

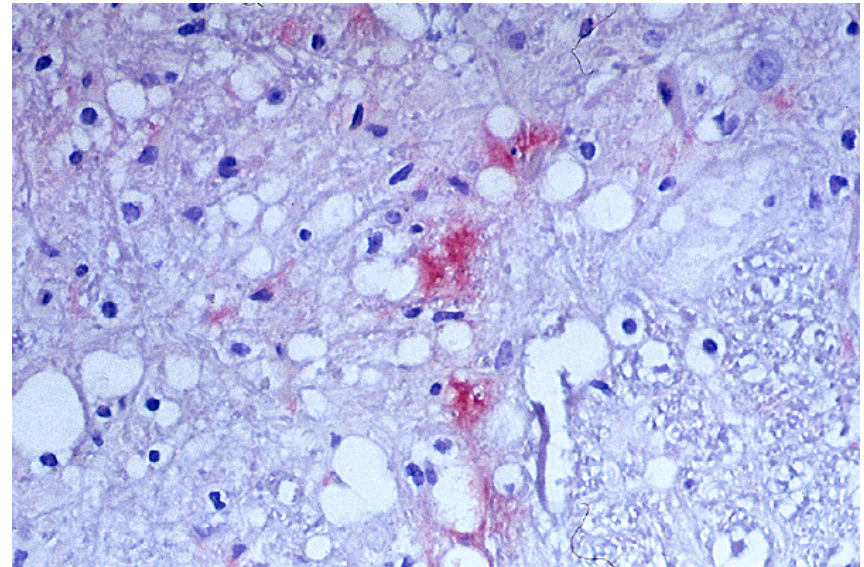
# The History of Chronic Wasting Disease

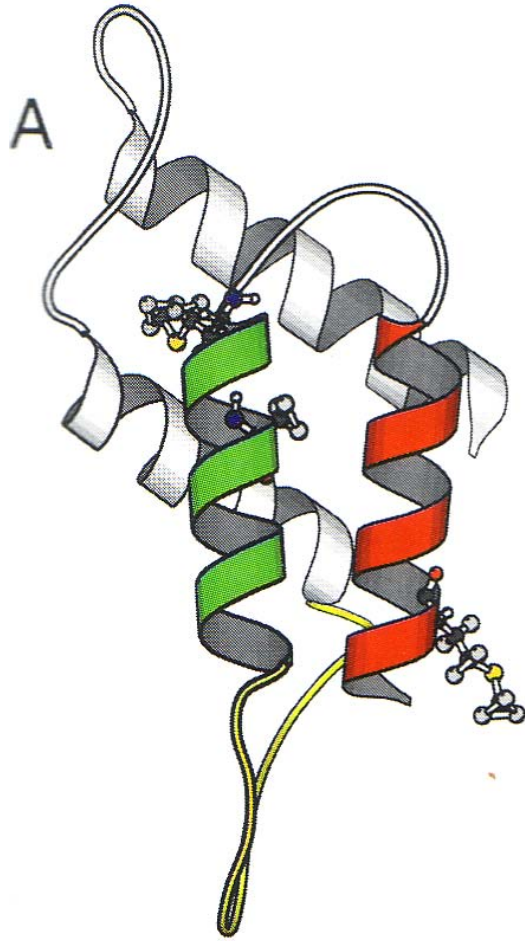
Dr. Trent Bollinger, CCWHC

One World, One Health Symposium  
Sept. 29, 2004

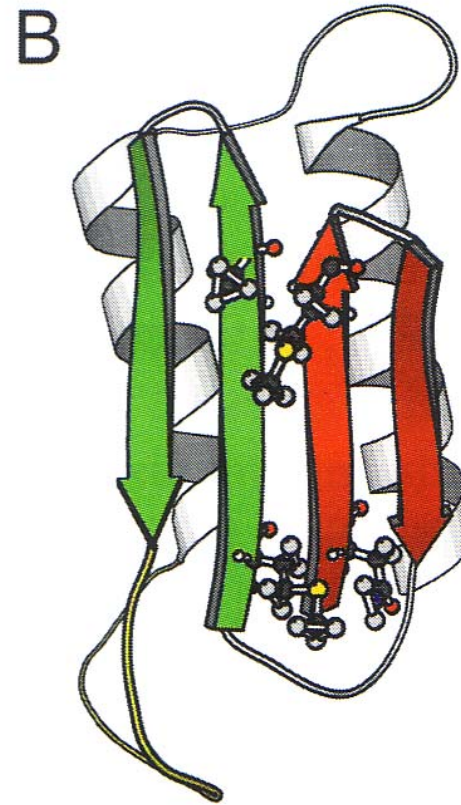
# Spongiform encephalopathies

- CWD is classified as a TSEs similar to scrapie, Creutzfeldt-Jakob disease (CJD), kuru, transmissible mink encephalopathy, bovine spongiform encephalopathy (BSE)





