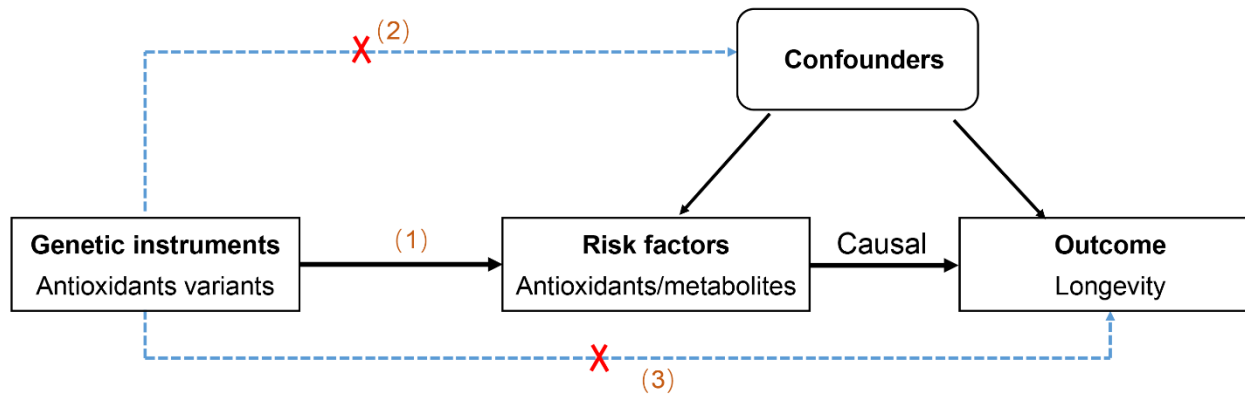


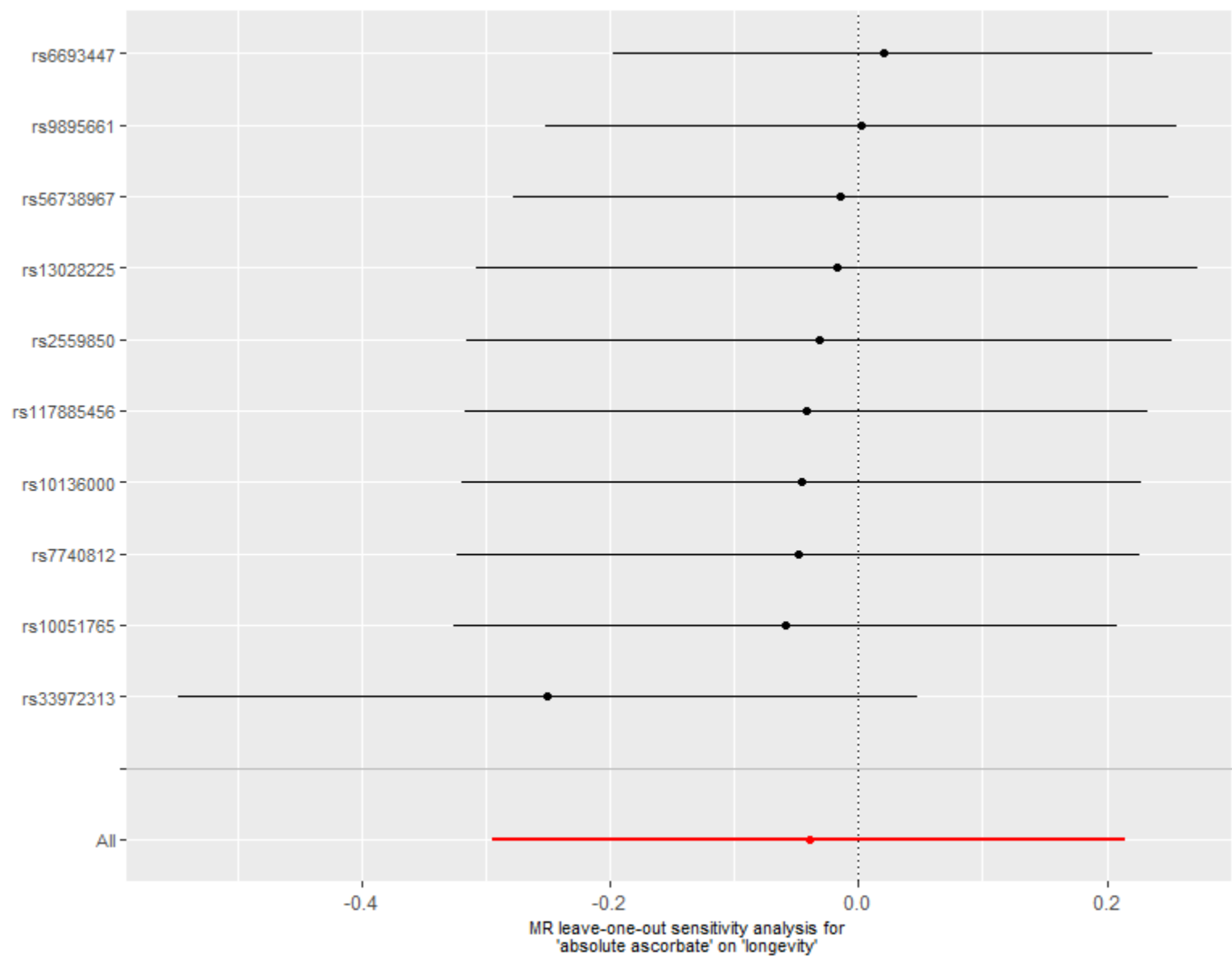
Online Supporting Material



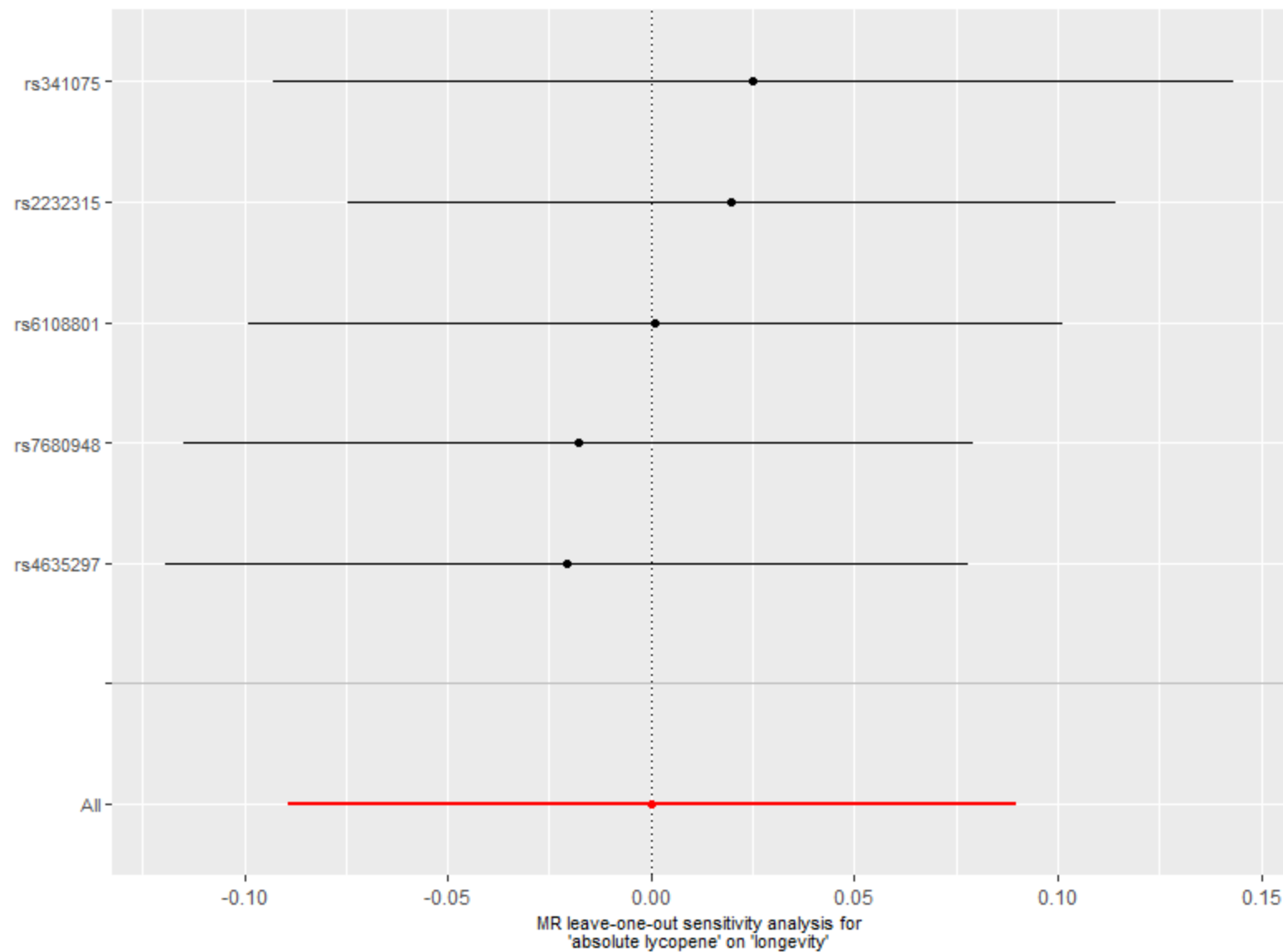
Supplemental Figure S1: Three principal assumptions in MR study: (1) genetic instruments are strongly related to exposure (circulating antioxidants/metabolites); (2) genetic instruments are independent of any possible known confounders; (3) genetic instrument exert impact on outcomes (longevity) entirely through the exposure (circulating antioxidants/metabolites), not through other pathways.

