

## Supplemental Material

### **Interaction Between *Glutathione S-Transferase P1*, *Tumor Necrosis Factor* and Traffic-related Air Pollution for Development of Childhood Allergic Disease**

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Supplemental Material Table 1. Baseline characteristics of children at 4 years included in the present study (wheezing cases and controls) compared with the original BAMSE cohort

Variable	Wheezing cases <sup>a</sup>	Controls	Original cohort <sup>b</sup>
	N=497 n / %	N=485 n / %	N=3595 n / %
Wheeze up to 4 years <sup>a</sup>	497/100	0/0	811/23
- transient wheeze	155/31	0/0	277/8
- persistent wheeze	211/42	0/0	196/5
- late onset wheeze	131/26	0/0	338/9
Current asthma	136/27	0/0	221/7
Sensitized to inhalant and/or food allergens <sup>c</sup>	143/29	123/25	610/24
Sensitized to inhalant allergens <sup>c</sup>	105/21	74/15	400/15
Sensitized to food allergens <sup>c</sup>	98/20	81/17	414/16
Peak expiratory flow (mean, l/min) <sup>d</sup>	163	170	169
Age (mean, months)	51	51	51
Male sex	295/59	227/47	1823/51
Parents' socioeconomic status			
- Unskilled blue-collar workers)	23/5	26/5	216/6
- Skilled blue-collar workers)	53/11	60/12	377/11
- Low level white collar workers	96/19	66/14	522/15
- Intermediate level white collar workers	146/29	139/29	1051/29
- High level white collar workers	171/35	188/39	1381/39
- Others (students, unemployed)	7/1	4/1	37/1
Heredity			
- No parental allergy and/or asthma	313/64	336/70	2502/70
- One parent with allergy and/or asthma	154/32	131/27	942/27
- Both parents with allergy and/or asthma	21/4	13/3	109/3
Year that house was built			
- Before 1940	141/28	159/33	1136/32
- 1940-1975	210/42	195/40	1484/41
- After 1975	146/29	131/27	972/27
Mother's smoking during pregnancy or at birth of child	89/18	56/12	475/13
Mold or dust in the house (at birth)	155/31	96/20	914/25
Ethnicity (one or two parents born outside Scandinavia)	66/15	67/15	463/15
Exposure to traffic-NO <sub>x</sub> during 1 <sup>st</sup> year of life			
- Mean value (µg/m <sup>3</sup> )	22.5	22.3	23.1
- 5 <sup>th</sup> and 95 <sup>th</sup> precentile (µg/m <sup>3</sup> )	4.4/49.6	5.2/47.0	4.7/47.9

<sup>a</sup> Transient, persistent or late onset wheezing according to definitions in the Methods section.

<sup>b</sup> The original BAMSE birth cohort includes 4089 children, but some children had missing wheezing status up to 4 years, and the table is therefore presented for the 3,595 children with complete data set.

<sup>c</sup> Sensitization to inhalant and/or food allergens, IgE ≥ 0.35 kUA/L. 2534 of the 3,595 children in the full cohort had a blood sample drawn and analyzed.

<sup>d</sup> 2,521 of the 3,595 children in the full cohort had acceptable PEF values.

Supplemental Material Table 2. Main effect of exposure to NO<sub>x</sub> (expressed as a 5<sup>th</sup>-95<sup>th</sup> percentile difference in NO<sub>x</sub> levels during the first year of life), for children in the present study

Outcome	OR <sup>a</sup> and 95% CI
Transient wheeze (n=155)	1.4 (0.7-3.2)
Late onset wheeze n=131)	1.6 (0.7-3.7)
Persistent wheeze (n=211)	3.0 (1.6-5.9)
Current asthma (n=136)	2.2 (0.9-4.9)
Sensitized to inhalant and/or food allergens (n=266) <sup>b</sup>	1.4 (0.7-2.8)
PEF, Peak expiratory flow (difference, l/min) (n=860) <sup>c</sup>	-5.1 (-11.7, 1.6)

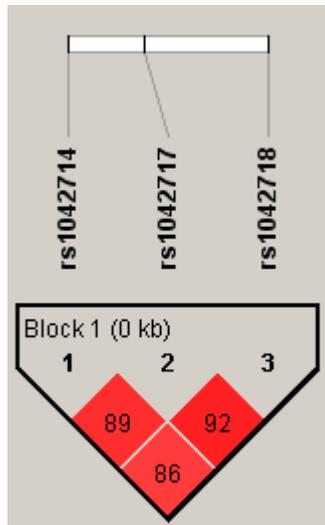
<sup>a</sup> Odds ratios for traffic-NO<sub>x</sub> exposure during the first year of life were calculated for the difference between the 5<sup>th</sup> to 95<sup>th</sup> percentile range of exposure in the cohort, which corresponds to 44 µg/m<sup>3</sup> (mean value 22.3 µg/m<sup>3</sup> for controls).

