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Role of viruses in biosphere

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Presented work is synthesis of both literature data and own efforts on study of virus transduction and demography models. The aim would be considering of viruses and other sub-cell organisms as needful part of life on Earth basing on fundamental biology and ecology. It is important to understand the negative consequences for humanity and the biosphere of extreme outbreaks of dangerous viruses (Spanish flu, AIDS, etc.). Viruses were discovered by the Russian scientist D. Ivanovsky in 1892 and named "filtering virus". Having the size of a molecule, it passes freely through filters and masks. In the early twentieth century, the Russian scientist V. Vernadsky predicted the existence of a single information field of the biosphere. In 60-s of XX century was opened to the genetic code, which was uniform in all organisms (G. Korana, etc.). 70-ies the phenomenon of "horizontal transfer," i.e., transferability of information among all living organisms on the planet without a sexual process (B. McClintock, M. Golubovsky, etc.) was discovered. Some viruses (e.g. T4) are the most studied organisms on Earth due to its relative simplicity. The number of virus types is not estimated, but can be measured in millions. The number of virus individuals on the planet is estimated at 10^{39} . Viruses are a necessary part of the biosphere. They create a "biological Internet" in which the information unity of organisms is ensured by the constant transfer of DNA sections between all organisms due to vires transduction. Viral epidemics are an example of co-evolution of higher and lower organisms. It temporarily reduces the number of individual species (for example, the number of people during the Spanish flu decreased by 17 million), but never threatens the existence of a particular species. Just as the medical fight against viruses reduces their population, but does not completely destroy them. The human immune system and the virus gene pool are also in a state of co-evolution. The temporary reduction in the number of the host organism of the virus is further compensated by increased immunity and a rise in the birth rate. Viruses activate the immune system of both individuals and humanity as a whole. Man needs them just as small wars are needed to maintain the combat capability of armies. Forecast of negative and positive consequences of virus reproduction is possible basing of modern mathematical ecology and genetics.