

Jockey Club
College of Veterinary Medicine
and Life Sciences
in collaboration with Cornell University

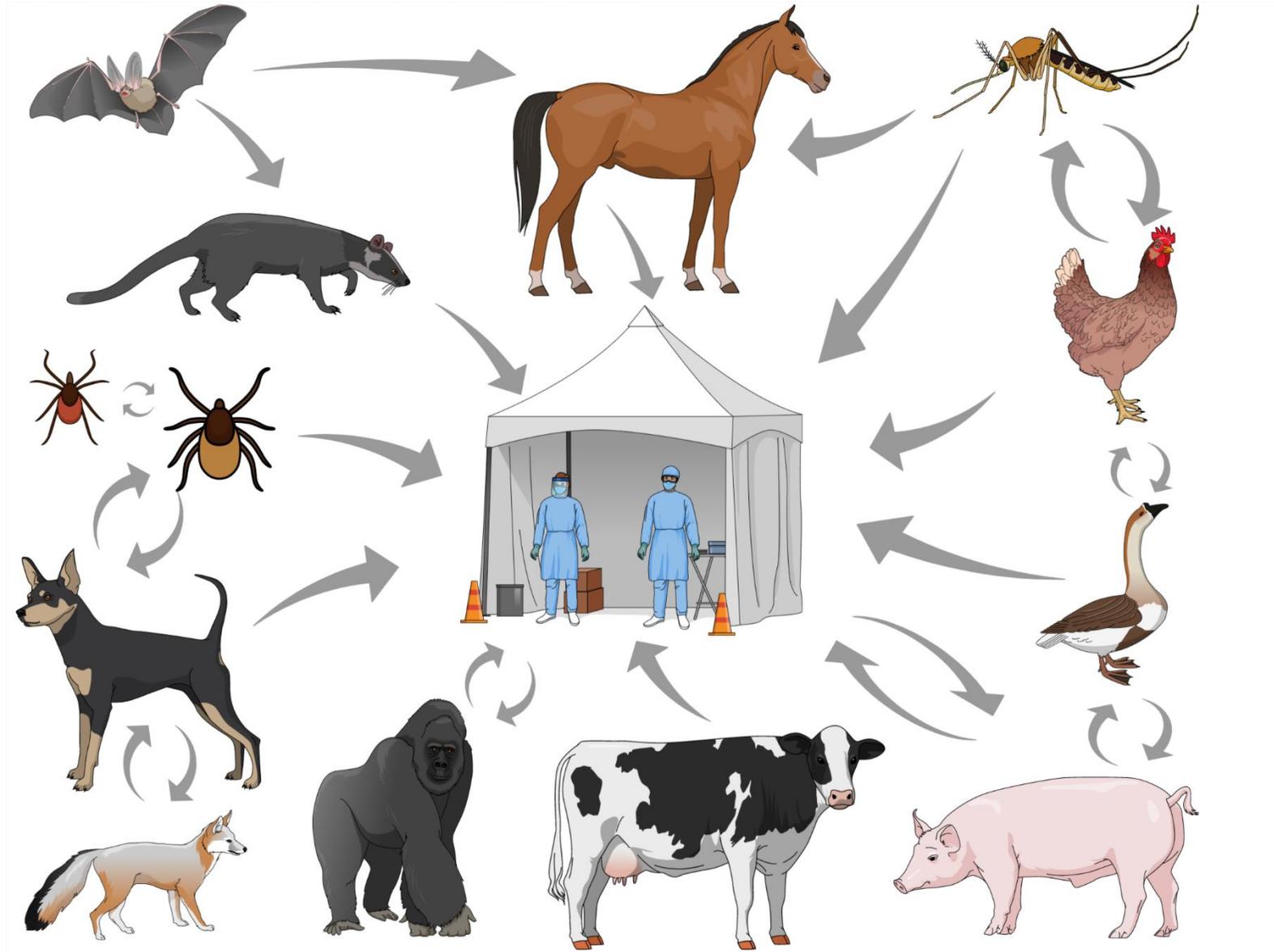
Introduction to zoonotic diseases

GE 2342

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Zoonotic diseases (=zoonoses)

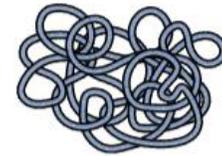
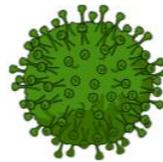
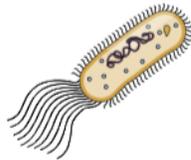
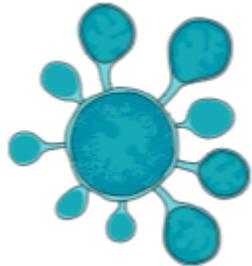
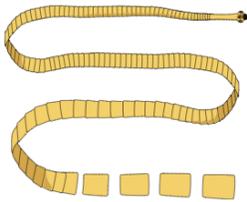


What are zoonotic diseases?

