

ANIMAL HEALTH CENTRE

Services and Fee Guide



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General Information

The Animal Health Centre works to diagnose disease and monitor animal health which is essential to British Columbia's agri-food industry. Laboratory findings are used to monitor the status of animal health in British Columbia. Ongoing surveillance and reporting of listed diseases to appropriate agencies is a crucial role of the Animal Health Centre and has important implications for product export certification. In addition, the diagnosis of diseases that may be transmitted from animals to people is important to health authorities.

Staff veterinarians and laboratory scientists investigate and identify major livestock and companion animal diseases that could have potentially devastating effects on the food supply or pose a threat to public health. Up to 70% of all diseases affecting people come from animals. An even larger percentage of newly emerging diseases originate with animals (UNFAO, 2013).

Animal Health Centre

The Animal Health Centre provides world-class veterinary diagnostic services that protect the health of all animals in B.C. by supporting disease prevention, control and eradication. The Animal Health Centre protects human health, with the timely and accurate diagnosis of zoonotic diseases that transmit from animals to humans, in the public health and food safety sectors. The Animal Health Centre is an accredited full-service veterinary laboratory in western Canada, offering more than 400 laboratory diagnostic tests for agents that may be found in wild and domestic birds, mammals, fish, reptiles and amphibians.

Mission

The mission of the Animal Health Centre is to diagnose, monitor and assist in controlling and preventing animal disease in British Columbia.

Vision

Our vision is a thriving, sustainable agricultural industry free from serious impacts caused by pests and diseases, for the benefit of all citizens of British Columbia.

Diagnostic Testing and Services

The Animal Health Centre full range of fee-for-service diagnostic testing, including Bacteriology, Histopathology, Molecular Diagnostics, Necropsy, Serology and Virology are accepted from veterinarians, livestock producers, the general public and other government agencies.

While primarily concerned with food-producing animals, the Animal Health Centre also provides diagnostic services for companion animals, captive and free-ranging wildlife, zoo animals, fish and bees.

Billing

- Accepted Methods of Payment: VISA, MasterCard, American Express, Debit, Cheque (payable to “Minister of Finance”) or Electronic Fund Transfer.
- Fees listed do not include applicable taxes.
- Out of province submissions will be charged at the fee plus 50%.
- In accordance with the *Animal Health Act*, the Lieutenant Governor in Council may make regulations designating laboratories as provincial laboratories, and respecting fees that may be charged by provincial laboratories, including fees for diagnostic examinations and post-mortem services, services performed for the purpose of gathering evidence for a legal proceeding and providing analytical or interpretive reports.
- Section 5 of the Laboratory Fees Regulation states, “a provincial laboratory may charge the fees set out in the [Fee] Schedule in respect of services performed or laboratory reports provided under the *Animal Health Act* or the *Ministry of Agriculture and Food Act*”.
- Note that all charges are payable at the time of submission. Results will not be released until payment has been received.

Disclosure of Results

- The veterinary professional responsible for your case will report their findings, diagnoses and recommendations for control (if applicable), in a written report.
- Whenever possible, it is preferable for our veterinary professionals to report directly to a veterinarian. The veterinarian has an established relationship with the animal and client and can help interpret the client’s results.
- If results are urgently required, contact the Animal Health Centre directly at 604-556-3003 before submitting the specimen.
- Reports are sent primarily to the submitting client. Reports will only be sent to third parties if indicated on the sample submission form.
- **Exceptions will only be made in the instance that a notifiable or reportable disease is suspected. In this case both the Chief Veterinarian of British Columbia and the Canadian Food Inspection Agency (CFIA) must be notified. Cases of suspected animal abuse will also be reported to the Society for the Prevention of Cruelty to Animals (SPCA).**

Contact Information

Local phone: 604-556-3003

Toll free: 1-800-661-9903

Front office email: PAHB@gov.bc.ca

Website: www.gov.bc.ca/animalhealthcentre

Hours of operation: Monday to Friday from 8:30 A.M. until 4:30 P.M. Closed on Statutory Holidays.



Accreditations

The Animal Health Centre is accredited by:

The American Association of Veterinary Laboratory Diagnosticians (AALVD) - full accreditation:

<https://www.aavld.org/accredited-labs>

The Standards Council of Canada (SCC) for ISO/IEC 17025:2017 - standard for accredited techniques and specific tests listed on our scope of accreditation:

<https://www.scc.ca/en/accreditation/laboratories/british-columbia-ministry-agriculture-plant-and-animal-health-laboratories>

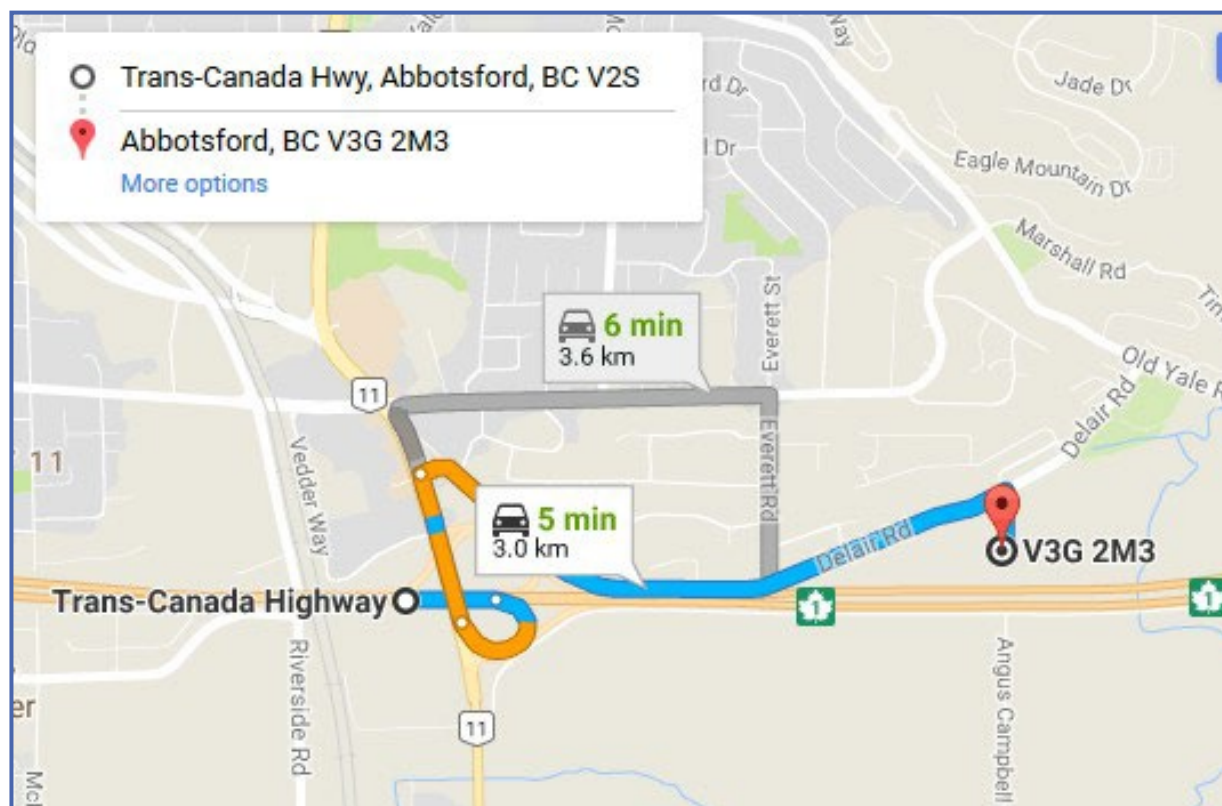
Location

The Ministry of Agriculture's Animal Health Centre is located in the Abbotsford Agricultural Centre. Our mailing address is:

**Animal Health Centre
1767 Angus Campbell Road
Abbotsford, BC V3G 2M3**

From Highway 1

- Take exit 92 toward Mission
- Merge onto BC-11 N
- Turn **Right** onto Delair Road
- Turn **Right** onto Angus Campbell Road



A-Z of Tests Offered at the AHC

Test Key: *AGID* – Agar Gel Immunodiffusion; *ELISA* – Enzyme Linked Immunosorbent Assay; *HI* – Hemagglutination Assay; *PCR* – Polymerase Chain Reaction; *RID* – Radial Immunodiffusion; *VI* – Virus Isolation; *VN* – Virus Neutralization.

Test Name	Preferred Specimen(s)	Lab Section	Price (before tax)
A			
Actinobacillus pleuropneumoniae <i>PCR</i>	Lung, tonsils	Molecular Diagnostics	\$35.00
Actinobacillus spp. <i>PCR</i> (including <i>Actinobacillus suis</i> detection)	Lung, tonsils	Molecular Diagnostics	\$35.00
Additional time required to conduct examination (in excess of 1 hour)	N/A	Pathology (Necropsy)	\$150.00 per hour
Additional time required to interpret/respond to client (in excess of 1 hour)	N/A	Pathology (Necropsy)	\$150.00 per hour
Adenovirus Hemorrhagic Disease <i>PCR</i>	Liver, lung, spleen	Molecular Diagnostics	\$35.00
Adenovirus spp. <i>PCR</i>	Please contact the AHC	Molecular Diagnostics	\$35.00
Aerobic Bacteria Culture and Sensitivity	2-5cm piece fresh tissue, swab	Bacteriology	Production Animals \$40 All Other Animals \$60
Aeromonas spp. <i>PCR</i>	Skin, gill, kidney	Molecular Diagnostics	\$35.00
Aeromonas salmonicida <i>PCR</i> (Furunculosis)	Skin, gill, kidney	Molecular Diagnostics	\$35.00
African swine fever virus <i>PCR</i>	Tonsils, lymph nodes, spleen, kidney, liver	Molecular Diagnostics	\$35.00
Aleutian Disease <i>PCR</i>	Whole blood	Molecular Diagnostics	\$35.00
Anaerobic Bacteria Culture	2-5cm piece fresh tissue, swab	Bacteriology	Production Animals \$40 All Other Animals \$60
Anaplasma marginale <i>PCR</i>	Whole blood	Molecular Diagnostics	\$35.00
Anthrax Screening <i>Navy Test Kit</i>	Whole blood, blood-soaked swab	Bacteriology	\$25.00
Arthrobacter davidanieli <i>PCR</i> (<i>Renibacterium</i> Vaccine)	Please contact the AHC	Molecular Diagnostics	\$35.00
Avian Adenovirus <i>PCR</i> (Inclusion Body Hepatitis)	Liver, spleen	Molecular Diagnostics	\$35.00
Avian Adenovirus Group 1 <i>AGID</i>	≥0.5ml serum per bird	Serology	\$10.00
Avian Adenovirus <i>VI</i>	Liver, spleen	Virology	\$40.00
Avian Astrovirus <i>PCR</i> (Chicken Astrovirus)	Kidney, liver, proventriculus, intestine/cecum	Molecular Diagnostics	\$35.00

Avian Encephalomyelitis <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Avian Encephalomyelitis Virus <i>PCR</i>	Brain, pancreas, gizzard	Molecular Diagnostics	\$35.00
Avian Hemorrhagic Enteritis Virus <i>PCR</i>	See Avian Adenovirus	Molecular Diagnostics	\$35.00
Avian Herpes Virus (other) <i>VI</i>	Please contact the AHC	Virology	\$40.00
Avian Infectious Bronchitis Virus <i>PCR</i>	Trachea/bronchus, tracheal swab, lungs, kidney, fecal swab, cecal tonsil	Molecular Diagnostics	\$35.00
Avian Infectious Laryngotracheitis Virus <i>PCR</i>	Trachea, tracheal swab, lungs, eyelid	Molecular Diagnostics	\$35.00
Avian Influenza Virus <i>PCR</i>	Oropharyngeal swab, cloacal swab, trachea, spleen, lungs, kidney, brain, cecal tonsil	Molecular Diagnostics	\$35.00
Avian Influenza <i>AGID</i>	≥0.5ml serum per bird	Serology	\$10.00
Avian Influenza <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Avian Nephritis Virus <i>PCR</i>	Kidney	Molecular Diagnostics	\$35.00
Avian Paramyxovirus 3 <i>HI</i>	≥0.5ml serum per bird	Serology	\$10.00
Avian Paramyxovirus-1 <i>PCR</i>	Trachea, oropharyngeal swab, lungs, brain, proventriculus, cecal tonsil, cloacal swab, spleen, kidney	Molecular Diagnostics	\$35.00
Avian Polyoma Virus <i>PCR</i>	Feather pulp, skin, lung, liver, kidney, whole blood, feces, cloacal swab	Molecular Diagnostics	\$35.00
Avian Reovirus <i>PCR</i>	<u>Enteric and respiratory</u> - Intestine, pancreas, feces, trachea, lung <u>Viral arthritis</u> - Joint swab, tendons, heart (chicks)	Molecular Diagnostics	\$35.00
Avian Reovirus <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Avian Reovirus <i>VI</i>	<u>Enteric and respiratory</u> - Intestine, pancreas, feces, trachea, lung <u>Viral arthritis</u> - Joint swab, tendons, heart (chicks)	Virology	\$40.00
Avibacterium paragallinarum <i>PCR</i> (Infectious Coryza)	Trachea, lungs, tracheal swabs, sinus, eyelid	Molecular Diagnostics	\$35.00
Avibacterium spp. <i>Culture</i>	2-5cm piece fresh tissue, swab	Bacteriology	Production Animals \$40 All Other Animals \$60
Avipoxvirus <i>PCR</i> (Fowl/Avian Pox, Raptor Poxvirus)	Skin lesions	Molecular Diagnostics	\$35.00
Avipoxivirus <i>VI</i> (Fowl/Avian Pox)	Skin lesions	Virology	\$40.00
B			
Bacterial Identification by MADLI-ToF	Pure bacterial isolate in blood agar plate NOTE: Unfit - If bacterial colonies are mixed (more than one isolate), overly grown with contaminants, or old, we will not be able to perform MALDI-ToF	Bacteriology	\$12.00 per isolate

	testing and report out the results as unfit.		
Baermann examination for lungworm	10g feces	Parasitology	\$27.00
Bartonella henselae PCR	Whole blood	Molecular Diagnostics	\$35.00
Batrachochytrium dendrobatidis PCR	Skin, digit, tadpoles, whole body rinse, cutaneous swab *dry swabs, do not submit in media*	Molecular Diagnostics	\$35.00
Batrachochytrium salamandrivorans PCR	Skin, cutaneous swab	Molecular Diagnostics	\$35.00
Bearded Dragon Adenovirus PCR	Liver, feces	Molecular Diagnostics	\$35.00
Blue Tongue Virus PCR	Nasal swabs, lesions, whole blood, spleen, lymph nodes or bone marrow	Molecular Diagnostics	\$35.00
Blue Tongue Virus ELISA	≥2 ml serum per animal	Serology	\$10.00
Bonamia ostreae PCR	Live or freshly dead oyster, gills and/or heart	Molecular Diagnostics	\$35.00
Border Disease Virus PCR	Buffy coat (whole blood), lymphoid tissue, brain	Molecular Diagnostics	\$35.00
Bordetella avium PCR	Tracheal swab, trachea	Molecular Diagnostics	\$35.00
Bovine Adenovirus Type 3, 4-8 PCR	Nasal swab, feces	Molecular Diagnostics	\$35.00
Bovine Adenovirus VI	Nasal swab, feces	Virology	\$40.00
Bovine Coronavirus PCR	Nasal swab, lung, trachea, feces	Molecular Diagnostics	\$35.00
Bovine Herpesvirus-1 PCR	Nasal swab, conjunctival swab vaginal swab, trachea Fetus: lung, liver, kidney, adrenal gland, placenta	Molecular Diagnostics	\$35.00
Bovine Herpesvirus- 4 PCR	Lesions (scrapings, scabs), respiratory tissues, nasal swabs, secretions, whole blood	Molecular Diagnostics	\$35.00
Bovine Leukemia Virus (BLV) ELISA	≥2 ml serum per animal	Serology	\$10.00
Bovine Papillomavirus PCR	Lesions	Molecular Diagnostics	\$35.00
Bovine Papular Stomatitis Virus – VI	Lesions	Virology	\$40.00
Bovine Parainfluenza 3 Virus PCR	Nasal swab, lung	Molecular Diagnostics	\$35.00
Bovine Parainfluenza Virus Type-3 VN	≥2 ml serum per animal	Virology	\$10.00
Bovine Parvovirus PCR	Feces, intestine	Molecular Diagnostics	\$35.00
Bovine Respiratory Coronavirus VN	≥2 ml serum per animal	Virology	\$10.00
Bovine Respiratory Syncytial Virus PCR	Nasal-pharyngeal washings, deep nasal swab, lung	Molecular Diagnostics	\$35.00
Bovine Respiratory Syncytial Virus VI	Nasal-pharyngeal washings, deep nasal swab, lung	Virology	\$40.00
Bovine Respiratory Syncytial Virus VN	≥2 ml serum per animal	Virology	\$10.00

Bovine Viral Diarrhea VI	Buffy coat (10 ml whole blood), serum, feces, intestine, Peyer's patches, spleen, mesenteric lymph node, lung, milk; Fetus: lung, liver, spleen, thymus, thyroid, placenta, fetal fluids	Virology	\$40.00
Bovine Viral Diarrhea Virus Type 1&2 VN	≥2 ml serum per animal	Virology	\$10.00
Bovine Viral Diarrhea Virus (BVDV) Type 1&2 ELISA	≥2 ml serum per animal	Serology	\$10.00
Bovine Viral Diarrhea Virus Types 1 & 2 PCR	Buffy coat (10 ml whole blood), serum, feces, intestine, Peyer's patches, spleen, mesenteric lymph node, lung, milk; Fetus: lung, liver, spleen, thymus, thyroid, placenta, fetal fluids	Molecular Diagnostics	\$35.00
Brachyspira hyodysenteriae PCR	Large intestine, feces	Molecular Diagnostics	\$35.00
Brachyspira pilosicoli PCR	Large intestine, feces	Molecular Diagnostics	\$35.00
Brucella BPAT CFIA form 5473 required	≥2 ml serum per animal	Serology	\$10.00
Brucella spp. PCR	Please contact the AHC	Molecular Diagnostics	\$35.00
C			
C.chauvoei, novyi, septicum, sordellii <i>Fluorescent antibody detection</i>	Affected tissue, swab of infected lesions	Bacteriology	\$40.00
Calf Scours Package for calves <2 weeks of age	10g Feces, +/- 2 fecal swabs (no culture media)	Multiple	\$110.00
Campylobacter spp.	Feces	Bacteriology	\$40.00
Canine Adenovirus Type 1 & 2 PCR	Type 1 - Liver, feces Type 2 - Nasal swab, conjunctival or pharyngeal swab	Molecular Diagnostics	\$35.00
Canine Adenovirus Type-2 VI	Nasal swab, conjunctival or pharyngeal swab	Virology	\$50.00
Canine Coronavirus PCR	Feces, fecal swab	Molecular Diagnostics	\$35.00
Canine Coronavirus VI	Feces, fecal swab	Virology	\$60.00
Canine Distemper Virus PCR	Buffy coat (whole blood), lung, kidney, liver	Molecular Diagnostics	\$35.00
Canine Distemper Virus VI	Buffy coat (whole blood), lung, kidney, liver	Virology	\$50.00
Canine Distemper Virus VN	≥2 ml serum per animal	Virology	\$10.00
Canine Herpes Virus VI	Lung, liver	Virology	\$50.00
Canine Herpesvirus PCR	Lung, liver	Molecular Diagnostics	\$35.00
Canine Influenza Virus PCR	Nasal swab, lung	Molecular Diagnostics	\$35.00
Canine Parainfluenza Virus PCR	Nasal swab, tracheal swab, trachea	Molecular Diagnostics	\$35.00
Canine Parainfluenza Virus VI	Nasal swab, tracheal swab, trachea	Virology	\$50.00

