

Intestinal mucosal immunity: using the zebrafish as a model



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Main focus: Intestinal mucosal immunology

During my PhD at the University Medical Centre Groningen (the Netherlands) I studied the role of bacterial and dietary antigens on the development of Type 1 Diabetes in a rat model. While studying the interaction between food (breast milk) and diabetes development we embarked on a study investigating the microbial composition, a subject that was only just beginning to gain attention of immunologists.

Fascinated by the microbiota, I continued in this area of research as a post-doc in the laboratory of Edward Nieuwenhuis at the Erasmus MC (Rotterdam). Here, I started a new research line: development of a novel model for intestinal inflammation in zebrafish. With this novel model I was able to identify unique links between certain intestinal bacteria, the recruitment of distinct immune cells and the severity of mucosal inflammation. **The fact that disease susceptibility results from differences in bacterial colonization (linked to dietary habits) early in life, made me realize I wanted to know more about this intriguing concept.**

After this first postdoc, I transferred to the Wilhelmina Children's Hospital to work in a new Pediatric Gastroenterology lab with an intensive collaboration with the Hubrecht Institute (groups of prof. Clevers and prof. Schulte-Merker). I have investigated the role of adaptive immune development (ontology) on the intestinal microbiota and mucosal homeostasis and demonstrated that zebrafish without adaptive immunity have an altered microbial composition and altered mucosal immune responses. **In my opinion, investigation of immune development (ontogeny) in different species will teach us which (conserved) mechanisms control intestinal health and mucosal immunology.**

To further integrate my knowledge on the interaction between the microbiota and food/feed components on the development and status of the mucosal immune system in different host organisms, I started as a post-doc at the Cell Biology and Immunology (CBI) Group at Wageningen University in 2014. Since last year I received my Tenure track position at this group. In this capacity I am starting my own research group focusing on the use of zebrafish as a model for aquaculture species, as well as fundamental research questions on the interactions between the host and bacteria.

My motto: If you follow your dream and work hard, you will get there!