- Animals can sometimes carry infectious agents that can spread to people and cause disease (and the other way around): **zoonotic diseases or zoonoses**

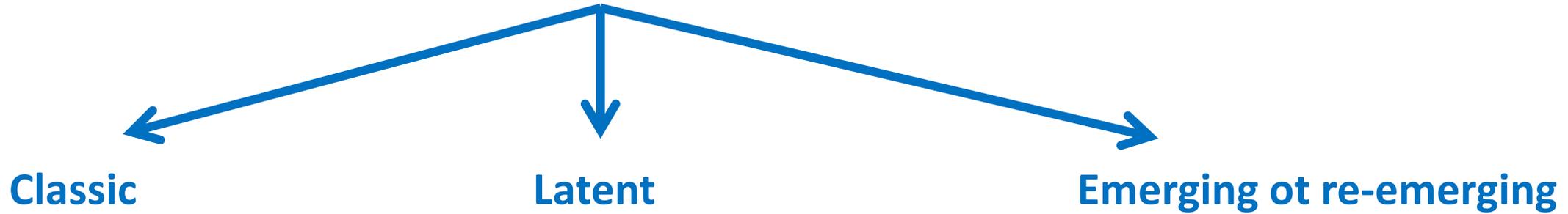
Zoonoses can be caused by:

Parasites, fungi, bacteria, viruses, prions



Zoonoses examples

Importance of zoonoses over history



- Tuberculosis
- Anthrax
- Rabies
- Brucellosis

...

- Salmonellosis
- Campylobacteriosis
- Listeriosis

...

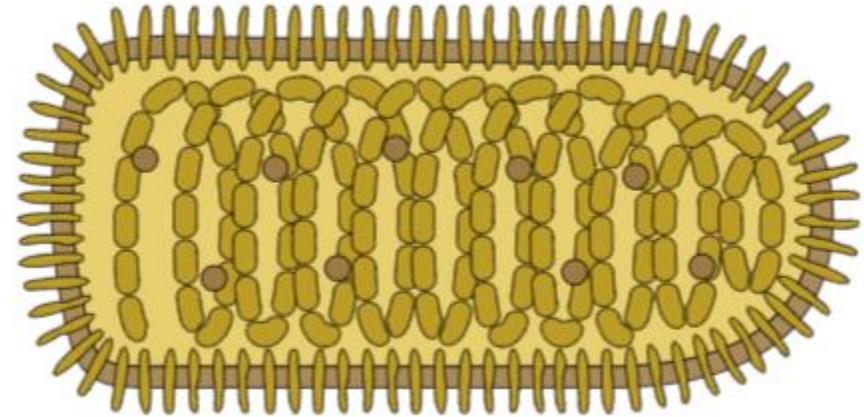
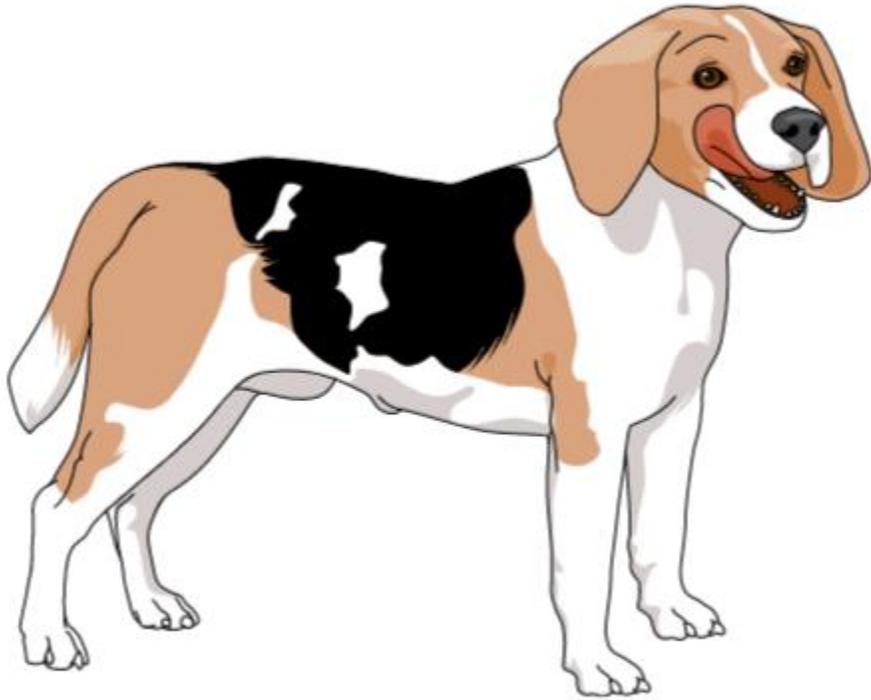
- Ebola
- Avian Influenza
- SARS, MERS

- **COVID-19**

...

