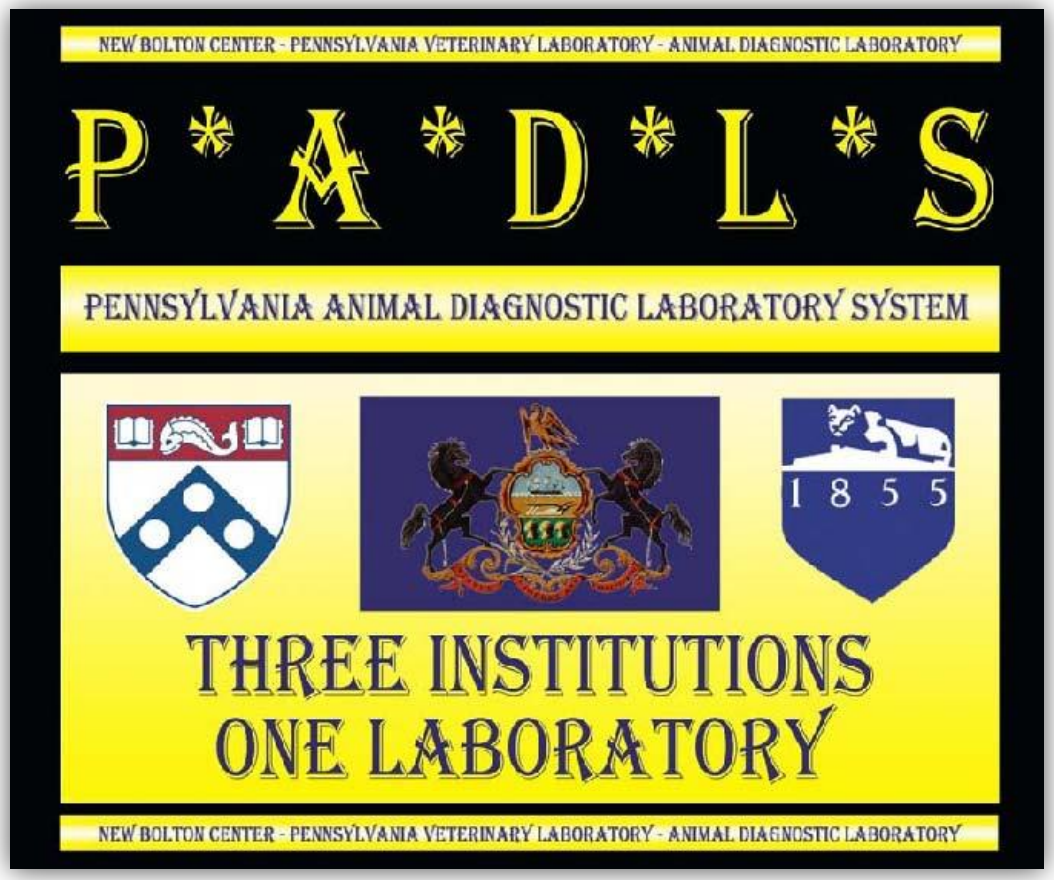
PADLS User Guide

Updated - 1/19/2016



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COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF AGRICULTURE | RUSSELL C. REDDING, SECRETARY

Dear fellow agriculturalists,

The safety of our nation's food supply starts with healthy livestock. As the home of nearly $4.8 billion in sales of livestock and livestock products in 2013, Pennsylvania places animal health as a top priority for the safety of consumers who depend on a secure food supply and the nutrient-dense meals that livestock-based foods – from animals grown in Pennsylvania – offer. Pennsylvania's reputation for quality secures our agriculture industry as a leading economic driver in the state.

Our Pennsylvania Animal Diagnostic Laboratory System (PADLS) is key to the continued strength of Pennsylvania's agriculture industry. It employs the regulatory authority of the state in the Department of Agriculture's charge to encourage, protect, and promote agriculture. It also features unique expertise from two of Pennsylvania's largest agricultural schools, the University of Pennsylvania (UPenn) and the Pennsylvania State University (Penn State).

PADLS is home to nationally-respected scientists and well-qualified technicians across three state-of-the-art facilities accredited by the American Association of Veterinary Laboratory Diagnosticians. From the Biosecurity Level 3-Certified Pennsylvania Veterinary Laboratory to the virology diagnostics of Penn State's Animal Diagnostic Laboratory and the toxicology laboratory of UPenn's New Bolton Center, each facility has its own story to tell.

And they share a common bond – they come together to work for you.

As a former dairy farmer, I know how important it can be to get intelligent results fast from necropsies, blood samples, fecal samples and more. You've come to the system that can help you quickly find the answers so you can take appropriate action for your operation or best advise your clients. To assist our employees, ensure testable samples and most accurate results, and observe the utmost safety from farm to lab, I urge you to carefully follow the submission guidelines outlined in this guide.

Thank you for choosing PADLS.

More importantly, thank you for your service in Pennsylvania's agriculture industry. You're meeting the challenges as we seek opportunities to increase productivity, decrease inputs, and lessen our environmental impact, all while feeding a growing population. Thank you for your commitment to Pennsylvania agriculture.

Sincerely,

Russell C. Redding

Foreword

Craig E. Shultz, DVM, Executive Director, Animal Health and Diagnostic Commission

Our Commonwealth's accredited and nationally recognized Pennsylvania Animal Diagnostic Laboratory System (PADLS) is supported by the Animal Health and Diagnostic Commission, the Pennsylvania Department of Agriculture Bureau of Animal Health and Diagnostic Services (BAHDS), the University of Pennsylvania School of Veterinary Medicine, and Pennsylvania State University Department of Veterinary and Biomedical Science.

The three laboratories in PADLS include:

The Pennsylvania Veterinary Laboratory, a division of the Bureau of Animal Health and Diagnostic Services in Harrisburg

New Bolton Center Laboratory, affiliated with the University of Pennsylvania, School of Veterinary Medicine in Kennett Square

The Animal Diagnostic Laboratory, affiliated with Pennsylvania State University in University Park

The partnership of the two university laboratories in the PADLS mission provides a unique opportunity to integrate complementary research and teaching components. The combined resources and technical expertise of leading scientists at PADLS laboratories provide state-of-the-art diagnostic technology supporting veterinarians' efforts to advance animal and public health initiatives and support producers in assuring a safe, secure, and abundant food supply.

The PADLS mission encompasses comprehensive diagnostic services for all animal species with special emphasis on those significant to Pennsylvania Agriculture. Under the Animal Health and Diagnostic Commission's leadership, PADLS has made steady progress in expanding technical expertise, testing volume capacities, quality assurance, participation in surveillance initiatives, and compliance with national standards.

We continue to enlarge the base of client-oriented capabilities including versatile electronic reporting, secure web-based access to test results and billing, and seamless integration with disease certification programs. Please join us in our commitment to enhance the technical and user-friendly capabilities of this extraordinary laboratory system.

Animal Health and Diagnostic Commission

The AHDC is composed of members of the Department of Agriculture, Department of Health, legislative, agriculture and veterinary communities. Commission meetings are held every two months. For more information, please contact the Executive Director at (717) 783-2200.

Russell Redding, Chairman
Secretary of Agriculture

Dr. Craig Shultz, Executive Director
Department of Agriculture

Dr. Karen Murphy, Acting Secretary
Department of Health
Represented by Dr. Enzo R. Campagnolo

Mr. Greg Hostetter, Deputy Secretary
Department of Agriculture
(non-voting member)

Senator Elder Vogel, Jr.
Senate Majority Chairman
Agriculture and Rural Affairs Committee
Represented by Michael Rader, Ex. Director

Senator Judith Schwank
Senate Minority Chairman
Senate Agriculture and Rural Affairs Committee
Represented by William Evans, Executive Director

Representative Martin Causer
House Majority Chairman
House Agriculture and Rural Affairs Committee
Represented by Kerry Golden, Ex. Director

Representative John Sabatina
House Minority Chairman
House Agriculture and Rural Affairs Committee
Represented by Destiny Zeiders, Executive Director

Producers appointed by the Governor

- Mr. Melvin G. Gehman
- Mr. Duane Hertzler
- Mr. J. Paul Slayton
- Mr. Thomas A. Sollenberger
- Mrs. Sheryl Vanco
- Mr. Thomas B. Williams

Veterinarians appointed by the Governor

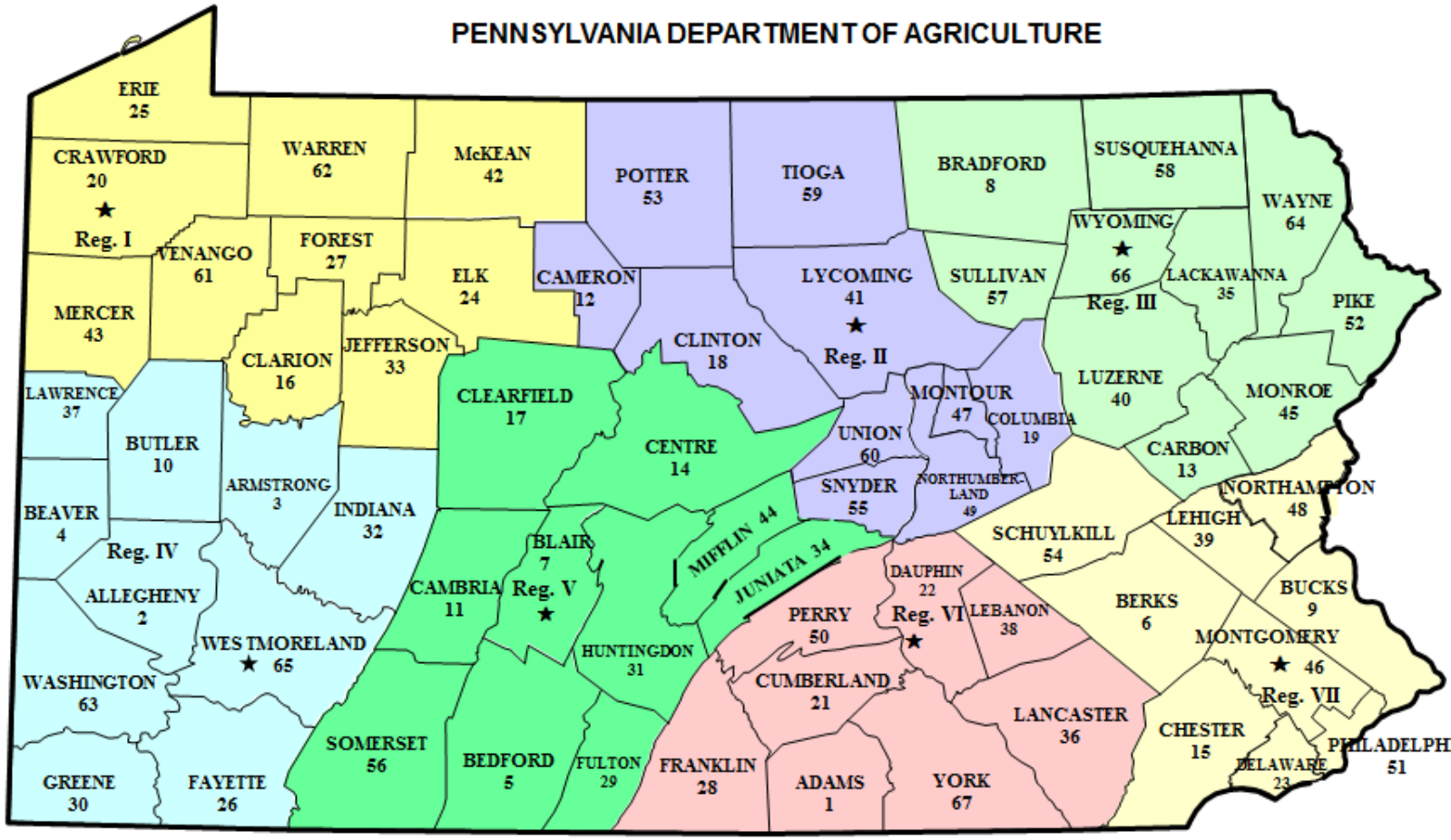
- Dr. Brian K. Reed , Vice Chair
- Dr. James S. Holt
- Dr. Meghann Pierdon

To contact the Pennsylvania Department of Agriculture

2301 North Cameron Street
Harrisburg Pa, 17110

PDA phone numbers:
Secretary's office: (717) 772-2853
Animal Health and Diagnostic Commission: (717) 783-8300
Chronic Wasting Disease CWD: 717-783-5309
Herd Records, Health Charts: (717) 783-5301
State Horse Racing Commission: (717) 787-1942
State Harness Racing Commission: (717) 787-5196
Bureau of Dog Law Enforcement: (717) 787-4833
Plant Industry: (717) 787-4843
Pa Equine Toxicology and Research Lab, West Chester, Pa: (610) 436-3501

PENNSYLVANIA DEPARTMENT OF AGRICULTURE



Dr. Karen Martin
REGION I
13410 Dunham Rd.
Meadville, PA 16335
(814) 332-6890

Dr. Amy Nesselrodt
REGION II
542 County Farm Rd., Suite 102
Montoursville, PA 17754
(570) 433-2640

Dr. Tony LaBarbera
REGION III
Route 92 South, PO Box C
Tunkhannock, PA 18657
(570) 836-2181

Dr. Erin Moore
REGION IV
226 Donohoe Road
Greensburg, PA 15601
(724) 832-1073

Dr. Elizabeth Santini
REGION V
403 Christiana St., Suite 3
Martinsburg, PA 16662
814-793-1849

Dr. John Roberts
REGION VI
2301 N. Cameron St., G-5
Harrisburg, PA 17110
(717) 346-3223

Dr. Aliza Simeone
REGION VII
1015 Bridge Road
Collegeville, PA 19426
(610) 489-1003

2/25/2015

General information

The PADLS Laboratories
The Pennsylvania Animal Diagnostic Laboratory System (PADLS) consists of three sister laboratories, which work together to support Pennsylvania agriculture through the diagnosis and prevention of animal disease.