Canine Parvovirus 2 PCR	Fecal swab, feces, intestine	Molecular Diagnostics	\$35.00
Caprine Arthritis Encephalitis PCR	Joint swab, buffy coat (whole blood), brain	Molecular Diagnostics	\$35.00
Caprine Arthritis Encephalitis ELISA animals should be ≥6mos old	≥2 ml serum per animal	Serology	\$10.00
Caprine Herpesvirus 2	Buffy coat (whole blood), tonsil, lymph node	Molecular Diagnostics	\$35.00
Ceratonova shasta PCR (formerly Ceratomyxa shasta)	Tissue lesions, intestinal scrapes	Molecular Diagnostics	\$35.00
Chick Anemia Virus ELISA	≥0.5ml serum per bird	Serology	\$10.00*
Chicken Anemia Virus PCR	Bursa, thymus, bone marrow, feces	Molecular Diagnostics	\$35.00
Chlamydia felis PCR	Conjunctiva swab, lung	Molecular Diagnostics	\$35.00
Chlamydophila abortus PCR	<u>Fetus</u> : placental cotyledons, lung	Molecular Diagnostics	\$35.00
Chlamydophila psittaci PCR	Lung, liver, spleen, feces	Molecular Diagnostics	\$35.00
Classical Swine Fever Virus PCR	Tonsils, lymph node (mandibular, retropharyngeal, gastrohepatic and mesenteric), spleen, kidney, ileum	Molecular Diagnostics	\$35.00
Clostridium difficile Toxin A&B ELISA	≥2 ml serum per animal	Serology	\$30.00
Clostridium piliforme PCR (Tyzzer's Disease)	Intestine	Molecular Diagnostics	\$35.00
Coxiella burnetii PCR	Placenta, milk, fetal lung, whole blood	Molecular Diagnostics	\$35.00
Coxiella burnetii ELISA (Q Fever)	≥2 ml serum per animal	Serology	\$10.00
Creation of documentation or photographs	N/A	Pathology (Necropsy)	\$150.00
Cryptococcus neoformans PCR	Brain, lung, lymph node, lesions	Molecular Diagnostics	\$35.00
Cryptosporidium spp. PCR	Small intestine, feces, fecal swabs	Molecular Diagnostics	\$35.00
Cryptosporidium spp. Direct smear	Feces	Bacteriology	\$27.00
D			
Dichelobacter nodosus PCR (Sheep Footrot)	Hoof trimmings, hoof swab	Molecular Diagnostics	\$35.00
DNA Sequencing <i>Bacterial Strain</i>	Pure colonies or bacterial isolate	Bacteriology	\$103.00
DNA Sequencing <i>Fungal Strain</i>	Fungal colonies	Bacteriology	\$103.00
Duck Viral Enteritis PCR	Liver, spleen, intestine, cecal tonsil	Molecular Diagnostics	\$35.00
Duck Viral Enteritis VI	Liver, spleen, intestine, cecal tonsil	Virology	\$40.00
Duck Viral Hepatitis VI	Liver, spleen, intestine, cecal, tonsil	Virology	\$40.00

E			
Encephalitozoon cuniculi <i>PCR</i> (rabbits and birds)	Kidney, urine	Molecular Diagnostics	\$35.00
Epizootic Haematopoietic Necrosis Virus <i>PCR</i>	Kidney, spleen, liver	Molecular Diagnostics	\$35.00
Epizootic Hemorrhagic Disease <i>PCR</i>	Whole blood (cattle & deer) spleen, lymph node, lung, liver	Molecular Diagnostics	\$35.00
Equine Adenovirus (Respiratory Disease) <i>VI</i>	Nasal swab, Lung	Virology	\$50.00
Equine Coronavirus <i>PCR</i>	Feces	Molecular Diagnostics	\$35.00
Equine Herpes Virus 1 <i>PCR</i>	<u>Adult</u> : Deep nasal swabs, conjunctival swab, whole blood (buffy coat), lung, spinal cord, brain <u>Fetus</u> : Liver, lung	Molecular Diagnostics	\$35.00
Equine Herpes Virus 1 <i>PCR</i> (Neuropathogenic)	<u>Adult</u> : Deep nasal swabs, conjunctival swab, whole blood (buffy coat), lung, spinal cord, brain; <u>Fetus</u> : Liver, lung	Molecular Diagnostics	\$35.00
Equine Herpes Virus 1 <i>VI</i>	<u>Adult</u> : Deep nasal swabs, conjunctival swab, whole blood (buffy coat), lung, spinal cord, brain; <u>Fetus</u> : Liver, lung	Virology	\$50.00
Equine Herpes Virus 1 <i>VN</i>	≥2 ml serum per animal	Virology	\$10.00
Equine Herpes Virus 2 <i>PCR</i>	Nasal swabs, buffy coat (whole blood)	Molecular Diagnostics	\$35.00
Equine Herpes Virus 3 <i>PCR</i>	Swabs from genital/oral lesions	Molecular Diagnostics	\$35.00
Equine Herpes Virus 4 <i>PCR</i>	Nasal swabs, conjunctival swab	Molecular Diagnostics	\$35.00
Equine Herpes Virus 4 <i>VI</i>	Nasal swabs, conjunctival swab	Virology	\$50.00
Equine Infectious Anemia – CFIA form 3937 required or CFIA approved electronic submission	≥2 ml serum per animal	Serology	\$12.00
Equine Influenza Virus <i>PCR</i>	Nasal swab, tracheal wash, lung	Molecular Diagnostics	\$35.00
Equine Influenza Virus <i>VI</i>	Nasal swab, tracheal wash, lung	Virology	\$50.00
Equine Influenza Virus <i>HI</i>	≥2 ml serum per animal	Serology	\$10.00
Equine rhinitis A Virus <i>PCR</i> (formerly Equine Rhinovirus-1)	Nasal swab, tracheal wash, lung	Molecular Diagnostics	\$35.00
Equine Viral Arteritis <i>PCR</i>	<u>Adult</u> : lung, thymus, whole blood (buffy coat), mesentery lymph node, liver, spleen <u>Fetus</u> : lung, spleen, thymus, placenta, liver	Molecular Diagnostics	\$35.00
Equine Viral Arteritis <i>VI</i>	<u>Adult</u> : lung, thymus, whole blood (buffy coat), mesentery lymph node, liver, spleen; <u>Fetus</u> : lung, spleen, thymus, placenta, liver	Virology	\$50.00
Equine Viral Arteritis <i>VN</i>	≥2 ml serum per animal	Virology	\$10.00
Erysipelothrix rhusiopathiae <i>PCR</i>	Tonsils, heart, joint swab, feces, spleen, lymph	Molecular Diagnostics	\$35.00

	nodes		
F			
Fecal Egg Count (Strongyle spp only)	10g feces	Parasitology	\$27.00
Fecal Flotation	10g feces	Parasitology	\$27.00
Feline Calicivirus PCR	Nasal swab, pharyngeal swab, lung	Molecular Diagnostics	\$35.00
Feline Calicivirus VI	Nasal swab, pharyngeal swab, lung	Virology	\$50.00
Feline Coronavirus PCR (Feline Infectious Peritonitis)	Peritoneal fluid spleen, kidney, lung	Molecular Diagnostics	\$35.00
Feline Herpesvirus PCR	Pharyngeal swab, nasal swab, lung, conjunctival swab	Molecular Diagnostics	\$35.00
Feline Immunodeficiency Virus PCR	Whole blood	Molecular Diagnostics	\$35.00
Feline Leukemia Virus PCR	Whole blood (1 ml)	Molecular Diagnostics	\$35.00
Feline Panleukopenia Virus VI (Feline Parvovirus)	Small intestine, kidney, liver	Virology	\$50.00
Feline Panleukopenia Virus PCR (Feline Parvovirus)	Small intestine, kidney, liver	Molecular Diagnostics	\$35.00
Feline Viral Rhinotracheitis VI (Feline Herpesvirus)	Pharyngeal swab, nasal swab, lung, conjunctival swab	Virology	\$50.00
Flavobacterium columnare PCR	Gills, lesions from mouth and skin	Molecular Diagnostics	\$35.00
Foot & Mouth Disease Virus PCR	Vesicular epithelium or fluid	Molecular Diagnostics	\$35.00
Fowl Pox Virus PCR	Skin lesions	Molecular Diagnostics	\$35.00
Francisella tularensis PCR	Oropharyngeal swab, whole blood, liver, spleen	Molecular Diagnostics	\$35.00
Frog Ranavirus (formerly Frog Iridovirus) VI	Kidney, digestive tract, liver, oral swab, cloacal swab *dry swabs, do not submit in media*	Virology	\$40.00
Frog Ranavirus PCR (formerly Frog Iridovirus)	Kidney, digestive tract, liver, oral swab, cloacal swab, *dry swabs, do not submit in media*	Molecular Diagnostics	\$35.00
Fungal Culture and Identification	2-5cm piece fresh tissue	Bacteriology	\$40.00
Fusobacterium spp. PCR	Please contact the AHC	Molecular Diagnostics	\$35.00
G			
Glasserella parsuis PCR (formerly Haemophilus parasuis)	Brain, visceral pleura and other serosal exudates	Molecular Diagnostics	\$35.00
H			
Haemophilus spp. Culture	2-5cm piece fresh tissue, swab	Bacteriology	Production Animals \$40 All Other Animals \$60
Helicobacter PCR (including H. hepaticus)	Liver	Molecular Diagnostics	\$35.00

Hemagglutinating Encephalomyelitis Virus <i>VI</i>	Brain, Upper spinal cord	Virology	\$40.00
Hemorrhagic Enteritis Virus <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Herpesvirus Consensus <i>PCR</i>	Please contact the AHC	Molecular Diagnostics	\$35.00
Histopathology	Fixed tissue	Histology	Production Animals \$62 All Other Animals \$95
I			
Immunoglobulin-Bovine IgG, IgM <i>RID</i>	≥2 ml serum per animal	Virology	\$10.00
Immunoglobulin-Equine IgG, IgM <i>RID</i>	≥2 ml serum per animal	Virology	\$10.00
Immunoglobulin-Porcine IgG <i>RID</i>	≥2 ml serum per animal	Virology	\$10.00
Immunohistochemistry (1st sample)	Fixed tissue	Histology	Production Animals \$62 All Other Animals \$95
Immunohistochemistry (additional samples up to 10)	Fixed tissue	Histology	\$25.00
Inclusion Body Hepatitis (Adenovirus) <i>VI</i>	Liver, spleen	Virology	\$40.00
Infectious Bovine Rhinotracheitis <i>PCR</i>	see Bovine Herpesvirus 1	Molecular Diagnostics	\$35.00
Infectious Bovine Rhinotracheitis <i>VI</i>	Nasal swab, conjunctival swab vaginal swab, trachea	Virology	\$40.00
Infectious Bovine Rhinotracheitis Virus <i>VN</i>	≥2 ml serum per animal	Virology	\$10.00
Infectious Bovine Rhinotracheitis Virus <i>ELISA</i>	≥2 ml serum per animal	Serology	\$10.00
Infectious Bronchitis <i>VI</i>	Trachea/bronchus, tracheal swab, lungs, kidney, cecal tonsil	Virology	\$40.00
Infectious Bronchitis Virus <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Infectious Bursal Disease <i>PCR</i>	Bursa	Molecular Diagnostics	\$35.00
Infectious Bursal Disease <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Infectious Bursal Disease <i>VI</i>	Bursa	Virology	\$40.00
Infectious Canine Hepatitis (Canine Adenovirus Type 1)	Liver, feces	Molecular Diagnostics	\$35.00
Infectious Canine Hepatitis <i>VI</i>	Liver, feces	Virology	\$50.00
Infectious Hematopoietic Necrosis Virus <i>PCR</i>	Kidney, spleen, liver, gills, mucus, whole fish	Molecular Diagnostics	\$35.00
Infectious Hematopoietic Necrosis Virus <i>VI</i>	Kidney, spleen, liver, gills, mucus, whole fish	Virology	\$40.00
Infectious Laryngotracheitis <i>VI</i>	Trachea, lung	Virology	\$40.00
Infectious Laryngotracheitis <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Infectious Pancreatic Necrosis Virus <i>PCR</i>	Pyloric caecum, spleen, kidney, brain	Molecular Diagnostics	\$35.00

Infectious Pancreatic Necrosis Virus VI	Pyloric caecum, spleen, kidney, brain	Virology	\$40.00
Infectious Salmon Anemia VI	Gills, heart, liver, kidney, spleen	Virology	\$40.00
Infectious Salmon Anemia Virus PCR	Gills, heart, liver, kidney, spleen	Molecular Diagnostics	\$35.00
Influenza A Virus Consensus PCR	Oropharyngeal swab, trachea, lungs, nasal swab	Molecular Diagnostics	\$35.00
J			
Johne's Disease PCR (Mycobacterium paratuberculosis)	Feces, rectal scrapping, ileum, mesenteric lymph nodes	Molecular Diagnostics	\$35.00
Johne's Disease ELISA (Mycobacterium paratuberculosis) ≥18mos for bovine testing ≥12mos for caprine testing	≥2 ml serum per animal	Serology	\$10.00
K			
Klebsiella Culture of Sawdust or Environmental Sample	Environmental sample of interest	Bacteriology	\$40.00
Koi Herpes Virus PCR (Cyprinid herpesvirus 3) (KHV)	Gill, kidney	Molecular Diagnostics	\$35.00
Kudoa thyrsites PCR	Muscle tissue	Molecular Diagnostics	\$35.00
L			
Lawsonia intracellularis PCR	Ileum, feces	Molecular Diagnostics	\$35.00
Leptospira ssp. PCR	Urine, whole blood	Molecular Diagnostics	\$35.00
Listeria monocytogenes PCR	Brain, abscess, liver, lesions, placenta, spleen	Molecular Diagnostics	\$35.00
Listeria Monocytogenes Enrichment and Isolation	Brain tissue sample	Bacteriology	\$40.00
Loma salmonae PCR	Gills	Molecular Diagnostics	\$35.00
M			
Malignant Catarrhal Fever PCR Sheep (Ovine herpesvirus-2)	Buffy coat (whole blood), tonsil, lymph node	Molecular Diagnostics	\$35.00
Malignant Catarrhal Fever PCR Wildebeest (Alcelaphine herpesvirus-1)	Buffy coat (whole blood), tonsil, lymph node, kidney, liver, brain	Molecular Diagnostics	\$35.00
Milk Culture (up to 4 samples)	Milk 1-2ml per teat	Bacteriology	\$33.00
Milk Culture (additional samples >4)	Milk 1-2ml per teat	Bacteriology	\$8.25 per sample
Mink Distemper Virus VI	Lung, kidney, intestine, trachea	Virology	\$40.00
Mink Distemper Virus VN	≥2 ml serum per animal	Virology	\$10.00
Mink Enteritis Virus PCR (Mink Parvovirus)	Intestine, liver, lung kidney	Molecular Diagnostics	\$35.00
Mollicutes PCR	Lung, trachea, bronchial lymph nodes, tonsils, nasal swabs	Molecular Diagnostics	\$35.00
Morbillivirus consensus PCR	Please contact the AHC	Molecular Diagnostics	\$35.00

Moritella viscosa <i>PCR</i> (Winter Ulcer Disease)	Kidney, gill, surface ulcers or abscesses	Molecular Diagnostics	\$35.00
Mycobacterium avium <i>PCR</i>	Feces, intestine, liver, spleen, kidney	Molecular Diagnostics	\$35.00
Mycobacterium bovis <i>PCR</i>	Abscesses, granulomas, lung, or affected lymph nodes	Molecular Diagnostics	\$35.00
Mycobacterium paratuberculosis <i>PCR</i> (Johne's Disease)	Feces, rectal scrapping, ileum, mesenteric lymph nodes	Molecular Diagnostics	\$35.00
Mycobacterium paratuberculosis (Johne's Disease) <i>ELISA</i> ≥18mos for bovine testing ≥12mos for caprine testing	≥2 ml serum per animal	Serology	\$10.00
Mycoplasma bovis <i>PCR</i>	Lung, synovium, joint fluid	Molecular Diagnostics	\$35.00
Mycoplasma gallisepticum <i>PCR</i>	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendon	Molecular Diagnostics	\$35.00
Mycoplasma gallisepticum <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Mycoplasma gallisepticum <i>HI</i>	≥0.5ml serum per bird	Serology	\$10.00
Mycoplasma hyopneumoniae <i>PCR</i>	Lung, bronchoalveolar lavage	Molecular Diagnostics	\$35.00
Mycoplasma iowae <i>PCR</i>	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendons	Molecular Diagnostics	\$35.00
Mycoplasma meleagridis <i>PCR</i>	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendon	Molecular Diagnostics	\$35.00
Mycoplasma meleagridis <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Mycoplasma ovipneumoniae <i>PCR</i>	Nasal swabs <i>*dry swabs, do not submit in media*</i>	Molecular Diagnostics	\$35.00
Mycoplasma synoviae <i>PCR</i>	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendon	Molecular Diagnostics	\$35.00
Mycoplasma synoviae <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Mycoplasma synoviae <i>HI</i>	≥0.5ml serum per bird	Serology	\$10.00
Myxobolus cerebralis <i>PCR</i>	Lesions, brain/cranium	Molecular Diagnostics	\$35.00
N			
Necropsy Post Mortem Diagnostic Package	Tissue from necropsy performed outside of the AHC	Pathology (Necropsy)	Production Animals \$110 All Other Animals \$250
Neorickettsia risticii <i>PCR</i> (Potomac horse fever)	Buffy coat (whole blood)	Molecular Diagnostics	\$35.00
Neospora caninum <i>PCR</i>	Brain, heart, lung, placenta, skeletal muscle, tongue	Molecular Diagnostics	\$35.00
Neospora caninum <i>ELISA</i>	≥2 ml serum per animal	Serology	\$10.00
Neurological Spinal Cord Add On	Add-on to post mortem examination	Pathology (Necropsy)	\$100.00
Newcastle Disease Virus <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Newcastle Disease Virus <i>HI</i>	≥0.5ml serum per bird	Serology	\$10.00