PrP<sup>C</sup>



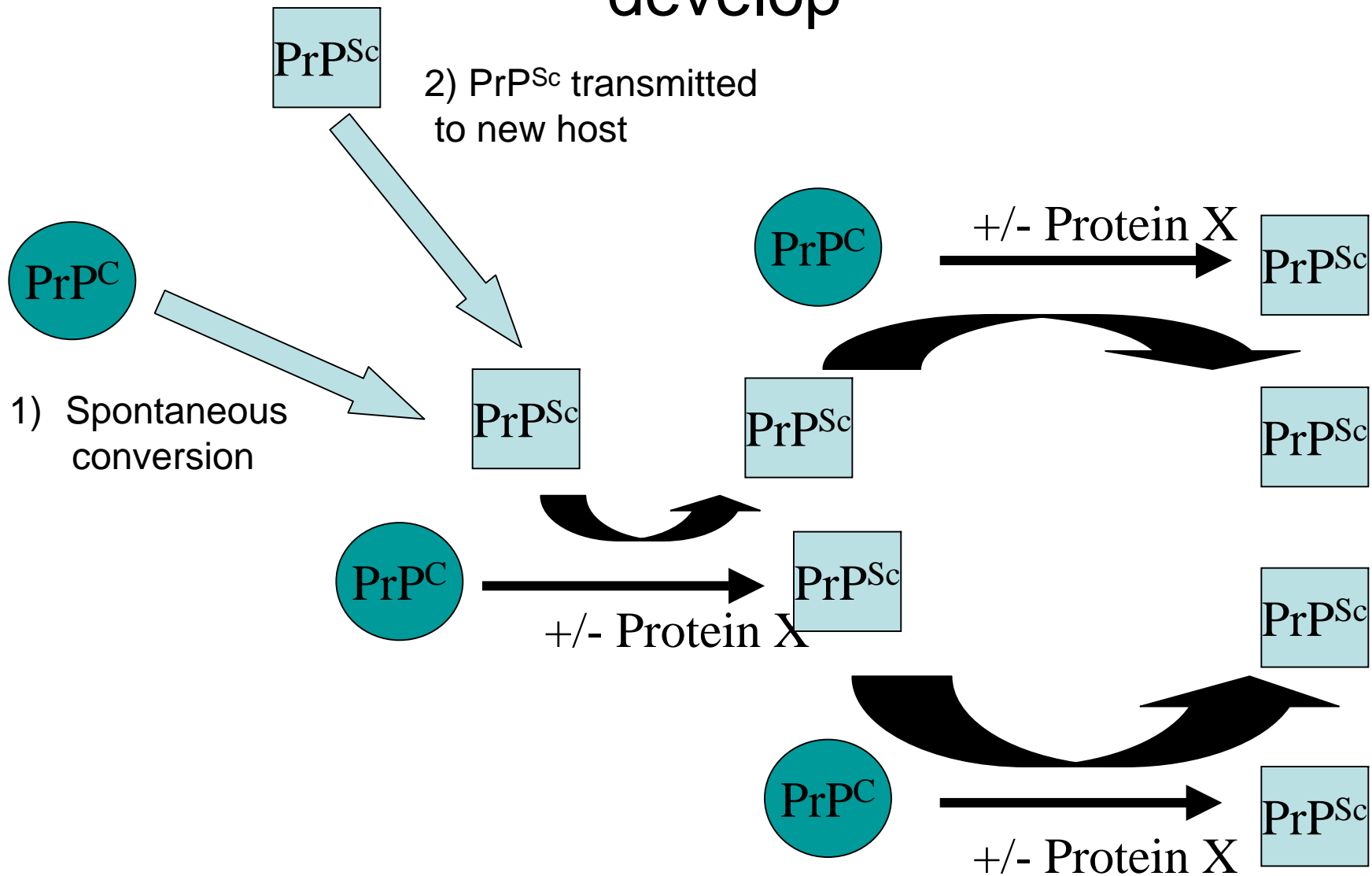
PrP<sup>Sc</sup>

Prusiner, S. B. 1999. An introduction to prion biology and diseases. Pages 1-66 in S. B. Prusiner, editor. Prion Biology and Diseases. Cold Springs Harbor Laboratory Press, Cold Springs Harbor, New York.

