

Description of Additional Supplementary Files

File name: Supplementary Data 1

Description: HLA gene read coverage.

File name: Supplementary Data 2

Description: HLA allele down sampling results.

File name: Supplementary Data 3

Description: HLA allele frequencies (3-field).

File name: Supplementary Data 4

Description: HLA allele frequencies (2-field).

File name: Supplementary Data 5

Description: Mean allele frequencies of mismatched alleles between our HLA calls and the UK Biobank imputed alleles.

File name: Supplementary Data 6

Description: Full breakdown of imputed and sequenced alleles comparisons (all ancestries combined).

File name: Supplementary Data 7

Description: Full breakdown of imputed and sequenced alleles comparisons (AFR ancestry).

File name: Supplementary Data 8

Description: Full breakdown of imputed and sequenced alleles comparisons (AMR ancestry).

File name: Supplementary Data 9

Description: Full breakdown of imputed and sequenced alleles comparisons (EAS ancestry).

File name: Supplementary Data 10

Description: Full breakdown of imputed and sequenced alleles comparisons (EUR ancestry).

File name: Supplementary Data 11

Description: Full breakdown of imputed and sequenced alleles comparisons (SAS ancestry).

File name: Supplementary Data 12

Description: Asymmetric multiallelic LD between HLA alleles (all ancestries combined).

File name: Supplementary Data 13

Description: Asymmetric multiallelic LD between HLA alleles (AFR ancestry).

File name: Supplementary Data 14

Description: Asymmetric multiallelic LD between HLA alleles (AMR ancestry).

File name: Supplementary Data 15

Description: Asymmetric multiallelic LD between HLA alleles (EAS ancestry).

File name: Supplementary Data 16

Description: Asymmetric multiallelic LD between HLA alleles (EUR ancestry).

File name: Supplementary Data 17

Description: Asymmetric multiallelic LD between HLA alleles (SAS ancestry).

File name: Supplementary Data 18

Description: Codes used to assign each phenotype to participants.

File name: Supplementary Data 19

Description: Phenotypes analyzed for each genetic ancestry.

File name: Supplementary Data 20

Description: Full summary statistics.

File name: Supplementary Data 21

Description: Biallelic LD for the significant variants (only pairs of variants with $R^2 > 0.2$ are shown).

File name: Supplementary Data 22

Description: Conditional analyses.

File name: Supplementary Data 23

Description: Potentially novel alleles and comparisons with the Estonian Biobank imputed results.

File name: Supplementary Data 24

Description: Summary statistics of synonymous variants.

File name: Supplementary Data 25

Description: Canonical correlation analysis between imputed and sequenced alleles.

File name: Supplementary Data 26

Description: Summary of polygenic scores AUC

File name: Supplementary Data 27

Description: AFND cohorts used for reference allele frequencies.

File name: Supplementary Data 28

Description: Negative control phenotypes summary statistics.