

Table S.3: Association Analysis of Lipid Traits in Eight European Cohorts by Homogeneous F -distributed Statistics (Hom-F), Hom-MetaSKAT-O, and Hom-MetaSKAT. The associations that attain a threshold significance of $P < 3.1 \times 10^{-6}$ are marked by red (Liu *et al.* 2014). The results of “Basis of Both GVF and $\beta_\ell(t)$ ” were based on smoothing both GVF and genetic effect functions $\beta_\ell(t)$ of model (3), and the results of “Basis of beta-Smooth Only” were based on smoothing $\beta_\ell(t)$ only approach of model (5), the results of “Additive Model (7)” were based on the additive effect model (7), and the p -values of Hom-MetaSKAT and Hom-MetaSKAT-O were based of R package MetaSKAT. Abbreviation: GVF = Genetic Variant Function.

Traits	Gene	P-values of the Hom-F							P-values of Hom-Meta-SKAT-O	
		Basis of Both GVF and $\beta_\ell(t)$		Basis of beta-Smooth Only		Additive Model (7)	SKAT	SKAT-O		
		B-spline Basis	Fourier Basis	B-spline Basis	Fourier Basis					
HDL	LPL	3.17×10^{-6}	6.72×10^{-9}	3.77×10^{-6}	7.17×10^{-7}	8.93×10^{-4}	1.08×10^{-3}	1.21×10^{-3}		
LDL	APOB	3.63×10^{-9}	7.67×10^{-4}	6.12×10^{-8}	1.93×10^{-4}	4.29×10^{-5}	1.63×10^{-2}	2.51×10^{-2}		
	APOE	1.13×10^{-85}	7.12×10^{-89}	2.38×10^{-81}	8.19×10^{-88}	5.05×10^{-87}	1.18×10^{-43}	6.67×10^{-44}		
	LDLR	9.90×10^{-15}	2.10×10^{-14}	6.14×10^{-15}	1.13×10^{-13}	9.47×10^{-17}	1.03×10^{-10}	2.94×10^{-10}		
	PCSK9	2.39×10^{-6}	6.04×10^{-10}	1.72×10^{-6}	1.37×10^{-7}	3.62×10^{-17}	6.18×10^{-7}	2.00×10^{-6}		
TG	APOE	5.13×10^{-6}	6.93×10^{-6}	5.37×10^{-7}	2.01×10^{-6}	1.43×10^{-6}	1.34×10^{-3}	2.59×10^{-3}		
	LPL	2.27×10^{-11}	8.93×10^{-13}	2.90×10^{-11}	5.20×10^{-14}	6.67×10^{-7}	1.78×10^{-5}	1.77×10^{-5}		
CHOL	APOB	2.11×10^{-8}	7.97×10^{-3}	2.30×10^{-7}	1.20×10^{-4}	8.08×10^{-8}	6.17×10^{-2}	1.00×10^{-1}		
	APOE	1.33×10^{-52}	2.12×10^{-52}	6.24×10^{-48}	8.37×10^{-51}	1.03×10^{-50}	9.08×10^{-23}	2.15×10^{-22}		
	HNF1A	1.08×10^{-1}	1.85×10^{-2}	9.00×10^{-3}	2.99×10^{-6}	1.77×10^{-2}	1.89×10^{-1}	2.77×10^{-1}		
	LDLR	8.93×10^{-11}	9.47×10^{-10}	9.32×10^{-10}	7.33×10^{-9}	2.43×10^{-12}	3.43×10^{-7}	1.15×10^{-6}		