sciensano

healthy all life long

BIODIVERSITY IN THE OH PROGRAMME: (UN)HEALTHY NATURE?

Part 1: Nature as a source of viruses and pandemics

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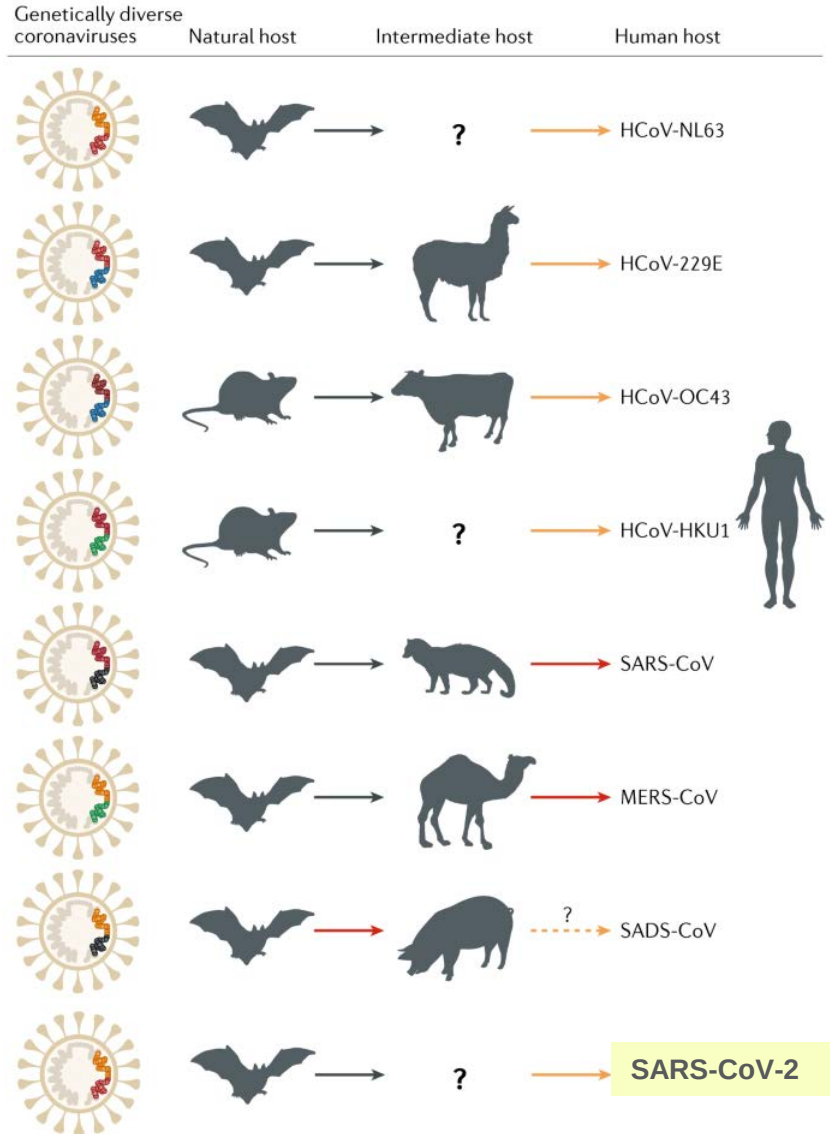
.be

Pandemics occur every 10 to 30 years

1918	Spanish flu	75 mil †
1957	Asian flu	3 mil †
1968	Hong Kong flu	2 mil †
1981	AIDS	37 mil †
2009	Mexican flu	0.4 mil †
2020	COVID-19	15 mil †

New viruses emerge from nature

Coronaviruses



Common cold coronaviruses

New viruses emerge from nature

Ebola, HIV, monkeypox, influenza,….

Surveillance of viruses in nature?

