Why Ranavirus is Horrible and Taking Over the World

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What is Ranavirus?
- Family: Iridoviridae
- A quickly emerging pathogen that is known to infect at least 180 species within 52 families, among fish, reptiles, and amphibians (Duffus et al. 2015)
- At least 6 species

So... what does it do?
- Once the virus has entered the host cells, it takes a matter of hours before replication of the virus begins (Chinchar, 2002)
- Results in cell death via necrosis of apoptosis
- Ultimately leads to organ failure and death of host (Gray et al., 2009)
- Mainly affects larva, tadpoles, and metamorphs


Where is it?... It’s Everywhere

- Found in numerous countries on six continents (because Antarctica has minimal life)

> Duffus et al. 2015

Why is it so HORRIBLE?

- International trade in amphibians
- Multiple means of transmission results in increased infection rates in communities
  - Direct contact
  - Indirect contact
  - Ingestion
- All age classes can be affected
- Potential for mass mortality events
- Interclass transmission (Brenes, 2013)

The Evidence!

Bowdoin professor identifies likely cause of mass frog deaths

Nathaniel Wheeler's paper, published recently in an academic journal, is getting the attention of scientists around the country.

A Maine biologist says a virus caused the death of some 200,000 tadpoles in his backyard pond. This is the largest documented mass natural death of amphibians ever recorded in academic literature.
More evidence

Collapse of Amphibian Communities Due to an Introduced Ranavirus

Price et al., 2014

Just in case you weren’t convinced

First Report of a Ranavirus Associated with Morbidity and Mortality in Farmed Chinese Giant Salamanders (Andrias davidianus)

From February to May 2016, a disease outbreak occurred in farmed Chinese giant salamanders in Nanping County, Shaanxi Province, China. Larval, juvenile and adult salamanders were affected. During the outbreak, approximately 360 of 870 salamanders died. Twelve sick salamanders (larvae, juveniles and three adults) were collected and transferred alive to the Key Laboratory of Animal Disease and Virology, Ministry of Agriculture in Beijing to determine the cause of the disease.

https://www.youtube.com/watch?v=7W0xQ7Atd4#t=138
Start at 1:25
References


Questions?

#RANAVIRUSISTHEWORSTTHINGEVER

Ranaviruses represent a significant threat to the global biodiversity of ectothermic vertebrates.

- Dr. Matt J. Gray