Nocardia seriolae <i>PCR</i>	Spleen, kidney, liver, or brain displaying granulomatous lesions	Molecular Diagnostics	\$35.00
Non-commercial poultry (flock size <100) first submission (per client on an annual basis)	Whole bird	Pathology (Necropsy)	\$25.00
Non-commercial poultry (flock size <100) subsequent submissions (beyond the first submission)	Whole bird	Pathology (Necropsy)	\$140.00
Nucleospora salmonis <i>PCR</i>	Kidney, blood , feces	Molecular Diagnostics	\$35.00
O			
Ornithobacterium rhinotracheale <i>PCR</i>	Tracheal swab, trachea, lung	Molecular Diagnostics	\$35.00
Ornithobacterium rhinotracheale <i>Culture</i>	2-5cm piece fresh tissue, swab	Bacteriology	Production Animals \$40 All Other Animals \$60
Ornithobacterium rhinotracheale <i>ELISA</i>	≥0.5ml serum per bird	Serology	\$10.00*
Ovine Herpes 2 Virus <i>PCR</i> (MCF - Sheep)	Buffy coat (whole blood), tonsil, lymph node	Molecular Diagnostics	\$35.00
Ovine Progressive Pneumonia <i>ELISA</i>	≥2 ml serum per animal	Serology	\$10.00
Ovine Progressive Pneumonia Virus <i>PCR</i> (Maedi-visna Virus)	Buffy coat (whole blood)	Molecular Diagnostics	\$35.00
Ovine Respiratory Syncytial Virus <i>PCR</i>	Nasal swab, lung	Molecular Diagnostics	\$35.00
P			
Pacheco's Disease (Herpes) Virus <i>VI</i>	Lung, liver, spleen, feces, whole blood	Virology	\$50.00
Parameoba perurans <i>PCR</i>	Gills, gill swabs	Molecular Diagnostics	\$35.00
Parapoxvirus <i>PCR</i>	Lesions	Molecular Diagnostics	\$35.00
Phocid Morbillivirus <i>VI</i>	Nasal, pharyngeal, or ocular swabs, trachea, lung	Virology	\$40.00
Phocine Distemper Virus <i>PCR</i>	Whole blood, nasal, pharyngeal or ocular swabs, trachea-bronchial lymph nodes, spleen, liver, kidney, lung and brain	Molecular Diagnostics	\$35.00
Pigeon Circovirus <i>PCR</i>	Feces, bursa	Molecular Diagnostics	\$35.00
Piscine myocarditis virus <i>PCR</i> (Salmon Totivirus)	Heart	Molecular Diagnostics	\$35.00
Piscirickettsia salmonis <i>PCR</i>	Kidney, liver, spleen	Molecular Diagnostics	\$35.00
Porcine Circovirus <i>PCR</i>	Feces, nasal secretions, lung, oropharyngeal swab, buffy coat	Molecular Diagnostics	\$35.00
Porcine Delta Coronavirus <i>PCR</i>	Feces, intestinal contents, intestine	Molecular Diagnostics	\$35.00
Porcine Epidemic Diarrhea Virus <i>PCR</i>	Feces, intestinal contents, intestine	Molecular Diagnostics	\$35.00
Porcine Parvovirus <i>PCR</i>	<u>Fetus</u> : lung, liver, kidney, spleen, placenta	Molecular Diagnostics	\$35.00

Porcine Parvovirus <i>VI</i>	<u>Fetus</u> : lung, liver, kidney, spleen, placenta	Virology	\$40.00
Porcine Reproductive & Respiratory Syndrome Virus <i>PCR</i>	<u>Adult</u> : Serum, blood swab in saline, lung, tonsil <u>Fetus</u> : lung, spleen, thymus, thoracic fluid	Molecular Diagnostics	\$35.00
Post Mortem Examination	Whole animal	Pathology (Necropsy)	Production Animals \$140 All Other Animals \$250
Post Mortem Examination – Fetus	Fetus <i>and</i> placenta	Pathology (Necropsy)	Production Animals \$80 All Other Animals \$250
Private Cremation – preparation and packaging of remains (<40 kg)	N/A	Pathology (Necropsy)	\$250.00
Proventricular Dilatation Disease <i>PCR</i> (Avian Borna Virus)	Crop, proventriculus, brain	Molecular Diagnostics	\$35.00
Pseudogymnoascus destructans <i>PCR</i> (Bat white-nose syndrome)	Skin and mucocutaneous swabs: wing webbing, snout, conjunctiva *dry swabs, do not submit in media*	Molecular Diagnostics	\$35.00
Psittacine Beak & Feather Virus <i>PCR</i> (Psittacine Circovirus)	Feather pulp, skin, bursa, thymus, feces, whole blood	Molecular Diagnostics	\$35.00
Psittacine Herpes Virus <i>PCR</i> (Pacheco's Disease)	Lung, liver, spleen, feces, whole blood	Molecular Diagnostics	\$35.00
R			
Rabbit Hemorrhagic Disease <i>PCR</i>	Liver, spleen, whole blood	Molecular Diagnostics	\$35.00
Rabbit Herpes Virus <i>VI</i>	Skin lesions	Virology	\$40.00
Renibacterium salmoninarum <i>PCR</i> (Bacterial Kidney Disease)	Kidney	Molecular Diagnostics	\$35.00
Reovirus – Avian <i>PCR</i>	<u>Enteric and respiratory</u> - Intestine, pancreas, feces, trachea, lung	Molecular Diagnostics	\$35.00
	<u>Viral arthritis</u> - Joint swab, tendon, heart (chicks)		
Reticuloendotheliosis Virus <i>PCR</i>	Buffy coat (whole blood), tumor tissues, spleen	Molecular Diagnostics	\$35.00
S			
Salmon Alphavirus <i>PCR</i>	Organs, viremic serum	Molecular Diagnostics	\$35.00
Salmonella culture <i>Enrichment, isolation, identification and serotyping</i> (PHAC)- Diagnostic Specimen	2-5cm piece fresh tissue, swab	Bacteriology	\$40.00
Salmonella culture <i>Enrichment, isolation, identification and serotyping</i> (PHAC)-analysis of environmental samples (fluff or sponge, environmental monitoring)	Fluff, environmental sponge/drag swab/booties	Bacteriology	\$40.00
Salmonella Dublin <i>ELISA</i>	≥2 ml serum per animal	Serology	\$10.00
Salmonid Herpes virus <i>PCR</i>	Liver, kidney, spleen	Molecular Diagnostics	\$35.00
Sarcocystis neurona <i>PCR</i>	Brain	Molecular Diagnostics	\$35.00

Seal Herpes Virus <i>PCR</i>	Whole blood, nasal, pharyngeal or ocular swabs, trachea, bronchial lymph nodes, spleen, liver, kidney, lung and brain	Molecular Diagnostics	\$35.00
Seneca Valley Virus <i>PCR</i>	Intact vesicles, vesicular fluid, scrapings of vesicular lesions, serum	Molecular Diagnostics	\$35.00
Snake Paramyxovirus <i>PCR</i>	Oral and cloacal swabs	Molecular Diagnostics	\$35.00
Spring Viremia of Carp Virus <i>PCR</i>	Whole fish (small fish - less than 4 cm), viscera including the kidney and encephalon from fish 4 to 6 cm long, kidney, spleen, PCR 8 liver, gills and encephalon from larger fish	Molecular Diagnostics	\$35.00
Streptococcus equi equi <i>culture/PCR combined</i>	Nasopharyngeal wash, nasal swab	Multiple	Production Animals \$75 All Other Animals \$95
Streptococcus iniae <i>PCR</i>	Brain	Molecular Diagnostics	\$35.00
Streptococcus spp. <i>PCR</i>	Please contact the AHC	Molecular Diagnostics	\$35.00
Streptococcus suis <i>PCR</i>	Please contact the AHC	Molecular Diagnostics	\$35.00
Streptococcus suis <i>Culture</i>	2-5cm piece fresh tissue, swab	Bacteriology	Production Animals \$40 All Other Animals \$60
Swine Influenza Virus <i>VI</i>	Nasal swab, trachea, lung	Virology	\$40.00
Swine Influenza Virus <i>PCR</i>	Nasal swab, trachea, lung	Molecular Diagnostics	\$35.00
Swine Influenza Virus <i>HI</i>	≥2 ml serum per animal	Serology	\$10.00
T			
Taura Syndrome Virus <i>PCR</i>	Haemolymph, pleopods, whole small shrimp	Molecular Diagnostics	\$35.00
Tenacibaculum maritimum <i>PCR</i> (formerly <i>F. maritimus</i>)	Lesions from mouth	Molecular Diagnostics	\$35.00
Torovirus (Breda) <i>VI</i>	Feces	Virology	\$40.00
Torovirus – Bovine <i>PCR</i>	Feces	Molecular Diagnostics	\$35.00
Torovirus – Porcine <i>PCR</i>	Feces	Molecular Diagnostics	\$35.00
Toxoplasma gondii <i>PCR</i>	<u>Fetus</u> : brain, CSF, placenta	Molecular Diagnostics	\$35.00
Transmissible Gastroenteritis (TGE) Virus <i>VN</i>	≥2 ml serum per animal	Virology	\$10.00
Transmissible Gastroenteritis Virus <i>PCR</i>	Feces, small intestine (Jejunum)	Molecular Diagnostics	\$35.00
Trichomonas gallinae <i>PCR</i>	Oral mucosa, esophagus	Molecular Diagnostics	\$35.00
Tritrichomonas foetus <i>PCR</i>	Vaginal swab, preputial washings	Molecular Diagnostics	\$35.00
Turkey Coronavirus <i>PCR</i>	Feces, intestine, bursa	Molecular Diagnostics	\$35.00
U			

Ureaplasma diversum <i>PCR</i>	Vaginal swab, placenta	Molecular Diagnostics	\$35.00
V			
Vesicular Stomatitis Virus <i>VI</i>	Lesions	Virology	\$40.00
Viral Hemorrhagic Septicemia Virus <i>PCR</i>	Kidney, spleen, liver, brain, whole fish	Molecular Diagnostics	\$35.00
Viral Hemorrhagic Septicemia Virus <i>VI</i>	Kidney, spleen, liver, brain, whole fish	Virology	\$40.00
W			
West Nile Virus <i>PCR</i>	Brain, cloacal swab, choanal swab, liver, kidney, spleen	Molecular Diagnostics	\$35.00
Western Equine Encephalomyelitis <i>PCR</i>	Whole blood, cerebrospinal fluid, cerebrum, brain stem, lung, liver, kidney, spleen, visceral lymph nodes	Molecular Diagnostics	\$35.00
White Spot Syndrome Virus <i>PCR</i>	Samples of or from the pleopods, gills, haemolymph, stomach or abdominal muscle	Molecular Diagnostics	\$35.00
White Sturgeon Herpesvirus 1&2 <i>PCR</i> (Acipenserid herpesvirus 1&2)	Skin lesions	Molecular Diagnostics	\$35.00
White Sturgeon Iridovirus <i>PCR</i>	Gill	Molecular Diagnostics	\$35.00
Y			
Yellow Head Virus <i>PCR</i>	Lymphoid organ, gill	Molecular Diagnostics	\$35.00
Yersinia ruckeri <i>PCR</i> (Enteric Redmouth Disease)	Internal organs	Molecular Diagnostics	\$35.00

*Avian tests by ELISA have a \$10.00 charge for the first sample for each test. Additional samples for the same test will be charged at 3 samples for \$10.00. After the first sample, it is most cost effective to submit subsequent samples in groups of 3.

For toxicology testing please see note on next page

Toxicology

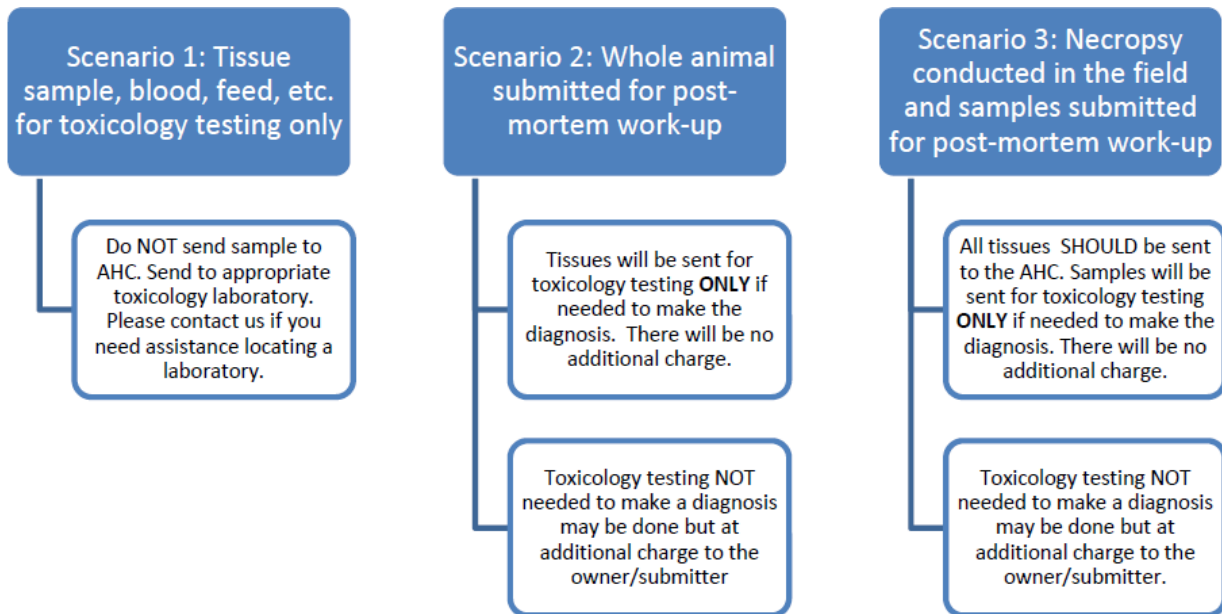
The toxicology laboratory at the Animal Health Centre is now closed. This means that toxicology testing previously conducted by the Animal Health Centre must now be undertaken elsewhere.

The Animal Health Centre is still committed to excellence in disease diagnostics and recognize that toxicology can play a vital role in reaching a diagnosis or understanding an animal health issue. For this reason, our pathologists have the option on necropsy-type cases to send samples for toxicology testing to outside laboratories.

Toxicology Testing

The primary goal of the pathologist is to arrive at a diagnosis. When the pathologist decides that toxicology testing is necessary as part of the case work-up, there is no extra charge to the client. When this testing is not part of the pathologist's regular work-up on the case (i.e., the pathologist does not deem it necessary to achieve a diagnosis) then the client will be charged for all outside toxicology tests.

The following flow chart provides guidance as to which samples can be submitted to the Animal Health Centre and how toxicology charges will be handled. Please contact the lab directly should you have any questions.



Tests by Department

If you are unsure of the testing you require, see our Common Disease Conditions and Suggested Testing section on page 60 or contact the Animal Health Centre at 1-800-661-9903 or 604-556-3003, or email PAHB@gov.bc.ca.

Pathology (Necropsy)

All samples, whether an entire animal, tissues, blood samples or swabs are received first by the Pathology section of the Animal Health Centre for evaluation by a veterinary pathologist. Veterinary pathologists are veterinarians with specialty training in the diagnosis of animal disease. Their diagnosis is based on macroscopic and microscopic tissue examination, as well as the use of diagnostic tests.

The Pathology section of the Animal Health Centre is a fully equipped, computerized, environmentally safe, 320 square metre area capable of handling both large and small animals. Accompanying the main Necropsy suite are five rooms for sample processing, photography, and histology preparation. There are an additional two rooms with HEPA-filtered safety cabinets that are used to examine samples with potential zoonotic or foreign animal disease agents.



Post Mortem Examination

Every post mortem examination (necropsy) is conducted at the discretion of the pathologist who will determine what, if any, procedures, and tests are necessary to complete the case following the gross examination. The pathologist may include up to 5 under the post mortem examination fee. Tests included in the fee: up to 10 histopathology slides, routine bacterial culture of up to 5 tissues, fecal floatation and PCR analysis or viral culture of single or pooled tissues.

If the pathologist determines that additional testing is necessary beyond the 5 included tests, the submitter will be contacted, and the case discussed. If further tests are approved by the submitter, additional charges will apply. Once all tests are complete, the pathologist will prepare the final case report, including the results of all tests conducted. This report is emailed, faxed, or mailed to the owner and/or the referring veterinarian.

Our target turnaround time, from submission to final reporting, is 10 business days. You may receive information about your case during this period at the discretion of the case coordinator. Some cases may take more than 10 business days to complete (for example, complex cases, neurological cases, cases requiring testing by external laboratories, etc.).

Submitters are welcome to discuss, over a reasonable time period, the final case results with the pathologist. Tests deemed unnecessary for case completion by the pathologist can be requested by submitters for their interest at an additional charge for each test.



Pathology (Necropsy): Tests and Fees

Test	Fee	
Additional time required to conduct examination (in excess of 1 hour)	\$150.00 per hour	
Additional time required to interpret/respond to client (in excess of 1 hour)	\$150.00 per hour	
Creation of documentation or photographs	\$150.00	
Necropsy Post Mortem Diagnostic Package	<i>Production Animals</i> \$110.00	<i>All Other Animals</i> \$250.00
Neurological Spinal Cord Add On	\$100.00	
Non-commercial poultry (flock size <100) first submission (per client on an annual basis)	\$25.00	
Non-commercial poultry (flock size <100) subsequent submissions (beyond the first submission)	\$140.00	
Post Mortem Examination	<i>Production Animals</i> \$140.00	<i>All Other Animals</i> \$250.00
Post Mortem Examination – Fetus	<i>Production Animals</i> \$80.00	<i>All Other Animals</i> \$250.00
Private Cremation – preparation of remains for release to crematorium (<40 kg)	\$250.00	

Production animals. Animals kept or dealt with primarily for their products or by-products. Examples include alpaca, cattle, goats, llama, sheep, swine, fur bearing animals, game farm animals, rabbits, poultry, fish, and public display animals (e.g., zoos and aquariums).

Necropsy Post Mortem Diagnostic Package. For tissues submitted from necropsies conducted outside of the Animal Health Centre. Up to five tests are included (e.g., histopathology, bacteriology, virology, and molecular diagnostics). Tests will be selected at the discretion of the duty pathologist. Specific test requests may be subject to additional charges.

