

UTCVM VETERINARY MEDICAL CENTER

Diagnostic Laboratory Service

The UTCVM Veterinary Medical Center is home to eight diagnostic laboratories: bacteriology/mycology, endocrinology, immunology, parasitology, pharmacology, virology, clinical pathology, and anatomic pathology. The faculty and technical staff in these laboratories provide vital medical diagnostic and supporting services for animals, along with cutting-edge research for the improvement of animal, human, and public health. UTCVM offers referring veterinarians accurate and timely laboratory results, phone consultations, courier pickup of samples, and special rates for FedEx shipping. Our full-service laboratories provide diagnostic services for most animal species.

The goal of the UTCVM Diagnostic Laboratory Service is to provide laboratory results with the precision and accuracy you should expect from a professional diagnostic laboratory. This manual provides general guidelines for specimen collection and submission to our specialty laboratories.



Bacteriology/Mycology	(865) 974-5639
Anatomical Pathology (Biopsy/Necropsy)	(865) 974-5673
Clinical Pathology (Chemistry, Cytology, Hematology & Urinalysis)	(865) 974-5605
Endocrinology	(865) 974-5638
Immunohistochemistry	(865) 974-5673
Immunology	(865) 974-5643
Parasitology	(865) 974-5645
Pharmacology	(865) 974-5646
Toxicology	(865) 974-5638
Virology	(865) 974-5880
Diagnostic Laboratory Service Director - Dr. Bob Donnell	(865) 974-5576

Hours of Operation

Monday - Friday, 8:00am - 5:00pm, Eastern Time Zone

Saturday Morning - Clinical Pathology and Bacteriology/Mycology operates with limited staff.

Holiday Closures

UTCVM Diagnostic Laboratory will be closed on the following days:

New Year's Day
Martin Luther King, Jr.
Spring Holiday (Good Friday)
Memorial Day
Independence Day
Labor Day
Thanksgiving - Thursday & Friday
Christmas Day

Test Results

Test results are automatically faxed to the veterinary practice. If your practice prefers to receive results by email, please call **865-974-5771** or email rdvminfo@utk.edu.

Ownership of Specimens

Submission of specimens to the UTCVM Veterinary Medical Center Diagnostic Laboratory Service signifies acceptance of a contract for test results and interpretation of results. Specimens submitted to the Service and isolates derived from them become the property of the University of Tennessee. The Service maintains the right to refer a portion of the specimen to an appropriate laboratory for additional testing. The University of Tennessee maintains the right to use the specimens for any lawful purpose, including but not limited to performing applied research and test development at the University or other collaborating institutes. Return of specimens to the submitter is determined on a case by case basis and will incur charges related to shipping, handling, and materials cost.

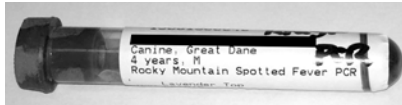
Laboratory Manual

PACKAGING & SHIPPING GUIDELINES

Label Specimen Container

The specimen should be contained in a plastic, spill-proof container or tube. The primary container should be labeled with:

- Patient name
- Owner first & last name
- Specimen type
- Test
- Collection date/time



Place in Biohazard Bag

Place the primary container into a biohazard bag (or other watertight secondary container) with enough absorbent material to soak up the entire contents. If multiple samples are being included in one package, wrap or separate the samples so they do not come into contact with each other.

Complete Submission Form

A fully completed laboratory submission form should be included with the specimen. It is important that the form be kept separate from the specimen (placed in outer pouch of biohazard bag or in a separate sealed bag) to protect the form from becoming wet or otherwise contaminated. Download individual lab submission forms:

vetmed.tennessee.edu/vmc/dls

Prepare Package for Shipping

Specimens that require refrigeration, including fresh blood, serum, and tissues should be sent with ice packs*. Biopsy tissues should be in 10% BNF fixative. Unfixed, air-dried slides should be packaged in a slide holder with bubble wrap. Refrigerated and room temperature samples can be shipped in the same package as long as adequate packing material is used to separate the samples. Fill the shipping package with additional packing material to minimize movement of the secondary container during transportation.

**Dry ice cannot be used with UTCVM FedEx labels. Samples that must remain frozen during transit, i.e. Equine Endogenous ACTH, must be shipped using another courier, or with your own FedEx account.*

For further instructions, please consult the FedEx "How to Pack" guidelines (pages 27-30). http://www.fedex.com/us/services/pdf/How_To_Pack.pdf

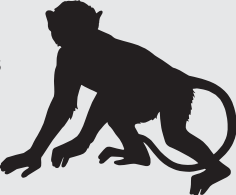
HazMat / IATA Regulations

Diagnostic specimens must be packaged and shipped in compliance with regulatory standards governing biohazardous materials for routine specimens**. See the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulations <https://www.iata.org/publications/dgr/Pages/index.aspx> and US DOT 49 CFR Parts 171-180 - <https://www.phmsa.dot.gov/standards-rulemaking/hazmat/hazardous-materials-information-center>. The U.S. Department of Transportation (DOT) Hazardous Materials (HazMat) Regulations, require all persons who offer or transport diagnostic specimens to comply with applicable regulations. Please do not hesitate to call the laboratories for further shipping instructions.

***If specimen is suspected to contain infectious agents, it is the shipper's responsibility to comply with international/US domestic shipping regulations: (https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Transporting_Infectious_Substances_brochure.pdf)*

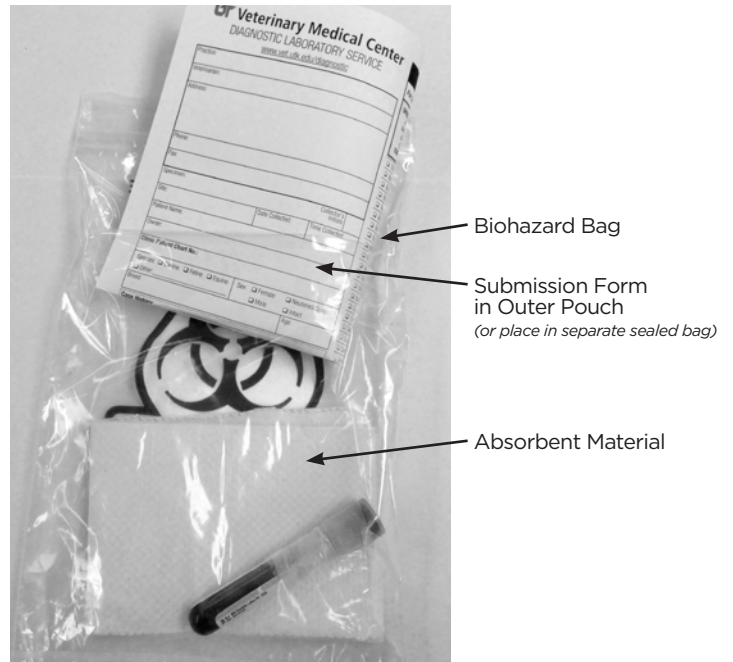
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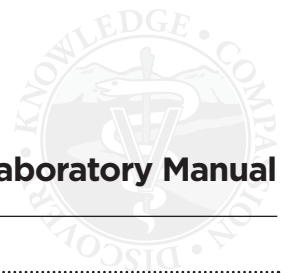
PRIMATE SAMPLES: Due to the potential health risk to UTCVM personnel, **primate samples are only accepted with prior approval and instruction***. Without prior approval or proper packaging, samples will be destroyed.



Call the specific lab prior to submitting. The only labs currently accepting primate samples are Anatomic Pathology (Biopsy & Necropsy), Clinical Pathology, and Parasitology.

**Primate samples and necropsies are NOT accepted from outside the United States.*





Benefits of a VOLVet Portal account

- Gain immediate access to medical records of referred patients
- Look up results of diagnostic lab samples submitted by your clinic
- Receive FedEx overnight shipping labels for lab submissions at a deep discounted rate
- Request a courier service pick-up for clinics within a 50-mile radius of UTCVM
- Find detailed guidelines for patient referrals and estimates for many common procedures in the Referral Guide

To get started

- Visit vetmed.tennessee.edu/vmc/dls, go to VOLVet Portal and complete the registration information

- A UTCVM representative will call you within 2 business days to verify your identity, clinic association, and send you an email to set up your password
 - Sign in to the VOLVet Portal using your email address and password
- Please note that multiple portal accounts can be established for veterinarians and staff within the veterinary practice but each user must have a unique email address.

UTCVM VETERINARY MEDICAL CENTER
VOLVet Portal

If you need immediate access to the VOLVet Portal, please register first then call **865-974-5771**, Monday - Friday, 8pm - 5pm (EST).

FedEx Discount Rate Program

Take advantage of UTCVM's deep discounted rate with FedEx today! For shipments within the domestic US, FedEx will deliver your samples to our laboratory by the next business morning for \$18.00. For Knoxville and surrounding counties, the priority overnight shipping rate is \$10.00.



General Shipping Instructions

- Login to your VOLVet Portal account: vetmed.tennessee.edu/vmc/dls
- Refer to our packaging and shipping guidelines before sending samples.
- A package with UTCVM's FedEx priority overnight label must be 3 pounds or less. If the package is over 3 pounds, you will need to separate the items into multiple packages, each with their own label.
 - » With overnight deliveries, only one or two small refrigerant packs are needed.
 - » To reduce costs, combine several specimens from multiple patients and send to various labs in one package.
- Each label is billed at the time of purchase. No credits will be given for unused labels. Shipping charges will be on your next monthly UTCVM invoice.
- FedEx labels are for Monday through Thursday shipments only. **Do not send samples on a Friday.** UTCVM Diagnostic Laboratory Service will not be available to receive samples on Saturdays.
- Call FedEx at 1-800-463-3339 for a pick-up or deliver your package to the nearest FedEx drop-off location. For specific FedEx collection times and local drop-off locations visit: <http://www.fedex.com/locate>

Additional Instructions for International Shipments (discounted rates vary)

The UTCVM Diagnostic Laboratory Service will accept companion animal specimens provided the material has not been inoculated with or exposed to any livestock* or poultry** foreign animal disease agent. A permit for these specimens is not required at the U.S. port of arrival. **Primate samples and necropsies are NOT accepted from outside the United States.**

Required documentation:

1. Two copies of the written statement must be submitted on producer/shipper letterhead, with one copy placed in the plastic pouch on the outside of the package and one copy between the secondary and tertiary packaging layer. For information required in the statement refer to: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-and-animal-product-import-information/import-live-animals/no-import-permit-req> (Guideline 1102: Feline and Canine Material).

2. Three copies of the commercial invoice must be placed in the shipping pouch on the outside of the package to be reviewed at the U.S. port of arrival and one copy between the secondary and tertiary packaging layer. A commercial invoice will be provided with your UTCVM FedEx shipping labels.
3. For all endocrinology specimens, complete and place the USDA Biological Specimen Shipment Form (<https://vetmed.tennessee.edu/vmc/dls/Endocrinology/Documents/USDA-PortEntryInspection.pdf>) in the plastic pouch on the outside of the package.

