

## 5 DISEASE-SPECIFIC GUIDE TO SAMPLE COLLECTION

Not all sampling types and test methods are applicable to all diseases. When in doubt, call the laboratory for guidance.

SPECIES	SPECIMEN	MEDIUM	LAB
<b>African horse sickness</b>			
Equine (including zebra)	<b>LIVE ANIMALS</b>		NVSL Ames
	Serum	Red top tube (10 ml)	
	Whole blood	Purple top tube (10ml) (preferred) Green top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: spleen, lymph node, lung, liver	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Set of tissues	Formalin (10:1)	
<b>African swine fever</b>			
Swine	<b>LIVE ANIMALS</b>		NVSL FADDL
	Tonsil scraping	Sterile tube	
	Whole blood	Green top tube (10ml) (for virus isolation)	
	Serum	Red top tube	
	<b>DECEASED ANIMALS</b>		
	Fresh tissues: spleen, tonsil, gastrohepatic, renal, and inguinal lymph nodes	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Set of tissues	Formalin (10:1)	
<b>Aino and Akabane<sup>1</sup></b>			
Bovine Ovine Caprine	<b>LIVE ANIMALS</b>		NVSL Ames
	Serum from fetus or neonate	Red top tube ( 2-5 ml minimum)	
	Serum from dam	Red top tube ( 2-5 ml minimum)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: placenta, fetal muscle, and nervous tissue	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Set of tissues	Formalin (10:1)	

<sup>1</sup>Virus isolation, PCR, and serology are done at the National Veterinary Services Laboratory (NVSL) Ames. PCR and serology are done at NVSL FADDL.

SPECIES	SPECIMEN	MEDIUM	LAB
<b>Bluetongue &amp; Epizootic hemorrhagic disease<sup>2,3</sup></b>			
Bovine Ovine Caprine	<b>LIVE ANIMALS</b>		NVSL Ames FADDL
	Serum	Red top tube (5 ml minimum)	
	Whole blood	Purple top tube (10 ml) (preferred for PCR) (only sample for FADDL testing)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: spleen, liver, lung, lymph node	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Set of tissues	Formalin (10:1)	
<b>Blue eye paramyxovirus</b>			
Swine	<b>LIVE ANIMALS</b>		NVSL Ames
	Nasal swab	Dacron®/polyester swab in TBTB (max 3 ml)	
	Serum	Red top tube (10 ml)	
	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: brain, spinal cord, lung, tonsil, reproductive tissues from sexually mature animals	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Set of fixed tissues: brain, spinal cord, lung, tonsil, spleen	Formalin (10:1)	
<b>Bovine babesiosis</b>			
Bovine	<b>LIVE ANIMALS</b>		NVSL Ames
	Whole blood	Purple top tube (10 ml)	
	Serum	Red top tube (10 ml)	
<b>Bovine spongiform encephalopathy</b>			
Bovine	<b>DECEASED ANIMALS</b>		NAHLN or NVSL Ames
	Minimum for surveillance: fresh obex For clinical suspects: ½ brain collected fresh and the other ½ collected in formalin	50 ml tube, Whirl-Pak®, or Ziploc® bag	
	Fresh tissue: ½ brain	Formalin (10:1)	
	<b>If rabies is on your differential diagnosis, sample must be rabies-negative before testing for BSE—check with your state public health laboratory for sample specs for rabies.</b>		

<sup>2</sup>Virus isolation and serology are done at NVSL Ames. PCR is done at FADDL (EDTA blood).

<sup>3</sup>Testing for BT/EHD at FADDL is limited to using EDTA blood.

