



December 2, 2010

This preliminary genotyping analysis was performed on a set of Wyoming cattle-and bison- derived *Brucella abortus* milk and tissue isolates (below); note that two isolates were typed from each of three animals, for a total of six isolates.

**Animal ID 83VS04205**, (aka 10B-11758), 10 year-old female crossbred Simmentel, NVSL Acc. No. 10-54053, Case No. B11-0015, owner John Ragsdale (Worland Livestock Auction), Meeteetse (Park County, received at the NVSL on October 26, 2010

**Animal ID 83VS04205 (additional isolate)**, NVSL Acc. No. 10-054515, Case No. B11-0037, owner John Ragsdale, received at the NVSL on October 28, 2010

**Animal ID 83AKC8899** (aka 10B-11757), 10 year-old female crossbred Angus, NVSL Acc. No. 10-054515, Case No. B11-0038, owner John Ragsdale, received at the NVSL on October 28, 2010

**Animal ID 83AKC8899 (additional isolate)**, NVSL Acc. No. 10-054515, Case No. B11-0038, owner John Ragsdale, received at the NVSL on October 28, 2010

**Animal ID 83VZR4294 #White 80**, 2 year-old female bison, NVSL Acc. No. 10-057783, case No. B11-0053, owner Antlers Ranch, Meeteetse (Park County) WY, received at the NVSL on November 12, 2010

**Animal ID 83VZR4294 #White 80 (additional isolate)**, NVSL Acc. No. 10-057783, case No. B11-0053, owner Antlers Ranch, received at the NVSL on November 12, 2010

These *B. abortus* isolates were genotyped using VNTR (variable number tandem repeat; also referred to as MLVA) analysis of 10 individual loci within the *Brucella* genome.

### **Results:**

The two isolates from Ragsdale cow No. AKC8899 each possessed the same VNTR profile (5-9-4-2-3-3-5-3-4-6). For Ragsdale cow No. 83VS04205, one isolate shared this profile, while the other isolate displayed a profile marked by the presence of different repeats at two loci (5-12-4-2-3-3-5-3-5-6). [Differences in VNTR profile among *B. abortus* isolates obtained from the same animal are not unusual].

For the Antlers Ranch bison isolates, both possessed the same VNTR profile (4-8-4-2-3-3-3-3-4-8).

None of the other entries in the NVSL database shared the VNTR profiles observed for the Ragsdale and Antlers Ranch isolates.

Figure 1 (below) shows the clustering of these and other isolates from the NVSL database generated by a UPGMA (unweighted pair-group method with arithmetic mean) analysis of the VNTR profiles. A total of 37 cattle, 36 elk, and 45 bison isolates from the database were incorporated into this analysis. The Ragsdale cattle and Antlers Ranch bison isolates are indicated in the Figure by the light blue highlighting. Horizontal red lines are used to demarcate the clusters containing these isolates.



The 'nearest neighbors' to the John Ragsdale cattle *B. abortus* strains are two isolates (case Nos. 09-0295 and 09-0354) recovered from Montana elk, submitted to the NVSL in 2009 by Neil Anderson.

For the Antlers Ranch bison isolates, the 'nearest neighbors' were two isolates from Wyoming elk (case Nos. 05-0018 and 05-0019) submitted to the NVSL in 2005 by Hank Edwards. (Note that additional Hank Edwards elk isolates submitted to the NVSL in 2009 are Case Nos. 09-0004 to 09-0008, owner listed as 'Wyoming Game and Fish').

