

## Seminar in Microbiology

Monday, 6<sup>th</sup> March, 2017

Salle de séminaire, E07.3347.a, CMU

**11:30 – 12:30**



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### Phage-based therapies

Because of their capacity to kill bacteria, lytic bacteriophages were used as therapeutic agents for the treatment of human bacterial infections. The first success of the so-called “phage therapy” has been reported in 1919 but it was also used in Lausanne in the 40s where, as instance, patients suffering from *Staphylococcus aureus* infections were treated with phages prepared by the CHUV bacteriology laboratory. While the occidental world switched to antibiotics, which are nowadays challenged by resistance, Eastern countries (Georgia, Russia and Poland for instance) continued to produce therapeutic phage preparations and patients are still successfully treated with phage therapy with only very few side-effects. The Resch lab research axis aim at re-introducing phage therapy in Switzerland and explore the therapeutic potential of phage lysins. Both treatments are very specific and therefore more respectful than conventional antibiotics for the patient because they do not destroy the commensal microbiomes and for the environment because they do not select for global antibiotic resistance.

#### Recent key publications:

- Oechslin et al- Synergistic interaction between phage therapy and antibiotics clears *Pseudomonas aeruginosa* infection in endocarditis and reduces virulence. J Infect Dis. 2016 Dec 22..
- Shlezinger et al. Phage therapy: A new horizon in the antibacterial treatment of oral pathogens. Curr Top Med Chem. 2016.
- Diene et al. Comparative Genomics Analysis of *Streptococcus tigurinus* Strains Identifies Genetic Elements Specifically and Uniquely Present in Highly Virulent Strains. PLoS One. 2016 11(8):e0160554.
- Pirnay et al. Silk Road to the Acceptance and Re-implementation of Bacteriophage Therapy. Biotechnol. J. 2016.
- Pirnay et al. Quality and Safety Requirements for Sustainable Phage Therapy Products. Pharm. Res. 2015 32(7):2173-9.
- Oechslin et al. In vitro characterization of PlySK1249, a novel phage lysin, and assessment of its antibacterial activity in a mouse model of *Streptococcus agalactiae*. Antimicrob. Agents Chemother. 2013 57(12):6276-83.