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Supplemental Figure S2: Leave-one-out permutations for the association of absolute circulating ascorbate with longevity.

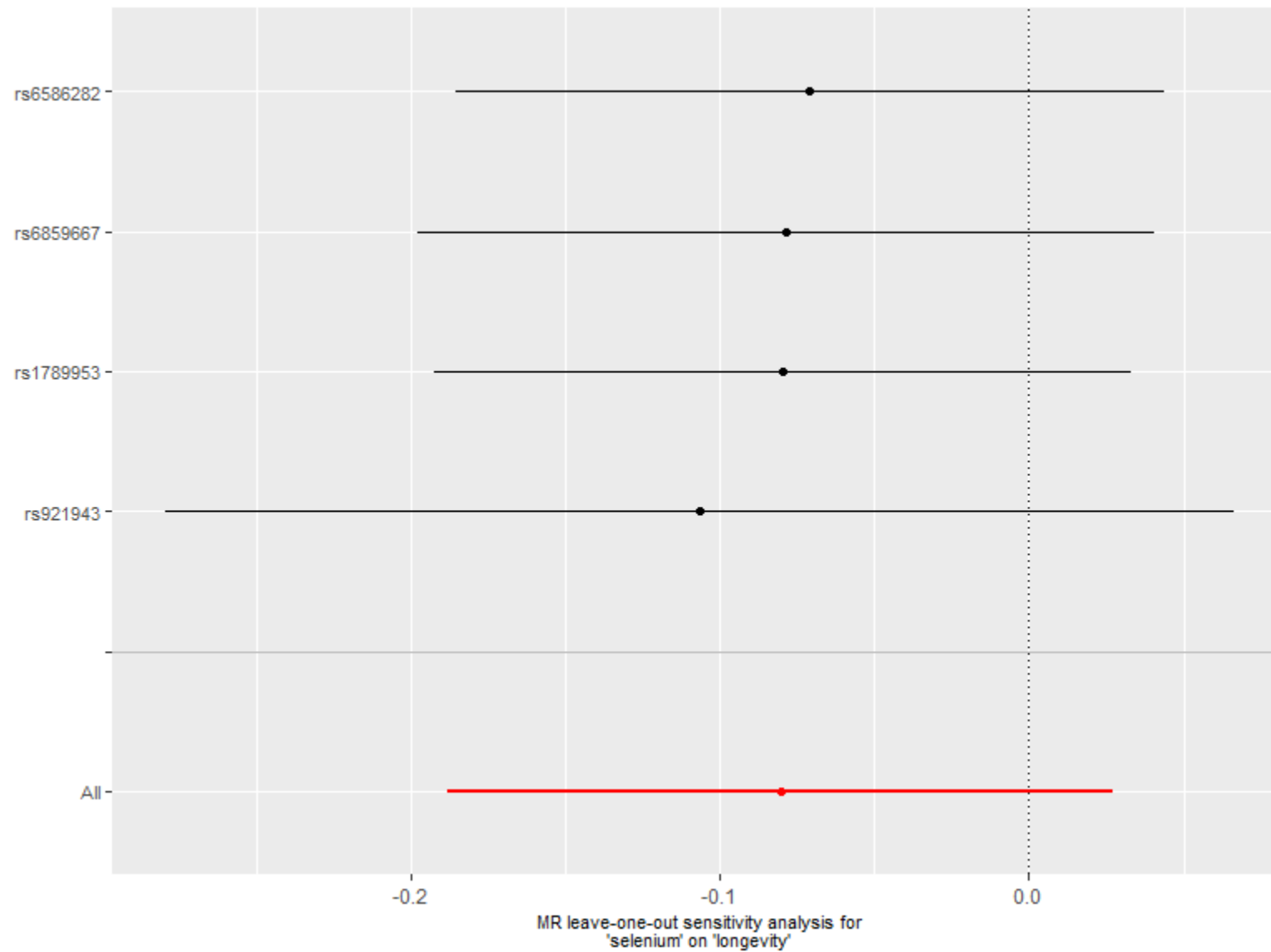


Supplemental Figure S3: Leave-one-out permutations