* Livestock is defined by USDA as both beef and dairy cattle, pigs, sheep, goats, horses, mules, asses, buffalo, and camels.

** Poultry is defined by USDA as domestic fowls, including chickens, turkeys, geese and ducks, raised for the production of meat or eggs.

UTCVM Courier Service

UTCVM offers a daily courier service for diagnostic submissions to Knoxville, TN and the surrounding areas within a 50-mile radius. In addition to lab samples, veterinary practices may submit MRI scans, ultrasounds, radiographs and necropsies (up to 25 lbs) to UTCVM through our courier service. For necropsies, tertiary packaging is **required**: inner bag, secondary bag or container with ice, outer container (cardboard or styrofoam box). Pharmacy medication orders can also be delivered to your facility by the courier service.

Request or Cancel Courier Pick-up

Submit your request through the online VOLVet Portal.

- Requests must be made by the end of your business day to guarantee a next-day pickup.
- Specimens must be prepared and ready for collection prior to the courier's arrival.
- If samples are not available at the time of pick-up, a service charge will still apply.

Collection Times

Monday through Friday, daily collections begin at 8:00am and samples will be delivered to the UTCVM Diagnostic Laboratory Service by 3:00pm. Turnaround times for test results vary; please consult the specific laboratory's test directory in this manual for details.

Refer to our packaging and shipping guidelines in the Laboratory Manual before sending samples.

Courier Service Fee

Fees for UTCVM Courier Service pick-up are \$10.00 or \$14.00 depending on the location of your clinic. When you sign in to the VOLVet Portal to submit a request the fee will be noted by your clinic name. Charges for this service will be included on your monthly UTCVM statement.

Anatomic Pathology (Biopsy & Necropsy)

SUBMISSION GUIDELINES

Submitting Tissues

- Containers must be labeled with the patient's name, sealed securely, and have an opening no smaller than the diameter of the jar.
- Use separate containers for separate lesions. For example, if there is a lesion on the leg and on the face, submit these in separate containers so they can be appropriately distinguished.
- There is no additional charge for multiple sites.
 - » Use a 10:1 formalin to tissue ratio.
- Glass containers are not recommended as breakage can occur in transport.

Tissue Handling

- Minimize the use of electrocautery or laser surgery, as it causes artifacts that make cell identification and surgical margin evaluation extremely difficult, if not impossible.
- Handle specimens gently. Excessive squeezing of tissues (with forceps, or otherwise) also creates artifacts that make cell identification and surgical margin evaluation extremely difficult, if not impossible.

Surgical Margins

- Surgical margins can be evaluated ONLY in samples submitted whole without any incisions into the surgical margins. If the sample is too large to fix whole,
 - » You may cut into the surface of the skin (but the incision should not extend to the edge/margin of the sample)
 - » or you may paint the surgical margins, fix a few hours in formalin, then send the pieces you want evaluated.
- Surgical margins should not be requested on diffuse lesions (e.g. dermatitis, inflammatory bowel disease, etc.).

Submitting Large Specimens

- Large soft tissue masses (i.e. spleens) are often too large to fix whole.
 - » If you are not concerned about surgical margins, please take several representative pieces of the mass and submit those in formalin (discard the remaining mass).
 - » If you are concerned about surgical margins, you may paint the surgical margins, fix a few hours in formalin, then send the pieces you want evaluated. DO NOT cut into the surgical margin prior to fixation.
- For limb amputations, please submit the entire limb on ice. Please try to plan ahead so that these arrive on a weekday within 24 hours of the surgery.

Submitting Bone

Specimens containing bone (digits, mandibles etc) will require decalcification after formalin fixation. This can result in a delay in processing the tissues and finalizing the report.

Surgical Marking Ink

This can be accomplished with fixed tissues after receipt, but applying ink before fixation often gives superior results.

- Hints for applying the surgical ink:
 - » Blot the surface to be inked so that it is dry.
 - » Apply the ink with a cotton swab and let it air dry for 3-5 minutes prior to placing the specimen in formalin.

STATE CONTRACT NECROPSY DISPOSAL FEES

All necropsy charges for cattle, sheep and goats that are located in Tennessee are covered by the State of Tennessee contract. Fetuses and placentas also fall under this contract.

The State Contract Submission Form (<https://tiny.utk.edu/StateNecropsyForm>) should be completed and signed by the referring veterinarian. The state contract does not cover biopsies.

Effective November 1, 2018, owners are required to pay a disposal charge at the time of presentation of their animal for state contracted necropsy. Disposal charges are based on the age of the animal at the time of necropsy registration at the Large Animal Receiving Desk. Necropsy examination (gross/microscopic) and routine ancillary tests deemed necessary by the duty pathologist will continue to be free under the state contract. Fetuses and placentas also fall under the state contract but will incur a disposal charge.

NOTE TO REFERRING VETERINARIANS: For you to maintain your client interaction in the State supported program you, as the referring veterinarian, will need to provide a State Contract Submission Form. In addition, the individual submitting the deceased animal (owner, agent, veterinarian, etc.) will be required to pay for the estimated disposal charges at the time of presentation. These charges are based on the age of the animal supplied at the time of presentation.

ANIMAL TYPE	AGE	PRICE
CATTLE	< 1 month	\$20.00
	1 - 12 Months	\$60.00
	Over 1 Year - cow/steer	\$200.00
	Over 1 Year - bull	\$300.00
GOATS	Up to 12 months	\$15.00
	Over 1 Year	\$34.00
GOATS - PYGMY/DWARF	Fetus - adult	\$8.00
SHEEP	< 1 Month	\$10.00
	1 - 12 Month	\$30.00
	Over 1 Year	\$40.00

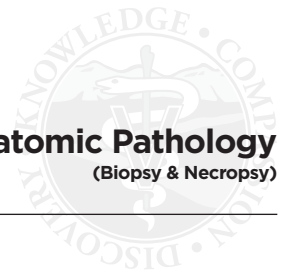
865-974-5673  865-974-5640

 cvmanatomicpath@utk.edu

 vetmed.tennessee.edu/vmc/dls/biopsy

vetmed.tennessee.edu/vmc/dls/necropsy

Anatomic Pathology
(Biopsy & Necropsy)



DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Biopsy	No additional charge for up to 5 samples from the same patient regardless of size. Includes bone decalcification, large specimens, large bones, and comprehensive surgical margin evaluation.	10% BNF (Buffered Neutral Formalin) Formalin to tissue ratio is 10:1. Container needs to be labeled with patient ID and specimen type.	72 hrs for routine, 96 hrs for special stains	\$89.00
Additional charge for 6+ samples	Additional sample charge does not apply to gastrointestinal biopsies & dermatologic skin samples. These samples will be considered as one site.	10% BNF (Buffered Neutral Formalin) Formalin to tissue ratio is 10:1. Container needs to be labeled with patient ID and specimen type.	72 hrs for routine, 96 hrs for special stains	\$20.00
Biopsy - STAT	Same as Biopsy except results have a 24 hour + faster turn-around than routine biopsies.	Must have "STAT" written on top of the biopsy request form in big letters. 10% BNF (Buffered Neutral Formalin) Formalin to tissue ratio is 10:1. Container needs to be labeled with patient ID and specimen type.	24-30 hours for verbal report of H&E stained slide	\$114.00
Necropsy	Necropsies can be performed on the patients from referring veterinarians with the final necropsy report in 2-6 weeks. Gross necropsy findings will be phoned or e-mailed to the referring veterinarian within 48 hours.	Complete and sign necropsy request and body disposal release forms.	Verbal gross necropsy findings within 48 hours; final necropsy report within 4-6 weeks	Call Lab

*Primate samples and necropsies are NOT accepted from outside the continental United States.



Bacteriology/Mycology

SUBMISSION GUIDELINES

- Select sample from a site that is expected to be most representative of the infection.
- Aseptically prepare cutaneous collection sites with a quick acting and tissue penetrating antiseptic (e.g. povidone-iodine) followed by a 70% alcohol swab/wipe. Avoid use of chlorhexidine or benzalkonium chloride for this purpose, especially from multiuse containers, as they may become contaminated.
- Transport samples to the laboratory, with appropriate containment and packaging, as soon as possible.
- Inform the lab if the animal is being treated with antimicrobial drugs and if patient is immuno-compromised.
- Inform the lab of the animal's age, production type and species. This may affect culture interpretation and selective reporting of antimicrobial susceptibility results.
- All specimen containers must be labeled with the patient name, clinic # or owner, body collection site, and date on container. Include history and patient demographic information on referral form.
- Results of Gram stains or other microscopic exams can often be made available the same day the specimen is received, if requested. Microscopic exams may be requested as separate tests and are performed routinely on most culture requests.
- Short-term refrigeration is acceptable (and preferred) for most specimens. Organisms that may not survive freezing or refrigeration include some anaerobes, fastidious respiratory pathogens, zygomycetous fungi, and *Pythium insidiosum*.

SPECIMEN TYPE & COLLECTION INFORMATION

SPECIMEN SOURCE	COLLECTION DEVICE	SPECIMEN PREPARATION AND COLLECTION	TYPICAL TESTS THAT MAY BE APPLICABLE
Abscess or Wound, Skin biopsy	Culture swab plus gel or sterile tube	Aseptically prepare collection site. Aspirate fluid or pus.	Aerobic Culture, Anaerobic Culture, Fungal Culture Dermatophytes only, <i>Mycobacterium</i> Culture, <i>Mycoplasma</i> Culture
Blood	Large animal: 8mL Isolator tube; Small animal: 1.5 mL Isolator tube (other blood culture systems acceptable)	Wash venipuncture site with antiseptic soap; rinse with sterile water. Apply povidone-iodine; let dry. Remove iodine with 70% alcohol (use same procedure to sterilize stopper on collection tube); draw blood into sterile syringe. Change needle to inoculate collection tube.	Blood Culture (includes aerobic and anaerobic)
Cerebrospinal Fluid	Sterile tube	Aseptically prepare site. Avoid blood contaminated specimen.	Aerobic Culture, Fungus Culture, <i>Mycobacterium</i> Culture, Fungal Antigen Tests (specify which)
Synovial Fluid	Sterile tube, blood culture bottle, or tube containing SPS or heparin anticoagulant	Aseptically prepare site. May collect in syringe rinsed with heparin or if in sufficient volume, place in blood culture tube or tube containing SPS or heparin.	Aerobic Culture, <i>Mycoplasma</i> Culture, Fungus Culture
Ears	Culture swab plus gel	Remove superficial debris; collect swab from deep within external canal	Aerobic Culture
Eyes	Culture swab plus gel	Suppurative material from conjunctival sites or material from corneal scrapings	Aerobic Culture, Anaerobic Culture <i>Mycoplasma</i> Culture, Fungal Culture
Feces	Sterile tube or container	Avoid contamination with urine or soil.	Specify individual agent or combinations desired: (<i>Salmonella</i> , <i>Clostridium</i> , <i>Campylobacter</i>) (Fecal Culture) (Other: for agents other than those above); <i>Clostridium difficile</i> toxin ELISA; <i>Clostridium perfringens</i> enterotoxin ELISA
Nail, Skin Scraping, Hair	Sterile tube or container	Clean to remove superficial debris. Use sterile blade to scrape active border of lesion. Hairs should include follicular end.	Fungal Culture, Fungal Culture Dermatophytes only
Nasal or Sinus	Culture swab plus gel or sterile tube	Clean to remove superficial debris. Collect representative aspirate or swab.	Aerobic Culture, Anaerobic Culture, Fungus Culture
Tissue (from normally sterile body sites)	Sterile tube or container	Aseptically prepare collection site. Tissue or aspirate preferred (culture swab plus gel acceptable for exudates). Add small amount (50-100 microliters) of sterile saline to keep specimen hydrated.	Aerobic Culture, Anaerobic Culture, <i>Mycobacterium</i> Culture, <i>Mycoplasma</i> Culture, <i>Campylobacter</i> Culture, Fungal Culture
Urine	Sterile tube	Cystocentesis recommended; transfer from syringe to sterile tube. Specify collection method.	Urine Culture Fungal Antigen Tests (Send-out tests, specify agent- <i>Histoplasma</i> , <i>Blastomyces</i> , <i>Coccidioides</i>)
Milk	Sterile tube or container		Milk Culture
Serum	Sterile tube	Separate serum from clotted blood. Avoid hemolysis.	<i>Brucella canis</i> Antibody, Fungal Antibody Tests by AGID (specify agent - <i>Aspergillus</i> , <i>Blastomyces</i> , <i>Histoplasma</i> , <i>Coccidioides</i>) <i>Cryptococcus</i> Antigen ELISA, Fungal Antigen Tests (send-out tests, specify agent- <i>Aspergillus</i> , <i>Blastomyces</i> , <i>Histoplasma</i> , <i>Coccidioides</i>)