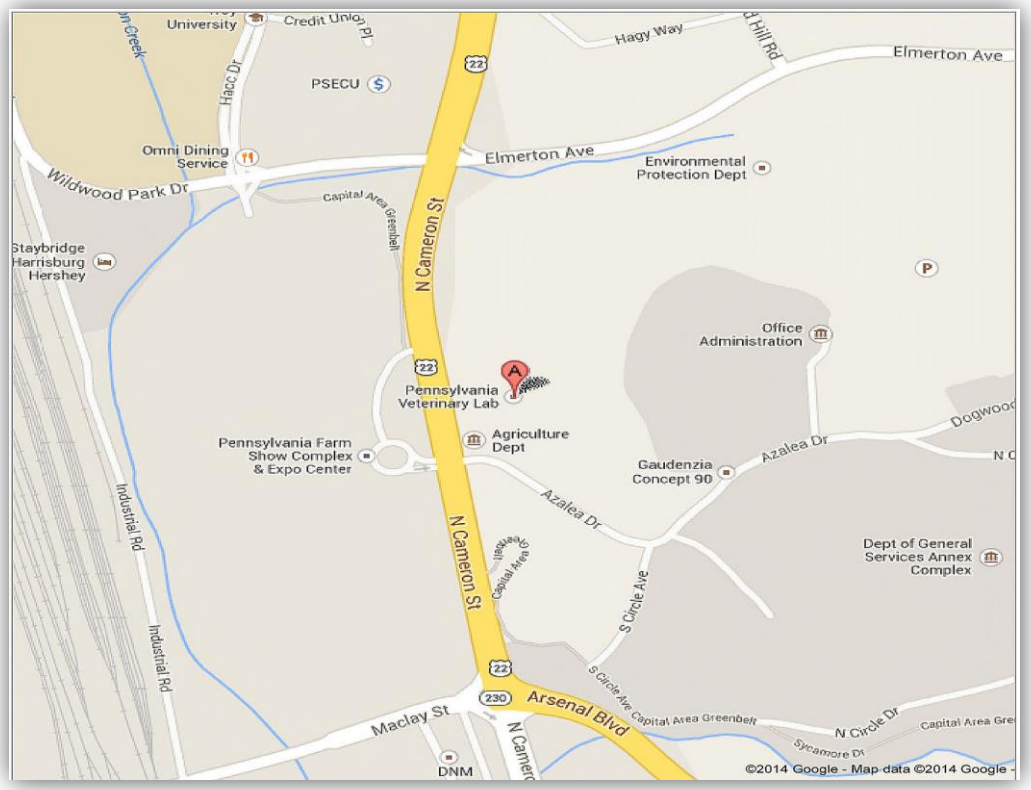
Pennsylvania Veterinary Laboratory, PA Department of Agriculture, 2305 North Cameron Street Harrisburg, PA, 17110-9405
(717) 787-8808

Animal Diagnostic Laboratory, The Pennsylvania State University, Wiley Lane, University Park, PA 16802-6720
(814) 863-0837

New Bolton Center, University of Pennsylvania, School of Veterinary Medicine, 382 West Street Road Kennett Square, PA 19348-1692
(610) 444-5800

Internet access: www.padls.org

PENNSYLVANIA VETERINARY LABORATORY



Directions to the Pennsylvania Veterinary Laboratory

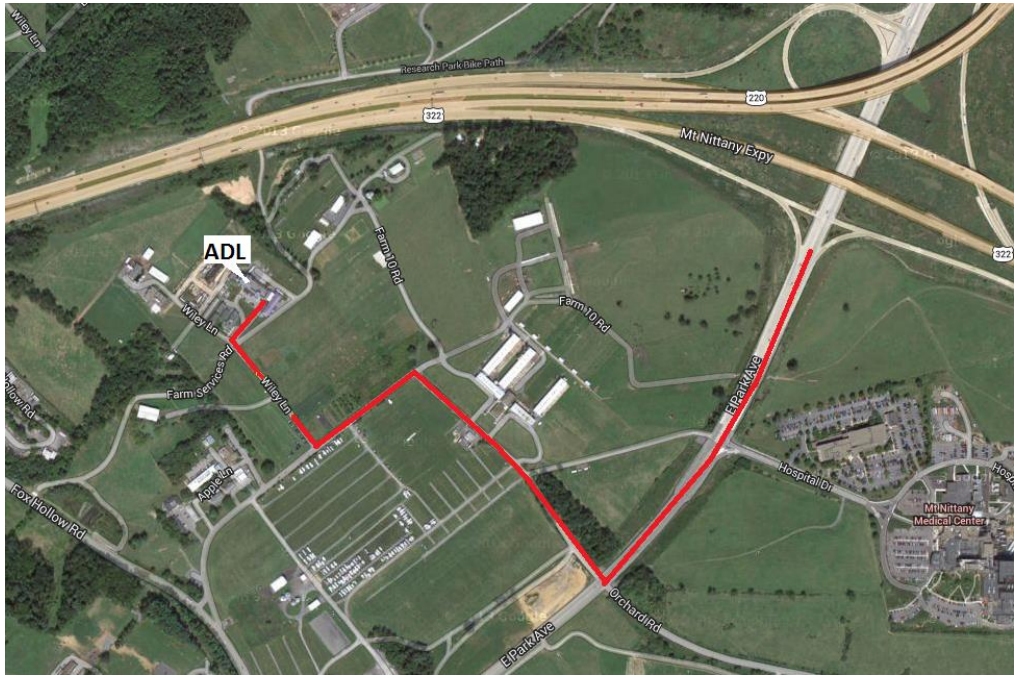
Located on Cameron Street in Harrisburg across from the Farm Show Complex.

Take PA Interstate-81 to Exit 67 (Cameron Street). Travel south on Cameron Street. At the second traffic , turn left onto Azalea Drive. Turn left into the Pennsylvania Department of Agriculture parking lot. Follow the signs to the Pennsylvania Veterinary Laboratory. The laboratory is located on the north side of the Department of Agriculture building (across the street from the Farm Show Complex.)

Business hours: The lobby and laboratory sections are open from 8:00 a.m. – 4:00 p.m. Monday through Friday with the exception of state holidays.

Self-service facilities are available for leaving samples for processing on the next business day. PVL has no weekend hours. Please call client services (717) 787-8808 for more information.

ANIMAL DIAGNOSTIC LABORATORY



Directions to Penn State Animal Diagnostic Laboratory

Located on Wiley Lane in State College north of the Penn State main campus

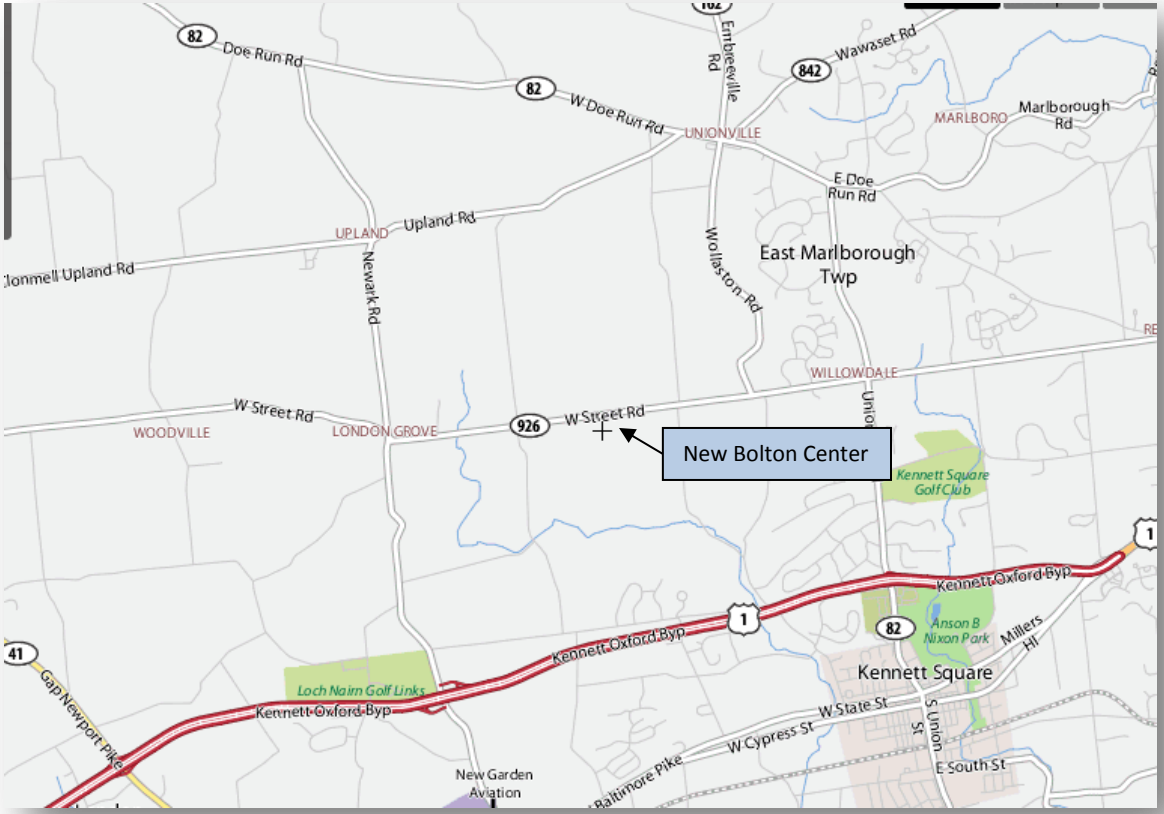
PADLS-PSU is best approached from the east and west via Route 322 by remaining on the State College bypass, also known as the Mount Nittany Expressway. For the best approach from the North, use Route 99/220 to the 322 bypass; and from the South, use Route 26 or Route 45 to the 322 bypass.

Take the Penn State University/Research Park exit from Route 322 (the first exit west of Route 26) toward University Park or Beaver Stadium. This is Park Avenue. Proceed through the Mount Nittany Medical Center intersection/traffic light to the next intersection (about 100 yards) and turn right onto Orchard Road. Follow Orchard Road to the top of the hill and around the bend to the left. Turn right onto Wiley Lane and travel straight ahead to the Wiley Laboratory. Turn right to the visitor parking area in front of the Animal Diagnostic Laboratory. Enter the lobby and the administrative staff will assist you.

If you are coming from the West side of town on Route 322, proceed East and take the University Park exit, bear right on Park Avenue. Proceed through the Mount Nittany Medical Center intersection/traffic light to the next intersection (about 100 yards) and turn right onto Orchard Road. Follow Orchard Road to the top of the hill and around the bend to the left. Turn right onto Wiley Lane and travel straight ahead to the Wiley Laboratory. Turn right to the visitor parking area in front of the Animal Diagnostic Laboratory. Enter the lobby and the administrative staff will assist you.

Business Hours: 8:00 a.m. to 5:00 p.m., Monday through Friday

NEW BOLTON CENTER



Business hours: 8:00 a.m. to 5:00 p.m. Monday - Friday. *New Bolton Center (Widener Hospital) is staffed 24 hours per day for the receipt of specimens. For emergency diagnostic service, please call (610) 444-5800.*

Directions to New Bolton Center

Located on West Street Road (Route 926) west of Rte 82 and north of the town of Kennett Square.

From the intersections of Rts 30 and 41- Route 41 south to Route 926 east. Go 5 miles to stop sign. Turn right and then immediately left. Continue on Route 926 another mile to New Bolton Center's entrance on the right. When you enter the center, bear to the right at the fork; check in at the admissions desk of the Widener Hospital.