for the association of absolute circulating lycopene with longevity.



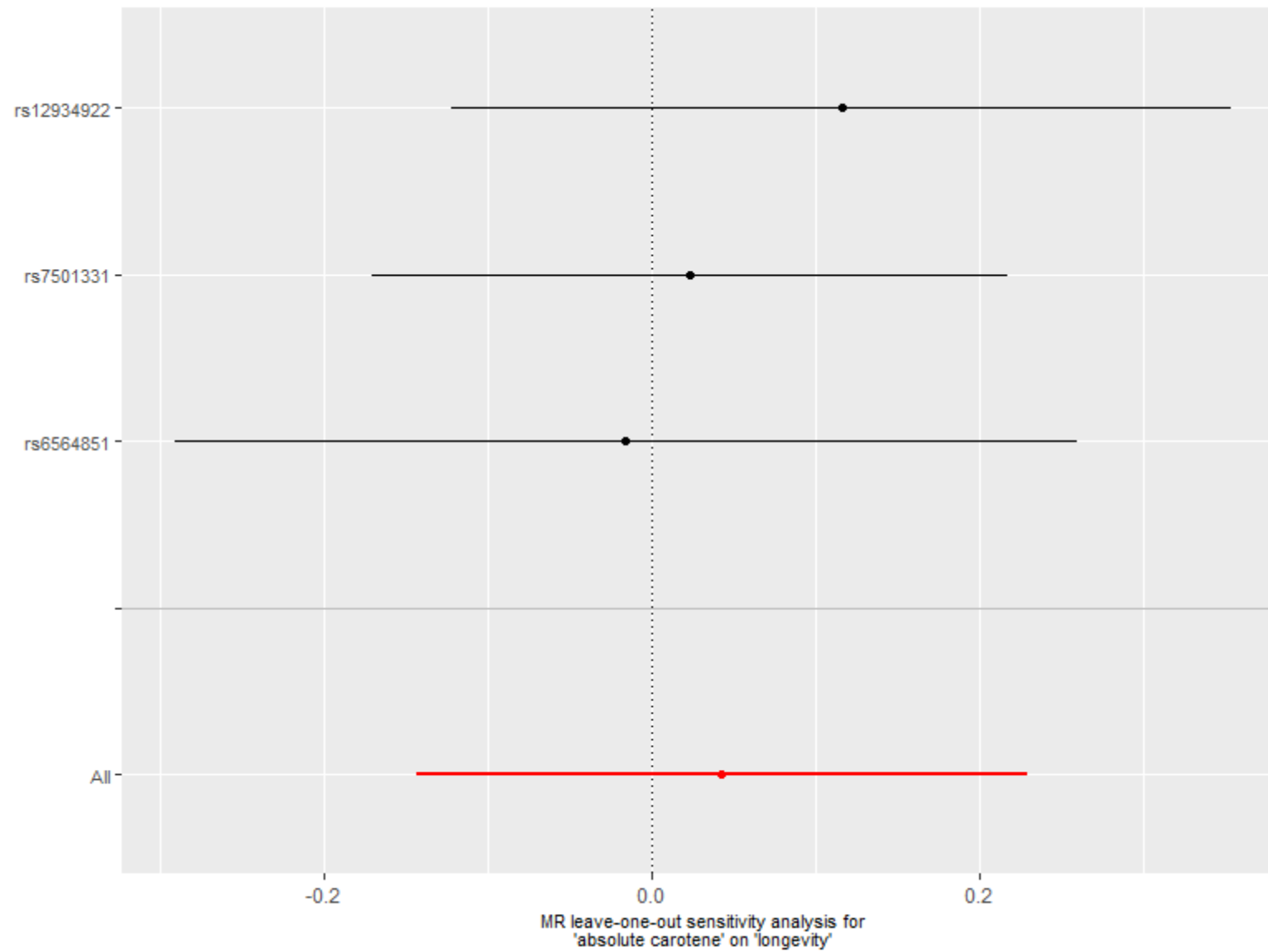
Online Supporting Material

Supplemental Figure S4: Leave-one-out permutations for the association of absolute circulating selenium with longevity.