Prion: protein infectious agent

Composed of PrP<sup>Sc</sup>

# Two ways in which spongiform encephalopathies develop



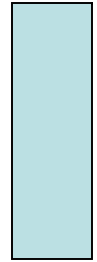
PrP<sup>Sc</sup>



PrP<sup>Sc</sup>

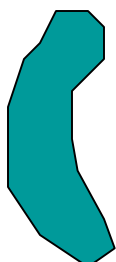
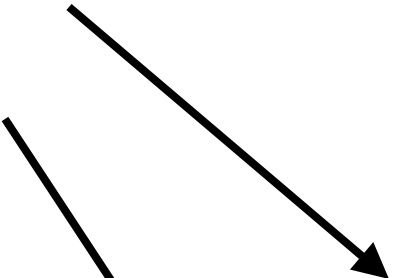


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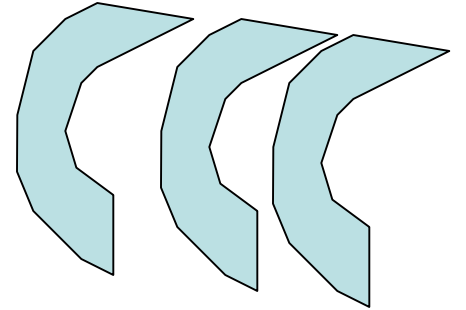
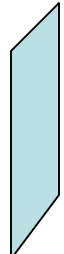


“Species barrier”

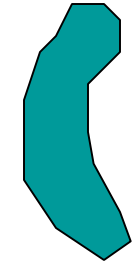
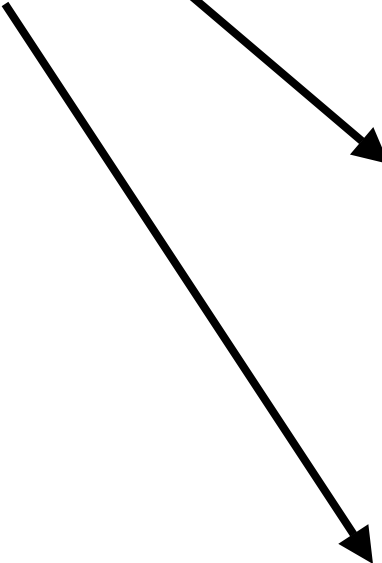
Species/Individual A



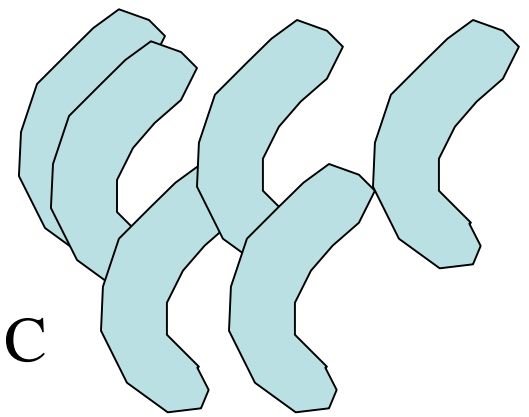
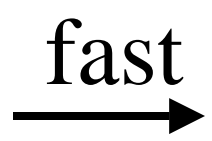
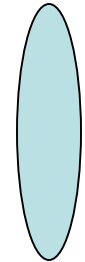
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Species/Individual B



