Reduced IFN-gamma- and enhanced IL-4-producing CD4+ cord blood T cells are associated with a higher risk for atopic dermatitis during the first 2 yr of life.

The aim of this study was to analyse whether altered cytokine production by cord blood (CB) T cells is of relevance regarding the development of allergic diseases during the first 2 yr of life independent from known or suspected risk factors for allergy. Within an ongoing birth cohort study (Life style - Immune System - Allergy; LISA) the cytokine production of PMA/ionomycin-stimulated CB cells was measured by intracellular cytokine staining. Data of 98 children from Leipzig and Munich with complete information on cytokine production at birth and allergic outcomes during the first 2 yr were analysed. Statistical analysis was performed using a regression model adjusted for gender, month of birth, parental history of atopy, parental education, exposure to environmental tobacco smoke, maternal smoking during pregnancy, renovation activities during pregnancy, pet ownership and study centre. During the first 2 yr of life, 17.3% of the children developed a physician-diagnosed atopic dermatitis. Children with reduced frequencies of interferon-gamma (IFN-gamma)-producing CD4(+) T cells in the CB (1st quartile) had a higher risk to develop atopic dermatitis (adjusted OR 5.16, 95% CI: 1.04-25.6). Furthermore, a high percentage of interleukin (IL)-4-producing T cells in CB in
children from the Leipzig cohort were associated with an increased risk for atopic dermatitis (adjusted OR 8.92, 95% CI: 1.40-56.93 for the 90th percentile). CD8(+) cytokine-producing CB T cells had no relation to increased risk for atopic dermatitis. Low amounts of IFN-gamma and high amounts of IL-4-producing T cells at birth may enhance the risk of subsequent development of atopic dermatitis.