Abstract Meeting Hydra:

Intestinal Immunity against *Ascaris suum* in pigs: The search for Targets and Effector mechanisms.

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Round worms (*Ascaris s*pp.) are universal and very important parasites of the small intestines of humans (*A. lumbricoides*) and pigs (*A. suum*). Both parasite species are closely related to each other, have an identical life cycle and are morphologically and antigenically indistinguishable. Following the oral ingestion of *Ascaris* eggs by the host, L3 larvae hatch from the eggs and then penetrate predominantly the wall of the caecum and proximal colon to undergo a hepatopulmonary migration. After this, the larvae ultimately establish in the small intestine and develop into adulthood. A continued exposure to *Ascaris* for several months induces a sterile immunity in both humans and pigs. This immunity is located at the level of the intestine and specifically targets the incoming larvae, preventing them from penetrating the intestinal wall. This so-called pre-hepatic barrier protects the host against the histopathological damage inflicted to the liver and lungs by the migrating larvae**.** The aim of this research project is to identify the effector components of the immune response necessary to prevent this larval migration and the parasite antigens driving it.

Intestinal immunity was induced in pigs by infecting them daily with a trickle infection for 30 weeks. The pigs subsequently received a challenge infection and were euthanized two weeks later. At necropsy, there was a 100% reduction in L4's recovered from the intestine and a 97,2% reduction in white spots on the liver in comparison with naïve control animals that received the same challenge infection. The mucus from the intestine was collected and the antibody secreting cells (ASC) were extracted from the local lymph nodes and put into culture. Antibodies purified from the mucus and the ASC culture supernatant were subsequently used to probe L3 larval extracts, egg hatch fluid and L3 E/S material. This resulted in the identification of a 12 kDa antigen specifically recognized by the IgA and IgG antibodies of immune animals. The antigen appears to be highly glycosylated and further steps are currently being taken to characterize it. In addition, intestinal tissue samples collected from the immune and naïve animals are used for gene transcription profiling and histological analysis in order to elucidate the immune effector mechanisms. The outcome of this project will help in the development of an *Ascaris* vaccine that induces a pre-hepatic barrier.