<sup>b</sup> Sensitization to inhalant and/or food allergens (IgE ≥ 0.35 kU<sub>A</sub>/L) in all children, both wheezing cases and controls (non-wheeze, non-sensitized children as controls, n=362).

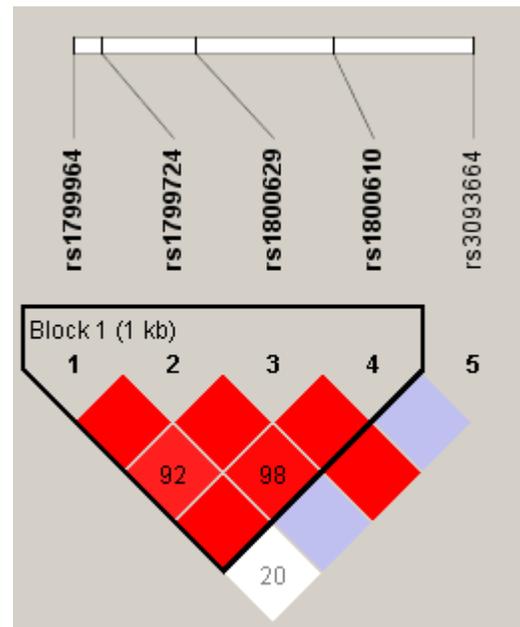
<sup>c</sup> All genotyped children, both wheezing cases and controls, were included in the PEF analyses (860 of the 982 genotyped children had acceptable PEF values).

## Figure Legends to Supplemental Material

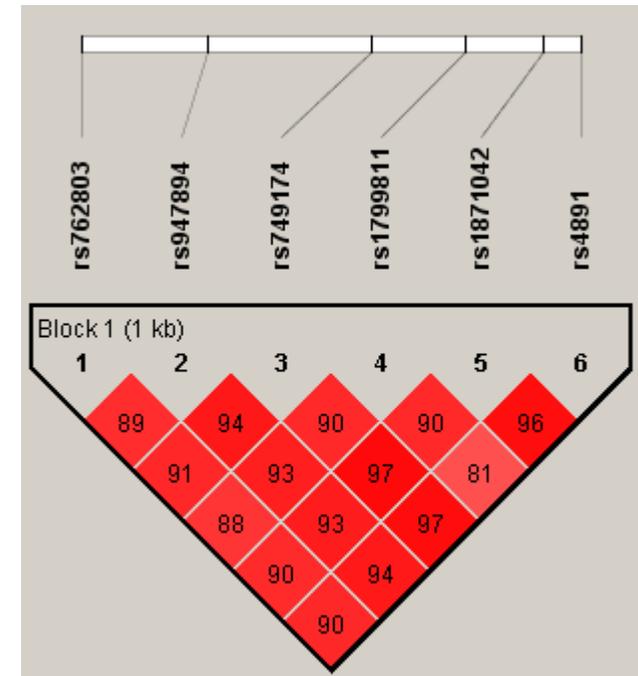
Supplemental Material Figure E1A,B,C. Block structure of the SNPs in the *ADRB2* gene (A), *TNF* gene (B) and *GSTP1* gene (C). The numbers in each box correspond to the pair-wise linkage disequilibrium coefficient  $D'$  between respective SNPs. Empty boxes represent  $D' = 1.0$ . The block structure was estimated using Haploview (Solid spine of LD) (Barrett JC, Fry B, Maller J, Daly MJ. 2005. Haploview: analysis and visualization of LD and haplotype maps. *Bioinformatics*, 21, 263-265.)



Supplemental Material Figure 1A



Supplemental Material Figure 1B



Supplemental Material Figure 1C