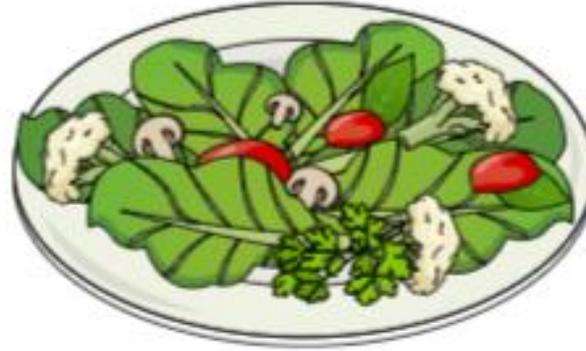
Classic zoonoses

Rabies has shaped the development of state veterinary services

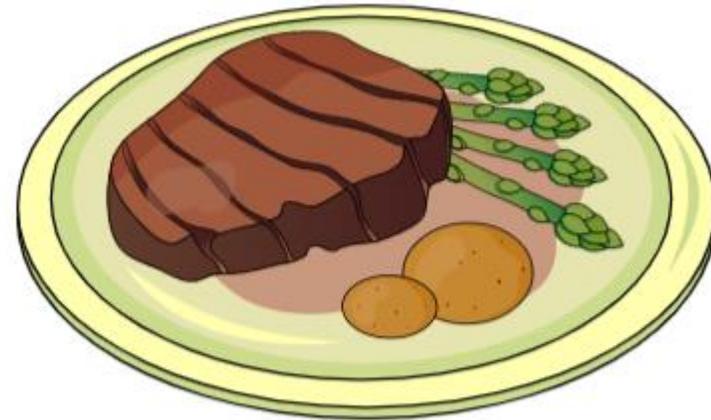


Latent zoonoses are often food-borne

- Salmonellosis
- Campylobacteriosis
- Listeriosis



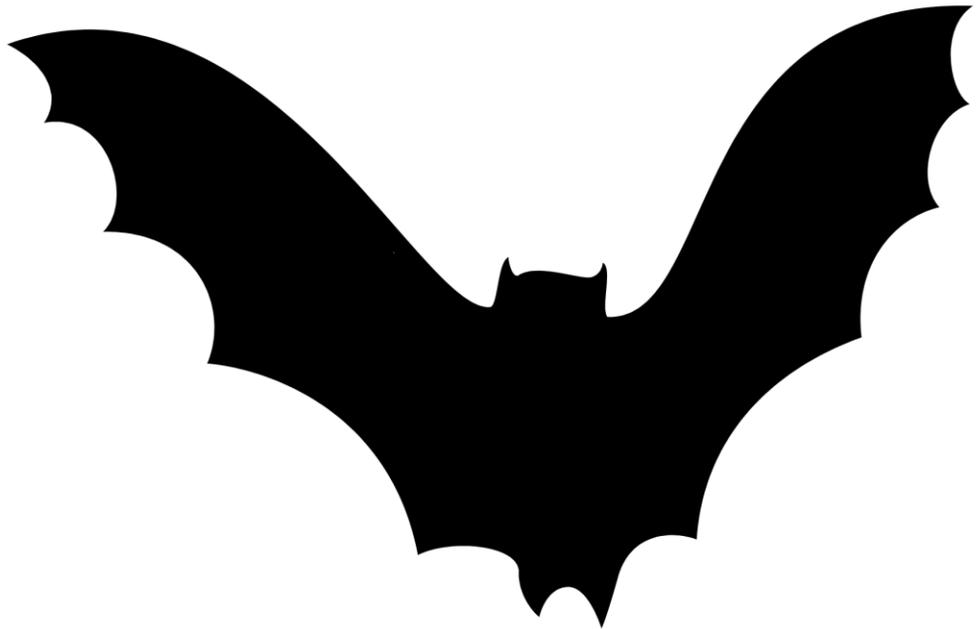
Most cause no symptoms in animals
therefore difficult to diagnose!



The most “dangerous” animal!

Bats have been responsible for many emerging zoonoses outbreaks.

