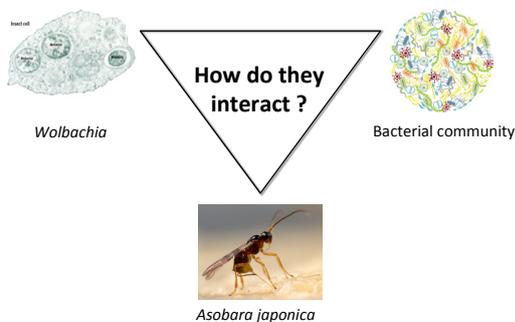


How to turn a sexual into an asexual? Disentangling the tripartite interaction host-symbiont-microbiome by artificial infection

Supervision by: Pina Brinker, Fangying Chen

Contact: p.brinker@rug.nl, room 5172.0662 or f.chen@rug.nl, room 5172.0664;
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Symbiosis between particular microbial associates, i.e. symbionts, and a host is a ubiquitous feature of life on earth, modulating host phenotypes. However, the relationship between hosts and symbionts is not a one-to-one interaction, but needs to be considered in the context of the whole microbiome, i.e. the collection of all host-associated microbes. In this project we will set out to disentangle the interactions within the complex of host-symbiont-microbiome in the parasitic wasp

Asobara japonica infected with the endosymbiont *Wolbachia*. Hereby focussing on the reproductive manipulation caused by *Wolbachia*. The *A. japonica* infection with *Wolbachia* varies geographically and infected wasps show asexual reproduction, with an all-female offspring. Our earlier findings show that *Wolbachia* manipulates sex determination genes to get only female offspring. However, *Wolbachia*-induced reproductive manipulation is imperfect, with infected females occasionally producing sons.

We propose that this is due to *Wolbachia*-microbiome and host-microbiome interactions. We hypothesise that the presence of *Wolbachia* affects the composition of the remaining microbiome and host reproductive mode. Therefore we will transplant *Wolbachia* infections into uninfected (sexual) *A. japonica* females with microinjection of cytoplasm acquired from infected females. During this time we will track potential changes on artificial infected females and their offspring. We will screen *Wolbachia* presence with specific primers and use qPCR to quantify its presence, investigate changes in the microbiome with general 16s rRNA primers, monitor if sex determination genes were manipulated by transplanted *Wolbachia* and record the number and sex of offspring.

We are looking for a motivated student who is interested in learning diverse methods and are happy to discuss further with you.

Methods: microinjection, morphological screening, RNA isolation, quantitative PCR.

Starting date: open