Mattias Karlsson received his Master of Science degree in molecular biology from Umeå University in 2006. He has been a doctoral student at Örebro University, School of Science and Technology, Life Science Research School, since 2007. In 2009, he was awarded with a Licentiate degree in biology.

This thesis deals with the immune responses elicited by eukaryotic cells when facing lactobacilli. Lactobacillus is a large group of rod-shaped bacteria that colonise the human gastrointestinal tract and urogenital system. Numerous strains of lactobacilli have been tested for their use in the treatment or prevention of gastrointestinal disorders, infections, as well as allergies. Several Lactobacillus strains have in scientific studies been evaluated for their use as urogenital probiotic (health promoting) agents. A few of them, including Lactobacillus rhamnosus GR-1 have shown to be effective in reducing the incidence of urogenital diseases such as bacterial vaginosis and urinary tract infections. Modulation of immune responses (immunomodulation) is thought to be a major factor governing probiotic effects, in addition to direct antimicrobial actions targeting pathogens.

The studies within this thesis present novel data on the modulation of cellular innate immune responses by L. rhamnosus GR-1 and other Lactobacillus strains. L. rhamnosus GR-1 could alter the release of inflammatory mediators from urinary bladder cells and leukocytes. Moreover, putative proteins with immunomodulatory roles were identified in secreted products from L. rhamnosus GR-1. A screening of twelve different Lactobacillus species indicated that a majority of them were able to modulate aspects of cellular innate immune responses. An increased understanding of Lactobacillus dependent immunomodulation will facilitate the future selection of new probiotics that can be used to create better treatment options for common remedies including urogenital diseases.