From the Downingtown interchange of the PA turnpike- Route 100 south toward West Chester. Approximately 2 miles after you cross Route 30, you will connect with Route 202. Take Route 202 south to Route 1 (you will pass an intersection of 926 and 202, but stay on 202 to Rt. 1). Turn right onto Rt. 1 south to Rt. 82 at Kennett Square (approximately 12 miles). Turn right onto Route 82 and go 1.5 miles to the traffic light at Rt. 926. Turn left onto 926. New Bolton Center is 2 miles down on the left. When you enter the center, bear to the right at the fork; check in at the admissions desk of the Widener Hospital.

From Eastern PA, Northern NJ and NY- PA turnpike west to exit 24-Valley Forge. Take Rt. 202 south (toward West Chester) to Rt. 1 (approximately 20 miles). (You will pass the intersection of 926 and 202, but stay on 202 to Rt. 1) Turn right onto Rt. 1 south to Rt. 82 at Kennett Square (approximately 10 miles). Turn right onto Route 82 and go 1.5 miles to the traffic light at Rt. 926. Turn left onto 926. New Bolton Center is 2 miles down on the left. When you enter the center, bear to the right at the fork; check in at the admissions desk of the Widener Hospital.

From Southern NJ- Commodore Barry Bridge to Rt. 322 and I-95 south are the same for a few miles. Exit onto 322 west toward West Chester. Go to Route 1. Turn left onto Route 1 south. Follow Rt. 1 south approximately 12 miles to Route 82 at Kennett Square. Turn right onto route 82 and go 1.5 miles to the traffic light at Rt. 926. Turn left onto 926. New Bolton Center is 2 miles down on the left. When you enter the center, bear to the right at the fork; check in at the admissions desk of the Widener Hospital.

From the South I-95 north to exit for Rt. 222- Perryville/Port Deposit, MD (this exit is immediately after paying toll at Susquehanna River, therefore pay toll in far right lane.) Route 222/275 to Rt. 276 (approximately 3 miles). Turn right. Go to Route 1 North (approximately 6 miles). Follow Route 1 to Toughkenamon exit (approximately 22 miles). Turn left at the end of the exit ramp onto Newark Road. Follow Newark Road to Route 926 east. Turn right and go one mile to New Bolton Center on the right. When you enter the center, bear to the right at the fork; check in at the admissions desk of the Widener Hospital.

Submission information

General Submission forms can be downloaded from the website at www.padls.org
PADLS accepts specimens from agricultural animals, i.e., bovine, porcine, equine, ovine, caprine, camelidae, cervidae, avian, aquaculture and zoo animals. Wild animal submissions must be arranged through the PA Game Commission with the exception of Rabies suspect animals. Rabies suspects from all species will be accepted. (See pages 22-23) When accepting cases and reporting results, **PADLS requires the involvement of a veterinarian**, since this professional has expertise in selecting, preparing and shipping proper specimens. Veterinarians are also required to recommend and administer treatment and preventive measures. PADLS reserves the right to perform tests for any of the diseases regulated by the Pennsylvania Department of Agriculture on any specimen it receives. PADLS reserves the right to perform any tests on animals or birds submitted for necropsy that the case coordinator deems necessary to obtain a diagnosis. A submission of specimens for diagnostic purposes constitutes your acknowledgement that some tests may be performed at other laboratories.

Export Testing

As a leader in animal health testing, PADLS is proud to support the export industry. To provide the most accurate and expedient testing, we encourage exporters to contact us in advance at 717-787-8808 to discuss testing needs and shipment deadlines. This exchange of information allows us to offer the best service

Submitting specimens for export testing: PADLS performs the serological, microbiological and molecular diagnostic testing required to meet the health requirements for both national and international exports. PADLS strives to assist the client to meet the generally tight test deadline schedules encountered. Therefore, exporters are strongly encouraged to adhere to the following guidelines:

- PADLS encourages the use of the Electronic Specimen Submission Form (eAAI-11) found under "Forms" (in EXCEL format) at www.PADLS.org.
- Completed forms should be submitted as an attachment to: PVLsubmit@pa.gov
- Specimens appearing on the submission form should be consecutively numbered and arranged in the shipping box in the same order.
- Identification numbers should be written clearly or typed.
- The country of destination should be specified for international exports.
- Provide both the desired tests and the specific test methodologies to be used.
- Provide the date of specimen collection
- Provide the name of the accredited export veterinarian.
- Provide a list of the agents to receive results as well as the preferred mode of transmission (email, fax, mail)
- Provide the name and contact information of the primary billing party
- For serum, the lab prefers the 7 ml draw red top or separator Vacutainer® tubes with the blood clot intact.
- These 7 ml draw tubes should be filled with no less than 5 ml of blood.

Regulatory tests (non-export submissions) must be submitted with the appropriate state or federal form (Brucellosis, Equine Infectious Anemia, Johne's disease, etc). AAI-11 and EIA forms must be ordered through the laboratory. Non-regulatory test submission forms can be ordered through the laboratory or downloaded from our website at www.padls.org or http://www.padls.org/forms/forms.html.

Suggestions for collecting and handling samples: The quality of the specimen submitted impacts the quality of the results. PADLS reserves the right to determine the suitability of a specimen:

Serology specimens: Blood specimens submitted on the clot should be received in the laboratory within one to two days post-collection to avoid hemolysis that could interfere with testing and compromise results. Specimens should be refrigerated and shipped with ice packs. The use of an overnight courier service is recommended to ensure specimen quality.

Diagnostic virology specimens: Collect specimens aseptically in the early stages of infection. Refrigerate specimen immediately and hand-carry or ship overnight with ice packs to ensure specimen quality. These tests depend on viable virus in the specimen and must be collected and transported appropriately. Please see the PADLS test charts in this document for specimen collection and transport requirements for specific tests.

Biopsies: Tissues should be fixed in 10 times their volume of a 10% formalin solution prior to shipping. Tissues should not exceed 1 cm in thickness. Any container containing formalin must be leak proof. Fully fixed tissues may be drained of excess formalin before shipping.

Necropsy: Notify the pathology section before submission of the animal. Please do not submit live animals without prior arrangements. **Rabies suspects must be euthanized prior to submission.**

Bacteriology specimens: Aseptic collection is essential. Use a leak proof container; label with animal identification, collection site and collection date. Specimens for aerobic culture that are NOT in a suitable transport media should be refrigerated and shipped with ice packs. **Specimens for anaerobic culture should not be refrigerated**. All fluid specimens should be refrigerated and shipped on ice packs. The use of an overnight courier service helps ensure specimen quality.

Rabies submission: See Special Services section – Rabies testing.

Note: *Specimens accepted by the laboratory become the property of the laboratory and cannot be returned.*

Please consult the appropriate section of the User Guide for further guidance on specimen collection and preparation.

Below is a list of supplies and forms available from PADLS on request.

(Prices are subject to change without notice)

- AAI-11 - PDA Official Serology and Tuberculosis Test Report_PVL
- AAI-119 - PDA Brucellosis Vaccination Report_PVL
- AAI-13 - PDA Health Certificate_PVL Regional Offices
- Questionnaire for Rabies Suspect Specimens (non-human cases)_PVL or www.padls.org
- BAHDS-1-Feb 2008 - PDA Poultry Serology Submission Form_PVL, NBC, PSU
- AAI-97 - PDA State Veterinary Laboratory Supplies Request Form
- Amies Transport Medium w/o Charcoal (only available upon request from the bacteriology lab at PVL)
- Chlamydia transport medium_PSU
- Empty cartons and mailing sleeves for mammalian blood sample tubes _PVL
- Field necropsy mailer kit_PSU (call for pricing and details)
- SE drag swab (drag swabs, gloves, mailers)_NBC, PSU
- Mammalian blood sample tubes & stoppers _PVL
- Poultry blood sample tubes & stoppers_PVL, NBC
- Tritrichomonas transport medium_NBC, PVL
- Brain Heart Infusion (BHI) Medium_PVL, NBC
- Chronic Wasting Disease Testing Kits_PVL
- VS FORM 10-11_USDA Equine Infectious Anemia (call to request order form)_PVL

Labeling, Packaging and Shipping of Samples

ALL SUBMISSIONS REQUIRE:

Owner's name, address, phone, fax and/or email numbers
Veterinarian's name, address, phone, fax, and/or email numbers. Regulatory work requires the signature of an accredited veterinarian on the AAI-11 form
Animal identification
Type of sample
Test(s) requested

We suggest that the specimens be addressed to the laboratory rather than to an individual. This is not meant to discourage direct communication with the staff, but rather prevent unnecessary delays in processing samples if the intended individual is not available.

Labeling and Packaging

Federal regulations govern the packaging and labeling of diagnostic specimens. Shippers may incur prosecution in the event of spillage that occurs during transit that damages other mail or equipment. This rule applies to both hazardous and non-hazardous materials. Samples that may contain an agent infectious for humans or animals must be shipped by International Air Transportation Association (IATA) regulations if they are to be shipped by any common carrier (even if not by air). These regulations include:

- Ship specimens in 2 appropriate leak-proof containers, i.e. red top and plastic bag. If using bags, double-bag.
- Include packing material adequate to cushion the containers and absorb all fluids in the event of leakage or breakage.
- Label each specimen with the owner's name, the animal's identification, and a tube number that correlates with the paperwork.
- Perishable specimens should be shipped on ice packs by same-day or overnight delivery. Label outside of box "perishable". Do not place samples that should be chilled in direct contact with the ice packs as it could damage the specimen(s). Place absorbent material between specimen and ice pack.
- Never ship on a Friday or the day before a holiday.
- Do not wrap forms around specimens; if the specimen leaks, the form could be rendered illegible.
- Enclose the paperwork for all specimens in a single Zip-top® bag and place it on top of the specimens.
- Do not send specimens in syringes and remove all sharps from the boxes. Packages with sharps will be rejected.
- Label the outside of the box clearly. Remove old conflicting labels that could confuse delivery.
- Mark packages with a "Diagnostic Specimen" label on the outside of the box.
- Your return address is important. This provides a way to track packages received by the laboratory.
- Do not ship in unprotected Styrofoam containers; these break easily if squeezed or dropped. Styrofoam within a cardboard box is recommended.

Shipping

For comprehensive details on shipping infectious substances and biological materials please see
http://www.ehrs.upenn.edu/media_files/docs/pdf/shippingapril2011.pdf

Purpose of shipping regulations

Shipping regulations have been published by international and national regulators in order to provide procedures for the shipper by which articles and substances with hazardous properties can be safely transported by air or surface. "In the interest of global public health, of progress in scientific research, and of the development of new drugs and treatments to combat diseases, human and animal specimens need to be transported safely, timely, and efficiently from the place where they are collected to the place where they will be analyzed. Regardless of the presumed infection status of the patient, specimens of human and animal origin should be packaged and transported in such a way as to protect those engaged in transportation from the risk of infection. Risks of infection of personnel involved in transport cannot be fully eliminated. However, they can be kept to a minimum."-- (World Health Organization; Transport of Infectious Substances). If you are shipping a pathogen or a diagnostic specimen with potential zoonotic risks, including rabies, http://www.iata.org/whatwedo/cargo/dgr/Pages/index.aspx contains online information about the regulations. The complete Federal Department of Transportation (DOT) Regulation, HM226, can be found on their website at http://hazmat.dot.gov/67fr-53118.pdf Rabies specimens should be shipped by courier and not by air.

Carrier Information and Courier Service

The three laboratories of the Pennsylvania Animal Diagnostic Laboratory System (PADLS) have contracted a courier service for limited types of specimen transport (see Table 1). The courier service transports specimens to PADLS laboratories and between PADLS laboratories, Monday through Friday. The charge for this courier service is $15. Federal packaging regulations apply, and the courier will refuse packages not meeting these specifications (see http://www.padls.org). The contracts are renewed each year, and subsequently, the vendor(s) and pricing are subject to change. The Animal Diagnostic Laboratory, Pennsylvania State University, University Park, PA, has an additional courier arrangement (see"Courier Contact Information").

In general, specimens picked up by the PADLS courier before noon are held overnight by the courier and delivered the next day. Specimens packed with adequate ice packs will be at acceptable temperature when received by the laboratory the next day. On Fridays and before Holidays, do not use the PADLS courier to ship specimens that must be held cold, as they will not be received by the laboratory until the next business day.

Table 1

Specimen Testing Types Picked up by the Courier (Only the following specimens are contracted for pick-up)
1. Avian influenza 2. Milk culture 3. Brucellosis milk ring test 4. Eggs for the Pennsylvania Egg Quality Assurance Program 5. Rabies 6. Any other test conducted by PADLS. This is restricted to specimens delivered by the client to a Regional Office of the Pennsylvania Department of Agriculture (See Table 2).

Table 2

Specimen Pick Up Locations

Specimens for the 6 types of testing above will be picked up from the following locations or agencies for PADLS clients at no charge.

