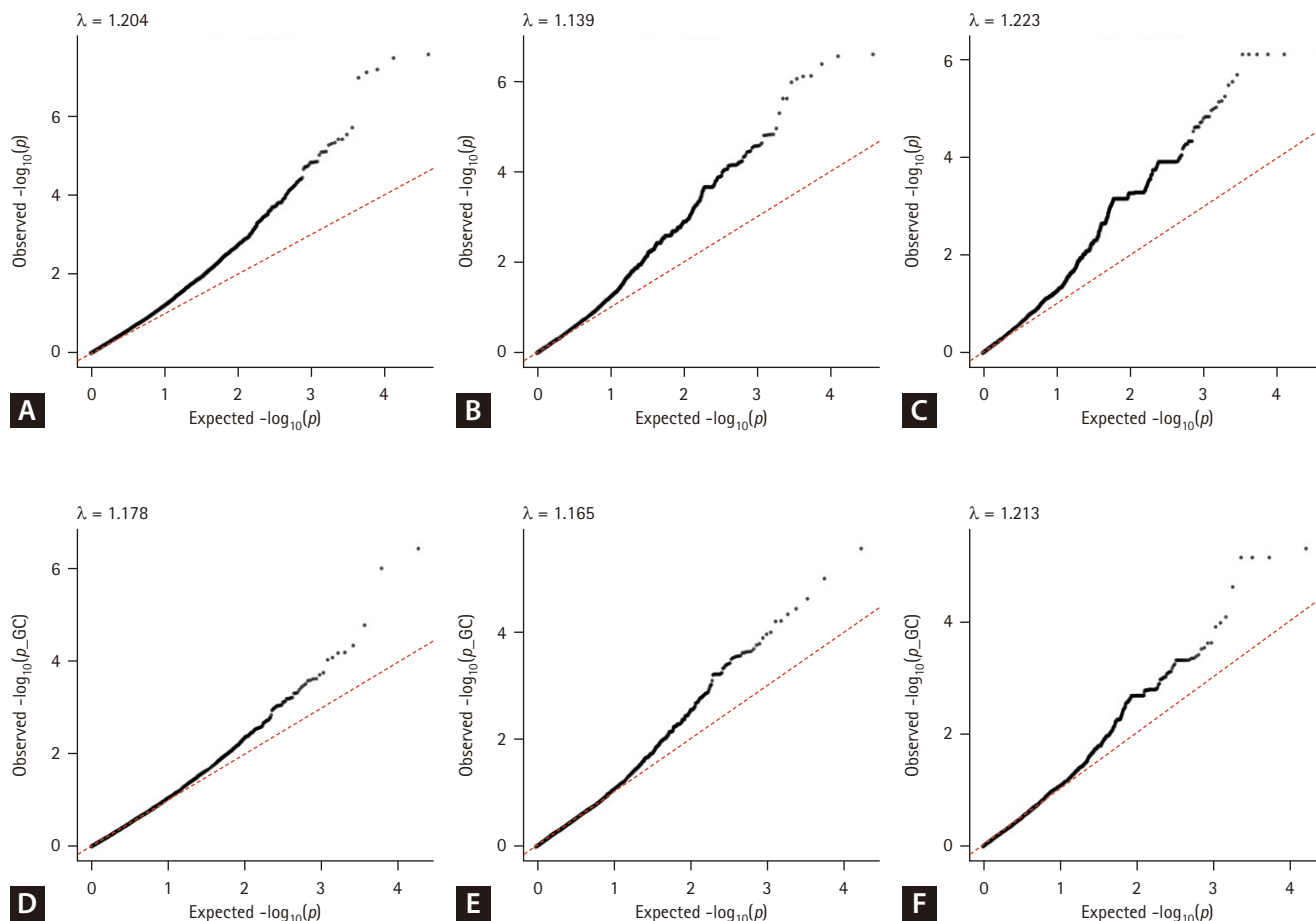




Supplementary Figure 4. Quantile-quantile (QQ) plots of within-case association analyses. QQ plots for variant-wise (A–C) and gene-wise (D–F) analyses in IBD, CD, and UC. The genomic inflation factors (λ) ranged from 1.14–1.22 (variant-wise) and 1.16–1.21 (gene-wise). The moderate upward deviation in the tail is consistent with a polygenic architecture rather than systematic bias. IBD, Inflammatory bowel disease; CD, Crohn’s disease; UC, ulcerative colitis.