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Centennial celebration of the bacteriophage research

The year 2017 marked the 100th anniversary of the publication of Félix d'Herelle entitled "On an invisible microbe antagonistic toward dysenteric bacilli" in which he coined the term "bacteriophage" [1]. Who should be credited as the first discoverer of bacteriophages — Félix D'Herelle in 1917, Frederik Twort in 1915, Nikolay Gamaleya in 1898, Ernest Hankin in 1896, or perhaps an unknown scientist before them [1] — remains an open question. However, it is generally accepted that Félix d'Herelle's report in 1917 is a foundational article initiating bacteriophage research worldwide. Importantly, the same report outlined the fundamental principles of *phage therapy* by briefly mentioning the first use of bacteriophages to cure an experimental bacterial infection in animals (rabbits) [2].

In April 2017 and June 2017, at Institut Pasteur in Paris and Eliava Institute in Tbilisi, respectively, two conferences were organized to celebrate the centennial anniversary of bacteriophage research. These two international events attracted more than 400 participants from over 30 countries, demonstrating the renewed interest of scientists around the globe in studying bacteriophages and, more broadly, viruses of microorganisms (www.isvm.org). This renaissance of microbial virus research is largely instigated by two major developments: first, the growing appreciation of the abundance of microbial viruses and their impact on the global ecology, from the deep ocean to human gut [3–9]; and second, the recognition of bacteriophages as powerful therapeutic agents for treating infections caused by worrisome, antibiotic-resistant, pathogenic bacteria [10–13]. The coupling of the fundamental and applied research lines in exploration of the vast world of microbial viruses is particularly fruitful as exemplified by the burgeoning development of the CRISPR-Cas-based genome editing technologies [14,15] or the discovery of new expansive families of microbial viruses, including crAssphages [16,17], the "Autolykiviridae" [18], and many others [19–26].

In this special issue of *Research in Microbiology*, we present a collection of papers reflecting the diversity of research lines focusing on microbial viruses. Kropinski [27] and Almeida et al. [28] provide historical overviews of different aspects of bacteriophage research and define new lines for future studies; Toussaint and Van Gijsegem [29], Atanasova et al. [30], and Buttimer et al. [31] describe novel microbial viruses and proviruses, providing further insights into the evolution and diversity of the corresponding virus families; Tkhilaishvili et al. [32] and Vinner and Malik [33] describe novel technological developments in bacteriophage research; whereas Gelman et al. [34] and Hoyle et al. [35] focus on the therapeutic potential of bacteriophages against diverse bacterial pathogens in different models, including a case report of successful treatment of a cystic fibrosis patient. We hope that these articles will inspire more scientists to join the growing community of microbial virologists and perpetuate the exciting research on microbial viruses for the next 100 years.

Conflict of interest

The authors declare no conflict of interest.

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