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## **Supplemental Material**

### **A Genome-Wide Analysis of DNA Methylation and Fine Particulate Matter Air Pollution in Three Study Populations: KORA F3, KORA F4, and the Normative Aging Study**

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#### **Table of Contents**

**Figure S1.** Forest plots for the eight CpG sites that showed Bonferroni genome-wide significance but results heterogeneous ( $I^2$  p-value < 0.05 or  $I^2 > 0.5$ ).

**Figure S2.** Residual plot for FDR significant CpG at 2-day average (F3=blue, F4=red, NAS=green).

**Figure S3.** Residual plot for FDR significant CpG at 7-day average (F3=blue, F4=red, NAS=green).

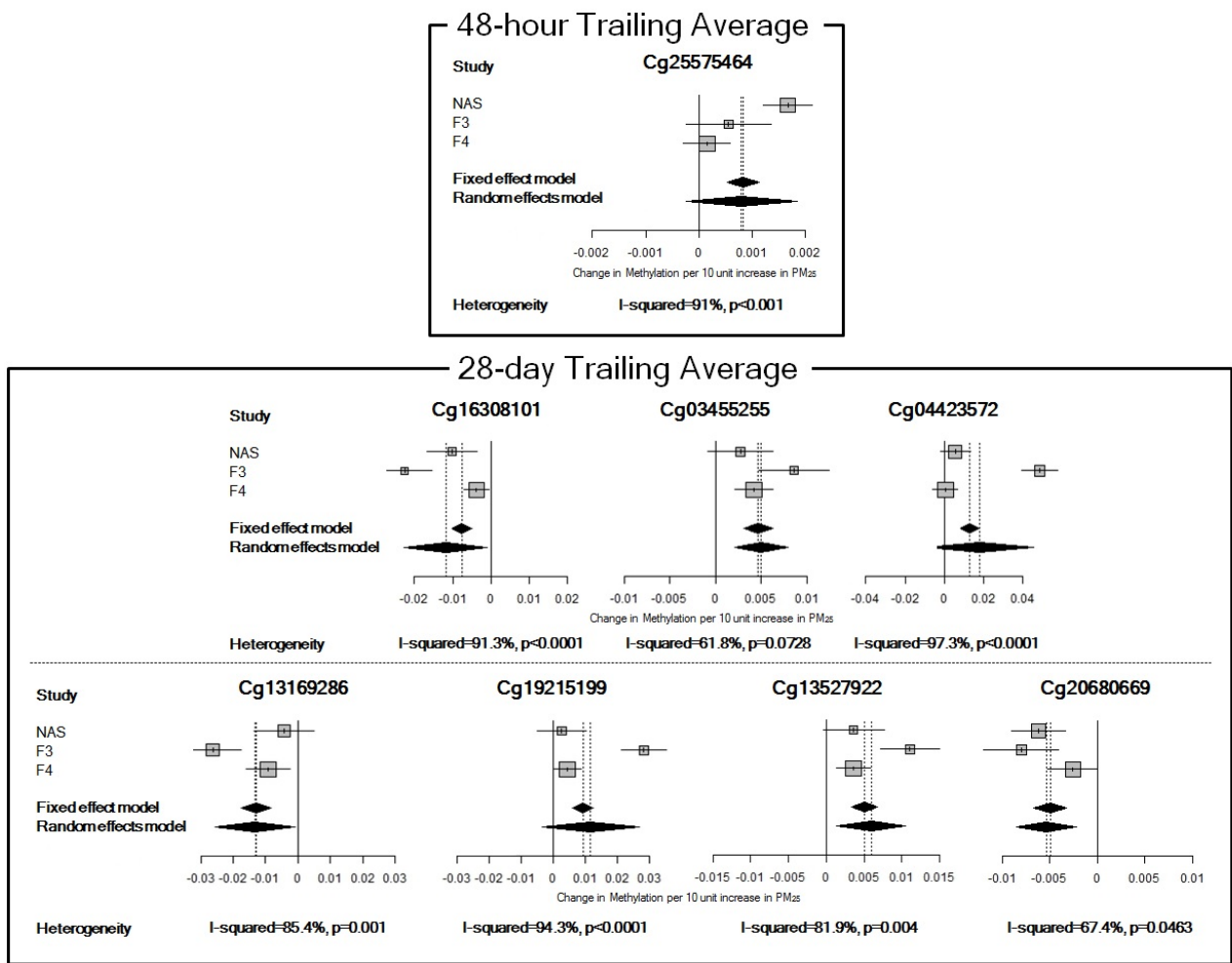
**Figure S4.** Residual plot for Bonferroni significant CpG at 28-day average (F3=blue, F4=red, NAS=green). For cg11046593, 21 methylation values were excluded and re-run the models and the meta-analysis. New p-value resulted 5.48E-08, still Bonferroni significant.

