Factors influencing establishment and composition of the gut microbiota and effects of probiotic bacteria

The gut microbiota is an important reservoir for bacteria causing extra-intestinal infections. It is also a major stimulus for the immune system, and stimulation by gut bacteria may promote immune maturation and confer protection from e.g. allergy. Still, the knowledge about factors affecting establishment and composition of the gut microbiota is very limited. We investigate establishment of the gut microbiota in longitudinally followed infants in relation to environmental and lifestyle factors, and identify determinants of gut colonization by various bacterial groups and species, including e.g. potential pathogens such as *Clostridium difficile* and *E. coli*, and bacteria traditionally regarded as beneficial to the host, such as lactobacilli and bifidobacteria. By genetic and phenotypic characterization of gut bacterial strains varying in their colonizing capacity we identify bacterial factors determining the ability to colonize and persist in the gut microbiota.

In collaboration with researchers in immunology and allergology we investigate the effect of specific gut colonization patterns on maturation of immunoregulatory mechanisms and later development of allergy.

We also perform studies on probiotic bacteria, i.e. bacteria which, when ingested, confer some health benefit to the host. The effect of intake of probiotic lactobacilli on certain clinical conditions and on composition of the gut microbiota are tested in randomized double-blind studies.

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Selected references:


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