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### **Comparative analysis of evolutionary pattern and adaptive mechanism of hemagglutinin and neuraminidase genes of H5N1 influenza virus in different geographical regions**

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Among various strains of avian influenza viruses, Highly Pathogenic Avian Influenza (HPAI) H5N1 virus is the most virulent with a crude mortality rate of 60%. This virus first appeared in Guandong, China in 1996. Since then, the virus has circulated in different hosts throughout Asia, Europe, Africa and North America. Though, human to human transmission of the HPAI H5N1 is a rare event, recombination and re-assortment among different lineages may give rise to new pandemic strains. To investigate evolutionary changes, we performed phylogenetic analysis of the two major envelop glycoproteins hemagglutinin and neuraminidase of H5N1 from human, avian, cat and swine hosts. HA and NA together play a pivotal role in molecular adaptation and evolution of HPAI H5N1 virus. Our present work provides understanding of phylogeography of H5N1 virus and possibility of emergence of new zoonotic strains. This work also suggests for adequate surveillance of H5N1 influenza virus to prevent potential risks. This will simplify the development of putative vaccine against H5N1 influenza virus in future.

#### **Biography**

Md. Mahitur Rahaman is a Research Associate of the Molecular Genetics Laboratory at the Mawlana Bhashani Science and Technology University, Bangladesh. He completed his Master's degree in Biotechnology and Genetic Engineering from the same institute. His research interests include molecular and evolutionary pattern analysis of influenza and different respiratory viruses. He is recently engaged in a project titled "Comparative analysis of evolutionary pattern and adaptive mechanism of different genes of H5N1 Influenza Virus in different geographical regions". He is also trying to develop a suitable vaccine against Ebola Virus. He achieved lots of awards from various organizations and recently he has received National Science and Technology Fellowship awarded by the Government of the People's Republic of Bangladesh for his outstanding research findings.

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