



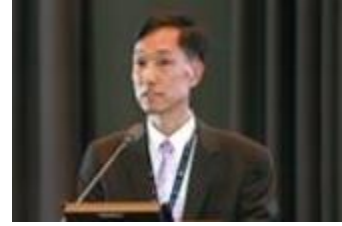
Update on *Mycoplasma ovipneumoniae*

Lindsay Piel

ADRU-ARS

Unit Update

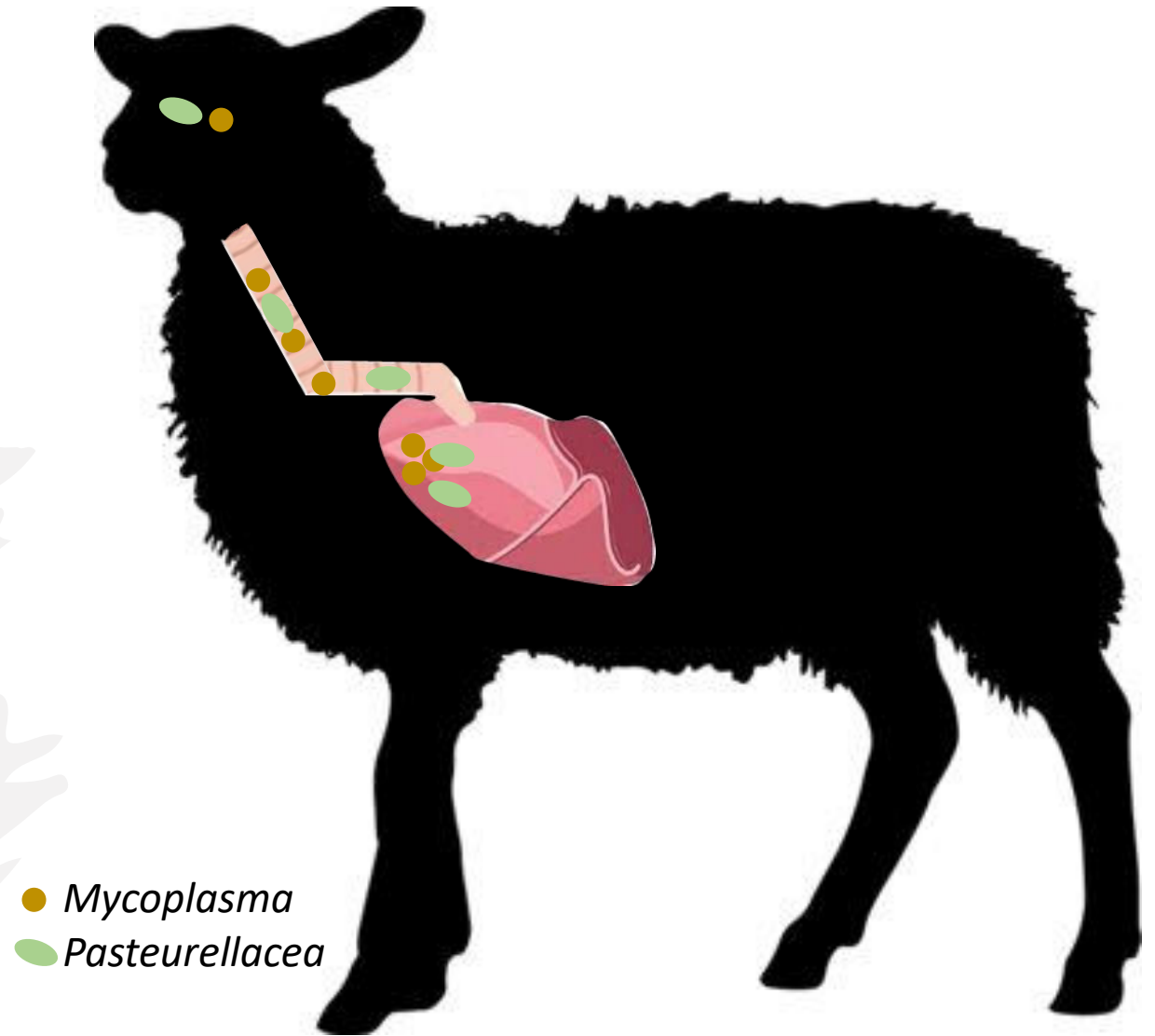
- New Research Leader Dr. Chungwon Chung