SPECIES	SPECIMEN	MEDIUM	LAB
<b>Classical swine fever</b>			
Swine	<b>LIVE ANIMALS</b>		NVSL FADDL
	Dacron®/polyester swab: oral/tonsil	TBTB (3 ml)	
	Tonsil scraping	Sterile tube	
	Whole blood	Green top tube (10ml) (for virus isolation)	
	Serum	Red top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: tonsil, spleen, retropharyngeal, submandibular, and mesenteric lymph nodes	Separate Whirl-Pak® or Ziploc® bags	
	Set of tissues	Formalin (10:1)	
<b>Contagious agalactia</b>			
Caprine Ovine	<b>DECEASED ANIMALS</b>		NVSL FADDL
	Tissue: lung	Whirl-Pak® or Ziploc® bags	
	Joint fluid	Sterile tube or red top tube	
	Set of tissues	Formalin (10:1)	
<b>Contagious bovine pleuropneumonia</b>			
Bovine	<b>DECEASED ANIMALS</b>		NVSL FADDL
	Fresh tissue: lung	Whirl-Pak® or Ziploc® bags	
	Joint fluid	Sterile tube or red top tube	
	Set of tissues	Formalin (10:1)	
<b>Contagious caprine pleuropneumonia</b>			
Caprine	<b>DECEASED ANIMALS</b>		NVSL FADDL
	Fresh tissue: lung	Whirl-Pak® or Ziploc® bags	
	Pleural fluid	Sterile tube or red top tube	
	Set of tissues	Formalin (10:1)	

SPECIES	SPECIMEN	MEDIUM	LAB
<b>Contagious equine metritis</b>			
Equine	<b>LIVE ANIMALS</b>		NVSL Ames
	Swabs for culture	Call NVSL Ames for instructions	
	Serum	Red top tube (10 ml)	
<b>Dourine</b>			
Equine	<b>LIVE ANIMALS</b>		NVSL Ames
	Whole blood	Purple top tube (10 ml)	
	Serum	Red top tube (10 ml)	
<b>Equine piroplasmiasis</b>			
Equine	<b>LIVE ANIMALS</b>		NVSL Ames
	Whole blood	Purple top tube (10 ml)	
	Serum	Red top tube (10 ml)	
<b>Foot-and-mouth disease</b>			
Bovine Swine Ovine Caprine Camelid Cervid (including cloven-hoofed zoo animals and wildlife)	<b>LIVE ANIMALS</b>		NVSL FADDL
	Dacron®/polyester swabs: oral or vesicular lesions	TBTB (3 ml) (small tissue tags from the edges of a ruptured vesicle may be added to the swab)	
	Vesicular tissue (vesicular epithelium— as large as practical) Animal should be restrained	Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Vesicular fluid	Sterile tube or red top tube (undiluted) or TBTB (50:50)	
	Crusts/scabs Animal "shoud" be restrained	Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Serum	Red top tube (10 ml)	
	Esophageal-pharyngeal fluid (collected by probang for identification of FMD-seropositive carriers)	TBTB (50:50)	
	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue (esp. lymph node)	Separate Whirl-Pak® or Ziploc® bags	
	Set of tissues	Formalin (10:1)	

SPECIES	SPECIMEN	MEDIUM	LAB
<b>Glanders</b>			
Equine	<b>LIVE ANIMALS</b>		NVSL Ames
	Serum	Red top tube (10 ml)	
	Whole blood	Purple or green top tube (10 ml)	
	Swabs for culture	<b>Call NVSL Ames for instructions</b>	
<b>Heartwater<sup>4</sup></b>			
Bovine Ovine Caprine Cervid	<b>LIVE ANIMALS</b>		NVSL Ames
	Serum	Red top tube (10 ml)	
	Whole blood	Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Brain smear	Air dry before packaging. If receipt at lab to be > 24 hrs, fix with methanol before shipping. Note on paperwork if slide is fixed.	
	Fresh tissue: lymphoid tissues, brain, kidney	Separate Whirl-Pak <sup>®</sup> or Ziploc <sup>®</sup> bags	
Set of tissues	Formalin (10:1)		
<b>Highly pathogenic avian influenza<sup>5</sup></b>			
Avian	<b>LIVE ANIMALS</b>		NVSL Ames
	Tracheal/Oropharyngeal swab	Dacron <sup>®</sup> /polyester swab in BHI (3.0 ml) (can pool up to 5 swabs)	
	Cloacal swab	Dacron <sup>®</sup> /polyester swab in BHI (3.0 ml) (can pool up to 5 swabs)	
	<b>For commercial poultry do NOT pool TR /OP with cloacal swabs.</b>		
	Serum	Red top tube (2 ml)	
	<b>DECEASED ANIMALS</b>		
	<b>Swab collection as above; tissues as below if needed.</b>		
Fresh tissue: trachea, lung, liver, spleen, kidney, terminal intestine	For each bird: Whirl-Pak <sup>®</sup> or Ziploc <sup>®</sup> pooled by system (respiratory, enteric, reproductive)		

<sup>4</sup>NVSL FADDL tests import cases from FMD-endemic countries.