**Table S1.** Study specific regression coefficients of FDR (2- and 7-day average) and Bonferroni (28-day average) significant CpGs.

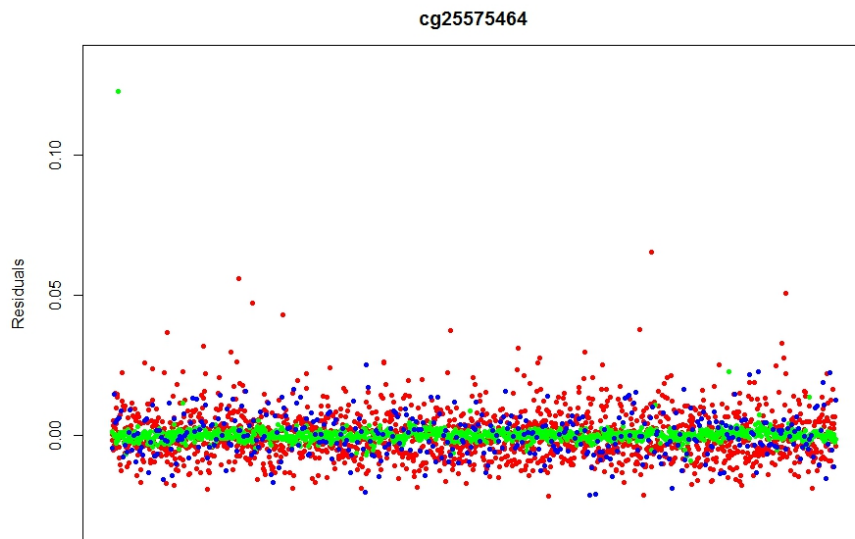
**Table S2.** Sensitivity analysis, comparison of fixed-effect regression coefficients ( $\beta$ ) and p-values of fully-adjusted models in 28-day significant hits with and without yearly PM<sub>2.5</sub> exposure adjustment.

#### **Supplemental Code and Data Zip File**

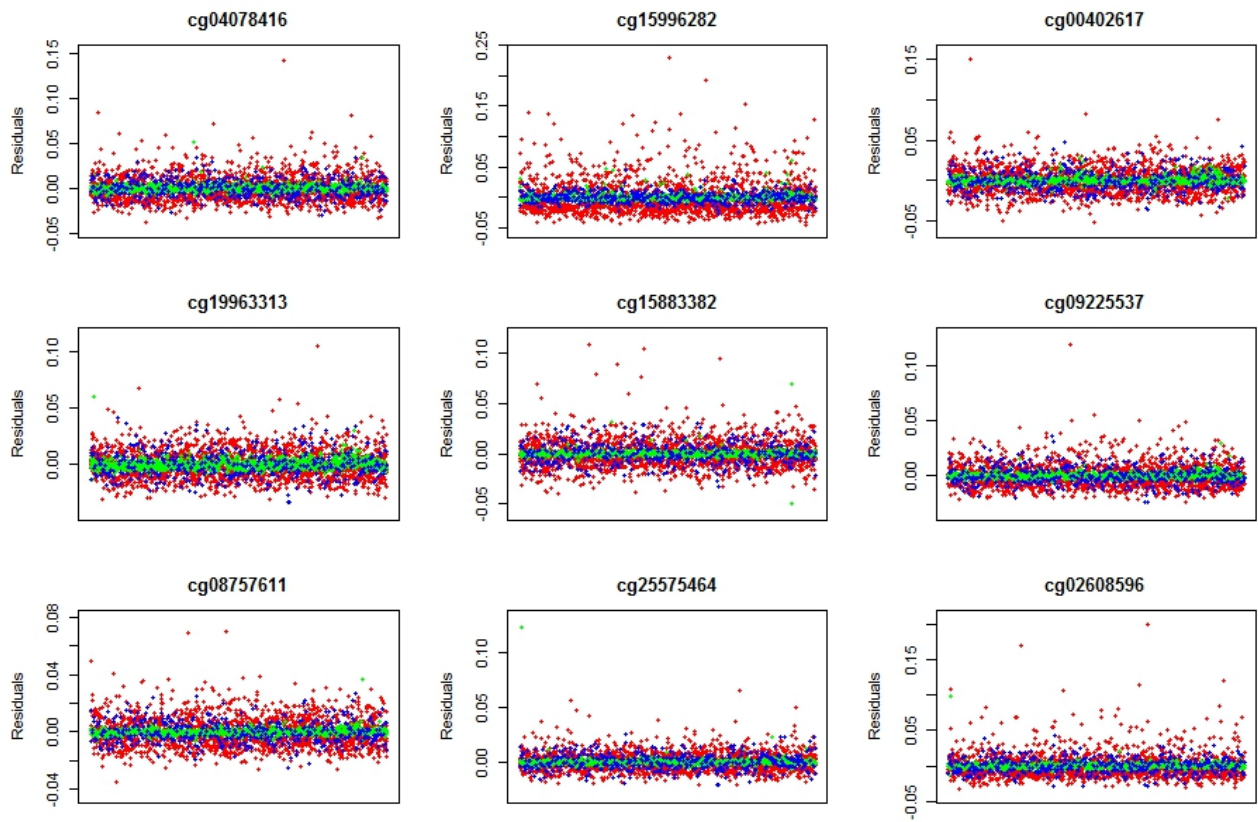
**Excel File S1.** FDR significant CpG sites for 28-day PM<sub>2.5</sub>