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Acid Fast Stain		May submit tissue sample or dried impression smear on glass slide	1 Bus. Day	\$19.50
Aerobic & Anaerobic Culture	Includes Gram stain and susceptibilities (when appropriate)	See general specimen collection and submission guidelines	Cultures with no growth held for 5 days; longer incubation required for specified organisms	\$69.00
Aerobic Culture	Includes Gram stain and susceptibilities (when appropriate)	See general specimen collection and submission guidelines	Average 3-5 Bus. Days	\$46.50
Aerobic/Anaerobic/ Fungal Culture	Combination test including stains and bacterial susceptibilities (when appropriate)	See individual tests	3-7 days for bacterial culture, up to 6 weeks for fungal culture	\$104.50
Aerobic/Anaerobic/ Mycoplasma Culture	Combination test including stains and bacterial susceptibilities (when appropriate)	See individual tests	3-7 days for bacterial culture, up to 10 days for <i>mycoplasma</i> culture	\$103.50
Aspergillus Panel	Includes antibody, galactomannan and protein electrophoresis Price includes shipping. Send-out test.			\$115.00
Blastomyces AGID	For Blastomyces dermatitidis antibodies	0.5 mL serum	48 hr test; run Mon.- Thurs.	\$31.00
Blastomyces Antigen EIA	For Blastomyces dermatitidis antigen Price includes shipping. Send-out test.	2.0mL of one of these: urine, serum, plasma, CSF -or- 1.0mL Bronchial Fluid	72 hr	\$86.00
Blood Culture	Includes aerobic and anaerobic culture and susceptibilities on aerobes (when appropriate) Call Lab	Whole blood in Isolator® tube preferred (for centrifugation/lysis culture method). Inquire for special case alternatives	Cultures with no growth held for 7 days; longer incubation required for specified organisms	\$61.00
Brucella canis Serology	Brucella canis antibodies	1.0 mL serum	2-3 Bus. Days	\$43.50
Campylobacter Culture	Fecal screen for <i>C. jejuni</i> or abortion/venereal screen for <i>C. fetus</i> / <i>C. jejuni</i> and related organisms	Fresh feces or tissue, must keep sample refrigerated	3-5 Bus. Days	\$28.50
Clostridium difficile Toxin	Direct fecal ELISA for toxins A and B	Fresh feces, may be refrigerated or frozen	1-2 Bus. Days	\$44.00
Clostridium perfringens Enterotoxin	Direct fecal ELISA for enterotoxin (cpe)	Fresh feces, may be refrigerated or frozen	1-2 Bus. Days	\$44.00
Clostridium Toxins Panel	Direct fecal ELISA for both <i>C. difficile</i> toxins A/B and <i>C. perfringens</i> enterotoxin	See individual tests	1-2 Bus. Days	\$82.00
Coccidioides AGID		0.5 mL serum	48 hr test; run Mon.- Thurs.	\$31.00
Cryptococcus Antigen	ELISA for capsular antigen	0.5 mL serum, CSF, BAL	1-2 Bus. Days	\$45.00
Fecal Clostridium Culture	Selective screening primarily for <i>C. perfringens</i> / <i>C. difficile</i>	Fresh feces, may be refrigerated or frozen	3-5 Bus. Days	\$24.00
Fecal Culture, Other	Screen for other misc. pathogens such as <i>Rhodococcus</i> , <i>Shigella</i> , K99 <i>E. coli</i> , <i>Yersinia</i> and <i>Citrobacter rodentium</i> . Must specify which. Includes <i>Salmonella</i> screen.	Fresh feces, may be refrigerated	3-5 Bus. Days	\$46.00
Fecal Salmonella Culture	<i>Salmonella</i> screen only	Fresh feces, may be refrigerated	3-5 Bus. Days	\$24.00
Fecal Salmonella/ Campylobacter	<i>Salmonella</i> and <i>Campylobacter jejuni</i>	Fresh feces, must keep refrigerated	3-5 Bus. Days	\$51.50
Fecal Salmonella/Clostridium	<i>Salmonella</i> , and <i>Clostridium</i> (<i>C. perfringens</i> / <i>C. difficile</i>)	Fresh feces, may refrigerate	3-5 Bus. Days	\$47.00
Fecal Salmonella/Clost/Campy	<i>Salmonella</i> , <i>Clostridium</i> (<i>C. perfringens</i> / <i>C. difficile</i>) and <i>Campylobacter</i>	Fresh feces, must keep refrigerated	3-5 Bus. Days	\$72.00
Fungal Culture	Includes fungal microscopy when appropriate	Various tissues and body fluids, culture swab not recommended, see general specimen collection and submission guidelines	Fungal cultures with no growth held for 5 weeks	\$41.50

Bacteriology/Mycology

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Fungal Culture Dermatophytes only	Screen for common dermatophytes	Hair or skin scraping	Dermatophyte cultures with no growth held for 3 weeks	\$30.00
Fungal Microscopy	KOH, Calcofluor, or India ink		1 Bus. Day	\$22.00
Fungal Susceptibility	Only available for certain fungal species and certain anti-fungal drugs. Contact lab for information regarding this test		Prior Authorization Required	
Gram Stain		May submit tissue sample or dried impression smear on glass slide	1 Bus. Day	\$19.00
Histoplasma AGID	For Histoplasma capsulatum antibodies	0.5 mL serum	48 hr test; run Mon.- Thurs.	\$31.00
Histoplasma Antigen EIA	Histoplasma Antigen EIA Price includes shipping. Send-out test.	2.0mL of one of these: urine, serum, plasma, CSF -or- 1.0mL Bronchial Fluid	72 hr	\$86.00
Milk Culture	Includes susceptibilities (when appropriate)	1.0 mL	3 days	\$18.00
Mycobacterium Culture	Includes acid fast stain	Various tissues, culture swab not recommended see general specimen collection and submission guidelines	Cultures with no growth held for 6 weeks	\$43.00
Mycobacterium Susceptibility for Rapidly Growing AFB and Aerobic Actinomycetes	Contact lab for information regarding this test		Prior Authorization Required	
Mycoplasma Culture	Various tissues and body fluids	Cultures with no growth held for 10 days	Cultures with no growth held for 10 days	\$41.00
Organism ID PCR With Sequencing	Contact lab for information regarding this test			\$100.00
Urine Culture	Includes Gram stain and susceptibilities (when appropriate)		Cultures with no growth held for 3 days	\$37.00



Clinical Pathology (Chemistry, Cytology, Hematology, & Urinalysis)



SUBMISSION GUIDELINES

Most tests have a one day turnaround unless we have a particularly heavy in-house workload. We do not offer STAT testing for referral specimens. All specimens must be received by NOON in order to be reported on the same day.

CBC

- Complete blood counts must be performed within 24 hours of sample collection.
- Submit a whole blood specimen in a properly filled (to the fill line) **EDTA (lavender-top)** collection tube.
- Additionally make one to two blood smears at the time of collection. We recommend using glass slides with a frosted label area. Let the smear air-dry and place in a cardboard or plastic slide holder.
- Label each specimen (including any slide holder) with TWO unique patient identifiers (e.g., pet name and owner last name, or pet name and medical record number). For blood smears, use a PENCIL to label the glass slide's frosted edge.
- Refrigerate the lavender top collection tube until drop off, courier pick-up, or shipping. DO NOT REFRIGERATE BLOOD SMEARS.

Coagulation Profile

- Submit specimen in a properly filled (to the fill-line) **citrate (blue-top)** collection tube
- Label each specimen with TWO unique patient identifiers (e.g., pet name and owner last name, or pet name and medical record number).
- If delivering the sample to UTCVM yourself, please call the laboratory to notify us of the specimen arrival.
- If you cannot get the specimen to our lab within 15 minutes of sampling, you must harvest the plasma: Centrifuge the specimen tube, gently remove the plasma using a PLASTIC transfer pipette (without disrupting the cell button), and place the plasma in a plain PLASTIC tube. Store plasma in FREEZER until drop off, courier pick-up, or shipping.

Chemistry

- Submit specimen in a properly filled (to the fill line) **heparin (green-top)** collection tube. This is the preferred sample type.
- **Clot tubes (red-top)** are also accepted, but be aware that our laboratory's reference intervals are for heparinized plasma.
- Label each specimen with TWO unique patient identifiers (e.g., pet name and owner last name, or pet name and medical record number).
- For blood chemistries: If you cannot get the specimen to our lab within 30 minutes of collection, you must harvest the **plasma (green-top)** or **serum (red-top)**. If using a red-top tube, make sure the sample is COMPLETELY CLOTTED before harvesting serum. To harvest plasma/serum: Centrifuge the specimen tube, gently remove the plasma/serum using a PLASTIC transfer pipette (without disrupting the cell button), and place the plasma/serum in a plain PLASTIC tube. Store plasma/serum in refrigerator until drop off, courier pick-up, or shipping.

Common Interferents

Hemolysis (excess free hemoglobin) and lipemia (excess fat, especially

triglycerides) both interfere with many laboratory tests and are best avoided if possible.

