

Novel Epigenetic Marks of Insulin Resistance Trajectories in a Longitudinal Study of Childhood Obesity

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Supplementary Figure 1. Heatmap with the correlation between the principal components of prepubertal DNA methylation and potential counfounders. Before (left) and after (right) to denoise by batch variable.

Supplementary Figure 2. Heatmap with the correlation between the principal components of pubertal DNA methylation and potential counfounder. Before (left) and after (right) to denoise by batch variable.

Supplementary Figure 3. Power curves obtained using the pwrEWAS R package to estimate the minimum total sample size required to detect differential DNA methylation under varying effect sizes.

Supplementary Table 1. Genomic inflation factor per each comparison performed.

Supplementary Table 2. Characteristics of the longitudinal experimental groups in the PUBMEP population (N = 90).

Supplementary Table 3. Characteristics of the prepubertal cross-sectional experimental groups (N=99).

Supplementary Table 4. Characteristics of the pubertal cross-sectional experimental groups (N = 129).

Supplementary Table 5. List of CpG sites that surpassed the global FDR threshold ($FDR < 0.05$) across all EWAS comparisons. P-values correspond to moderated t-tests derived from the limma modelling framework (see Methods for details).

Supplementary Table 6. Full list of EWAS results for all performed comparisons. P-values correspond to moderated t-tests derived from the limma modelling framework (see Methods for details).

Supplementary Table 7. Results of the DMR analysis comparing pubertal non-IR and IR children. P-values correspond to the statistical framework implemented in the DMRcate package (see Methods for details).

Supplementary Table 8. GO enrichment analysis of the genes annotated to the 120 FDR-significant CpG sites. P-values correspond to the hypergeometric test (see Methods for details).

Supplementary Table 9. KEGG enrichment analysis of the genes annotated to the 120 FDR-significant CpG sites. P-values correspond to the hypergeometric test (see Methods for details).

Supplementary Table 10. Full results of the association analyses between FDR-significant CpG sites and adiposity or cardiometabolic health outcomes. P-values correspond to t-tests from linear regression models.

Supplementary Table 11. Results of the internal mQTL analysis performed within the cohort for the FDR-significant CpG sites identified in the EWAS. P-values correspond to t-tests from linear regression models including correction factors (see Methods for details).

Supplementary Table 12. CpG sites previously reported to be associated with insulin resistance in adult populations and their corresponding associations in the present paediatric study.