Location	Specimen or Test Type
Regional Offices of the Pennsylvania Department of Agriculture (Clients may deliver specimens to these Department of Agriculture offices for free shipping to PADLS for any test performed by PADLS.)	Table 1 (1,2,3,4,6)
Veterinarians' offices in the Commonwealth of Pennsylvania	Table 1 (1,2,3,4)
Pennsylvania Game Commission Pennsylvania State Police Wilson College, Chambersburg, PA	Specimens generated by the entity, except rabies testing. Including rabies testing

Courier Contact Information

- The PADLS contracted courier for 2016 – 2017 is "**Quick Courier".** For service, call 1-800-355-1004 and use **account code PAVETE23**. You will be given all information necessary for completing the order by the service person. Online service will be limited to the PADLS laboratories.

- **Note**: United Parcel Service (UPS) is recommended for shipping to the Animal Diagnostic Laboratory, Pennsylvania State University. **Clients pay for shipping at a contracted rate**. Call PSU 1-814-863-0837 for details. **Do not use the U.S. Postal Service**, as specimen delivery to the ADL will be delayed because of transit through the University mail system.

- Quick Courier will pick up specimens for rabies testing. See Table 2 for rabies specimen pick up sites. For same day pick-up/delivery to PVL for next day delivery, requests must be made before noon. If the pick-up/delivery request is placed after noon, the package will not be picked-up by the courier until the following day.

- Animal specimens will be accepted regardless of human exposure status. Live animals are not accepted. Testing is performed at the Pennsylvania Veterinary Laboratory, Harrisburg, PA 17110. Call (717) 787-8808

- **Note:** A citizen or private veterinarian requesting delivery of a rabies specimen to the Department of Health/Bureau of Laboratory Services in Lionville, PA should call DoH Bureau of Labs at (610) 280-3464 for more information

Results and reports

From our clients' point of view, the results are the reason to submit specimens for testing. PADLS recognizes the importance of results, and every effort is made to provide accurate, timely and interpretable data. If you have questions about a test result, please call. The following general guidelines are useful:

- All specimens are assigned an accession number upon arrival at a PADLS laboratory.
- All specimens/cases are assigned to a case coordinator who assumes final responsibility for the specimen and for reporting the results to the submitting veterinarian or other designated party.
- Regardless of type of test or result, results are routinely faxed, e-mailed or mailed to the veterinarian and owner submitting the case/specimen.
- Diagnostic results (biopsy, necropsy) can be provided by phone on request.
- Antibiotic sensitivity results will be reported only to the submitting veterinarian. In instances where a PADLS employee is acting as the veterinarian on the case, the owner can be advised by the laboratory on treatment options provided a veterinarian-client-patient relationship exists.
- If you call for test results, please have the accession number (if known), the owner's name, the veterinarian's name, the date the specimen was sent, and the test(s) requested. This data will help us find your results quickly.
- The estimated turn-around-times listed are counted in business days from the day of specimen receipt until the day the test is reported, assuming there are no complications with testing.

Fees and billing

Fees

The PADLS fee schedule is printed as a separate document and is available upon request from any PADLS laboratory or downloaded from http://www.padls.org.

Fees are updated annually.

Acute and convalescent-paired sera shipped together are billed as one sample.

For services not available within PADLS, specimens may be sent to outside laboratories, but referral will not be done without consultation with the submitter. A minimum shipping and handling fee of $25 will be applied.

Fees for emergency testing services provided outside of normal working hours will be negotiated and increased based on the procedures required.

Billing

The client is responsible for payment of all billable tests. A detailed Testing Summary information sheet explaining test charges is sent with each completed report for information only. Bills or Invoices (cumulative monthly account summary) are generated at the end of each month and payment is due within 30 days. For balances overdue by 90 days, fee-based services may not be performed until the overdue balance is paid in full. Bill payment can also be made with Credit cards to the Pennsylvania Veterinary Laboratory and the Penn State University, Animal Diagnostic Laboratory. This option appears in the payment section of the monthly Invoice statement

Special Services

Rabies Testing

Rabies testing for livestock and **non-human exposure** cases is performed at the **Pennsylvania Veterinary Laboratory in Harrisburg**. Note that the following **non-PADLS** laboratories also perform rabies testing in Pennsylvania:

- **Allegheny County Department of Laboratories**, 3441 Forbes Avenue, Pittsburgh, PA 15213, (412) 578-8070. *This laboratory provides testing for human and non-human exposure cases from Allegheny County only.*
- **Philadelphia Department of Health Laboratory**, 5000 South Broad Street, Philadelphia, PA 19107, (215) 685-6740. *This laboratory provides testing on human and non-human exposure cases from within the Philadelphia City limits*.
- **PA Department of Health, Bureau of Laboratories**, 110 Pickering Way, Lionville, PA 19353, (610) 280-3464. *This laboratory provides testing for human exposure cases only.*

Whenever possible, specimens for human exposure cases should be submitted directly to the appropriate testing laboratory above. Call for submission instructions specific to each laboratory. Human exposure cases received at PSU and NBC will be forwarded to the PA Department of Health laboratory in Lionville for examination.

Human exposure is considered to have occurred if:

1) A bite has been inflicted
2) The animal's saliva has made contact with a fresh, open wound, mucous membrane, or the eye.
3) Scratches by claw have broken the skin.

Acceptable specimens: Carcasses, heads or brains are acceptable submissions. Bats should always be submitted intact for identification purposes. **No live animals will be accepted for rabies testing.** Specimens should be refrigerated as soon as possible after death. If further diagnostic work is to follow a negative rabies test, the laboratory must be informed at the time of submission to ensure that proper tissues are saved. No part of any animal submitted for rabies testing (or any other testing) will be returned regardless of test results.

How to submit specimens for rabies testing

Specimens for rabies testing (carcasses or appropriate portions) can be hand delivered to a PADLS laboratory weekdays between 8:00 a.m. and 4:00 p.m. Whole animal carcasses or appropriate portions from both 'human exposure' and 'non-human exposure' suspects can be delivered to any of the three laboratories. A body disposal fee may be imposed. Facilities (cooler, forms) are available at the loading dock for submitting specimens after hours (weekends or evenings). Specimens are processed the next business day. Rabies specimens (< 20 lbs) may also be delivered to any PDA regional office (see page 7) to be forwarded to the proper testing laboratory. Euthanasia and decapitation, if necessary, should be performed by the local veterinarian at the submitter's expense before presentation to the Regional Office

Rabies specimen courier service

The Pennsylvania Department of Agriculture has contracted with Quick Courier (phone 1-800-355-1004) to transport samples for rabies testing from Pennsylvania veterinarians to the Pennsylvania Veterinary Laboratory, Harrisburg. Upon receipt, PVL will bill the veterinarian directly. Human exposure samples shipped from a private residence will be billed to the private residence under terms and fees agreed upon between the resident and Quick Courier. When using the courier service, Federal packing regulations apply. For additional information call PVL at 717-787-8808.

Packaging of specimens for rabies testing

- Please see Labeling and Packaging guidelines (**page 16**). Hand-delivered specimens must be in a waterproof container. If plastic bags are used, please double bag to help prevent puncture by claws, teeth or bone fragments. For shipment via courier, double bag the specimen in a leak proof container and then place in a rigid container. Federal regulations apply. If leakage occurs during shipment, the packager may face prosecution, even if the shipped material is not hazardous. For additional information call PVL at 717-787-8808.
- Note that equine and bovine heads involved in a human rabies exposure incident must be sent to a PADLS laboratory. The Lionville Laboratory cannot process samples of that size, although the extracted brain from such a specimen can still be forwarded to Lionville.
- Please use the Rabies Submission Form (http://www.padls.org). Every rabies sample must be accompanied by the following information:
  - Name, address and phone number of any person(s) exposed.
  - Name, address and phone number of submitter/owner of animal.
  - Name, address and phone number of any veterinarian or physician involved, if different from submitter.
  - Animal species, history, vaccination status, and clinical signs noted.

Results

The result of rabies testing is provided by phone and by mail to the submitter of the case. If the test is positive, the Bureau of Animal Health and the Department of Health are also notified. Quarantine of animals, if necessary, is administered by PDA Regional offices (see page 7)

Field Investigation Units

The field investigation teams are an outreach arm of the Animal Health and Diagnostic Commission. Field investigators serve as a bridge between PADLS and the producers, private practitioners, and other agricultural professionals. Farm visits and consultations are available to help resolve problems of poultry, other agricultural animals, and wildlife on a reactive or proactive basis.

Reactive investigations are appropriate when (1) local expertise desires supplementation, (2) the potential exists for serious human or animal disease, and/or (3) the disease process has the potential for serious regional or statewide economic consequences.

Proactive investigations are appropriate when (1) research indicates the potential for disease is of sufficient economic or health risk, (2) a new or emerging disease process is suspected, and/or (3) investigation may be of interest to animal health researchers.

The field investigation units assist PADLS and the livestock industry in evaluating existing diagnostic methods and assessing the need for new or improved diagnostic modalities. They may be contacted by private practitioners, county extension personnel, producers, PADLS personnel, or through the office of the Animal Health and Diagnostic Commission at (717) 772-2852.

The Field Investigation Units may be contacted through the PADLS laboratories:

NBC (mammalian, avian): (610) 444-5800
PSU (mammalian): (814) 863-2160
PSU (avian): (814) 863-1983

Client Services and Laboratory Quality Management

The goal of PADLS is to produce accurate and timely test results that will assist our clients in maintaining animal health. Clients are encouraged to contact us with any feedback they may have. Client input is instrumental in guiding our effort to tailor our services to the needs of the Pennsylvania agricultural industry.

The PADLS Quality Assurance team meets regularly to ensure that our laboratories maintain the highest quality standards. The Quality Assurance team consists of PADLS employees and a representative of the Bureau of Animal Health and Diagnostic Services. PADLS is accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD). This organization assists PADLS to meet or exceed the ISO 17025 standards of the World Organization for Animal Health (Office International des Epizooties, OIE). Accreditation is achieved by meeting established standards and demonstrating a firm commitment to continuous process improvement.

Special Services: The E. coli Reference Center at PSU

The *E. coli* Reference Center (ECRC) at PSU is one of the largest repositories of *E. coli* strains in the U.S. These strains have been isolated from various host species over the past 50 years. ECRC continues to offer PCR, as well as O and H typing services for the genotypic characterization of more than twenty five virulence genes associated with pathogenic *E. coli.* Using such techniques as multi-locus sequence typing (MLST) and pulsed field gel electrophoresis (PFGE), ECRC can elucidate *E. coli* strain relatedness, thus providing timely and accurate diagnosis of pathogenic *E. coli*. In addition, the Center carries out surveillance and monitoring of *E. coli* in animals and produce. The characteristics of each isolate are recorded in a database and the strains can be readily retrieved for further analysis. ECRC also performs custom diagnostics. If interested, please call 814-863-2167 and/or visit our website at: http://ecoli.cas.psu.edu

Special Services: The Salmonella Reference Center at NBC

The Salmonella Reference Center (SRC) located on the University of Pennsylvania's New Bolton Center campus provides a selection of bacterial culture options for the diagnosis of *Salmonella* infections in animals. In addition, techniques are available for the culture of *Salmonella* from environmental samples for environmental monitoring and Biosecurity programs. A real-time PCR assay is available for the rapid screening of samples for the presence of *Salmonella.* Techniques such as biochemical identification, antibiotic susceptibility testing and serotyping, modern molecular typing by Pulsed Field Gel Electrophoresis (PFGE) are provided to help in the characterization of *Salmonella* outbreaks. Support is provided to a number of State and Federal programs such as PEQAP, the Federal Egg Safety Program and NPIP.

Reportable Diseases

The following infectious diseases of agricultural animals have been declared reportable by the Office of International Epizootics (OIE) and by Pennsylvania (see, http://www.pacode.com/secure/data/028/chapter27/s27.35.html). If you suspect a possible diagnosis of any of the diseases listed on the next page, please call the Bureau of Animal Health and Diagnostic Services (BAHDS) at (717) 787-836-3240. The BAHDS will then be able to participate with PADLS in expediting diagnostic efforts.

