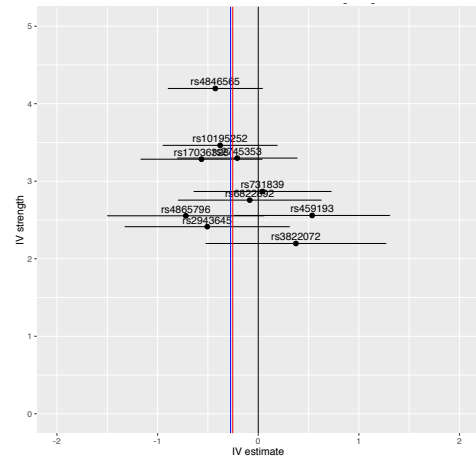
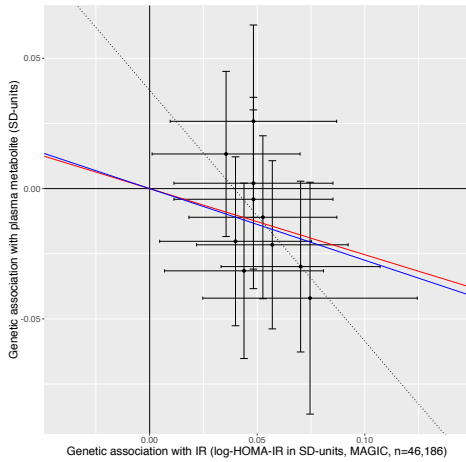
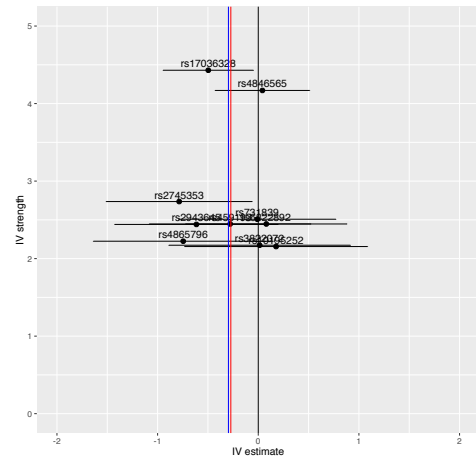
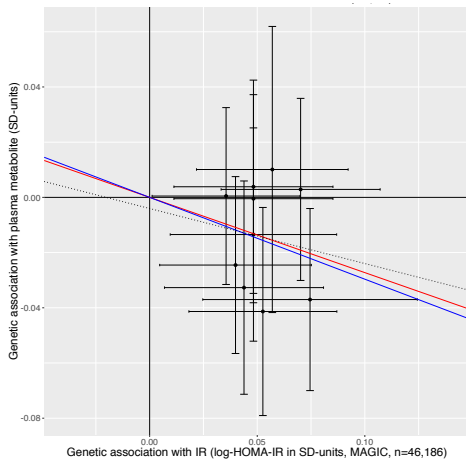


Palmitoleic acid

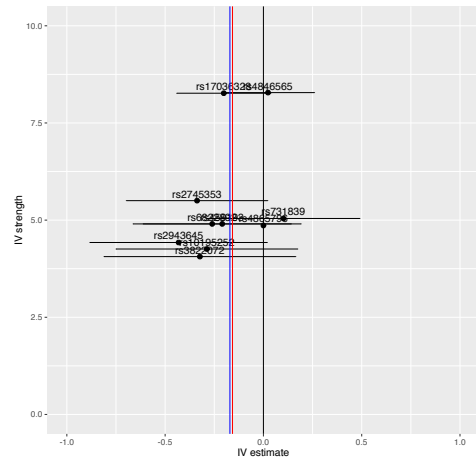
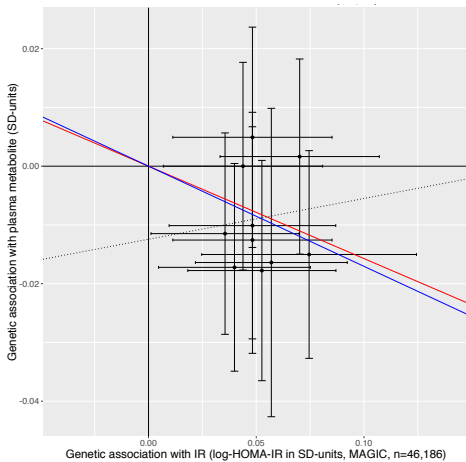
PIVUS/Twingene (n=2,613)



