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Virology & Mycology

Perspective

General Introduction about Infectious Disease Caused by Virus

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DESCRIPTION

Virology is a relatively new field of study. By studying descriptions of diseases that occurred hundreds or thousands of years ago, we can identify specific viruses as the root cause of epidemics that took place at that time. Additionally, smallpox vaccination has been used for more than a thousand years. But viruses weren't discovered to be filterable until over a century ago, making them unique from bacteria that spread infectious diseases. The structure of viruses was only characterized roughly 60 years ago, and it took even longer before they could be seen as particles in an electron microscope. But during the past 20 years, the development of contemporary biotechnology has dramatically increased our understanding of viruses and how they interact with their hosts. The study of viruses, or virology, covers a wide range of topics, including the molecular biology of virus replication, virus structure, interactions with hosts and the diseases they cause in those hosts, the evolution and history of viruses and viral diseases, virus epidemiology, or the ecological niche that viruses occupy and how they spread from victim to victim, as well as the vaccination against viral disease and other methods of viral disease prevention.

Although it is known that viruses may infect the majority of living things, including bacteria, blue-green algae, fungi, plants, insects, and vertebrates, we strive to present an overview of virology that highlights their potential as disease-causing agents for humans in this article. The treatment is not meant to be exhaustive due to the breadth of virology and the fact that human viruses that cause disease, particularly epidemic disease, are not evenly dispersed throughout virus families. However, in order to gain a general grasp of this fascinating class of organisms, we believe it is crucial to present human viruses in the context of viruses as a whole. As a result, we consider a variety of nonhuman viruses that are crucial for our comprehension of the biology and evolution of viruses.

Because many viruses cause serious illness in people or domestic animals and because some viruses harm crop plants, viruses are of great interest. The threat posed by infectious illnesses to human health has significantly decreased over the past century, especially in developed nations.Infectious disease deaths accounted for 0.8% of all deaths at the start of the twentieth century. The rate is now less than a tenth of what it was. The most harmful viruses may now be effectively controlled thanks to the introduction of vaccinations. An intensive and coordinated campaign to immunize everyone at risk for the disease, supported by the World Health Organization, has succeeded in eradicating the smallpox virus globally.

Intensive vaccination campaigns have successfully eradicated the poliovirus and measles virus from the Americas. There is optimism that in the near future, these two diseases will likewise be completely wiped from the planet. There are vaccines available to prevent a wide range of other viral illnesses, such as rotavirus gastroenteritis, Japanese encephalitis, mumps, rabies, rubella, yellow fever, and, more recently, the papillomavirus disease that is the main cause of cervical cancer.

However, viruses that are currently developing are not the only ones that affect people. Numerous viruses that have been around for a while still create significant issues. For instance, the respiratory syncytial virus is a prominent factor in neonatal pneumonia. It has taken a lot of work, yet there is still no vaccination that works. Even in the presence of immunizations, issues could persist. For instance, the influenza virus is subject to frequent modification, necessitating yearly revision of the vaccine. It is impossible to completely eradicate influenza because birds are its main reservoir. Therefore, annual immunization of the entire population would be necessary to control influenza. This is a serious issue because the virus continues to produce yearly outbreaks with a high fatality rate. Although influenza kills mostly the elderly, the global influenza epidemic of 1918, which claimed 20–100 million lives globally, demonstrated the virus's propensity to also kill the young and healthy. During the outbreak, 1% of the population in the United States perished, and influenza may have been the cause of half of those deaths. It is still crucial to continue researching how viruses replicate and interact with their hosts, to keep an eye on viruses in the wild, and to work on developing new vaccinations and other forms of control.

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