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## Cellular microRNAs inhibit influenza A virus replication

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icroRNAs (miRNAs) are a class of noncoding RNAs of lengths ranging from 18 to 123 nucleotides (nt) that play critical roles in a wide variety of biological processes, including cellular proliferation, apoptosis, and tumor formation. There is a growing amount of evidence that miRNAs play critical roles in intricate host-pathogen interaction networks, but the involvement of miRNAs during influenza viral infection or replication is still unclear. Since there is strong evidence that cellular miRNAs can be used by host cells to resist the viral infection, we hypothesized that one or more cellular miRNAs could be involved in the replication of influenza A virus (IAV). To this end, we constructed a new 3'-UTR reporter system to determine whether cellular miRNAs have a direct role in repression of IAV gene expression. Finally, we screened several miRNAs that inhibit the replication of the H1N1 IAV through binding to the conserved region of the PB1 gene. It is surprising that the miRNAs downregulate PB1 expression through mRNA degradation instead of translation repression. This is the first demonstration that cellular miRNAs regulate influenza viral replication by degradation of the viral gene. Our results suggest that cellular miRNAs are important factors in the host's resistance to viral infection and provide a deeper understanding of the mechanisms underlying the defense system of host cells.

## Biography

Dr. Huang received his Ph.D from Princeton University and continued his postdoctoral studies at Princeton University for five years. He is a Principle Investigator of CAS Key Laboratory of Pathogenic Microbiology and Immunology, Institute of Microbiology, Chinese Academy of Sciences. The major research interest of his laboratory is centered on RNA virus including influenza virus. His overall objective is to an understanding of the molecular mechanisms of viral replication and viral pathogenesis. He has published more than 20 papers in reputed journals.