SUPPLEMENTARY INFORMATION

Discovery of novel eGFR-associated multiple independent signals using a quasi-adaptive method

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Figures 1-57: Represent regional association plots for loci with replicated novel independent signals identified by the quasi-adaptive method. Three plots were shown for each locus. The first plot shows a regional association plot based on eGFR association analysis performed on UKBB individual-level genotype data among European-ancestry participants with highlighted novel independent signal and known index SNP, respectively, as an LD reference variant (colored purple). The second plot is a regional association plot based on conditional eGFR association analysis conditioned on known index SNP performed on UKBB individual-level genotype data among European-ancestry participants with the novel independent signal as LD reference variant (colored purple). The third plot is a regional association plot based on conditional eGFR association analysis conditioned on a novel independent signal performed on UKBB individual-level genotype data among European-ancestry participants with known index SNP as LD reference variant (colored purple). The details of the conditional eGFR association analyses were explained for each plot separately.

Figures 58-59: Colocalization of eGFR-associated known index SNPs with gene expression (cis eQTLs) across all tissues. Figure 58 and Figure 59 depict colocalization results based on unconditional and conditional eGFR association analyses, respectively. Genes with at least one posterior probability of colocalization (PP ≥ 80%) across tissues (x axis) are shown with the respective underlying variants and chromosome numbers (y axis). Colocalizations are illustrated as dots, where dot size corresponds to the PP and are colored according to the predicted change in gene expression relative to the lower eGFR. Color coding on y axis reflects locus.

Figures 60-76: Represent colocalization results for known index SNP and novel independent signal at each locus across all tissues. Plot A and Plot B show posterior probability of colocalization (PP of one common variant) based on eGFR association analysis (y axis) and conditional eGFR association analysis (x axis) for known index SNP and novel independent signal, respectively. The gray dash line represents PP = 80%, with high evidence for colocalization (PP > 80%) shown in color and low evidence (PP < 80%) shown in gray. The blue dashed line corresponds to the diagonal line. The details of the conditional eGFR association analyses were explained for each plot separately.
**Figure 1:** Regional association plot for index SNP rs1397764 (3:141750810_A/G) and secondary signal rs147877018 (3:141813349_G/A) using eGFR association analysis.

**Figure 2:** Regional association plot for secondary signal rs147877018 (3:141813349_G/A) using conditional eGFR association analysis (conditioned on index SNP).
Figure 3: Regional association plot for index SNP rs1397764 (3:141750810_A/G) using conditional eGFR association analysis (conditioned on secondary signal).

Figure 4: Regional association plot for index SNP rs6921580 (6:7203714_C/G) and secondary signal rs3904600 (6:7109665_C/G) using eGFR association analysis.
Figure 5: Regional association plot for secondary signal rs3904600 (6: 7109665_C/G) using conditional eGFR association analysis (conditioned on index SNP).

Figure 6: Regional association plot for index SNP rs6921580 (6: 7203714_C/G) using conditional eGFR association analysis (conditioned on secondary signal).
**Figure 7**: Regional association plot for index SNP rs10086569 (8: 87247209_C/T) and secondary signal rs4566 (8: 86361082_G/T) using eGFR association analysis.

**Figure 8**: Regional association plot for secondary signal rs4566 (8: 86361082_G/T) using conditional eGFR association analysis (conditioned on index SNP).
**Figure 9:** Regional association plot for index SNP rs10086569 (8: 87247209_C/T) using conditional eGFR association analysis (conditioned on secondary signal).

**Figure 10:** Regional association plot for index SNP rs10846157 (12:15325031_A/C) and secondary signal rs11056376 (12:15307394_A/G) using eGFR association analysis.
**Figure 11:** Regional association plot for secondary signal rs11056376 (12:15307394_A/G) using conditional eGFR association analysis (conditioned on index SNP).

**Figure 12:** Regional association plot for index SNP rs10846157 (12:15325031_A/C) (conditioned on secondary signal) using conditional eGFR association analysis.
Figure 13: Regional association plot for index SNP rs2634675 (12: 48740855_A/G) and secondary signal rs3730071 (12: 49168798_C/A) using eGFR association analysis.

Figure 14: Regional association plot for secondary signal rs3730071 (12: 49168798_C/A) using conditional eGFR association analysis (conditioned on index SNP)
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**Figure 16:** Regional association plot for index SNP rs807624 (2:15782471_G/T) and tertiary signal rs807574 (2:15807239_A/G) using eGFR association analysis.
**Figure 17**: Regional association plot for tertiary signal rs807574 (2:15807239_A/G) using conditional eGFR association analysis (conditioned on index SNP and secondary signal).

**Figure 18**: Regional association plot for index SNP rs807624 (2:15782471_G/T) using conditional eGFR association analysis (conditioned on secondary signal and tertiary signal).
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**Figure 20:** Regional association plot for tertiary signal rs13227214 (7:128740355_C/G) using conditional eGFR association analysis (conditioned on index SNP and secondary signal).
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**Figure 36:** Regional association plot for index SNP rs881858 (6:43806609_G/A) using conditional eGFR association analysis (conditioned on secondary signal, tertiary signal, and signal of 4th).
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![Regional association plot for index SNP rs2039424 (9:71432174_G/A) and signal of 4th rs4745268 (9:71405525_C/T) using eGFR association analysis.](image)

**Figure 38:** Regional association plot for signal of 4th rs4745268 (9:71405525_C/T) using conditional eGFR association analysis (conditioned on index SNP and secondary signal).

![Regional association plot for signal of 4th rs4745268 (9:71405525_C/T) using conditional eGFR association analysis.](image)
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Figure 76: Colocalization results for index SNP rs6127099 and signal of 4th rs2585441 on chromosome 20. **Plot A**: conditional GWAS adjusted for secondary signal (rs2762943) and signal of 4th (rs2585441). **Plot B**: conditional GWAS adjusted for index SNP (rs6127099) and secondary signal (rs2762943)