+



Species/Individual C

Sheep Natural Scrapie

13 months

Mice 1st passage

6 m

Mice 2nd passage

4 m

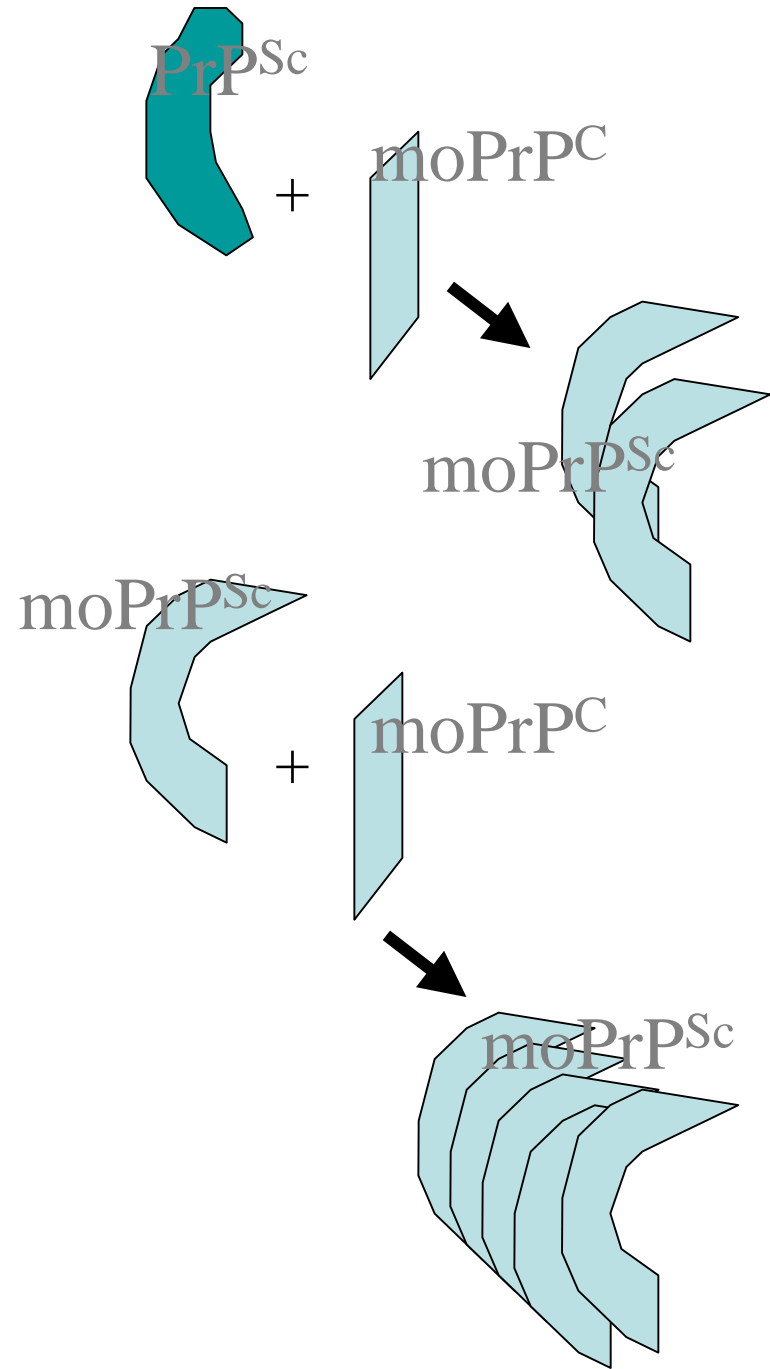
Mice 3rd passage

4.5 m

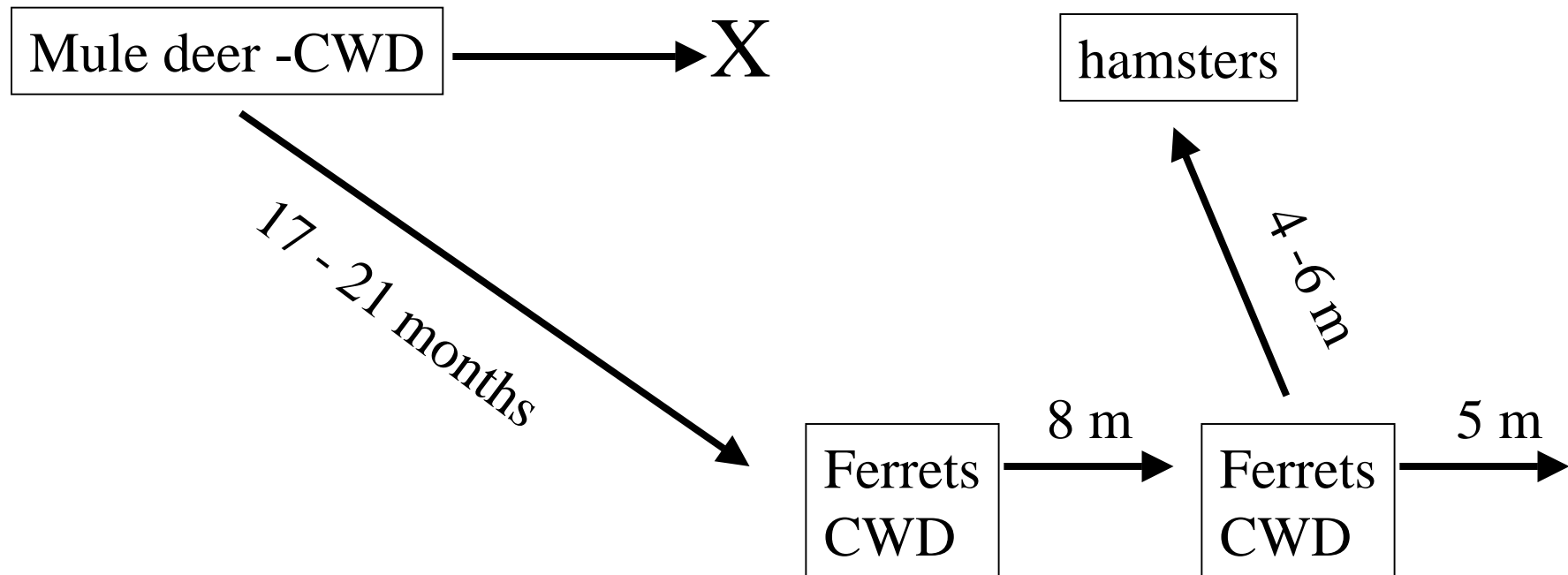