- Hemolysis can be endogenous to the patient (e.g., intravascular hemolytic anemia) or an artifact due to difficult blood collection or sample handling errors such as: forcing blood through a needle into the blood collection tube, prolonged sample storage, improper sample storage temperature (extreme heat or cold), and poor centrifugation technique (e.g., centrifuging a red-top or tiger-top tube of whole blood that has not fully clotted). When harvesting plasma or serum, if the plasma or serum is visibly red and iatrogenic sample hemolysis is suspected, a new sample should be collected whenever possible. If a patient has severe intravascular hemolysis due to disease, be aware that some laboratory values may not be reported due to interference with testing.
- Lipemia is most commonly post-prandial but can also occur with endocrine disease and disorders of lipid metabolism. When harvesting plasma or serum, if the plasma is visibly lipemic and post-prandial lipemia is suspected, wait and collect another sample after an 8-12 hour fast. If you must submit a grossly lipemic sample, we can reduce the impact of lipemia on chemistry measurements by ultracentrifuging the specimen prior to analysis.

Proper sample handling helps to ensure accurate test results. Please consult test directory for specific tests and panels. Be sure to use appropriate sample tubes and fill these correctly. Avoid prolonged sample storage and extreme temperatures. Do not freeze samples unless specifically indicated for the test. Do not place specimens in direct contact with ice packs.

Urine

- Submit specimen in a **urinalysis tube (preferred)** or a **clot tube (red-top)** blood collection tube. A minimum volume of 5 mL urine is required.
- Label each specimen with TWO unique patient identifiers (e.g., pet name and owner last name, or pet name and medical record number).
- Store urine in refrigerator until drop off, courier pick-up, or shipping.

Cytology Smear

- Submission of 2 to 3 highly cellular smears per site is optimal. Smears should be thin (e.g., using "blood smear technique") and contain a monolayer of intact cells.
- We recommend using glass slides with a frosted label area.
- Label frosted slides with TWO unique patient identifiers (e.g., pet name and owner last name, or pet name and medical record number) using a PENCIL.
- Allow smears to air dry. Place dry slides in a cardboard or plastic slide holder. Label slide holder with TWO unique patient identifiers.
- Leave smears UNFIXED and UNSTAINED. (We do accept previously stained smears, but these are not preferred.)
- Complete a **Cytology Submission Form**. Anatomic site of the aspirate is required information. A concise clinical history and lesion description will facilitate the pathologist's interpretation and help maximize diagnostic yield.
- DO NOT REFRIGERATE cytology smears. Protect smears from moisture and keep them away from formalin fumes and other fixatives.

*Primate samples and necropsies are NOT accepted from outside the continental United States.

Centesis Fluid Analysis

- Submit specimen in a properly filled (to the fill line) **EDTA (lavender-top)** collection tube. DO NOT SUBMIT SPECIMENS IN SYRINGES.
- If you are submitting fluid for **culture**, place specimen in a **clot (red-top)** collection tube; please follow instructions for submission of culture specimens (see page 4-5).
- If you are submitting fluid for **chemistry analysis**, e.g., creatinine, potassium, or bilirubin measurement, please follow instructions under the "Chemistry" section on the previous page.
- Complete a **Cytology Submission Form** (check "Centesis Fluid Exam and Report").
- Label each specimen with TWO unique patient identifiers (e.g., pet name and owner last name, or pet name and medical record number)
- Refrigerate the lavender top collection tube until drop off, courier pick-up, or shipping.
- Additionally make one to two direct smears of the fluid at the time of collection using a "blood smear" technique. Allow smear(s) to air dry. Place dry slide(s) in a cardboard or plastic slide holder. Label slide holder with TWO unique patient identifiers. Leave smear(s) UNFIXED and UNSTAINED. (We do accept previously stained smears, but these are not preferred.)
- DO NOT REFRIGERATE smears. Protect smears from moisture and keep them away from formalin fumes and other fixatives.

Sample Drop-off

- Local veterinarians or their staff are welcome to drop off laboratory specimens. The sample drop-off area is located outside our

pharmacy window on the large animal side. We check the drop-off station several times each day.

- Specimens in **EDTA (lavender-top)** (e.g., CBCs, fluids), **heparin (green-top)**, and **clot (red-top)** tubes, plasma/serum in plain plastic tubes, and urine specimens should be placed in individual plastic sample bags together with the appropriate submission form and left in the REFRIGERATOR.
- Cytology smears (in an appropriate slide holder) should be placed in a plastic sample bag together with the appropriate submission form and left in the CYTOLOGY DROP-OFF BOX.
- Lab personnel collect samples from the drop-off area multiple times throughout the day.

Sample Shipping

- Specimens in EDTA (e.g., CBCs, fluids), heparin, and clot (red-top) tubes, plasma/serum in plain plastic tubes, and urine specimens should be placed in individual plastic sample bags together with the appropriate submission form and shipped OVERNIGHT with an ice pack. Blood smears accompanying CBC specimens and smears accompanying fluid specimens may be shipped in the same box as the EDTA tube; however, take care to protect the smears from moisture and keep them separated from the ice pack.
- Smears (tissue aspirate smears, smears of fluids, and blood smears for cytologic evaluation) may be shipped via regular mail (do NOT use ice packs), although if there is risk of exposure to high ambient temperatures (e.g., middle of summer), consider expedited shipping (no ice pack needed). DO NOT SHIP CYTOLOGY (OR BLOOD) SMEARS AND BIOPSY SAMPLES IN THE SAME BOX due to risk of exposing cytology/blood smears to formalin fumes.

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
CHEMISTRY				
ALB	Albumin	Green top, 1 mL	Next Bus. Day	\$16.50
ALK Phos	Alkaline phosphatase	Green top, 1 mL	Next Bus. Day	\$16.50
Alk Phosphatase, Heat Stable	Corticosteroid-induced isoform of Alk Phos	Green top, 1 mL	Next Bus. Day	\$20.00
ALT	Alanine aminotransferase	Green top, 1 mL	Next Bus. Day	\$16.50
Ammonia	Special and immediate handling required, please call lab.	Lavender top, 1 mL - Immediately spin and separate from cells, MUST be frozen if not submitted within 30 minutes of collection.	Next Bus. Day	Call Lab
AST	Aspartate Aminotransferase	Green top, 1 mL	Next Bus. Day	\$16.50
Avian/Herp Chem Panel, Major	AST, creatine kinase, urea nitrogen, phosphorus, calcium, glucose, total protein, alb, globulin, albumin/globulin ratio, cholesterol, uric acid, bile acid post prand.	Green top, 1 mL	Next Bus. Day	\$31.50
Avian/Herp Chem Panel, Minor	AST, CK, calcium, glucose, total protein, uric acid	Green top, 1 mL	Next Bus. Day	\$19.00
Bile Acids Fast & 2 Hr Pp	Paired samples (fasting & post-prandial)	Red top, 1 mL	Next Bus. Day	\$54.00
Bile Acids Fasting	Fasting bile acids	Red top, 1 mL	Next Bus. Day	\$32.00
Bile Acid Postpran	2 hours after meal	Red top, 1 mL	Next Bus. Day	\$32.00
Bilirubin, Total		Green top, 1 mL	Next Bus. Day	\$16.50
Calcium	Total calcium	Green top, 1 mL	Next Bus. Day	\$16.50
Cholesterol		Green top, 1 mL	Next Bus. Day	\$16.50
CK	Creatine Kinase	Green top, 1 mL	Next Bus. Day	\$16.50

Clinical Pathology

(Chemistry, Cytology, Hematology, & Urinalysis)

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
cPL SNAP™ Test	Canine pancreatic-specific lipase	Red top, 1 mL	Next Bus. Day	\$23.50
Creatinine		Green top, 1 mL	Next Bus. Day	\$16.50
Electrolyte Panel	Na, K, Cl, TCO2	Green top, 1 mL	Next Bus. Day	\$17.50
Fecal Occult Blood		Feces	Next Bus. Day	\$13.00
Fructosamine		Green top, 1 mL	1-4 Bus. Days Batch run on Tuesdays & Fridays	\$43.00
GGT	Gamma-glutamyl transferase	Green top, 1 mL	Next Bus. Day	\$16.50
Glucose		Green top, 1 mL	Next Bus. Day	\$16.50
Ionized Calcium Panel - Whole Blood	Ionized calcium, Na, K	Green top, 1 mL	Same Day	Call Lab
Ketones, Serum		Red top, 1 mL	Next Bus. Day	\$9.50
Large Animal General Chemistry Panel	GGT, AST, creatine kinase, urea nitrogen, creatinine, phosphorus, calcium, glucose, total protein, alb, globulin, albumin/globulin ratio, total bilirubin, magnesium, SDH	Green top, 2 mL	Next Bus. Day	\$39.00
Large Animal Panel and Electrolytes	LA general chemistry panel, plus electrolytes (Na, K, Cl, TCO2)	Green top, 2 mL	Next Bus. Day	\$45.00
LDH	Lactate dehydrogenase	Green top, 1 mL	Next Bus. Day	\$16.50
Lipase		Green top, 1 mL	Next Bus. Day	\$26.00
Lipid Panel	Cholesterol and triglycerides	Green top, 1 mL	Next Bus. Day	\$31.50
Mg	Magnesium	Green top, 1 mL	Next Bus. Day	\$24.00
Phenobarbital		Green top, 1 mL	5-7 Bus. Days Batch run on Thursdays	\$43.00
Phosphorus		Green top, 1 mL	Next Bus. Day	\$16.50
Pre-Op Panel, Large Animal	Na, K, Cl, TCO2, glucose, creatinine, AST	Green top, 1 mL	Next Bus. Day	\$23.50
Pre-Op Panel, Small Animal	Na, K, Cl, TCO2, glucose, creatinine, ALT	Green top, 1 mL	Next Bus. Day	\$23.50
Refeeding Panel	Na, K, Cl, TCO2, calcium, phosphorus, magnesium, ALB	Green top, 1 mL	Next Bus. Day	\$33.50
Renal Panel	Electolytes, BUN, creatinine, phosphorus, calcium, albumin	Green top, 2 mL	Next Bus. Day	\$30.00
Serial Glucoses	Up to 5 timed Collections	Green top, 1 mL	Next Bus. Day	\$70.00
Small Animal General Chemistry Panel	Alkaline phosphatase, ALT, AST, creatine kinase, urea nitrogen, creatinine, phosphorus, calcium, glucose, total protein, alb, globulin, albumin/globulin ratio, cholesterol, total bilirubin, magnesium	Green top, 2 mL	Next Bus. Day	\$33.50
Small Animal Panel and Electrolytes	SA general chemistry panel, plus electrolytes	Green top, 2 mL	Next Bus. Day	\$47.00
Sorbitol Dehydrogenase-SDH	Serum should be harvested and frozen prior to pickup.	Red top, 1 mL	Next Bus. Day	\$20.50
Total Protein	Biuret method	Green top, 1 mL	Next Bus. Day	\$16.50
Triglycerides		Green top, 1 mL	Next Bus. Day	\$16.50
Urea Nitrogen - BUN		Green top, 1 mL	Next Bus. Day	\$16.50
Uric Acid		Green top, 1 mL	Next Bus. Day	\$16.50
Urine Creatinine		Urine, 1 mL	Next Bus. Day	\$16.50
Urine Electrolyte Panel	Na, K, Cl	Urine, 1 mL	Next Bus. Day	\$17.50
Urine Panel	Na, K, Cl, creatinine, phosphorus	Urine, 1 mL	Next Bus. Day	\$23.50
Urine Protein Quant		Urine, 1 mL	Next Bus. Day	\$25.50
Urine Protein/Creatinine Ratio	UPC	Urine, 1 mL	Next Bus. Day	\$41.00