Neurological Spinal Cord Add On. Extraction and examination of the spinal cord of animals submitted for post mortem examination. May be indicated in cases where the animal has suffered from hind-limb weakness. The added cost reflects the extra time and work it takes staff to remove and examine the entire spinal cord. Samples should be less than 24 hours old. Please note examination of the brain is included in the regular post mortem price if deemed appropriate by the case pathologist.

Post mortem examination includes necropsy with gross (macroscopic) examination and up to five tests (e.g., histopathology, bacteriology, virology, and molecular diagnostics). Tests will be selected at the discretion of the duty pathologist. Specific test requests may be subject to additional charges.

Private Cremation and the Release of Remains

- Animals weighing less than 40kg may be released to a *licensed pet crematorium* for private cremation.
- The cremation service with the cremation company of choice must be arranged by the submitter (owner or vet clinic) *before* the post mortem procedure and the Animal Health Centre must be notified at the time the animal arrives.
- The submitter must sign page one of the [**Private Cremation Release Form**](#) agreeing to the conditions for the release of the remains. Please ensure to check off "Private Cremation Requested" under "Services" on the second page of the submission form.

- When the post mortem examination is complete and the case pathologist has approved the release, we will contact the cremation company to arrange pick up. Animals will only be released once the case is completed by the pathologist.
- Animals cannot be released if a public health risk has been identified and deemed a risk to humans or other domestic animals (i.e., those with serious infectious diseases).

Specimens for Pathology (Necropsy) – Submission Requirements

Whole animals

Please see our detailed submission guide on page 54.

Tissue Specimens for Diagnostic Package

- Samples should be sent fresh or frozen. For packaging and shipping instructions please see page 54.
- When requesting histopathology, please try to submit formalin-fixed tissues. This will prevent rotting while in transit.
 - For proper fixation, tissues should be no more than 0.5 cm thick at the thickest point. Please use 10% neutral buffered formalin to fix tissues and ensure that a ratio of one part tissue to 10 parts formalin (by volume) is used for initial fixation.
 - Note that formalin fixed tissues do not need to be placed in individually labelled bags. Simply mark the bag with the words “Fixed” and “Histology” and mark off fixed tissues on the submission form.
 - **Do not** freeze samples for which you may require histopathology.

Abortion Specimens

- Please detail all relevant clinical history on the submission form. For example, parity of the dam, signs of illness, nutritional status, previous illnesses or stresses, vaccination history, general level of management and herd health status, recent additions to herd, previous abortions, or indications of infertility.
- If possible, please submit the *entire fetus and placenta*. If that is not possible, please submit the following tissues:
 - **Frozen or refrigerated:** placenta, stomach contents, fetal heart blood, lung, liver, kidney and spleen, brain.
 - **Fixed:** lung, liver, kidney, spleen, brain, heart, adrenal gland, ileum, thymus, thyroid, eyelid, skeletal muscle.

Fish Pathology and Diagnostic Testing

The Animal Health Centre provides fish pathology services including high quality gross and histopathological interpretation and diagnostic testing for marine and freshwater fish throughout British Columbia, Canada, and internationally. The Animal Health Centre is fully accredited by the AAVLD (American Association of Veterinary Laboratory Diagnosticians) and is one of the few diagnostic laboratories in Canada that can offer full-service fish health testing including pathology, virology, bacteriology, and molecular diagnostic testing. Submissions from any species of farm-reared, hatchery, wild, or aquarium fish are accepted. Submissions of fish from outside of the Pacific Ocean watershed require extra care, please see this notice for more information.

A. History:

With each submission, please provide a complete description of the fish management system, including group size, general level of management and fish health status, number of fish affected, onset/duration of problem, clinical signs, vaccination history, prior disease, and any treatment administered. Our fish submission forms provide a valuable template for compiling this information and can be found on our website <http://www.gov.bc.ca/animalhealthcentre>.

B. Selecting and Submitting Samples:

- Acutely affected and untreated fish are the preferred individuals for sampling.
- Fish tissues rapidly decay (autolyze) after death - e.g., the lining of the gill (lamellar epithelium) will begin to detach within about 5 minutes of death - the best tissue quality is obtained by sampling and preserving anesthetized fish that are submitted live.
- If dead fish are the only specimens available, tissue samples for histopathological evaluation should be collected and preserved in 10% neutral buffered formalin as soon as possible after death.
- Sampled tissues, tissues in histocassettes, or whole formalin fixed fish can be submitted for histopathological evaluation.
- When whole formalin fixed fish are submitted ensure adequate penetration of fixative to internal organs, tissues, and structures by:
 - Cutting a wedge section of the coelomic wall to expose the coelomic cavity and organs.
 - Removing the operculum to expose the gill arches.
 - Removing the dorsal surface of the head to expose the brain.
- For adequate fixation:
 - Ensure that the volume of fixative is at least 10 × tissue volume of the container.
 - Ensure tissues are no more than 1cm thick.
 - When using histocassettes, ensure that tissues occupy no more than 50% of the cassette. Please avoid squishing tissues into the cassette.
- As bile will digest tissues before fixative penetration, ensure that bile does not touch tissues to be examined by histopathology. Bile can also be aspirated from the gallbladder using a small needle and syringe.
- Samples for molecular diagnostic testing (PCR) can be kept chilled or frozen and should be shipped on ice - ideally frozen samples should always stay frozen (e.g., shipped on dry ice).
- Bacterial culture swabs or tissues destined for bacteriology should be kept chilled on ice or refrigerated and shipped chilled on ice (do not freeze swabs or tissues destined for bacterial culture).
- When specific tests are requested, submit replicate tissue samples, in separate labelled Whirl-

Pak bags for each lab section and test requested. Alternatively, submit representative portions of tissues or entire organs and indicate on the submission form, for the pathologist to select tests at their discretion.

C. Samples required:

- **Bacteriology:** kidney swab (kidney for larger fish or if no swabs are available), coelomic fluid/swab, organ swabs or tissue samples from organs/tissues with gross lesions (aerobic culture).
- **Histology:** gill, liver, spleen, heart, head kidney, trunk kidney, stomach, intestinal ceca and mesentery, distal intestine and mesentery, gonad, brain, eye, and skin/skeletal muscle (include a transverse section of the lateral line). Also include specific lesions and margins if they are identified.
 - In-house immunohistochemistry for *Piscirickettsia salmonis* is available on formalin-fixed tissues.
- **PCR/Virology:** for routine diagnostics include pooled samples of spleen, kidney, liver, heart, and gill (tissues from up to a maximum of five fish can be pooled for molecular diagnostic testing).

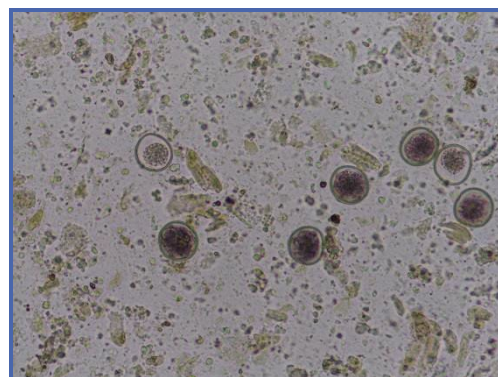
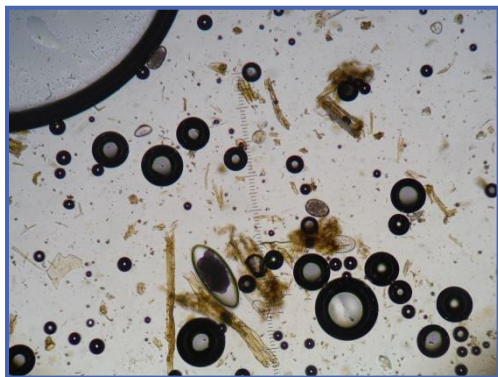
Parasitology

Parasitology: Tests, Specimens and Fees

Test	Specimen	Fee
Baermann examination for lungworm	10g feces	\$27.00 per sample
Cryptosporidium spp.- direct smear		
*please request test under Bacteriology section of submission form	10g feces	\$27.00 per sample
Fecal Flotation	10g feces	\$27.00
Fecal Egg Count (Strongyle spp only)	10g feces	\$27.00

Specimens for Parasitology – Submission Requirements

Feces: Submit approximately 10gm (10 – 20ml volume) in a securely closed sterile container. Outer surfaces of the container must be clean and dry. Do not submit feces in plastic bags or gloves. Label samples with animal name/ID and date collected. For packaging and shipping instructions please see page 54.



Bacteriology

The Bacteriology section of the Animal Health Centre offers extensive microbiological services for the isolation and identification of a wide range of bacterial and fungal pathogens from avian, mammalian, aquatic, reptile, feed, and environmental specimens.

The laboratory workup may include aerobic, anaerobic, and microaerophilic culture, as well as enrichment culture for many specific pathogens including *Salmonella*, *Campylobacter* and *Listeria*. Identification of bacterial and fungal organisms is performed using standard microbiological culturing techniques, various biochemical testing methods and DNA sequencing in some cases.



Bacteriology: Tests, Specimens and Fees

Test	Preferred Specimen(s)	Fee	
Aerobic Bacteria Culture and Sensitivity	2-5cm piece fresh tissue, swab	Production Animals \$40.00	All Other Animals \$60.00
Anaerobic Bacteria Culture	2-5cm piece fresh tissue, swab	Production Animals \$40.00	All Other Animals \$60.00
Anthrax Screening Test Kit Navy	Whole blood, blood-soaked swab	\$25.00	
Avibacterium spp. Culture	2-5cm piece fresh tissue, swab	Production Animals \$40.00	All Other Animals \$60.00
Bacterial Identification by MALDI-ToF	Pure bacterial isolate in blood agar plate NOTE: Unfit - If bacterial colonies are mixed (more than one isolate), overly grown with contaminants, or old, we will not be able to perform MALDI-ToF testing and report out the results as unfit.	\$12.00 per isolate	
C.chauvoei, novyi, septicum, sordellii <i>Fluorescent antibody detection</i>	Affected tissue, swab of affected lesions	\$40.00	
Campylobacter spp.	Feces	\$40.00	
Cryptosporidium spp. <i>Direct smear</i>	Feces	\$27.00	
DNA Sequencing <i>Bacterial Strain</i>	Pure colonies or bacterial isolate	\$103.00	
DNA Sequencing <i>Fungal Strain</i>	Fungal colonies	\$103.00	
Fungal Culture and Identification	2-5cm piece fresh tissue	\$40.00	
Haemophilus spp. Culture	2-5cm piece fresh tissue, swab	Production Animals \$40.00	All Other Animals \$60.00
Klebsiella Culture of Sawdust or Environmental Sample	Environmental sample of interest	\$40.00	
Listeria Monocytogenes <i>Enrichment and Isolation</i>	Brain tissue sample	\$40.00	
Milk Culture (up to 4 samples)	Milk 1-2ml per teat	\$33.00	
Milk Culture (additional samples >4)	Milk 1-2ml per teat	\$8.25 per sample	
Ornithobacterium rhinotracheale Culture	2-5cm piece fresh tissue, swab	Production Animals \$40.00	All Other Animals \$60.00
Salmonella culture <i>enrichment, isolation, identification, and serotyping (PHAC)-analysis of environmental samples (fluff or sponge, environmental monitoring)</i>	Fluff, environmental sponge/drag swab/booties	\$40.00	
Salmonella culture <i>enrichment, isolation, identification, and serotyping (PHAC)- Diagnostic Specimen</i>	2-5cm piece fresh tissue, swab	\$40.00	

Streptococcus equi <i>Culture/PCR combined</i>	Nasopharyngeal wash, nasal swab	Production Animals \$75.00	All Other Animals \$95.00
Streptococcus suis <i>Culture</i>	2-5cm piece fresh tissue, swab	Production Animals \$40.00	All Other Animals \$60.00

Antimicrobial Susceptibility Testing

Antimicrobial susceptibility testing (AST) is performed using the Kirby-Bauer disk diffusion assay and follows Clinical and Laboratory Standards Institute (CLSI) guidelines. AST testing is performed on organisms that are deemed clinically significant. We may not perform AST testing in cases where organisms are recovered from environmental sources, are common contaminants or are considered normal flora as these do not provide useful information and may promote unnecessary antibiotic usage.

Specimens for Bacteriology - Submission Requirements

Proper collection and handling of samples are critical for the success of bacterial and fungal culture. Samples should be collected immediately after the animal first develops symptoms and before any antimicrobial treatment. Collection of samples must be performed aseptically to prevent microbial contamination and overgrowth of primary pathogens. Improper handling and transport of samples will limit the recovery and identification of bacterial or fungal pathogens. Samples should be sealed and transported in a secure container to prevent leakage during shipment. For packaging and shipping instructions please see page 54.

Collection and Storage

Samples must be aseptically collected, individually labelled, and refrigerated immediately after collection. Samples that cannot be shipped the same day to the Animal Health Centre should be stored at 4°C for a maximum of two days. Depending on type of submission, samples must be kept chilled or frozen. The use of ice pack refrigerants to keep specimens chilled during transit is extremely important. If specimens are frozen, they must remain frozen in transport and not allowed to thaw.

Environmental samples (dust, sawdust, bedding material). For culture of environmental samples please submit approximately 100gm (about 1 cup) of a representative sample in a securely sealed container or Ziploc bag. Do not submit environmental samples in specimen gloves. *Please note that environmental samples submitted to the Animal Health Centre are for culture only. No antibiotic sensitivities will be performed on environmental samples.*

Environmental sponges/drag swabs/booties. Environmental sponges, drag swabs, or booties may be submitted for *Salmonella* spp. culture. *Please ensure specimens are double bagged and clearly identified using permanent marker on each specimen bag. The exterior of the bag must be clean and dry. Please follow ALL manufacturer's instructions on how to use both swabs and Whirl Pak bags.*

- Commercially available environmental sponges may be utilized for environmental *Salmonella* testing. Sponges should be submitted in a Whirl-Pak bag with the top tightly rolled over 3 times and the metal tabs folded over to ensure no leakage of specimen. Do not close the top metal tabs in a twist tie fashion as it does not create a proper seal. DO NOT submit more than 2 sponges per specimen bag.
- Drag swabs (or gauze swabs) may be used for environmental *Salmonella* testing. The swabs must be submitted in a Whirl-Pak bag with the top tightly rolled over 3 times and the metal tabs folded over to ensure no leakage of specimen. DO NOT submit more than 4-5 pieces of gauze per

specimen bag. If using a liquid (such as buffered peptone water) to moisten swab then use only enough liquid to moisten the swab, do not saturate it. Do not close the top metal tabs in a twist tie fashion as it does not create a proper seal.

- Booties may be used for environmental *Salmonella* testing. Submit booties in a sealed and labelled bag (large Whirl-Pak or Ziploc bag).

Feed (fresh or dry). For feed testing submit approximately 50-100 gm (about 1 cup) of a representative sample. For dry samples submit in a securely closed container or Ziploc bag. For moist or liquid feed samples submit in a securely closed container. Do not use Whirl-Pak or other bags for moist or liquid specimens. *Please note that feed samples submitted to the Animal Health Centre are for culture only. No antibiotic sensitivities will be performed on feed samples.*

Fluff. Fluff samples may be submitted for the detection of *Salmonella* spp. Please submit fluff in a securely closed specimen cup or Whirl-Pak bag. Do not overfill the specimen cup or bag; the fluff samples should fill no more than ¼ of the specimen cup or bag.

PLEASE NOTE: Antibiotic sensitivity panels will never be performed on environmental samples.

Fresh tissues. Whenever possible, submit fresh tissues in a sterile, leak proof container for bacterial and fungal culture. Tissue samples should be kept separate and if possible, the ends of intestinal specimens should be ligated (tied off), and intestinal samples separated from other tissues. Whenever possible, submit a 2-5cm piece of tissue with any lesions present. Autolyzed tissues are not suitable for culture.

Feces. Submit approximately 10gm (10-20ml volume) in a securely sealed sterile container. Outer surfaces of the container must be clean and dry. Do not submit feces in plastic bags or gloves.

Fluids (aspirates, pus, exudate etc.). All fluid or semi-fluid specimens should be collected aseptically in a sterile, leak-proof specimen container or vial. DO NOT submit syringes with needles attached.

Swabs. When fresh tissues, fluids or feces are not available, specimen swabs may be submitted for bacterial and/or fungal culture. Only use swabs with appropriate bacterial (aerobic or anaerobic) transport media for collection and shipment to the laboratory.

PLEASE NOTE not all testing requested may be completed in the event of a swab only submission. When requesting more than one test please submit tissue and/or multiple swabs to ensure there is enough material to perform all tests.

DO NOT submit dry swabs to the Bacteriology laboratory. Swabs for anaerobic culture must be submitted in an **anaerobic culture transport media** to ensure recovery of anaerobic organisms. Commercial transport media swabs are readily available

DO NOT freeze transport swabs for bacterial culture.

Milk. Proper collection of milk samples is essential for identification of mastitis associated pathogens. Aseptic technique is necessary to prevent contamination by commensal organisms found on the cow's skin, udder, and teats; hands of the sampler; and in the barn environment. Contaminated samples result in misdiagnosis, increased work, and expenses. Contamination can be avoided by following the procedures below.

Materials for Sampling Milk:

- Sterile vials or tubes – do not use plastic or Whirl-Pak bags for milk sampling.
- 70% alcohol (ethyl or isopropyl).

- Cotton balls or gauze soaked in 70% alcohol, or commercially prepared, individually packaged alcohol swabs.
- Examination gloves.
- Cooler with ice or freezer packs for storing samples.
- Racks for holding sample tubes or vials while sampling cows, and for cooler storage.
- Disinfectant for cleaning teats (effective germicidal products used for pre-milking teat disinfection are recommended).
- Paper towels or individual cloth towels.
- Labelling supplies: permanent ink pen (with ink that is stable in both water and alcohol) or typed labels.

