File name: MAGIC Manning et al README.pdf

Prepared: July 30, 2012

These file contain the association analysis results presented in the MAGIC paper describing a genome-wide approach accounting for body mass index (BMI in the meta-analysis of glycemic traits¹.

The glucose results are from an analysis of 29 studies in up to 58,074 non-diabetic participants and the insulin results are from an analysis of 26 studies in up to 51,750 non-diabetic participants.

Trait values for fasting insulin have been naturally log transformed. Fasting glucose (mmol/l) and BMI (kg/m²) values have not been transformed. The regression models included adjustment for age and sex as well as study-specific adjustments.

The two interaction analyses are (1) a meta-analysis of the interaction regression estimate β_3 from a model Y= β_0 + β_1 *SNP+ β_2 *BMI+ β_3 *SNP*BMI and (2) the joint meta-analysis (JMA) of the β_1 and β_3 regression estimates which takes the covariance between these two estimates into account. The methodology for the JMA is described in Manning et al².

When using data from the downloadable meta-analyses results please acknowledge the source of the data as follows: "Data on glycemic traits have been contributed by MAGIC investigators and have been downloaded from www.magicinvestigators.org" and cite the MAGIC BMI paper¹.

References

- 1. Manning, A. K. *et al.* A genome-wide approach accounting for body mass index identifies genetic variants influencing fasting glycemic traits and insulin resistance. *Nature Genetics* **44**, 659–669 (2012).
- 2. Manning, A. K. *et al.* Meta-analysis of gene-environment interaction: joint estimation of SNP and SNP × environment regression coefficients. *Genet. Epidemiol.* **35**, 11–18 (2010).

Main effects meta-analysis

Files:

MAGIC_Manning_et_al_FastingGlucose_MainEffect.txt.gz MAGIC_Manning_et_al_InFastingInsulin_MainEffect.txt.gz

Fields:

Snp	The SNP name
effect_allele	The allele which was used to model the additive effect of the SNP
other allele	The non-effect allele
maf	The frequency of the minor allele
MainEffects	The main effect estimate (β_1) from the model: $Y = \beta_0 + \beta_1 * SNP$ obtained
	from an inverse variance meta-analysis

MainSE	The standard error of the main effect estimate (β_1) from the model: Y=
	$\beta_0 + \beta_1 * SNP$ obtained from an inverse variance meta-analysis
MainP	The p-value from testing the significance of the β_1 estimate from an
	inverse variance meta-analysis of $Y = \beta_0 + \beta_1 * SNP$
BMIadjMainEffects	The main effect estimate (β_1) from the model: $Y = \beta_0 + \beta_1 * SNP + \beta_2 * BMI$
	obtained from an inverse variance meta-analysis
BMIadjMainSE	The standard error of the main effect estimate (β_1) from the model: Y=
	$\beta_0 + \beta_1 * SNP + \beta_2 * BMI$ obtained from an inverse variance meta-analysis
BMIadjMainP	The p-value from testing the significance of the β_1 estimate from an
	inverse variance meta-analysis of $Y = \beta_0 + \beta_1 * SNP + \beta_2 * BMI$

Interaction meta-analysis

Files:

MAGIC_Manning_et_al_FastingGlucose_Interaction.txt.gz MAGIC_Manning_et_al_lnFastingInsulin_Interaction.txt.gz

Fields:

Snp	The SNP name
effect_allele	The allele which was used to model the additive effect of the SNP
other allele	The non-effect allele
maf	The frequency of the minor allele
InterEffects	The interaction effect estimate (β_3) from the model: Y=
	$\beta_0 + \beta_1 * SNP + \beta_2 * BMI + \beta_3 * SNP * BMI$ obtained from an inverse
	variance meta-analysis
InterSE	The standard error of the interaction effect estimate (β_3) from the
	model: $Y = \beta_0 + \beta_1 * SNP + \beta_2 * BMI + \beta_3 * SNP * BMI$ obtained from an
	inverse variance meta-analysis
InterP	The p-value from testing the significance of the β_3 estimate from
	an inverse variance meta-analysis
JMAcontBMI_MainEffect	The main effect estimate (β_1) from the model: Y=
	$\beta_0 + \beta_1 * SNP + \beta_2 * BMI + \beta_3 * SNP * BMI$ obtained from a JMA
JMAcontBMI_MainSE	The standard error of the main effect estimate (β_1) from the model:
	$Y = \beta_0 + \beta_1 * SNP + \beta_2 * BMI + \beta_3 * SNP * BMI$ obtained from a JMA
JMAcontBMI_InterEffect	The interaction effect estimate (β_3) from the model: Y=
	$\beta_0 + \beta_1 * SNP + \beta_2 * BMI + \beta_3 * SNP * BMI$ obtained from a JMA
JMAcontBMI_InterSE	The standard error of the interaction effect estimate (β_3) from the
	model: $Y = \beta_0 + \beta_1 * SNP + \beta_2 * BMI + \beta_3 * SNP * BMI$ obtained from a
	JMA
JMAcontBMI_P	The p-value from simultaneously testing the significance of the β_1
	and β_3 estimates from a JMA