

# Regulatory T cells decreased with farm exposure at age 6

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(HealthDay)—At age 6 years, regulatory T cells (Tregs) are decreased

with farm exposure and increased among those with asthma, according to a study published online Oct. 12 in *Allergy*.

Noting that farm exposure protects against development of allergies early in life, Paul C. Schröder, Ph.D., from the University Children's Hospital in Munich, and colleagues assessed Tregs longitudinally at 4.5 and 6 years in 111 children (56 farm and 55 reference children). Mononuclear cells were cultured unstimulated, with phorbol-12-myristate-13-acetate/ionomycin or lipopolysaccharide (LPS); they were stained for Tregs. Treg/Th1/Th2/Th17-associated cell marker mRNA expression was measured *ex vivo*. Parents answered detailed questionnaires assessing farm exposures and clinic phenotypes from birth to age 6.

The researchers observed a decrease in Treg percentage before and after stimulation and in *FOXP3* mRNA expression *ex vivo* from age 4.5 to 6 years. Decreased LPS-stimulated Treg percentage was seen at age 6 years for high versus low farm-milk and animal-stable exposure ( $P = 0.045$ ). There was a correlation for elevated LPS-stimulated Treg percentage at age 6 with increased risk of asthma (adjusted odds ratio, 11.29). Less efficient suppression of interferon gamma and interleukin-9 were seen for Tregs from asthmatics versus non-asthmatics. Between 4.5 and 6 years there was a decrease in mRNA expression of Th1/Th2/Th17-associated cell markers ( $P$

"This immunological switch defines a critical 'time-window' for Treg-mediated asthma protection via [environmental exposure](#) before age 6 years," the authors write.

Several authors disclosed financial ties to the pharmaceutical industry.

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