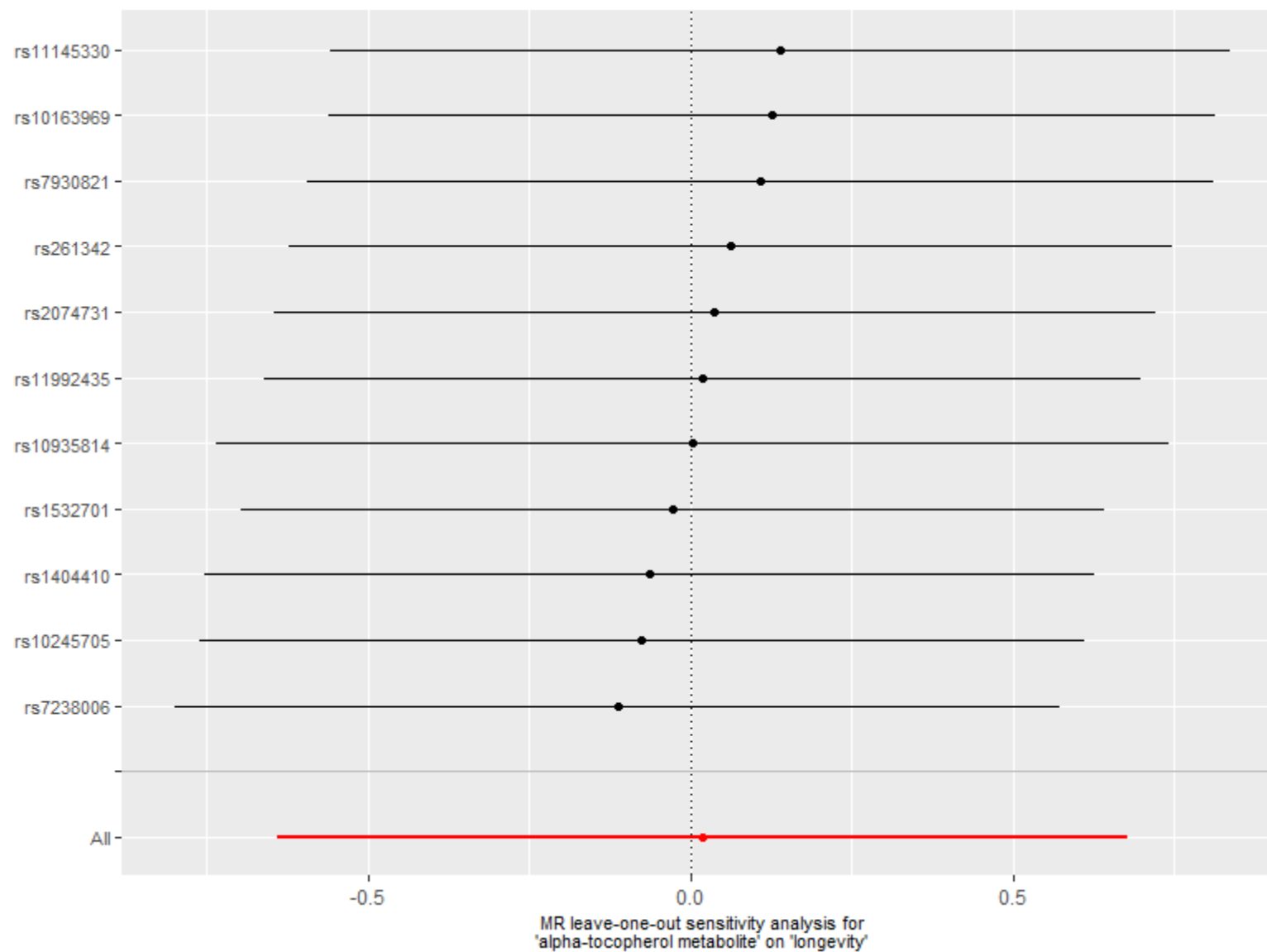
Online Supporting Material

Supplemental Figure S5: Leave-one-out permutations for the association of absolute circulating beta-carotene with longevity.



