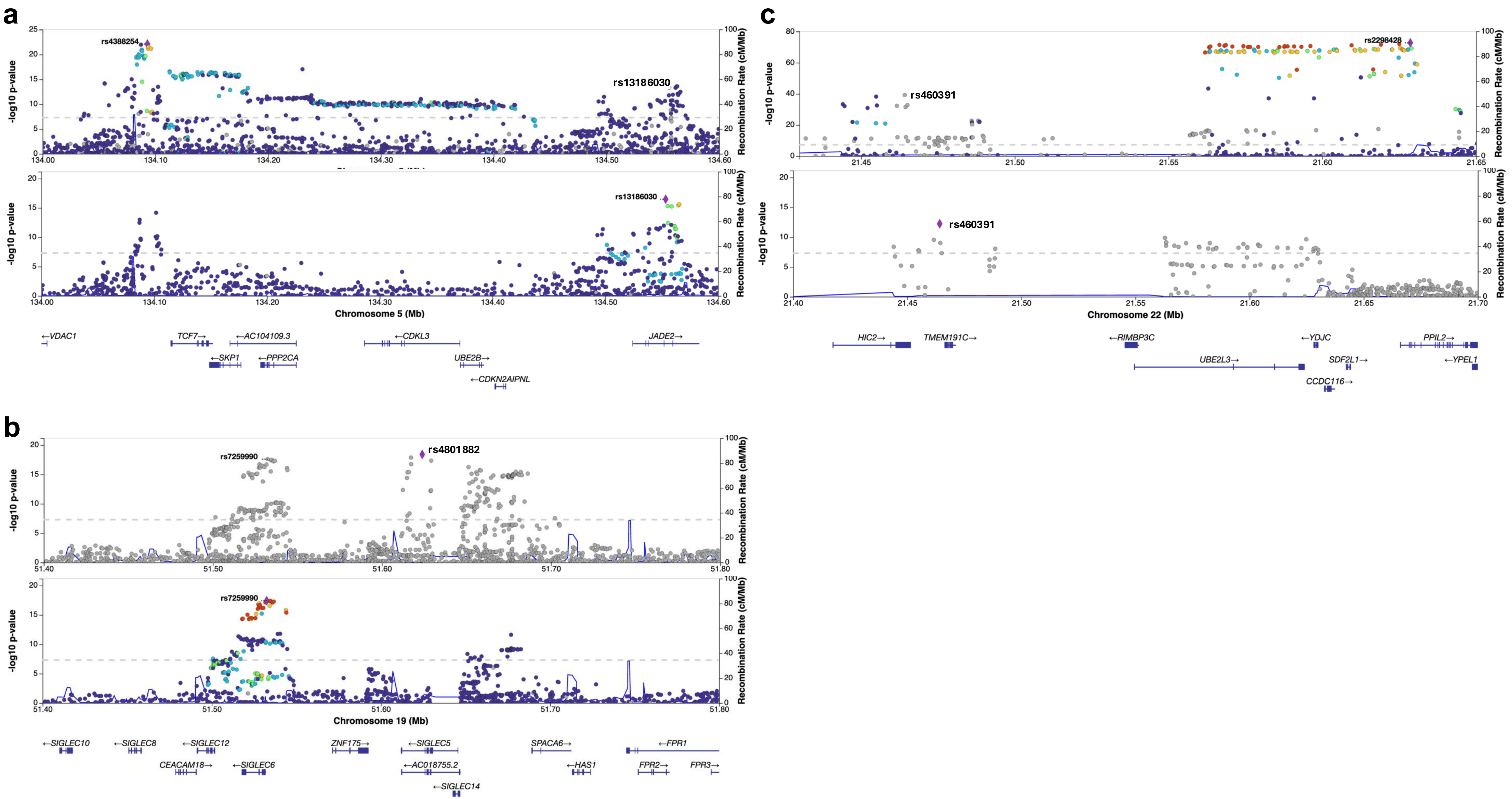
