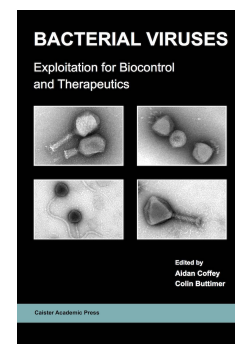


Bacterial Viruses

Exploitation for Biocontrol and Therapeutics



Edited by: Aidan Coffey and Colin Buttimer
 Cork Institute of Technology, Ireland and University College Cork, Ireland; respectively

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The potential of bacterial viruses (bacteriophages or phages) as antibacterial agents was recognised over a century ago. However, the success of antibiotic therapy from the 1940s onwards caused a general decline in the applications of phages as therapeutics. Nonetheless, recent decades have seen a disquieting proliferation of pathogenic bacteria resistant to multiple antibiotics commonly used in human and veterinary medicine, in turn leading towards a crisis in public health. The renewed exploration of phages and their molecular components for biocontrol and therapeutics offers a complementary approach for eliminating problematic bacteria across a range of sectors where bacterial infections and contaminations are a persistent problem.

Written by internationally-recognised scientists involved in the exploitation of bacterial viruses in diverse areas from around the world, this book provides comprehensive coverage of the current research in several phage applications for biocontrol of undesirable bacteria in human and veterinary medicine, horticulture, aquaculture and food. Chapters from the famous centres of phage therapy in Wroclaw and Tbilisi detail some of the pioneering historical contributions to the topic. The book also examines the impact of phages on the human microbiome as well as the progress of research in phage engineering, phage enzymes, phage delivery systems, biodetection as well as intellectual property aspects.

Aimed at research scientists, advanced students and other professionals, this informative and up-to-date book is a recommended acquisition for all science and medical libraries.

- Chapter 1.** An Overview of Current Phage Therapy: Challenges for Implementation (*Naomi Hoyle, Randolph Fish, Nata Nakaidze, Satya Ambrose and Elizabeth Martin Kutter*)
- Chapter 2.** Phage Therapy: The Pharmacology of Antibacterial Viruses (*Katarzyna Danis-Wlodarczyk, Krystyna Dabrowska and Stephen T. Abedon*)
- Chapter 3.** Human Gut Bacteriophages: Peacekeepers and Warriors at the Microbiota-Gut Interface (*Susan Mills, Colin Hill and R. Paul Ross*)
- Chapter 4.** Polish Contribution to the Advancement of Phage Treatment in Humans (*Maciej Żaczek, Beata Weber-Dabrowska, Marzanna Lusiak-Szelachowska, Ryszard Miedzybrodzki and Andrzej Górski*)
- Chapter 5.** Commercial Products for Human Phage Therapy (*Nina Chanishvili and Marina Goderdzishvili*)
- Chapter 6.** Application of Bacteriophages in Human Therapy: Recent Advances at the George Eliava Institute (*Nina Chanishvili, Lia Nadareishvili, Elisabed Zaldastanishvili, Nana Balarjishvili and Mzia Kutateladze*)
- Chapter 7.** Considerations for Using Bacteriophages in Plant Pathosystems (*Aleksa Obradović, Jeffrey B. Jones, Botond Balogh and Katarina Gasić:*)
- Chapter 8.** Phage Biocontrol Applications in Food Production and Processing (*Amit Vikram, Joelle Woolston and Alexander Sulakvelidze*)
- Chapter 9.** Bacteriophage Therapy in Food Animals (*Yongping Xu, Huijun Geng, Xiaoyu Li, Bingdong Wei, Cong Cong, Xiaowen Sun and Jibin Li*)
- Chapter 10.** Bacteriophages in Aquaculture (*Yongping Xu, Hongyu Ren, Yongsheng Ma, Zhen Li, Xiaoyu Li, Lili Wang and Shuying Li*)
- Chapter 11.** *Mycobacterium avium* subspecies *paratuberculosis*: Are Mycobacteriophages the Answer? (*Gillian Crowley, Colin Buttimer, Lorraine Endersen, Aidan Coffey and Jim O'Mahony*)
- Chapter 12.** Phage Structural Antimicrobial Proteins (*Silvio B. Santos, Luís D.R. Melo and Hugo Oliveira*)
- Chapter 13.** Crystallographic Structure Determination of Bacteriophage Endolysins (*Marta Sanz-Gaitero and Mark J. van Raaij*)
- Chapter 14.** Peptidoglycan Hydrolases from Phages of Gram-positive Bacteria (*Sara Arroyo-Moreno, Colin Buttimer and Aidan Coffey*)
- Chapter 15.** Developments and Opportunities of Bacteriophage Lytic Proteins for Therapeutics Against Gram-negative Pathogens (*Diana Gutiérrez and Yves Briers*)
- Chapter 16.** Genetically Engineered Bacteriophages (*Rajesh Mamkulathil Devasia and Salim Manoharadas*)
- Chapter 17.** Bacteriophage Encapsulation Using Spray Drying for Phage Therapy (*Danish J. Malik*)
- Chapter 18.** Practical Issues in Setting Up and Maintaining a Collection of Therapeutic Bacteriophages: the Finnish Experience (*Saija Kiljunen, Jussi Tervonen and Mikael Skurnik*)
- Chapter 19.** Commercialization of Phage Therapeutics: the Value of Intellectual Property and Patents (*Fabien Palazzoli, Michael Koeris and Shawna McCallin*)

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