Amplification in secondary hosts-

from the lens of an influenza virus

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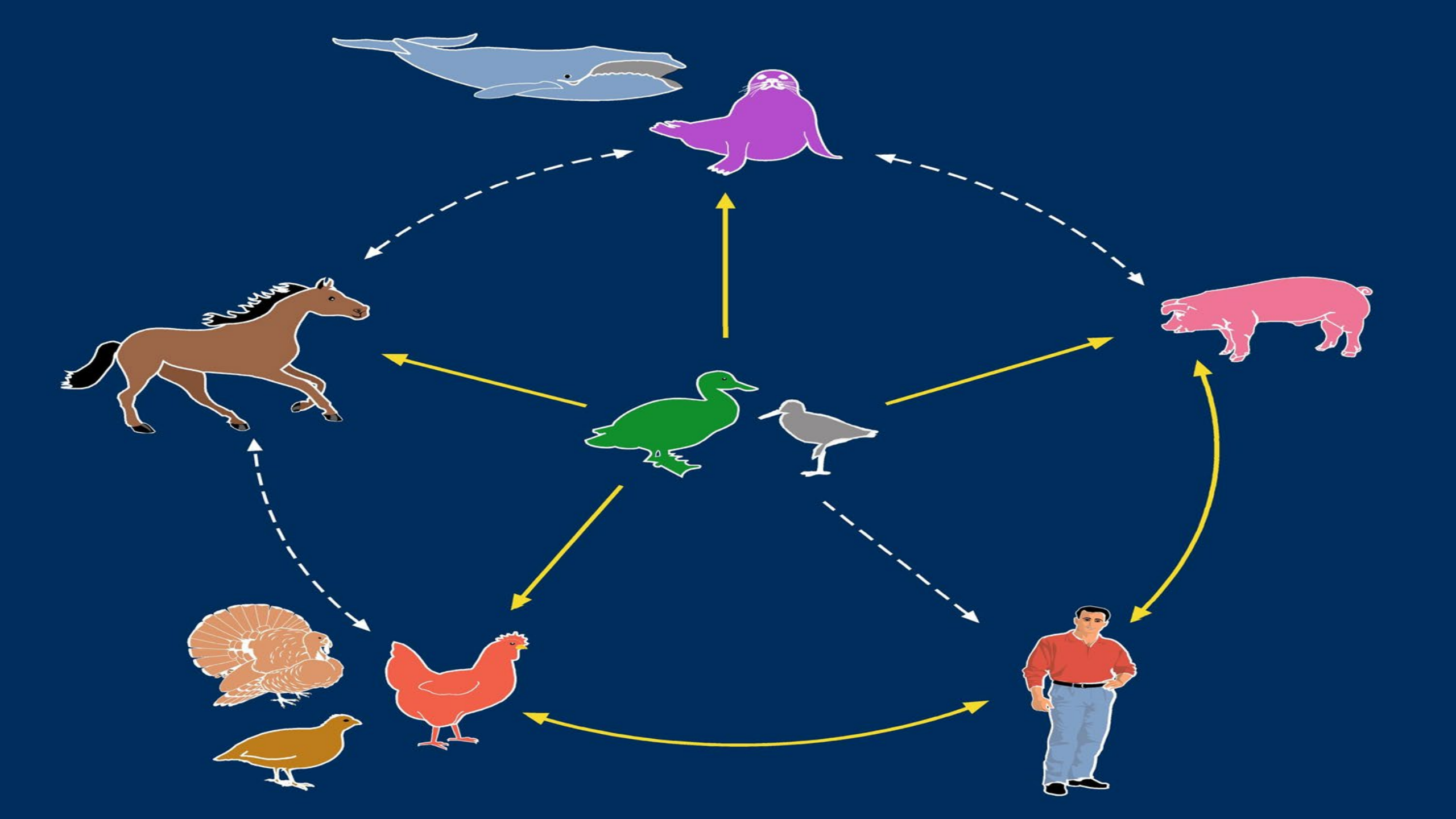
Declaration of interests

- Grant funding by government and philanthropic organizations.



Role of intermediate hosts in patient zero

- Change human exposure to pathogen
- Provide different selective pressure on pathogen
- Provide opportunity for interaction with related pathogens

Exposure

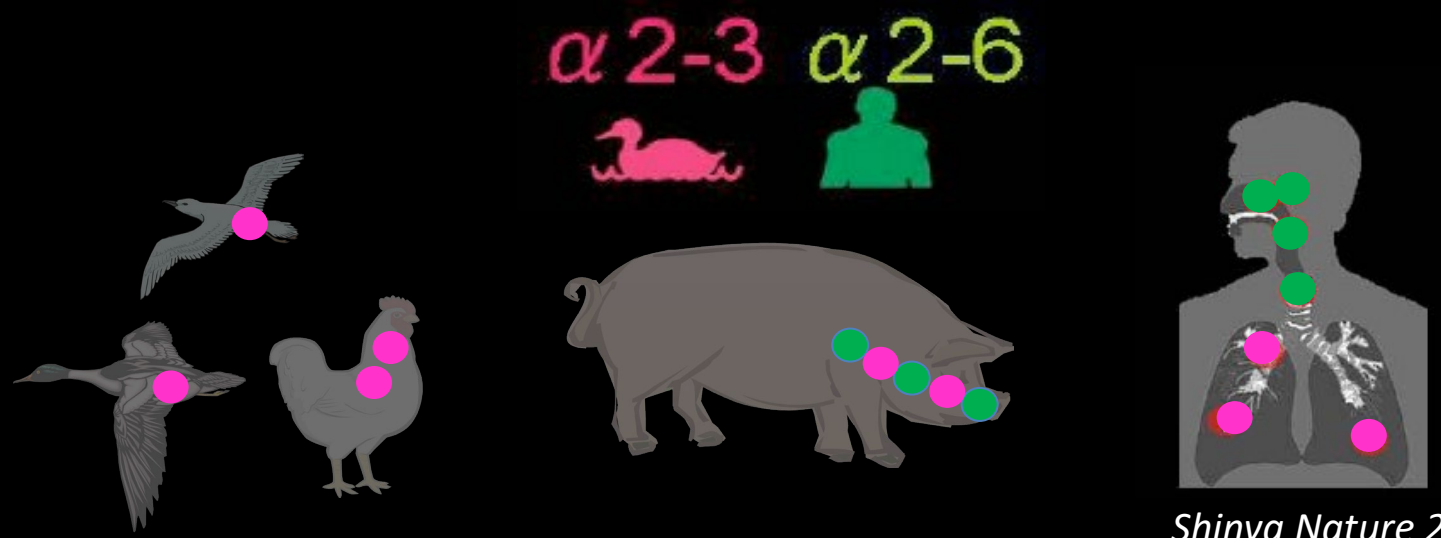
- How many are exposed?
- How often are they exposed?
- Who is exposed?
- How are they exposed (air, fluids, food)?

