

Supplementary Figure 1 Blood DNA methylation at cg16966520 in the promoter region of the *EIF2D* gene is significantly associated with brain DNA methylation in the prefrontal cortex (PFC), entorhinal cortex (EC), superior temporal gyrus (STC), and cerebellum (CER). These results were obtained from the Blood Brain DNA Methylation Comparison Tool (<https://epigenetics.essex.ac.uk/bloodbrain/>).

Tour

CpG Query

A

Datasets Display Data Display Plot

Refresh Download Tables

Selected Datasets

Show 10 entries

Search:

Dataset	Description	Author	Year	PMID
SIC	Blood DNAm associated with Alzheimer's disease	Silva	2022	35982059
MCA	Blood DNAm associated with chronological age	McCartney	2020	31892350

Showing 1 to 2 of 2 entries

Previous 1 Next

Annotations

Show 10 entries

Search:

CpG	chr	pos	Illumina	Relation_to_Island	RefGene_Group	mQTL	Blood-Brain comparison
cg13270055	chr22	36960499	CACNG2		Body	mQTL	Blood-Brain

Showing 1 to 1 of 1 entries

Previous 1 Next

Individual Datasets

Show 10 entries

Search:

CpG	dataset	phenotype	sex_specific	sample_group	statistics	direction	statistics_value	pValue
cg13270055	SIC	AD	No	ADNI + AIBL	OR for AD (meta-analysis)	-	0.967	1.65e-06
cg13270055	SIC	AD	No	AIBL	OR for AD	-	0.97	9.79e-04
cg13270055	SIC	AD	No	ADNI	OR for AD	-	0.964	4.58e-04
cg13270055	MCA	Aging	No	Generation Scotland, Discovery	estimate for age effect	+	0.008	1.89e-20
cg13270055	MCA	Aging	No	Generation Scotland, Replication	estimate for age effect	+	0.006	6.89e-20