KORA/TwinsUK (n=7,776)



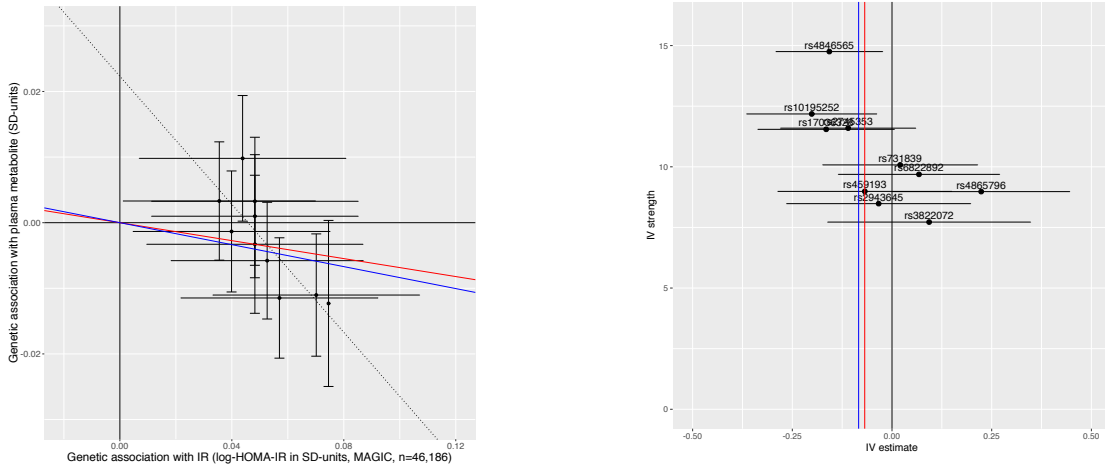
CHARGE (n=8,961)



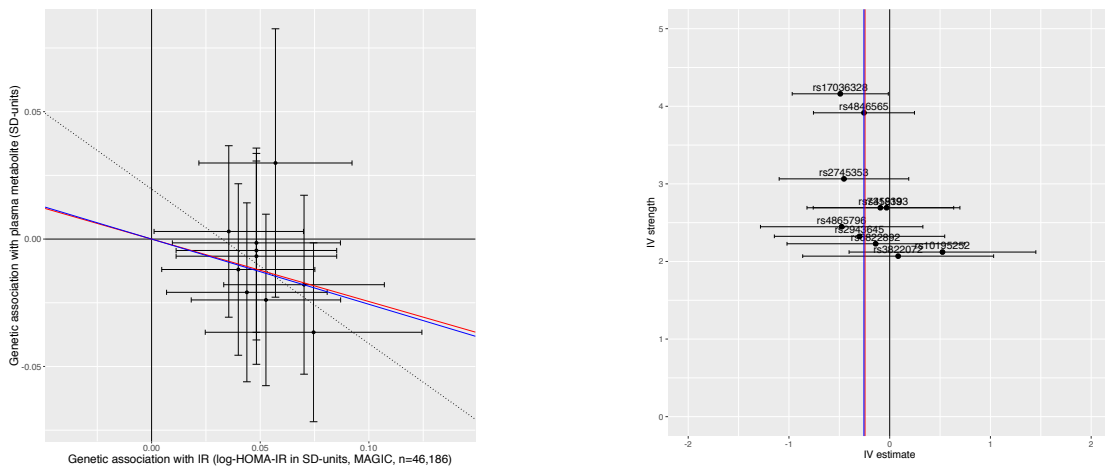
S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