<sup>5</sup>Refer to [https://www.aphis.usda.gov/animal\\_health/lab\\_info\\_services/downloads/WIAV0020.pdf](https://www.aphis.usda.gov/animal_health/lab_info_services/downloads/WIAV0020.pdf)



SPECIES	SPECIMEN	MEDIUM	LAB
<b>Lumpy skin disease</b>			
Bovine	<b>LIVE ANIMALS</b>		NVSL FADDL
	Skin biopsy	TBTB (3 ml)	
	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
	Lymph node aspirate	TBTB (3 ml)	
	<b>DECEASED ANIMALS</b>		
	Lymph node aspirate	TBTB (3 ml)	
	Fresh tissues: skin, lymph node, lung	Separate Whirl-Pak® or Ziploc® bags	
Set of tissues	Formalin (10:1)		
<b>Malignant catarrhal fever</b>			
Bovine (including wild ruminants)	<b>LIVE ANIMALS</b>		NVSL Ames or NVSL FADDL (if vesicular lesions)
	Whole blood	Purple top tube (10 ml) (preferred for PCR)	
	Serum	Red top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: spleen, eye	Separate Whirl-Pak® or Ziploc® bags or screw-cap plastic tubes	
Set of tissues	Formalin (10:1)		
<b>Peste des petits ruminants</b>			
Ovine Caprine (including wild small ruminants)	<b>LIVE ANIMALS</b>		NVSL FADDL
	Dacron®/polyester swab: nasal, ocular, oral	TBTB (3 ml)	
	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: bronchial lymph node, mesenteric lymph node, lung, spleen, intestinal mucosa	Separate Whirl-Pak® or Ziploc® bags	
Set of tissues	Formalin (10:1)		
<b>Rabbit viral hemorrhagic disease</b>			
Rabbit	<b>LIVE ANIMALS</b>		NVSL FADDL
	Serum (import/export only)	Red top tube (5 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: liver	Whirl-Pak® or Ziploc® bags	
Set of tissues	Formalin (10:1)		

SPECIES	SPECIMEN	MEDIUM	LAB
<b>Rift Valley fever</b>			
Ovine	<b>LIVE ANIMALS</b>		NVSL FADDL
Bovine	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
Caprine	<b>DECEASED ANIMALS</b>		
Camelid	Fresh tissue: liver, spleen, brain, placenta	Separate Whirl-Pak® or Ziploc® bag	
	Set of tissues	Formalin (10:1)	
<b>Schmallenberg virus (SBV)</b>			
Ovine	<b>LIVE ANIMALS</b>		NVSL Ames
Caprine	Whole blood	Purple top tube (10 ml)	
Bovine	Serum (fetal and adult; fetal cases should be accompanied by dam's serum)	Red top tube (2-5 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh fetal tissue: placenta, amniotic fluid, brain (preferred), heart blood	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
<b>Screwworm</b>			
All species	<b>LIVE ANIMALS</b>		NVSL Parasitology (Use VS Form 5-38)
	Maggots from all parts of wounds. Include different sizes and appearances.	70% ethanol or isopropyl alcohol - not formalin	
Ovine	<b>LIVE ANIMALS</b>		NVSL FADDL
Caprine	Skin/Pox lesion biopsy	TBTB (3 ml)	
	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissues: skin, lymph node, lung	Separate Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes	
	Set of tissues	Formalin (10:1)	
<b>Swine vesicular disease</b>			
Swine	<b>LIVE ANIMALS</b>		NVSL FADDL
	Dacron®/polyester swab: lesion, nasal, fecal	TBTB (3 ml)	
	Vesicular tissue (vesicular epithelium— as large as practical)	Tube or TBTB (3 ml)	
	Vesicular fluid	Sterile tube or red top tube (undiluted) or TBTB (50:50)	
	Serum	Red top tube (10 ml)	
	Whole blood	Green top tube (10 ml) Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue: skin, tongue, and mucosa with lesions	Separate Whirl-Pak® or Ziploc® bags	
	Set of tissues	Formalin (10:1)	