This is why:

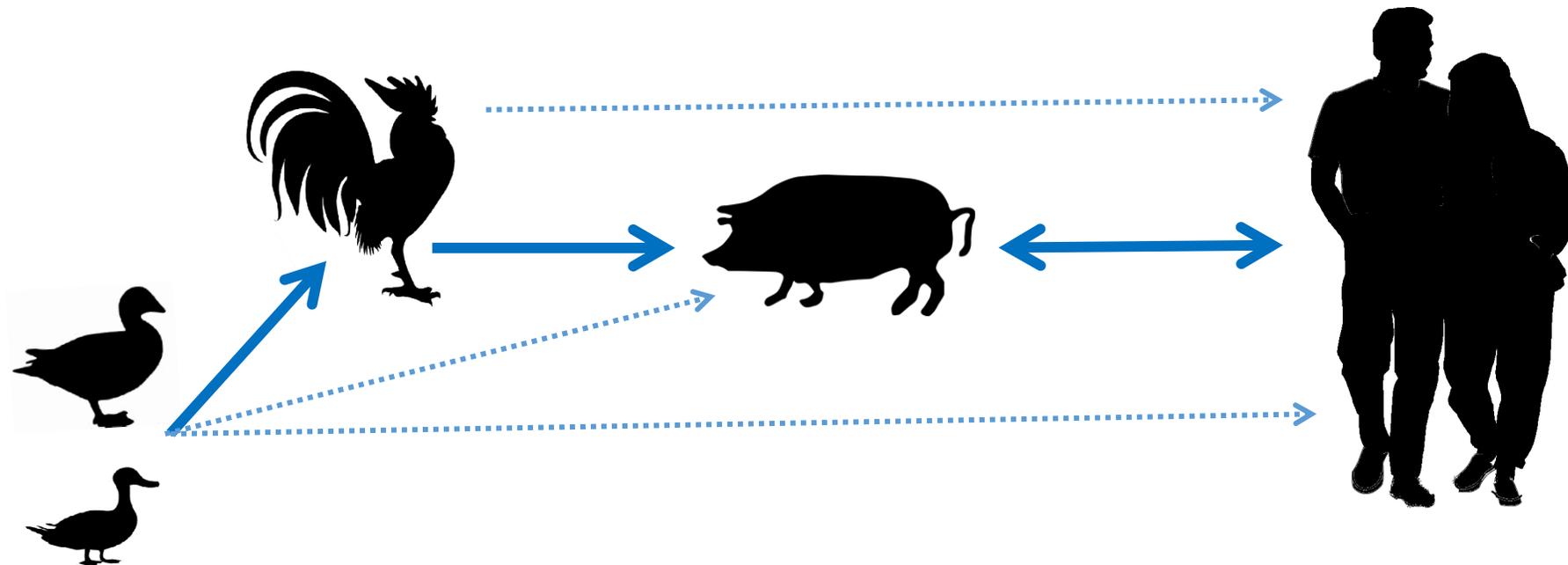


- Extreme species diversity: also means virus diversity
- Very social, huge colonies: facilitates transmission
- Relatively long life expectancy: more time to get infected and transmit
- Can fly...: can spread disease to other colonies that are geographically distant

Examples: Hendra, Nipah, Ebola, Coronaviruses...

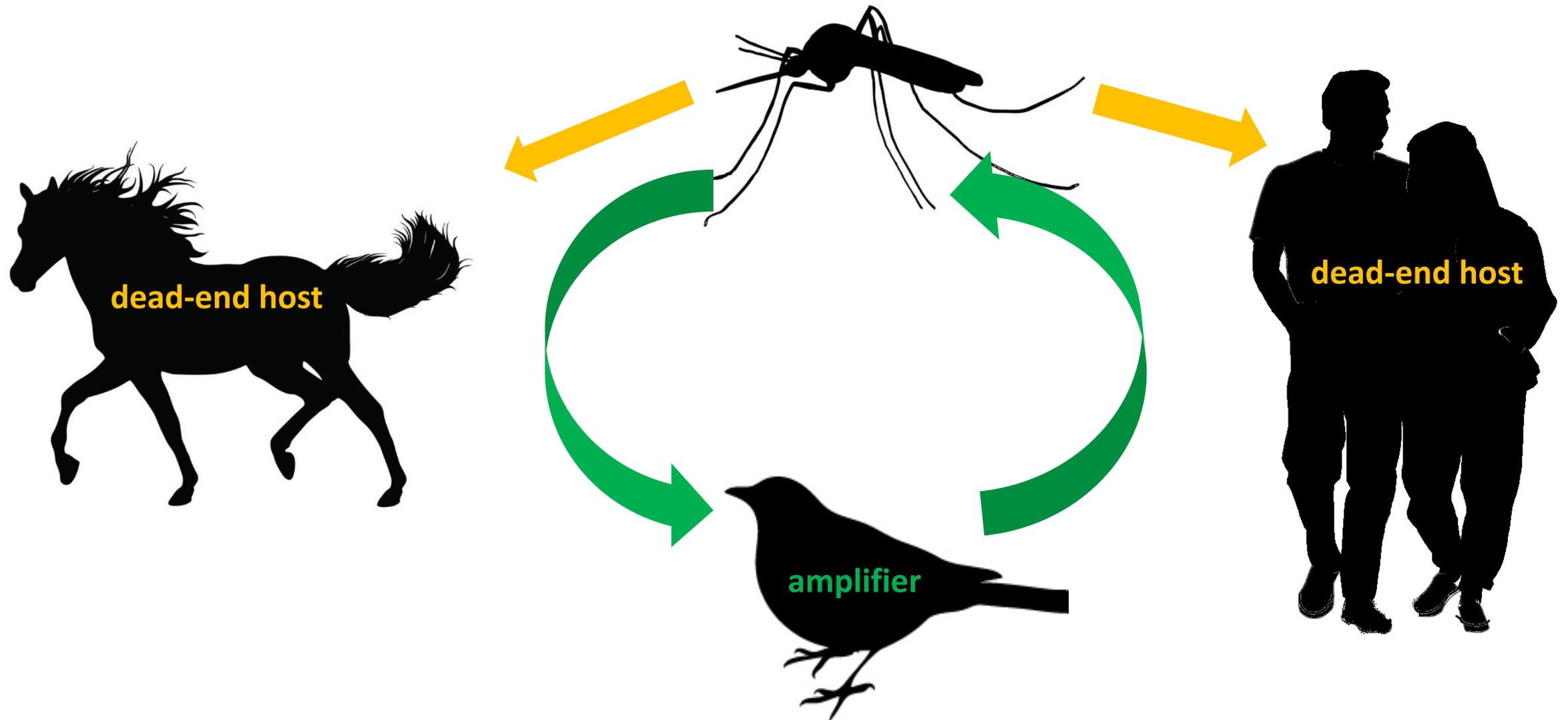
Several host species can be involved in the evolution and transmission of zoonoses: **Example Influenza viruses**