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
CYTOLOGY				
Blood Smear Exam		1 mL EDTA whole blood	Next Bus. Day	\$43.50
Bone Marrow Cytology and Report		Slides prepared from bone marrow. A concurrent blood sample (lavender top) for CBC and a freshly made blood smear should also be submitted.	Next Bus. Day	\$68.00
Buffy Coat Exam		EDTA blood, 1mL	Next Bus. Day	\$40.00
Centesis Fluid Exam and Report	Cell counts, total solids and smear exams	Lavender & red top. 1 mL aspirate of abdominal, thoracic or pericardial fluid.	Next Bus. Day	\$84.00
CSF Analysis w/Cytology and Report	Cerebral spinal fluid; cell counts, protein and concentrated smear exam	CSF, 1mL in sterile tube no additive.	Next Bus. Day	\$84.00
Cytology Smear Evaluation and Report		Slides prepared from FNA or impression	Next Bus. Day	\$68.50
Synovial Fluid Exam and Report	Cell counts, total solids and smear exams	Synovial fluid, 1mL in EDTA tube (Lavender top)	Next Bus. Day	\$84.00
HEMATOLOGY				
Avian / Herp CBC	WBC, spun PCV, absolute white cell counts, cell morphology	Heparinized whole blood (green top tube), 0.5 mL minimum	Next Bus. Day	\$33.50
CBC	Complete blood count with examination of blood smears	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$31.00
CBC & Reticulocytes	Complete blood count and absolute retic count	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$44.00
CBC With Fibrinogen	Complete blood count and fibrinogen by heat precipitation	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$38.00
Coagulation Profile & Platelet Count	PT, PTT and platelet count	Blue top tube filled to required level plus EDTA tube for platelet count.	Next Bus. Day	Call Lab
Differential Count (Blood)	WBC differential read from EDTA blood smear	Lavender top tube (EDTA) minimum at least half of required volume for tube size or smears made from tube.	Next Bus. Day	\$15.50
Fibrinogen, Heat Precipitation	Semi-quantitative assay of fibrinogen for large animals	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$13.00
PCV & TPP	Spun packed cell volume and refractometer plasma protein	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$12.50
Platelet Count	Instrument count confirmed with examination of blood smears	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$14.00
PT (Prothrombin Time)	Prothrombin time	Blue top tube filled to required level	Next Bus. Day	\$18.50
PTT (Activated Partial Thromboplastin Time, aPTT)	Partial Thromboplastin Time	Blue top tube filled to required level	Next Bus. Day	\$18.50
Reticulocyte Count	Absolute retic count	Lavender top tube (EDTA) minimum at least half of required volume for tube size	Next Bus. Day	\$18.00
URINALYSIS				
Urinalysis	Urine dipstick and microscopic sediment exam Refrigerate sample	Urine, minimum 5 mL	Next Bus. Day	\$20.00
Urine Hb - Mb Diff	To differentiate urine hemoglobin/myoglobin First morning void is best	Fresh urine, minimum 5 mL	Next Bus. Day	\$23.00



Endocrinology

SUBMISSION GUIDELINES

Proper sample collection and handling are essential to accurate test results.

- Do not send whole blood for any test procedure.
- Please do not send samples in serum-separator tubes (polymer-gel tubes). This causes hemolysis of samples.

Serum is required for all endocrinology tests except Endogenous ACTH (plasma-EDTA).

Label sample containers adequately

- Owner's name
- Animal's name
- Test desired
- Time of collection (baseline, post-stim., etc.)

Serum samples

- Clot at room temperature. Centrifuge within 1 hour, remove serum and freeze.
- Alternatively, store blood samples in the refrigerator for 2 to 4 hours to clot. Centrifuge, remove serum and freeze. For plasma samples: use EDTA tubes. Centrifuge and remove plasma within 15 minutes and freeze.

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
ENDOCRINOLOGY				
17-Hydroxyprogesterone, Baseline	[Feline-castrated/spayed only, Canine and Ferret]	0.5 mL of serum	7-10 Bus. Days	\$23.00
17-Hydroxyprogesterone, Pre & Post (ACTH Stim)	[Canine, Feline-castrated/spayed only]	0.5 mL of serum each	7-10 Bus. Days	\$46.00
Adrenal Panel - ACTH Stim Canine	Baseline and post-ACTH cortisol, progesterone, 17-hydroxyprogesterone, estradiol, androstenedione, testosterone, [Canine]	2.0 mL of serum each	7-10 Bus. Days	\$162.00
Adrenal Panel - ACTH Stim Feline, castrated/spayed only	Baseline and post-ACTH cortisol, progesterone, 17-hydroxyprogesterone, estradiol, androstenedione, testosterone, aldosterone [Feline-castrated/spayed only]	2.0 mL of serum each	7-10 Bus. Days	\$170.00
Adrenal Panel - Ferret	Baseline estradiol, androstenedione, 17-hydroxyprogesterone, [Ferret]	0.5 mL of serum	7-10 Bus. Days	\$70.00
Adrenal Panel - Rabbit, castrated/spayed only	Baseline cortisol, progesterone, 17-hydroxyprogesterone, androstenedione, testosterone [Rabbit-castrated/spayed only]	2.0 mL of serum	7-10 Bus. Days	\$68.00
Adrenal Panel Combined Dex Supp/ACTH Stim	Analyze cortisol, androstenedione, estradiol, progesterone, 17-hydroxyprogesterone and testosterone in baseline, post-dexamethasone, and post-ACTH samples, [Canine]	2.0 mL of serum each	7-10 Bus. Days	\$200.00
Aldosterone, Baseline	Canine and Feline - castrated/spayed only	0.5 mL of serum	Samples run once weekly	\$25.00
Aldosterone, Pre & Post (ACTH Stim)	Canine and Feline - castrated/spayed only	0.5 mL of serum each	Samples run once weekly	\$50.00
Androstenedione, Baseline	Canine, Feline, Ferret	0.5 mL of serum	7-10 Bus. Days	\$36.00
Androstenedione, Pre & Post (ACTH Stim)	Canine, Feline	0.5 mL of serum	7-10 Bus. Days	\$71.00
Cortisol, Baseline	Canine, Equine, Feline	0.5 mL of serum	Daily	\$18.00
Cortisol, Pre & Post (ACTH Stim)	Canine, Feline	0.5 mL of serum each	Daily	\$34.00
Cortisol, Combined Dex Supp/ACTH Stim	Analyze cortisol in baseline, post-dexamethasone, and post-ACTH samples, [Canine]	0.5 mL of serum each	Daily	\$38.00
Cortisol, High Dose Dexamethasone Suppression	Analyze cortisol in baseline sample and post-dexamethasone samples (4 and 8 hours), [Canine]	0.5 mL of serum each	Daily	\$38.00

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Cortisol, Low Dose Dexamethasone Suppression	Analyze cortisol in baseline sample and post-dexamethasone samples (4 and 8 hours), [Canine]	0.5 mL of serum each	Daily	\$38.00
Endogenous ACTH	Baseline sample [Equine]	1.0 mL of plasma. Collect in purple top on ice, spin immediately and separate and transfer to plastic tube. Store sample frozen and send on dry ice overnight.	Samples run once weekly	\$28.00
Estradiol, Baseline	[Canine, Ferret, Feline - castrated/spayed only]	0.5 mL of serum	7-10 Bus. Days	\$26.00
hCG Stim Test (Progesterone)	Baseline and post-hCG stimulated progesterone [Canine, Feline, Rabbit]	0.5 mL of serum each	7-10 Bus. Days	\$41.00
hCG Stim Test (Testosterone)	Baseline and post-hCG stimulated testosterone [Canine, Equine, Feline, Rabbit]	0.5 mL of serum each	7-10 Bus. Days	\$36.00
Insulin	Baseline sample [Equine]	1.0 mL of serum. Collect in a red top, allow to clot, then spin and separate. Store sample frozen and send on an ice pack standard overnight.	Samples run once weekly	\$26.00
Progesterone, Baseline	For canine breeding progesterone, sample must be submitted by 3:00pm for same day results. [Feline and Rabbit - castrated/spayed only, Canine]	0.5 mL of serum	7-10 Bus. Days	\$31.00
Reproductive Hormones (E, P, T)	Baseline estradiol, progesterone, testosterone, (Canine, Feline - castrated/spayed only)	1.0 mL of serum	7-10 Bus. Days	\$75.00
T3 and T4, Baseline	[Canine, Feline, Equine]	0.5 mL of serum	Daily	\$29.00
T3, Baseline	[Canine, Feline]	0.5 mL of serum	Daily	\$17.00
T4, Baseline	[Canine, Feline]	0.5 mL of serum	Daily	\$17.00
T4/TSH	[Canine]	0.5 mL of serum	Daily	\$34.00
Testosterone, Baseline	[Feline and Rabbit - castrated/spayed only, Canine]	0.5 mL of serum	7-10 Bus. Days	\$26.00
TSH	[Canine]	0.5 mL of serum	Daily	\$20.00

TOXICOLOGY

Bromide	Samples received on Mon and Tues will be processed on Wed. Samples received after Tues will be processed the following Wed.	1.0 mL of serum	Run every Wed.	\$70.00
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Immunology

SUBMISSION GUIDELINES

- Surface antibody testing including neutrophil, platelet, and red blood cells are performed on EDTA blood
- Patients should not have a recent history of steroid medication
- 2 Samples, patient and normal control, are requested for the Neutrophil Surface Antibody Flow test
- 2-3 ml of EDTA blood is REQUIRED for antibody testing
- Ship Monday through Thursday FEDEX or UPS overnight
- Ship in an insulated package with ice packs
- Results will be faxed or emailed as requested on submission form