Sampling Technique:

- Label tubes before sampling (date, farm, cow, quarter)
- Brush loose dirt, bedding, and hair from the udder and teats. Thoroughly wash with germicidal product and towel dry dirty teats and udders before sample collection. Udders should be wash as a last resort.
- Discard several streams of milk from the teat (strict foremilk) and observe milk and mammary quarters for changes in consistency or appearance of milk that may indicate clinical mastitis. Record all observations of clinical signs.
- Dip all quarters in an effective pre-milking teat disinfectant and allow at least 30 seconds contact time.
- Dry teats thoroughly with an individual paper or cloth towel.
- Beginning with teats on the far side of the udder, scrub teat ends vigorously (10 to 15 seconds) with cotton balls or gauze moistened (not dripping wet) with 70% alcohol. Teat ends should be scrubbed until no more dirt appears on the swab or is visible on the teat end. A single cotton ball or alcohol swab should not be used on more than one teat. Take care not to touch clean teat ends. Avoid clean teats coming into contact with dirty tail switches, feet, and legs. In herds where cows are not cooperative, begin by scrubbing the nearest teat until clean, obtain the sample, and move to the next teat.
- Begin sample collection from the closest teat and move to teats on the far side of the udder. Remove the cap from the tube or vial but do not set the cap down or touch the inner surface of the cap. Always keep the open end of the cap facing downward. Maintain the tube or vial at approximately a 45-degree angle while taking the sample. Do not allow the lip of the sample tube to touch the teat end. Collect one to three streams of milk and immediately replace and tightly secure the cap. Do not overfill tubes, especially if samples are to be frozen.
- To collect a composite sample (milk from all four quarters in the same tube), begin sample collection with the nearest teats and progress to the teats on the far side of the udder. 1-2 ml of milk should be collected from each quarter of the udder.
- When samples are taken at the end of or between milkings, teats should be dipped in a germicidal teat disinfectant after sampling.
- Store samples immediately on ice or in some form of refrigeration. Samples to be cultured at a later date (more than 48 hours) should be frozen immediately.

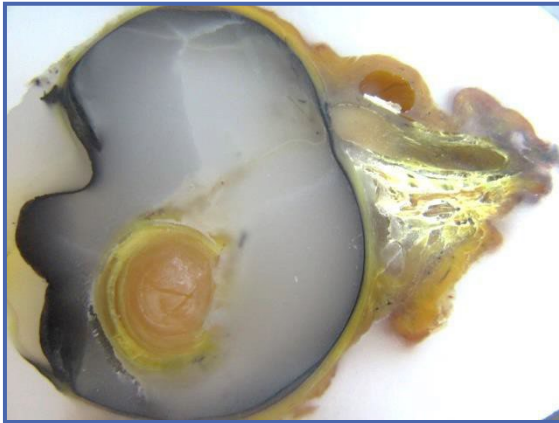
Reference: Microbiological Procedures for the Diagnosis of Bovine Udder Infection and Determination of Milk Quality. [NMC publication, 2004]

Histopathology

The histopathology section of the Animal Health Centre handles routine preparation of stained tissue sections mounted on glass microscope slides. Prepared tissue sections encompass all varieties of animal species, including fetal tissues.

Tissues are trimmed from samples fixed in 10% neutral buffered formalin. Overnight, automated tissue processors take the tissues through increasing concentrations of ethanol followed by xylene and, finally, into molten paraffin wax. Tissues are then embedded into molds and cooled in the freezer. The resulting blocks are sectioned at 3-6µm thick using a manual microtome and mounted onto glass microscope slides. After spending 35 minutes in a 65°C oven, they are placed onto the automated stainer.

Sections are stained with hematoxylin and eosin (H&E) before microscope examination. Stained tissue sections are ready for examination by the pathologist approximately twenty-four hours after fixed tissues are forwarded to the Histopathology section. Specific diagnostic tests using special stains may also be used, if required. Immuno-histochemistry staining for specific pathogens (disease-causing agents) has been introduced to assist the pathologist by directly identifying these pathogens in tissue sections.



Histopathology: Tests and Fees

Test	Fee	
	<i>Production Animals</i>	<i>All Other Animals</i>
Histopathology	\$62.00	\$95.00
Immunohistochemistry (1 st sample)	\$62.00	\$95.00
Immunohistochemistry (additional samples up to 10)	\$25.00	\$25.00

Specimens for Histopathology - Submission Requirements

If histopathology is required, please fix samples in formalin at the time they are taken. Shipping samples fresh will result in rotting during transit, which will hinder microscopic tissue examination. Please also avoid freezing samples as it damages the tissue. For packaging and shipping instructions please see page 54.

Preparation of Fixed Tissue with Formalin

Specimens should be no thicker than 5 mm at the thickest point. Other dimensions (e.g., length) are not critical; however, the sample should be large enough to provide an adequate field of study. For larger tissues that must be submitted intact (e.g., brain), it is best to make several deep cuts into the tissue so that the formalin can penetrate more quickly.

A 10 to 1 ratio of formalin to tissue (by volume) is essential for adequate fixation. Samples should be allowed to fix in 10% neutral buffered formalin for at least 24 hours.

Once the sample is fixed, it can be transported using just enough formalin to cover the tissue. Alternatively, the tissue can be wrapped in formalin-soaked paper towel.

Recipe for 10% Neutral Buffered Formalin

- Formaldehyde 35-40% strength - 10 ml
- (Na H₂ PO₄ H₂O) Sodium phosphate monobasic monohydrate - 0.4 gm
- (Na₂ H PO₄) Sodium phosphate dibasic anhydrous - 0.65 gm
- Water - to 100 ml

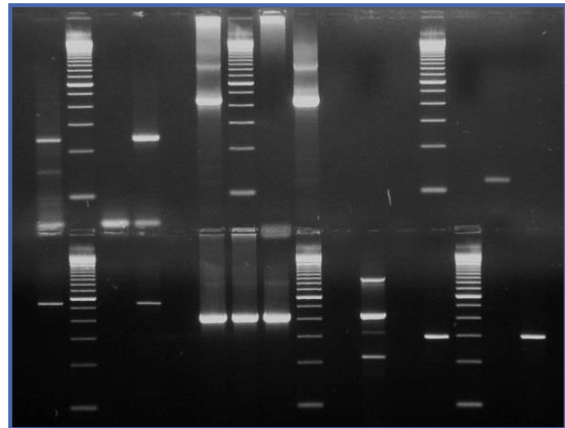
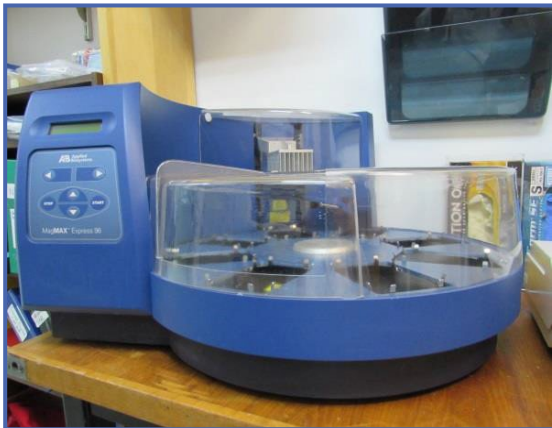
Molecular Diagnostics

The Molecular Diagnostics section of the Animal Health Centre offers diagnostic testing for a wide range of animal pathogens using molecular biology-based methods such as conventional and real-time PCR tests and DNA sequencing.

Diagnostic and Proficiency Testing

This section develops and validates Polymerase Chain Reaction (PCR) methods for detection and typing of pathogens important to domestic poultry, wild and exotic birds, food and fur bearing animals, companion animals, wild and zoological species, marine mammals and aquaculture salmonids.

In addition to routine diagnostic testing, the Molecular Diagnostics section undergoes proficiency testing conducted by the National Centre for Foreign Animal Disease and USDA's National Veterinary Services Laboratory.



Molecular Diagnostics: Tests, Specimens and Fees

Each PCR test from the Molecular Diagnostics lab costs **\$35.00** + tax unless otherwise indicated.

Test	Specimen
Actinobacillus pleuropneumoniae	Lung, tonsils
Actinobacillus spp. (including Actinobacillus suis detection)	Lung, tonsils
Adenovirus Hemorrhagic Disease	Lung, liver, spleen
Adenovirus spp.	Please contact the AHC
Aeromonas spp.	Skin, gill, kidney
Aeromonas salmonicida (Furunculosis)	Skin, gill, kidney
African swine fever virus	Tonsils, lymph nodes, spleen, kidney, liver
Aleutian Disease	Whole blood
Anaplasma marginale	Whole blood
Arthrobacter davidanieli (Renibacterium Vaccine)	Please contact the AHC
Avian Adenovirus (Inclusion Body Hepatitis)	Liver, spleen
Avian Astrovirus (Chicken Astrovirus)	Kidney, liver, proventriculus, intestine/cecum
Avian Encephalomyelitis Virus	Brain, pancreas, gizzard
Avian Hemorrhagic Enteritis Virus	See Avian Adenovirus
Avian Infectious Bronchitis Virus	Trachea/bronchus, tracheal swab, lungs, kidney, fecal swab, cecal tonsil
Avian Infectious Laryngotracheitis Virus	Trachea, tracheal swab, lungs, eyelid
Avian Influenza A Virus	Oropharyngeal swab, cloacal swab, trachea, spleen, lungs, kidney, brain, cecal tonsil
Avian Nephritis Virus	Kidney
Avian Paramyxovirus-1 (APMV-1)	Trachea, oropharyngeal swab, lungs, brain, proventriculus, cecal tonsil, cloacal swab, spleen, kidney
Avian Polyoma Virus	Feather pulp, skin , lung, liver, kidney, whole blood, feces, cloacal swab
Avian Reovirus	<u>Enteric and respiratory</u> - Intestine, pancreas, feces, trachea, lung <u>Viral arthritis</u> - Joint swab, tendons, heart (chicks)
Avibacterium paragallinarum (Infectious Coryza)	Trachea, lungs, tracheal swabs, sinus, eyelid
Avipoxvirus (Fowl/Avian Pox, Raptor Poxvirus)	Skin lesions
Bartonella henselae	Whole blood
Batrachochytrium dendrobatidis	Skin, digit, tadpoles, whole body rinse, cutaneous swab *dry swabs, do not submit in media*
Batrachochytrium salamandrivorans	Skin, cutaneous swab
Bearded Dragon Adenovirus	Liver, feces
Blue Tongue Virus	Nasal swabs, lesions, whole blood, spleen, lymph nodes or bone marrow

Bonamia ostreae	Live or freshly dead oyster, gills and/or heart
Border Disease Virus	Buffy coat (whole blood), lymphoid tissue, brain
Bordetella avium	Tracheal swab, trachea
Bovine Adenovirus Type 3, 4-8	Nasal swab, feces
Bovine Coronavirus	Nasal swab, lung, trachea, feces
Bovine Herpesvirus-1	Nasal swab, conjunctival swab vaginal swab, trachea <u>Fetus</u> : lung, liver, kidney, adrenal gland, placenta
Bovine Herpesvirus- 4	Lesions (scrapings, scabs), respiratory tissues, nasal swabs, secretions, whole blood
Bovine Papillomavirus	Lesions
Bovine Parainfluenza 3 Virus	Nasal swab, lung
Bovine Parvovirus	Feces, intestine
Bovine Respiratory Syncytial Virus	Nasal-pharyngeal washings, deep nasal swab, lung
Bovine Viral Diarrhea Virus Types 1 & 2	Buffy coat (10 ml whole blood), serum, feces, intestine, Peyer's patches, spleen, mesenteric lymph node, lung, milk. <u>Fetus</u> : lung, liver, spleen, thymus, thyroid, placenta, fetal fluids
Brachyspira hyodysenteriae	Large intestine, feces
Brachyspira pilosicoli	Large intestine, feces
Brucella spp.	Please contact the AHC
Canine Adenovirus Type 1 & 2	<u>Type 1</u> - Liver, feces <u>Type 2</u> - Nasal swab, conjunctival or pharyngeal swab
Canine Coronavirus	Feces, fecal swab
Canine Distemper Virus	Buffy coat (whole blood), lung, kidney, liver
Canine Herpesvirus	Lung, liver
Canine Influenza Virus	Nasal swab, lung
Canine Parainfluenza Virus	Nasal swab, tracheal swab, trachea
Canine Parvovirus 2	Fecal swab, feces, intestine
Canine Parvovirus 2	Fecal swab, feces, intestine
Caprine Arthritis Encephalitis	Joint swab, buffy coat (whole blood), brain
Caprine Herpesvirus 2	Buffy coat (whole blood), tonsil, lymph node
Ceratonova shasta (formerly Ceratomyxa shasta)	Tissue lesions, intestinal scrapes
Chicken Anemia Virus	Bursa, thymus, bone marrow, feces
Chlamydia felis	Conjunctiva swab, lung
Chlamydophila abortus	<u>Fetus</u> : placental cotyledons, lung
Chlamydophila psittaci	Lung, liver, spleen, feces
Classical Swine Fever Virus (Hog Cholera)	Tonsil, lymph nodes (mandibular, retropharyngeal, gastrohepatic, and mesenteric), spleen, kidney, ileum
Clostridium piliforme (Tyzzer's Disease)	Intestine
Coxiella burnetii	Placenta, milk, fetal lung, whole blood
Cryptococcus neoformans	Brain, lung, lymph node, lesions
Cryptosporidium spp.	Small intestine, feces, fecal swabs
Dichelobacter nodosus (Sheep Footrot)	Hoof trimmings, hoof swab
Duck Viral Enteritis	Liver, spleen, intestine, cecal tonsil

Encephalitozoon cuniculi (rabbits and birds)	Kidney, urine
Epizootic Haematopoietic Necrosis Virus	Kidney, spleen, liver
Epizootic Hemorrhagic Disease	Whole blood (cattle & deer) spleen, lymph node, lung, liver
Equine Coronavirus	Feces
Equine Herpes Virus 1	<u>Adult:</u> Deep nasal swabs, conjunctival swab, whole blood (buffy coat), lung, spinal cord, brain <u>Fetus:</u> Liver, lung
Equine Herpesvirus 1-neuropathogenic	<u>Adult:</u> Deep nasal swabs, conjunctival swab, whole blood (buffy coat), lung, spinal cord, brain <u>Fetus:</u> Liver, lung
Equine Herpes Virus 2	Nasal swabs, buffy coat (whole blood)
Equine Herpes Virus 3	Swabs from genital/oral lesions
Equine Herpes Virus 4	Nasal swabs, conjunctival swab
Equine Influenza Virus	Nasal swab, tracheal wash, lung
Equine rhinitis A Virus (formerly Equine Rhinovirus-1)	Nasal swab, tracheal wash, lung
Equine Viral Arteritis	<u>Adult:</u> lung, thymus, whole blood (buffy coat), mesentery lymph node, liver, spleen <u>Fetus:</u> lung, spleen, thymus, placenta, liver
Erysipelothrix rhusiopathiae	Tonsils, heart, joint swab, feces, spleen, lymph nodes
Feline Calicivirus	Nasal swab, pharyngeal swab, lung
Feline Coronavirus (Feline Infectious Peritonitis)	Peritoneal fluid spleen, kidney, lung
Feline Herpesvirus	Pharyngeal swab, nasal swab, lung, conjunctival swab
Feline Immunodeficiency Virus	Whole blood
Feline Leukemia Virus	Whole blood (1 ml)
Feline Panleukopenia Virus (Feline Parvovirus)	Small intestine, kidney, liver
Flavobacterium columnare	Gills, lesions from mouth and skin
Foot & Mouth Disease Virus	Vesicular epithelium or fluid
Fowl Pox Virus	Skin lesions
Francisella tularensis	Oropharyngeal swab, whole blood, liver, spleen
Frog Ranavirus (formerly Frog Iridovirus)	Kidney, digestive tract, liver, oral swab, cloacal swab *dry swabs, do not submit in media*
Fusobacterium spp.	Please contact the AHC
Glaserella parasuis (formerly Haemophilus parasuis)	Brain, visceral pleura and other serosal exudates
Herpesvirus Consensus	Please contact the AHC
Helicobacter (including H. hepaticus)	Liver
Infectious Bovine Rhinotracheitis (Bovine Herpes Virus Type 1)	see Bovine Herpesvirus 1
Infectious Bursal Disease	Bursa
Infectious Canine Hepatitis (Canine Adenovirus Type 1)	Liver, feces
Infectious Hematopoietic Necrosis Virus	Kidney, spleen, liver, gills, mucus, whole fish
Infectious Pancreatic Necrosis Virus	Pyloric caecum, spleen, kidney, brain

Infectious Salmon Anemia Virus	Gills, heart, liver, kidney, spleen
Influenza A Virus Consensus	Oropharyngeal swabs, cloacal swab, trachea, lung, nasal swab
Johne's Disease (Mycobacterium paratuberculosis)	Feces, rectal scrapping, ileum, mesenteric lymph nodes
Koi Herpes Virus (Cyprinid herpesvirus 3)	Gill, kidney
Kudoa thyrsites	Muscle tissue
Lawsonia intracellularis	Ileum, feces
Leptospira ssp.	Urine, whole blood
Listeria monocytogenes	Brain, abscess, liver, lesions, placenta, spleen
Loma salmonae	Gills
Malignant Catarrhal Fever Sheep (Ovine herpesvirus-2)	Buffy coat (whole blood), tonsil, lymph node
Malignant Catarrhal Fever Wildebeest (Alcelaphine herpesvirus-1)	Buffy coat, tonsil, lymph node, kidney, liver, brain
Mink Enteritis Virus (Mink Parvovirus)	Intestine, liver, lung kidney
Mollicutes	Lung, trachea, bronchial lymph nodes, tonsils, nasal swab
Morbillivirus consensus	Please contact the AHC
Moritella viscosa (Winter Ulcer Disease)	Kidney, gills, surface ulcers or abscesses
Mycobacterium avium	Feces, intestine, liver, spleen, kidney
Mycobacterium bovis	Abscesses, granulomas, lung, affected lymph nodes
Mycobacterium paratuberculosis (Johne's Disease)	Feces, rectal scrapping, ileum, mesenteric lymph nodes
Mycoplasma bovis	Lung, synovium, joint fluid
Mycoplasma gallisepticum	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendons
Mycoplasma hyopneumoniae	Lung, bronchoalveolar lavage
Mycoplasma iowae	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendons
Mycoplasma meleagridis	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendons
Mycoplasma ovipneumoniae	Nasal swabs *dry swabs, do not submit in media*
Mycoplasma synoviae	Tracheal swab, sinus, lung, air sac, joint swab, fertile eggs, tendons
Myxobolus cerebralis (Whirling Disease)	Lesions, brain/cranium
Neorickettsia risticii (Potomac Horse Fever)	Buffy coat (whole blood)
Neospora caninum	Brain, heart, lung, placenta, skeletal muscle, tongue
Nocardia seriolae	Spleen, kidney, liver, or brain displaying granulomatous lesions
Nucleospora salmonis	Kidney, blood , feces
Ornithobacterium rhinotracheale	Tracheal swab, trachea, lung
Ovine Herpes 2 Virus (Malignant Catarrhal Fever - Sheep)	Buffy coat (whole blood), tonsil, lymph node
Ovine Progressive Pneumonia Virus	Buffy coat (whole blood)

