ImmunoTools *special* Award 2017

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A novel nanoparticle-based vaccination platform for cutaneous allergen specific immunotherapy

Nowadays, an increasing number of people in developed countries suffer from allergy, and so far there is no effective curative approach to treat this chronic disorder. Subcutaneous allergen-specific immunotherapy (SCIT) is considered to be the most efficient immunotherapy against allergy by now. However, the associated risk of severe side effects and long treatment schedules result in low patient compliance. Recently, it has been shown that targeting dendritic cells via C-type lectin receptors (CLR) using allergen-neoglycoconjugates induced high IgG responses meanwhile preventing IgE binding and production. The high immunogenicity and reduced IgE binding of allergen-neoglycoconjugates make them attractive candidates for allergen-specific immunotherapy.

The first goal of my project is to assess immunogenicity of novel glycoconjugates *in vitro*; I will expose bone marrow-derived dendritic cells (BMDCs) to glycoconjugates and assess their activation status via expression of CD80 on the cell surface. To evaluate antigen presentation of BMDCs, allergen-specific T cells will be co-incubated with antigen-presenting cells.

Next, we will use a mouse model resembling the atopic march observed in humans. Such mice develop an allergic asthma-like phenotype with a severely impaired pulmonary function, lung eosinophilia and high specific IgE titers. Using this model we will assess therapeutic efficiency of allergen-neoglycoconjugates, and cell composition in lung infiltrate serves as an important indicator for pathological changes. Furthermore, in a related *in vivo* project we will investigate the role of γδ-T cells in transcutaneous immunization in a mouse model. All the cell population analyses in lung and skin will be performed by flow cytometry and the following anti-mouse antibodies will be used:

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includes 15 reagents

FITC - conjugated anti-mouse CD4, CD25, CD44, CD45, g/d TCR

PE - conjugated anti-mouse CD19, CD80, g/d TCR

APC - conjugated anti-mouse CD3, CD4, CD8a, CD11b, CD19, CD25, Gr-1

DETAILS more AWARDS