Oleic acid

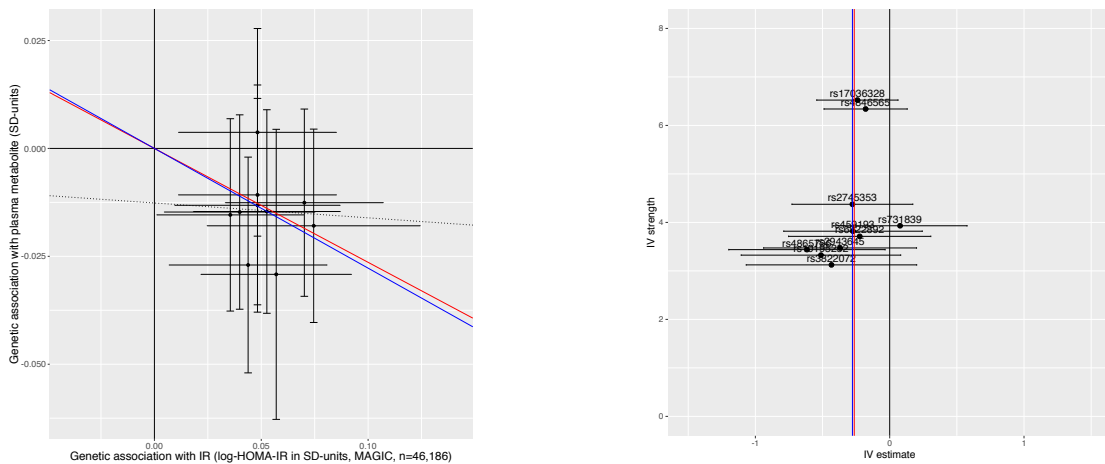
PIVUS/Twingene (n=2,613)



KORA/TwinsUK (n=7,768)



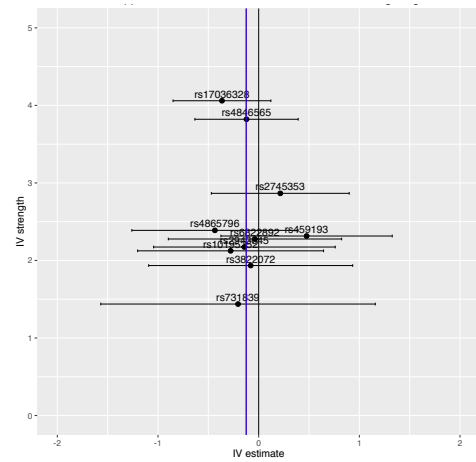
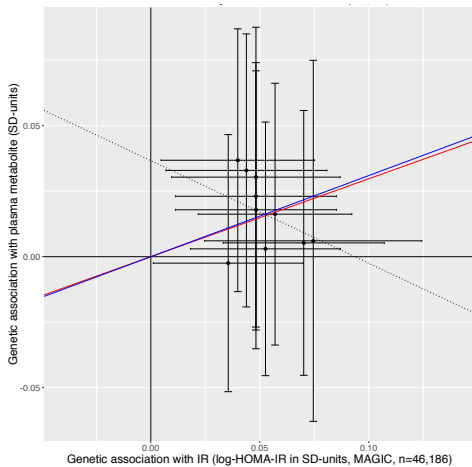
CHARGE (n=8,961)



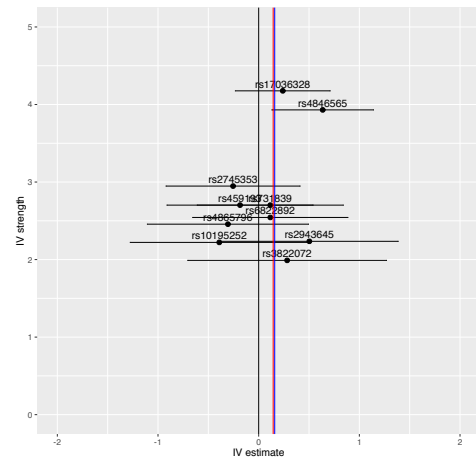
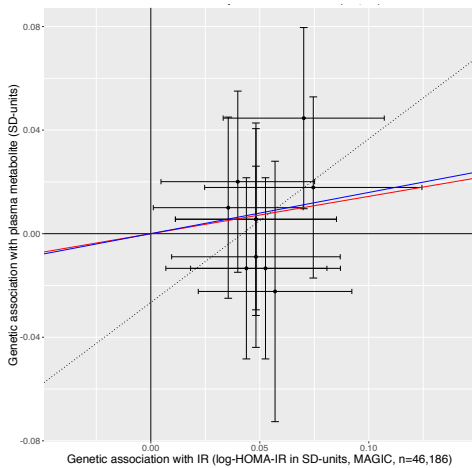
S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

