Sneezing nose, post-nasal drips and cough together with episodes of wheezing and dyspnea in preschoolers are real challenges. Therefore urgently we need to answer questions concerning the role of innate immunity in the induction and maintenance of chronic inflammation in the airways of preschoolers with chronic rhinosinusitis (CRS) and asthma. In real life, up to 50% of clinical problems in allergist's office could be resolved based on IgE-mediated-Th2 inflammation paradigm. Many non-specific risk factors of non-IgE dependent chronic rhinosinusitis and asthma have been proposed. Unfortunately the mechanism of non-allergic CRS/asthma has not been clearly defined yet. Consequently, only available therapeutical approach is extrapolated from allergic patients. Obviously, it is not a curative approach. Therefore, at least of 50% preschoolers with CRS/asthma are still without disease-specific treatment. Another clinical challenge is relatively high (at least 10%) prevalence of patients with uncontrolled symptoms of CRS/asthma despite intensive therapy. In the light of the latest findings it is reasonable to believe, that both problems appear due to imbalance in innate answer of airway's immunity, irrespective from allergy processes. Lymphoid cells (ILCs) - a new paradigm in immunology are new hope for many patients suffering from difficult to controlled CRS and/or asthma. Innate lymphoid cells are a growing family of immune cells that mirror the phenotypes and functions of T cells. Currently three types of ILCs were defined: ILC1s, ILC2s, and ILC3s They may represent the innate counterparts of CD4+ T helper 1 (TH1), TH2, and TH17 cells. However, in contrast to T cells, ILCs do not express antigen receptors or undergo clonal selection and expansion when stimulated. Instead, ILCs react promptly to signals from infected or injured tissues and produce an array of secreted proteins, termed cytokines, that direct the developing immune response. Thus, the power of ILCs may be controlled or unleashed to regulate or enhance immune responses in disease prevention and therapy.
What is more it has been shown that persistence of asthma required multiple interconnected feedback and feed-forward circuits between ILC2s and epithelial cells. Therefore we should analyze ILCs always in the context of epithelium function.

The presented research project entitled ” The role of nonspecific immune response of the airway mucosa in children with chronic rhinosinusitis and asthma” is a holistic and original experimental study. This project has been undertaken to expand the knowledge on the biological role of the “epithelium-ILCs-team” and to identify the molecules that allow manipulation of ILCs and the orchestration of the optimal immune response in CRS and asthma. During the study number of each ILC’s type and cytokine profile will be measured in nasal mucosa and compared between strictly defined groups of preschoolers. Simultaneously, number of immunoregulatory lymphocytes induced in nasal mucosa will be determined. Wide range of molecules involved in innate immunity will be assessed. Finally, we will assess changes in innate immunity over time and in the relation to pathogens’ contamination of nasal mucosa. The anti-inflammatory effects of nasal steroids on innate immunity will be determined. We believe that our results will point-out the local regulators of ILCs’ accumulation and function, what seems to be a crucial from both basic scientists and clinicians.