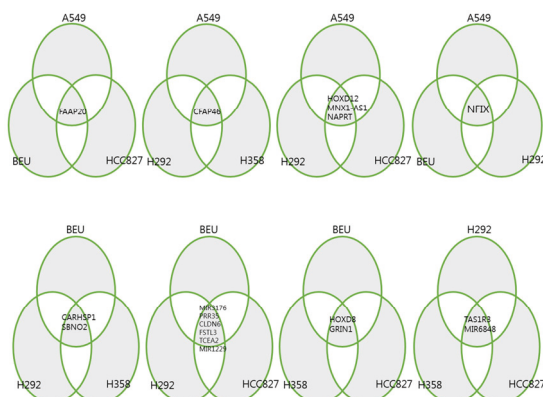


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Analysis of DNA methylation profiling in lung epithelial cell treated with fine dusts

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Background/Aims: Recently, the concentration of fine dust is continuously increasing. Fine dust affects various disease including lung cancer. Analysis of DNA methylation induced with fine dust can provided mechanism of lung injury by fine dust. **Methods:** Five cell lines, A549, Beas2B, H292, H358, HCC827, were chosen. Each cell lines were treated with fine dust for 1 week. Cell lines have two groups, treated with fine dust and not treated with fine dust. Methylation profile of these cell line were analyzed by using Next Generation Sequencing(MDB sequencing). **Results:** In this study, we found genes that showed concordant changes in the DNA methylation of the fine dust treated group at least in the three cell lines. Differential methylation was found in 18 genes, NFIX, FAAP20, CFAP46, HOXD12, MNX1-AS1, NAPRT, CARHSP1, SBNO2, MIR3176, PRR35, CLDN6, FSTL3, TCEA2, MIR1229, HOXD8, GRIN1, TAS1R3, MIR6848. The promoter of these genes was confirmed by hypomethylation. Table 1 shows each genes list that showed differential methylation in the fine dust treated cell lines. Figure 1 is a Venn diagram of the genes in which methylation was found in each group. **Conclusions:** This results suggest fine dust appears to be induced hypomethylation. Also, these results need to be confirmed through methylation PCR, and the functional study of these genes is required.



Cell line	Gene name	Chromosome	A549	BEU	H292	H358	HCC827
A549	NFIX	Chr19	-0.483	-0.371	-7.639		-1.049
BEU	FAAP20	Chr1	-0.779	-0.306	-0.458	-0.558	-2.089
H292	CFAP46	Chr10	-0.749	-0.465	-2.357		-1.049
H358	HOXD12	Chr2	-0.959		-1.477	-0.321	-0.336
HCC827	MNX1-AS1	Chr7	-1.17	-0.156	-2.077		-1.267
A549	NAPRT	Chr8	-0.199	-0.563	-1.472	-0.619	-1.405
BEU	CARHSP1	Chr16	-0.151	-2.203	-2.419	-0.276	-1.189
H292	SBNO2	Chr19	-0.079	-2.305	-0.838	-0.725	-2.471
H358	MIR3176	Chr16	-0.300	-2.092	-1.048	-0.386	
HCC827	PRR35	Chr16	-0.367	-0.898	-1.122	-0.164	-1.553
A549	CLDN6	Chr16	-0.185	-2.557	-0.716	-0.377	-1.360
H292	FSTL3	Chr19	-0.610	-2.688	-1.935	-0.160	-2.672
H358	TCEA2	Chr20	-0.225	-0.182	-0.718	-0.372	-1.128
HCC827	MIR1229	Chr5	-0.487	-1.176	-1.185	-0.128	-1.824
BEU	HOXD8	Chr2	-0.203	-2.569	-0.390	-0.861	-0.600
H292	GRIN1	Chr9	-0.127	-2.647	-0.831	-0.067	-0.747
H358	TAS1R3	Chr1	-0.061		-0.447	-1.703	-0.039
HCC827	MIR6848	Chr8	-0.050	-0.686	-1.160	-0.804	-1.811