Pigs are «mixing vessels»

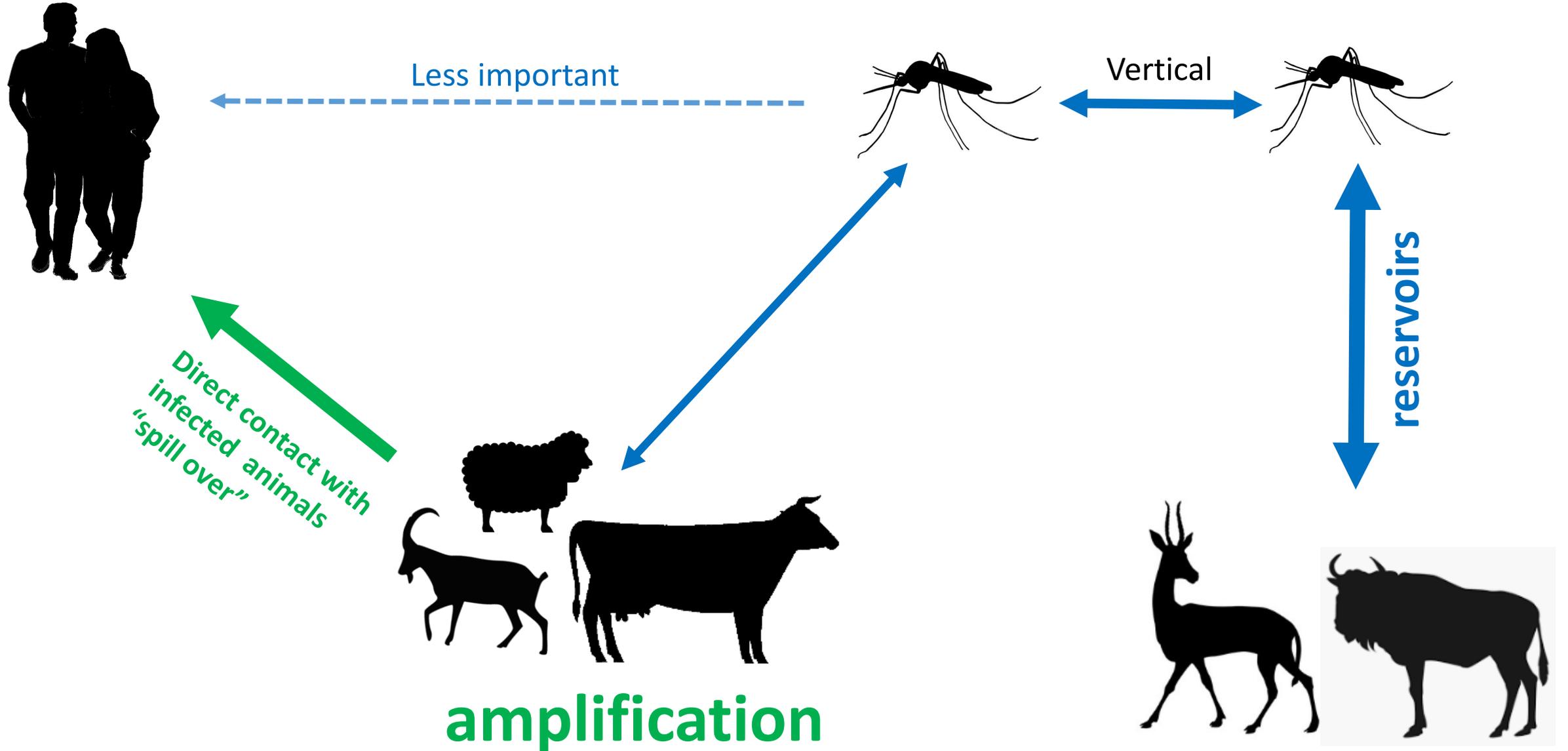


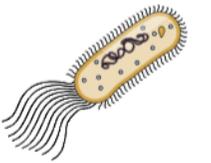
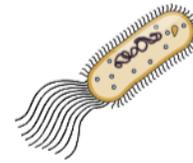
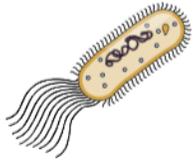
Sometimes the transmission dynamics and host range can be complex:

Example West Nile virus transmission

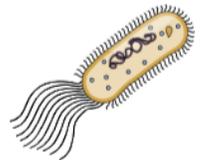
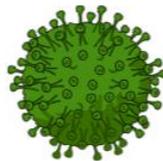
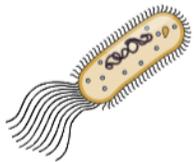
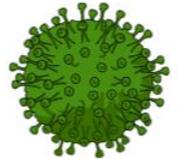


Sometimes the transmission dynamics and host range can be complex: Example Rift Valley Fever virus transmission

