Preface

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Published online: 19 January 2012
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Discovery of viruses extends back to around 3700 BC, when the first written record of virus infection was immortalized, represented by Egyptian hieroglyphs depicting classical signs of poliomyelitis and pustular lesions on the face of a mummy dated 1143 BC indicating small pox infection. The scientific studies concerned to viruses took form in late 19th century, Ivanosky was the first to show the existence of viruses and Beijerinck coined the term virus. This was considered to be the beginning of virology. By mid twentieth century almost 2,000 recognized species of animal, plant, and bacterial viruses were discovered. Despite scientist achievement over past 100 years, viruses continue to pose new threats and challenges. Several viral infections and diseases threaten human race which may be fatal or highly debilitating. Majority of viral diseases attack infants and young children, while others strike people in their prime. There is continual trend of extreme variation in viral epidemics considering its extent, severity, duration, appearance, reappearance and the emergence of new diseases. Research activities associated with viruses in India started in early 1950s carried out at National Institute of Virology (NIV), Pune, initially on arbo viruses but the institute later on grew up as the national monitoring center for studying major viruses associated with Influenza, Japanese encephalitis, Rota, Measles and Hepatitis. Initially major burden of viral tests and characterization was on NIV and National Centre for Disease Control (NCDC) but

later on several virology laboratories came into existence in India. Some of these laboratories are situated at Vellore, Lucknow, Delhi, Kolkata, Bangalore, Hyderabad, etc. and are actively engaged in studying virus morphology, sequencing the genome, molecular characterization, epidemiology, viral culture, serology etc.

The pattern and profile of viral infections are undergoing several changes which, makes it tough to analyze. Recent outbreaks and reemergence of highly pathogenic viruses like Nipah (2001), SARS (2003), H5N1 (2006–2009), Chandipura (2005), Chikungunya (2006), H1N1 (2009) and CCHF (2011), and fatal gesture of HIV and Japanese encephalitis continue to dominate the disease incidence rates globally. Majority of world epidemics are of viral origin. This problem can be controlled only by timely diagnosis and preventive measures. In order to overcome the viral diagnostics in country, the Indian government has planned network of virology laboratories nationwide armed with advance technologies. Several new laboratories are already functional having RT-PCR facilities, conducting serological tests, isolating dangerous pathogens, conducting fluorescent microscopy, tissue culture and sequencing techniques.

The need of the hour is to win over the virus, which is not a one step phenomenon; instead it is a chain and linked process between individuals, researchers, analysts, anti-viral drug developers etc. The lack of specific antiviral drugs and vaccines are the major concern, through which emerging, reemerging and drug-resisting viruses pose foremost threat. We should consider another challenging and emerging clinical area of personalized medicines, due to difference in host genetic factors and viral strain variation when compared to foreign countries. A viral outbreak forecast system may be developed which can predict the viral epidemic/pandemics on the basis of intense research

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and molecular markers, and may save several lives nationwide.

In this issue several eminent virologists have thrown light over major challenges posed by viruses, and the ways they prove so fatal for human race. Each topic deals with viral infections, their epidemiological distribution, diagnosis, pathogenesis and preventive measures which are serving as global issues and challenges. Chapters focus on different viruses and infections caused by them, which

have plagued our country and have caused great loss to human resource and country economy. These articles may present the perspectives and thoughts of leading virologists, focusing on the viral infections of concern. I am grateful to all the eminent virologists for their contributions and hope this special issue provide readers with new information and insight; a glimpse into the methods and techniques, which may revolutionize the future of virology.