

## The Pathology of *Aeromonas hydrophila*

Curt Holmes

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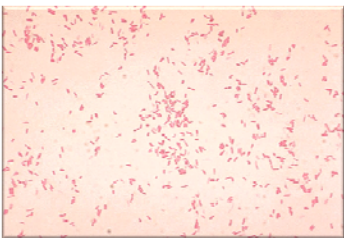
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### Introduction

- + Heterotrophic
- + Gram-negative
- + Polar flagellum
- + Fresh or brackish water
- + Anaerobic or aerobic conditions
- + Resistant to cold/antibiotics



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### Documented Amphibian Decline

- + Bradford 1991
- + Mountain yellow-legged frog (*Rana muscosa*)
- + Kings Canyon National Park
- + 1978 – early 1979: ~790 frogs
- + End of August 1979: ~20 frogs
- + Red-leg disease

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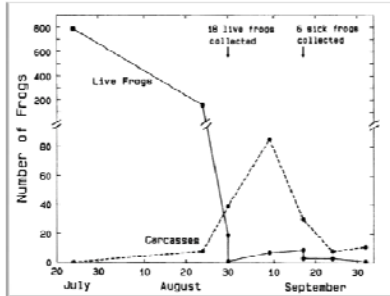
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Figure



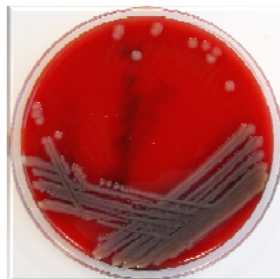
## Documented Amphibian Decline

- + Nyman 1986
- + Wood frog (*Rana sylvatica*)
- + Within 2 weeks: 5400 larvae extirpated
- + "*A. hydrophila* is much more widespread than published reports to date would indicate"



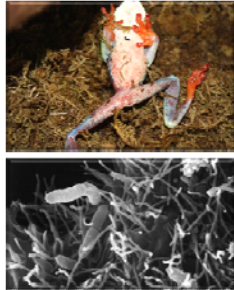
## Infection and Spread

- + Opportunistic pathogen
- + Present in many aquatic environments
- + Infects and transferred by:
  - + Amphibians
  - + Reptiles
  - + Humans
  - + Birds
  - + Fish



## Control

- + Control of *A. hydrophila* is crucial
- + Red-leg syndrome
  - + Antibiotics vs. wild
- + High mortality rate
- + Biggest problem for amphibians:
  - + Mortality rate
  - + Multiple modes of transmission
  - + Quick contact spread
  - + Affects fitness
  - + Affects all age classes




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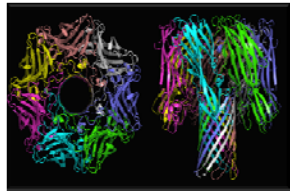
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## Video

- + Pore-forming toxins (PFT)
- + HeLa cells used
- + 50 ng/ml of the purified pore-forming toxin aerolysin from *A. hydrophila*
- + Cell blebbing
- + <http://www.youtube.com/watch?v=1KGBesCc7cQ>




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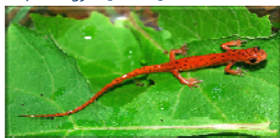
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## References

- + Bradford, David F. "Mass mortality and extinction in a high-elevation population of *Rana muscosa*." *Journal of Herpetology* (1991): 174-177.
- + Nyman, Stephen. "Mass mortality in larval *Rana sylvatica* attributable to the bacterium, *Aeromonas hydrophila*." *Journal of Herpetology* (1986): 196-201.




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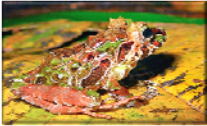
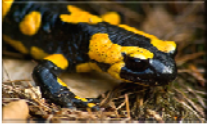
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Questions?



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