

## Siblings Promote a Type 1/Type 17-oriented immune response in the airways of asymptomatic neonates - DTU Orbit (08/11/2017)

### **Siblings Promote a Type 1/Type 17-oriented immune response in the airways of asymptomatic neonates**

**BACKGROUND:** Siblings have been shown to reduce the risk of later asthma and allergy, but the mechanism driving this association is unknown. The objective was to study whether siblings affect the airway immune response in healthy neonates. We hypothesized that siblings exert immune modulatory effects on neonates mirrored in the airway mucosa. **METHODS:** We measured 20 immune-mediators related to the Type 1, Type 2, Type 17 or regulatory immune pathways in the airway mucosa of 571 one-month-old asymptomatic neonates from the Copenhagen Prospective Studies on Asthma in Childhood<sub>2010</sub> birth-cohort (COPSAC<sub>2010</sub>). The association between airway mediator levels and presence of siblings was investigated using conventional statistics and principle component analyses (PCA). **RESULTS:** Neonates with siblings had an up-regulated level of airway immune-mediators, with predominance of Type 1- and Type 17-related mediators. This was supported by the PCA showing a highly significant difference between children with vs. without siblings:  $p < 10^{-10}$ , which persisted after adjustment for potential confounders including pathogenic airway bacteria and viruses:  $p < 0.0001$ . The immune priming effect was inversely associated with time since last childbirth:  $p = 0.0015$ . **CONCLUSIONS:** Siblings mediate a Type 1/Type 17-related immune-stimulatory effect in the airways of asymptomatic neonates, also after adjustment for pathogenic bacteria and viruses, indicating that siblings exert a transferable early immune modulatory effect. These findings may represent an *in-utero* immune priming effect of the fetal immune system caused by previous pregnancies as the effect was attenuated with time since last childbirth or presence of unidentified microbes, but further studies are needed to confirm our findings.

### **General information**

State: Published

Organisations: Department of Systems Biology, Center for Biological Sequence Analysis, University of Copenhagen

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Number of pages: 9

Pages: 820-828

Publication date: 2016

Main Research Area: Technical/natural sciences

### **Publication information**

Journal: Allergy

Volume: 71

Issue number: 6

ISSN (Print): 0105-4538

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 1

Scopus rating (2016): CiteScore 6.23 SJR 2.724 SNIP 2.475

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 3.13 SNIP 2.127 CiteScore 5.73

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 2.464 SNIP 2.121 CiteScore 5.51

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 2.195 SNIP 1.902 CiteScore 4.91

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 2.008 SNIP 1.818 CiteScore 4.81

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 2.328 SNIP 1.781 CiteScore 4.89

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 1.826 SNIP 1.845  
Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 1  
Scopus rating (2009): SJR 1.681 SNIP 0.958  
Web of Science (2009): Indexed yes  
BFI (2008): BFI-level 2  
Scopus rating (2008): SJR 1.433 SNIP 1.937  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 1.374 SNIP 1.862  
Web of Science (2007): Indexed yes  
Scopus rating (2006): SJR 1.523 SNIP 2.691  
Web of Science (2006): Indexed yes  
Scopus rating (2005): SJR 0.895 SNIP 1.651  
Scopus rating (2004): SJR 0.771 SNIP 1.896  
Web of Science (2004): Indexed yes  
Scopus rating (2003): SJR 0.551 SNIP 1.107  
Web of Science (2003): Indexed yes  
Scopus rating (2002): SJR 0.672 SNIP 0.627  
Scopus rating (2001): SJR 0.624 SNIP 0.489  
Web of Science (2001): Indexed yes  
Scopus rating (2000): SJR 0.714 SNIP 0.428  
Scopus rating (1999): SJR 0.513 SNIP 0.28  
Original language: English  
Allergy, Asthma, Chemokines, Children, Cytokines, Mucosal lining fluid  
DOIs:  
10.1111/all.12847  
Source: FindIt  
Source-ID: 2291653417  
Publication: Research - peer-review › Journal article – Annual report year: 2016