- Immunology based research with vaccine development goals
- Has worked in both industry and government environments

Mycoplasma ovipneumoniae

- Present in a large percentage of domestic flocks
- Subclinical disease found at slaughter
- Part of a polymicrobial disease



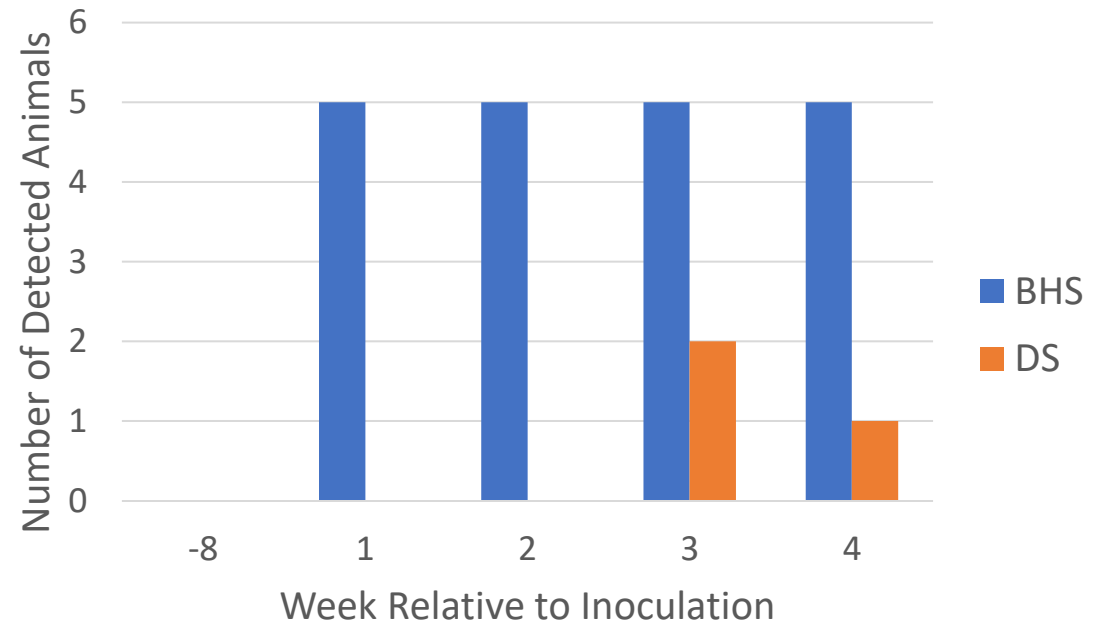
Aged Bighorn Sheep vs. Domestic Sheep Inoculation

Sally Madsen-Bouterse, David Herndon, Maggie Highland, Paige Grossman, Alejandra Rivolta, Lindsay Fry, Brenda Murdoch

