**Twin Research and Human Genetics**

**Associations Between Asthma and Sensitization to Pet or Pollen Allergens in Young Swedish Twins — The STOPPA Study**

Cecilia Lindemalm, Björn Nordlund, Anne K. Örtqvist, Cecilia Lundholm, Marianne van Hage, Tong Gong, and Catarina Almqvist

**Supplementary Tables**

|  |
| --- |
| **Table S1****All Twins Analyses: Odds Ratios and 95% Confidence Intervals for The Association Between Sensitization (Exposure) and Register-Based Asthma (Outcome) in the STOPPA Twins** |
|  | **Binary variable** |  | **Categorical variable****0.35–0.69 kU/l** |  | **0.7–3.4 kU/l** |  | **3.5–17.4 kU/l** |  | **≥17.5 kU/l** |  | **Trend\***   |  | **Continuous variable**  |
| **Phadiatop** |  | 2.72 | [1.82, 4.05] |  |   |   |  |   |   |  |   |   |  |   |   |  |   |   |  |   |  |
|  | *277* |   |   |   |   |   |   |   |   |   |   |   |   |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Cat (e1)** | 3.76 | [2.36, 6.00] | 1.88 | [0.73, 4.85] | 2.74 | [1.29, 5.82] | 5.64 | [2.70, 11.8] | 5.46 | [2.46, 12.1] | 1.62 | [1.37, 1.90] | 1.03 | [1.01, 1.04] |
|  | *125* |  | *25* |  | *33* |  | *34* |  | *33* |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |   |   |   |  |
| **Dog (e5)** | 4.85 | [2.96, 7.94] | 1.43 | [0.49, 4.15] | 4.95 | [2.66, 9.23] | 11.5 | [5.20, 25.6] | 7.56 | [2.29 – 25.0] | 2.06 | [1.66, 2.56] | 1.09 | [1.00, 1.19] |
|  | *112* |  | *27* |  | *47* |  | *28* |  | *10* |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| **Horse (e3)** | 4.35 | [2.49, 7.58] | 3.51 | [1.41, 8.69] | 3.24 | [1.35, 7.76] | 5.45 | [2.14, 13.9] | 7.96 | [2.43, 26.0] | 1.76 | [1.42, 2.18] | 1.04 | [1.02, 1.06] |
|  | *74* |  | *17* |  | *26* |  | *19* |  | *12* |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| **Birch (t3)** | 2.77 | [1.75, 4.38] | 0.88 | [0.17, 4.65] | 1.51 | [0.72, 3.19] | 2.23 | [0.98, 5.05] | 5.34 | [2.95, 9.68] | 1.46 | [1.27, 1.68] | 1.02 | [1.02, 1.03] |
|  | *118* |  | *9* |  | *38* |  | *25* |  | *46* |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| **Timothy (g6)** | 2.24 | [1.43, 3.49] | 2.92 | [1.15, 7.44] | 2.72 | [1.47, 5.02] | 1.96 | [0.98, 3.94] | 1.67 | [0.80, 3.48] | 1.24 | [1.07, 1.43] | 1.00 | [0.99, 1.02] |
|  | *162* |  | *15* |  | *60* |  | *45* |  | *42* |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| **Mugwort (w6)** | 1.91 | [1.03, 3.53] | 1.54 | [0.62, 3.77] | 1.20 | [0.42, 3.44] | 4.89 | [1.88, 12.8] | — | — | 1.46 | [1.10, 1.94] | 1.19 | [0.97, 1.46] |
|  | *64* |  | *24* |  | *25* |  | *15* |  | *0* |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| **Mite1 (d1)** | 1.72 | [1.05, 2.83] | 1.97 | [0.78, 5.00] | 1.05 | [0.40, 2.72] | 2.51 | [1.19, 5.29] | 1.51 | [0.65, 3.51] | 1.19 | [1.01, 1.40] | 1.01 | [1.00, 1.03] |
|  | *110* |  | *22* |  | *29* |  | *31* |  | *28* |  |  |  |  |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| **Mite2 (d2)** | 1.67 | [1.03, 2.71] | 1.75 | [0.59, 5.21] | 0.77 | [0.27, 2.17] | 2.82 | [1.30, 6.13] | 1.94 | [0.99, 3.79] | 1.20 | [1.03, 1.40] | 1.01 | [1.00, 1.03] |
|  | *110* |  | *13* |  | *32* |  | *23* |  | *42* |  |  |  |  |  |
|  |  |   |  |   |  |   |  |   |  |   |  |   |  |  |
| **Mold (m2)** | 6.94 | [2.70, 17.85] | 7.53 | [2.68, 21.17] | 9.62 | [1.88, 49.19] | — | — | — | — | 2.60 | [1.22, 5.54] | 2.30 | [0.66, 8.00] |
|  |  | *12* |  |  | *5* |  |  | *6* |  |  | *1* |  |  | *0* |  |  |  |  |  |  |  |