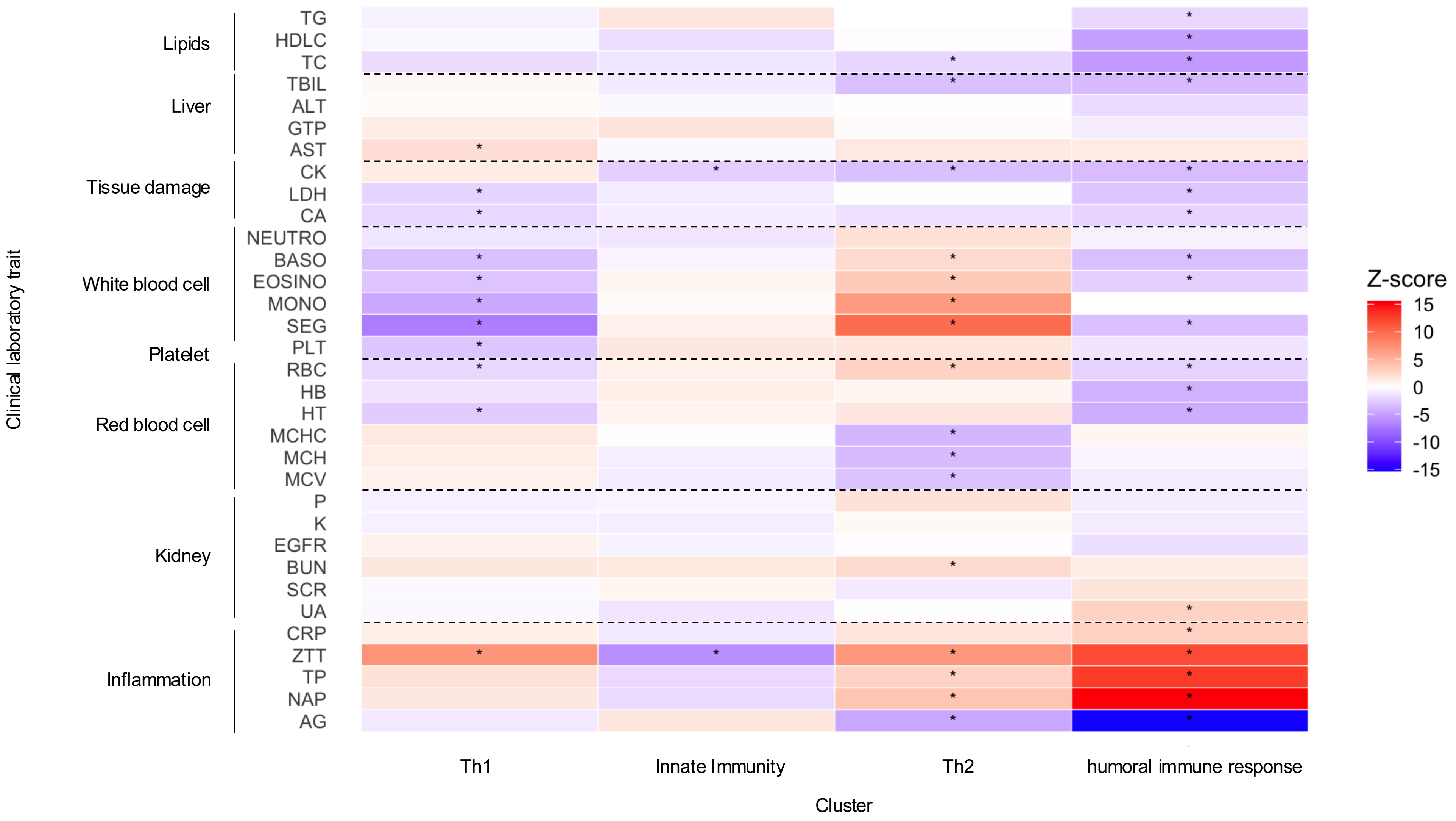