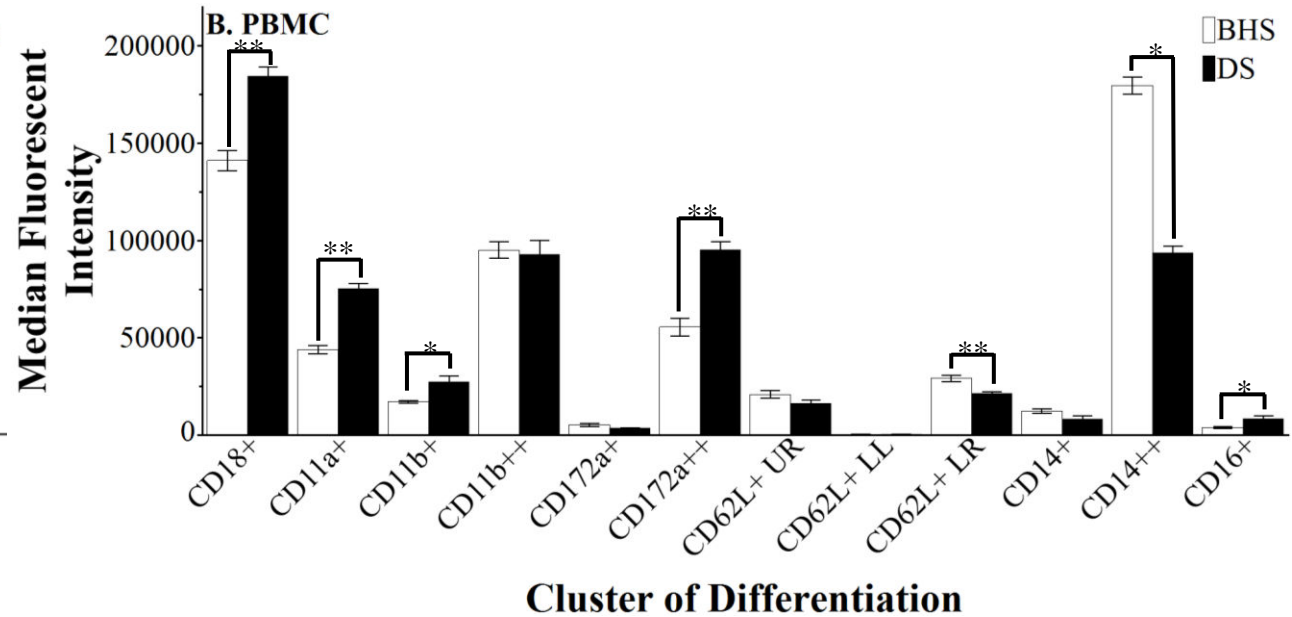
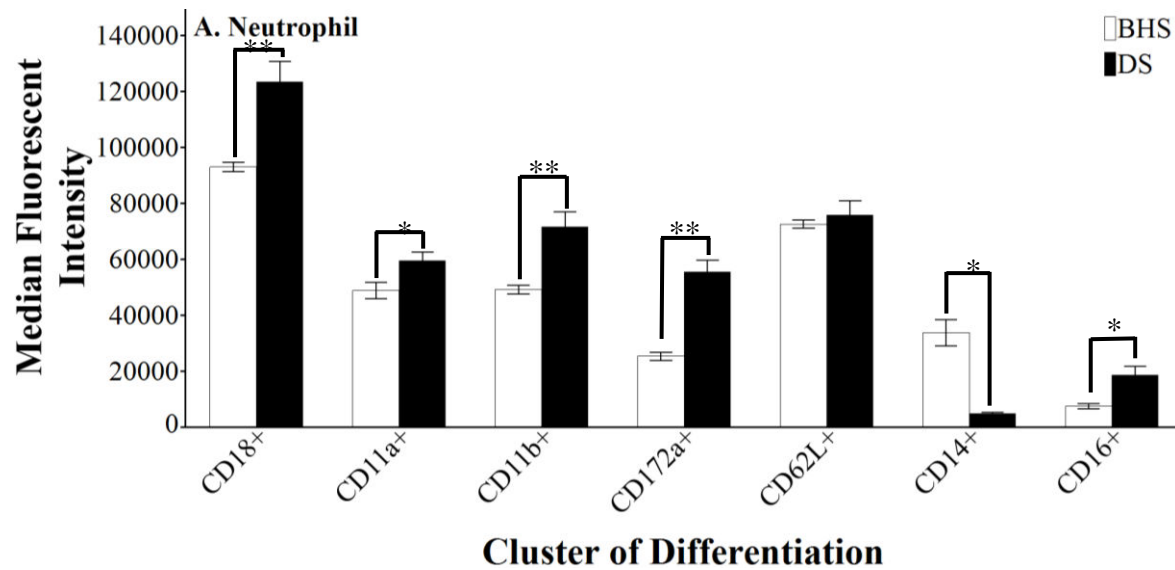
Post-Study Analysis: Lindsay Piel

Bighorn Sheep Become Positive for *M. ovipneumoniae*

- Nasal Inoculation
- Laboratory Strain (Y98)
- Bighorns had mild-moderate nasal discharge and coughing events

