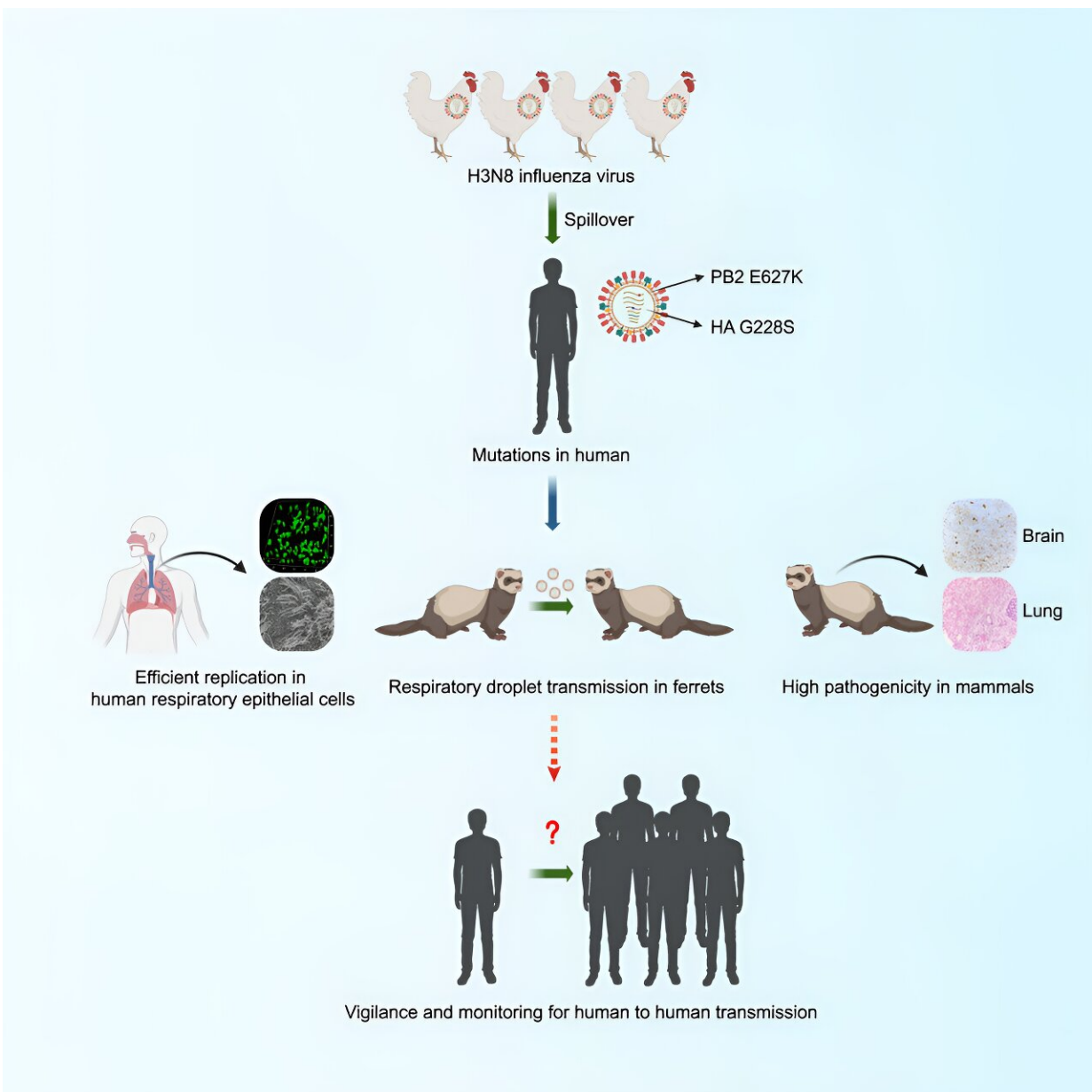


# Bird flu is undergoing changes that could increase the risk of widespread human transmission

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Graphical abstract. Credit: *Cell* (2023). DOI: 10.1016/j.cell.2023.08.011

A new study from researchers in China and Nottingham has discovered that a subtype of avian flu virus, endemic in poultry farms in China, is undergoing mutational changes, which could increase the risk of the disease being passed on to humans.

Researchers also say that the findings raise concerns of a potential epidemic or pandemic in the making and that concerted research is necessary to closely monitor such viruses in poultry and humans.

The results, which have been published in *Cell*, report on the characterization of a human isolate—from a human patient—of the H3N8 avian influenza virus (AIV). Using [laboratory mice](#) and ferrets as models for human infection, the study found that virus has undergone several adaptive changes to cause severe animal infections and making it transmissible by the airborne route between animals.

In humans, the avian H3N8 [virus infection](#) has been found to cause [acute respiratory distress syndrome](#) and can even be fatal. The virus is widespread in chicken flocks; however previously, the features of how it might be transmitted from animals to humans is poorly understood.

"We demonstrate that an avian H3N8 virus isolated from a patient with severe pneumonia replicated efficiently in human bronchial and lung [epithelial cells](#), was extremely harmful in its effects in laboratory mammalian hosts and could be passed on through respiratory droplets," says Professor Kin-Chow Chang, at the University of Nottingham.

"Importantly, we discovered that the virus had acquired human receptor binding preference and amino acid substitution PB2-E627K, which are necessary for airborne transmission. Human populations, even when vaccinated against human H3N2 virus, appear immunologically naïve to emerging mammalian-adapted H3N8 AIVs and could be vulnerable to infection at epidemic or pandemic proportion.

"Acid resistance of influenza virus is also an important barrier for [avian influenza virus](#) to overcome to acquire the adaptability and transmissibility in new mammals or humans. The current novel H3N8 virus has not acquired the acid resistance yet. So, we should pay attention to the change on acid resistance of the novel H3N8 virus," says Professor Jinhua Liu at the China Agricultural University in Beijing.

The study, titled "Airborne transmission of human-isolated avian H3N8 [influenza virus](#) between ferrets" was a collaboration between the University of Nottingham, China Agricultural University in Beijing, the Chinese Academy of Sciences and the Chinese Center for Disease Control and Prevention.

**More information:** Honglei Sun et al, Airborne transmission of human-isolated avian H3N8 influenza virus between ferrets, *Cell* (2023). [DOI: 10.1016/j.cell.2023.08.011](https://doi.org/10.1016/j.cell.2023.08.011)

Provided by University of Nottingham

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