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Bacteriophages as Therapeutic Delivery Vehicles

Guest Editors:

Prof. Dr. Paul Hyman

Department of Biology and
Toxicology, Ashland University,
Ashland, OH 44805, USA

Dr. Christine Schneider

Department of Biology, Carroll
University, Waukesha, WI 53186
USA

Dr. Bryan Gibb

Department of Biological and
Chemical Sciences, New York
Institute of Technology, Old
Westbury, NY 11568-8000, USA

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Message from the Guest Editors

Bacteriophages and other viruses can be considered highly evolved gene delivery vehicles that carry their genome payloads in metabolically inert virion particles between host cells. For many tailed bacteriophages, simply binding to the host cell receptor triggers a complex series of protein conformational changes that lead to the injection of the phage genome into the host cell. Other viruses rely on host cell endocytosis mechanisms that are activated upon binding of the viruses to cell receptors.

The applications of these genetically modified viruses can be quite varied including:

Targeted delivery of toxin genes to kill cells

Targeted delivery of genes encoding desirable traits to modify cellular function

Gene therapy

Phage vaccines

A related but very different use of virus particles is the attachment of toxins or other therapeutic molecules to the outside of the virus capsid, again using the receptor binding protein affinity for the cell receptor to direct the payload to the correct cells.



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Prof. Dr. Amélia Pilar Rauter

Departamento de Química e Bioquímica (DQB) e Centro de Química Estrutural (CQE), Institute of Molecular Sciences, Faculdade de Ciências, Universidade de Lisboa, Lisboa, Portugal

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Pharmaceuticals Editorial Office
MDPI, Grosspeteranlage 5
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