

PHAGE THERAPY OF CRITICAL BACTERIAL INFECTIONS: SINGLE-CENTER EXPERIENCE

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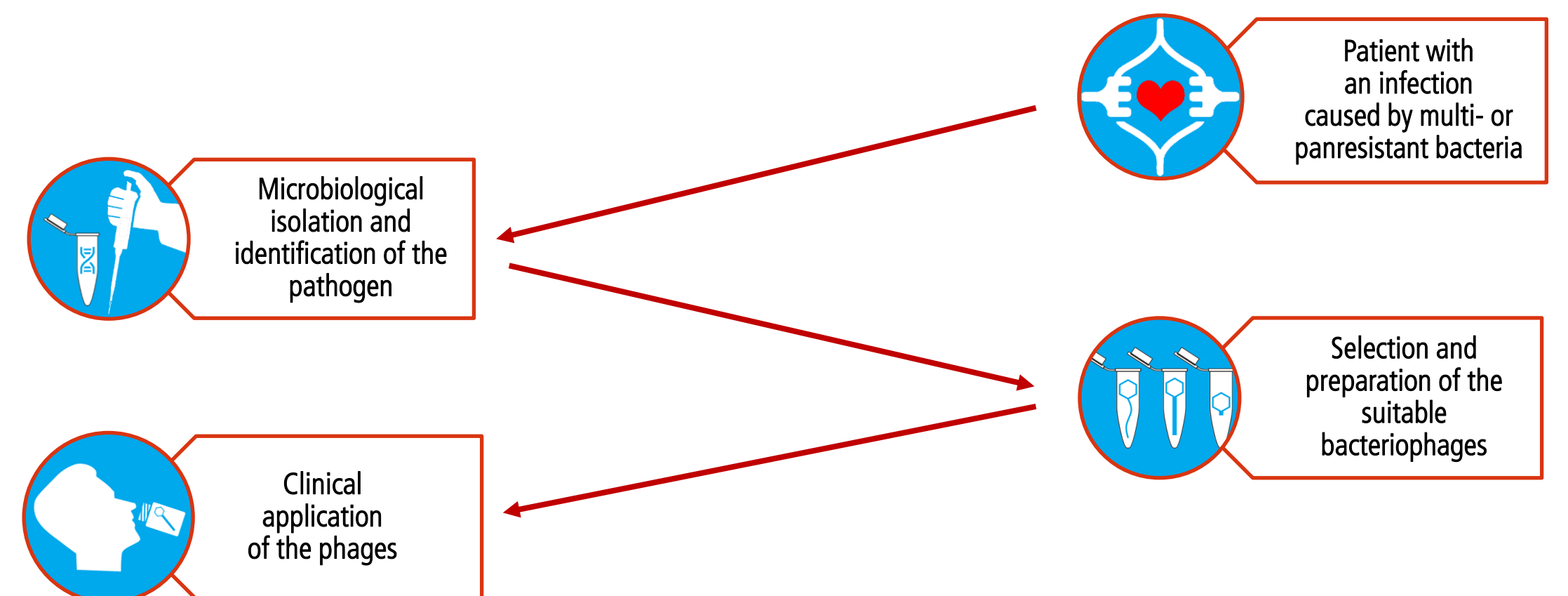
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Introduction

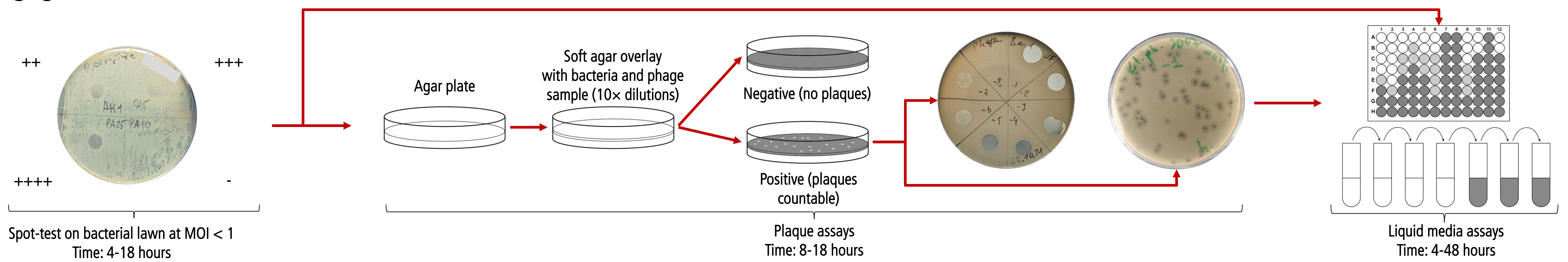
The growing need for the treatment of infections caused by multidrug-resistant pathogens is forcing both clinicians and potential patients to look for alternative therapeutic agents. Currently, phage therapy is considered as an effective alternative or addition to standard antibiotic therapy in cases of critical infections for patients.

