Class Starters & Enders

Making the Most of Instructional Time
Five Minute Lessons

Class Starters and Enders help utilize the last minutes of class when a lesson ends but there is not enough time to start another, or for an interest approach at the beginning of class. Mini-lessons correlate to GPS in the programs areas below.

The Cow That Stole Christmas

Program Areas: Healthcare, Animal Science, Marketing

Instructions: Read the material and make notes of important points, answer questions, and be ready to discuss this topic.

Shortly before Christmas in 1984, an English veterinarian was called to check out a cow with unusual symptoms – an arched back, weight loss, head tremors, and loss of coordination. Six weeks later, the cow was dead. Seven months after the cow died, the United Kingdom Central Veterinary Laboratory diagnosed its cause of death – **bovine spongiform encephalopathy**, more commonly known as mad cow disease.

There have been three cases of BSE in the U.S. The first, diagnosed in an animal known as "the cow that stole Christmas," occurred in 2003. The meat from this dairy cow from Washington was sent into the human food chain, as tissue tests of the live cow did not show BSE. Shortly before Christmas of that year, when the official diagnosis was made, a recall was issued for all beef harvested in the same plant on the same day as this cow. The immediate response of the public was to stop buying beef, which could have devastated the industry, had this mentality continued.

BSE is a fatal **degenerative** brain disease infecting cattle, and is one of several **transmissible spongiform encephalopathies,** or TSEs, which occur in animals. The disease has an **incubation** period of four to five years, but can quickly take the life of an infected animal. Though the exact cause is still unknown, the most accepted theory for the cause of BSE is a **prion**, or misfolded protein. Animals susceptible to contracting BSE carry an **allele** which causes normally-folded proteins to change formation into a prion formation, which is harmful and can damage the **bovine**'s central nervous system. The disease possibly originated after feeding cattle meat and bone meal containing BSE- or **scrapie**-infected product. Once the initial outbreak began, it was spread throughout the UK's cattle industry by continuing to feed animals food containing prion infected ingredients.

Symptoms of BSE include changes in behavior – such as unusual aggression or nervousness, abnormal posture, lack of coordination, difficulty or inability to rise and walk, decreased milk production in females, and weight loss with a normal appetite. Unfortunately, there is no test to determine whether a live animal has BSE or not. The only way to diagnose it is to examine brain tissues.

There are many TSEs similar to BSE infecting different species of animals. The most common TSE in sheep and goat herds is scrapie, and humans can contract one of several types of **Creutzfeldt-Jakob disease**. CJD can be contracted **spontaneously** or by contaminated medical equipment. A relatively new form of CJD, called **variant Creutzfeldt-Jakob disease**, or vCJD, affects young people. In some cases of vCJD, links have been found between the disease and the individual ingesting BSE-tainted beef. Most vCJD cases occurred in the UK during the years after the BSE outbreak in the 1980s. To prevent the spread of BSE, the United States, UK, and the European Union banned the use of **ruminant** proteins in the preparation of animal feed. Some forms of **offal** are banned from animal feed as well. In the US, the spinal and brain tissue cannot enter the human food chain either.

Review

1. What is the scientific name for mad cow disease?
2. What part of the body does BSE affect?
3. What are some other forms of TSEs?
4. What has the US done to prevent the spread of BSE?
5. When was BSE diagnosed in the UK?
6. How does a bovine contract BSE?
7. How many BSE cases have there been in the U.S.?
8. **Marketing Students**: Explain how U.S. trade patterns might react to discoveries of BSE and how it would affect beef experts.
9. **Healthcare Students:** Explain the affects of BSE on brains of animals and how humans act when affected by BSE.
10. **Agriculture Students:** Explain the immediate affects BSE had on the U.S. cattle industry in 2003.

Language Connection

Define the following terms.

Allele	Offal
Bovine	Prion
Bovine Spongiform Encephalopathy	Ruminant
Creutzfeldt-Jakob Disease	Scrapie
Degenerative	Transmissible Spongiform Encephalopathy
Incubation	Variant Creutzfeldt-Jakob Disease

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