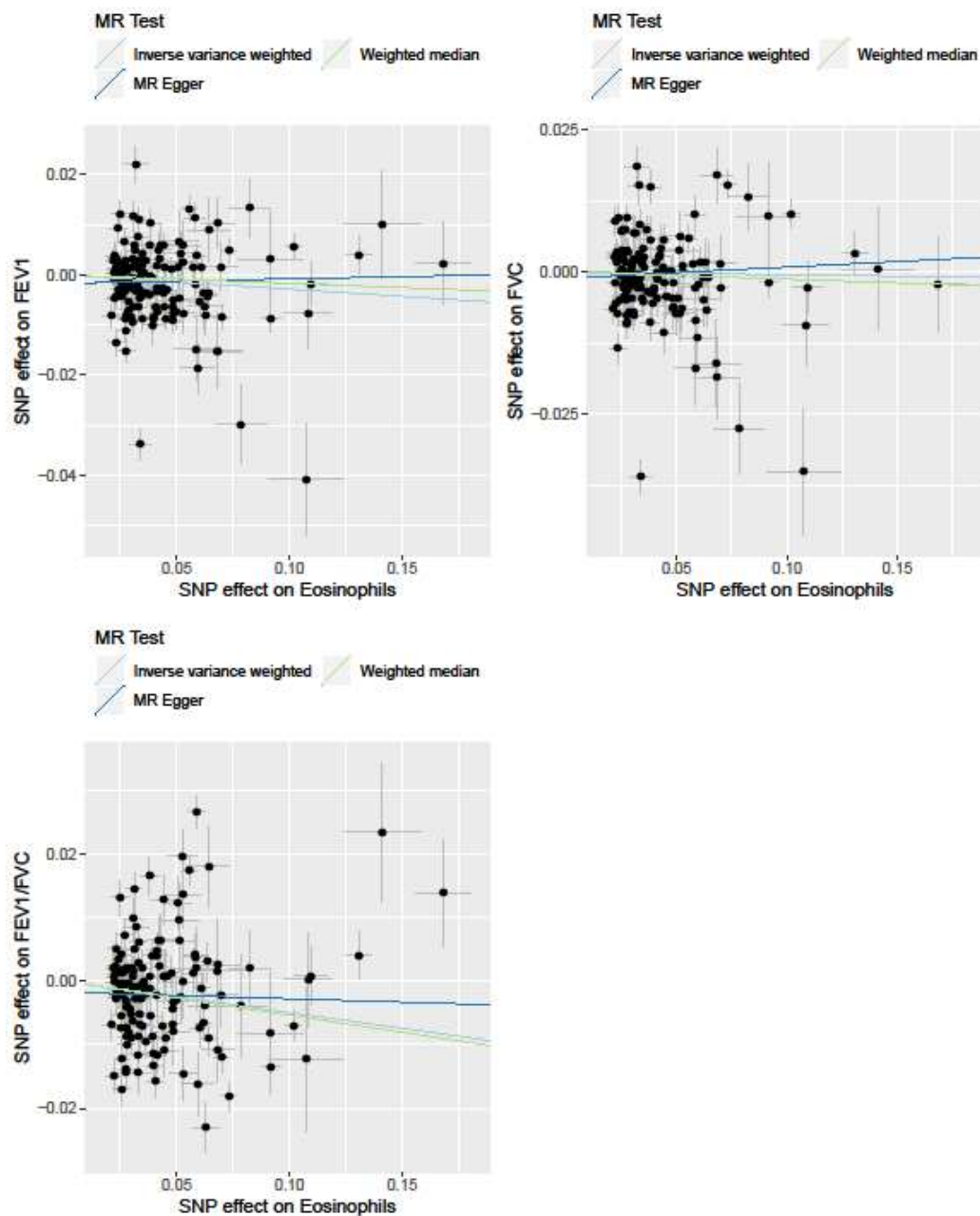