However, given the growing popularity of this approach and only emerging international legislation, timely and adequate recommendations for the rational use of bacteriophages for therapeutic purposes are required. On the basis of the Hannover Medical School, we organized the National Center for Phage Therapy.

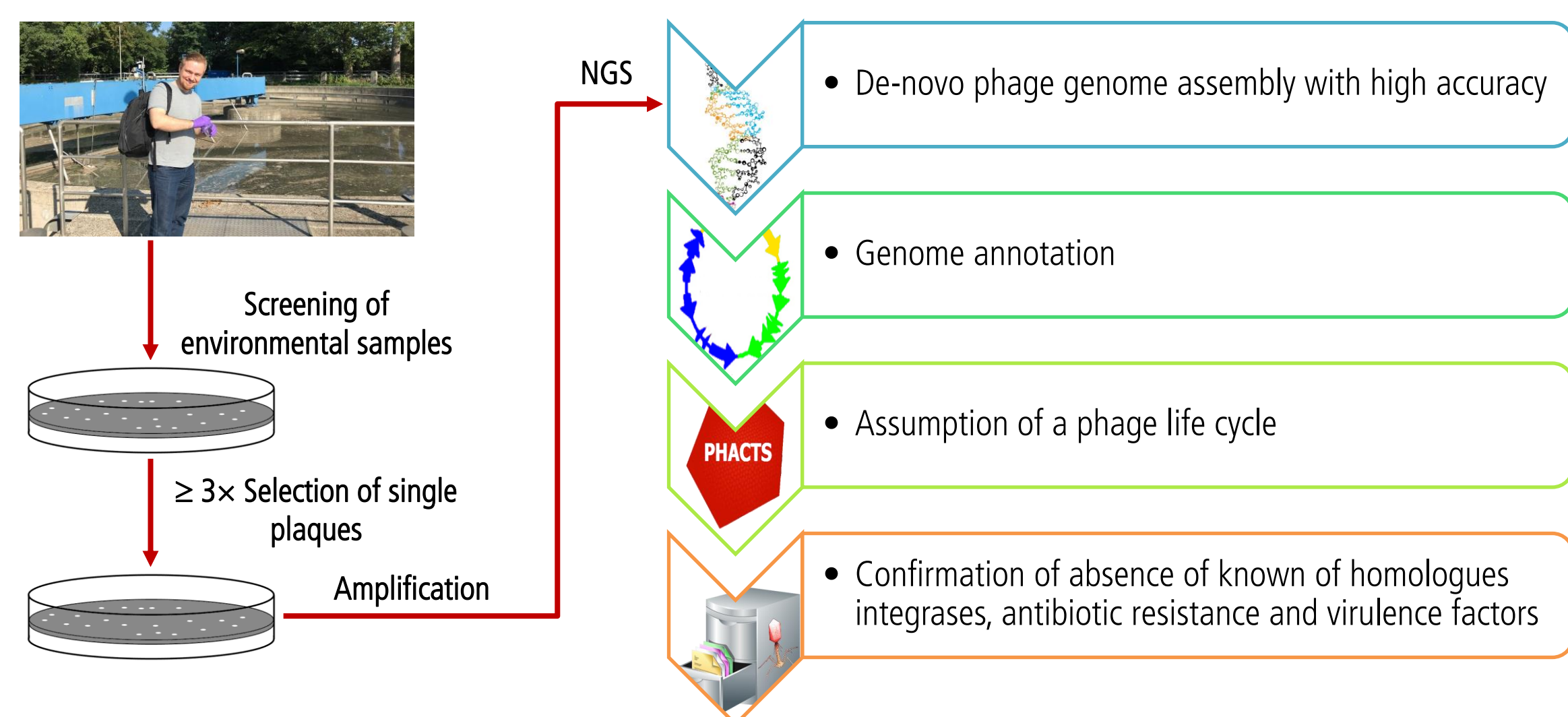
Phage therapy process



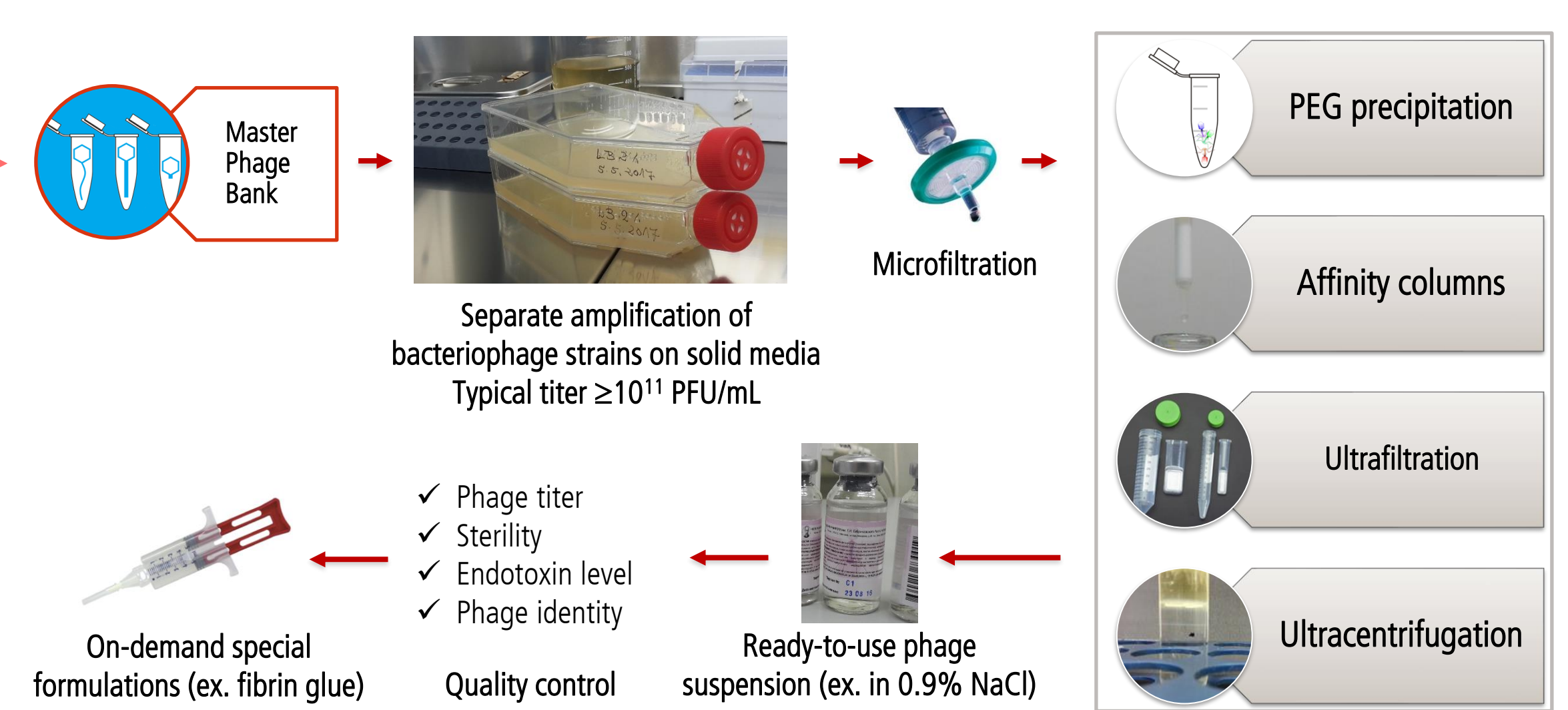
Phagogram



