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**Title:** IL-13-induced cytokine release and hyperresponsiveness in precision cut lung slices of different species – Characterization of a model potentially suitable for translational research of asthma cellular events

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**Body:** Rationale: Precision cut lung slices (PCLS) display an ex vivo tissue model that maintain microanatomy and functionality of the respiratory tract. It allows the investigation of the efficacy of biopharmaceuticals in lung tissue of different species. In the present study, the effect of interleukin-13 (IL-13) on cytokine release and methacholine-induced bronchoconstriction was evaluated in rodent and human PCLS. Methods: PCLS were prepared from lungs of mouse, rats, and humans. The tissue was incubated with 1-100 nM IL-13. Bronchoconstriction was induced by methacholine and visualized by videomicroscopy. Cytokines were measured by ELISA. Results: Methacholine-induced bronchoconstriction in mouse and rat PCLS exhibited an EC50 of 80 nM and 220 nM, respectively. Pre-incubation with IL-13 decreased EC50 to 60 nM (mouse) and 160 nM (rat). Pre-incubation of rodent PCLS with IL-13 resulted in 20% stronger bronchoconstriction at maximum methacholine concentration. IL-13-induced hyperresponsiveness could so far not be demonstrated in human PCLS. Nevertheless, it was shown, that IL-13 stimulated the secretion of eotaxin-2/-3 and TARC in human PCLS - cytokines that are associated with asthma pathophysiology. The IL-13-induced cytokine release could be reduced significantly by 100 % by addition of specific inhibitors acting either on the IL-13 itself or the IL-13/IL-4 receptor complex. Conclusions: IL-13 induces cytokines and hyperresponsiveness in PCLS. It shows that PCLS can be used as model to study certain features of respiratory diseases.