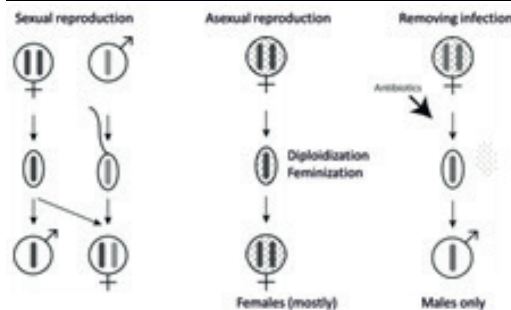
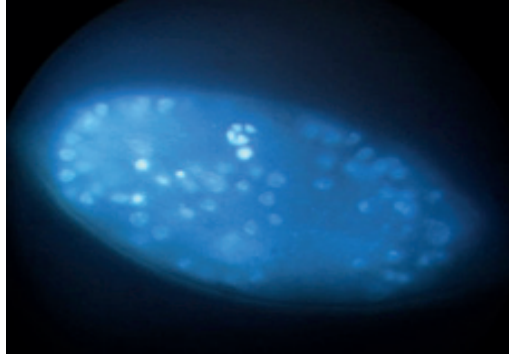


Diploidization and feminization in an asexual insect (and comparative genomics of reproductive parasites)

Supervision by: Elzemie Geuverink

Contact: e.geuverink@rug.nl, room 5172.0668; language: English or Dutch



Parasites often manipulate the behaviour, physiology or even reproduction of their hosts to enhance their own transmission. Some hymenopteran insects are manipulated into asexual reproduction by endosymbiotic bacteria. The bacteria can only transmit to the next host generation via eggs of females as sperm do not contain cytoplasm. As males are a dead end for these bacteria, the bacteria have evolved several ways to bias the host's progeny towards females. In the parasitoid *Asobara japonica*, *Wolbachia* bacteria manipulate both chromosome replication during meiosis (genome duplication) and the sex determination pathway (feminization).

Interference by *Wolbachia* already occurs in the ovaries of the infected female. Infected ovaries, antibiotics-treated ovaries and uninfected ovaries were used for RNA sequencing to determine the genes that are targeted by *Wolbachia*. A preliminary transcriptome comparison yielded a large set of candidates for genome duplication and feminization. Qualitative (RT-PCR) and quantitative (qPCR) screens can assess whether these transcripts are differentially expressed in infected mothers and young embryos. Furthermore, a high-quality genome of the parasitic wasp as well as its endosymbiont is available to be compared to related species with different reproductive manipulations by *Wolbachia*.

Methods: RNA extraction, PCR, sequencing, bioinformatics (various sequence and expression comparison tools).

Starting date: open