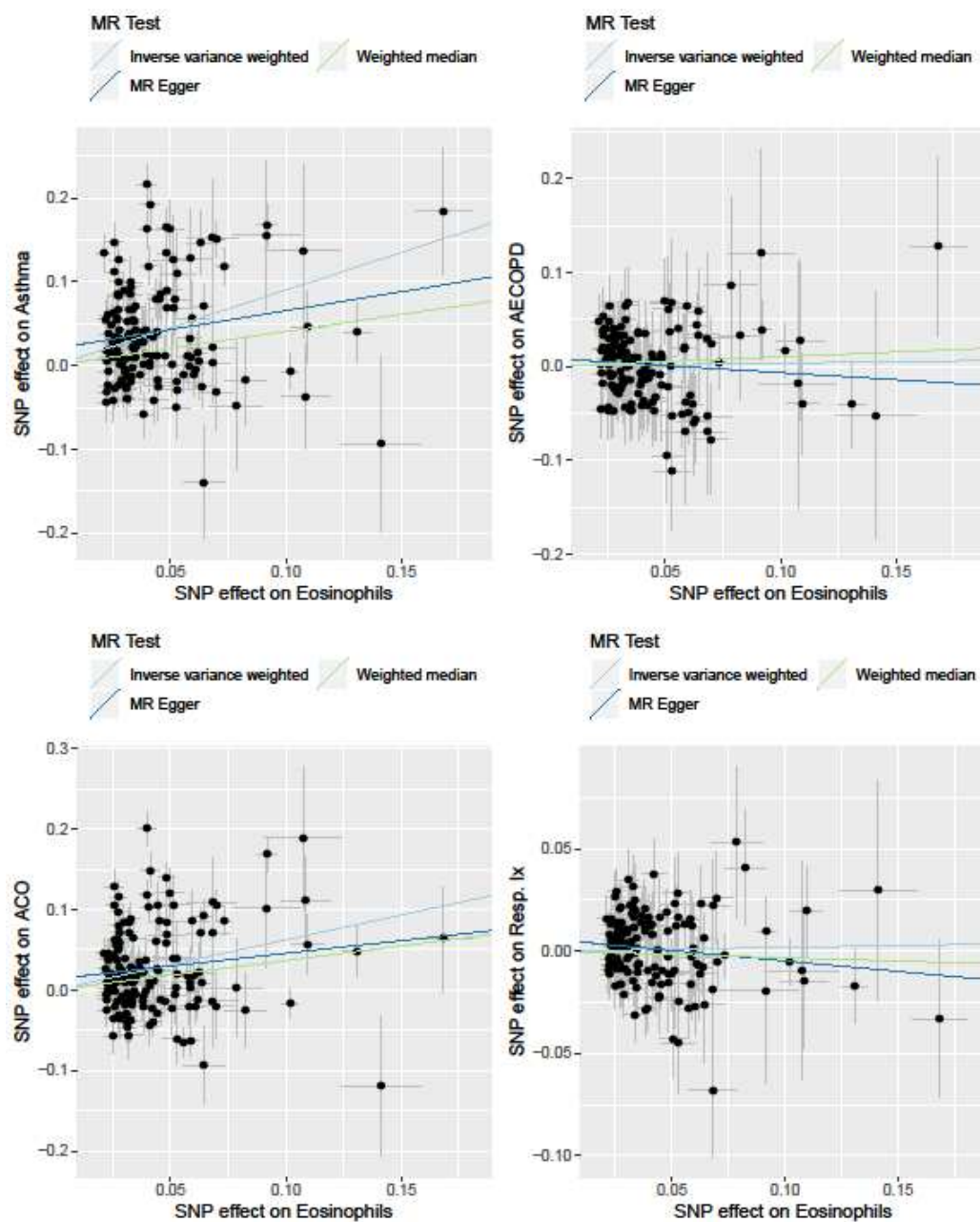


