IOWA STATE UNIVERSITY
Veterinary Diagnostic Laboratory

Pathology Submission Guide

OVINE AND CAPRINE ABORTION

Specimens to submit: Entire fetus and placenta are the preferred specimens. Fetal tissues should include:

Brain	1/2 of organ, formalin-fixed
Ewe serum	Optional, see notes on abortion serology. 3-5 ml ewe's serum
Heart	1/2 cm slice, formalin-fixed
Kidney	1 entire kidney, fresh/chilled
Liver	1/8-1/4 of organ, fresh/chilled
	1/2 cm slice, formalin-fixed
Lung	1/8-1/4 of organ, fresh/chilled
	1/2 cm slice, formalin-fixed
Placenta	3 or more cotyledons, fresh/chilled
	2 or more cotyledons, formalin-fixed
Spleen	1/2 of organ, fresh/chilled
Stomach contents	1-3 ml syringe or tube, fresh/chilled
Thoracic fluid	Clear, uncontaminated, fresh/chilled
Thymus	Fresh/chilled; 1/2 cm slice formalin-fixed
Vaginal swabs	Optional, select recently aborted ewes

SAMPLING TECHNIQUES

1. Do NOT freeze tissues.
2. Submit placenta whenever possible.
3. Submit ewe's sera, retain 1/2 of sample frozen.

AGENTS DETECTED BY ROUTINE EXAMINATION

Bacteria	*Trueperella (Arcanobacterium) pyogenes, Bacillus, Campylobacter, Chlamydia,, Coxiella Burnetti, Listeria monocytogenes*
Parasites	*Toxoplasma gondii* (see comments), *Neospora*
Viruses	Border disease virus, Cache Valley virus, Caprine herpesvirus

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COMMENTS

- Diagnosis of *Chlamydial* abortion is most readily accomplished through PCR conducted on fresh placenta. The PCR can also be conducted on fetal stomach contents or liver tissue. Histopathology is also useful.
- Diagnosis of toxoplasmal abortion can be accomplished through detection of characteristic lesions in placenta and brain and/or detection of antibody in fetal thoracic fluid. Detection of antibody in ewe serum is not evidence for abortion, only infection at some time; antibody titers persist for months. Absence of antibody in the ewe would rule out toxoplasmosis.
- *Chlamydia* and *Toxoplasma gondii* are 2 of the 3 most common infectious causes of ovine abortion. Without placenta, brain, and/or fetal thoracic fluid, we cannot properly address these primary differentials.
- *Campylobacter* spp. are an important cause of abortion, particularly in ewes. PCR and culture are useful to confirm a diagnosis; however, non-abortifacient strains are common in the intestinal contents of small ruminants and also in the soil on sheep and goat farms. Fecal contamination of placental samples may therefore result in positive PCR results and testing may be best performed on fetal stomach contents or liver tissue. Histopathology is also important in confirming campylobacteriosis.
- *Coxiella burnetii* is an important cause of abortion in goats and can be readily detected in placental samples by PCR. This agent can be commonly detected in the soil on sheep and goat farms and fecal contamination of placental samples may confound results. Direct detection of *C. burnetii* within formalin-fixed placental tissue by *in situ* hybridization (ISH) can improve diagnostic specificity.
- Cache Valley virus infection can be detected by PCR; however, tissue samples from fetuses are often negative at the time of abortion. Diagnosis is commonly through serological studies conducted at a reference laboratory. Fetal fluids or precolostral serum from live-born affected lambs can be examined and are of high diagnostic specificity. Analysis of serological results from paired ewes (affected/unaffected) may also be helpful.