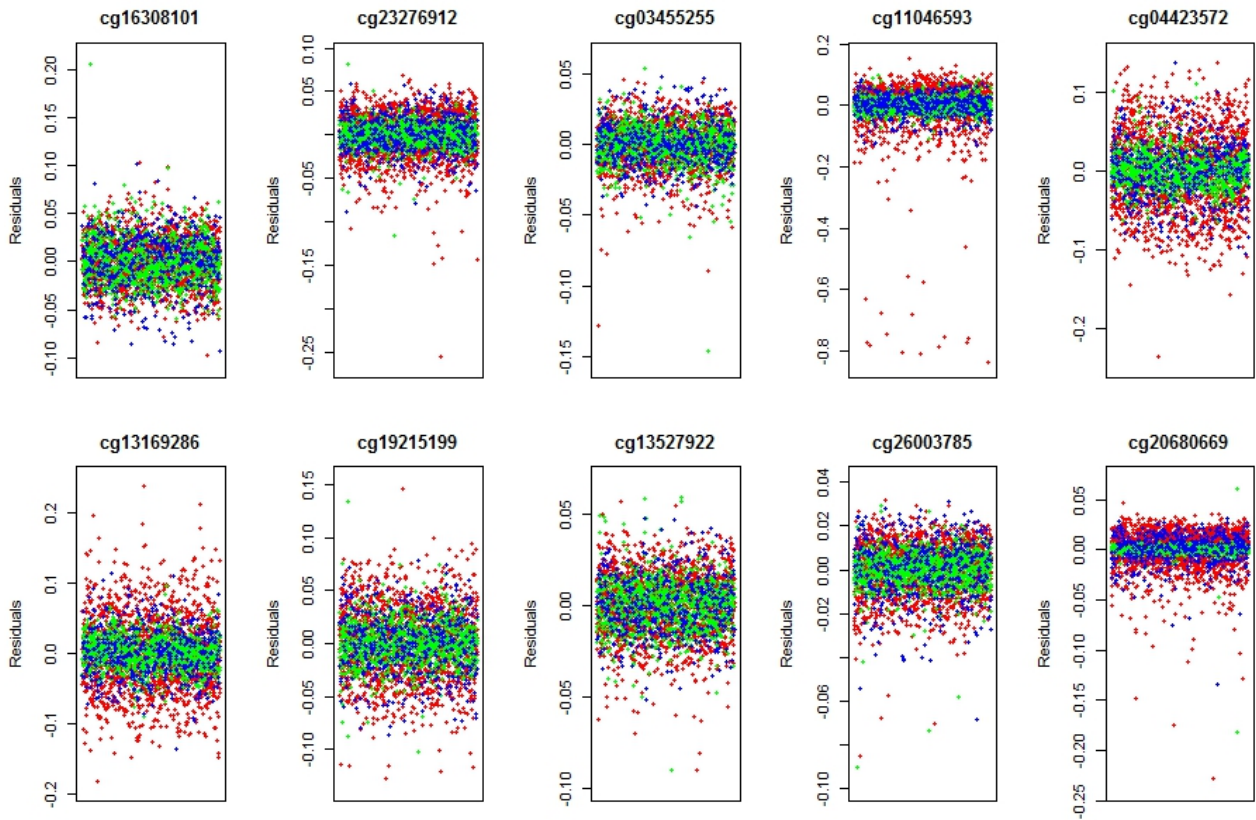
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**Figure S2.** Residual plot for FDR significant CpG at 2-day average (F3=blue, F4=red, NAS=green).