Showing 1 to 5 of 5 entries

Previous 1 Next

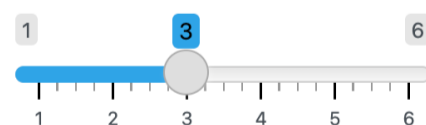
B

CpG Query

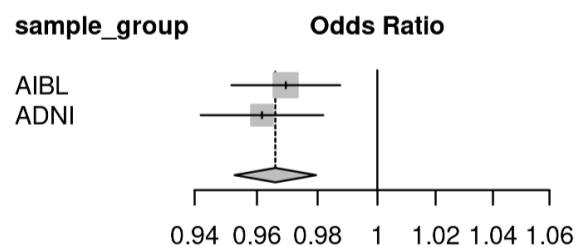
Datasets Display Data Display Plot

Forest Plot

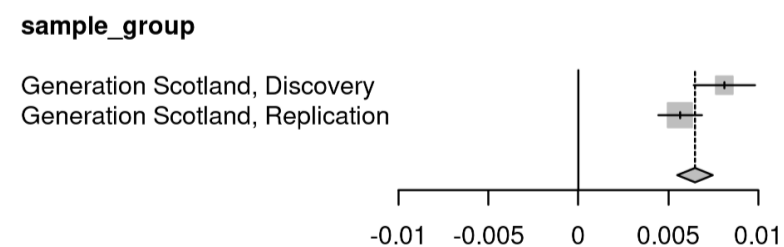
Plots per row



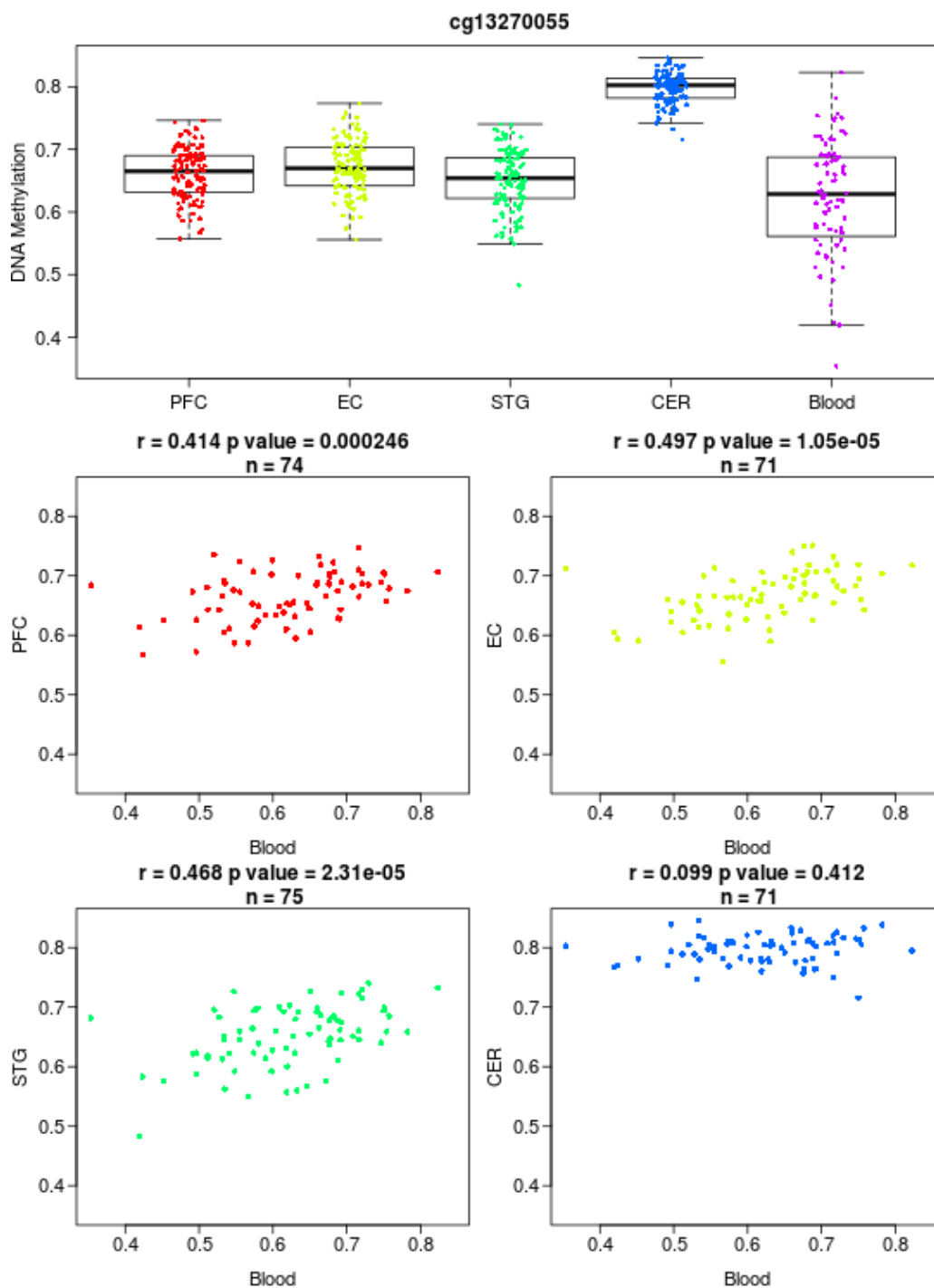
cg13270055 SIC (association with AD)



cg13270055 MCA (association with age)



Supplementary Figure 2 DNA methylation at cg13270055 located on the *CACNG2* gene increases with age ($P_{\text{discovery}} = 1.89 \times 10^{-20}$, $P_{\text{replication}} = 6.89 \times 10^{-20}$), but decreases in the blood samples of Alzheimer's subjects ($P_{\text{meta-analysis}} = 1.65 \times 10^{-6}$, $P_{\text{AIBL}} = 9.79 \times 10^{-4}$, $P_{\text{ADNI}} = 4.58 \times 10^{-4}$). The summary statistics are shown under **(A)** Display Data tab, and the forest plots are shown under **(B)** Display Plot tab.



Supplementary Figure 3 Blood DNA methylation at cg13270055 located on the *CACNG2* gene is significantly associated with brain DNA methylation in the prefrontal cortex (PFC), entorhinal cortex (EC), superior temporal gyrus (STC), and cerebellum (CER). These results were obtained from the Blood Brain DNA Methylation Comparison Tool (<https://epigenetics.essex.ac.uk/bloodbrain/>).

Genome-wide Query

Datasets Display Data Display Plot

Refresh Download Tables

Selected Datasets
To select a different set of CpGs
- change significance level: double click on **Threshold**

Show 10 entries Search:

Dataset	Description	Author	Year	PMID	Source	Metric	Filter	Threshold
SIF	Blood DNAm associated with Alzheimer's disease in females	Silva	2022	36109771	ADNI + AIBL	<input checked="" type="radio"/> pValue <input type="radio"/> FDR	<input checked="" type="radio"/> < than <input type="radio"/> > than	0.00001
SIM	Blood DNAm associated with Alzheimer's disease in males	Silva	2022	36109771	ADNI + AIBL	<input checked="" type="radio"/> pValue <input type="radio"/> FDR	<input checked="" type="radio"/> < than <input type="radio"/> > than	0.00001

Showing 1 to 2 of 2 entries Previous 1 Next

Annotated CpGs Explore Top 10 CpGs

Show 10 entries Search:

CpG	chr	pos	illumina	dataset	sample_group	phenotype	sex_specific	statistics	direction	statistics_value	pValue
No significant CpGs. - There are no CpGs that meet all of the threshold cutoffs. Please adjust the thresholds or the datasets selected.											