(Maedi-visna Virus)	
Ovine Respiratory Syncytial Virus	Nasal swab, lung
Parameoba perurans	Gills, gill swabs
Phocine Distemper Virus	Whole blood, nasal, pharyngeal or ocular swabs, trachea-bronchial lymph nodes, spleen, liver, kidney, lung and brain
Pigeon Circovirus	Feces, bursa
Piscine myocarditis virus (Salmon Totivirus)	Heart
Piscirickettsia salmonis	Kidney, liver, spleen
Porcine Circovirus	Feces, nasal secretions, lung, oropharyngeal swab, buffy coat
Porcine Delta Coronavirus	Feces, intestinal contents, intestine
Porcine Epidemic Diarrhea Virus	Feces, intestinal contents, intestine
Porcine Parvovirus	<u>Fetus</u> : lung, liver, kidney, spleen, placenta
Porcine Reproductive & Respiratory Syndrome Virus	<u>Adult</u> : Serum, blood swab in saline, lung, tonsil <u>Fetus</u> : lung, spleen, thymus, thoracic fluid
Proventricular Dilatation Disease (Avian Borna Virus)	Crop, proventriculus, brain
Pseudogymnoascus destructans (Bat white-nose syndrome)	Skin and mucocutaneous swabs: wing webbing, snout, conjunctiva *dry swabs, do not submit in media*
Psittacine Beak & Feather Virus (Psittacine Circovirus)	Feather pulp, skin, bursa, thymus, feces, whole blood
Psittacine Herpes Virus (Pacheco's Disease)	Lung, liver, spleen, feces, whole blood
Rabbit Hemorrhagic Disease Virus	Liver, spleen, whole blood
Renibacterium salmoninarum (Bacterial Kidney Disease)	Kidney
Reovirus – Avian	<u>Enteric and respiratory</u> - Intestine, pancreas, feces, trachea, lung <u>Viral arthritis</u> - Joint swab, tendons, heart (chicks)
Reticuloendotheliosis Virus	Buffy coat (whole blood), tumor tissues, spleen
Salmon Alphavirus	Organs, viremic serum
Salmonid Herpes Virus	Liver, kidney, spleen
Sarcocystis neurona (Equine protozoal myeloencephalitis)	Brain
Seal Herpes Virus	Whole blood, nasal, pharyngeal or ocular swabs, trachea, bronchial lymph nodes, spleen, liver, kidney, lung and brain
Seneca Valley Virus	Intact vesicles, vesicular fluid, scrapings of vesicular lesions, serum
Snake Paramyxovirus	Oral and cloacal swabs
Spring Viremia of Carp Virus	Whole fish (small fish - less than 4 cm), viscera including the kidney and encephalon from fish 4 to 6 cm long, kidney, spleen, PCR & liver, gills and encephalon from larger fish
Streptococcus equi equi Culture/PCR combined Production Animals \$75	Nasopharyngeal wash, nasal swab

All other Animals \$95	
Streptococcus iniae	Brain
Streptococcus spp.	Please contact the AHC
Streptococcus suis	Please contact the AHC
Swine Influenza Virus	Nasal swab, trachea, lung
Taura Syndrome Virus	Haemolymph, pleopods, whole small shrimp
Tenacibaculum maritimum (formerly Flexibacter maritimus)	Lesions from mouth
Torovirus – Bovine	Feces
Torovirus – Porcine	Feces
Toxoplasma gondii	<u>Fetus</u> : brain, CSF, placenta
Transmissible Gastroenteritis Virus	Feces, small intestine (Jejunum)
Trichomonas gallinae	Oral mucosa, esophagus
Tritrichomonas foetus	Vaginal swab, preputial washings
Turkey Coronavirus	Feces, intestine, bursa
Ureaplasma diversum	Vaginal swab, placenta
Viral Hemorrhagic Septicemia Virus	Kidney, spleen, liver, brain, whole fish
West Nile Virus	Brain, cloacal swab, choanal swab, liver, kidney, spleen
Western Equine Encephalomyelitis	Whole blood, cerebrospinal fluid, cerebrum, brain stem, lung, liver, kidney, spleen, visceral lymph nodes
White Spot Syndrome Virus	Samples of or from the pleopods, gills, haemolymph, stomach or abdominal muscle
White Sturgeon Herpesvirus 1&2 (Acipenserid herpesvirus 1&2)	Skin lesions
White Sturgeon Iridovirus	Gill
Yellow Head Virus	Lymphoid organ, gill
Yersinia ruckeri (Enteric Redmouth Disease)	Internal organs

Specimens for Molecular Diagnostics - Submission Requirements

Proper collection and handling of samples are critical for the success of virus detection and isolation. As peak virus titers are usually present at the onset of clinical signs, samples should be collected immediately after the animal first develops clinical signs. Collection of samples during the acute phase of viral infection usually provides sufficient amount of virus for detection. Samples collected later in the course of infection may lead to false negative results or misdiagnosis when secondary bacterial infection is involved. For packaging and shipping instructions please see page 54.

Collection and Storage

Samples must be aseptically collected and kept refrigerated immediately after collection. Samples that cannot immediately be transported to the laboratory should be stored at 4°C for a maximum of two days. Samples must be kept frozen at -70°C or lower for long term storage. The use of ice pack refrigerants to keep the specimens cold while in transit is extremely important for virus detection. If specimens are frozen, they must remain frozen in transit and not be allowed to thaw out.

Swabs for PCR testing. Viral swabs can be submitted in virus transport medium (VTM) or Universal Transport Medium (UTM) or Brain Heart Infusion broth (BHI).

- Use only dry polyester or Dacron swabs on plastic handles for collection and submission of swab samples for PCR tests.
- Do not use any liquid when submitting dry swabs for *Batrachochytrium dendrobatidis*, bat white-nose syndrome, *Mycoplasma ovipneumoniae*, frog iridovirus or turtle iridovirus.
- After thoroughly swabbing the area of interest, place the swab in the collection tube containing 3-5 ml of VTM or UTM or BHI and swirl vigorously.
- Squeeze the liquid off the swab (press and roll) along the inside wall of the tube and discard swab into a disinfectant solution.
- Securely close the cap and clean the outside of each tube and seal the tubes in plastic zip lock bags.
- Store swabs at 4°C and transport immediately to the Animal Health Centre.

DO NOT use cotton-tipped or calcium alginate swabs, swabs with wood or paper handles or swabs in bacterial transport media and agar. Residual bleach and other chemicals in these items can be inhibitory to PCR and may inactivate viruses.

Swabs for bacterial PCR tests: Swabs can be submitted in sterile saline or PBS. Swabs submitted in bacterial transport media are not suitable for PCR testing.

Fresh tissues: Whenever possible, submit fresh tissues in a sterile, leak proof container for PCR assays. Autolyzed (decayed) tissues are not suitable for testing.

Whole blood: Use tubes containing anti-coagulants such as citrate (blue stopper), EDTA (purple stopper) or heparin (green stopper) and submit a *minimum of 5 ml*.

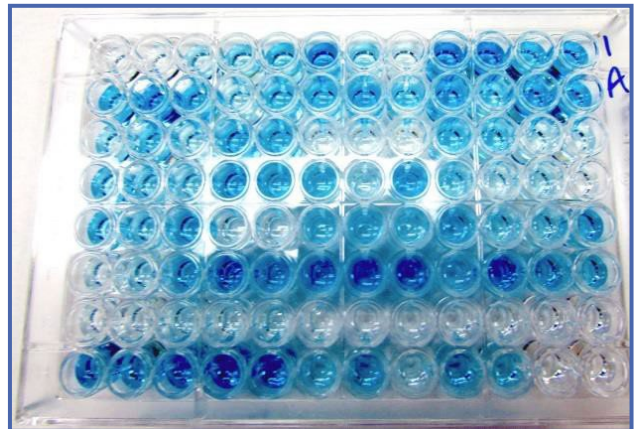
Feces: Submit approximately 10gm (10 – 20ml volume) in securely closed sterile container. The outer surface must be clean and dry. Do not submit feces in plastic bags or gloves.

Serology

The Serology section of the Animal Health Centre offers serological testing for a wide range of avian and mammalian pathogens. Enzyme linked immunosorbent assay (ELISA), Agar Gel Immunodiffusion (AGID), hemagglutination inhibition (HI) are the major serological assays performed at the Animal Health Centre.

In addition to routine diagnostic testing, the Serology section undergoes proficiency testing conducted by the Canadian Food Inspection Agency, National Centre for Foreign Animal Disease and the USDA's National Veterinary Services Lab.

The Serology section is accredited by the CFIA for Equine Infectious Anemia and *Brucellosis* (BPAT) testing. This lab is also an approved John's disease (*M. avium subsp. paratuberculosis*) testing lab, having successfully passed NVSL serology panels since 1999.



Serological tests can be used to determine:

1. If an animal has been infected by a particular pathogen
2. If a specific pathogen is linked to a clinical disease
3. If an animal has elicited an antibody response following vaccination

A single serum sample from an animal provides some indication of exposure to a pathogen at a point in time. However, paired serology on 5-10 age matched cohorts including clinically affected and apparently healthy animals is necessary to assess the potential disease dynamics within a group of animals. Acute and convalescent-phase sera collected from the same animal constitute paired sera. The acute-phase serum is taken as soon as the animal first develops clinical signs and the convalescent-phase samples usually at least 2 weeks later. Paired sera should be submitted together.

Serology: Tests, Specimens and Fees

Test Key: *AGID* – Agar Gel Immunodiffusion; *ELISA* – Enzyme Linked Immunosorbent Assay; *HI* – Hemagglutination Assay.

Test	Specimen	Fee
Avian Adenovirus Group 1 <i>AGID</i>	≥0.5ml serum per bird	\$10.00
Avian Encephalomyelitis (AE) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Avian Influenza (AI) <i>AGID</i>	≥0.5ml serum per bird	\$10.00
Avian Influenza (AI) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Avian Paramyxovirus 3 (PMV3) <i>HI</i>	≥0.5ml serum per bird	\$10.00
Avian Reovirus (REO) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Blue Tongue Virus (BTV) <i>ELISA</i>	≥ 1 ml serum per animal	\$10.00
Bovine Leukemia Virus (BLV) <i>ELISA</i>	≥1 ml serum per animal	\$10.00
Bovine Viral Diarrhea Virus (BVDV) Type 1&2 <i>ELISA</i> #	≥1 ml serum per animal	\$10.00
Brucella <i>BPAT</i> CFIA form 5473 required	≥1 ml serum per animal	\$10.00
Caprine Arthritis Encephalitis (CAE) <i>ELISA</i> animal should be ≥6mos old	≥1 ml serum per animal	\$10.00
Chick Anemia Virus (CAV) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Clostridium difficile Toxin A&B <i>ELISA</i>	≥1 ml serum per animal	\$30.00
Coxiella burnetti (Q fever) <i>ELISA</i>	≥2 ml serum per animal	\$10.00
Equine Infectious Anemia (EIA) – CFIA form 3937 required or CFIA approved electronic submission	≥2 ml serum per animal	\$12.00
Equine Influenza Virus <i>HI</i>	≥2 ml serum per animal	\$10.00
Hemorrhagic Enteritis Virus (HEV) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Infectious Bovine Rhinotracheitis (IBR) Virus <i>ELISA</i> #	≥1 ml serum per animal	\$10.00
Infectious Bronchitis Virus (IBV) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Infectious Bursal Disease (IBD) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Infectious Laryngotracheitis (ILT) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Mycobacterium paratuberculosis (Johne's) <i>ELISA</i> - ≥18mos old for bovine testing - ≥12mos old for caprine testing	≥2 ml serum per animal	\$10.00
Mycoplasma gallisepticum (MG) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*
Mycoplasma gallisepticum (MG) <i>HI</i>	≥0.5ml serum per bird	\$10.00
Mycoplasma meleagridis (MM) <i>ELISA</i> *	≥0.5ml serum per bird	\$10.00*

Mycoplasma synoviae (MS) ELISA*	≥0.5ml serum per bird	\$10.00*
Mycoplasma synoviae (MS) HI	≥0.5ml serum per bird	\$10.00
Neospora caninum ELISA	≥2 ml serum per animal	\$10.00
Newcastle Disease Virus (NDV) ELISA*	≥0.5ml serum per bird	\$10.00*
Newcastle Disease Virus (NDV) HI	≥0.5ml serum per bird	\$10.00
Ornithobacterium rhinotracheale (ORT) ELISA*	≥0.5ml serum per bird	\$10.00*
Ovine Progressive Pneumonia (OPP) ELISA	≥2 ml serum per animal	\$10.00
Salmonella Dublin ELISA	≥2 ml serum per animal	\$10.00
Swine Influenza Virus HI	≥2 ml serum per animal	\$10.00

***Please note that Avian tests by ELISA have a \$10.00 charge for the first sample for each test. Additional samples for the same test will be charged at 3 samples for \$10.00. After the first sample, it is most cost effective to submit subsequent samples in groups of 3.**

#If ELISA tests are not specified by the client, then lab will add ELISA tests for IBR and BVDV.

For example, the per test charge for 10 blood samples would be as follows: \$10.00 for the first sample and 9 samples at \$30.00 (\$10.00 per 3 samples) = \$40.00 per test. Multiply this by the number of tests requested for your total charge.

Specimens for Serology – Submission Requirements

Quality of serum samples submitted for serological assays can have a significant impact on final assay results. For example, hemolyzed or lipemic serum can lead to unreliable test results. Please use the following guidelines to submit serum samples to ensure timely service and accurate test results:

- Use only untreated serum tubes or serum separation tubes for collection.
- After collection keep the blood samples at room temperature until serum has separated from the clot (30-60 minutes). Centrifuge tubes to separate the serum from the clot. Pour or draw off serum into clean tubes.
- Submit serum only. Freeze and thaw cycles during shipping and/or storage can lead to hemolysis if serum is not separated from the clot. Do not submit serum samples that are grossly hemolyzed (dark red) or lipemic (milky appearance).
- Ship samples to the Animal Health Centre with ice packs to keep sera cold while in transit. If samples cannot immediately be transported to the Animal Health Centre, refrigerate the serum at 2–7°C for up to 5 days or freeze at 20°C for long-term storage. **DO NOT** freeze blood.
- Submit a minimum of 2 ml serum per animal for large animals and 0.5ml serum per bird for avian submissions. Outside of the tubes must be clean and dry to avoid contamination. Label large animal tubes with ID numbers using permanent marking pen on the side of the tube.
- Place the serum tubes in Styrofoam or cardboard boxes designed to hold the tubes. Do not

submit in bags.

- When submitting more than 20 large animal samples at a time, please send an MS Excel file of the Animal IDs by e-mail to PAHB@gov.bc.ca. To do this, simply enter the animal IDs in a single column identified as "Animal ID". The Animal Health Centre report will contain the IDs as entered in the file. Please place sample tubes in the same order in the rack/box as in the MS Excel file.

For more packaging and shipping instructions please see page 54.

Virology

The Virology section of the Animal Health Centre offers an extensive and complete laboratory service for the detection of viral infections in domestic poultry, wild and exotic birds, food and fur bearing animals, companion animals, wild and zoological species, marine mammals and aquaculture salmonids.

The Virology section performs virus isolation in cell culture and embryonated chicken eggs and uses techniques such as Fluorescent Antibody Test (FAT), Virus Neutralization (VN), Hemagglutination (HA), *RID* – Radial Immunodiffusion; VN – Virus Neutralization, and Hemagglutination Inhibition (HI) for the detection of viruses, viral antigens and antibodies produced in response to viral infections.

Virology: Tests, Specimens and Fees

Test	Specimen	Fee
Avian Adenovirus	Liver, spleen	\$40.00
Avian Herpes Virus	Please contact the AHC	\$40.00
Avian Pox Virus	Skin lesions	\$40.00
Avian Reovirus	<u>Enteric and respiratory</u> - Intestine, pancreas, feces, trachea, lung <u>Viral arthritis</u> - Joint swab, tendons, heart (chicks)	\$40.00
Bovine Adenovirus	Nasal swab, feces	\$40.00
Bovine Papular Stomatitis Virus	Lesions	\$40.00
Bovine Parainfluenza Virus Type-3 VN	≥2 ml serum per animal	\$10.00
Bovine Respiratory Coronavirus VN	≥2 ml serum per animal	\$10.00
Bovine Respiratory Syncytial Virus (BRSV) VN	≥2 ml serum per animal	\$10.00
Bovine Respiratory Syncytial Virus	Nasal-pharyngeal washings, deep nasal swab, lung	\$40.00
Bovine Viral Diarrhea	Buffy coat (10 ml whole blood), serum, feces, intestine, Peyer's patches, spleen, mesenteric lymph node, lung, milk. <u>Fetus</u> : lung, liver, spleen, thymus, thyroid, placenta, fetal fluids	\$40.00
Bovine Viral Diarrhea Virus (BVDV) Type 1&2 VN	≥2 ml serum per animal	\$10.00
Canine Adenovirus Type-2	Nasal swab, conjunctival or pharyngeal swab	\$50.00
Canine Coronavirus	Feces, fecal swab	\$60.00
Canine Distemper Virus	Buffy coat (whole blood), lung, kidney, liver	\$50.00
Canine Distemper Virus (CDV) VN	≥2 ml serum per animal	\$10.00
Canine Parainfluenza Virus	Nasal swab, tracheal swab, trachea	\$50.00
Duck Viral Enteritis	Liver, spleen, intestine, cecal tonsil	\$40.00
Duck Viral Hepatitis	Liver, spleen, intestine, cecal tonsil	\$40.00
Equine Adenovirus (Respiratory Disease)	Nasal swab, Lung	\$50.00
Equine Herpes Virus 1	<u>Adult</u> : Deep nasal swabs, conjunctival swab, whole blood (buffy coat), lung, spinal cord, brain <u>Fetus</u> : Liver, lung	\$50.00
Equine Herpes Virus 1 (EHV-1) VN	≥2 ml serum per animal	\$10.00
Equine Herpes Virus 4	Nasal swabs, conjunctival swab	\$50.00
Equine Influenza Virus	Nasal swab, tracheal wash, lung	\$50.00
Equine Viral Arteritis	<u>Adult</u> : lung, thymus, whole blood (buffy coat), mesentery lymph node, liver, spleen <u>Fetus</u> : lung, spleen, thymus, placenta, liver	\$50.00
Equine Viral Arteritis (EVA) VN	≥2 ml serum per animal	\$10.00
Feline Calicivirus	Nasal swab, pharyngeal swab, lung	\$50.00
Feline Panleukopenia Virus (Feline Parvovirus)	Small intestine, kidney, liver	\$50.00
Feline Viral Rhinotracheitis (Feline Herpesvirus)	Pharyngeal swab, nasal swab, lung, conjunctival swab	\$50.00
Frog Iridovirus	Kidney, digestive tract, liver, oral swab, cloacal swab *dry swabs, do not submit in media*	\$40.00
Hemagglutinating Encephalomyelitis Virus	Brain, Upper spinal cord	\$40.00

Immunoglobulin-Bovine IgG, IgM RID	≥2 ml serum per animal	\$10.00
Immunoglobulin-Equine IgG, IgM RID	≥2 ml serum per animal	\$10.00
Immunoglobulin-Porcine IgG RID	≥2 ml serum per animal	\$10.00
Infectious Bovine Rhinotracheitis (IBR) Virus VN	≥2 ml serum per animal	\$10.00
Infectious Canine Hepatitis	Liver, feces	\$50.00
Infectious Hematopoietic Necrosis Virus	Kidney, spleen, liver, gills, mucus, whole fish	\$40.00
Infectious Laryngotracheitis	Trachea, lung	\$40.00
Infectious Pancreatic Necrosis Virus	Pyloric caecum, spleen, kidney, brain	\$40.00
Infectious Salmon Anemia	Gills, heart, liver, kidney, spleen	\$40.00
Mink Distemper Virus	Buffy coat (whole blood), lung, kidney, liver, nasopharyngeal swab, conjunctival swab	\$40.00
Mink Distemper Virus (CDV) VN	≥2 ml serum per animal	\$10.00
Pacheco's Disease (Herpes) Virus	Lung, liver, spleen, feces, whole blood	\$50.00
Phocid Morbillivirus	Nasal, pharyngeal or ocular swabs, trachea, lung	\$40.00
Porcine Parvovirus	<u>Fetus</u> : lung, liver, kidney, spleen, placenta	\$40.00
Rabbit Herpes Virus	Skin lesions	\$40.00
Swine Influenza Virus	Nasal swab, trachea, lung	\$40.00
Torovirus (Breda)	Feces	\$40.00
Transmissible Gastroenteritis (TGE) Virus VN	≥2 ml serum per animal	\$10.00
Viral Hemorrhagic Septicemia Virus	Kidney, spleen, liver, brain, whole fish	\$40.00

*Where applicable, each test includes cell culture, egg inoculation, and florescent antibody testing.