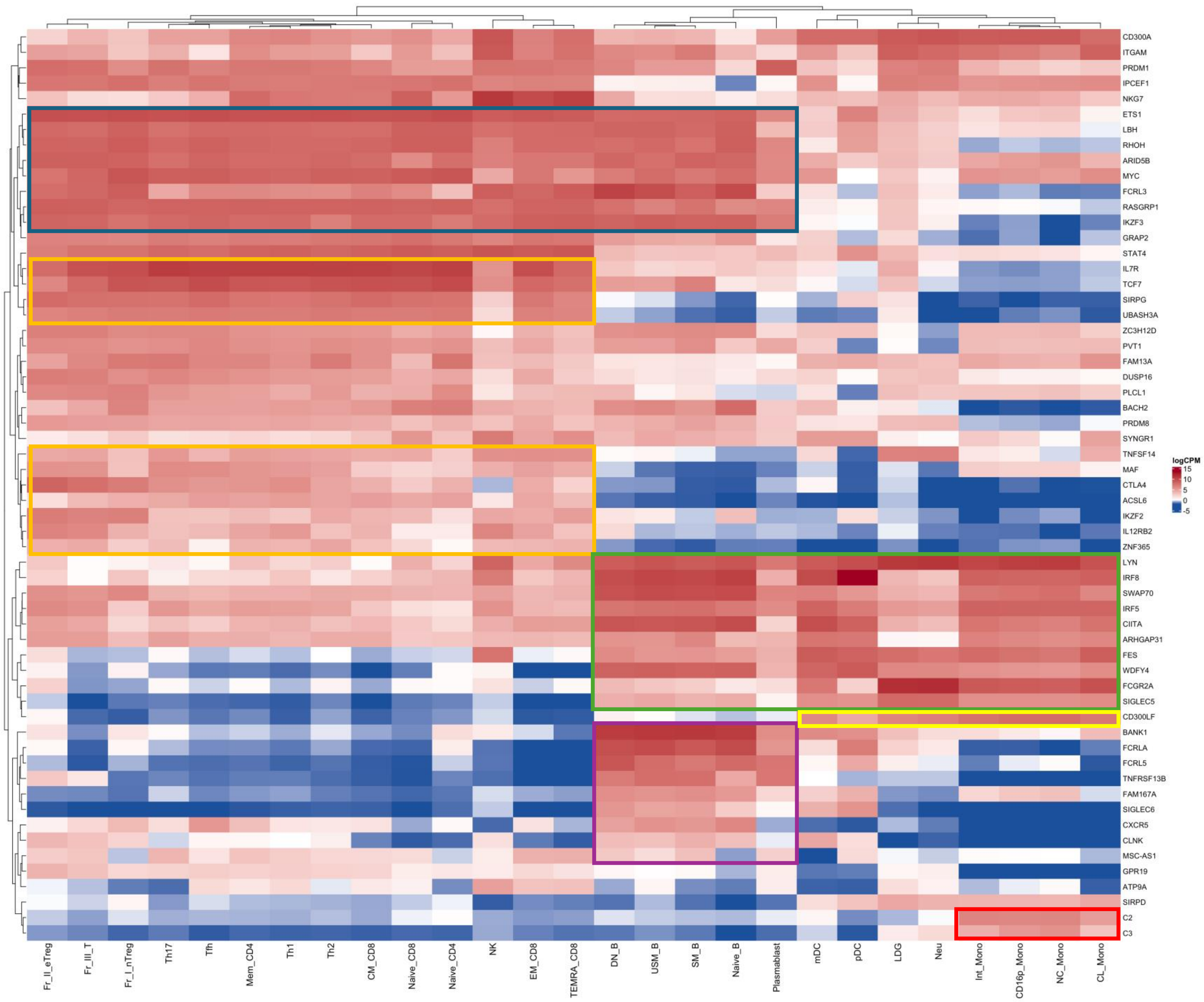
Extended Data Fig.1