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Bovine

- Actinomycosis
- Anaplasmosis
- Anthrax
- Asbestosis
- Blackleg
- Bluetongue
- Brucellosis
- Bovine genital campylobacter
- Bovine spongiform encephalopathy
- Bovine tuberculosis
- BVD type 2
- Chronic Wasting Disease
- Contagious bovine pleuropneumonia
- Cysticercosis
- Dermatophilosis
- Echinococcus/Hydatid cyst disease
- Enzootic bovine leukosis
- Foot and mouth disease
- Heartwater
- Hemorrhagic septicemia
- Infectious bovine rhinotracheitis/vulvovaginitis
- Leptospirosis
- Listeriosis
- Lumpy skin disease
- Malignant catarrhal fever
- Paratuberculosis/Johne's disease
- Pseudorabies
- Psoroptic mange
- Q fever
- Rabies
- Rinderpest
- *Salmonella typhimurium, Dublin*
- Screwworm
- Theileriasis
- Trichomoniasis
- Trypanosomiasis
- Vesicular stomatitis

Equine

- African horse sickness
- Anthrax
- Brucellosis
- Contagious equine metritis
- Dourine
- Epizootic lymphangitis
- Equine encephalomyelitis
- Equine infectious anemia
- Equine influenza
- Equine piroplasmosis
- Equine viral arteritis
- Glanders
- Horse mange (sarcoptes)
- Horse pox
- Japanese encephalitis
- Leptospirosis
- Neurotropic herpesvirus
- Rabies
- *Salmonella typhimurium*
- Screwworm
- Tuberculosis
- Venezuelan equine encephalitis
- Vesicular stomatitis
- West Nile virus

Fish

- Epizootic hematopoietic virus
- Herpes virus of salmonids
- Infectious hematopoietic necrosis
- Septicemia
- Spring viremia of carp
- Viral hemorrhagic disease

Porcine

- African swine fever
- Anthrax
- Atrophic rhinitis
- *Brucella suis*
- Cysticercosis
- Echinococcosis/ hytadid disease
- Enterovirus
- Foot and mouth disease
- Hog cholera
- Leptospirosis
- Rabies
- Porcine epidemic diarrhea (PED)
- Porcine reproductive/respiratory syndrome (PRRS)
- *Salmonella choleraesuis*
- Screwworm
- Swine vesicular disease
- Transmissible gastroenteritis
- Trichinellosis
- Tuberculosis
- Vesicular stomatitis
- Vesicular exanthema

Poultry

- Avian chlamydiosis
- Avian infectious bronchitis
- Avian influenza
- Avian tuberculosis
- Duck viral enteritis
- Duck viral hepatitis
- Fowl cholera (P. multocida)
- Fowl typhoid (S. gallinarum)
- Infectious bursal disease (Gumboro)
- Infectious laryngotracheitis
- Marek’s disease
- Mycoplasmosis (MG, MS, MM)
- Newcastle disease
- Pullorum disease (*S. pullorum*)

Ovine/Caprine

- Actinomycosis
- Anthrax
- Blackleg
- Bluetongue
- Brucellosis
- BVD type 2
- Caprine arthritis/encephalitis
- Contagious caprine pleuropneumonia
- Contagious agalactia
- Echinococcus/hydatid disease
- Enzootic abortion (chlamydia)
- Foot and mouth disease
- Heartwater
- Leptospirosis
- Listerosis
- Nairobi sheep disease
- Ovine pulmonary adenomatosis
- Ovine progressive pneumonia
- Ovine epididymitis (*Brucella ovis*)
- Paratuberculosis
- Peste des petits ruminants
- Pseudorabies
- Psoroptic mange
- Q fever
- Rabies
- Rift valley fever
- Rinderpest
- *Salmonella typhimurium, dublin*
- (*abortus ovis)*
- Scrapie
- Screwworm
- Sheep and goat pox

PADLS Tests

AQUACULTURE

PADLS offers these services to aid the aquaculture industry in meeting the interstate and international export regulations, and isolation and identification of target pathogens established by the International Committee of the Office International Des Epizooties. PSU performs virology testing for export certification. Contact your regional veterinarian for coordination of specimen collection.

DEAD FISH ARE NOT GENERALLY SUITABLE FOR A COMPLETE NECROPSY.

The following information is requested for proper collection and submission of specimens to the laboratory.

1. The name, address and phone number of the owner and the submitting veterinarian must be indicated.
2. Live fish delivered or shipped to the laboratory are essential for accurate diagnostic investigation.
3. Fish not submitted alive should be iced immediately after death, placed in a plastic bag, wrapped in newspaper and packed in a Styrofoam shipping box with 2 to 3 frozen ice packs and delivered to the laboratory IMMEDIATELY or shipped to the laboratory by an overnight courier.
4. A detailed history should include the pH of the water, dissolved oxygen levels, feed source (manufacturer), any changes in the fish management, mortality numbers, symptoms and information regarding treatment already given. A description of the water flow and layout of the facility is very helpful.
5. The laboratory reserves the right to determine the suitability of a specimen for testing. If a specimen is unsuitable because of deterioration, the laboratory will request that you submit another sample.
6. When in doubt, or if you have any questions, contact the appropriate laboratory for assistance: NBC (610) 444-5800 (PSU (814) 863-0837 or PVL (717) 787-8808.

***If shipping to PSU, do not use the US Postal Service**

The methods of shipment to the diagnostic laboratory for fish disease diagnosis are listed from most desirable to least desirable. The impact of fish handling and preservation on disease diagnosis can be summarized:

Shipment method	Parasitology	Histology	Toxicology	Virology
Live	+++	+++	+++	+++
Iced	+	+/-	+++	+++
Frozen	-	-	+++	+++
Formalin	+/-	+++	-	-

Key	
+++	no effect, excellent specimen for examination
++	negligible effect, good specimen for examination
+	moderate effect, specimen may be usable
+/-	substantial effect, specimen may not be useful
-	dramatic effect, specimen not useful

AQUACULTURE – BACTERIOLOGY

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING	SETUP	EST. TURN AROUND	REMARKS
Bacterial Kidney Disease, *Renibacterium salmoninarum*	PVL	FA	fish (*Salmonid spp.)*	live fish, fixed posterior kidney, frozen posterior kidney	LIVE - aerated container of their original water FIXED – leak-proof formalin approved container FROZEN - insulated container with refrigerant packs	LIVE - drop off FIXED- mail FROZEN- overnight courier	M - F	1 - 3 days	Fish that have died must be delivered to the laboratory within 2-3 hours after death or they are of no value for testing.
Enteric redmouth *Yersinia ruckeri*	PVL	Bacterial culture	fish	live fish, fish iced immediately after death	LIVE - aerated container of their original water ICED- plastic bags in waterproof Styrofoam container with refrigerant packs	LIVE - drop off ICED -overnight courier	M - Th	5 days	See above remarks.
Furunculosis *Aeromonas salmonicida*	PVL	Bacterial culture	fresh water and marine fish	live fish, iced immediately after death	LIVE - aerated container of their original water ICED- plastic bags in waterproof Styrofoam container with refrigerant	LIVE drop off at PADLS-PVL ICED -overnight courier	M - Th	5 - 20 days for atypical strains	See above remarks.

AQUACULTURE – PARASITOLOGY

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SETUP	EST. TURN AROUND	REMARKS
Ceratomyxa shasta	PSU PVL	Direct examination, Histopathology	fish (*Salmonid spp.)*	Live fish, fish iced immediately after death	LIVE-aerated container of their original water ICED- plastic bags in waterproof Styrofoam container with refrigerant	LIVE- drop off ICED-overnight courier	M - F	1 - 3 days	See general aquaculture information.
Myxobolus, Myxosoma cerebralis (Whirling Disease)	PVL	Plankton Centrifuge Method	fish (Salmonid spp.)	Sixty (60) Fish heads	Whirl bags and deliver to laboratory or freeze and deliver to laboratory	Contact laboratory	By arrange -ment	28 days	See above REGULATORY TEST FOR EXPORT, requires collection and site inspection by PDA personnel. Contact laboratory for collection date and site visit

AQUACULTURE – VIROLOGY

The aquaculture virology laboratory provides virus isolation and identification test for a variety of fish viruses which include Infectious Hematopoietic Necrosis (IHNV), Infectious Pancreatic Necrosis (IPNV), Viral Hemorrhagic Septicemia (VHSV), Koi Herpes Virus (KHV), and Large Mouth Bass Virus (LMBV). Detection methods for viruses employing biotechnology are used to enhance sensitivity and specificity of tests and decrease turnaround time of results. At this time, PCR is used only for VI confirmation purposes.

TISSUE / SPECIMEN guidelines for aquaculture virology submission are as follows:

Under 4 cm	Entire fish (remove yolk sac if present)
4-6 cm	Entire viscera (including kidney)
Over 6 cm	Kidney, spleen, and gill filaments `
Sexually mature	Ovarian fluid, kidney, spleen, gill filaments and Milt (male reproductive fluid)

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SETUP	EST.TURN AROUND	REMARKS
Infectious Hematopoietic Necrosis (IHNV)	PSU	VI	Fish (*Salmonid spp.)*	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	M - Th	2 - 3 weeks	
Infectious Pancreatic Necrosis (IPNV)	PSU	VI	Fish (*Salmonid spp.)*	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	M - Th	2 - 3 weeks	
Koi Herpes Virus (KHV)	PSU	VI	Fish (carp)	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	M - Th	2 - 3 weeks	
Large Mouth Bass Virus (LMBV)	PSU	VI	Fish (carp)	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	On request	2 - 3 weeks	
Spring Viremia of Carp	PSU	VI	Fish (carp)	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	T - Th	2 - 3 weeks	Advance notice is preferred for this non-routine test
Viral Hemorrhagic Septicemia (VHSV)	PSU	VI	Fish (*Salmonid spp.)*	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	M - Th	2 - 3 weeks	
Viral Isolation Screen (IHNV), (IPNV), (VHSV)	PSU	VI	Fish (*Salmonid spp.)*	As stated above	Leak-proof container with VTM	Overnight shipment on ice Do not freeze	M - Th	2 - 3 weeks	

BACTERIOLOGY/MYCOLOGY

TEST/ AGENT	SITE	PROCEDURE	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SET-UP	EST. TURN AROUND	REMARKS
Acid fast stain	NBC PSU PVL	acid fast stain	feces swab tissue	sterile container Culturette	overnight shipment on gel packs	M - F	1 day	Specimens to be cultured for mycobacteria other than *M. paratuberculosis* may be referred to NVSL.
			heat-fixed slide	slide mailer	None			
Aerobic culture (includes Listeria)	NBC PSU PVL	aerobic culture	swab fluid	culturette or Amies transport media (latter preferred for *Actinobacillus* and *Haemophilus*)	overnight shipment on gel packs	M - F	2 - 5 days	Take specimens from the margin of lesions. If tissue and fluid specimens are not protected by transport medium, ship overnight. Uterine swabs should be taken with a guarded swab commercial collection system. *Listeria* isolation may require 1-3 months.
			tissue	sterile container				
Anaerobic culture	NBC PSU PVL	anaerobic culture	tissue 3.0 cm^3	sterile container, anaerobic transport medium	**samples should not be refrigerated**	M - F	4 - 10 days	Anaerobic bacteria should be suspected if the infection involves tissue that is normally sterile, a site of recent trauma, or a poorly vascularized area Transport media/swabs available upon request.
			fluid aspirate	Vacutainer (> 3 mL) anaerobic transport medium				
			swab	anaerobic transport medium Amies gel swab				
Antibiotic residue	PSU	PREMI test	urine, 5mL	sterile container	overnight shipment on gel packs	M - F	1 day	Detection of antibiotic residue excreted in urine prior to shipping for slaughter. **Sample must arrive within 3 hours of collection and before 10 AM or be frozen and shippeped frozen.
Antibiotic susceptibility	NBC PSU PVL	Minimum inhibitory concentration (MIC) or Disk diffusion	bacterial isolate derived from PADLS culture work	N/A	No Ice	M - F	3 - 5 days	Susceptibility reports will be released to veterinarians only. Susceptibility test reports contain *in vitro* test results only and do not constitute recommendations for treatment. Charges may reflect re-isolation and identification by PADLS.
			characterized bacterial culture	medium slant with growth				
Black Leg Screen *(Clostridium chauvoei, Cl. novyi, Cl. septicum, Cl. sordellii)*	PSU PVL	fluorescent antibody assay	deep muscle tissue	sterile container	overnight shipment on gel packs	M - F	1- 3 days	Specimens for *Clostridium* FA testing must arrive at the laboratory within 24 hours of collection. *Cl. septicum* is a frequent post-mortem invader.

TEST/ AGENT	SITE	PROCEDURE	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SET-UP	EST. TURN AROUND	REMARKS
Blood Culture	NBC PSU	blood bottle culture (aerobic and anaerobic)	7-10 mL whole blood	SPS Vacutainer or blood collection bottle	overnight shipment	M - F	3-7 days	Indicate if patient is on antimicrobial therapy, define drug and dose. Collect specimen following complete surgical preparation. Preferred specimen collected prior to initiation of antimicrobial therapy.
Brucella	PVL	*Brucella* culture	bovine female: milk (all 4 quarters 20 mL ea.)	sterile capped vial	overnight shipment on gel packs	M - F	7-14 days	Include foremilk in samples for *Brucella* culture, but not routine cultures. Aseptic collection technique is extremely important. If milk samples cannot arrive at the laboratory within 24 hours of collection, they can be frozen, provided that the freezer is not a "frost free" unit.
			supra-mammary lymph nodes	sterile container				
			bovine male: semen (2mL)					
			superficial inguinal lymph nodes	sterile container				
			other species: tissue, swab	Ames transport media				
Campylobacter culture (see also Venereal Campylobacter)	NBC PVL	microaerophilic culture	feces	sterile wide-mouth container	overnight shipment on gel packs	M - F	3-5 days	
			rectal swab-	Amies or Cary Blair transport media				
Clostridium difficile	NBC PVL	ELISA						
Clostridium spp. screen	All	anaerobe culture PEA and EYA plating	feces or intestinal loop	sterile container	overnight shipment on gel packs	M - F	2-3 days	
Clostridium perfringens toxin typing Toxin detection	All	ELISA (NBC) PCR (PSU, PVL)	feces or intestinal loop	sterile container	overnight shipment on gel packs keep feces frozen	M - F	2-8 days	PCR can be performed by arrangement. See under Molecular Diagnostics
			isolated microorganism (feces)	anaerobic BA in AnaPak fecal cup				
Contagious Equine Metritis (CEM) (*Taylorella equigenitalis*)	PVL	CEM culture	swabs of reproductive tract outlined in regulatory collection guidelines	Amie's swab with charcoal.	overnight on ice/gel packs. **samples must be received in the laboratory within 48 h of collection.**	M-F	7 days	Animal identification, site sampled and collection date must be clearly written on the submission form. VS10-4 should be used and can be provided upon request.
Darkfield microscopic exam	PVL	Darkfield microscopic exam	fluid specimen	sterile container	rapid transport to the lab ambient temperature for *Tritrichomonas* testing	M - F	1 day	Samples for *Tritrichomonas* examination should be protected from extreme temperatures. Refrigerate all other samples. Direct examination is a rapid but insensitive procedure. Culture or PCR procedures are recommended to confirm the presence or absence of a particular organism.

