Biomedical Sciences Seminar
Cosponsored by Neuroscience

presents
"Three critical aspects of prion diseases in livestock"

Guest Speaker: Dr. Eric Cassmann, DVM, PhD
National Animal Disease Center, ARS, USDA

Thursday, October 22, 2020

WHEN: 12:00pm-1:00pm
WHERE: Vet Med 2226 (Students Only)

You can join the seminar via Zoom. See email for Zoom information.

HOST: Dr. M. Heather Greenlee

Abstract
Transmissible spongiform encephalopathies (TSEs) are a group of fatal neurologic diseases caused by an aberrantly folded endogenous protein that is transmissible. In the misfolded state, the prion protein induces autocatalytic misfolding of normal cellular prion protein (PrPC) to the disease associated prion protein (PrPSc). There are many prion diseases of livestock species including scrapie in sheep and goats, chronic wasting disease (CWD) in cervids, bovine spongiform encephalopathy (BSE) in cattle, and transmissible mink encephalopathy in mink. The transmission and pathogenesis of scrapie in sheep has been extensively studied. The transmission of scrapie prions occurs by both horizontal and vertical routes. After ingestion of infectious scrapie prions, dissemination of PrPSc occurs throughout the lymphoid system and culminates with neuro-invasion. There is a long asymptomatic phase in which sheep can shed infectious scrapie prions making the disease difficult to manage. The susceptibility of sheep is dependent on the prion protein genotype. Three polymorphisms in the prion gene at codons 136, 154, and 171 are associated with relative resistance or susceptibility to scrapie in sheep. Selective breeding for resistant sheep has been applied to scrapie eradication programs. Prion strains can be defined by measurable phenotypic attributes like attack rate, incubation period, brain lesion distribution, PrPSc brain distribution, and molecular profiles. Differences in prion strains or types can affect the detection, susceptibility, and propensity for interspecies transmission of prion diseases.

Next Week: Jianqiang Zhang, PhD
Title: “Emerging human and swine coronaviruses: Susceptibility of animal hosts and interspecies transmission?”