Project 11 (P11): Modulation of cutaneous immune responses by *Candida albicans*

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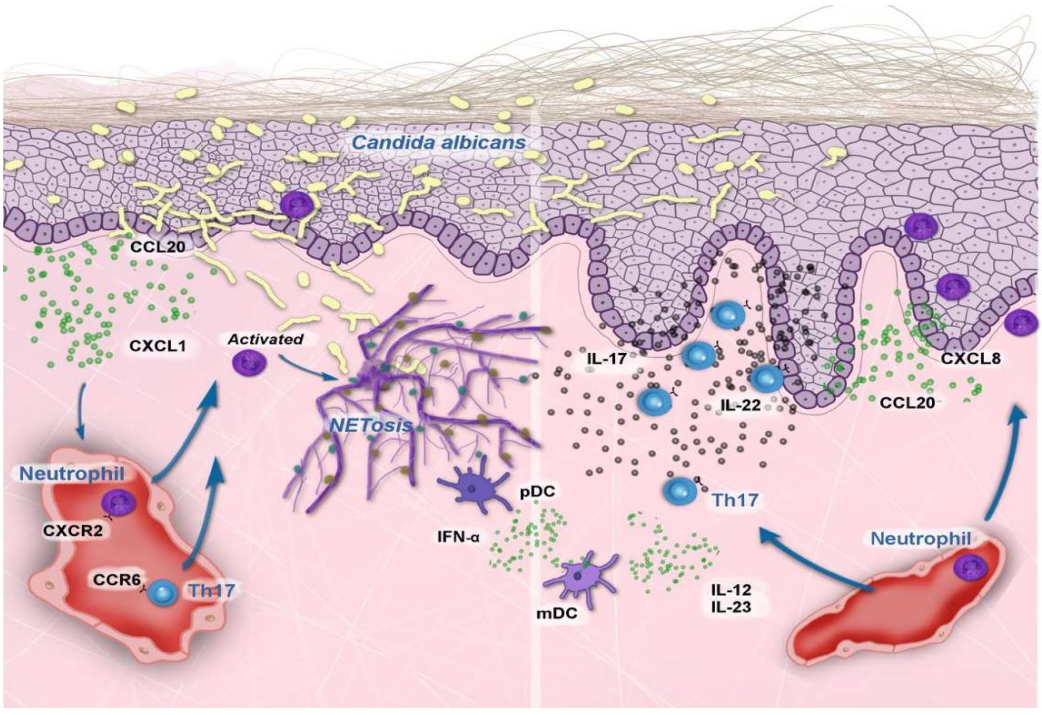
Findings of the EU-funded project „**M**icrobes in **A**llergy and **A**utoimmunity **R**elated to **S**kin (MAARS)“ demonstrate that microbes (bacteria, viruses and fungi) oft he skin interact with the host's immune system and influence inflammatory immune responses. In this multi-national consortium, preliminary results indicate a role for *Candida albicans* in the modulation of immune responses within the skin of psoriasis patients.
A principle clinical and so far unsolved question is, why are only distinct skin sites affected by psoriatic inflammation (predilection sites). In psoriasis patients, the skin of extensor parts of large joints as well as the big body folds in the inguinal, submammary and rima ani are affected. These areas often show colonization with Candida species. Immunologically yeasts, like *Candida albicans*, induce T_H17-directed immune responses. Interestingly, genome wide association studies show, that the IL-23/ IL-17 signaling pathway is overrepresented in psoriasis patients and that therapeutic inhibition through neutralization of IL-23 or IL-17 is highly effective in treating the disease.
Hence, the hypothesis of the present project is, that colonization with *Candida albicans* in the large body folds acts as an initial trigger of psoriatic inflammation. During the MOI II-funding period a biobank of human skin specimens of psoriasis patients, Candida-colonization and a *Candida albicans*-modulated psoriasis-like skin inflammation mouse model was established.
In the present MOI III-project, we aim to unravel the *Candida albicans*-associated factors, that promote the development of a psoriatic inflammatory response. The *Candida albicans*-host interaction will be investigated at the level of keratinocytes, neutrophil granulocytes and T cells *in vitro* and *in vivo*.