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Findings could shield humans from influenza virus

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A University of Alberta-led research team has discovered an influenza detector gene that could potentially prevent the transmission of the virus to humans.

Katharine Magor, a U of A associate professor of biology, has identified the genetic detector that allows ducks to live, unharmed, as the host of influenza. The duck's virus detector gene, called retinoic acid inducible gene—I, or RIG-I, enables a duck's immune system to contain the virus, which typically spreads from ducks to chickens, where it mutates and can evolve to be a human threat like the H5N1 influenza virus. The first human H5N1 cases were in Hong Kong in 1997. Eighteen people with close contact to chickens became infected and six died.

Magor's research shows chickens do not have a RIG-I gene. A healthy chicken can die within 18 hours after infection, but researchers have successfully transferred the RIG-I gene from ducks to chicken cells. The chicken's defenses against influenza were augmented and RIG-I reduced viral replication by half.

One potential application of this research could affect the worldwide poultry industry by production of an influenza-resistant chicken created by transgenesis.

The work of Katharine Magor, her U of A PhD candidate Megan Barber, and researchers from the United States (Jerry Aldridge and Robert Webster) was published March 22, in the online, early edition of

Proceedings from the National Academy of Sciences.

Provided by University of Alberta