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
IMMUNOLOGY				
Antinuclear Antibody (ANA) by IFA	IFA, [Canine, Equine, Feline]	0.2 mL serum	2-4 Bus. Days	\$51.00
Bartonella henselae by IFA	IFA	0.2 mL serum	2-4 Bus. Days	\$51.00
Blood Typing - Canine	DEA1.1 Pos. or Neg, [Canine]	0.5 mL EDTA blood	1-2 Bus. Days	\$42.50
Blood Typing - Feline	Card test, [Feline]	0.5 mL EDTA blood	1-2 Bus. Days	\$42.50
Bovine Pregnancy ELISA	ELISA, [Bovine]	1mL milk or serum	3-5 Bus. Days	\$4.00
Crossmatch	Agglutination	0.5 mL serum and EDTA blood Patient and donor	1 Bus. Day	\$42.50
Crossmatch (After Hours)	Agglutination	0.5 mL serum and EDTA blood Patient and donor	1 Bus. Day	\$91.50
Crossmatch STAT	Agglutination	0.5 mL serum and EDTA blood Patient and donor	2-3 Hours	\$62.50
Ehrlichia canis Titer by IFA	IFA, [Canine, Feline]	0.2 mL serum	2-4 Bus. Days	\$51.00
Equine Tapeworm Antibody Detection ELISA	ELISA, [Equine]	0.2 mL serum	2-4 Bus. Days	\$29.00
IgG Level (RID) - Camelid, Equine	RID, [Camelid, Equine]	0.5 mL serum	1-2 Bus. Days	\$41.50
Johnes by ELISA	ELISA	0.5 mL serum or milk	2-4 Bus. Days	\$6.00
Protein Electrophoresis	Electrophoresis No hemolysis present in serum	0.5 mL serum, thoracic or abdominal fluid, urine	3-5 Bus. Days	\$66.50
Urine Electrophoresis	Electrophoresis w/Path Interp, [Canine, Equine, Feline]	0.5 mL serum	3-5 Bus. Days	\$73.00

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
FLOW CYTOMETRY				
Immunophenotyping Flow - Lymphocyte	Panel includes CD4, CD5, CD8, CD21, CD34,CD45, MHC Class II. Flow cytometry. Special handling required. Please call.	2.0 mL EDTA blood or aspirate	3-5 Bus. Days	\$99.00
Neutrophil Surface Antibody Flow	Flow cytometry Special handling required, please call lab.	2.0 mL EDTA blood	2-4 Bus. Days	\$51.00
Platelet Bound Antibody Flow	Flow cytometry Special handling required, please call lab.	3 mL EDTA blood	2-4 Bus. Days	\$51.00
Red Blood Cell Surface Antibody Flow	Flow cytometry/Coombs by flow Special handling required, please call lab.	0.5 mL EDTA blood	2-4 Bus. Days	\$51.00

PCR

Anaplasma (platys and phagocytophilum) PCR	PCR, [Canine, Equine]	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
Anaplasma marginale PCR	PCR, [Bovine]	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
Bartonella Genera PCR	PCR	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
Demodex gatoi PCR	PCR	Skin Scraping or Hair Pluck	3-5 Bus. Days	\$29.00
Dermatophilus congolensis PCR	PCR	Skin, hair, crust (scab)	3-5 Bus. Days	\$36.50
Ehrlichia canis PCR	Real-time PCR	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
FIV PCR	PCR	0.2 mL EDTA blood	3-5 Bus. Days	\$51.00
Lyme Disease by PCR	PCR, [Canine, Equine]	0.2 mL EDTA blood	3-5 Bus. Days	\$50.00
Mycoplasma haemofelis PCR	Real-time PCR (Hemobartenella), [Feline]	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
Mycoplasma haemolama PCR	Eperythrozoonosis, [Camelid]	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
Rocky Mountain Spotted Fever by PCR	PCR, [Canine, Feline]	0.5 mL EDTA blood	3-5 Bus. Days	\$51.00
Sexing, Psittacine Blood PCR	PCR, [Avian]	0.2 mL EDTA blood	3-5 Bus. Days	\$41.50

PANELS

Canine Ehrh+Anaplas PCR Panel	Canine Ehrh + Anaplas PCR Panel, [Canine]	0.5mL blood in Lavender top tube	3-5 Bus. Days	\$85.50
Coombs Panel	Agglutination	0.5 mL EDTA blood	1-2 Bus. Days	\$37.50
Feline Tick Panel PCR	Feline Ehrlichia and Anaplasma by PCR, [Feline]	0.3mL blood in Lavender top tube	3-5 Bus. Days	\$85.50
Tick Panel PCR	RMSF, E. canis, Lyme, Anaplasma (all four tests by PCR), [Canine, Equine]	1 mL EDTA blood	3-5 bus. days	\$145.50
Tick Titer Panel IFA	RMSF, Lyme, E. canis titers by IFA, [Canine] Also a Virology test	0.5 mL serum	2-4 Bus. Days	\$112.50

Parasitology

SUBMISSION GUIDELINES

Fecal Samples

Routine fecal procedures require a golf ball size refrigerated sample, collected the same day for each test request.

Heartworm Microfilariae Knott's - Post Treatment Only

Requires 2 mL of EDTA (lavender top) whole blood.

Serology and Heartworm Testing

Refer to the submission form for sample types and minimum volumes.

CHOOSING FECAL PANELS









Give us the **whole pile**. There's no such thing as too much poop. Call us to ask about minimum amounts needed.

TEST NAME	COMPONENTS	PROS	CONS
Fecal Panel (Sugar and Zinc) Routine <i>FOR SMALL ANIMALS</i>	Centrifugal* Sucrose	<ul style="list-style-type: none"> Increased sensitivity for Roundworm & Tapeworm eggs, <i>Cryptosporidium</i> & Coccidian oocysts 	Specific gravity of solution (1.275) distorts <i>Giardia</i> cysts & Fluke eggs
	Centrifugal* Zinc	<ul style="list-style-type: none"> Increased sensitivity for <i>Giardia</i> cysts, Fluke eggs & lungworm larvae 	Poor sensitivity for whipworm eggs and <i>Cryptosporidium</i> oocysts
Giardia Panel & Sugar Float <i>FOR SMALL ANIMALS</i>	Giardia ELISA	<ul style="list-style-type: none"> <i>Giardia</i> ANTIGEN in symptomatic cats & dogs Increased sensitivity when paired with zinc fecal float 	Increased false positives in asymptomatic dogs
	Direct Saline Smear	<i>Giardia</i> trophozoites only detected in 10% of known positive infections	<ul style="list-style-type: none"> Poor sensitivity for most Helminth eggs, Protozoa and Coccidian oocysts Requires fresh unrefrigerated sample
	Centrifugal* Zinc & Sucrose	<ul style="list-style-type: none"> The most comprehensive fecal exams for animals with diarrhea Optimized for <i>Giardia</i> cysts, <i>Cryptosporidium</i> & Coccidian oocysts 	Specific gravity of solution (1.275 vs. 1.19) require both sugar & zinc for comprehensive detection
Fecal Panel <i>FOR LARGE ANIMALS</i>	Centrifugal* Sucrose	<ul style="list-style-type: none"> Detect parasites other than <i>Giardia</i> as cause of diarrhea Nematode & Cestode eggs, <i>Cryptosporidium</i> & Coccidian oocysts 	Specific gravity of solution (sp.g 1.275) distorts <i>Giardia</i> cysts and fluke eggs
	McMaster chamber for strongylate eggs	<ul style="list-style-type: none"> Assess environmental contamination Evaluate deworming efficacy Identify high and low egg shedders Establish deworming strategies using pre- and post-counts Provide a basis for eliminating animals contributing to excel pasture contamination 	Does not provide a comprehensive fecal exam; low sensitivity for <i>Anoplocephala</i> , <i>Oxyuris</i> , and <i>Parascaris</i> eggs.
	Centrifugal* Sucrose	<ul style="list-style-type: none"> The most comprehensive fecal exams for large animals 	Specific gravity of solution (1.275) distorts Fluke eggs

*Parasite detection significantly increases with centrifugation

Comprehensive review by Companion Animal Parasite Council capcvet.org

CHOOSING HEARTWORM TESTS

ROUTINE TEST COMPONENTS	PROS	CONS
 <ul style="list-style-type: none"> Dirochek™ ANTIGEN Knott's Exam 	Highest sensitivity for as few as 1-2 adult females	Poor sensitivity for male only infection or immature female worms
 <ul style="list-style-type: none"> Idexx SNAP™ ANTIGEN Knott's Exam 	High sensitivity for at least 2 adult females	Poor sensitivity <2 female worms, male only infection, or immature female worms
 <ul style="list-style-type: none"> Idexx 4DxPlus™ Heartworm ANTIGEN & <i>Borrelia burgdorferi</i>, <i>Anaplasma</i> species & <i>Ehrlichia</i> species ANTIBODIES Knott's Exam 	<ul style="list-style-type: none"> High sensitivity for at least 2 adult females Detects <i>Borrelia</i> antibodies from natural infection; not detected from specific vaccines 	<ul style="list-style-type: none"> Poor sensitivity <2 female worms, male only infection, or immature female worms Tick-borne pathogen antibodies presence/absence only (NO numerical titer) No differentiation between <i>Anaplasma</i> species or <i>Ehrlichia</i> species antibodies
 <ul style="list-style-type: none"> Dirochek™ ANTIGEN Feline heartworm ANTIBODIES 	<ul style="list-style-type: none"> Antibody detection for both male and female larvae and adults Highest antigen sensitivity for as few as 1-2 adult females 	<ul style="list-style-type: none"> No indication of continued infection; only that infection occurred Large volume of serum necessary for repeat testing
SPECIALTY TESTS & COMPONENTS	PROS	CONS
 <ul style="list-style-type: none"> Verification Panel Dirochek™ ANTIGEN Idexx SNAP™ or SNAP 4DxPlus™ Knott's Exam 	<ul style="list-style-type: none"> Confirmation of POSITIVE result using multiple tests Aid in diagnosis for complex cases <p>*** Exclusive to UTCVM Parasitology Lab! ***</p>	
 Knott's Exam (Post-treatment)	<ul style="list-style-type: none"> Evaluate 3 months after treatment initiated Kills and stains microfilariae Differentiate <i>D. immitis</i> from <i>Acanthocheilonema reconditum</i> 	<ul style="list-style-type: none"> No microfilariae present in male only infections, or immature female worms Microfilariae can survive for up to 2 years

Comprehensive review by American Heartworm Society Guidelines heartwormsociety.org

