

# Protein & ligand: target search

a comparative genomics approach in investigating host susceptibility to avian influenza

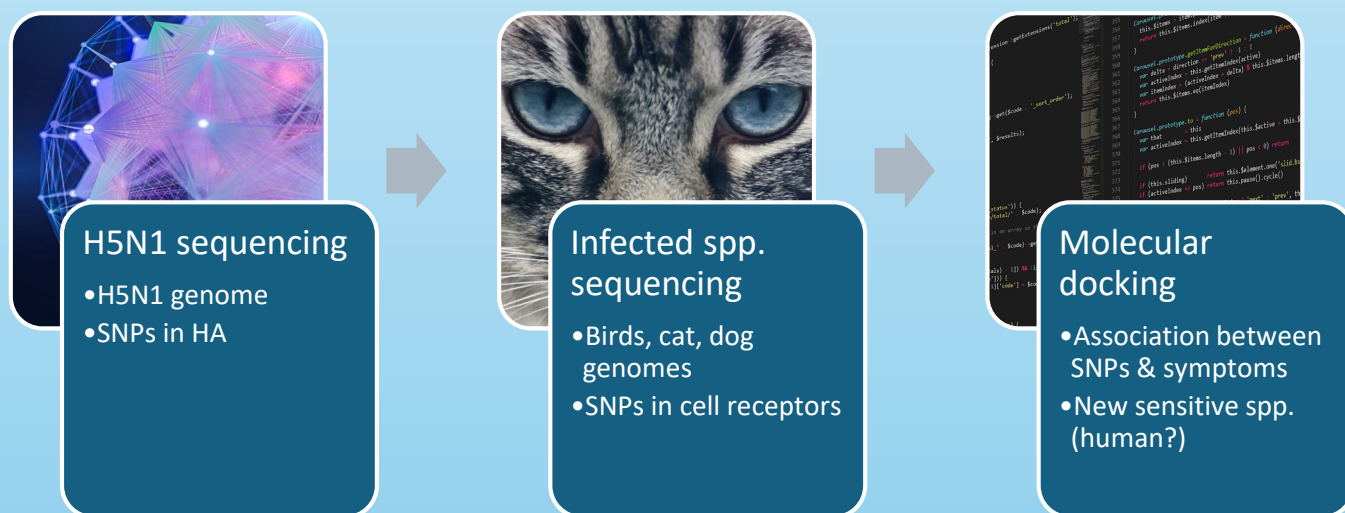
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**Introduction:** Avian influenza outbreaks pose a significant threat to both animal and human health. Understanding the factors influencing host susceptibility is crucial for effective disease management and prevention. In this study, we aim to investigate the unprecedented occurrence of fatal avian influenza infections in domestic cats.

**Objective:** Our study aims to elucidate the molecular mechanisms underlying the increased susceptibility of domestic cats to avian influenza by employing a comparative genomics approach.

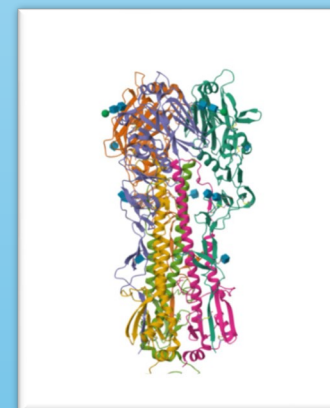
## Methods:

1. Sequencing and Analysis of Viral Genome: The genome of the avian influenza virus strain responsible for the outbreak in domestic cats will be sequenced and compared to known avian influenza strains.
2. Identification of Genetic Variants: Single Nucleotide Polymorphisms (SNPs) within the hemagglutinin gene of the viral genome will be identified.
3. Comparative Genomics of Hosts: Genomic data from cats, birds, and dogs will be analyzed to identify genetic variations in cell surface receptor genes associated with influenza virus binding.
4. Molecular Docking: In silico molecular docking studies will be conducted to predict the binding affinity of mutated hemagglutinin with host cell receptors.

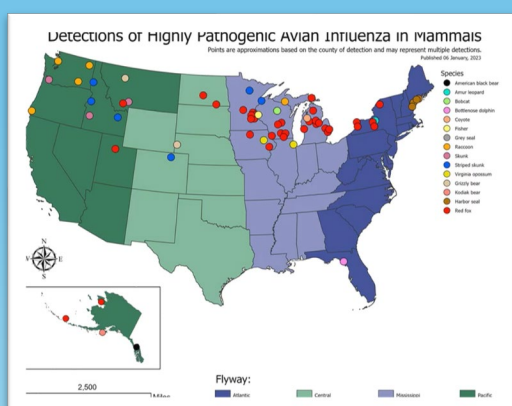


**Expected Results:** We anticipate identifying specific genetic variants in the hemagglutinin gene of the avian influenza virus that may enhance its virulence in domestic cats. Furthermore, we expect to elucidate differences in the genetic makeup of cell surface receptors between cats, birds, and dogs, providing insights into host susceptibility.

**Conclusion:** This study will contribute to our understanding of the molecular determinants of host susceptibility to avian influenza and may have implications for disease surveillance, prevention, and control strategies. Further investigations into the potential zoonotic transmission of the virus will be essential for public health preparedness.

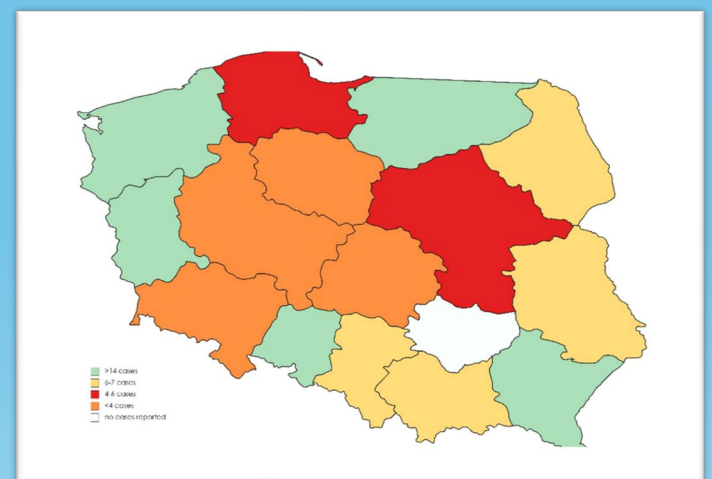


hemagglutinin



Cases in USA

(<https://www.cdc.gov/flu/avianflu/spotlights/2022-2023/h5n1-technical-report.htm>)



Suspected Cases in Poland

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10401914/>)