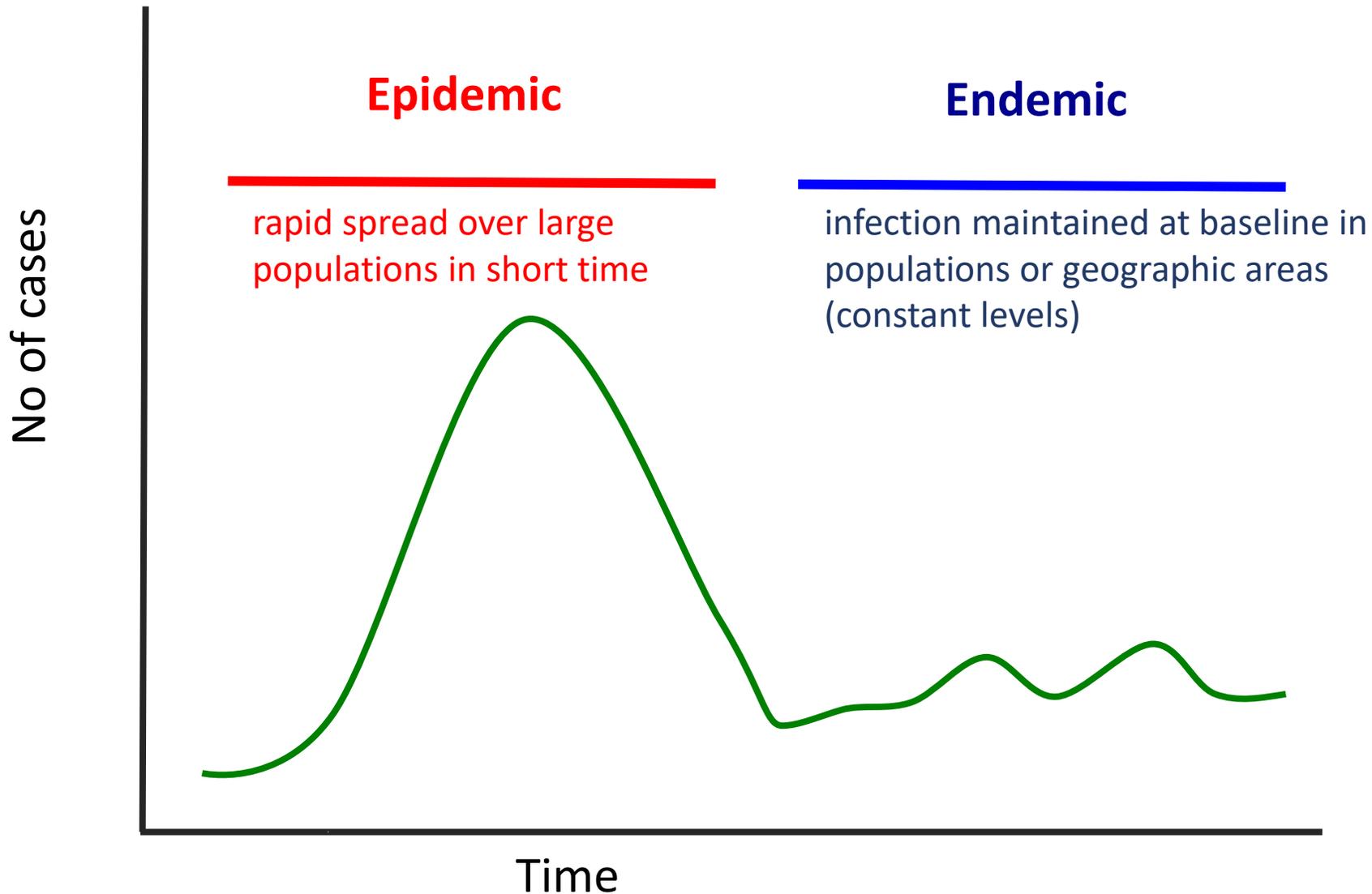




Students will learn to understand and interpret concepts and terms such as...



What is an epidemic, a pandemic...?