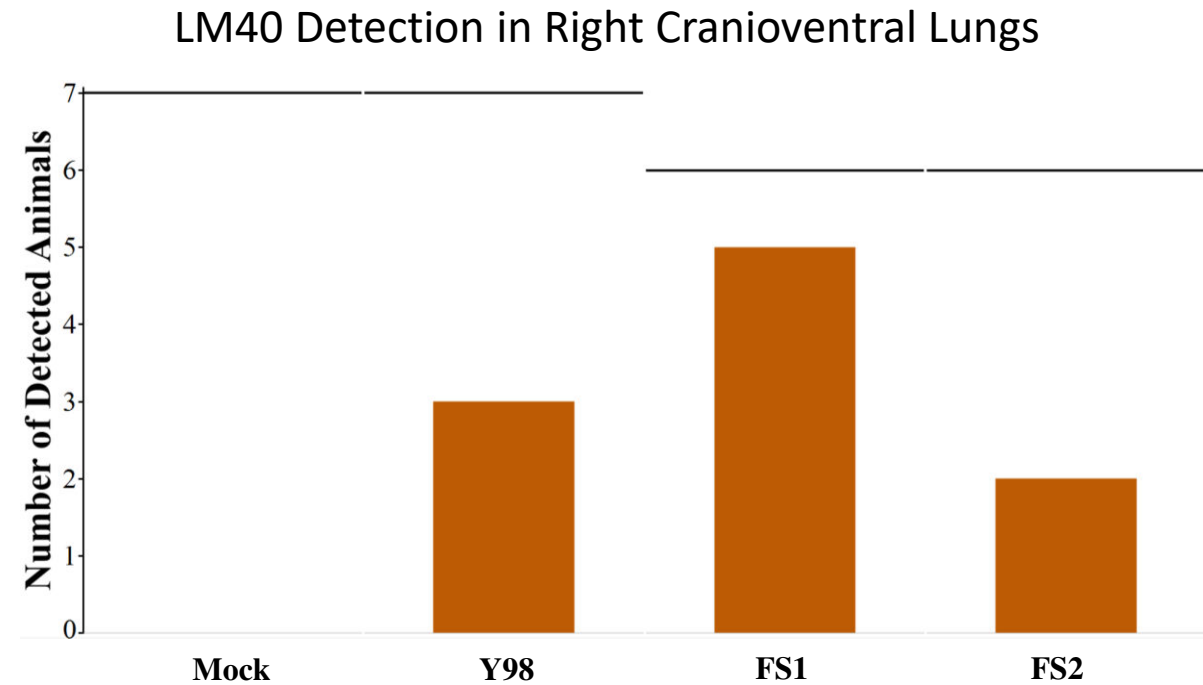
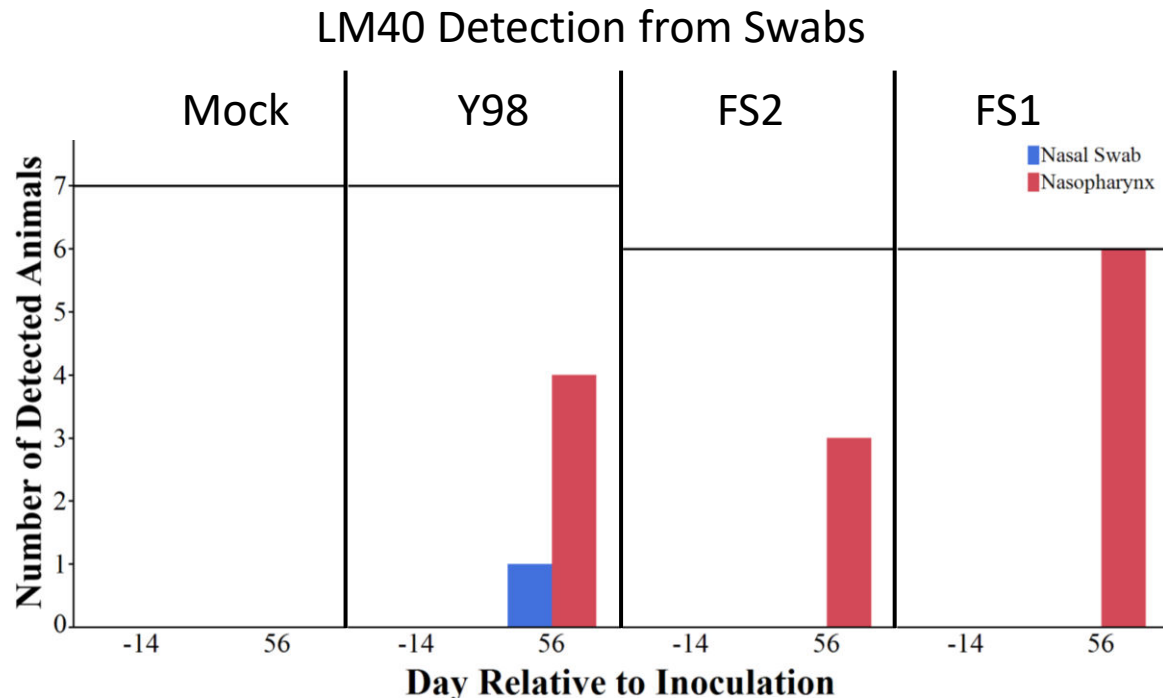