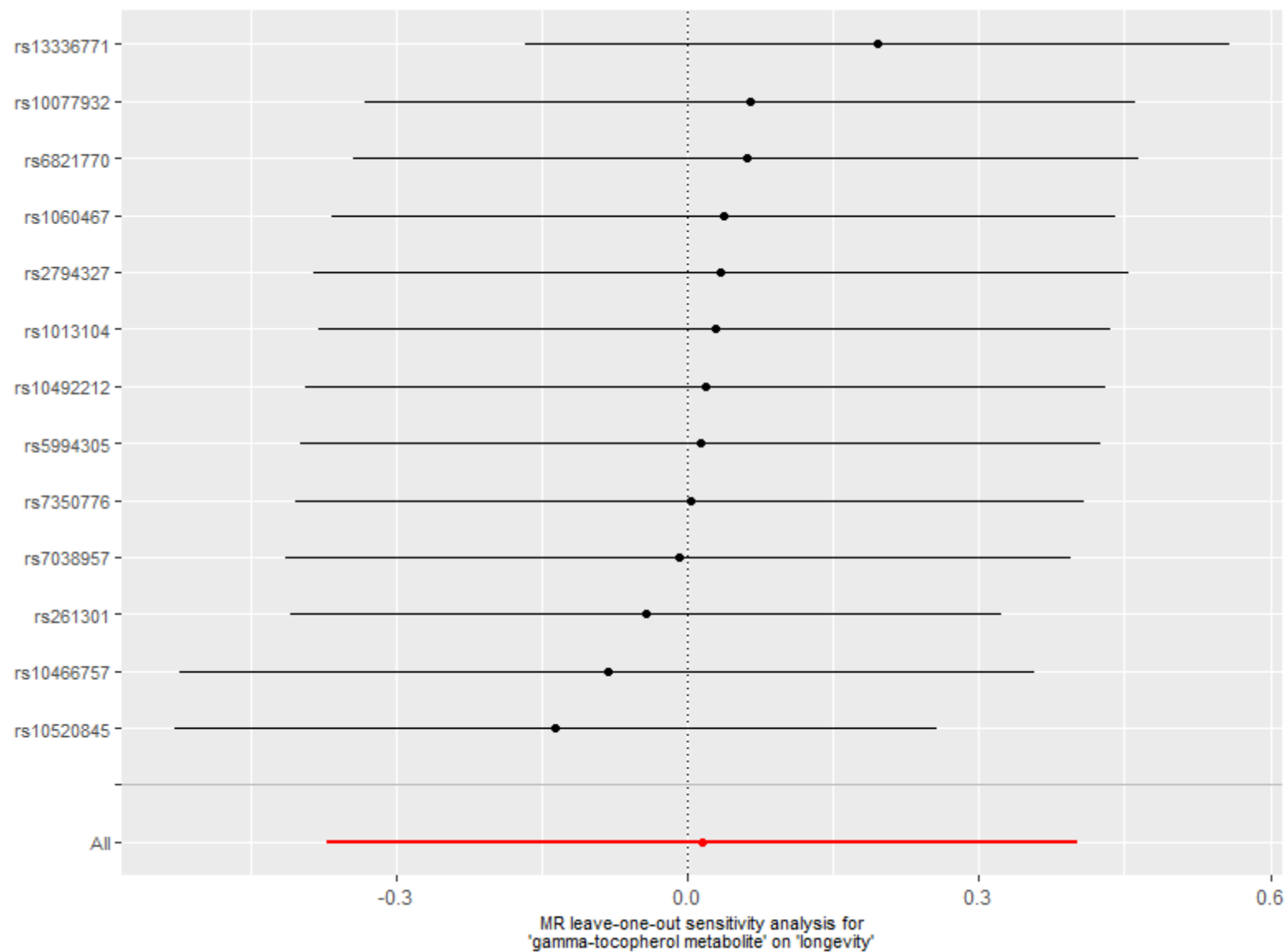
Online Supporting Material

Supplemental Figure S6: Leave-one-out permutations for the association of alpha-tocopherol metabolite with longevity.



