Evaluation of the efficacy of an assembly of three bacteriophages compared or associated to antibiotics on *Staphylococcus aureus* embedded in biofilms or internalised in osteoblasts

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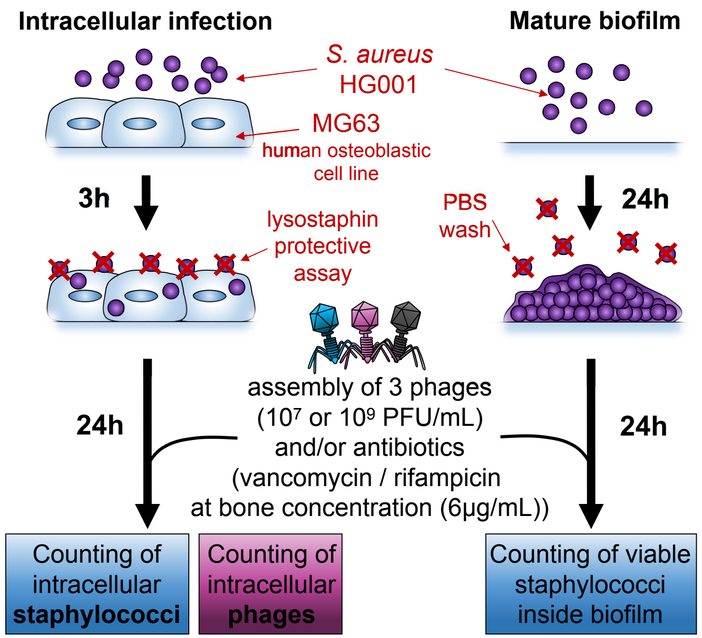
Introduction

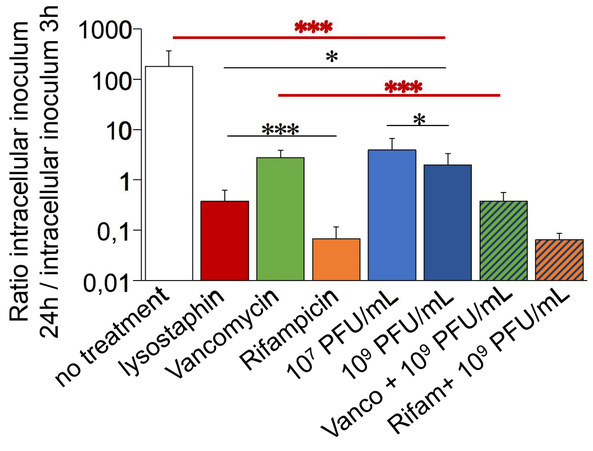
Staphylococcus aureus is the first causative agent of **bone and joints infections** (BJI). It is responsible of particularly difficult to treat infections because of its ability to **form biofilms** and to be **internalized and persist inside osteoblastic cells**. Recently, **phage therapy** has emerged as a promising therapy to i**mprove the management of chronic BJI**. In the present study, we evaluated the efficacy of an **assembly of three bacteriophages** previously used in a clinical case report (Ferry 2018) against *S.aureus* in ***in vitro* models of osteoblast intracellular nfection and biofilm formation.**

Material & Methods

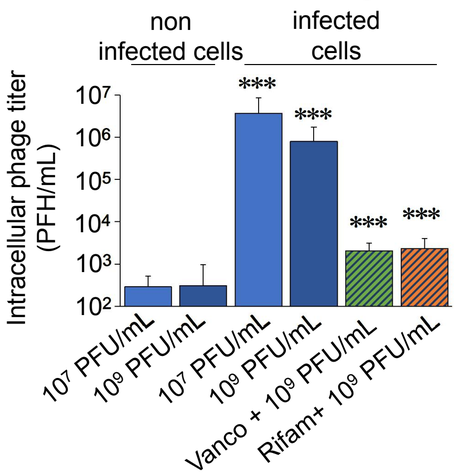


"Intracellular" results

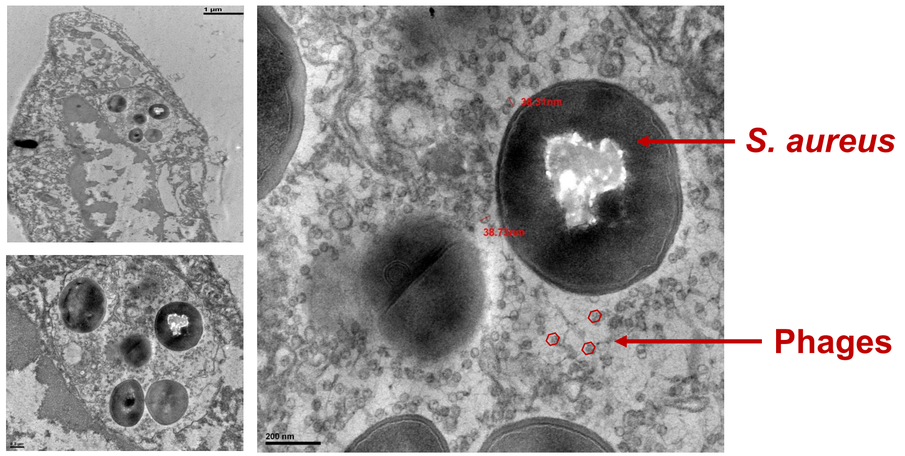
1. Intracellular staphylococci



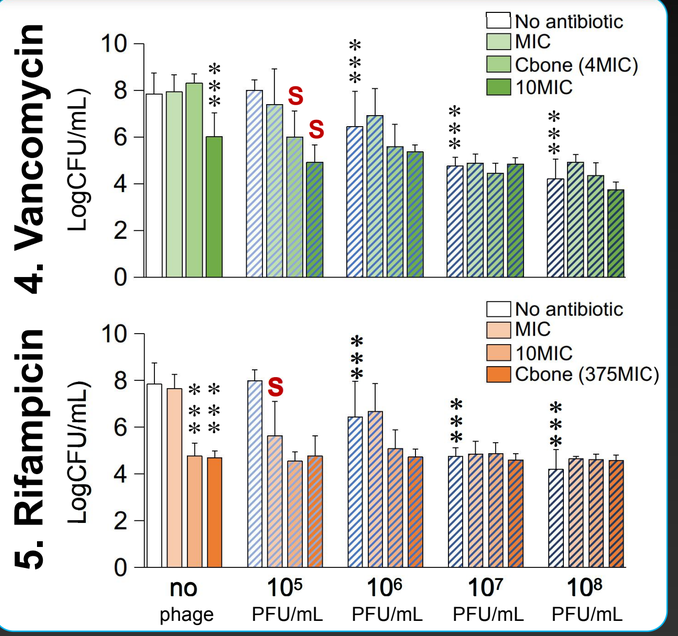
2. Intracellular phages



3. Electronic transmission microscopy



"Biofilm" results



Take-home messages

- **No observed intracellular effect of phages** on intraosteoblastic *S. aureus* **(Fig 1)**

But ...

- **Control of extracellular environnement** when add vancomycin and phages **(Fig 1)**
- **Presence of intracellular phages** next to *S. aureus* inside infected host cell **(Fig 2 and Fig 3)**
- **High anti-biofilm effect** of phages and **synergy** when adding antibiotics and phages **(Fig 4 and Fig 5)**