Tyrosine

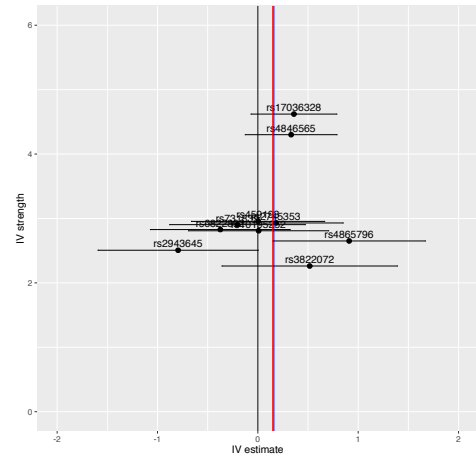
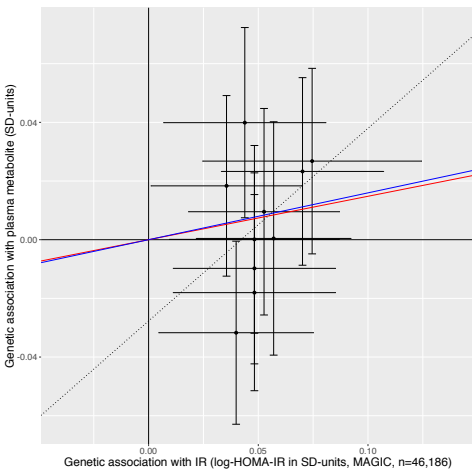
PIVUS/Twingene (n=2,613)



KORA/TwinsUK (n=7,807)



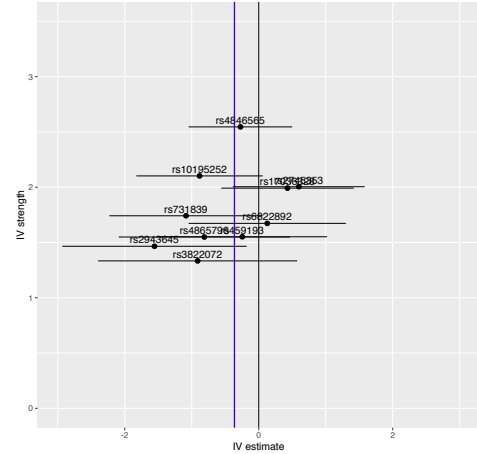
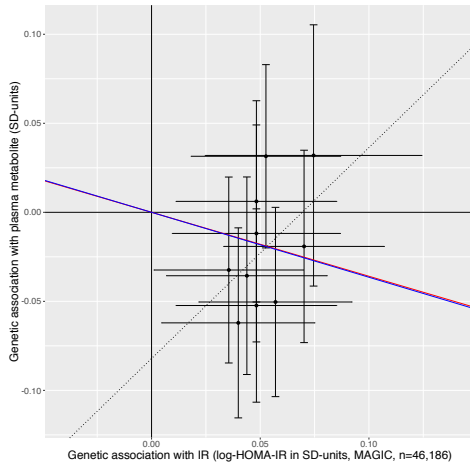
Finnish cohorts(n=8,330)



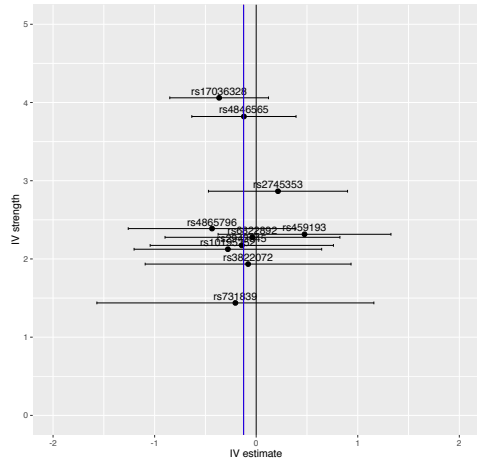
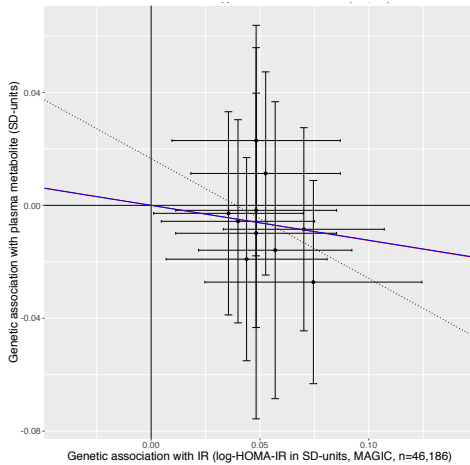
S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

Hippuric acid

PIVUS/Twingene (n=2,613)