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
FECAL EXAMINATIONS				
SMALL ANIMAL				
Fecal Panel (Sugar & Zinc Flotation), Small Animal	Centrifugal sucrose flotation for eggs, cysts, oocysts detection, including Cryptosporidium and whipworms. Centrifugal zinc sulfate flotation for Giardia (cysts), lungworm (larvae), and fluke (eggs).	4 g fresh/refrigerated fecal	2-3 Bus. Days	\$31.00
Giardia 3 Day Check	Centrifugal zinc sulfate flotation for 3 samples collected over 3 to 5 days., [Canine, Feline (litter-free)]	4 g fresh/refrigerated fecal	2-3 Bus. Days	\$55.00
Giardia Panel & Sugar Flotation (Direct Smear, Zinc & Sugar Flotation, ELISA)	Motile protozoa and select nematode larvae, Centrifugal zinc sulfate flotation (cysts), direct smear (trophozoites) and ELISA-antigen, Centrifugal sucrose flotation for eggs, cysts, oocysts detection, including Cryptosporidium and whipworms [Canine, Feline (litter-free)]	4 g fresh/refrigerated fecal	2-3 Bus. Days	\$53.00
Lungworm Panel (Baermann, Zinc & Sugar Flotation)	Respiratory parasite larval and egg stages, excluding heartworms, [Canine, Feline]	8 g fresh/refrigerated fecal	Submit Mon. through Thurs. ONLY. Overnight incubation.	\$54.00
LARGE ANIMAL				
Fecal Baermann Test	Lungworm larvae, [Bovine, Camelid, Caprine, Equine, Ovine]	4 g fresh/refrigerated fecal	Submit Mon. through Thurs. ONLY. Overnight incubation.	\$17.50
Fecal Egg Count	Useful for egg count reduction test (evaluate deworming efficacy), [Bovine, Camelid, Caprine, Equine, Ovine]	8 g fresh/refrigerated fecal DO NOT POOL SAMPLES	2-3 Bus. Days	\$16.50
Fecal Egg Count (Herd)	Useful for egg count reduction test (evaluate deworming efficacy), [Bovine, Camelid, Caprine, Equine, Ovine] Submit 3+ samples from Herd	8 g fresh/refrigerated fecal: Submit 3+ samples from same herd - DO NOT POOL SAMPLES	2-3 Bus. Days, depending on number of samples in herd	\$14.50
Fecal Float/Egg Count Panel	Fecal Flotation Sugar and Fecal Egg Count [Bovine, Caprine, Equine, Ovine, other large animal]	8 g fresh/refrigerated fecal	2-3 Bus. Days	\$34.50
ANY SPECIES				
Fecal Sedimentation	Ethyl acetate sedimentation for fluke eggs, [Canine, Feline (litter-free)]	3 separate fecals collected over a 5 day period; labeled individually	2-3 Bus. Days	\$30.00
Fecal Smear Parasite Stain	Trichrome stain, [All]	Please call for specific preservative methods (A very important step for identification)	Please call	\$68.50

*Primate samples and necropsies are NOT accepted from outside the continental United States.

Parasitology

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
SEROLOGY				
CANINE				
Babesia canis by IFA	IgG Immunofluorescence antibody detection, [Canine]	1 mL serum	Send-out test. Please call in advance.	\$97.00
Heartworm 4DX Plus SNAP™ & Knott's	ROUTINE AND WELL-CHECK SNAP™ Lyme/Anaplasma/Ehrlichia Antibodies-Heartworm Antigen, Knott's Test for Dirofilaria immitis, Acanthocheilonema reconditum microfilariae differentiation and identification, [Canine]	2 sample types required: 2 mL EDTA whole blood AND 1 mL serum or EDTA plasma	2-3 Bus. Days	\$43.50
Heartworm SNAP™ & Knott's	ROUTINE AND WELL-CHECK ELISA for Dirofilaria immitis antigen, Knott's Test for Dirofilaria immitis, Acanthocheilonema reconditum microfilariae differentiation and identification, [Canine]	2 sample types required: 2 mL EDTA whole blood AND 1 mL blood, serum or EDTA plasma	2-3 Bus. Days	\$35.50
Heartworm Dirocheck™ & Knott's	ROUTINE AND WELL-CHECK Dirofilaria immitis antigen, Knott's Test for Dirofilaria immitis, Acanthocheilonema reconditum microfilariae differentiation and identification, [Canine]	2 sample types required: 2 mL EDTA whole blood AND 1 mL serum or EDTA plasma NO GREEN TOP	2-3 Bus. Days	\$33.50
Heartworm Verification Panel (Knott's + Dirocheck™ + SNAP™)	FOR CONFIRMATION OF POSITIVE RESULT Knott's test for microfilaria and antigen test for previous Positive result, [Canine]	2 sample types required: 2 mL EDTA whole blood AND 1 mL serum NO GREEN TOP	2-3 Bus. Days	\$60.50
Heartworm Microfilaria Knott's Post-treatment Evaluation	PREVIOUS POSITIVE CANINE ONLY Knott's Test for Dirofilaria immitis, Acanthocheilonema reconditum microfilariae differentiation and identification, [Canine]	2 mL EDTA whole blood	2-3 Bus. Days	\$22.00
Neospora Serology	IgG for Neospora caninum immunofluorescent antibody, [Canine]	1 mL serum	Test run weekly	\$63.00
FELINE				
Heartworm Panel, Feline (Antigen & Antibody)	Dirofilaria immitis antigen and antibody, [Feline (domestic & exotic)]	1 mL plasma or serum	2-3 Bus. Days	\$47.00
OTHER SPECIES				
Encephalitozoon cuniculi IgM	IgM Antibody, [Rabbit]	1 mL serum	Send-out test. Please call in advance.	\$53.50
Encephalitozoon cuniculi IgG	IgG Antibody, [Rabbit]	1 mL serum	Send-out test. Please call in advance.	\$64.50
Encephalitozoon cuniculi IgG, IgM, CRP Panel	IgG Antibodies, IgM Antibodies, CRP [Rabbit]	1 mL serum	Send-out test. Please call in advance.	\$114.50
EPM Send-out	Equine protozoal myoencephalitis, Neospora hughesi and Sarcocystis neurona antibody serologies by different methods, [Equine]	1 mL serum or 0.5 mL CSF (do not spin down CSF)	Send-out test. Please call in advance.	Call Lab
Toxoplasma ELFA (Antibodies)	Toxoplasma gondii antibody [All mammals, except cetaceans and pinnipeds]	0.5 mL serum	Test run weekly on Thursdays	\$55.00

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
PCR				
Babesia PCR	Organismal detection in whole blood, [Canine]	1 mL EDTA whole blood	7-14 Bus. Days	\$59.50
Cryptosporidium PCR	Organismal detection in fecal sample, [Bovine, Canine, Feline (litter-free); Reptile]	4 g fresh/refrigerated fecal; Reptile gastric lavage and fecal	7-14 Bus. Days	\$75.00
Cytauxzoon felis PCR	Conventional PCR, [Feline]	2 mL EDTA whole blood	7-14 Bus. Days	\$59.50
MISCELLANEOUS				
Hair Digest (Cheyletiella Mites)	KOH (potassium hydroxide) digestion and mite identification-sarcoptid mites, Cheyletiella, [All mammals]	Hair and skin scrape, scrape in oil	Please call	\$50.00
Parasite External ID	Whole organism (Do not preserve in formalin) Ticks, lice and fleas etc., [All]	Do not submit in formalin or on scotch tape	7-14 Bus. Days	\$35.50
Parasite Internal ID	Whole organism (Do not preserve in formalin) Worms, [All]	Do not submit in formalin	7-14 Bus. Days	\$35.50
Skin Scraping (Sarcoptes/Demodex Mites)	Deep skin scrape for sarcoptid mites, [All] Please call for other species	Oil scrape on slide or tube	7-14 Bus. Days	\$19.00



Virology



SUBMISSION GUIDELINES

- Samples for virus isolation or PCR **MUST BE KEPT COLD**.
- Tissue imprints and conjunctival scrapes should be air-dried. **DO NOT FIX**.
- Conjunctival scrapes should be made **BEFORE** application of fluorescein.
- Tests may be ordered STAT at an additional cost. Call for details.
- Recommended swabs for PCR should have plastic stems, dacron or rayon tips. Break off into sterile tube. **DO NOT IMMERSER IN GEL**.

CHOOSING VIROLOGY TESTS

TEST TYPE	USE	SAMPLE	PROS	CONS
Serology	Detects antibody response	Serum	Shows exposure	Acute testing may be negative. Vaccination can interfere with interpretation.
Isolation	Detects the virus	Tissue, swab in sterile saline, blood (depends on the virus)	Highly sensitive	Requires fresh, refrigerated sample: virus must be viable
IFA (Immunofluorescent Antibody)	Detects viral antigen	Slide with tissue imprints or slide made from swab	Inexpensive to perform	Poor sensitivity
PCR (Polymerase Chain Reaction)	Detects the virus nucleic acid	Tissue, swab, blood, fluid (depends on the virus)	Highly sensitive: virus does not have to be viable	Expensive test to perform

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Anaplasma phagocytophilum (Ehrlichia equi Titer)	Anaplasma phagocytophilum titer by IFA	0.2 mL serum	1-2 Bus. Days	\$31.00
Blue Tongue Virus Titer	Serum titer by IFA or Direct IFA	0.5 mL serum	1-2 Bus. Days	\$18.50
Bovine Abortion Panel (Serology)	IBR,BTV,BVD, Lepto titers, [Bovine]	1 mL serum	1-2 Bus. Days	\$66.50
Bovine Abortion Panel by IFAT	IBR,BTV,BVD, Lepto Direct IFA, [Bovine] Refrigerate sample	Tissue imprint	1-2 Bus. Days	\$66.50
Bovine Abortion Real-time PCR Panel	BVD, IBR, Lepto PCR, [Bovine] Refrigerate sample	Tissue	< 3 Bus. Days	\$139.50
Bovine Adenovirus 3 Titer	IFA, [Bovine]	0.5 mL serum	1-2 Bus. Days	\$19.00
Bovine Adenovirus 5 Titer	IFA, [Bovine]	0.5 mL serum	1-2 Bus. Days	\$19.00
Bovine Diarrhea Viral PCR Panel	Bovine Viral Diarrhea Virus PCR, Coronavirus PCR and Rotavirus PCR [Bovine]	1mL feces or intestinal contents	< 3 Bus. Days	\$128.50
Bovine Herpesvirus Titer	IFA, [Bovine]	0.5 mL serum	1-2 Bus. Days	\$19.00
Bovine Parainfluenza-3	Real-time PCR, [Bovine]	Tissue or conjunctival swab	3 Bus. Days	\$47.50
Bovine Respiratory Panel (IFAT)	IBR, BVD, BCoV, PI3, RSV, BAV-3, BAV-5 Direct IFA, [Bovine] Refrigerate sample	Tissue imprint	1-2 Bus. Days	\$68.50
Bovine Respiratory Panel (Serology)	IBR, BVD, BCoV, PI3, RSV titers by IFA, [Bovine]	1 mL serum	1-2 Bus. Days	\$68.50
Bovine Respiratory Real-time PCR Panel	BVD, IBR, RSV, [Bovine] Refrigerate sample	Respiratory swab or tissue	< 3 Bus. Days	\$143.50
Bovine Viral Diarrhea Virus by IFAT	Direct IFA, [Bovine]	Tissue imprint	1-2 Bus. Days	\$19.00
Bovine Viral Diarrhea Virus (BVD) Real-Time PCR	Real-time PCR, [Bovine]	2.0 mL whole blood, purple top	< 3 Bus. Days	\$55.50
Bovine Viral Diarrhea Virus Titer	IFA, [Bovine]	0.2 mL serum	1-2 Bus. Days	\$19.00
Canine Adenovirus Titer	IFA, [Canine]	0.2 mL serum	1-2 Bus. Days	\$19.00
Canine Distemper CSF Panel	Serum and CSF titers by IFA, [Canine]	0.2 mL serum, 0.2 mL CSF	1-2 Bus. Days	\$31.00