Bighorn Sheep and Domestic Sheep Have Different Baseline Immune Systems



Lamb Inoculation with Alternate
Strains of *M. ovipneumoniae*

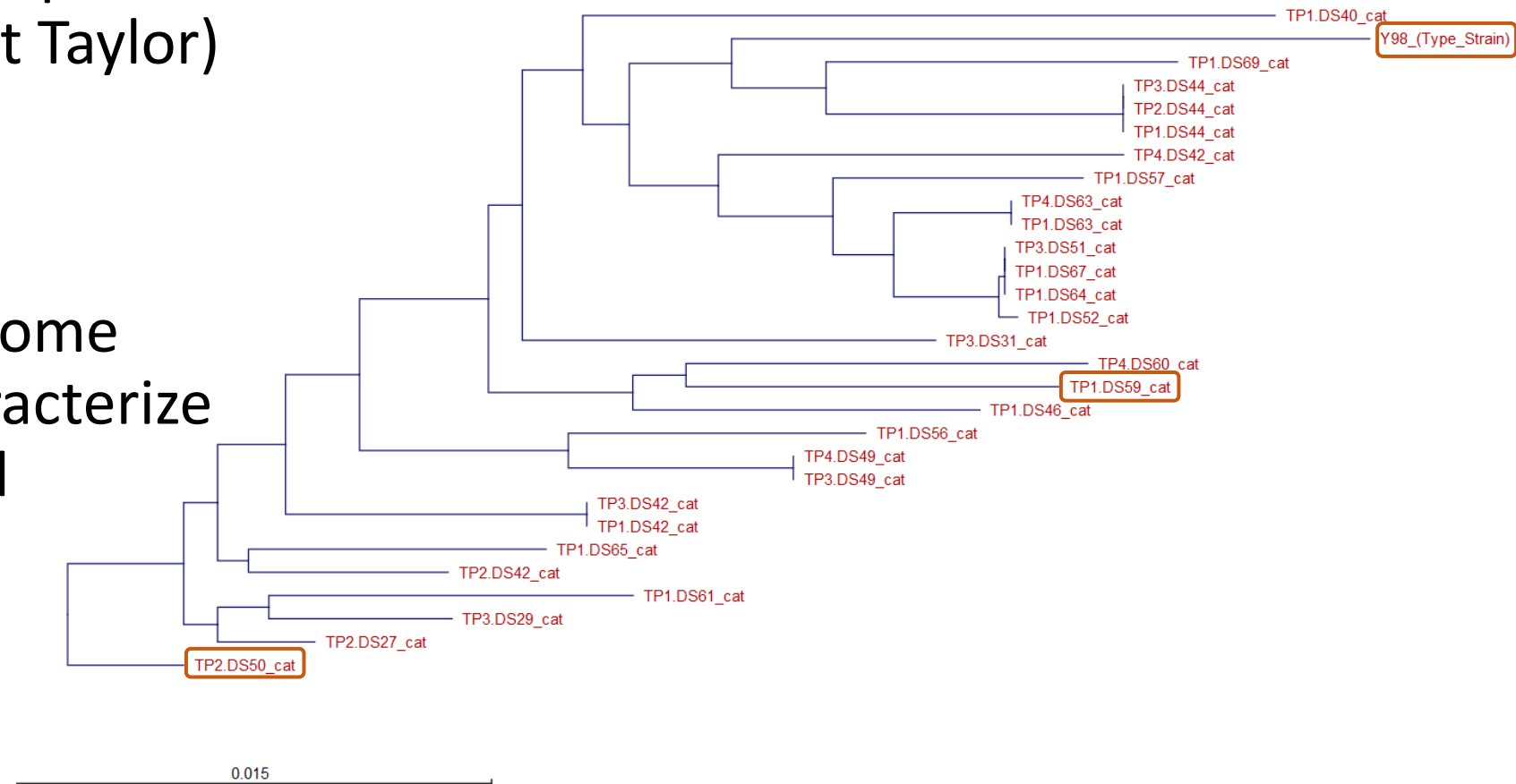
Detection of *M. ovipneumoniae* Varies Depending on the Strain