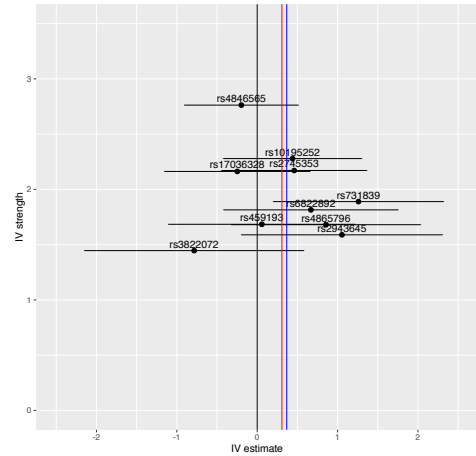
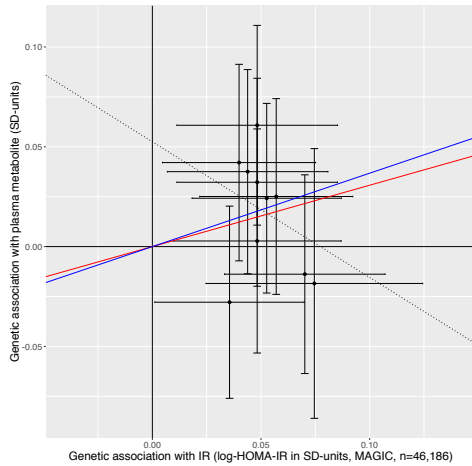
KORA/TwinsUK (n=7,806)



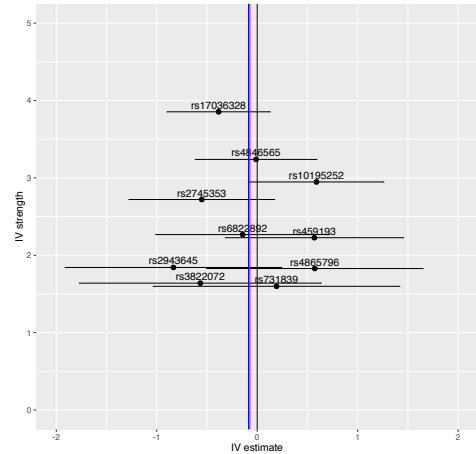
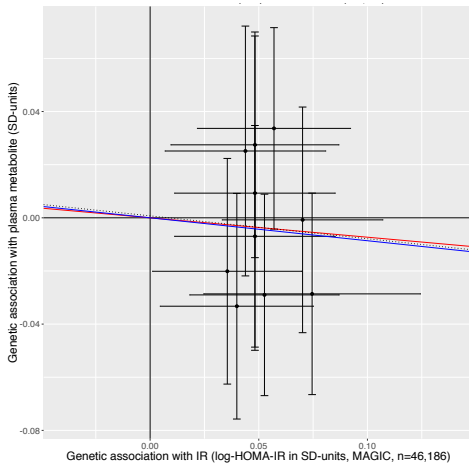
S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

Monoacylglycerol 18:1

PIVUS/Twingene (n=2,613)



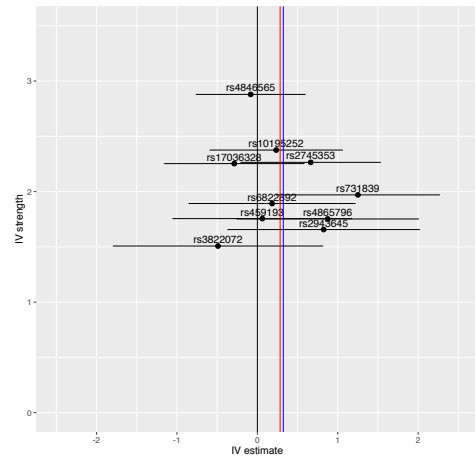
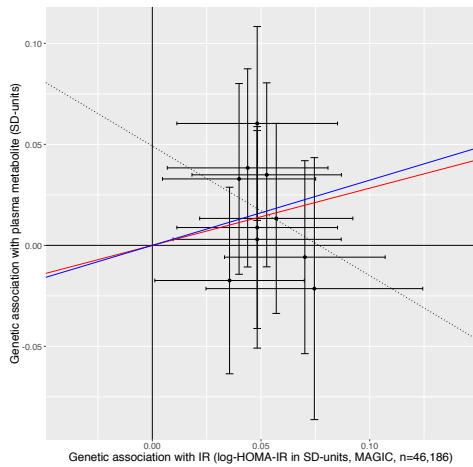
KORA/TwinsUK (n=5,717)