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Canine Distemper Real-time PCR	Real-time PCR, [Canine]	Whole blood, CSF or 4-5 mL urine	< 3 Bus. Days	\$56.50
Canine Distemper Sequencing	Real-time PCR with Sequencing	1mL of EDTA blood, feces, swab, or urine	5 Bus. Days	\$72.00
Canine Distemper Serology (G & M)	IFA, [Canine]	0.2 mL serum	1-2 Bus. Days	\$24.50
Canine Distemper Serology and Slide Panel	Serum titer by IFA and Direct IFA, [CaOvine]	0.2 mL serum + corneal or nasal smear on slide, air dry	Next Bus. Day	\$31.00
Canine Distemper Titer IgG	Serum titer endpoint provided by IFA, [Canine]	0.2 mL serum or CSF	1-2 Bus. Days	\$19.00
Canine Distemper Vaccine Screen	Screening only, no endpoint by IFA, [Canine]	0.2 mL serum	1 Bus. Day	\$12.00
Canine Herpesvirus by Real-time PCR	Real-time PCR, [Canine]	Swab or tissue	< 3 Bus. Days	\$47.50
Canine Vaccinal Titer Panel	CDV, Parvo, Adeno (ICH) screening titers by IFA, [Canine]	0.2 mL serum	1 Bus. Day	\$40.50
Canine Viral Diarrhea Panel	Coronavirus PCR, Canine Distemper by PCR, Parvovirus by Real-time PCR [Canine]	1 mL of feces	< 3 Bus. Days	\$134.00
Chlamydia by Real-time PCR	Chlamydia by Real-time PCR, all species, [All] Refrigerate sample	Swab, tissue, (avian cloacal/choanal swab)	< 3 Bus. Days	\$45.00
Coronavirus by IFAT	Direct IFA	Tissue imprint	1-2 Bus. Days	\$19.00
Coronavirus Real-time PCR	Real-time PCR [Bovine, Canine, Equine, Feline] Refrigerate sample	1mL feces, fluid, or tissue	< 3 Bus. Days	\$53.50
Coronavirus Titer	IFA, [Most species]	0.2 mL serum or fluid	1-2 Bus. Days	\$19.00
EIA (Equine Infectious Anemia) Routine AGID	Coggins test, [Equine] USDA electronic submission form available	1.0 mL serum	1 Bus. Day	\$11.00
EIA (Equine Infectious Anemia) Routine AGID - Digital	Coggins test, [Equine] Electronic submissions to Global Vet Link	1.0 mL serum	1 Bus. Day	\$14.00
EIA (Equine Infectious Anemia) STAT by ELISA	Coggins test by ELISA, [Equine] USDA electronic submission form available	1.0 mL serum	2 hours with prior notice	\$24.50
EIA (Equine Infectious Anemia) STAT by ELISA - Digital	Coggins test by ELISA, [Equine], electronic submissions to Global Vet Link	1.0 mL serum	2 hours with prior notice	\$27.00
Equine Herpesvirus 1 by Real-time PCR	Real-time PCR, [Equine]	Swab, tissue or EDTA blood	< 3 Bus. Days	\$47.50
Equine Herpesvirus 1 by Real-time PCR - Neurotropic	Real-time PCR, [Equine]	Swab, tissue or EDTA blood	< 3 Bus. Days	\$47.50
Equine Herpesvirus 4 by Real-time PCR	Real-time PCR, [Equine]	Swab, tissue or EDTA blood	< 3 Bus. Days	\$47.50
Equine Herpesvirus Panel (1&4) by Real-time PCR	Real-time PCR, [Equine]	Swab, tissue or EDTA blood	< 3 Bus. Days	\$72.00
Equine Influenza (Serology)	Hemagglutination inhibition (HI), [Equine].	0.5 mL serum	Up to 10 Bus. Days	\$40.50
Equine Influenza Panel	Equine Influenza Serology and Equine Influenza FA, [Equine]	0.5 mL serum	Up to 10 Bus. Days	\$41.50
Equine Respiratory by Real-time PCR Panel	Real-time PCR, [Equine]	Swab or wash	< 3 Bus. Days	\$160.50
Equine Streptococcus equi by Real-time PCR	Real-time PCR, [Equine]	Swab or wash	< 3 Bus. Days	\$45.00
Feline Calicivirus Real-time PCR	Real-time PCR, [Feline]	Oropharyngeal or corneal swab in sterile tube	< 3 Bus. Days	\$48.50
Feline Calicivirus Titer	IFA, [Feline]	0.2 mL serum	1-2 Bus. Days	\$19.00
Feline Herpes & Calici Real-time PCR Panel	Real-time PCR, [Feline]	Corneal or oropharyngeal swab	< 3 Bus. Days	\$86.00
Feline Herpesvirus by Real-time PCR	Real-time PCR, [Feline]	Corneal or oropharyngeal swab	< 3 Bus. Days	\$45.00

Virology

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Feline Respiratory Real-time PCR Panel	FHV, Calici, Chlamydia (Chlamydomydia) by Real-time PCR, [Feline]	Conj or oropharyngeal swab	< 3 Bus. Days	\$123.00
Feline Vaccinal Titer Panel	FHV, Calici, Panleukopenia screening titers by IFA, [Feline]	0.2 mL serum	1 Bus. Day	\$34.50
FelV IFA	IFA, [Feline]. Send-out test.	Blood smear on slide, air dry	Up to 10 Bus. Days	\$33.50
FelV by Real-time PCR	Real-Time PCR	1 mL whole blood	< 3 Bus. Days	\$46.50
FelV/FIV Panel	SNAP™-test, [Feline]	0.5 mL serum, whole blood or plasma	1 Bus. Day	\$42.50
FelV/FIV/FIP	FelV/FIV SNAP™ test + FIP titer by IFA, [Feline]	0.5 mL serum	1-2 Bus. Days	\$48.50
FIP by IFAT	Direct IFA, [Feline]	Tissue imprint	1-2 Bus. Days	\$19.00
FIP by Real-time PCR	[see Coronavirus Real-time PCR]		< 3 Bus. Days	\$53.50
FIP Titer	IFA, [Feline]	0.2 mL serum	1-2 Bus. Days	\$19.00
Herpesvirus by IFAT	Direct IFA	Conj scrape on slide or tissue imprint	1-2 Bus. Days	\$19.00
Herpesvirus PCR with Sequencing	PCR with Sequencing, [All]	Swab, tissue or EDTA blood	5 Bus. Days	\$66.50
Herpesvirus Titer	IFA, [Canine, Feline, Equine, Bovine, Camelid]	Serum	1-2 Bus. Days	\$19.00
Infectious Bovine Rhinotracheitis by Real-time PCR	IBR Real-time PCR	Swab, tissue	< 3 Bus. Days	\$45.00
Infectious Bovine Rhinotracheitis by IFA	Titer by IFA or Direct IFA	Serum, tissue (fresh)	1-2 Bus. Days	\$19.00
Influenza A by Real-time PCR	Real-time PCR (any mammalian species)	Deep nasopharyngeal swab or tissue	< 3 Bus. Days	\$51.50
Leptospira by Real-time PCR	Real-time PCR	Urine, blood, serum, or tissue	< 3 Bus. Days	\$46.50
Leptospirosis Panel (Serology & Real-time PCR)	Leptospira by Real-time PCR & Leptospirosis Serology, price includes shipping	Blood, tissue or urine plus serum (for serology)	Up to 10 Bus. Days	\$77.00
Leptospirosis Serology	Please call lab. Send-out test.	0.5 mL serum	Up to 10 Bus. Days	\$41.50
Lyme Disease Titer	IFA	0.2 mL serum	1-2 Bus. Days	\$31.00
Mycoplasma PCR with Sequencing (Reptiles)	PCR with Sequencing, [Reptile]	Swab or wash	5 Bus. Days	\$49.50
Ophidian Paramyxovirus Titer	Hemagglutination inhibition	0.2 mL serum	Up to 15 Bus. Days	Call Lab
Ophidian Paramyxovirus Titer 5+	Hemagglutination inhibition, 5 or more samples	0.2 mL serum	Up to 15 Bus. Days	Call Lab
Parainfluenza by IFAT	Direct IFA	Tissue or tissue imprint	1-2 Bus. Days	\$19.00
Parainfluenza Titer	Titer by IFA	Serum	1-2 Bus. Days	\$19.00
Parvovirus by IFAT	Direct IFA	Tissue imprint	1-2 Bus. Days	\$19.00
Parvovirus by Real-time PCR	Real-time PCR	Feces, tissue, fluid	< 3 Bus. Days	\$46.50
Parvovirus Strain Sequencing		Feces	Up to 10 Bus. Days	\$66.50
Parvovirus Titer	IFA	0.2 mL serum	1-2 Bus. Days	\$19.00
Parvovirus Vaccine Screen	Screening only, no endpoint, by IFA	0.2 mL serum	1 Bus. Day	\$13.00

DIRECTORY OF TESTS

TEST NAME	TEST DESCRIPTION, [ACCEPTABLE SPECIES], COMMENTS	SAMPLE SUBMISSION	TURNAROUND TIME	PRICE
Potomac Horse Fever Panel (Serology & Real-time PCR)	Real-time PCR + serology	0.5 mL purple top + 0.2 mL serum	< 3 Bus. Days	\$68.50
Potomac Horse Fever Real-time PCR	Real-time PCR, [Equine]	0.5 mL purple top	< 3 Bus. Days	\$48.50
Potomac Horse Fever Titer	IFA, [Equine]	0.2 mL serum	1-2 Bus. Days	\$36.50
Ranavirus by Real-time PCR	Real-time PCR	Swab	< 3 Bus. Days	\$48.50
Respiratory Syncytial Virus Real-time PCR	Real-time PCR, [Bovine, Caprine, Ovine]	Conjunctival, nasal, oropharyngeal swab, lung	< 3 Bus. Days	\$51.50
Respiratory Syncytial Virus Titer	Titer by IFA or Direct IFA, [Bovine]	Tissue imprint or 0.2 mL serum	1-2 Bus. Days	\$19.00
Rocky Mtn Spotted Fever Titer	IFA	0.2 mL serum	1-2 Bus. Days	\$32.00
Small Ruminant Abortion PCR Panel	Chlamydomphila Real-time PCR and Leptospira Real-time PCR [caprine, ovine]	Tissue	< 3 Bus. Days	\$77.00
Tick Titer Panel	RMSF, LYME, E.canis titers by IFA	0.2 mL serum	2-4 Bus. Days	\$112.50
Turtle Respiratory Panel	Turtle Respiratory Panel (includes: Ranavirus Real-Time PCR, Mycoplasma and Herpersvirus by PCR w/Sequencing), [Turtles only]	swab or wash	5 Bus. Days	\$134.00
Virus Isolation	Virus isolation in tissue culture	Fresh tissue, swabs, fluids - call for best sample	1-4 weeks	\$80.50



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