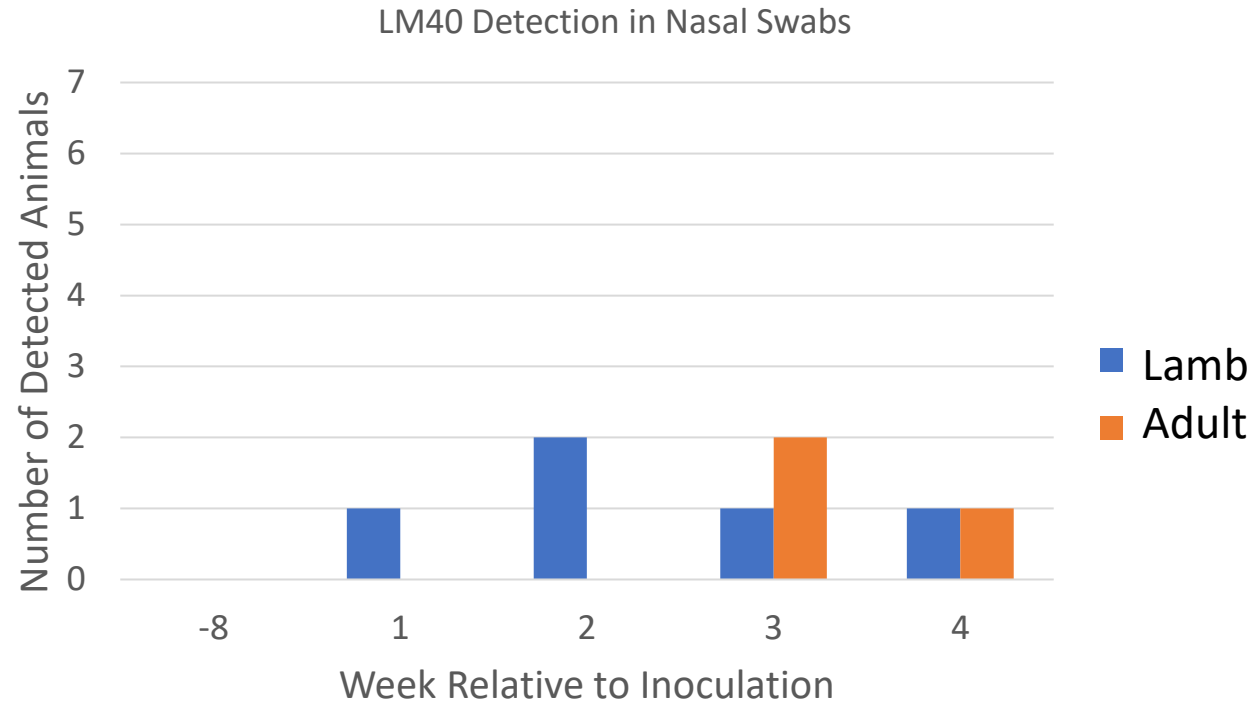
- Animals were undergoing BAL procedures
- Checking Strain Viability

Field Strain Isolation and Sequencing

- Strains were isolated from sheep at the United States Sheep Experiment Station (Bret Taylor)
- Will undergo whole genome sequencing to help characterize strain differences (David Herndon)



Comparison Between Lambs and Ewes Between the Two Inoculation Studies



- Lambs had n=7
- Adults had n=5

Other Focuses

- Genome-wide association study (GWAS) to increase power to previous study associating genetics with shed bacterial DNA
- Looking at strain variation over time
- Sequencing RNA from infected animals to detect overwhelming transcriptional changes

USDA Members and Collaborators

USDA Team Members

Scientists

Dr. Lindsay Piel

Dr. Michelle Mousel

David Herndon

Dr. David Schneider

Scientific Assistants and Farm Staff

Dr. Julianne Hwang

Paige Grossman

Alejandra Rivolta

Darren Schnider

Lori Fuller

Emma Karel-Ward

Kristina Erickson

Sarah Therrian

Megan Jacks

Collaborators

- ❖ Dr. Bret Taylor - Range Sheep Production Efficiency Research (RSPER) unit
- ❖ Dr. Brenda Murdoch – University of Idaho (UI)



Thank you