

Chem 412 Seminar

2. April, 2001

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The Cows are Mad as Hell and They're not Going to Take it Anymore: A study on Mad Cow Disease

Over the past few months, our news has been flooded with information regarding a potentially lethal bovine disease in Europe. Bovine Spongiform Encephalopathy (BSE), more commonly known as Mad Cow Disease, is a disease with symptoms that resemble scrapie, a degenerative brain disease in other livestock. BSE, scrapie and other Transmissible Spongiform Encephalopathies (TSE) have been shown to be caused by prions, or preinfectious proteinaceous particles. These "renegade" proteins have the ability to recruit other proteins for their cause. In the case of TSE's, particularly BSE, the prion precipitates in brain tissue causing plaques, giving the brain a "Swiss cheese" appearance. BSE's main resident protein target is PRP, a brain protein with no known function. Two mechanisms have been proposed as to the infection and mutation of the wild type, resident PRP. Testing for this disease is now performed through microscopic inspections of brain tissue, but new testing through western blot analysis has been looked into. As of yet, there is no known treatment for this disease, but some promise can be seen in studies looking into the effects of our old friend, Amphotericin B. Along with the absence of any treatment protocol, no known cross-species infection (particularly between cows and humans) has been found.

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