Specimens for Virology – Submission Requirements

Proper collection and handling of diagnostic specimens are critical for the success of virus detection and virus isolation techniques. As peak virus titers are usually present at the onset of clinical signs, diagnostic specimens for virus detection and virus isolation should be collected immediately after the animal first develops clinical signs. Collection of samples during the acute phase of viral infection usually provides sufficient amount of virus for detection by various assays. Samples collected later in the course of infection may lead to false negative results or misdiagnosis when secondary bacterial infection is involved. For packaging and shipping instructions please see page 54.

Collection and storage

Samples must be aseptically collected and refrigerated immediately after collection. Samples can be stored short term (<48hrs) at 4°C. Long term storage temperature should be $\leq -70^{\circ}\text{C}$. Use ice pack refrigerants and insulated containers to keep samples at an appropriate temperature in transit. If specimens are frozen, they must remain frozen in transit.

Swabs for virus isolation testing: Viral swabs can be submitted in virus transport medium (VTM) or Universal Transport Medium (UTM) or Brain Heart Infusion broth (BHI).

- Use only dry polyester or Dacron swabs on plastic handles for collection and submission of swab samples for virus isolation.
- Do not use any liquid when submitting dry swabs for *Batrachochytrium dendrobatidis*, bat white-nose syndrome, *Mycoplasma ovipneumoniae*, frog iridovirus or turtle iridovirus.
- After thoroughly swabbing the area of interest, place the swab in the collection tube containing 3-5 ml of VTM or UTM or BHI and swirl vigorously.
- Squeeze the liquid off the swab (press and roll) along the inside wall of the tube and discard swab into a disinfectant solution.
- Securely close the cap and clean the outside of each tube and seal the tubes in plastic zip lock bags.
- Store swabs at 4°C and transport immediately to the Animal Health Centre.

DO NOT use: *Cotton-tipped or calcium alginate swabs, swabs with wood or paper handles or swabs in bacterial transport media and agar may not be used. Residual bleach and other chemicals in cotton swabs and wooden handles and agar in the bacterial transport media can be inhibitory to PCR and may inactivate viruses.*

Fresh tissues: Whenever possible, submit fresh tissues in a sterile, leak proof container for virus isolation. Autolyzed tissues are not suitable for virus isolation.

Whole blood: Use tubes containing anti-coagulants such as citrate (blue stopper), EDTA (purple stopper) or heparin (green stopper) and submit a minimum of 5 ml.

Feces: Submit approximately 10gm (10 – 20ml volume) in securely closed, puncture-resistant sterile container. Outer surfaces of the container must be clean and dry. Do not submit feces in plastic bags or gloves.

Test Panels

The following testing panels are offered by the Animal Health Centre to address common disease processes of concern. Panels are not customizable. Please be sure to meet the minimum specimen amount requested to ensure the entire panel can be completed.

Panel	Specimen	Fee
Calf Scours Package ^		
<i>for calves <2 weeks of age</i>		
culture and sensitivity, which includes enriched <i>Salmonella</i> sp. culture, polymerase chain reaction (PCR)-based typing of <i>E. coli</i> to detect enterotoxigenic and enteropathogenic strains, direct fecal smear for <i>Cryptosporidium</i> spp., and PCR testing for rotavirus and coronavirus	10g Feces, +/- 2 fecal swabs (no culture media)	\$110.00 36% savings

^The Calf Scours Package is for fecal samples from scouring calves affected during the first 2 weeks of life (excluding necropsy cases). Sample eligibility includes scouring calves that are 0-2 weeks old as well as calves that are > 2 weeks of age where scours originally developed during the first 2 weeks of life. This package represents a 36% savings over ordering these tests individually.

For packaging and shipping instructions please see page 54.

External Testing and Fees

While the Animal Health Centre is the leading accredited full-service veterinary laboratory in Western Canada, some tests are not available at this facility. For external testing and shipping please see the following fees.

External Lab Testing - Client Requested

Administrative fee for forwarding specimens	Within British Columbia	\$7.00/pkg of samples
	To other provinces	\$30.00/pkg of samples
	Outside of Canada	\$49.00/pkg of samples
Courier fees		At cost
External lab to bill client directly for testing fees.		

General Submission Procedures

All submissions must have a completed submission form accompanying them. If you have any questions regarding submissions, please call 1-800-661-9903 or 604-556-3003, or email PAHB@gov.bc.ca.

Submission Forms

We will only accession animals and samples submitted with the current official Animal Health Centre submission forms, which can be accessed via our website www.gov.bc.ca/animalhealthcentre. Outdated forms and inappropriate species forms (e.g., bird submitted with a fish form) will not be accepted. Non-official (i.e., clinic-specific forms) will not be accepted. If the correct submission form is not received within 24 hours for whole fish, horses, and cattle, the animal will be disposed of without necropsy or testing. All other animals and samples will be held for 5 business days before disposal. Please understand that any delay may compromise the diagnostic integrity of the specimen.

A completed submission form must be received with every submission. Samples with incomplete submission forms will not be processed. Please note that samples submitted without a submission form will not be accepted. Submission forms should include:

- Completely fill all required fields on submission forms. These are indicated in red and with a *.
- Testing request and number of samples submitted.
- A complete history of affected animal(s) indicating symptoms, vaccine status, treatment given and suspected disease(s) if possible.
- Medical records or other laboratory results (e.g., bloodwork) can be included with the submission form if relevant. Please do not attach medical records instead of writing out a complete history.

If the submission form received is incomplete or incorrect, your sample will be placed on hold while our accessioning staff contact you. No testing will be done on your sample until all required information is received. It is the responsibility of the submitter to ensure that the correct paperwork is submitted to the Animal Health Centre in a timely manner.

Whole Animal Submissions

Up to 3 animals, 8 birds or 5 fish can be submitted within a single submission so long as the animals show similar clinical signs of disease. If separate tests on individual animals are required, then those animals should be submitted separately.

Samples from animals included in a single submission will be pooled and a single report will be issued. If samples are to be tested separately, it should be clearly indicated on the submission form (extra charges will apply) or separate forms should be used.

Poultry <8 kg and fish of any size may be submitted alive for euthanasia (live fish must be submitted in water).

All other animals must be submitted dead. The Animal Health Centre will not euthanize live animals other than poultry or fish.

Submission Methods

In Person Delivery

- Weekday delivery between 8:30 a.m. and 4:30 p.m., deliver as early in the day as possible.
- Large animals are not accepted for unloading between 12:30 p.m. and 1:00 p.m.
- Please check in with the front office before unloading whole animals.
- Live animal submissions must arrive in a disposable container. Once a container enters the post mortem room it will be destroyed.

Mail or Courier

- Samples must be well preserved so that they arrive in suitable condition for examination.
- Samples must be packed so they do not leak per TDG guidelines.
- Separately labelled samples are required for each test (e.g., bacteriology, virology, etc.) as they are sent to different sections of the Animal Health Centre for processing.
- Pack completed submission form and other paperwork inside a separate plastic bag.
- Clearly state the total number of items submitted for each submission, on the submission form.

How to Package Your Samples for Submission

Before collecting specimen(s), check the sample requirements for the test you require. You can find this in the appropriate section of this fee guide or online at: www.gov.bc.ca/animalhealthcentre.

Ensure that containers used to transport and ship specimens meet the requirements of the Transportation of Dangerous Goods Act (TDG). **For cases where there may be a zoonotic pathogen present, ensure that samples are transported and labelled accordingly.** For more information about TDG visit their website at: www.tc.gc.ca/eng/tdg/act-menu-130.html

Submission Forms

When shipping any samples to the Animal Health Centre, please follow these guidelines to avoid testing delays:

1. Completely fill all required fields on submission forms. These are indicated in red and with a *.
2. An emailed or faxed copy of the submission form may be sent in advance to PAHB@gov.bc.ca, along with an original hard copy with the shipped submissions.
3. Place submission forms inside a closed Ziploc style bag to prevent condensation from ice packs or accidental leaks from ruining the submission form.
4. Place submission forms near the top of the packed submissions so it can be accessed before opening the rest of the package.
5. Do not attach the submission form on the outside of shipping container packaging.

General Shipping

1. If sending samples that required cold or stable temperatures, please use a Styrofoam container with a well-fitting exterior cardboard box.
 - a. This outer pack will help to maintain the integrity of your parcel, and ensure it makes it to the animal health centre in one piece.
 - i. Styrofoam alone can break in transit, leading to lost samples or delays in transport.
 - b. If your box does not fit your Styrofoam container well, add additional packing material to ensure the container does not move in transit.
2. When adding refrigerants (ice packs, dry ice, wet ice) to your packages
 - a. Avoid the use of wet ice/frozen water unless double or triple bagged in a watertight bag, with absorbent material in packaging.
 - b. Ensure dry ice is shipped according to TDG standards
 - c. Ensure any ice pack is not in direct contact with samples that cannot be frozen (formalin, swabs with bacterial media, whole blood, etc.)

Submission of Whole Animals

1. When submitting whole animals to the Animal Health Centre, please ensure that a hard copy of your submission form accompanies the submission (please see submission form submission).
2. If submitting multiple animals on the same case, please label individuals clearly.
 - a. Please note that any extra animals over the limit for the species submitted will not be tested unless requested and will be a second charge for necropsy.

3. If whole animals are small enough to fit in bags, please double bag. Contractors' bags are preferable to regular garbage bags to prevent leaking.
4. Please ensure that CCIA Tag numbers are on submission forms, as well as any other information used for tracing animal movement such as Pig Trace numbers or other.

Carcasses Shipped via Courier

1. When in doubt, ship whole animals frozen. This prevents decay of the animal in case of shipping delays and hot weather.
 - a. Ship animal with ice packs – especially important for small animals as they can thaw quickly in transit.
 - b. Bear in mind most courier companies do not have refrigerated trucks.
2. Please double bag the animal. Contractors' bags are preferable to regular garbage bags to prevent leaking.
3. Place ample absorbent material in shipping container to absorb any leaks or condensation.
4. Animals should be shipped early or midweek when possible. Avoid shipping over weekends or holidays.



Submission of Feti

1. When in doubt, ship the fetus frozen. This prevents decay of the fetus in case of shipping delays and hot weather.
2. Please double bag the fetus. Contractor bags are preferable to regular garbage bags to prevent leaking.
3. Place ample absorbent material in shipping container to absorb any leaks or condensation.
4. Ship the package early or midweek when possible. Avoid shipping over weekends or holidays.
5. Send the placenta if available.
 - a. Whole placenta is preferable, send as large a sample as possible to allow thorough assessment and sampling at the lab.

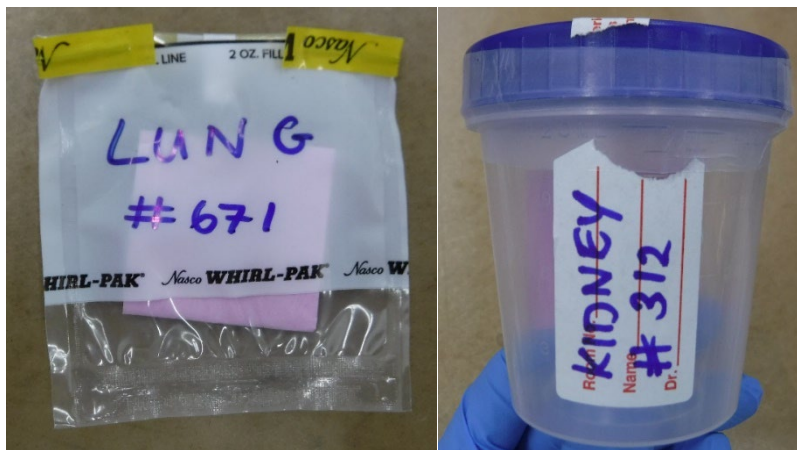
Shipping Fresh Tissues

Equipment required:

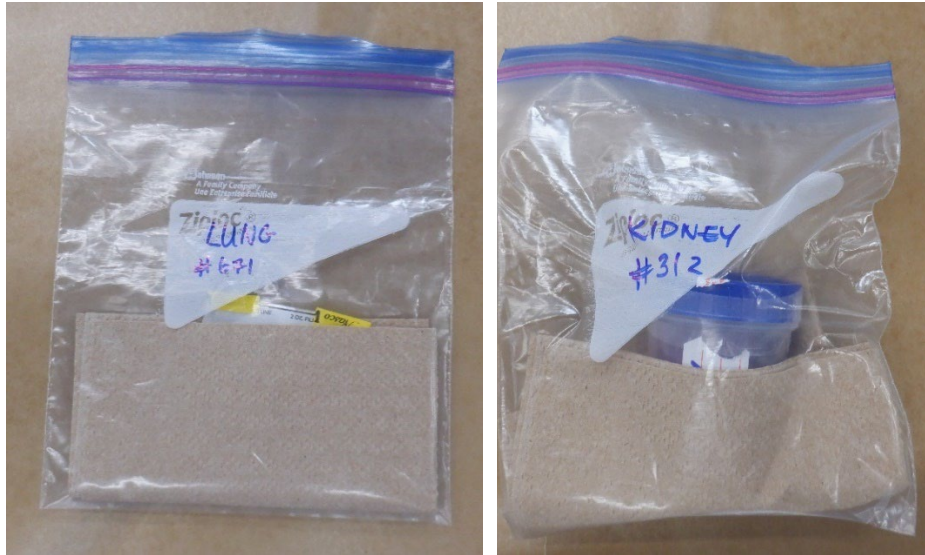
- Primary container – watertight twist top containers or whirl top bags preferred – avoid using pill containers
- Secondary container – additional whirl top bag or Ziploc bag
- Absorbent material – paper towel
- Sturdy tape – glass tape, electrical tape, duct tape or parafilm if using twist top containers



- 1) The sample should be placed in the primary leakproof container.
 - a. Label tissue type(s) on the primary container.
 - b. Avoid overfilling whirl top bags as this will prevent them from sealing properly – they must be folded over 3 times to completely seal (down to “FILL LINE”).
 - c. Fully tighten the lid of twist top containers and tape around the seal.



- 2) Place the primary container inside the secondary container along with the absorbent material. Label tissue type(s) on outside of secondary container.



- 3) Once placed in the final shipping container, ensure directional arrows are used to mark the upright direction of the package during shipment.
 - a. Send the sample with ice packs to prevent it from degrading in transit. Place ice packs in Ziploc bags to prevent leaking – especially important if using frozen water bottles.
 - b. Consider shipping the sample in a cooler during particularly hot weather or when shipping over long distances.
 - c. Bear in mind most courier companies do not have refrigerated trucks.



- 4) If there is extra space inside the shipping container, add bubble wrap or newspaper to protect the sample and prevent it from moving around in transit.

Shipping Formalized Tissue

Any samples being sent should follow a triple packaging system:

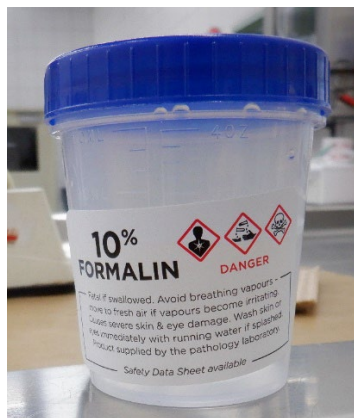
Equipment Required:

- Twist top container

- Sturdy tape such as glass tape, electrical tape, duct tape or parafilm
- Absorbent material such as paper towel
- Two zip lock bags



- 1) The sample should be placed in a leakproof primary container such as a twist top container along with enough formalin to adequately fix the sample (10:1 formalin to tissue ratio). Make sure that the container is clearly marked with what percentage of formalin it contains.



- 2) Ensure to tape around the lid of the twist top container to prevent it from coming loose or leaking. Use tape such as glass tape, electrical tape or duct tape for maximum adhesion. Parafilm works well for this as well.



- 3) The twist top container is then placed inside a secondary layer of packaging. A sturdy Ziplock bag may be used for this. Ensure to include within this layer enough material to absorb all the formalin, should the primary receptacle crack or leak. Paper towel or absorbent pads may be used for this.



- 4) Place this package inside of another zip lock bag and seal before placing into a box or other suitable shipping container.



- 5) Once placed in the final shipping container, ensure directional arrows are used to mark the upright direction of the package during shipment. If there is extra space in the shipping container, add something such as bubble wrap or newspaper to take up the extra space, protect the sample and prevent it from moving around during transport.

Shipping Multiple Tissues

- Ensure animal ID and tissue type(s) are clearly labelled on each primary container.
- Unless submitting a pooled sample, separate primary and secondary containers should be used for each tissue to prevent cross contamination in case of a leak.
- When shipping fresh and formalized tissues together, ensure formalized tissues are triple bagged and placed upright in the shipping container. Place formalized and fresh tissues on opposite sides of the shipping container. Put newspaper or bubble wrap between to keep them upright and apart from one another.

