

biodegradability due to their proteinaceous nature and consequently their non-accumulation in nature, reducing the risk to induce resistant bacteria in the environment (in contrast with antibiotics); (ix) phages are the most abundant and diverse biological entities on earth, thus representing an almost infinite source of new proteins with different properties that can be used to target almost any bacterial pathogen.

It is thus easy to conclude that phage-derived proteins will play, in a near future, a predominant role in the combat to the established antimicrobial crisis.

References

- Adams, M.H. and Park, B.H. (1956). An enzyme produced by a phage-host cell system. II. The properties of the polysaccharide depolymerase.
- Baker, J.R., Liu, C., Dong, S., and Pritchard, D.G. (2006). Endopeptidase and glycosidase activities of the bacteriophage B30 lysin. *Appl. Environ. Microbiol.* 72: 6825–6828.
- Barbirz, S., Müller, J.J., Uetrecht, C. et al. (2008). Crystal structure of *Escherichia coli* phage HK620 tailspike: podoviral tailspike endoglycosidase modules are evolutionarily related. *Mol. Microbiol.* 69: 303–316.
- Baxa, U., Steinbacher, S., Miller, S. et al. (1996). Interactions of phage P22 tails with their cellular receptor, Salmonella O-antigen polysaccharide. *Biophys. J.* 71: 2040–2048.
- Becker, S.C., Foster-Frey, J., Stodola, A.J. et al. (2009). Differentially conserved staphylococcal SH3b_5 cell wall binding domains confer increased staphylolytic and streptolytic activity to a streptococcal prophage endolysin domain. *Gene* 443: 32–41.
- Bertozzi Silva, J., Storms, Z., and Sauvageau, D. (2016). Host receptors for bacteriophage adsorption. *FEMS Microbiol. Lett.* 363: fnw002.
- Blázquez, B., Fresco-Taboada, A., Iglesias-Bexiga, M. et al. (2016). PL3 amidase, a tailor-made lysin constructed by domain shuffling with potent killing activity against pneumococci and related species. *Front. Microbiol.* 7: 1156.
- Bolla, J.-M., Alibert-Franco, S., Handzlik, J. et al. (2011). Strategies for bypassing the membrane barrier in multidrug resistant Gram-negative bacteria. *FEBS Lett.* 585: 1682–1690.
- Born, Y., Fieseler, L., Thöny, V. et al. (2017). Engineering of bacteriophages Y2:: *dpoL1-C* and Y2:: *luxAB* for efficient control and rapid detection of the fire blight pathogen, *Erwinia amylovora*. *Appl. Environ. Microbiol.* 83: pii: e00341-17.
- Borysowski, J., Weber-Dabrowska, B., and Górski, A. (2006). Bacteriophage endolysins as a novel class of antibacterial agents. *Exp. Biol. Med. (Maywood)*. 231: 366–377.
- Briers, Y., Cornelissen, A., Aertsen, A. et al. (2008). Analysis of outer membrane permeability of *Pseudomonas aeruginosa* and bactericidal activity of endolysins KZ144 and EL188 under high hydrostatic pressure. *FEMS Microbiol. Lett.* 280: 113–119.