TEST/ AGENT	SITE	PROCEDURE	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SET-UP	EST. TURN AROUND	REMARKS
Dermatophilus exam	All	Geimsa Stain and/or culture	Skin scrapings(stain) tissue or swab(culture)	sterile container Culturette	overnight on ice/gel packs	M - F	1-7 days	
E. coli typing (O + H)	PSU	Serotyping	ligated loop of intestine or colon, feces or isolate	sterile container	overnight on ice/gel packs	M - F	3 - 14 days	Submission of tissue/feces will include culture fees and sensitivity fees
E. coli virulence testing	PSU	Adhesin and toxin PCR	fresh feces or Bacterial isolate	sterile container	overnight on ice/gel packs	M - F	3 - 14 days	Submission of tissue/feces will include culture fees.
Gram morphology	All	Gram stain	heat-fixed slide	slide mailer	none	M - F	1 – 2 days	
Johne's disease *(Mycobacterium paratuberculosis)*	PVL	Mycobacterial culture (Liquid ESP) or PCR Fecal specimens can be tested individually or in pools of 5. To reduce turn-around time, the laboratory prefers to initially test pools by PCR. Fecal specimens of positive or suspect pools are then individually tested by culturing.	feces (10 g) ileocecal valve, mesenteric lymph node tissues, paraffin embedded blocks	wide-mouth screw-top container, child-resistant prescription vial sterile container	overnight on ice/gelpacks	M - W	42 days (individual) 49 - 56 days (pooling)	Animal identification should be clearly written on a submission form. For correct billing, it is important to provide information regarding program participation. If possible, withhold silage or moldy feed 48 hrs prior to fecal collection. Obtain samples directly from the rectum. Ship samples to arrive at the laboratory within 24-36 hours of collection. Contact the laboratory for specimen containers. Samples received in open containers or gloves will be refused. (See also under PCR)
Leptospira	PSU PVL	FA microscopic exam	fetal fluids kidney liver placenta, spleen urine	sterile container kidney impression slides	overnight on ice/gel packs	M - F	1 - 3 days	Fetal fluids and tissues should be refrigerated but should not be frozen Urine collection- see below PCR can be performed by arrangement. See under Molecular Diagnostics
Mastitis culture	All	Aerobic milk culture	quarter sample; quantitative, bulk tank sample	sterile capped vial freeze immediately (minimum of 10 mL for bulk tank)	overnight on ice/gel packs	M - F bulk tank M - W	2 - 5 days	Please see below for sample collection; call laboratory for additional information. Bulk tank kits available from PSU. *Pooled samples (up to 10 samples)

☞ **Leptospira urine collection:** For best recovery potential, inject with furosemide IV or IM. Clean vulva/prepuce and wait 10 min or second urination. Collect 10mL urine midstream in a red top or other sterile container.

☞ **Mastitis**: Wash the udder and teats and allow to air dry. Clean the teat orifice with alcohol pledgets. Sample in reverse order to reduce contamination. For routine culture, the first stream of milk should be discarded. Hold the collection vial as nearly horizontal as possible and collect 2-3 mL of milk. When collecting composite samples, include an equal volume of milk from each quarter. Freeze samples immediately after collection.

BACTERIOLOGY (continued)

TEST/ AGENT	SITE	PROCEDURE	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SET-UP	EST.TURN AROUND	REMARKS
Mycology	All	Fungal culture and/ or microscopic exam	tissue fluid	sterile container	overnight on ice packs	M - F	1 - 42 days	If dermatophytes are suspected, specimens should not be transported in a sealed container and should not be refrigerated.
			skin scrapings	paper envelope	none			
Mycoplasma spp.	PSU PVL	*Mycoplasma* culture	bovine milk--bulk tank sample	sterile-capped vial	Milk shipped frozen overnight on ice packs	M - F	10 days	Avoid the use of wood-shaft swabs; they interfere with the detection of *Mycoplasma* in culture. Speciation with PCR (MG, MS, *M. bovis* etc) see under Molecular Diagnostics
			tissues ($1.5in^3$)	sterile container				
			aspirates, swabs	Amies transport medium w/o charcoal				
Quantitative bacterial culture	All	Dilution Plate Count	feed	1 qt Zip-top bag		M - F	2 - 5 days	Raw semen samples must arrive at the laboratory within 24 hours of collection in order for examination to be considered valid. Urine samples collected by cytocentesis or from catheterized animals are preferred; however, mid-stream collections are suitable. *Samples must arrive at the laboratory on the same day as collection in order for the examination to be considered valid.*
			processed semen	sterile container	overnight on ice packs			
			raw semen	sterile container				
			urine	1 L sterile container				
			water, bedding or litter	1 qt Zip-top bag				
Salmonella	All	*Salmonella* culture	feces (10 g)	wide-mouth screw-top container child resistant prescription vial	overnight on ice/gel packs for all except feed and eggs	M - F	3 - 10-days (presumptive ID: 3 - 4 days)	Samples should be obtained from the rectum of animals whenever possible. ***Specimens received in open containers or gloves will be refused.***
			tissue (ligated ileum, mesen-teric lymph node, etc.)	sterile container				
			exudate swab	Culturette, Amies or Cary-Blair transport medium				
			environmental swab/ Swiffers	condensed evaporated skim milk				
			eggs	sterile Whirl-Pak® bag				
			feed	sealed bag				

TEST/ AGENT	SITE	PROCEDURE	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	SET-UP	EST.TURN AROUND	REMARKS
Salmonella serotyping	NBC or referral to NVSL	Luminex or Conventional Serotyping	bacterial isolate	Nutrient Agar slant	overnight	M – F	1-21 days	Please contact laboratory
Serpulina spp.	PSU	Victoria Blue stain	ligated spiral colon/ceca	sterile container	overnight on ice/gel packs	M - F	5 - 14 days	Tissue specimens must be shipped to arrive overnight. *Contact laboratory prior to collection*.
Tritrichomonas	NBC PVL	Tritrichomonas culture Microscopic exam	cow: vaginal wash/cervical mucus	InPouch media sterile capped vial with Diamond's media, or Lactated Ringers Solution (LRS) InPouch media for culture	transport at ambient temperature protected from light LRS - hand carry within 4 hours	M - F	5 - 10 days	Contact lab prior to collection for instructions and transport media Samples collected in Clark's/Weybridge media for venereal Campylobacterosis cannot be tested for Trichomoniasis.
			bull: preputial wash					
			semen					
			fetal fluids	sterile, capped vial for exam				
Ureaplasma spp.	PVL	*Ureaplasma* culture	fetal fluids (stomach, pericardial, & thoracic fluids	sterile capped vial	overnight on gel/ice packs	M - F	4 - 21 days	Wood shaft or cotton-tipped swabs should not be used as these may obscure the detection of Ureaplasma in culture. Shielded swabs should be used when collecting specimens from the female reproductive tract. Ureaplasmas may be a component of normal flora in the posterior vagina, particularly around the urethra.
			swab, raw	Amies transport medium w/o charcoal				
			semen (2 mL)	sterile capped vial				
Venereal *Campylobacter* spp.	PVL	Venereal *Campylobacter* culture	bovine female: vaginal wash, cervical mucus	Lactated Ringer's solution Clark's transport medium, Vacutainer Weybridge transport media	should preferably arrive same day or overnight on gel packs	M - F	7 - 17 days	Direct aspiration of cervical/vaginal mucus or preputial material is the best method of specimen collection from adult bovines. Collect into a Vacutainer containing USP Lactated Ringer's solution. It is best to hand deliver within 4 hours of collection. Clark's transport medium (available from Colorado State University) can be inoculated with this material; Submitters requiring volume testing, e.g. for export, must make arrangements 5 days in advance. *Contact the laboratory for specific instructions*. Samples cannot be frozen.
			bovine male: preputial wash					
			semen	semen straw, cryovial	frozen			
			abortions: tissues fluids	sterile container, Clark's transport medium sterile capped vial	overnight on gel packs			

***If shipping to PSU, do not use the US Postal Service**

MOLECULAR DIAGNOSTICS

General guidance about swab selection for PCR: Cotton/Dacron/Polyester Swabs are acceptable. Calcium alginate and gel swabs should not be used and, where possible, use of wooden swabs should be avoided. Swabs can be submitted dry when indicated or in appropriate medium as recommended below. Call the laboratory running the test for more information.

Legend: * = preferred specimen **BHI** - brain heart infusion broth; **PCR** - polymerase chain reaction; **FFPE** - formalin fixed paraffin embedded; **RRT-PCR** - real time reverse transcriptase polymerase chain reaction

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Actinobacillus pleuropneumoniae	PSU	PCR	porcine	tissues (lung, tonsil), tonsil swabs, pure or mixed cultures	sterile container	overnight on ice / gel packs	2 - 7 days	
Anaplasma marginale	PVL	RT-PCR	bovine	5 mL blood in Heparin or EDTA (lavender top tub	lavender top tube	overnight on ice / gel packs	3 5 days	This test detects the DNA of Anaplasma marginale, the agent of bovine Anaplasmosis. This test is not designed to detect other Anaplasma species
Anaplasma *phagocytophilum* (Granulocytic Anaplasmosis)	PVL	Real time PCR	Dogs and horses	Live or dead black-legged ("deer") ticks* (lxodes scapularis)- nymph and adult	Crush proof clear plastic vial with a tight-fitting lid or a small plastic zipper locking bag inside another bag. Include a paper towel moistened with water to prevent desiccation.	Overnight, room temperature (live ticks) or on ice (dead ticks)	3-5 days	Testing of ticks requires submission by an accredited veterinarian.
Avian Influenza (AI) Including H5/H7 subtyping	NBC PSU PVL	RRT-PCR	avian: chickens, turkeys, and other gallinac-eous birds, wild birds, ducks	tracheal swab* (for gallinaceous birds), cloacal swab* (for waterfowl) intestine, lung, trachea, air sac, sinus	leak-proof with BHI broth Don't use wooden swabs	overnight on ice, do not freeze Should be frozen if the samples cannot reach the lab within 48 hrs.	1 - 3 days	Up to 11 tracheal swabs can be pooled in a tube containing BHI broth with 5.5ml volume.. Available from NBC, PVL, PSU. No more than 5 cloacal swabs should be pooled
Avian paramyxovirus-1 (APMV-1) Including Exotic New castle Disease	NBC PSU PVL	RRT-PCR	avian: chickens, turkeys, and other gallinac-eous birds, wild birds, ducks	tracheal swab* (for gallinaceous birds), cloacal swab* (for waterfowl) intestine, lung, kidney trachea, air sac, sinus	leak-proof with BHI broth Don't use wooden swabs	overnight on ice, do not freeze	1 - 3 days	Up to 11 tracheal swabs can be pooled in a tube containing BHI brothwith 5.5ml volum. Available from NBC, PVL, PSU