Phage isolation and characterization

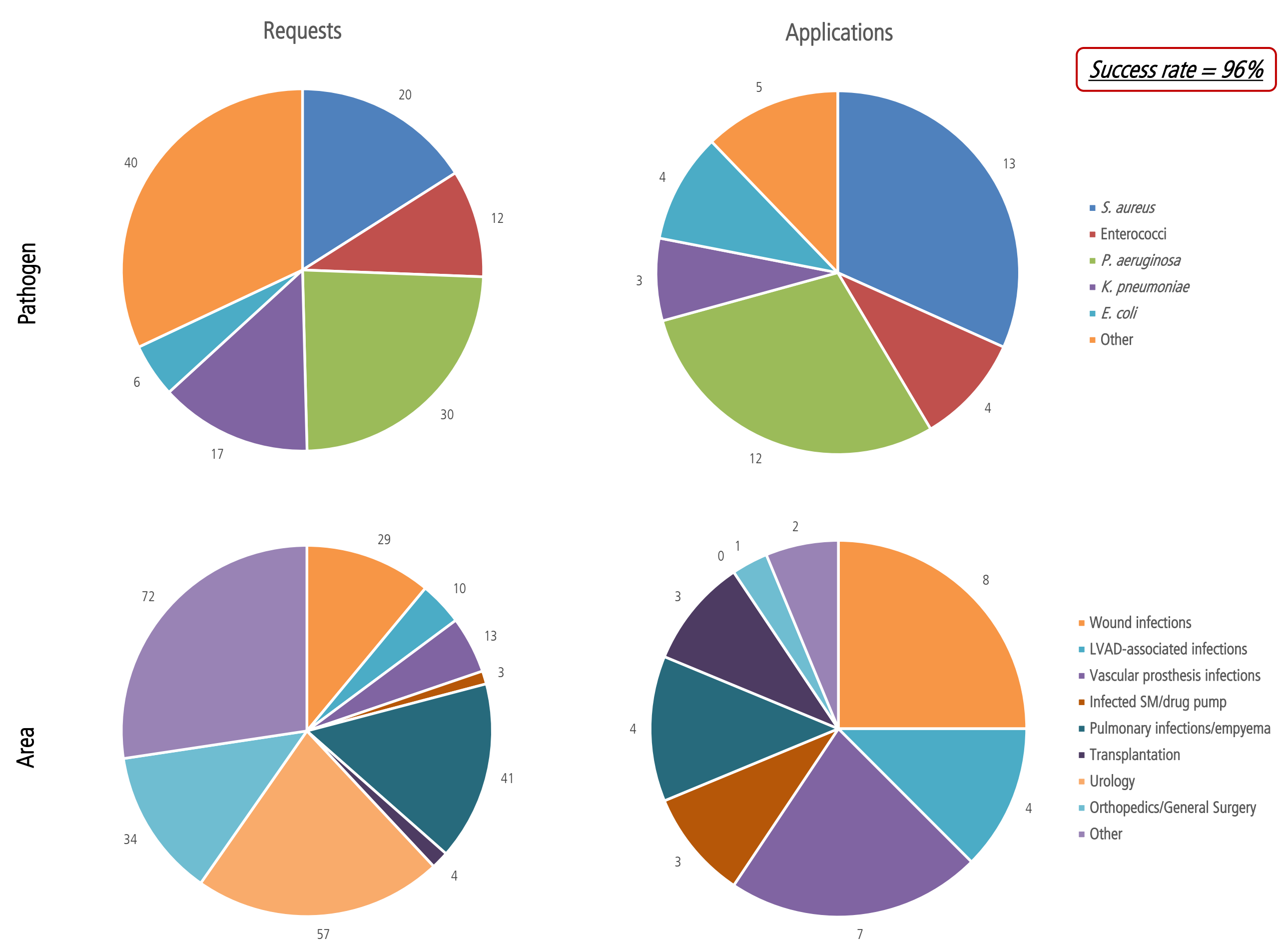
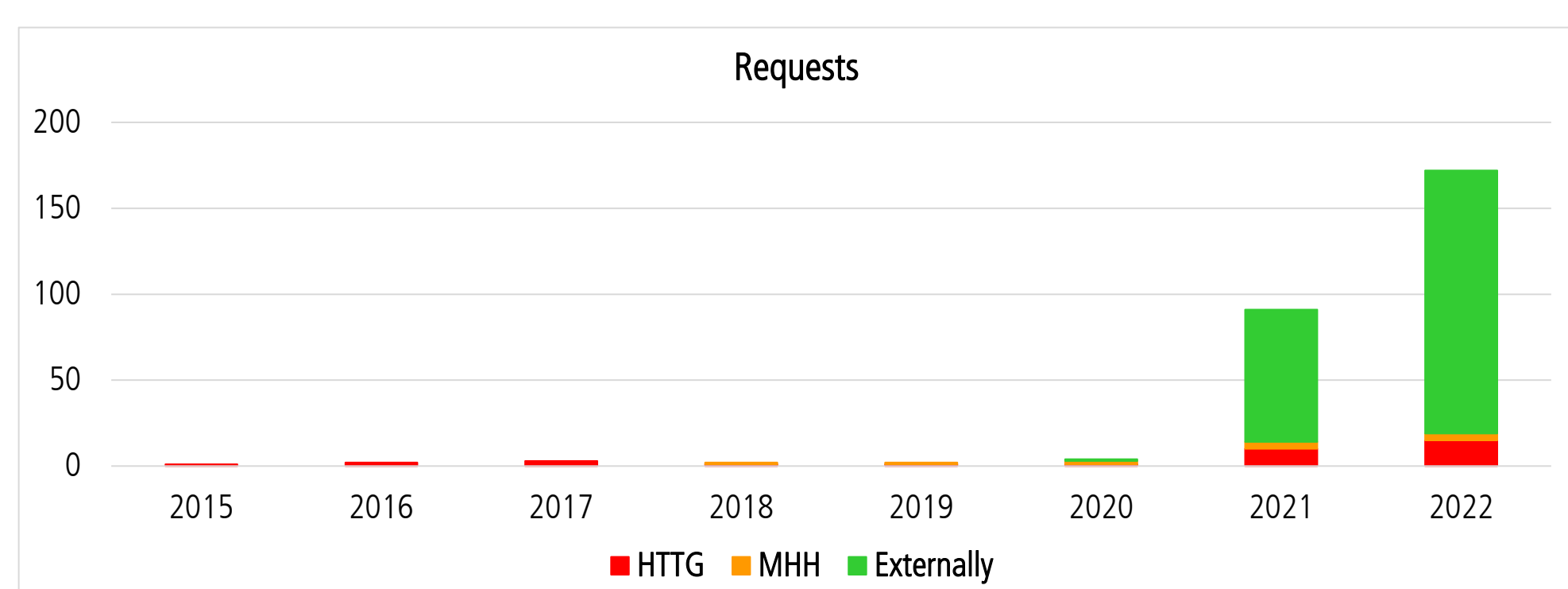


Preparation of bacteriophages



Clinical application of phage preparations

per os	<ul style="list-style-type: none"> In cases of isolation of bacteria from gastro-intestinal tract 1-3 x daily $\geq 10^8$ PFU in 0.9% NaCl
inhalative	<ul style="list-style-type: none"> In case of isolation of bacteria from lower respiratory tract 1-3 x daily $\geq 10^8$ PFU in 0.9% NaCl
local	<ul style="list-style-type: none"> For bacterial contaminated wounds Intraoperatively for infected implanted devices or deeper wounds etc. 1-2 x per week $\geq 10^{10}$ PFU with a carrier substance 1-3 x daily $\geq 10^8$ phages in 0.9% NaCl
intravenous	<ul style="list-style-type: none"> In case of systemic infection (endotoxin control required) ? Biodistribution ? Protection from antibodies



Conclusions

- Well-known phagogram approaches are robust and easy to implement. However new methods with better scalability and timing are needed;
- Whole process from phage isolation to clinical application is feasible for a single clinical center including modern phage preparation standards;
- Individualized phage therapy is an emerging antibacterial solution with high success rate if appropriate indications and dosage are selected.