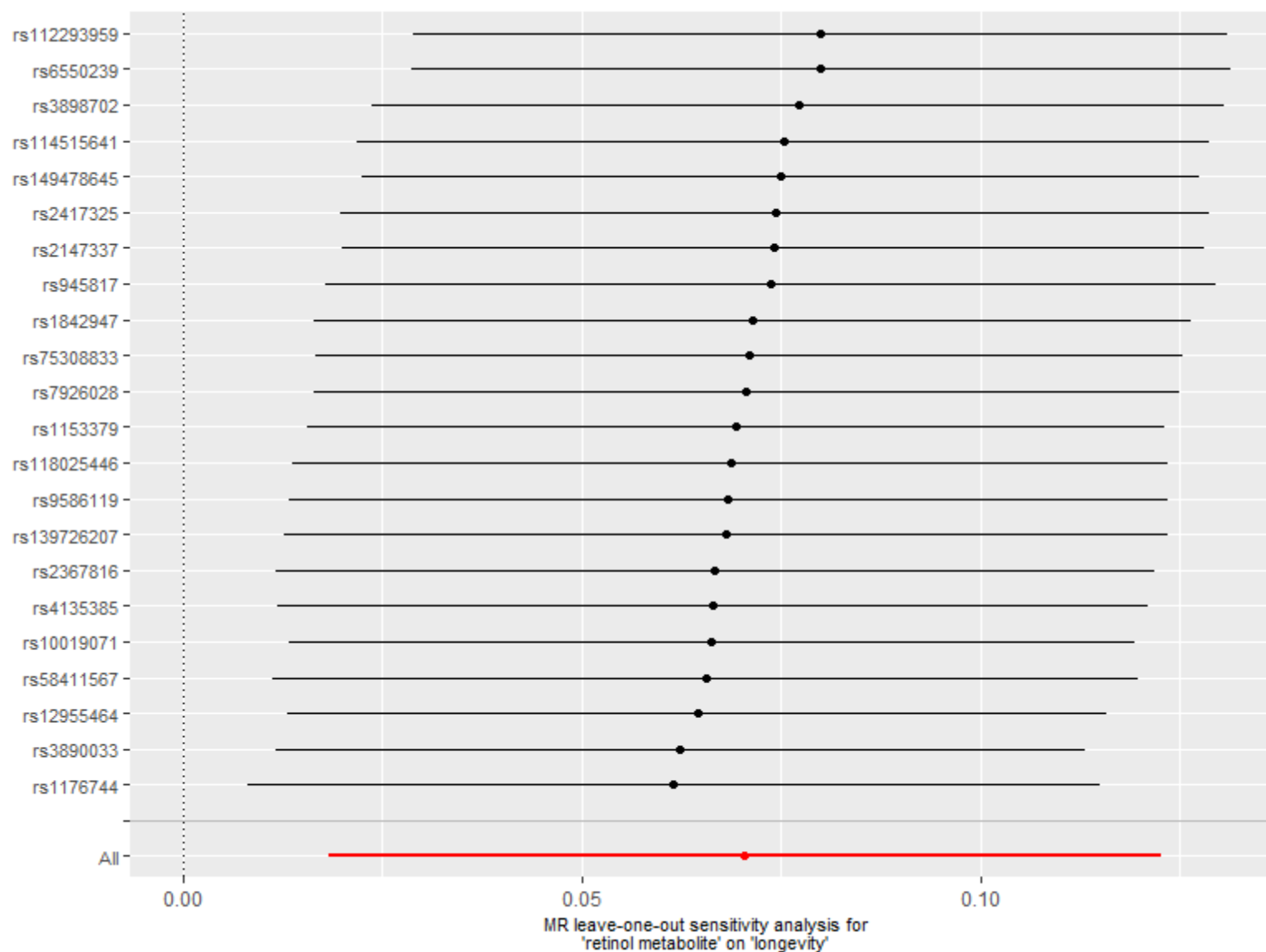
Online Supporting Material

Supplemental Figure S7: Leave-one-out permutations for the association of gamma-tocopherol metabolite with longevity.



Online Supporting Material

Supplemental Figure S8: Leave-one-out permutations for the association of circulating retinol metabolite with longevity.



Online Supporting Material

Supplemental Figure S9: Leave-one-out permutations for the association of circulating ascorbate metabolite with longevity.