If you have any questions about sample packaging, please call 1-800-661-9903 or 604-556-3003, or email PAHB@gov.bc.ca.

Common Disease Conditions and Suggested Testing

If in doubt about test selection or how to proceed with a submission, please contact the Animal Health Centre at 1-800-661-9903 or 604-556-3003 during regular office hours.

Abortion

A. History:

Please provide as complete information as possible on the dam, herd, or management system: e.g., herd size, general level of management and herd health status, recent additions to herd, numbers of pregnant animals in herd, previous abortions or indications of infertility, number of abortions/stillbirths/weak neonates in herd, parity of the dam, stage of gestation, nutritional status of dam, previous illnesses or stresses, vaccination status of the dam and any signs of illness. The [Mammalian Submission Form](#) provides a valuable template for gathering this information.

B. Selecting and Submitting Samples:

- Based on the degree of autolysis, maceration and possible scavenging, the placenta and fetal remains should be submitted for post mortem examination. Submission of a fetus, placenta and if possible, a serum sample from the dam afford the best likelihood of rendering a diagnosis.
- As an agent and/or lesions may not be present in all fetuses, if possible, please submit multiple fetuses (up to 3 fetuses may be presented in a single submission).
- If submitting the entire fetus is not possible, please submit as complete a set as possible of tissues as listed below. A serum or milk sample from the dam may also be provided.

C. Samples Required:

- Frozen or refrigerated: for routine bacteriology, virology, molecular studies, trace mineral analysis and ancillary diagnostic studies, fresh tissues, including placenta, stomach contents (1-2 ml), fetal heart blood (1-2 ml), heart, lung, spleen, liver, kidney, and brain should be collected. Antibiotic resistance profiles may also be requested (Kirby Bauer disc diffusion).
- Formalin fixed: placenta, lung, liver, kidney, spleen, heart, adrenal gland, thymus, thyroid, small intestine (2 pieces), large intestine with meconium (2 pieces including meconium), brain, eyelid, and skeletal muscle.

Bovine Abortion

- **Bacteriology:** placenta, lung, and stomach content (1-2 ml).
- **Histology:** placenta (cotyledon and intercotyledonary regions), lung, liver, kidney, spleen, heart, adrenal gland, thymus, thyroid, small intestine (2 pieces), large intestine with meconium (2 pieces including cecum and spiral colon), brain, eyelid, and skeletal muscle.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Bovine Viral Diarrhea Virus (BVDV), Bovine Herpesvirus-1/ Infectious Bovine Rhinotracheitis (BHV-1/IBR), *Leptospira* spp., and *Neospora caninum*.
- **PCR/Virology:** heart, lung, spleen, liver, kidney, and brain.
- **Radioimmunoassay/Ig Quantification/Serology:** heart blood (1-2 ml).
- **Serology/Trace Mineral/Vitamin:** dam serum submission.

Ovine/Caprine Abortion

Note: all small ruminant abortions should be considered a potential zoonotic risk due to *Coxiella burnetii* infection and should be handled with appropriate precautions, including use of personal protective gear and thorough hand washing and disinfection of fomites.

- **Bacteriology:** placenta, lung, and stomach content (1-2 ml).
- **Histology:** placenta (cotyledon and intercotyledonary regions), lung, liver, kidney, spleen, **heart**, adrenal gland, ileum, thymus, thyroid, small intestine (2 pieces), large intestine with meconium (2 pieces including cecum and spiral colon), brain, eyelid, and skeletal muscle.
 - In-house immunohistochemistry is available on formalin-fixed tissues for *Toxoplasma gondii* and *Neospora caninum* and tissue blocks can be sent to a reference laboratory for *Coxiella burnetii*
- **PCR/Virology:** heart blood (1-2 ml), heart, lung, spleen, liver, kidney, and brain.
- **Serology/Trace Mineral/Vitamin:** dam serum submission.

Equine Abortion

- **Bacteriology:** placenta, lung, stomach content (1-2 ml).
- **Histology:** placenta (including samples of cervical star), lung, liver, kidney, spleen, heart, adrenal gland, ileum, thymus, thyroid, small intestine (2 pieces), large intestine with meconium (2 pieces including cecum and colon), brain, eyelid, and skeletal muscle.
 - In-house immunohistochemistry for Equine Herpes Virus 1 (EHV-1) is available on formalin-fixed tissues.
- **PCR/Virology:** heart blood (1-2 ml), heart, lung, spleen, liver, kidney, and brain.
- **Serology/Trace Mineral/Vitamin:** dam serum submission.

Porcine Abortion

- **Bacteriology:** placenta, lung, stomach content (1-2 ml).
- **Histology:** placenta (including samples of cervical star), lung, liver, kidney, spleen, heart, adrenal gland, ileum, thymus, thyroid, small intestine (2 pieces), large intestine with meconium (2 pieces including cecum and colon), brain, eyelid, and skeletal muscle.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) and Porcine Circovirus 2 (PCV-2).
- **PCR/Virology:** heart blood (1-2 ml), heart, lung, spleen, liver, kidney, and brain.
- **Serology/Trace Mineral/Vitamin:** dam serum submission.

Diarrhea

A. History:

Please provide pertinent information on the herd and management system: e.g., herd size, prior episodes of clinical disease, general level of management and herd health status, animal age, numbers of animals affected, onset/duration of problem, vaccination history, and any administered treatments. The [Mammalian Submission Form](#) provides a valuable template for gathering this information.

B. Selecting and Submitting Samples:

- Acutely affected and untreated animals are the preferred individuals for sampling.
- Appropriately fixed gut sections are critical for effective histological analysis of enteric diseases. To ensure rapid tissue fixation, gut sections should be collected and preserved as soon as possible following death (preferably <10 minutes post mortem).
- To further aid fixation, the margins of sampled bowel may be cut or incised, then gently rinsed in fresh water to expose the mucosa prior to immersion in formalin.
- When specific tests are requested, please submit replicate tissue samples, in separate labelled Whirl-Pak bags for each lab section and test requested. Alternatively, submit representative portions of tissues or entire organs and indicate on the submission form, for the pathologist to select tests at their discretion.

C. Samples Required

- As intestinal lesions may be multifocal to segmental, always collect multiple intestinal samples for histology (preferably three segments each of ileum and jejunum, and at least one each of duodenum, cecum, colon and stomach). Include any abnormal areas and margins of intestinal segments with gross lesions.
- For all submissions, please include routine histological and fresh or frozen tissues outside of the gastrointestinal tract, such as liver, kidney, spleen, and lung.

Bovine/Ovine/Caprine Enteritis

Note: for testing of scouring calves < 2 weeks of age please see Calf Scours Package in our Test Panels section on page 50.

- **Bacteriology:** feces, ligated small and large intestine segments, and mesenteric lymph nodes (aerobic and anaerobic culture).
 - Special culture for *Salmonella* spp, *Yersinia* spp. and *Campylobacter* spp. available.
 - PCR toxin genotyping (virulence factors) is available for *Clostridium perfringens* and *Escherichia coli* isolates.
- **Histology:** esophagus, forestomachs (rumen, rumen pillars, reticulum, omasum), abomasum, mesenteric lymph node, duodenum, jejunum, ileum with Peyer's patch, spiral colon, cecum, and any area of the gastrointestinal tract with gross lesions.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Bovine Viral Diarrhea Virus (BVDV) and Bovine Coronavirus (BCV). Ear notch submission for BVDV immunohistochemistry may also be submitted.

- **Parasitology:** feces (*Cryptosporidium* wet mount, fecal flotation or sedimentation, Modified McMaster quantitative fecal egg count).
 - Unless otherwise requested the Modified McMaster quantitative fecal egg count will be performed on all sheep and goat fecal samples while routine fecal flotation will be performed on cow fecal samples.
- **PCR/Virology:** feces, ligated segments of small and large intestine, and mesenteric lymph node.
 - PCR for *Mycobacterium paratuberculosis* is available.
- **Serology/Radioimmunodiffusion (Bovine):** antemortem serum or post mortem heart blood sample (colostral IgG).

Equine Enteritis

- **Bacteriology:** feces, ligated segments of small and large intestine, and mesenteric lymph nodes (aerobic and anaerobic culture).
 - Special culture for *Salmonella* spp, *Yersinia* spp. and *Campylobacter* spp. available.
 - PCR toxin genotyping (virulence factors) is available for *Clostridium perfringens* and *Escherichia coli* isolates.
- **Histology:** esophagus, stomach, mesenteric lymph node, duodenum, jejunum, ileum with Peyer's patch, cecum, colon, and any area of the gastrointestinal tract with gross lesions.
 - In-house immunohistochemistry is available for *Lawsonia intracellularis*.
- **Parasitology:** feces (fecal flotation or sedimentation).
- **PCR/Virology:** feces, small intestine, large intestine, and mesenteric lymph node.
- **Serology:** liquid feces (*Clostridium difficile* Toxin A & B ELISA).

Porcine Enteritis

- **Bacteriology:** feces, small intestine, large intestine, mesenteric lymph node (aerobic and anaerobic culture).
 - Special culture for *Salmonella* spp., *Yersinia* spp. and *Campylobacter* spp. available.
 - PCR toxin genotyping (virulence factors) is available for *Clostridium perfringens* and *Escherichia coli* isolates.
- **Histology:** esophagus, stomach, mesenteric lymph node, duodenum, jejunum, ileum with Peyer's patch, cecum, colon, and any area of the gastrointestinal tract with gross lesions.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Transmissible Gastroenteritis Virus (TGEV), Porcine Circovirus 2 (PCV-2), and *Lawsonia intracellularis*.
- **Parasitology:** feces (fecal flotation or sedimentation).
- **PCR/Virology:** feces, small intestine, large intestine, and mesenteric lymph node.
 - PCR available for Porcine Parvovirus.
- **Serology:** liquid feces (*Clostridium difficile* Toxin A & B ELISA).

Canine/Feline Enteritis

- **Bacteriology:** feces, ligated segments of small and large intestine, and mesenteric lymph nodes (aerobic and anaerobic culture).
 - Special culture for *Salmonella* spp., *Yersinia* spp. and *Campylobacter* spp. available.
 - PCR toxin genotyping is available for *Clostridium perfringens* and *Escherichia coli* isolates.
- **Histology:** esophagus, stomach, mesenteric lymph node, duodenum, jejunum, ileum with Peyer's patch, cecum, colon, and any area of the gastrointestinal tract with gross lesions.
 - In-house immunohistochemistry is available on formalin-fixed tissues for canine parvovirus (CPV), canine distemper virus (CDV), feline coronavirus (FIP).
- **Parasitology:** feces (fecal flotation).
- **PCR/Virology:** feces, small intestine, large intestine, and mesenteric lymph node.
- **Serology:** liquid feces (*Clostridium difficile* Toxin A & B ELISA).

Pneumonia

A. History:

Please provide a complete description of the herd and management system, including herd size, general level of management and herd health status, animal age, numbers of animals affected, onset/duration of problem, vaccination history, and any treatment administered. The [Mammalian Submission Form](#) provides a valuable template for gathering this information.

B. Selecting and Submitting Carcasses and Tissue Samples:

- Tissues from acutely affected and untreated animals are preferred samples.
- When specific tests are requested, please submit replicate tissue samples, in separate labelled Whirl-Pak bags for each lab section and test requested. Alternatively, submit representative portions of tissues or entire organs and indicate on the submission form, for the pathologist to select tests at their discretion.

C. Samples Required:

- Histology samples from several areas of affected and unaffected lung should be taken, including samples along the junction of affected and unaffected lung as well as the pleural surface. Regional lymph nodes, thymus, tonsils and a sample of trachea should also be submitted if gross lesions are observed.
- Submission of additional tissues, including liver, kidney, spleen and heart for routine histology and bacteriology is recommended.

Bovine Pneumonia

- **Bacteriology:** affected areas of lung, pleural fluid/swab, tracheobronchial aspirate, or broncho-alveolar lavage fluid, and bronchial or other reactive thoracic lymph nodes (aerobic culture and *Histophilus somni* enriched culture).
- **Histology:** multiple lung samples from cranial and caudal lobes from both left and right lungs, include borders of affected and unaffected areas, trachea, bronchial lymph nodes, thymus, and tonsils.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Bovine Viral Diarrhea Virus (BVDV), Bovine Respiratory Syncytial Virus (BRSV), and Bovine Herpesvirus-1/ Infectious Bovine Rhinotracheitis (BHV-1/IBR).
- **Parasitology:** feces (fecal flotation and Baermann for larvae of lungworm).
- **PCR/Virology:** lung, trachea, bronchial lymph nodes, tonsils, and nasal swabs.
 - PCR available for BRSV, BHV-1, BHV-2, BHV-4, bovine adenovirus, bovine coronavirus, bovine parainfluenza-3 and *Mycoplasma bovis*.

Ovine/Caprine Pneumonia

- **Bacteriology:** affected areas of lung, pleural fluid/swab, bronchial or other reactive thoracic lymph nodes (aerobic culture).
- **Histology:** multiple lung samples from cranial and caudal lobes from both left and right lungs, include borders of affected and unaffected areas, trachea, bronchial lymph nodes, thymus, and tonsils.
- **Parasitology:** feces (fecal flotation and Baermann for larvae of lungworm).
- **PCR/Virology:** lung, trachea, bronchial lymph nodes, tonsils nasal swabs.
 - PCR available for caprine arthritis and encephalitis (CAE) and *Mycoplasma* spp.

Equine Pneumonia

- **Bacteriology:** affected areas of lung, pleural fluid/swab, tracheobronchial aspirate, or broncho-alveolar lavage fluid, guttural pouch, and bronchial or other reactive thoracic lymph nodes (aerobic culture).
- **Histology:** multiple lung samples from cranial and caudal lobes from both left and right lobes, include borders of affected and unaffected areas, trachea, bronchial lymph nodes, thymus, and tonsils.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Equine Herpes Virus 1 (EHV-1).
- **PCR/Virology:** lung, trachea, bronchial lymph nodes, and nasal/pharyngeal swabs.

Porcine Pneumonia

- **Bacteriology:** affected areas of lung, pleural fluid/swab, tracheobronchial aspirate, or broncho-alveolar lavage fluid, bronchial or other reactive thoracic lymph nodes (aerobic culture and *Hemophilus parasuis* enriched culture).
 - Please note that *Streptococcus suis* type II has been recovered from pig submissions and appropriate caution should be exercised with pneumonic lungs.
- **Histology:** multiple pieces of lung from cranial and caudal lobes from both left and right lungs, include borders of affected and unaffected areas, trachea, bronchial lymph nodes, thymus, and tonsils.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Porcine Reproductive and Respiratory Syndrome Virus (PRRSV), Porcine Circovirus 2 (PCV-2), Influenza A Virus.
- **Parasitology:** feces (fecal flotation and Baermann for larvae of lungworm).
- **PCR/Virology:** lung, trachea, bronchial lymph nodes, pleural fluid/swab, tonsil, and nasal swabs.

Canine/Feline Pneumonia

- **Bacteriology:** affected areas of lung, pleural fluid/swab, tracheobronchial aspirate, or broncho-alveolar lavage fluid, bronchial or other reactive thoracic lymph nodes, and tonsils (aerobic and fungal culture).
- **Histology:** multiple pieces of lung from cranial and caudal lobes from both left and right lungs, include borders of affected and unaffected areas, trachea, bronchial lymph nodes, thymus, and tonsils.
 - In-house immunohistochemistry is available on formalin-fixed tissues for Canine Distemper Virus (CDV), Feline Coronavirus (FIP), Influenza A Virus.
- **Parasitology:** feces (fecal flotation and Baermann for larvae of lungworm).
- **PCR/Virology:** lung, trachea, bronchial lymph nodes, tonsil, nasal swabs.
 - Note: for CDV PCR please also include samples of kidney, bladder, brain, tonsillar or conjunctival scrapings.

Frequently Asked Questions

Q. What does the Animal Health Centre do?

A. The Animal Health Centre is a diagnostic laboratory that examines samples to discern cause of death or determine the nature of an ailment that may be present in the sample.

Q. What are the hours of operation?

The Animal Health Centre office is open to receive lab submissions Monday to Friday from 8:30 AM to 4:30 PM. We cannot accept lab submissions outside of office hours. Lab submissions received after 3:30 PM may be processed the following day.

Q. Do you accept walk-in clients?

A. Yes, the Animal Health Centre is happy to accept walk-in clients both new and existing, no appointment is required. However, to ensure efficient service, we ask that clients call or email the Animal Health Centre office before submitting a whole animal for post-mortem examination.

Q. Can I ship my samples to you?

A. Yes, the Animal Health Centre is happy to accept samples via mail or courier. Please refer to our shipping guide on page 54 for more information.

Q. Do you only examine animals that are part of the agricultural industry?

A. No, the Animal Health Centre is happy to examine companion animals such as cats or dogs, zoo or aquarium species, as well as wildlife.

Q. Do you spay or neuter animals?

A. No, the Animal Health Centre is a diagnostic facility. We do not provide medical services to live animals.

Q. Can you euthanize my animal?

A. The Animal Health Centre can euthanize fish and poultry weighing less than 8kg for testing purposes only. All other animals must be submitted deceased for testing.

Q. Can I get my animal's cremains (ashes) back after the post mortem?

A. Animals weighing less than 40kg may be released to a licensed pet crematorium for private cremation and have their cremains (ashes) returned to their owner(s). Please see page 22 for more information about private cremation, additional fees apply. All other animals will be cremated communally, and cremains (ashes) will not be returned.

Q. Can you expedite my requested testing and results?

A. No, depending on the nature of your requested test proper time must be allocated to ensure the integrity of the test and its results are as accurate as possible.

Q. Can I use the same submission form for multiple animals?

A. One submission form may be used if submitting lab samples from multiple animals of the **same species**. If you are submitting samples from multiple species, even for the same testing you must use separate submission forms.

For example, when submitting serum samples for Johne's testing of goats and sheep, please use one submission form for goats, and a second one for sheep. Be sure to indicate the **number of tests requested** and provide the **species, age, sex, and ID for each animal** and clearly label each sample. If submitting more than 20 samples, please create and email a MS Excel list of animal IDs to PAHB@gov.bc.ca and include a printed copy with your submission.

Q. Do you perform toxicology testing?

A. No, our toxicology laboratory is now closed. Please send tissue for toxicology testing to an alternate diagnostic laboratory such as Prairie Diagnostic Services in Saskatoon, SK or the Animal Health Lab in Guelph, ON. See page 19 for more information.

If your question was not answered here, please call us at 1-800-661-9903 or 604-556-3003, or email PAHB@gov.bc.ca.

ANIMAL HEALTH CENTRE

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