Different selective pressures

- Transmission to new host can break balance between pathogen and its natural host

- Replication in different host can lead to different selective pressures

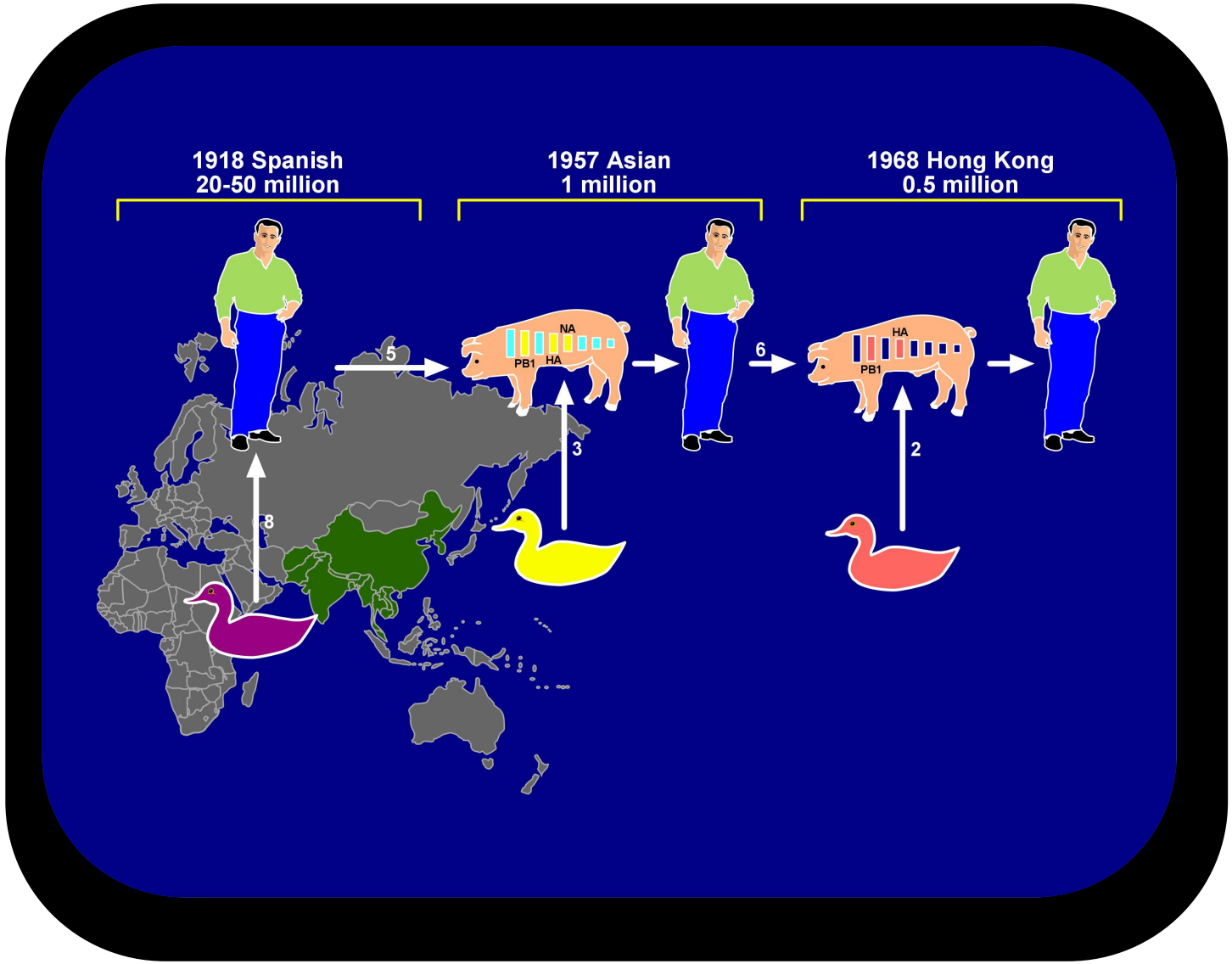
- These pressures may differ between hosts



Shinya Nature 2006

Often the selective pressures of a given intermediate host aren't clear

Reassortment has been a driver of influenza pandemics



Common viruses in different hosts are different

H1
H3

H3
H5
H7
H9
H10

Summary

- The secondary host can be an important conduit to human infection

- To better define risk to patent zero we need
    - to better understand the extent of secondary hosts
    - to better understand the selective pressures of secondary hosts
    - to better understand the flora of secondary hosts
    - to better understand how management of animal's changes risk