Supplementary Figure 1



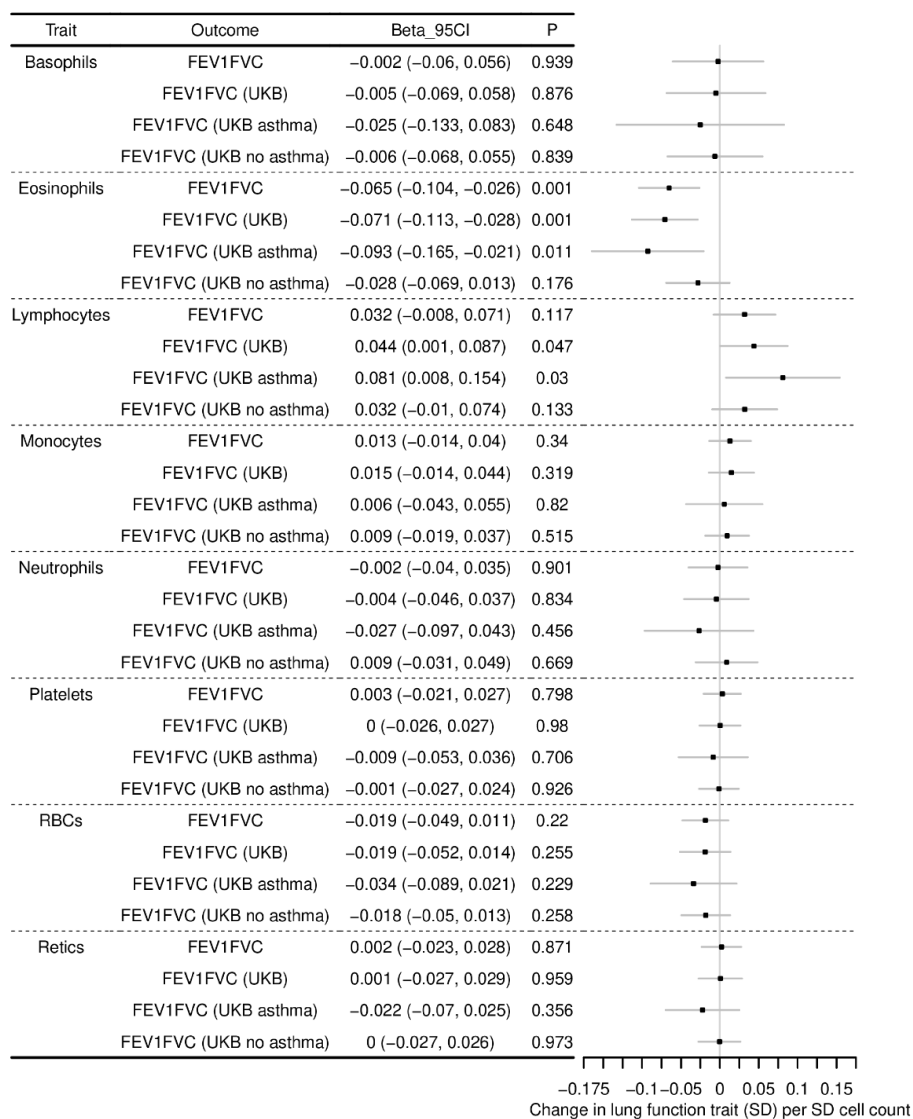
These scatterplots show the relationship between the SNP-eosinophil and SNP-outcome effects for 151 SNPs used in univariable MR analyses, for three quantitative lung function traits: forced expiratory volume in 1 second (FEV_1), forced vital capacity, and the ratio of FEV_1/FVC . Each black dot represents a SNP, and whiskers represent precision. The three fitted lines correspond to the causal effect estimates using three separate MR methods. Units are in SD change (see **Extended Methods**).

Supplementary Figure 2



These scatterplots show the relationship between the SNP-eosinophil and SNP-outcome effects for 151 SNPs used in univariable MR analyses, for four binary respiratory phenotypes: moderate-to-severe asthma, acute exacerbations of COPD, asthma-COPD overlap, and respiratory infections. Each black dot represents a SNP, and whiskers represent precision. The three fitted lines correspond to the causal effect estimates using three separate MR methods. Units are in SD change (see **Extended Methods**).

Supplementary Figure 3



Legend

Forest plot showing multivariable MR estimating the causal effect of multiple cell types on the ratio of forced expiratory volume in 1 second (FEV_1) to forced vital capacity (FVC), after conditioning on the effects of the SNPs on other cell types. Models were run using four sets of SNP-outcome results: GWAS results for FEV_1/FVC from UK Biobank and SpiroMeta [FEV_1FVC , $N=400,102$]; results from UK Biobank only [FEV_1FVC (UKB), $N=321,047$];

results from UK Biobank only, restricting to individuals with asthma [FEV1FVC (UKB asthma), N=37,868]; and results from UK Biobank only, after excluding individuals with asthma [FEV1FVC (UKB no asthma), N=283,179]. Effect sizes (beta, 95% confidence interval, 95CI) are in SD change in lung function outcome per SD cell count (adjusted for the effects of other cell types). Points of the forest plot represent effect size estimate; whiskers are 95% confidence intervals.