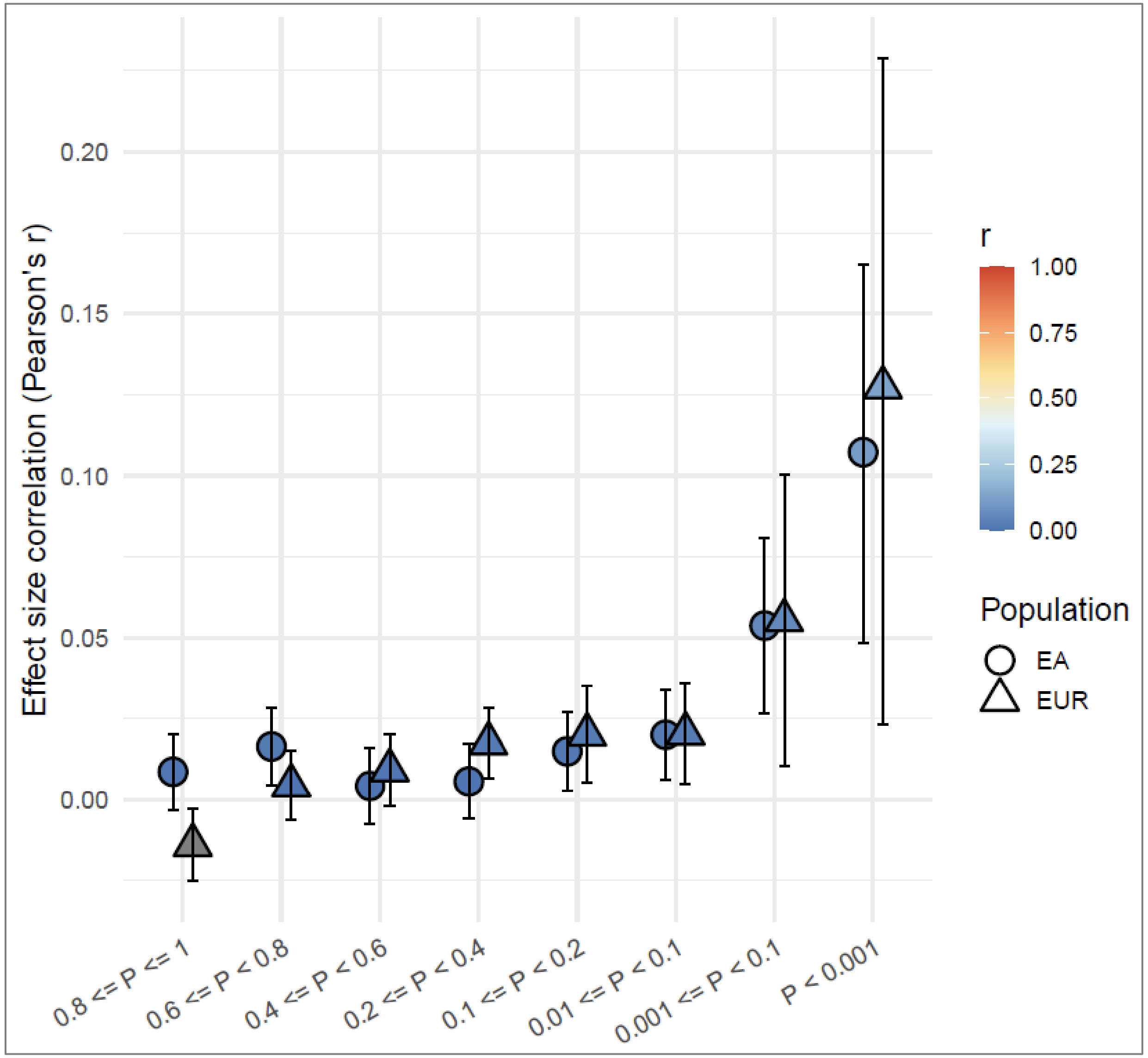
Extended Data Fig.2



Extended Data Fig.3

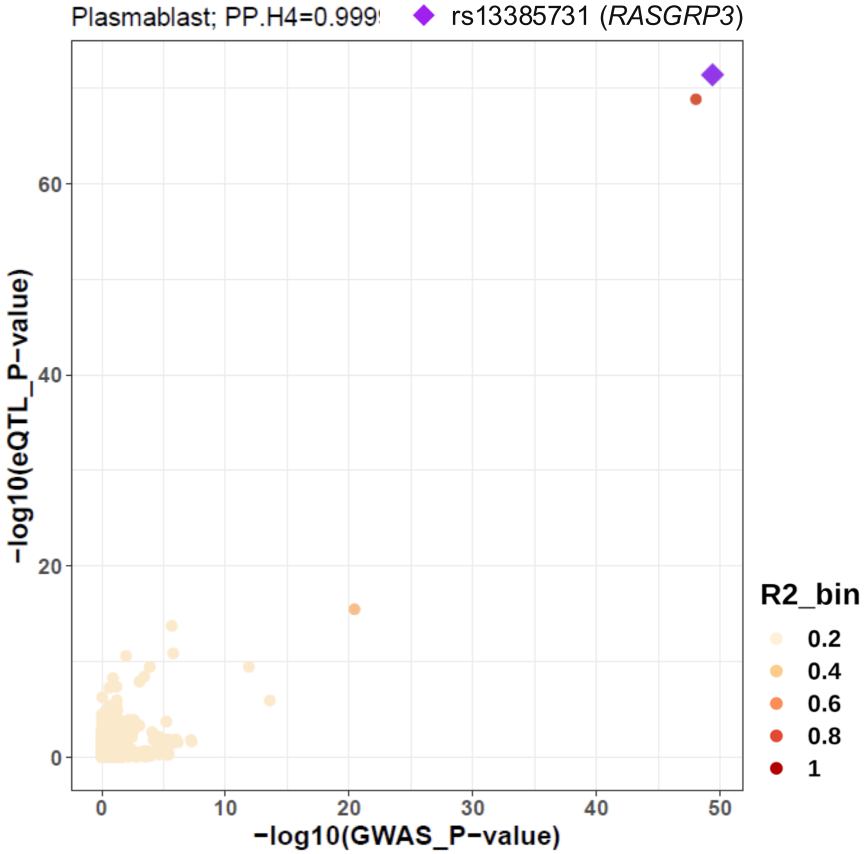


Extended Data Fig.4



Extended Data Fig.5

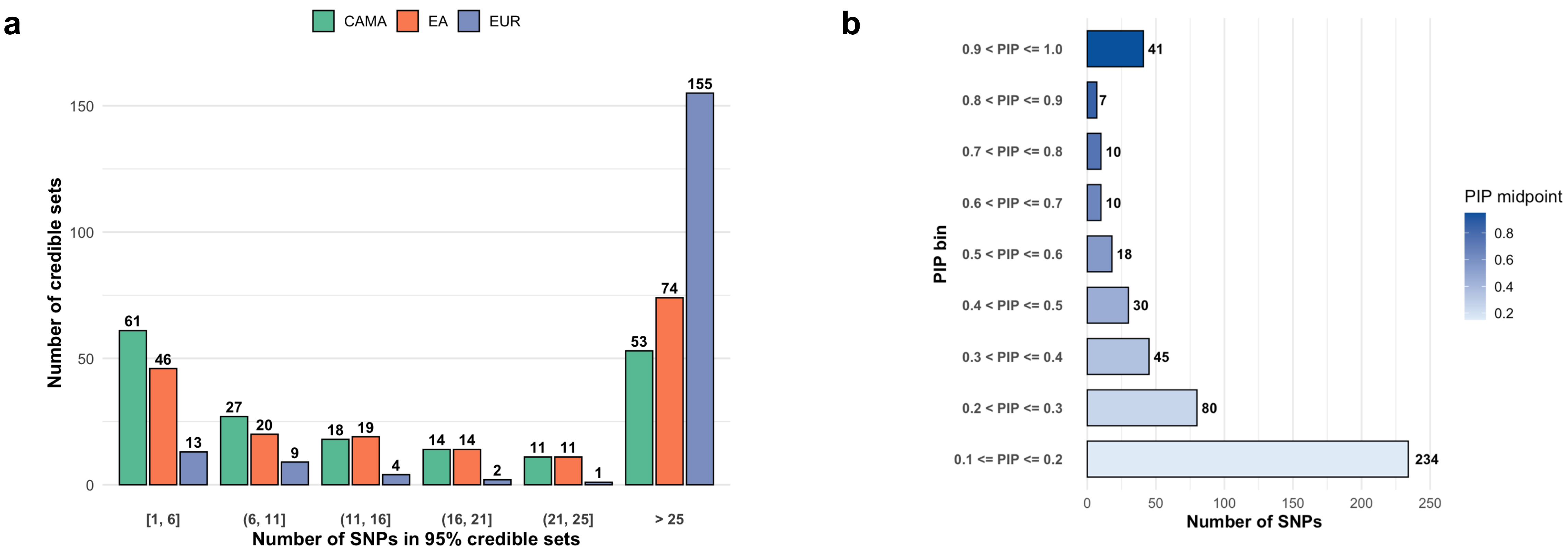
a



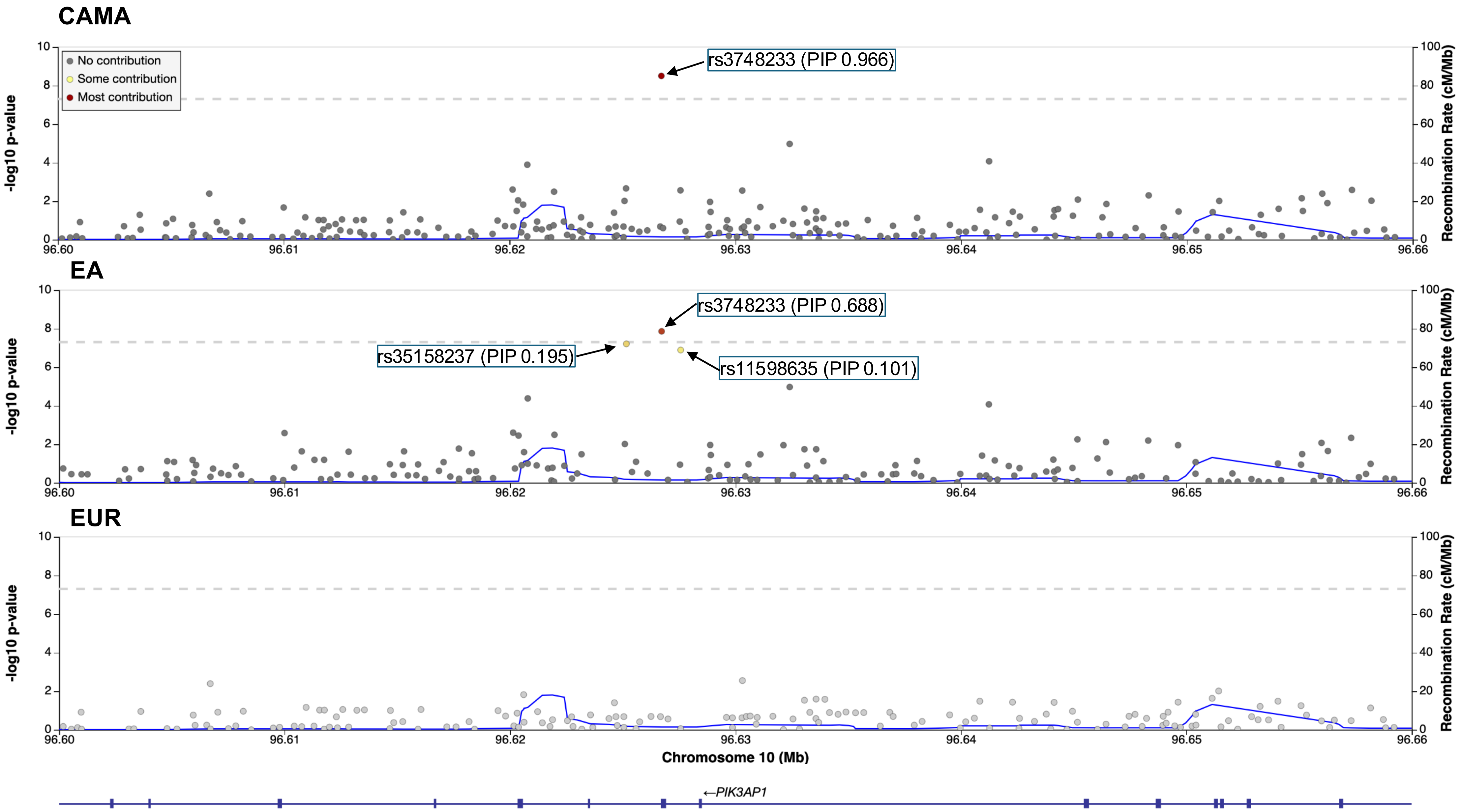
b

Cell type	rs13385731 (*RASGRP3*)	rs8035957 (*RASGRP1*)	Ancestry
Naive_CD4	2.6.E-15	0.073	EA
