

Manipulation of bacteria-fish interactions through marine viruses an evolutionary analysis (extension)

Initiative: Evolutionsbiologie (beendet)

Ausschreibung: Postdoktorandenförderung

Bewilligung: 22.03.2012

Laufzeit: 2 Jahre

Evolution and maintenance of mutualism are difficult to explain by means of natural selection, as cheaters are likely to outcompete cooperative individuals. Accordingly, the shift from mutualism to parasitism is commonplace in nature, and can be induced by a third player that intervenes in the interaction between a symbiont and its host. Temperate phages are a typical example. They integrate into the genome of mutualistic bacteria and convert them into parasitic diseases - Cholera being one of them. Such tri-partite interactions quickly generate chaotic oscillations and their evolutionary dynamics are therefore difficult to predict. I propose to use a model system consisting of the pipefish *Syngnathus typhle*, bacteria of the genus *Vibrio*, and their temperate phages to study tri-partite interactions experimentally. My experiments will focus on the processes that lead to local adaptation and generate a geographic mosaic, on the applicability of the matching alleles hypothesis, and on virulence evolution. All these concepts have been developed in the framework of hosts and constitutive parasites and their validity in more complex communities is not known. Data that are obtained empirically are then integrated into a mathematical model.

Projektbeteiligte

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