New generation sequencing: sequence all viruses

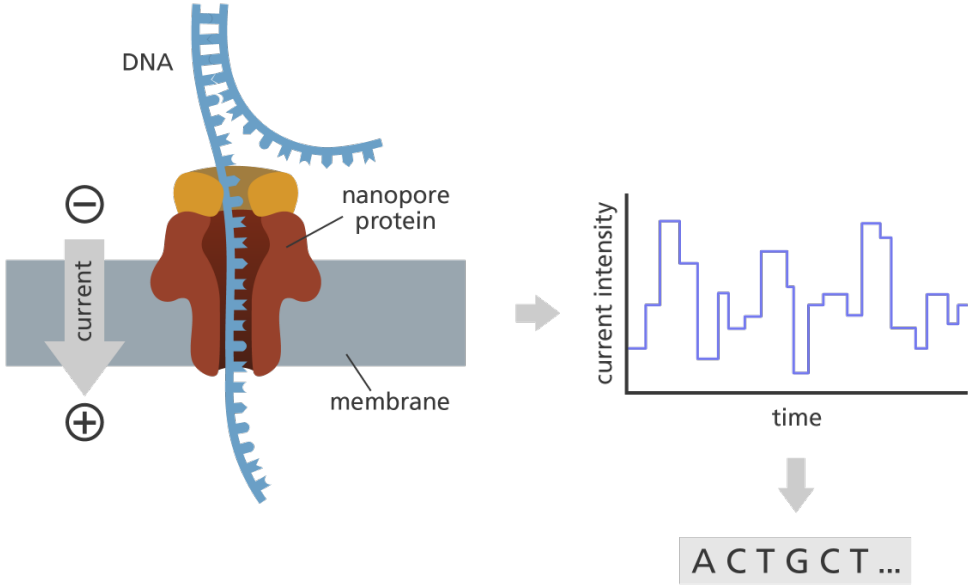
Map the virosphere

Virus discovery becomes like collecting stamps

>1·5 million mammalian and waterfowl viruses

260 viruses known in humans

From: NY Times



Virosphere ≠ risk

Does a new or unknown animal virus pose a (pandemic) risk?

Are humans susceptible?

- Potential to infect human cells?
- Absence of cross-immunity in humans?

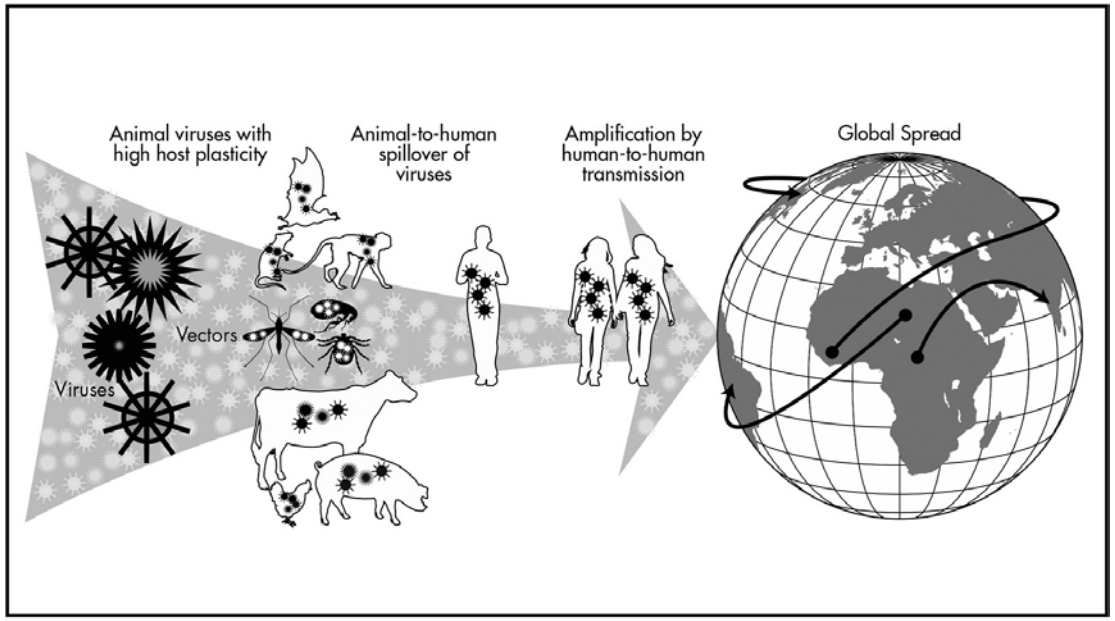
Animal models

- Infection and transmission?
- Disease?
- eg human transgenic mice (human receptors)

Risk-based surveillance: focus on the interface

Spill-overs occur all the time > so what is actually spilling over?

Occupational exposure



Sao Paulo

Ever increasing interface

One Health – Global Health

Brussels

Lyme disease

Key points

Better veterinary regulation and control could have prevented COVID-19

We need:

- One Health approach
- Global Health approach
- Structured surveillance programmes
    - stable financing
    - risk-based priorities

Small changes in behaviour/awareness can reduce the likelihood of spillover and postpone the next pandemic