Mem_CD4	1.0.E-04	0.993	EA
Tfh	1.0.E-08	0.987	EA
Th1	3.0.E-06	0.881	EA
Th2	1.2.E-06	0.991	EA
Th17	2.1.E-08	0.993	EA
Fr_I_nTreg	9.4.E-19	0.842	EA
Fr_II_eTreg	1.5.E-14	0.992	EA
Fr_III_T	1.6.E-09	0.978	EA
Naive_CD8	6.1.E-10	0.815	EA
Mem_CD8	6.9.E-06	0.346	EA
EM_CD8	1.0.E-10	0.454	EA
CM_CD8	1.6.E-05	0.844	EA
TEMRA_CD8	2.0.E-11	0.149	EA
Naive_B	7.8.E-09	0.993	EA
USM_B	0.039	0.521	EA
SM_B	1.1.E-05	0.992	EA
DN_B	0.284	0.995	EA
Plasmablast	1	0.948	EA
NK	0.061	0.042	EA
CD16p_Mono	0.995	0.038	EA
NC_Mono	0.697	0.066	EA
Int_Mono	0.999	0.037	EA
CL_Mono	0.999	0.029	EA
mDC	2.0.E-08	0.165	EA
pDC	0.993	0.048	EA
Neu	1	0.027	EA
LDG	0.195	0.034	EA
EBV_transformed_lymphocyte	0.0264	0.156	EUR
Whole_Blood	0.0349	0.012	EUR