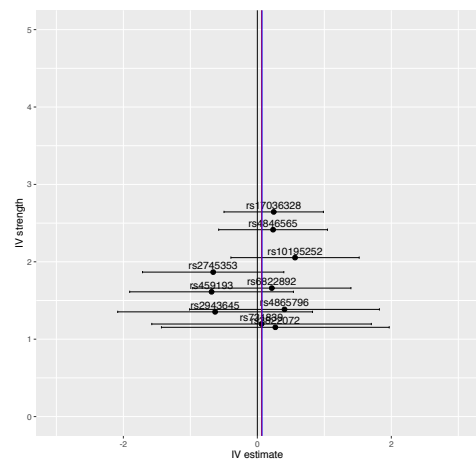
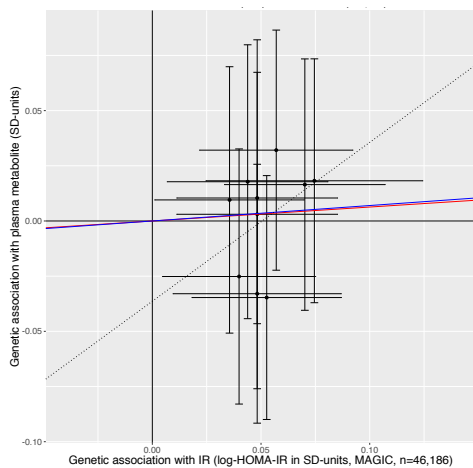
S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

Monoacylglycerol 18:2

PIVUS/Twingene (n=2,613)



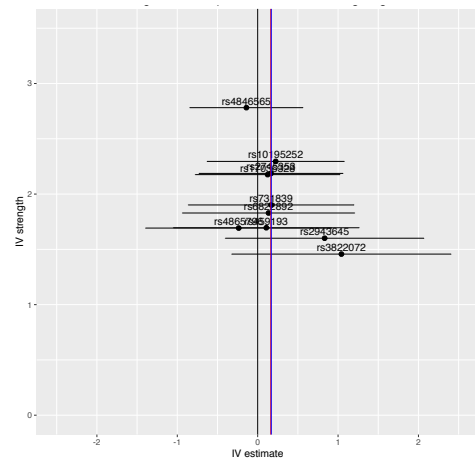
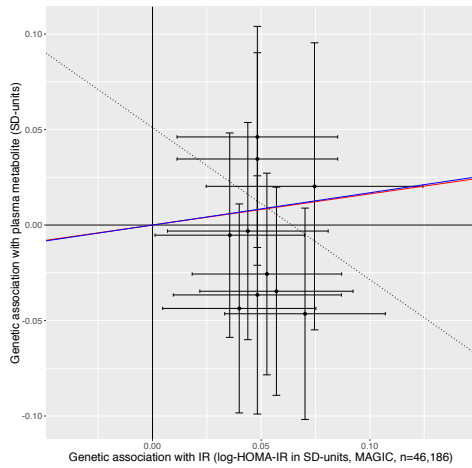
KORA/TwinsUK (n=2,797)



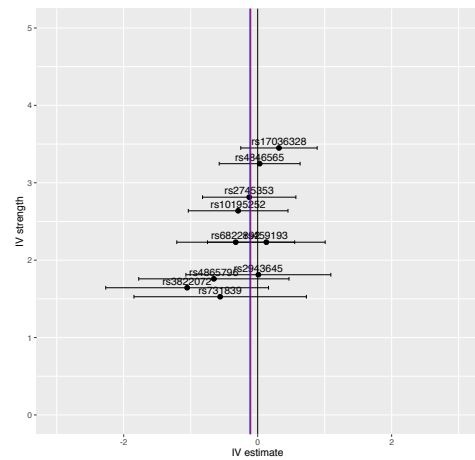
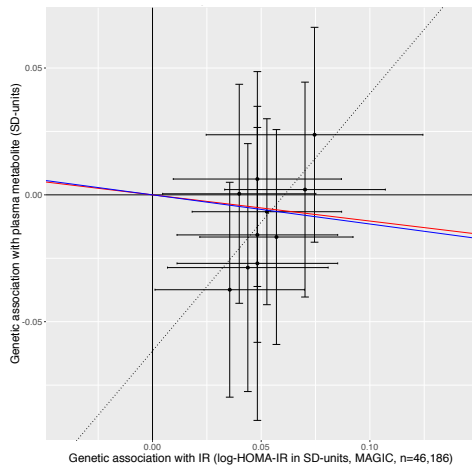
S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

