

## When two phages quarrel does the bacterium rejoice?

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

Bewilligung: 01.11.2017

Laufzeit: 1 Jahre 6 Monate

Research on phages is one of the most rapidly evolving fields of applied life sciences, mainly due to the potential of the bacterial viruses to act as an alternative to antibiotics and fight multidrug-resistant bacterial pathogens. In therapy, phages are applied as cocktails comprising many different isolates to ensure high pathogen eradication efficacy, but possible viral interplay within the cocktail is currently not considered. This project aims to explore how viruses behave during a heterogenic infection and whether they actively compete for the host's limited resources, and how does such a situation impacts host survival options? Using a phage library, physiological analyses of infection experiments with the model bacterium *Bacillus subtilis* will be performed. The molecular mechanisms of observed phage interactions will be investigated via comparative genome, transcriptome and proteome analyses and subsequently validated by directed phage mutagenesis approaches. Deciphering such mechanisms is of utmost importance for medical applications of bacterial viruses and re-evaluation of the phage cocktail concept. Knowledge about virus type "incompatibility" will allow the use of specific and highly effective cocktails. Additionally, it will provide deep insight into the ecology of phages and the diverse viral genetic pool.

### Projektbeteiligte

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### Open Access-Publikationen

**Genomic Analysis of the Recent Viral Isolate vB\_BthP-Goe4 Reveals Increased Diversity of 29-Like Phages**

**Complete genome sequence of the virus isolate vB\_BthM-Goe5 infecting *Bacillus thuringiensis***

**Phage vB\_BmeM-Goe8 infecting *Bacillus megaterium* DSM319**

**Phage vB\_BveM-Goe7 represents a new genus in the subfamily Bastillevirinae**