Extended Data Fig.6

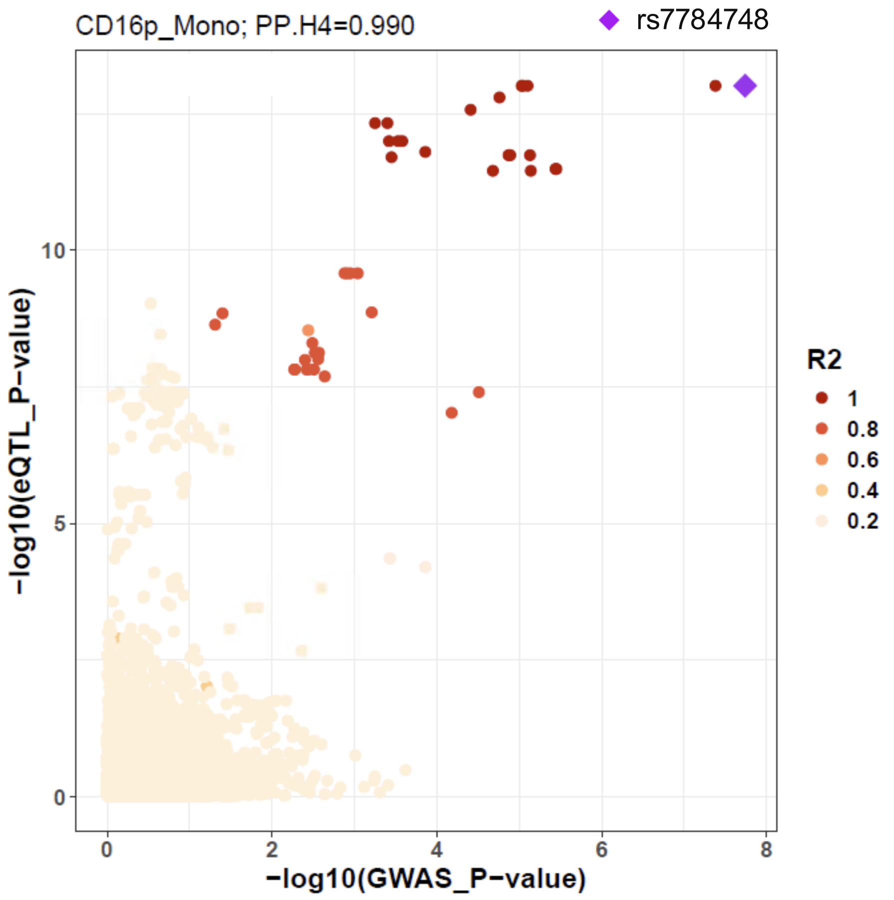


Extended Data Fig.7



Extended Data Fig.8

a

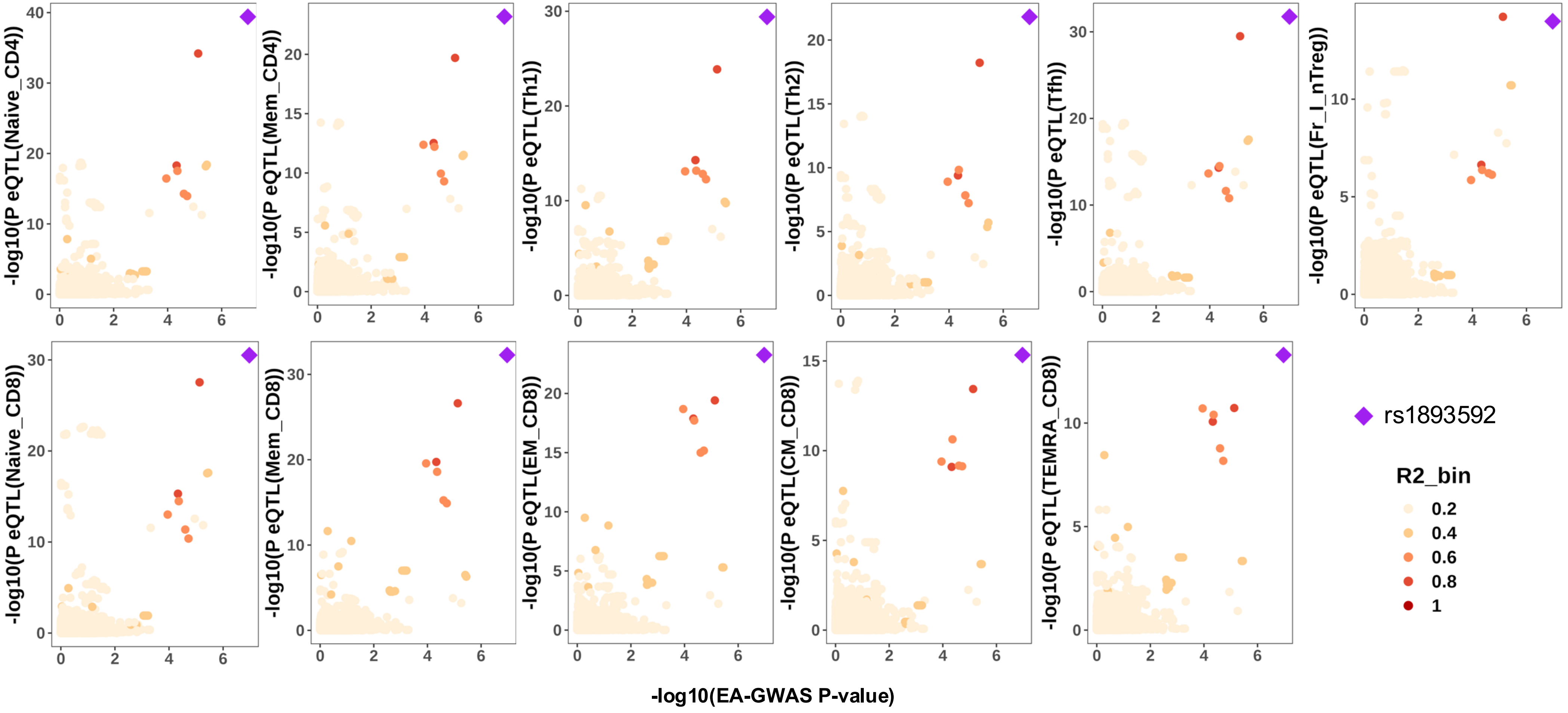


b

Cell type	PP.H4	Ancestry
Naive_CD4	0.029	EA
Mem_CD4	0.482	EA
Tfh	0.596	EA
Th1	0.398	EA
Th2	0.980	EA
Th17	0.990	EA
Fr_I_nTreg	0.971	EA
Fr_II_eTreg	0.967	EA
Fr_III_T	0.981	EA
Naive_CD8	0.001	EA
Mem_CD8	0.001	EA
EM_CD8	0.028	EA
CM_CD8	0.936	EA
TEMRA_CD8	0.002	EA
Naive_B	0.056	EA
USM_B	0.008	EA
SM_B	0.045	EA
DN_B	0.925	EA
Plasmablast	0.072	EA
NK	0.002	EA
CD16p_Mono	0.990	EA
NC_Mono	0.983	EA
Int_Mono	0.964	EA
CL_Mono	0.012	EA
mDC	0.015	EA
pDC	0.003	EA