Mice 4th passage

5 m

Mice 5th passage

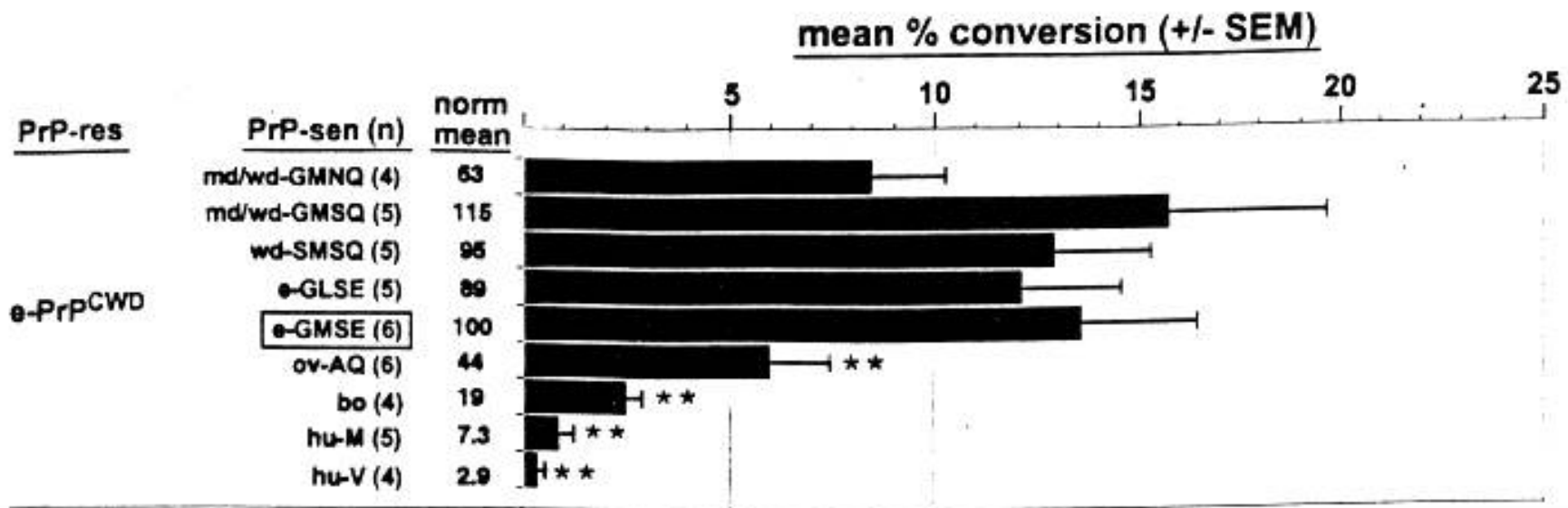


Types of species susceptible to a prion isolate can be altered by transmission of prions to other species

