

Publication**Lung functional development and asthma trajectories****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4616313**Author(s)** Decrue, Fabienne; Gorlanova, Olga; Usemann, Jakob; Frey, Urs**Author(s) at UniBasel** [Frey, Urs Peter](#) ; [Decrue, Fabienne](#) ; [Gorlanova, Olga](#) ;**Year** 2020**Title** Lung functional development and asthma trajectories**Journal** Seminars in Immunopathology**Volume** 42**Number** 1**Pages / Article-Number** 17-27**Keywords** Asthma; Children; Development; Environmental factor; Lung growth; Review**Mesh terms** Adult; Air Pollution; Asthma, etiology; Child; Humans; Lung, physiopathology; Microbiota; Pulmonary Disease, Chronic Obstructive, etiology

Early life environmental risk factors are associated with chronic respiratory morbidity in child- and adulthood. A possible mechanism for this sustained effect is their influence on early life lung functional growth and development, a susceptible phase of rapid lung growth with increased plasticity. We summarize evidence of hereditary and environmental ante-, peri-, and early postnatal factors on lung functional development, such as air pollution, tobacco exposure, nutrition, intrauterine growth retardation, prematurity, early life infections, microbiome, and allergies and their effect on lung functional trajectories. While some of the factors (e.g., prematurity) directly impair lung growth, the influence of many environmental factors is mediated through inflammatory processes (e.g., recurrent infections or oxidative stress). The timing and nature of these influences and their impact result in degrees of impaired maximal lung functional capacity in early adulthood; and they potentially impact future long-term respiratory morbidity such as chronic asthma or chronic obstructive airway disease (COPD). We discuss possibilities to prevent or modify such early abnormal lung functional growth trajectories and the need for future studies and prevention programs.

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