

## **B.V. Tarakanov, Bacteriophagy Phenomenon in the Rumen, Moscow: Nauchnyi Mir, 2006**

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The monograph of B.V. Tarakanov is the first serious scientific book on bacteriophagy in Russian since early 1990s. The presence of bacteriophages in the normal microflora of humans and animals was demonstrated by d'Herelle almost immediately after the discovery of bacteriophagy in 1917. The understanding of the ecology of bacterial viruses in microbial communities of animal digestive tracts, where the density of life is extremely high, is, however, still far from clear. The monograph by B. V. Tarakanov is therefore quite timely for Russian microbiology.

The book is an almost exhaustive review of the relevant literature presently available. The author not only analyzes the data, but also provides detailed accounts of the factual results of practically every basic work on this topic. The total number of cited sources is 151; over 100 of these are original articles on ruminal bacteriophages. The book is well illustrated; it contains numerous electron micrographs of bacteriophages and other experimental data. Since many of the sources discussed in the monograph are not easily available, this book is therefore an important tool for researchers in bacteriophage ecology.

The monograph contains a detailed analysis of data concerning the biology of individual phages isolated from the rumen and from the fore stomach of Australian marsupials, on various host bacteria (genera *Selenomonas*, *Prevotella*, *Ruminococcus*, *Streptococcus*, and *Bifidobacterium*). The issues discussed include lysogeny of ruminal bacteria, electron microscopic studies of uncultured viral communities, and quantitative assessment of phage populations by pulse-electrophoresis and laser densitometry. The sections dealing with the

effect of the factors of ruminal environment (tannic acid, other plant metabolites, feeding rations, etc.) on the phage activity in the rumen are of special interest. These data may be important for the explanation of the stable coexistence of dense bacterial populations and viruses in this community. The book presents the results of unique experiments by the author and his colleagues aimed at the regulation of ruminal microbial populations by means of bacteriophage preparations specific to the amylolytic bacterium *Streptococcus bovis*. These techniques were found to affect significantly the profile of the biochemical activity of the rumen population. These changes, in turn, had a validated effect on the quality and quantity of meat and milk obtained from the treated animals. Apart from their practical importance, these results are interesting for microbial ecology. The regulation of the populations of phages and their host in the rumen is probably different from that in the colon; in the latter case, resident bacteria (at least coliforms) are not easily available to externally arriving bacteriophages.

The low level of conceptualization is among the weak points of the monograph. The author relates the facts and does not suggest any verbal models of the ecological interactions. This fact makes the book somewhat less valuable to students and teachers. However, the book by B.V. Tarakanov will certainly be useful to biologists deeply interested in microbial ecology and in the role of bacteriophages in natural microbial communities.

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