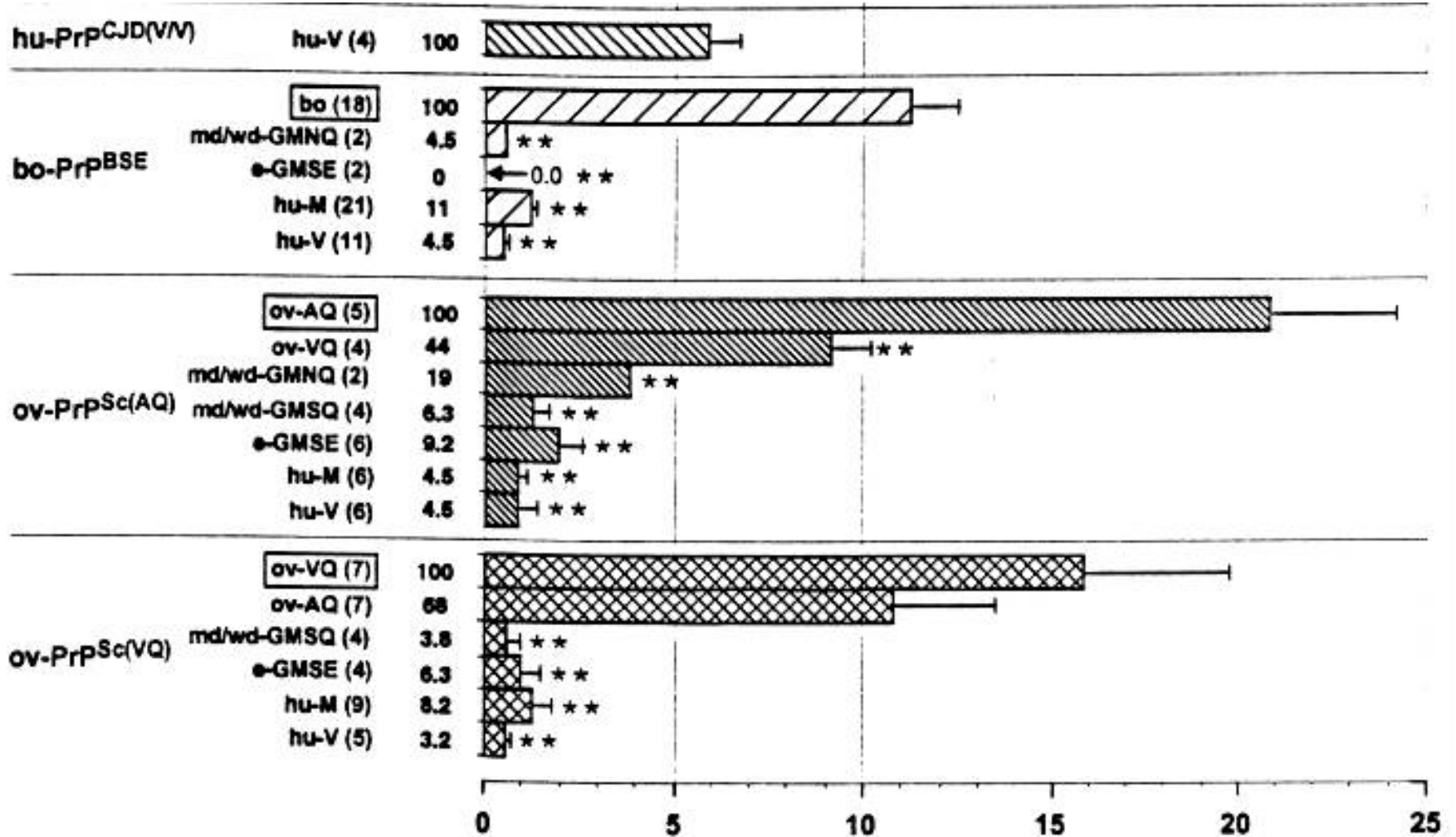


Bartz, et al, 1998





Raymond *et al*, 2000 The EMBO Journal Vol 19 (17) p.4425



Raymond *et al*, 2000 The EMBO Journal Vol 19 (17) p.4425

# Methods of transmission

- Direct inoculation
  - Experimental exposure
  - Iatrogenic exposure of humans to CJD
  - Vaccine for louping ill in sheep contaminated with scrapie prion
- Ingestion
  - Experimental exposure
  - BSE: sheep scrapie to cattle and then cattle to cattle
  - Kuru in humans
  - vCJD in humans
- Direct animal to animal spread
  - Scrapie in sheep
  - CWD in deer and elk

# Chronic wasting disease

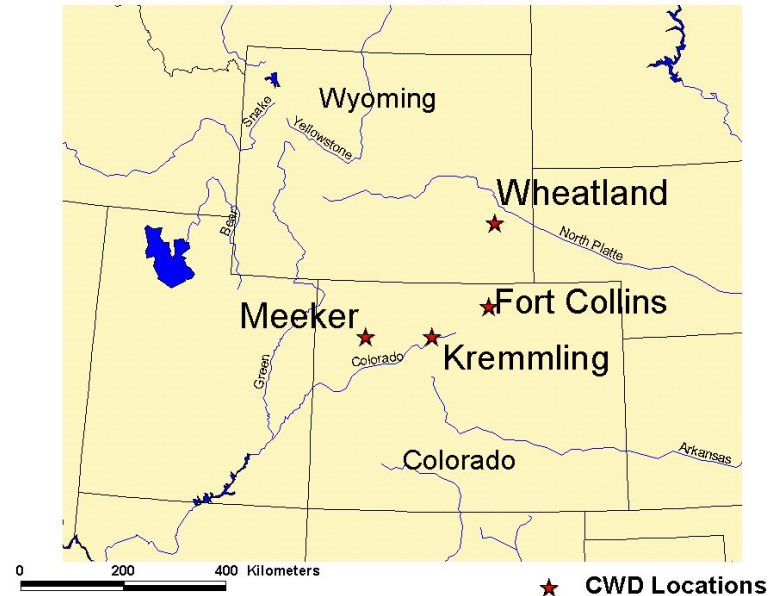
- Disease of mule deer, black-tailed deer, white-tailed deer and elk



