

Meta-analysis software:

METAL: https://genome.sph.umich.edu/wiki/METAL_Documentation

PLINK: <https://zzz.bwh.harvard.edu/plink/metaanal.shtml>

Metasoft: <http://genetics.cs.ucla.edu/meta/>

GWAMA / MR_MEGA: <https://genomics.ut.ee/en/tools>

META: https://mathgen.stats.ox.ac.uk/genetics_software/meta/meta.html

Meta-analysis methods:

GWAS meta-analysis methods overview from 2008

<https://pmc.ncbi.nlm.nih.gov/articles/PMC2782358/>

GWAMA manuscript

<https://bmcbioinformatics.biomedcentral.com/articles/10.1186/1471-2105-11-288>

MR-MEGA manuscript

<https://academic.oup.com/hmg/article/26/18/3639/3976569#115627882>

MetaSoft modified random effects and binary effects

[https://www.cell.com/ajhg/fulltext/S0002-9297\(11\)00155-8](https://www.cell.com/ajhg/fulltext/S0002-9297(11)00155-8)

<https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1002555>

SmetABF

<https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1009948>

MANTRA

<https://onlinelibrary.wiley.com/doi/10.1002/gepi.20630>

MTAG

<https://pubmed.ncbi.nlm.nih.gov/29292387/>

MAMA

<https://www.biorxiv.org/content/10.1101/2021.04.23.441003v1.full>

Summary statistics alignment

GWAS summary stats formatting: <https://github.com/MRCIEU/gwas-vcf-specification>

MungeSumstats:

<https://www.bioconductor.org/packages/release/bioc/html/MungeSumstats.html>

[BCFtools score](#) github repository: <https://github.com/freeseek/score>

GWAS_VCF sumstat format, reference alignment, meta-analysis, and PRS

2024 BCFtools/Liftover paper:

<https://academic.oup.com/bioinformatics/article/40/2/btae038/7585532>

EASY QC R package:

<https://www.uni-regensburg.de/medizin/epidemiologie-praeventivmedizin/genetische-epidemiologie/software/>

Referenced meta-analyses

GBMI website: <https://www.globalbiobankmeta.org/>

Flagship paper - <https://www.medrxiv.org/content/10.1101/2021.11.19.21266436v1.full.pdf>

Github repository: https://github.com/globalbiobankmeta/META_ANALYSIS

GWAS catalog: <https://www.ebi.ac.uk/gwas/>

GWAS count figure: <https://academic.oup.com/nar/article/53/D1/D998/7893318>