SPECIES	SPECIMEN	MEDIUM	LAB
<b>Teschovirus encephalomyelitis (Teschén/Talfan disease)</b>			
Swine	<b>DECEASED ANIMALS</b>		NVSL Ames and/ or NVSL FADDL (if CSF in differential diagnosis)
	Fresh tissue: brain, spinal cord	Separate Whirl-Pak® or Ziploc® bags	
	Set of fixed tissues: brain, spinal cord	Formalin (10:1)	
<b>Venezuelan equine encephalomyelitis</b>			
Equine	<b>LIVE ANIMALS</b>		NVSL Ames
	Serum	Red top tube (5 ml)	
	<b>DECEASED ANIMALS</b>		
	Brain, cerebrospinal fluid	Whirl-Pak® or Ziploc® bag or screw-cap plastic tubes and red top tube (CSF)	
<b>Vesicular stomatitis</b>			
Bovine Swine Ovine Caprine Equine Camelid Cervids (including cloven-hoofed zoo animals and wildlife)	<b>LIVE ANIMALS</b>		NVSL FADDL (Ruminant and Swine) and NVSL Ames (Equine)
	Dacron®/polyester swab: oral lesions	TBTB (3 ml)	
	Vesicular tissue (vesicular epithelium— as large as practical) Animal should be restrained	Separate Whirl-Pak® or Ziploc® bags or tubes with 3ml TBTB Tissue tags from the edges of a ruptured vesicle may be added to the swab tube.	
	Vesicular fluid	Sterile tube or red top tube with TBTB (50:50)	
	Crusts/scabs Animal should be restrained	Whirl-Pak®, Ziploc® bags, or tubes (no media)	
	Serum	Red top tube (10 ml)	
	Esophageal-pharyngeal fluid (collected by probang for identification of FMD- seropositive carriers)	TBTB (50:50)	
	Whole blood (not needed for equine)	Green top tube (10 ml) Purple top tube (10 ml)	
	<b>DECEASED ANIMALS</b>		
	Fresh tissue (esp. lymph node)	Separate Whirl-Pak® or Ziploc® bags	
Set of tissues	Formalin (10:1)		



SPECIES	SPECIMEN	MEDIUM	LAB
<b>Virulent Newcastle Disease (vND)<sup>6</sup></b>			
Avian	<b>LIVE ANIMALS</b>		NVSL Ames
	Tracheal/Oropharyngeal swab	Dacron®/polyester swab in BHI (3.0 ml) (can pool up to 5 swabs)	
	Cloacal swab	Dacron®/polyester swab in BHI (3.0 ml) (can pool up to 5 swabs)	
	<b>For commercial poultry do NOT pool TR /OP with cloacal swabs.</b>		
	<b>DECEASED ANIMALS</b>		
	<b>Swab collection as above; tissues as below if needed.</b>		
Fresh tissue: trachea, lung, liver, spleen, kidney, terminal intestine, brain (if neurologic signs)	For each bird: Whirl-Pak® or Ziploc® pooled by system (respiratory, enteric, reproductive)		

<sup>6</sup>Refer to [https://www.aphis.usda.gov/animal\\_health/lab\\_info\\_services/downloads/WIAV0020.pdf](https://www.aphis.usda.gov/animal_health/lab_info_services/downloads/WIAV0020.pdf)



## Collecting Tissue Samples

Tissue samples for formalin: at a minimum, collect 1 cm thick sections of any lesions, trachea, esophagus, heart, lung, thoracic lymph nodes, liver, spleen, kidney, abdominal lymph nodes, bladder, stomach, duodenum, jejunum, ileum, colon, and bursa for avian species.

If neurologic signs, collect brain, cut in half along midline, and submit as fresh and fixed. For the fixed brain sample, ensure sufficient volume of formalin is included to maintain the 10:1 ratio of formalin to tissue.

If small lesion, put entire lesion in Whirl-Pak® or Ziploc® for virology, NOT in formalin.

DO NOT FREEZE SAMPLES. Submit cool on frozen gel packs.

Contact FADDL about sample submissions at: [fad.submissions@usda.gov](mailto:fad.submissions@usda.gov)