Gamma-tocopherol

PIVUS/Twingene (n=2,613)



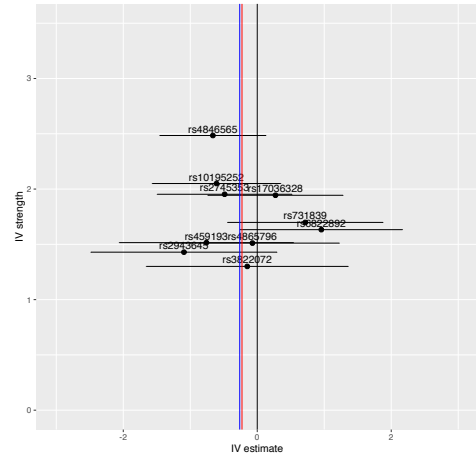
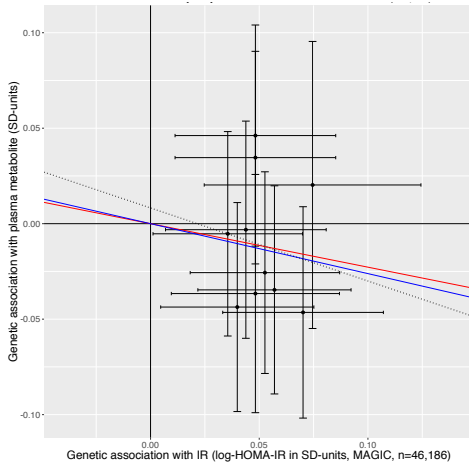
KORA/TwinsUK (n=7,203)



S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

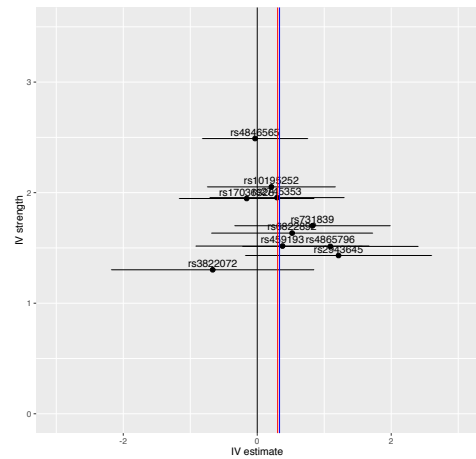
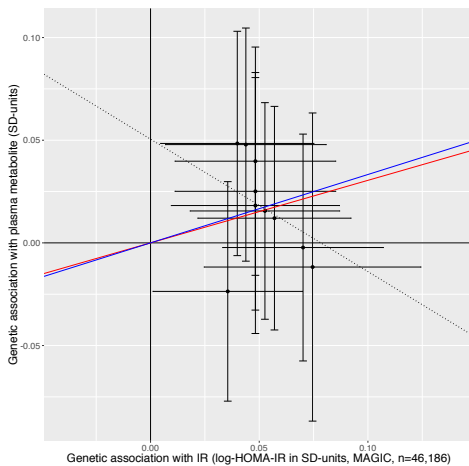
3a,6b,7b-Trihydroxy-5b-cholanoic acid

PIVUS/Twingene (n=2,613)



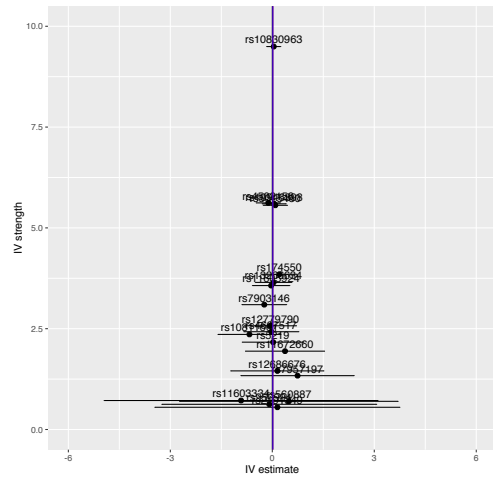
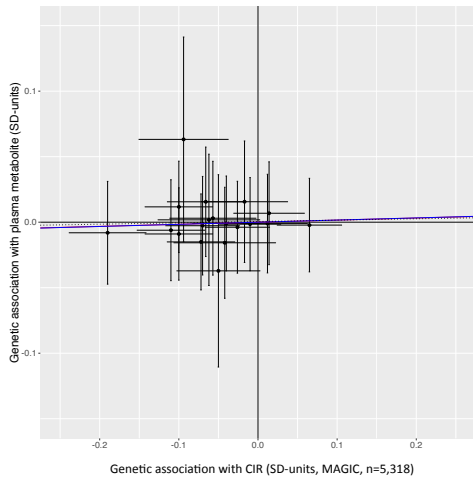
Monoacylglycerol 14:0