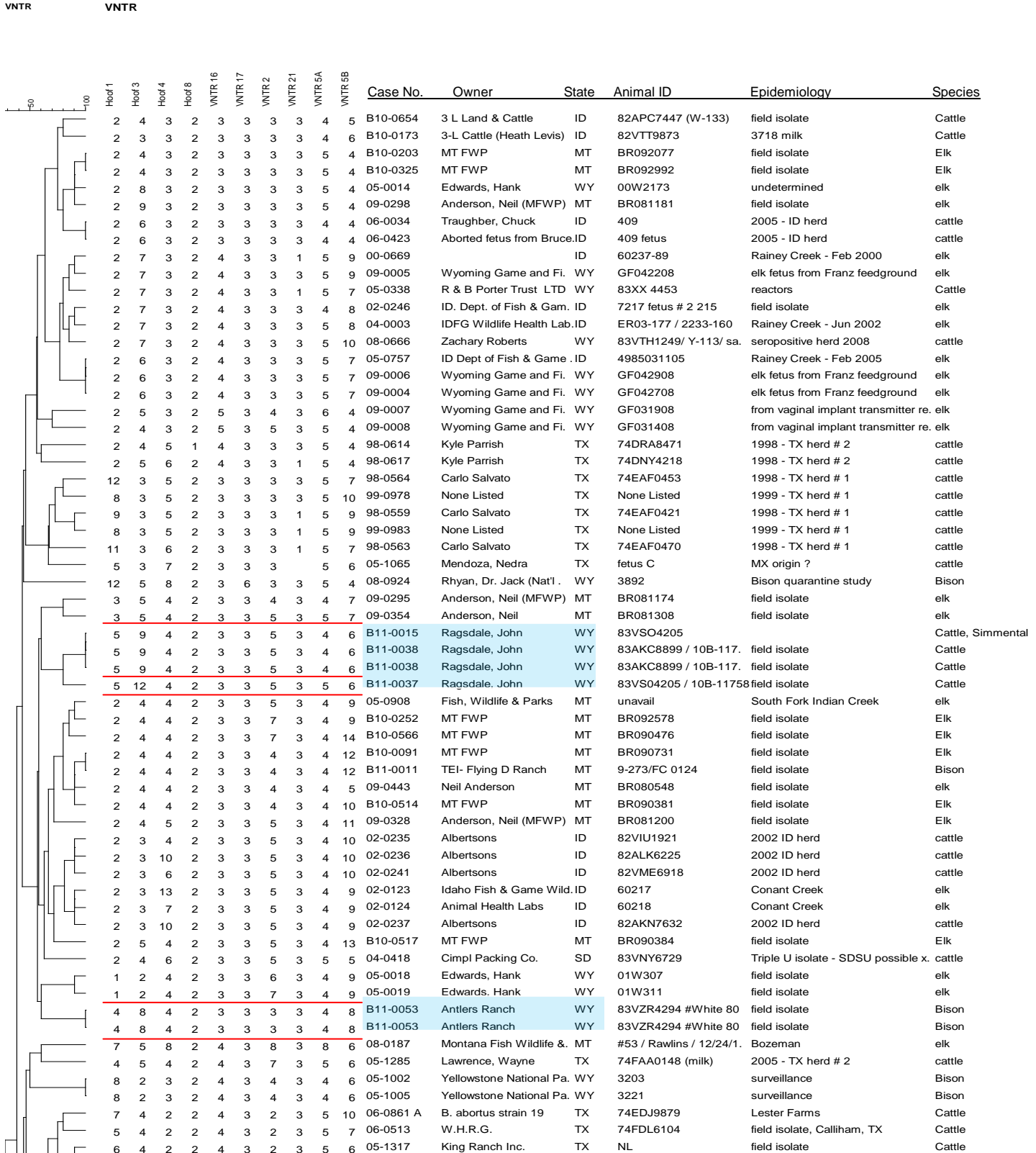
As can be seen in Figure 1, the larger clade containing the Ragsdale cattle and Antlers Ranch bison isolates feature field isolates recovered from elk, bison, and cattle from Montana, Idaho, and South Dakota. Interestingly, the majority of current field isolates from Wyoming animals in the NVSL database do not segregate into this clade.

James Higgins, MS PhD  
Mycobacteria and Brucella Section  
NVSL / APHIS / USDA  
1920 Dayton Ave.  
Ames, IA 50010  
515-337-7034 (fax 7315)  
James.A.Higgins@aphis.usda.gov



**National Veterinary Services Laboratories**  
 1920 Dayton Rd. , Ames, IA 50010  
 Phone (515) 337-7388 Fax (515) 337-7315  
**Brucella Preliminary Genotyping Report - Confidential**

**Figure 1. UPGMA clustering dendrogram of *B. abortus* isolates from elk, bison, and cattle isolates from the NVSL database**





**National Veterinary Services Laboratories**  
 1920 Dayton Rd. , Ames, IA 50010  
 Phone (515) 337-7388 Fax (515) 337-7315  
**Brucella Preliminary Genotyping Report - Confidential**

**Figure 1. (continued)**