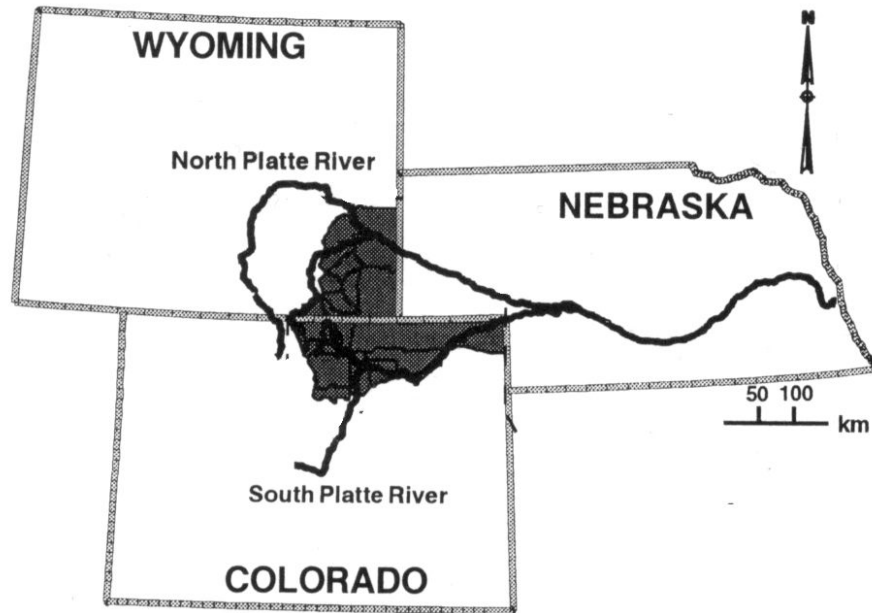
# History of CWD

- First recognized as a clinical entity in the late 1960s in captive mule deer and elk in Colorado and Wyoming; confirmed as a TSE in late 1970s

Locations Where CWD was First Diagnosed in Captive Cervids, 1967 -1979.



## CWD-endemic portions of Colorado and Wyoming, USA



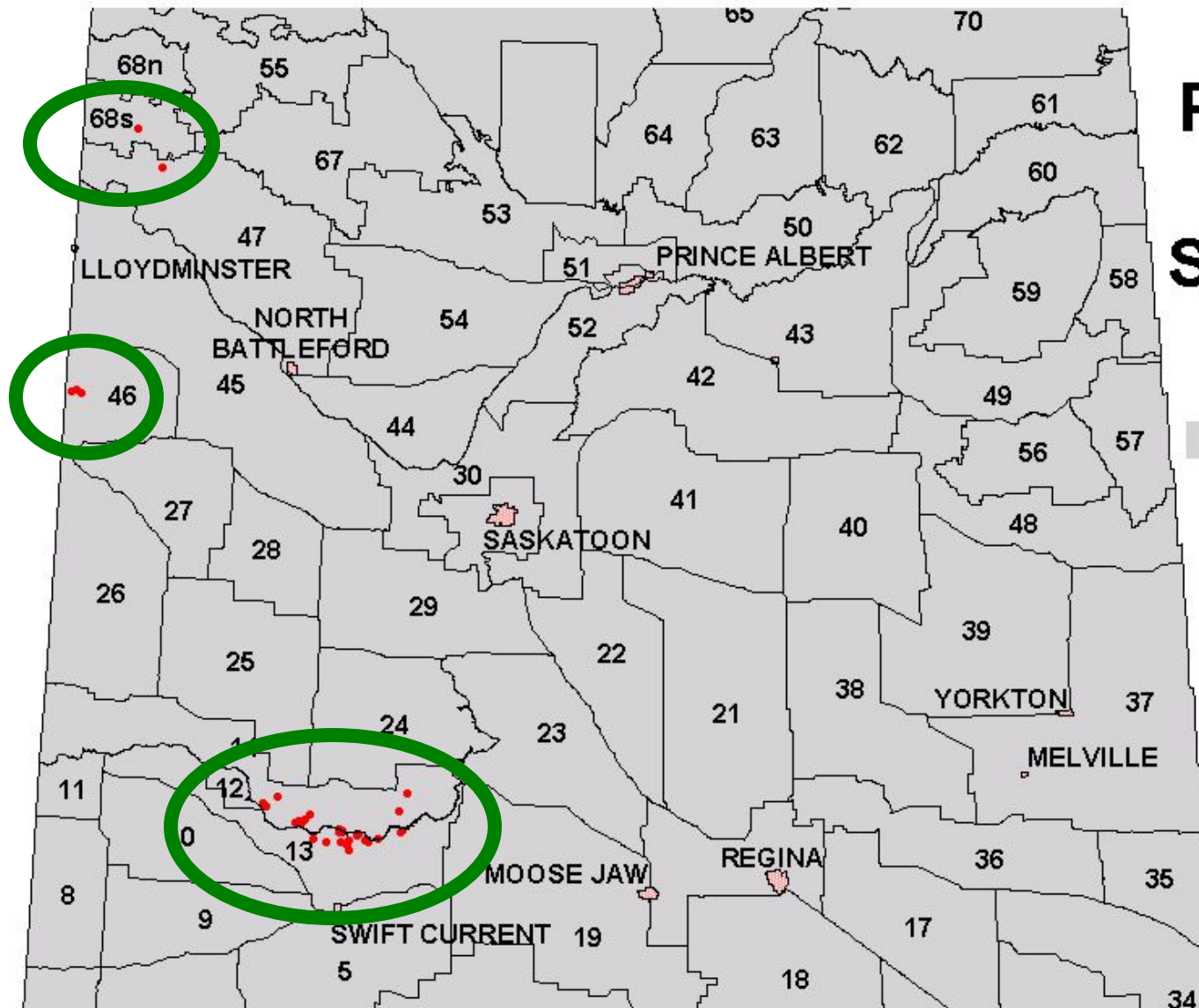
- Estimated overall prevalence in endemic areas of Colorado and Wyoming is 4.9% in mule deer, 2.1 % in white-tailed deer and 0.5% in elk.

