

# **Influence of secondary symbionts assemblage on the pea aphid dropping behavior**

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Many invertebrates are hosts to unicellular microorganisms, referred to in this context as symbionts. This "partnership" is essential for the symbionts as they can't survive outside the host. However, when examined from the host perspective, symbionts can be regarded either as obligatory symbionts that are vital for the host reproduction and development, or facultative symbionts that although generally not essential for the host's development or reproduction they may be crucial for its' survival under certain ecological conditions.

The pea aphid, *Acyrtosiphon pisum* (Homoptera: Aphididae), is a plant dwelling insect that has been extensively studied for its diverse bacterial fauna- including one obligatory and up to seven different facultative – symbionts. This aphid typically drops off the plant in response to a mammalian breath in order to avoid incidental predation. In this project I examined whether bacterial symbionts influence the pea aphid dropping behavior. I compared the fauna of bacterial symbionts in dropping and non-dropping aphids of two *A. pisum* populations using three molecular techniques: Denaturing Gradient Gel Electrophoresis (DGGE), illumina mass-sequencing and diagnostic PCR.

I found that in addition to *Buchnera aphidicola* (the obligatory symbiont), the tested populations of *A. pisum* harbored *Serratia symbiotica*, *Regiella insecticola* and *Rickettsia* (all facultative symbionts), with no significant difference in their frequency between dropping and non-dropping aphids. While *S. symbiotica* was detected in all three techniques, *R. insecticola* could be detected only by diagnostic PCR.

I conclude that *A. pisum*'s dropping behavior is not affected by symbionts and is possibly affected by other factors.



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