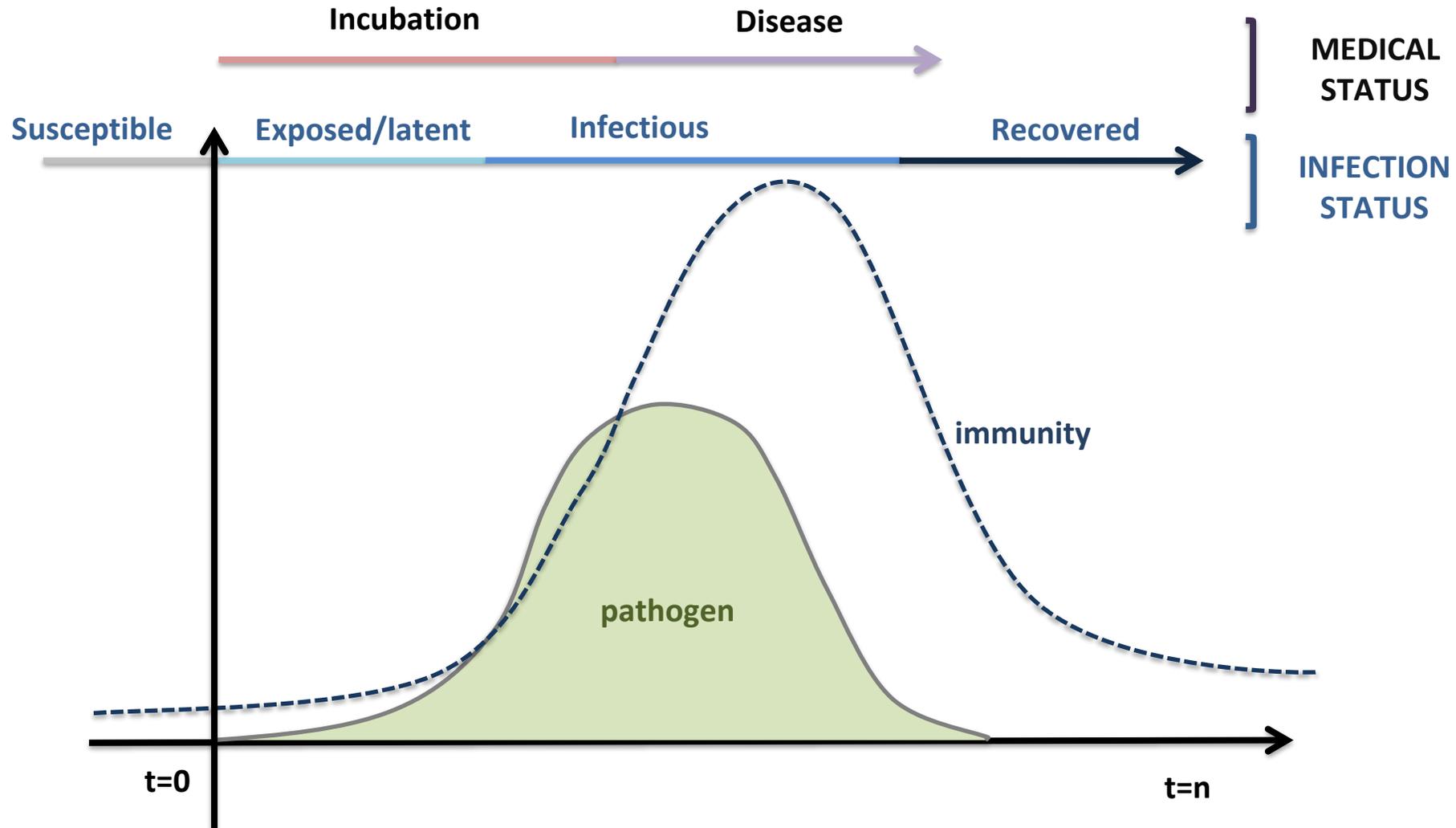
Pandemic

- Epidemic involves several countries/continents
- affect large populations

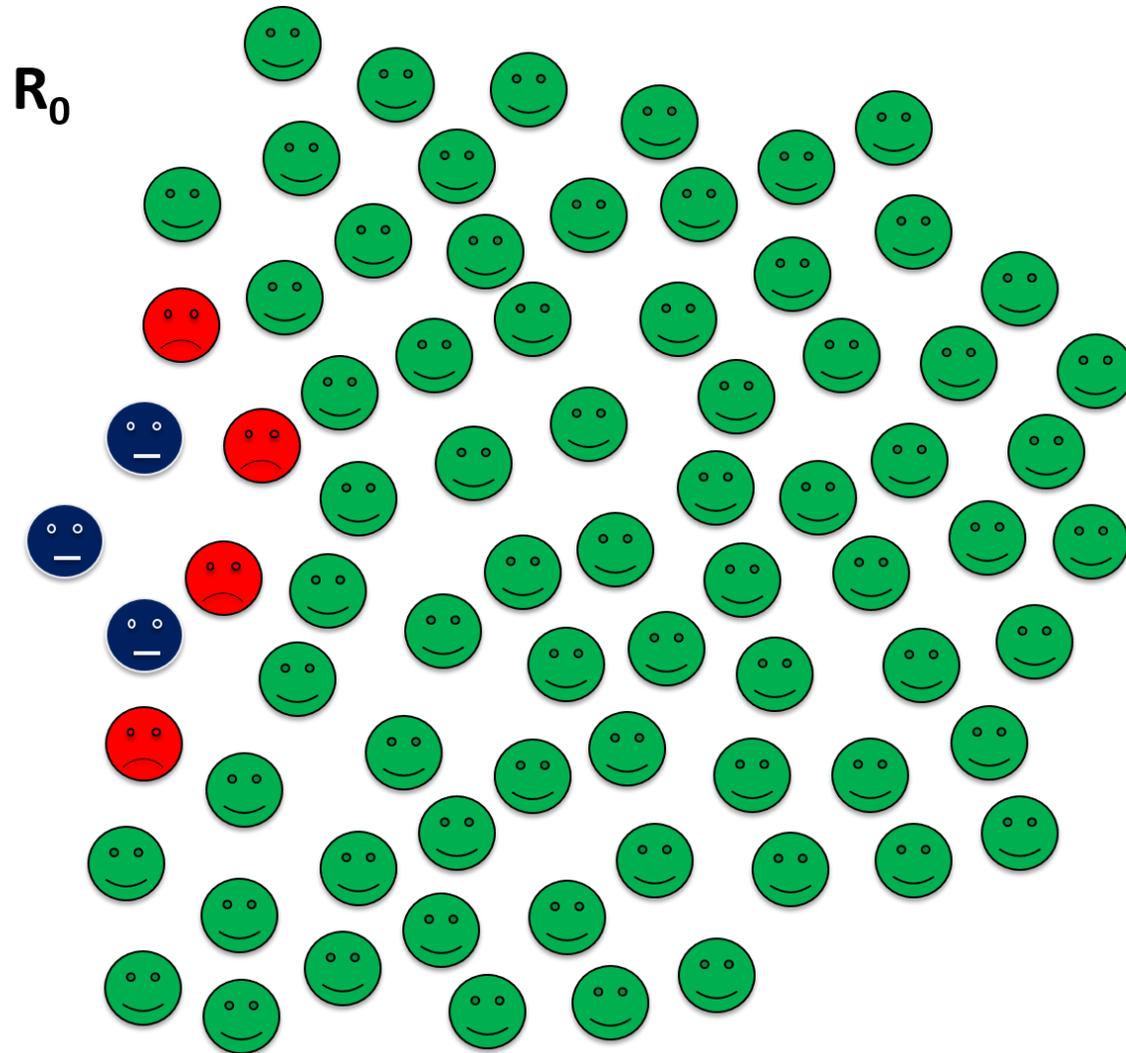
Sporadic

- Occasional cases occurring at irregular intervals

Can someone be infectious during the incubation period?



What is a superspreader? A reservoir? The basic reproductive number (R_0)



$R_0 > 1$

What else will you learn?

- Zoonoses transmitted by livestock, rodents, vectors etc.
- Factors driving the emergence of zoonoses
- Treatment, prevention and control of zoonoses
- Infectious disease dynamics and principles of vaccination
- Surveillance of infectious diseases
- Outbreak investigation
- Bioterrorism



For more Information please contact:

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