Showing 0 to 0 of 0 entries Previous Next

B. Selecting female-specific CpGs associated with AD

Datasets Display Data Display Plot

Refresh Download Tables

Selected Datasets
To select a different set of CpGs
- change significance level: double click on **Threshold**

Show 10 entries Search:

Dataset	Description	Author	Year	PMID	Source	Metric	Filter	Threshold
SIF	Blood DNAm associated with Alzheimer's disease in females	Silva	2022	36109771	ADNI + AIBL	<input checked="" type="radio"/> pValue <input type="radio"/> FDR	<input checked="" type="radio"/> < than <input type="radio"/> > than	0.00001
SIM	Blood DNAm associated with Alzheimer's disease in males	Silva	2022	36109771	ADNI + AIBL	<input checked="" type="radio"/> pValue <input type="radio"/> FDR	<input type="radio"/> < than <input checked="" type="radio"/> > than	0.05

Annotated CpGs Explore Top 10 CpGs

Show 10 entries Search:

CpG	chr	pos	illumina	dataset	sample_group	phenotype	sex_specific	statistics	direction	statistics_value	pValue
cg18020072	chr6	31590640	SNORA38;BAT2	SIF	ADNI + AIBL	AD	Yes, females	OR for AD (meta-analysis)	+	1.328	3.02e-08
cg18020072	chr6	31590640	SNORA38;BAT2	SIM	ADNI + AIBL	AD	Yes, males	OR for AD (meta-analysis)	+	1.051	2.49e-01
cg24276069	chr1	45243927	RPS8;SNORD38B	SIF	ADNI + AIBL	AD	Yes, females	OR for AD (meta-analysis)	+	1.233	9.62e-08
cg24276069	chr1	45243927	RPS8;SNORD38B	SIM	ADNI + AIBL	AD	Yes, males	OR for AD (meta-analysis)	-	0.955	2.08e-01

C. Selecting male-specific CpGs associated with AD

Genome-wide Query

Datasets Display Data Display Plot

Refresh Download Tables

Selected Datasets
To select a different set of CpGs
- change significance level: double click on **Threshold**

Show 10 entries Search:

Dataset	Description	Author	Year	PMID	Source	Metric	Filter	Threshold
SIF	Blood DNAm associated with Alzheimer's disease in females	Silva	2022	36109771	ADNI + AIBL	<input checked="" type="radio"/> pValue <input type="radio"/> FDR	<input type="radio"/> < than <input checked="" type="radio"/> > than	0.05
SIM	Blood DNAm associated with Alzheimer's disease in males	Silva	2022	36109771	ADNI + AIBL	<input checked="" type="radio"/> pValue <input type="radio"/> FDR	<input checked="" type="radio"/> < than <input type="radio"/> > than	0.00001

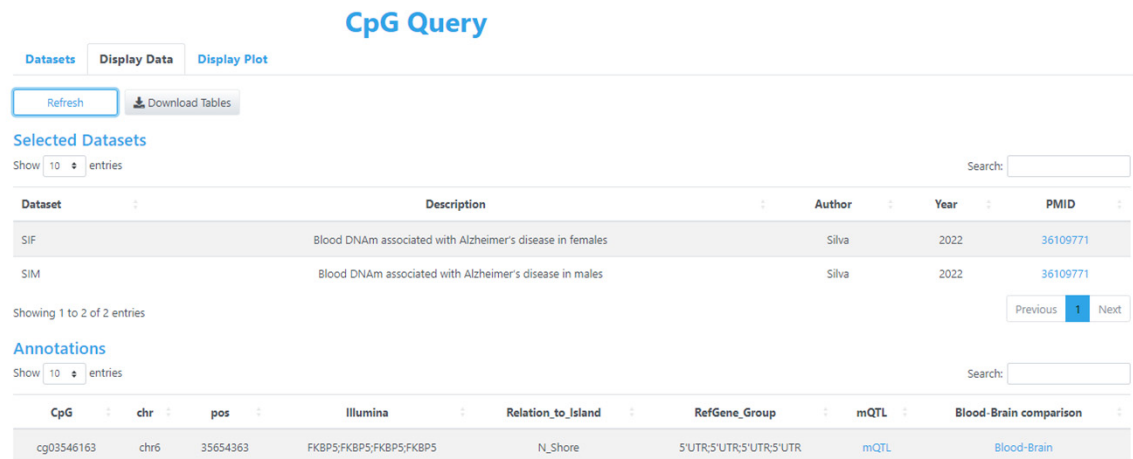
Annotated CpGs Explore Top 10 CpGs

Show 10 entries Search:

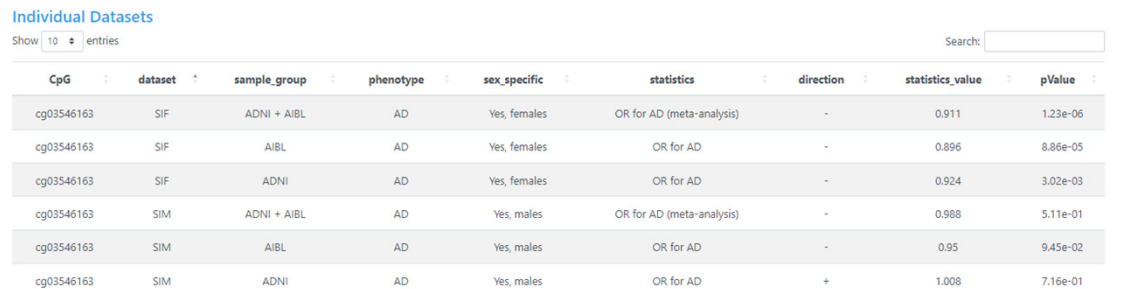
CpG	chr	pos	illumina	dataset	sample_group	phenotype	sex_specific	statistics	direction	statistics_value	pValue
cg02672643	chr11	110790527		SIF	ADNI + AIBL	AD	Yes, females	OR for AD (meta-analysis)	+	1.049	2.05e-01
cg02672643	chr11	110790527		SIM	ADNI + AIBL	AD	Yes, males	OR for AD (meta-analysis)	+	1.19	1.62e-06
cg15757041	chr16	5115938	C16orf89	SIF	ADNI + AIBL	AD	Yes, females	OR for AD (meta-analysis)	+	1.058	4.70e-01
cg15757041	chr16	5115938	C16orf89	SIM	ADNI + AIBL	AD	Yes, males	OR for AD (meta-analysis)	-	0.677	3.69e-06
cg15281611	chr1	54040884	GLIS1	SIF	ADNI + AIBL	AD	Yes, females	OR for AD (meta-analysis)	+	1.058	1.07e-01
cg15281611	chr1	54040884	GLIS1	SIM	ADNI + AIBL	AD	Yes, males	OR for AD (meta-analysis)	+	1.181	6.66e-06
cg03827739	chr10	75401754	MYOZ1	SIF	ADNI + AIBL	AD	Yes, females	OR for AD (meta-analysis)	+	1.038	3.93e-01
cg03827739	chr10	75401754	MYOZ1	SIM	ADNI + AIBL	AD	Yes, males	OR for AD (meta-analysis)	+	1.199	8.03e-06

Supplementary Figure 4 Using Genome-wide Query to perform sex-specific analysis.

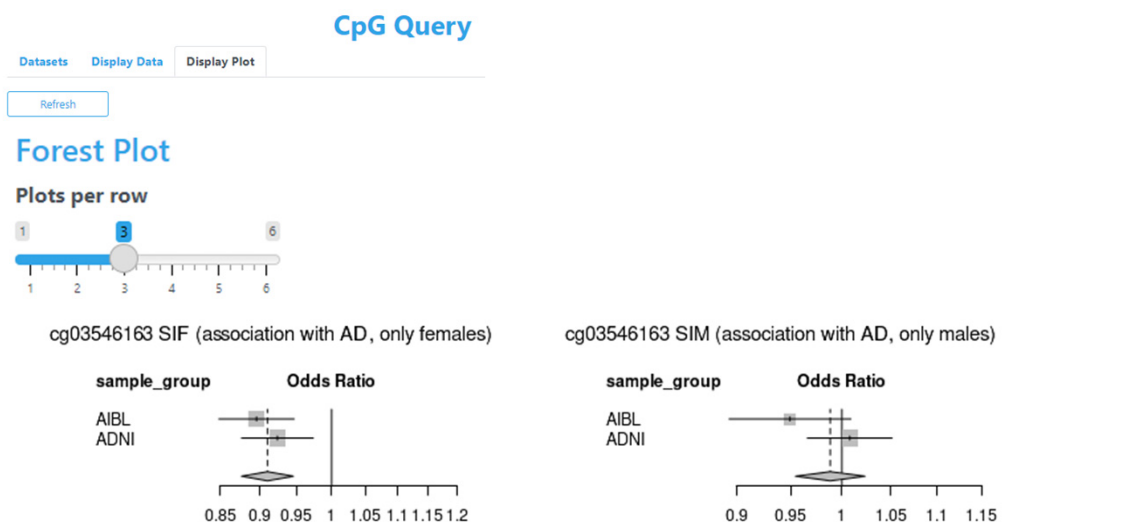
A. Selected Datasets and CpG



B Results under "Display Data" tab



C Results under the "Display Plot" tab



Supplementary Figure 5 The CpG Query Tool can be used to explore details of DNA methylation at female-specific CpG cg03546163 associated with AD.