Neu	0.230	EA
LDG	0.043	EA
EBV_transformed_lymphocyte	0.249	EUR
Whole_Blood	0.092	EUR

Extended Data Fig.9

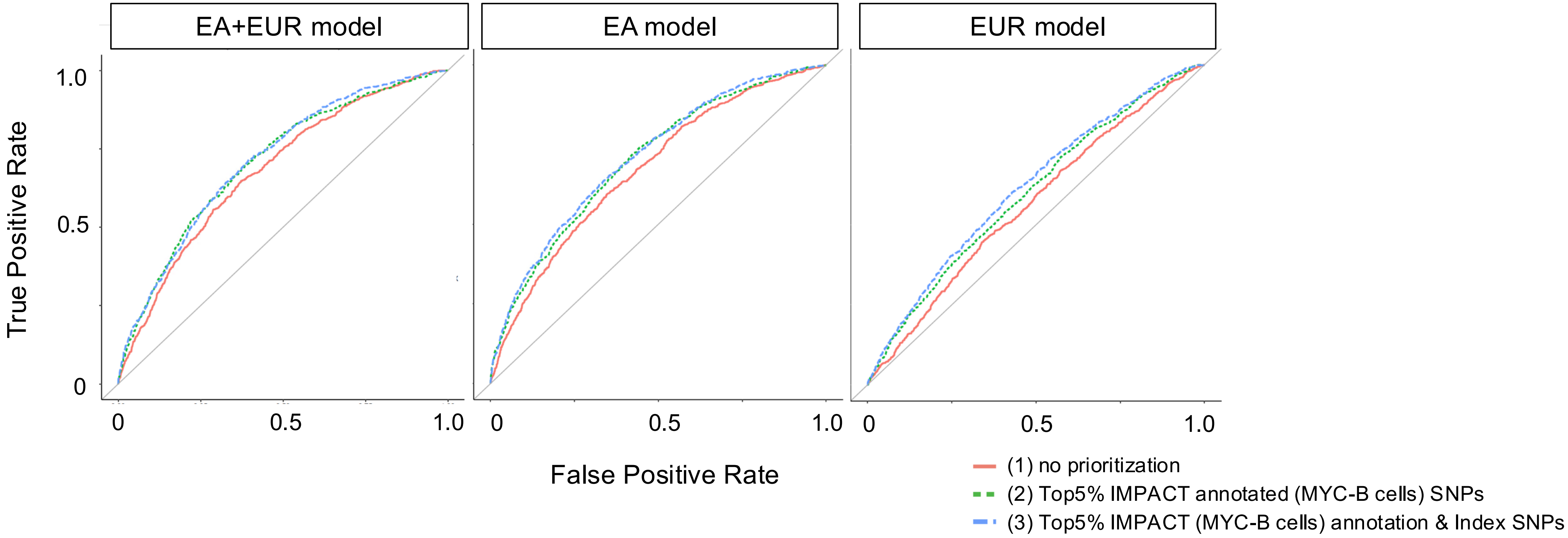
a



b

	PP.H4
Naive_CD4	1
Mem_CD4	1
Tfh	1
Th1	1
Th2	1
Th17	0.657
Fr_I_nTreg	0.997
Fr_II_eTreg	0.0029
Fr_III_T	0.0037
Naive_CD8	1
Mem_CD8	1
EM_CD8	1
CM_CD8	1
TEMRA_CD8	1
Naive_B	NA
USM_B	NA
SM_B	NA
DN_B	NA
Plasmablast	NA
NK	0.0236
CD16p_Mono	NA
NC_Mono	NA
Int_Mono	NA
CL_Mono	NA
mDC	NA
pDC	NA
Neu	NA
LDG	0.0565

Extended Data Fig.10



Test performance in SEA (AUC)

Trained by	EA+EUR	EA	EUR
(1)	0.680	0.672	0.564
(2)	0.708	0.702	0.598
(3)	0.713	0.711	0.616