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Melolontha hippocastani gut specialized bacterial community: function and structure elucidation

It has been reported that the larvae of *Melolontha hippocastani* (forest cockchafer, Fam. Scarabaeidae) possess newly-discovered specialized structures called pocket-like structures, attached in the enlarged region of their hindgut. 454 pyrosequencing analyses revealed that they harbor bacteria belonging to the genera *Pseudomonas*, *Achromobacter*, *Arthrobacter*, *Brevundimonas* and *Bosea*. This high bacteria could play an important role for the insect, i.e. recalcitrant compounds digestion, although its function has still to be unraveled.

The aim of this project is to use selective media to isolate the bacteria whose presence in the pockets is known, confirm its identity trough DNA sequencing and try to unravel the function that they serve in benefit of the insect. Furthermore, through MALDI-TOF analysis, the chemical content of the pockets will be compared with the composition of the rest of the hindgut, in order to determinate which metabolites occur exclusively in the pockets, that is, presumably produced by the bacteria inhabiting there.

On the other hand, the metabolically active bacteria in adult cockchafers will also be identified by 13C Stable Isotope Probing of the DNA, gradient centrifugation and sequencing.

Publications

Alonso-Pernas P, Arias-Cordero E, Novoselov A, Ebert C, Rybak J, Kaltenpoth M, Westermann M, Neugebauer U, Boland W (2017) Bacterial Community and PHB-Accumulating Bacteria Associated with the Wall and Specialized Niches of the Hindgut of the Forest Cockchafer (*Melolontha hippocastani*). *Front Microbiol* 8, 291. Details PubMed

Alonso-Pernas P, Bartram S, Arias-Cordero EM, Novoselov AL, Halty-deLeon L, Shao Y, Boland W (2017) In Vivo Isotopic Labeling of Symbiotic Bacteria Involved in Cellulose Degradation and Nitrogen Recycling within the Gut of the Forest Cockchafer (*Melolontha hippocastani*). *Front Microbiol* 8, 1970. Details PubMed

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