PIVUS/Twingene (n=2,613)

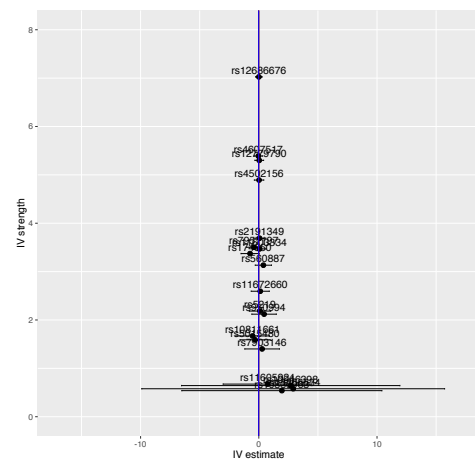
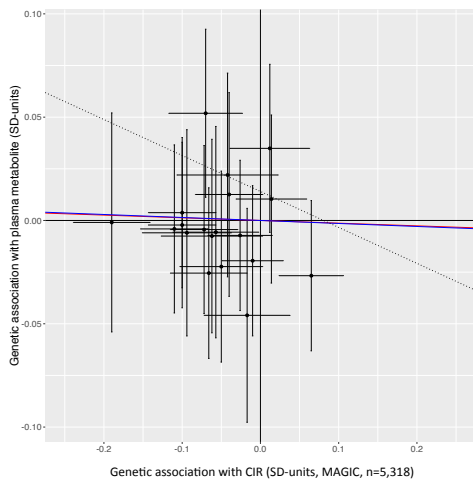


S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin resistance (log-HOMA-IR, n = 46,186) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.

PIVUS/Twingene (n=2,613)

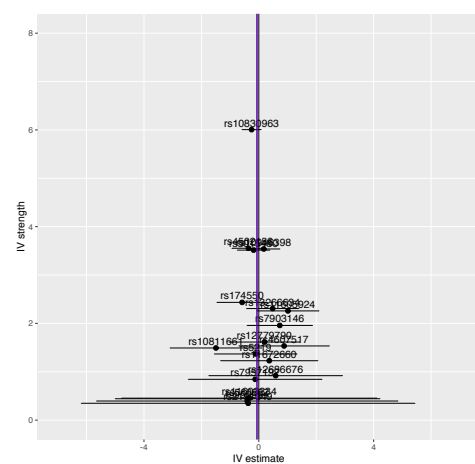
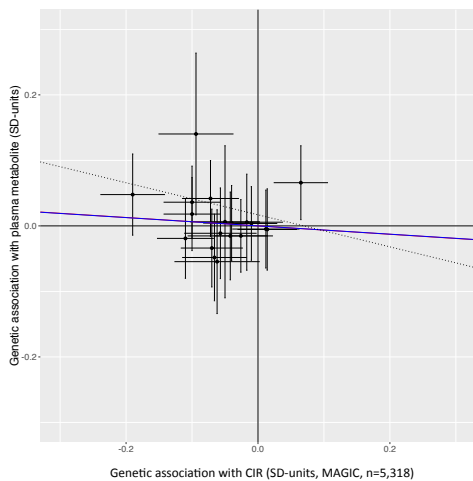


KORA/TwinsUK (n=6,812)



3a,6b,7b-Trihydroxy-5b-cholanoic acid

PIVUS/Twingene (n=2,613)



S4 Figure. Left panel: Scatter plots of genetic associations with the outcome against genetic associations with insulin secretion (CIR, n = 5,318) adjusted for age and sex in SD-units. Right panel: Funnel plots of instrument strength against instrumental variables estimates. Regression lines indicate instrumental variable estimates for inverse variance weighted (red), likelihood-based (blue), and Egger regression (dotted) MR analysis. Error bars indicate 95% CI.