Note: Numbers in italics indicate number of cases with positive (≥0.35 kU/l) serology for the binary variables, and within cut-offs for the categorical variables**.** \*Linear trend across the categories.

|  |
| --- |
| **Table S2****Co-Twin Control Analysis: Associations Between Sensitization (Exposure) and Register-Based Asthma (Outcome) in the STOPPA Twins** |
|  | ***OR* (95% CI)** |
| **Binary** |  | **Trend\*** |  | **Continuous variable** |
| **All** |  | **MZ** |  | **DZ** |  | **All** |  | **MZ** |  | **DZ** |  | **All** |  | **MZ** |  | **DZ** |  |
| **Phadiatop** | 4.25 | [1.43, 12.6] | 1.67 | [0.40, 6.97] | 12.0 | [1.56, 92.3] |  | 1.76 | [1.22, 2.55] | 1.38 | [0.84, 2.27] | 2.19 | [1.21, 3.96] |  | 1.04 | [1.01, 1.07] | 1.08 | [1.00, 1.16] | 1.03 | [1.00, 1.06] |
|  | *42* |  | *16* |  | *26* |  | *68* |  | *30* |  | *38* |  | *132* |  | *72* |  | *60* |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| **Cat (e1)** | 8.00 | [1.84, 34.8] | 3.50 | [0.73, 16.8] | — | — | 2.18 | [1.22, 3.89] | 1.47 | [0.85, 2.56] | — | — | 1.05 | [0.98, 1.13] | 1.03 | [0.98, 1.08] | — | — |
|  | *36* |  | *18* |  | *18* |  | *40* |  | *18* |  | *22* |  | *60* |  | *32* |  | *28* |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| **Dog (e5)** | 4.50 | [1.52, 13.3] | 2.67 | [0.71, 10.0] | 10.0 | [1.28, 78.1] | 2.64 | [1.34, 5.18] | 1.90 | [0.96, 3.77] | 5.29 | [1.04, 26.9] | 1.08 | [0.95, 1.22] | 1.03 | [0.93, 1.15] | 13.8 | [0.68, 281] |
|  | *44* |  | *22* |  | *22* |  | *44* |  | *20* |  | *24* |  | *58* |  | *30* |  | *28* |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| **Horse (e3)** | 6.50 | [1.47, 28.8] | 4.00 | [0.85, 18.8] | — | — | 2.12 | [1.10, 4.07] | 1.75 | [0.91, 3.34] | — | — | 2.58 | [0.61, 10.9] | 1.91 | [0.60, 6.06] | — | — |
|  | *30* |  | *20* |  | *10* |  | *26* |  | *16* |  | *10* |  | *28* |  | *16* |  | *12* |  |
|  |   |   |   |   |   |   |   |   |  |   |   |   |   |   |   |   |   |   |
| **Birch (t3)** | 12.0 | [1.56, 92.3] | 5.00 | [0.58, 42.8] | — | — | 2.41 | [1.15, 5.05] | 1.81 | [0.86, 3.83] | — | — | 1.09 | [0.96, 1.23] | 1.05 | [0.97, 1.14] | — | — |
|  | *26* |  | *12* |  | *14* |  | *28* |  | *14* |  | *14* |  | *44* |  | *26* |  | *18* |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| **Timothy (g6)** | 3.00 | [1.09, 8.25] | 1.25 | [0.34, 4.65] | 10.0 | [1.28, 78.1] | 1.34 | [0.94, 1.90] | 1.00 | [0.62, 1.61] | 1.89 | [1.00, 3.58] | 1.00 | [0.98, 1.03] | 0.99 | [0.90, 1.08] | 1.00 | [0.98, 1.03] |
|  | *40* |  | *18* |  | *22* |  | *44* |  | *18* |  | *26* |  | *60* |  | *26* |  | *34* |  |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| **Mugwort (w6)** | 2.33 | [0.60, 9.02] | 1.50 | [0.25, 8.98] | 4.00 | [0.45, 35.8] | 1.50 | [0.74, 3.03] | 1.14 | [0.41, 3.17] | 1.92 | [0.64, 5.71] | 1.46 | [0.73, 2.93] | 1.41 | [0.49, 4.07] | 1.50 | [0.59, 3.82] |
|  | *20* |  | *10* |  | *10* |  | *18* |  | *10* |  | *8* |  | *30* |  | *14* |  | *16* |  |

Note: Numbers in italics indicate number of exposure- and disease-discordant children. Some *OR* estimates were not possible to calculate due to covariation in data; in all of those disease-discordant twin pairs, the twin with asthma also had the highest rate of IgE. \*Linear trend across the categories. MZ = monozygotic twins, DZ = dizygotic twins.