Miller et al, 2000

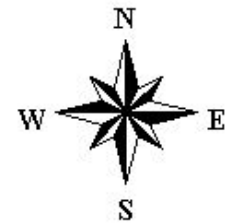
# CWD Index Cases in Saskatchewan



# CWD Positive Deer in Saskatchewan



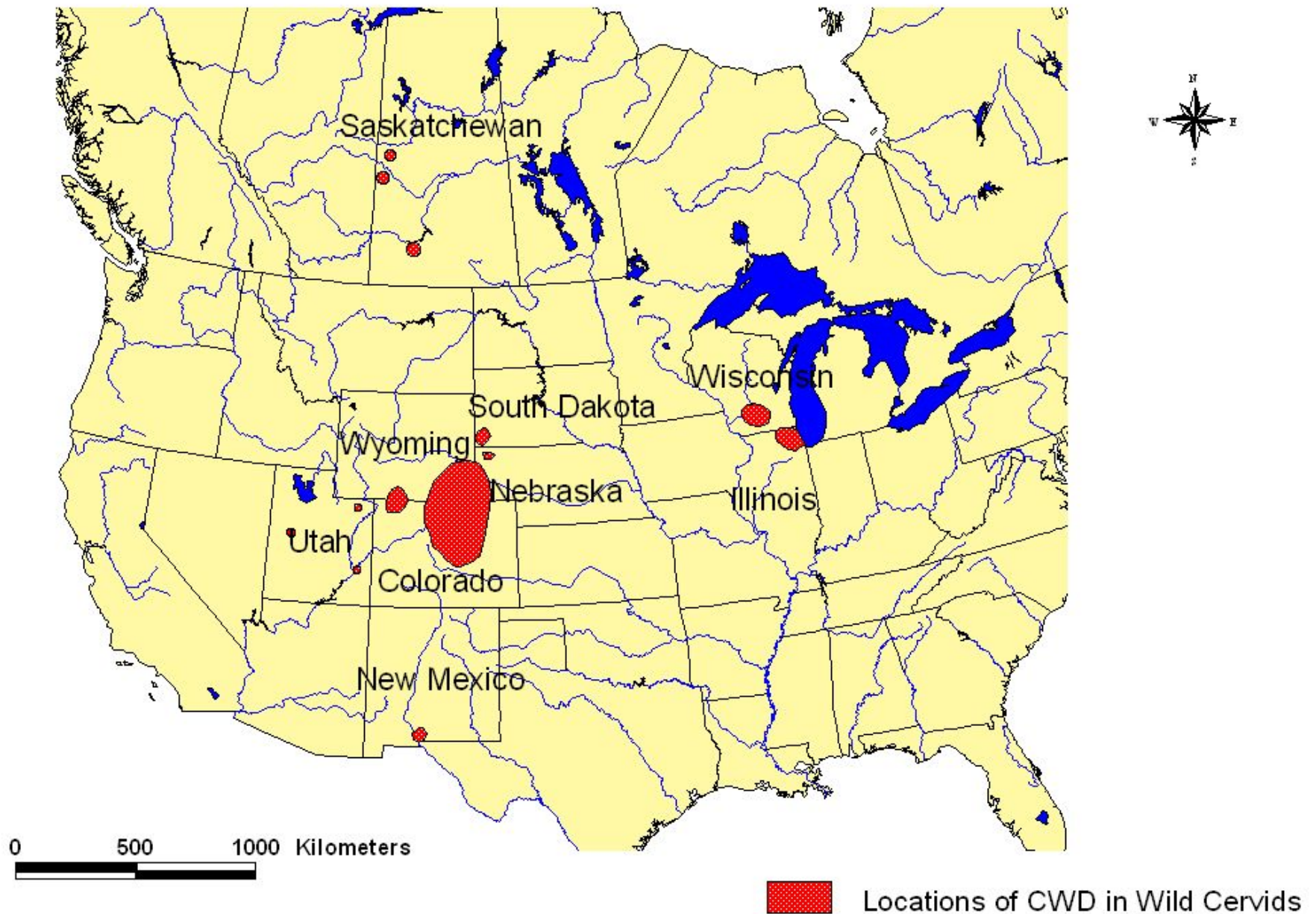
- Positive Deer  
as of July 27th, 2004
- Wildlife Management Zones



Resource Stewardship Branch  
Compiled by Steve Porter



## Locations where CWD has been Diagnosed in Wild Cervids as of March 2004.



# Locations of Wild and Game Farm Infected Cervids March 2004.

