**Heat treated bacteria and immunity Nestec II**

Modulation of the immune system is one of the most plausible mechanistic concepts of probiotic function. To understand the mechanisms involved, more detailed research is needed to determine the bacterial factors and cellular receptors responsible for the immunomodulatory effects of specific probiotic strains.

Our previous studies have identified genetic loci of L. plantarum that are important in the modulation of the host immune system. In addition we studied the protective potential of selected bacterial strains in mice, in a peanut sensitization model, and in an influenza vaccination model. These results illustrate the usefulness of in vitro immune assays for the selection of candidate probiotics to be further tested in vivo. In the current project we established the protective effect of a bacterial preparation shown to enhance the in vitro production of gut antimicrobial peptides in a Salmonella infection mouse model. Continuous administration of this bacterial preparation led to increased amounts of innate immunity markers in the ileum, including myeloperoxidase, iNOS and Reg3β as well as increased secretion of IgA. These changes were associated with decreased translocation of Salmonella in the ileum, spleen, liver and mesenteric lymph nodes, as well as less systemic inflammation compared to the Salmonella-infected groups of control mice that had not received the protective bacterial preparation. Future experiments will investigate whether the heat-treated bacterial preparation is as efficient as the live preparation in vivo, and if the processing of the strain impacts on its capacity to prevent Salmonella infection.In this project HMI is collaborating with researchers at [the Nestlé Research Center (Switzerland)](http://www.research.nestle.com/).