**Figure S3.** Residual plot for FDR significant CpG at 7-day average (F3=blue, F4=red, NAS=green).



**Figure S4.** Residual plot for Bonferroni significant CpG at 28-day average (F3=blue, F4=red, NAS=green). For cg11046593, 21 methylation values were excluded and re-run the models and the meta-analysis. New p-value resulted 5.48E-08, still Bonferroni significant.

**Table S1.** Study specific regression coefficients of FDR (2- and 7-day average) and Bonferroni (28-day average) significant CpGs.

CpG	NAS		F3		F4	
	$\beta^*$	P-value	$\beta$	P-value	$\beta$	P-value
<b>2-day Trailing Average</b>						
cg25575464†	0.00167	6.83E-12	5.58E-04	0.17597	1.51E-04	0.502384
<b>7-day Trailing Average</b>						
cg00402617	0.00169	0.01372	0.00422	2.65E-05	0.00174	0.002803
cg02608596	0.00204	5.02E-07	0.0012	0.138056	0.00106	0.096751
cg04078416	0.00129	0.000277	8.52E-04	0.266829	0.00184	0.000476
cg08757611	9.30E-04	5.95E-05	6.43E-04	0.279705	0.00122	0.001554
cg09225537	0.00116	9.71E-05	0.00148	0.02347	9.22E-04	0.020167
cg15883382	0.00295	4.15E-06	0.00105	0.181377	0.00125	0.013804
cg15996282	0.0023	3.34E-05	0.00183	0.008537	0.00108	0.279726
cg19963313†	0.00183	0.000141	0.00249	0.005548	0.00147	0.001984
cg25575464	0.00248	7.86E-10	4.82E-04	0.390485	5.65E-04	0.07276
<b>28-day Trailing Average</b>						
cg03455255	0.00271	0.140615	0.00857	1.81E-05	0.0042	7.24E-05
cg04423572	0.00564	0.15232	0.04859	4.58E-22	5.25E-04	0.872754
cg11046593	0.01191	0.007323	0.02234	5.85E-07	0.01072	0.072973
cg13169286	-0.0043	0.360508	-0.0263	6.31E-09	-0.0092	0.009082
cg13527922	0.0036	0.081134	0.01107	7.09E-08	0.00359	0.001815
cg16308101	-0.0101	0.002248	-0.0225	1.13E-09	-0.0038	0.020929
cg19215199	0.0027	0.49826	0.0283	5.52E-14	0.00441	0.04335
cg20680669	-0.0061	2.95E-05	-0.008	7.67E-05	-0.0026	0.053071
cg23276912	0.00639	0.038665	0.01122	5.64E-05	0.00596	0.000643
cg26003785	0.00378	0.012775	0.00635	0.000282	0.00319	6.62E-05

\*  $\beta$  express change in %5mC associated with a 10  $\mu\text{g}/\text{m}^3$  increase in  $\text{PM}_{2.5}$

† Bonferroni Significant

**Table S2.** Sensitivity analysis, comparison of fixed-effect regression coefficients ( $\beta$ ) and p-values of fully-adjusted models in 28-day significant hits with and without yearly PM<sub>2.5</sub> exposure adjustment.

	With long-term		Without long-term	
	$\beta^*$	P-value	$\beta^*$	P-value
<b>cg16308101</b>	-0.0070	4.64E-07	-0.0076	2.86E-08
<b>cg23276912</b>	0.0079	8.85E-09	0.0073	4.56E-08
<b>cg03455255</b>	0.0050	5.37E-09	0.0047	1.86E-08
<b>cg11046593</b>	0.016	1.28E-07	0.016	1.12E-08
<b>cg04423572</b>	0.013	1.23E-08	0.013	7.26E-09
<b>cg13169286</b>	-0.014	5.97E-08	-0.013	6.21E-08
<b>cg19215199</b>	0.0095	4.32E-08	0.0093	3.66E-08
<b>cg13527922</b>	0.0056	2.09E-09	0.0051	1.54E-08
<b>cg26003785</b>	0.0033	1.10E-06	0.0038	9.53E-09
<b>cg20680669</b>	-0.0020	2.36E-03	-0.0049	2.09E-08

\*  $\beta$  express change in %5mC associated with a 10  $\mu\text{g}/\text{m}^3$  increase in PM<sub>2.5</sub>

Covariates: age, personal income (education years for NAS, in which information on income was not available), alcohol intake, BMI, temperature (moving average always matching with the PM exposure window) and the proportion of five white blood cell types: monocytes, B Cells, CD8 T cells, CD4 T cells, NK as continuous and sex, smoking status (never, former, current and passive - only for KORA - smokers), day of the week and season as categorical