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Bluetongue virus (BTV)	PVL	RRT-PCR	ruminants,	5 mL blood in Heparin or EDTA (lavender top tub	lavender top tube	overnight on ice / gel packs	3-5 days	
Borrelia *burgdorferi (Lyme disease)*	PVL	Real time PCR	Dogs and horses	Live or dead black-legged ("deer") ticks* (lxodes scapularis)- nymph and adult Formalin fixed paraffin embedded tissues blocks, tissue shavings Unstained slides	Crush proof clear plastic vial with a tight-fitting lid or a small plastic zipper locking bag inside another bag. Include a paper towel moistened with water to prevent desiccation. Slide mailer	Overnight, room temperature (live ticks) or on ice (dead ticks) Standard delivery	3-5 days	Testing of ticks requires submission by an accredited veterinarian.
Bovine coronavirus	PSU PVL	RRT-PCR	Bovine	feces, fecal swab, intestine, intestinal contents, lung (respiratory cases)	leak proof container Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) use a Dacron swab	overnight on ice or gel packs do not freeze	2 - 7 days	
Bovine herpesvirus (BHV1) or infectious bovine rhinotrachitis (IBR) virus	PSU PVL	RT-PCR	Bovine	bovine lung, fetal thoracic fluid, nasal swabs, conjunctival swabs	leak proof container Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) use a Dacron swab	overnight on ice or gel packs	2 - 7 days	
Bovine respiratory syncytial virus (BRSV)	PSU	RRT-PCR	Bovine	lung, nasal swabs, tracheobronchial lavage fluid	leak proof container Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) use a Dacron swab	overnight on ice or gel packs	2 - 7 days	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Bovine viral diarrhea virus (BVD)	PSU PVL	RRT-PCR, Pooled RRT-PCR	bovine-all ages camelid (check with registry requirements- whole blood preferred **sample type** for Alpaca testing)	serum (2-3 mL) or red top tube (10 mL) whole blood or lavender top tube (10 mL) Tissues (including ear notches- half-inch or 1cm square)	leak proof container	overnight on ice or gel packs Ear notch samples can be sent dry and banked frozen at the farm to be sent in one shipment.	2 - 7 days (indicate if priority and call ahead for shipping arrangement) BVDV-1 and 2 typing also offered.	Pooling of serum samples for adults or ear notches, in the case of calves, is recommended when testing whole herds. Up to 10 serum samples and 20 ear notches are pooled for cattle in the lab. Individual animals are tested from positive pool to determine infection status within a positive pool for an additional charge. A positive sample should be resubmitted after 3 wks to ascertain persistent infection (PI) status of the positive animal. Handling of vaccines when collecting samples should be avoided to prevent sample contamination.
Campylobacter jejuni	PVL	PCR		feces	leak proof container	overnight on ice or gel packs	2 - -5 days	
Classical Swine Fever virus (CSFV)	PVL	RRT-PCR	swine	nasal swabs tonsils	Use Dacron swab with Brain Heart Infusion (BHI) broth or Viral Transport Media	overnight on ice or gel packs	24 - 48 hrs	
Clostridium perfringens toxin typing	PSU PVL	PCR	all species	feces or intestinal loop isolated organism	sterile container anaerobic BA in AnaPak	overnight shipment on ice/gel packs	2 - 8 days	For PCR, organism needs to be cultured
Eastern Equine Encephalitis (EEE)	PVL	PCR	all species	brain tissue	fresh or formalin fixed paraffin embedded tissue, slide mailer	fresh tissue, overnight shipment, on ice, do not freeze	3 - 5 days	FFPE tissue preferred with histologic lesions
Encephalomyocarditis Virus (EMCV)	PSU	PCR	porcine	heart, brain, spleen, liver, pancreas, and skeletal muscle tissue	fresh or formalin fixed paraffin embedded tissue	fresh tissue, overnight shipment, on ice, do not freeze	2 – 7 days	
Equine rhino-pneumonitis herpesvirus (EHV)	PVL	PCR	equine	15 mL blood in Heparin or EDTA (lavender top tube) nasal swab tissues-- including placenta-fetus, lung, nasal secretions, lymph nodes, thymus, brain	leak-proof container tissue materials for virus isolation and PCR should be submitted in BHI.	overnight shipment, on ice	3 - 5 days	EHV - For PCR only, nasal swab samples without BHI are also acceptable. Detects EHV -1 (neuropathogenic and abortogenic) and EHV-4

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
				unstained slide, FFPE tissues	slide mailer	standard delivery		
E. coli virulence testing	PSU	Adhesin and toxin PCR	all species	fresh feces or bacterial isolate	sterile container	overnight on ice/gel packs	3 - 14 days	Submission of tissue/feces will include culture fees.
Fowl adenovirus (FAdV)	NBC PSU	RT-PCR	avian	cecal tonsil bursa of Fabricius liver		overnight on ice/gel packs		
Infectious Bronchitis Virus	NBC PSU	RRT-PCR	avian	tracheal swab	leak-proof with VTM or BHI broth Don't use wooden swabs	overnight on ice, do not freeze	3 - 5 days	Mass., Conn., Ark. strains
Infectious laryngotracheitis virus (ILTV)	NBC PSU	PCR	avian					
Leptospira spp	PVL PSU	PCR	all species	urine, kidney, placenta, spleen, liver	sterile container paraffin embedded tissues (FFPE)	overnight on ice/gel packs	2 - 7 days	Urine collection (see below)
Leptospira urine collection	For best recovery potential, inject with furosemide IV or IM. Clean vulva/prepuce and wait 10 min or second urination. Collect 10 mL urine midstream in a red top or other sterile container.							
Mycobacterium paratuberculosis (Johne's disease)	PVL	PCR	bovine	feces (5-10 g) ileocecal valve, mesenteric lymph node (FFPE) blocks	wide-mouth screw-top container, child-resistant prescription vial, sterile container. For pooling, samples are pooled in the laboratory in groups of 5	overnight on ice/gel packs	1 - 5 days	Set-up once per week
Mycoplasma spp. Including speciation	PSU PVL	PCR AFLP-PCR	all species	culture, broth plates tissues (1.5 in^3) aspirates swabs	sterile-capped vial sterile container	overnight on ice packs	2 - 7 days	Avoid the use of calcium alginate or wooden shaft swabs
Mycoplasma galliscepticum	All	PCR	avian	culture aspirates swabs	sterile-capped vial	overnight on ice packs	2 - 7 days	Avoid the use of calcium alginate or wooden shaft swabs
Mycoplasma synoviae	All	PCR	avian	culture aspirates swabs	sterile-capped vial	overnight on ice packs		

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Mycoplasma bovis	PSU PVL	PCR	bovine	culture aspirates swabs	sterile-capped vial	overnight on ice packs		
Mycoplasma hyopneumoniae	PSU	PCR	swine	culture aspirates swabs	sterile-capped vial	overnight on ice packs		
Microbial Sequencing Including Viral, Bacterial and Fungal	All	PCR	all species	isolate(s) on plate, broth, or in suitable medium *Sterile body fluids	sterile container	overnight on ice *overnight Frozen	5-15 days	16SrRNAfor bacterial ID 28SrRNA for Fungal ID sequencing Viral Gene Sequencing
Neospora spp	PSU PVL	PCR	bovine	Tissue/FFPE	sterile container or FFPE	overnight on ice	2 – 7 days	
Pastuerella multocida – toxin typing	PSU	PCR	porcine	isolated organism	sterile container	overnight	2 - 7 days	
Porcine circovirus type 2 (PCV-2)	PSU	PCR	porcine	lymph nodes, lung, spleen, tonsil, serum	leak-proof container with BHI	overnight on ice	2 – 7 days	
Porcine PEDV-SDCoV-TGEV	PVL	Multiplex PCR	porcine	Feces, oral fluids, rectal swabs, intestinal contents and environmental swabs. Preferred specimen type -2-3 g fresh feces.	sealed leak-proof container	overnight on ice	1-2 days	$30.00 charge or no charge if submitted for PEDV-SDCoV with Premise Identification Number (PIN) while federal funds are available.
Porcine respiratory and reproductive syndrome: (PRRS) Arterivirus; Lelystad agent	NBC PSU	RRT-PCR	porcine	tissue serum (1 mL)	leak-proof container with or w/o BHI	overnight on ice	2 – 7 days	
Porcine parvovirus (PPV)	PSU	Gel-based PCR or RRT-PCR	porcine	lymph nodes, tonsils, thymus, spleen, lung, fetal thoracic fluid lymph nodes, tonsils, thymus, spleen, lung, fetal thoracic fluid	leak proof container Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) use a Dacron swab	overnight on ice or gel packs	2 - 7 days	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Porcine respiratory coronavirus (PRCV) and transmissible gastroenteritis virus (TGEV)	PSU	Duplex PCR	porcine	fecal swabs, intestine, intestinal contents (for TGEV) nasal swabs, lung (for PRCV)	leak-proof container Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) Use Dacron swab	overnight on ice or gel packs	2 – 7 days	
Salmonella spp. including *Salmonella enteriditis* (SE)	All	RT-PCR	all species	Feces, 10g feed, environmental swabs, 10 mL fluid, tissue, milk filter, eggs	leak-proof container	overnight shipment on ice/gel packs, do not freeze	2 - 3 days	PSU does SE testing only SE PCR satisfies FDA, NPIP or PEQAP test requirements. Call laboratories for details.
Strep. equi (Strangles)	NBC	PCR	equine	guttural pouch tracheal wash/swab nasal swab pharyngeal swab	Culturette container with no additives	overnight on gel packs	negative result, within 24 hours. Presumptive positive--2 extra business days to confirm	
Swine influenza virus (SIV)	PSU PVL	RRT-PCR	swine	nasal swab lung	Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) Use Dacron swab	overnight on ice or gel packs	1 – 3 days	
Transmissible gastroenteritis virus (TGEV)	PSU	RRT-PCR	swine	fecal swabs, intestine, intestinal contents	Leakproof container Brain Heart Infusion (BHI) broth or Viral Transport Media (VTM) Use Dacron swab	overnight on ice or gel packs	2 – 7 days	
Tritrichomonas	PVL	PCR	cow, bull	cow: vaginal wash/cervical mucus bull: preputial wash, semen fetal fluids	In Pouch media or Lactated Ringers Solution (LRS)	sterile capped vial	2 - 3 days	Contact lab prior to collection for instructions and transport media.

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
West Nile Virus (WNV)	PVL	RT-PCR	all species	brain tissue from mammals kidney, brain, intestine, spleen, lung, etc. from avian species	fresh, formalin fixed tissue slide mailer	for fresh tissue, overnight shipment, on ice do not freeze	3 - 5 days	FFPE tissues preferred with histologic lesions

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PARASITOLOGY

A range of testing services is provided by PADLS laboratories for identification of whole parasite specimens, microscopic ova or larvae, protozoan organisms, ectoparasites, and parasite antigens. In order to provide an accurate and timely identification, we request that samples be submitted according to the guidelines shown below. Use shipping containers that seal tightly. Provide proper temperature requirements for the particular specimen, and forward as quickly as possible. Clearly identify each sample with the animal's ID, owner's name, and veterinarian or practice involved. A full history is always helpful to assist us in providing the best possible diagnosis. Please call the laboratory if you have additional questions.

☞ **Always provide fresh samples, including feces, and ship with frozen gel packs for transit in less than 24 hours.**
☞ **Parasite ID results will be provided within 14 days. All other samples are processed as workload permits and reported within 7 days.**

TEST/AGENT	PROCEDURE	TISSUE / SPECIMEN	CONTAINER	REMARKS
Cryptosporidium	Acid fast stain	1 g feces	leak-proof, sealed	Smear NBC
Cryptosporidium/Giardia	FA (combined) , ELISA	1 g feces	leak-proof, sealed	PSU, PVL
Centrifugation/fecal flotation	Centrifugation/fecal flotation	5 g feces	leak-proof, sealed	PSU, PVL
Fecal parasite direct smear	Fecal smear	5 g fresh feces	leak-proof, sealed	
Lungworm screen	Modified double fecal centrifugation	10 g fresh feces	leak-proof, sealed	Identifies larvae rather than ova PSU, PVL
Fecal flotation	Modified McMaster's	5 g fresh feces	leak-proof, sealed	Quantitation of nematode ova
Parasite identification	Microscopic exam	parasite	leak-proof, sealed	Identification of ecto/endo parasites NBC

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PATHOLOGY

BIOPSY SERVICE: Submitters may send biopsies to the PADLS laboratory of their choice (with the noted exceptions). Practitioners are encouraged to use containers and mailers specifically intended for formalin fixed specimens. Label containers appropriately, especially if more than one specimen is submitted. Owner address, patient signalment and a brief history are required information. Submission forms are available online at www.padls.org or by calling the laboratory. Tissues should be placed in 10% buffered formalin. Ten volumes of formalin are required to adequately fix one volume of tissue. Specimens should consist of the lesion site and surrounding tissue. Tissue should not be thicker than 1 cm. Do not allow fresh or fixed tissue to freeze. Formalin will freeze at low temperatures resulting in tissue damage. Adding 1 mL of ethanol to each 9 mL of 10% formalin will prevent such freezing. Certain tissues require special attention. Intestines are labile; they should be opened and contents removed with a saline or formalin rinse. Bouin's fixative is preferred for endometria. Brains are fixed whole in 10 volumes of formalin. Fresh brains should be hemisectioned if viral or bacterial studies are intended—refrigerating one half and saving the other half in formalin.

PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	EST.TURN AROUND	REMARKS
Biopsy	Domestic livestock, wildlife, zoo animals, avian	Surgical biopsies	Sealed within padded outer mailer	US Postal Service, courier service, or hand deliver	2 days	Unfixed tissue, tissue requiring special handling (e.g., bone, eyes) and special stains require extra time for completion.
Endometrial Biopsy	Equine	Alligator forceps-collected endometrial specimens	Same as biopsy mailers with Bouin's fixative available	US Postal Service, courier service, or hand deliver	7 days	Reproductive history and rectal findings are required information. An epicrisis (therapeutic recommendations by a theriogenologist) is available only through PADLS-NBC.

IMMUNOHISTOCHEMISTRY (IHC)

IHC is only performed at NBC and PVL. Please call laboratory for test availability and handling instructions. Containers must be leak-proof and appropriately padded. Delivery can be via the US Postal Service, courier service, or by hand. Turn-around time is 7-14 days. Multiple tissues can be examined in a single IHC test without additional charges.

AGENT	SITE	SPECIES	TISSUE/ SPECIMEN
Avian influenza	NBC	avian	trachea, heart, kidneys, intestines, lungs, pancreas
Bovine coronavirus (BCV)	NBC PVL	bovine	ileum, colon
Bovine respiratory syncytial virus (BRSV)	NBC PVL	bovine	lung
Bovine viral diarrhea virus (BVD) - ear notch	NBC PVL	bovine	ear notch

AGENT	SITE	SPECIES	TISSUE/ SPECIMEN
Feline coronavirus (FeCo/FIP)	NBC	feline	ileum, colon, lesions
Feline herpesvirus 1	NBC	feline	skin, tongue, lymphoid, lesions
Feline parvovirus	NBC	feline	jejunum, ileum, tongue, lymphoid, liver
Helicobacter	NBC		stomach, liver

AGENT	SITE	SPECIES	TISSUE/ SPECIMEN
Porcine TGE coronavirus	NBC PVL	porcine	ileum, colon
Prions: CWD, Scrapie	PVL	cervine, ovine, caprine	caudal brainstem, obex, retropharyngeal lymph nodes, tonsil
Sarcocystis neurona (EPM)	NBC	equine	brain, spinal cord lesions

(Continued next page)

AGENT	SITE	SPECIES	TISSUE/ SPECIMEN
Bovine herpesvirus 1 (IBR)	NBC PVL	bovine	nasal mucosa, upper airways, lung fetus: chorion, lung, liver, adrenal, lymphoid
Bovine viral diarrhea virus (BVD) - tissue	NBC PVL	bovine	lymphoid, skin, intestine fetus: chorion, lymphoid
Campylobacter spp	NBC		intestine fetus: chorion, liver
Canine distemper	NBC	canine	lung, lymphoid, gut, kidney, urinary bladder, brain
Canine parvovirus 2	NBC	canine	jejunum, ileum, tongue, lymphoid, liver
Chlamydophila spp	NBC	ovine, bovine, caprine	lung, liver, spleen, placenta, cotyledon, fetal tissue
Equine arteritis virus (EVA)	NBC	equine	fetus/neonate: chorion, lung, liver, kidney, lymphoid, ileum

AGENT	SITE	SPECIES	TISSUE/ SPECIMEN
Equine herpesvirus 1	NBC	equine	fetus/neonate: lung, liver, thymus, spleen, adrenal, chorion CNS: brainstem, spinal cord
Infectious bronchitis virus	NBC	avian	nasal, trachea, lung, kidney
Lawsonia	NBC PVL	equine, porcine	ileum
Leishmania spp	NBC	canine, equine, other	skin liver, spleen, lymph node, bone marrow
Listeria monocytogenes	NBC PVL	bovine, ovine, caprine, equine, porcine	caudal brainstem, lung, liver, lymphoid, chorion
Mycobacterium spp	NBC	various species	granulomas
Neospora caninum	NBC PVL	bovine, canine, other species	brain, heart, skeletal muscle, chorion
Papillomavirus	NBC		skin lesions
Porcine circovirus 2 (PCV 2)	NBC PVL	porcine	tonsils, lung, lymphoid, ileum, kidney fetus: chorion, cord, tonsils, lung, thymus, spleen, kidney

AGENT	SITE	SPECIES	TISSUE/ SPECIMEN
Porcine Respiratory and Reproductive Syndrome virus (PRRS)	NBC PVL	porcine	tonsils, lung, lymphoid, ileum, kidney fetus: chorion, cord, tonsils, lung, thymus, spleen, kidney
Swine influenza virus	PVL	porcine	lung
Toxoplasma gondii	NBC	various species	brain, heart, skeletal muscle, chorion
West Nile virus	NBC PVL	avian, equine	equine: brain, brainstem, spinal cord avian: intestine, spleen, heart, kidney, brain
Yersinia pestis	NBC	various species	intestine, lymph node, respiratory, spleen, lesions

FIELD NECROPSY / DIARRHEA PANEL

Circumstances occasionally require practitioners to conduct postmortem examinations on client premises or in the clinic. Pre-purchased specimen collection kits (complete with instructions, containers, swabs, transport medium, and shipping boxes) are available upon request. All PADLS laboratories are prepared to receive and process packages containing field necropsy specimens.

The US Postal Service and commercial couriers have strict regulations regarding the packaging of potentially hazardous biological and chemical materials. Resistance to crushing and the containment of leaked fluids are prime considerations. Formalin-fixed-tissues should be in screw top containers, the lid taped, and placed within a leak-proof, plastic bag. Excess formalin may be removed if fixation is complete, leaving enough fluid to keep the specimen moist. Do not allow fixed tissues to become frozen from ambient temperatures, dry ice or super-frozen ice packs. Fresh tissues should be double bagged. If delayed in transit, gas distension from putrefaction could cause leakage. Tissues for microbiological procedures should be chilled and not frozen. Specimens for toxicological analysis may be fresh or frozen. To avoid contamination of the specimen selection, the proper container is important **(see Toxicology section of User Guide for details)**.

PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING*	EST. TURN AROUND	REMARKS
Field necropsy	Agricultural animals	fresh and formalin-fixed tissues	Styrofoam shipping box as described above	overnight courier, ship only M-Th	14 days	Field necropsy samples submitted by a referring vet are processed the same as submitted animals. Consult with the case coordinator regarding history and sample/test selection.
Field necropsy	Dog and cat	fresh and formalin-fixed tissues	Styrofoam shipping box as described above	overnight courier, ship only M-Th	14 days	Please contact the laboratory prior to submission.
Diarrhea panel	Agricultural animals	20 mL feces	leak-proof sealed	overnight courier, ship only M - Th with frozen gel packs	7 - 10 days	Electron Microscopy is an out-of-PADLS test

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NECROPSY SERVICE

Submitters may send fresh, recently dead animals to the PADLS laboratory of their choice Deliveries of dead animals or samples may be made 24 hours a day. **Live animals may be submitted only by prior arrangement.** Arrangements for transportation should be made by the client as soon as possible. Chill carcasses if feasible; do not freeze unless otherwise instructed. Antemortem blood samples (whole blood or serum) should be taken prior to pre-transport euthanasia and should accompany the submission. Referring veterinarians or clients are encouraged to notify the lab and consult with the pathologist before sending the carcass(es) or other samples. A clinical history, written by the referring veterinarian, owner, or flock supervisor should accompany the submission. Individuals submitting wild animals for necropsy must receive permission from the Pennsylvania Game Commission prior to submission of the animal. Insurance cases and cases with the potential for litigation must be identified as such.

Please call for instructions for emergency necropsy submissions during evening and weekend hours. Ancillary tests beyond the gross postmortem examination are at the discretion of the pathologist. The necropsy fee covers most routine tests (e.g., bacteriology, histology, virology, serology, some toxicology, etc.); however, extensive testing may incur additional fees. Tests that cannot be done by PADLS are forwarded to various referral laboratories and the fees charged by the outside laboratory will apply. Turn-around time is usually two weeks. Some tests, e.g., special toxicological assays and virus isolation, may take several more weeks. Submitters will be apprised of the status of their case, and addendums will be issued as information becomes available. Cosmetic necropsies are not performed.

Carcasses are incinerated/rendered immediately after necropsy and no parts of the body can be returned.
Disposal of carcasses not submitted for necropsy is by arrangement only and will incur a fee. Necropsy of animals in a state of advanced autolysis is at the discretion of the pathologist.

PROCEDURE	SPECIES	TISSUE/ SPECIMENS	CONTAINER	SHIPPING*	EST. TURN AROUND	REMARKS
Mammalian Necropsy	Domesticated livestock, confined wildlife, zoo animals	Necropsy animals should be submitted recently dead or terminal. Multiple animals are desirable as indicated on the fee schedule.	Small carcasses should be bagged and boxed and with frozen gel packs	Client delivery as soon as possible after death, or alive. (only with prior arrangements)	14 days	Cases requiring the removal of the spinal cord require three weeks for completion and additional fees.
Dog/Cat necropsy	Dog, cat	Please call for availability and instructions				
Avian Necropsy	All avian species	1-10 fresh dead and/or live birds representative of the condition	Rigid, leak-proof, container with frozen gel packs (dead birds).	Hand deliver or overnight courier. Ship only M – Th. (Do not ship live birds)	1-3 days	Call ahead for availability if submitting to PVL. Live birds should be hand delivered in appropriate containers with sufficient ventilation and space. Some tests, e.g., special toxicological assays and virus isolation, may require several more weeks for completion.
Hatchery residue break-out analysis	All avian species	Please call for availability and instructions				

If shipping to PSU, do not use the US Postal Service

PROCEDURE	SPECIES	TISSUE/ SPECIMENS	CONTAINER	SHIPPING*	**EST. TURN AROUND**	REMARKS
Rabies	All mammals	Whole body or head	see Rabies section for shipping instructions	Hand deliver or overnight courier	3 working days	For further information, refer to the rabies section of the User Guide
Aquaculture Necropsy (see pages 26 for specific details)	Fin Fish	1-10 fish (live preferred)	Bucket with water sample and sufficient oxygen supply.	Client delivery of live fish.	72 hours* *ancillary testing may require several additional weeks for completion.	Live fish should be hand delivered in appropriate container(s) with sufficient oxygen supply.
		Dead fish are NOT generally suitable for a COMPLETE necropsy. Dead fish need to be iced immediately after death, placed in a plastic bag, wrapped in newspaper and packed in a Styrofoam shipping box with 2 to 3 frozen ice packs.	Rigid leak-proof container with frozen ice packs (dead fish)	Pack dead fish, as described, in a Styrofoam cooler and deliver to the laboratory IMMEDIATELY or ship by an overnight courier only M-W. **(Do not ship live fish.)**		Call Lab before shipping
Exotic Necropsy	Reptiles Amphibians Exotic Mammals	Refrigerate—do NOT freeze dead specimens	Small carcasses should be bagged and boxed with frozen gel packs in a leak-proof container in insulated box or cooler for fresh dead	Client delivery as soon as possible after death, or alive. Ship only with prior arrangements by an overnight courier only M-Th. Venomous reptiles must be presented DEAD.	72 hours* *ancillary testing may require several additional weeks for completion.	Cases requiring the removal of the spinal cord require three weeks for completion and additional fees. Call Lab before shipping.

AVIAN SEROLOGY

The majority of the tests conducted by PADLS are on serum samples from commercial poultry flocks being tested for avian influenza in association with the Live Bird Market System (LBMS), PA Monitored Flock Program, and National Poultry Improvement Plan (NPIP) testing requirements. NPIP certification is also available for *Salmonella* and *Mycoplasma* species. Please contact **BAHDS (717-783-6677)** for additional information on this program. The remainder of the tests are associated with:

1. Regulatory testing required for interstate shipment, sales and PA exhibitions
2. Surveillance testing for diseases, e.g., avian influenza
3. Diagnostic testing from birds submitted to the laboratory for necropsy
4. Flock serologic profiling. Please contact the individual laboratories for additional information.

Avian serology testing requires appropriate amounts of uncontaminated, non-hemolyzed sera. Sample collection technique and timely submission significantly impact laboratory results. Poor quality sera may be reported as non-testable. The following outline is provided to assist poultry servicemen/veterinarians in proper blood collection/serum submission. Contact the laboratory for proper submission forms and blood collection tubes.

1. Collect 2 to 3 mL of blood aseptically from wing vein.
2. Transfer blood to a **clean, dust-free** tube (most blood tubes equal 5 mL).
3. Stopper and place in a horizontal position for several hours, at room temperature until the serum separates from the clot. Alternatively, specimen tubes which will be hand-delivered may be sealed with tape and placed in a semi-horizontal position for several hours until the serum separates.
4. After serum separation, the specimens should be left in an upright position at room temperature or in the refrigerator overnight until transport to the lab.
5. Submit these specimens to the laboratory as soon as possible, or pour the serum into a clean, sealed vial.
6. Submit a minimum of 1.0 mL of serum when requesting multiple tests.
7. Fill out the proper specimen submission form, include **all** requested information.
8. If possible, the samples should be sent refrigerated using an overnight courier service or, alternatively, hand delivered to the lab.
9. Contact the laboratory to make special test arrangements for export or sale samples or when holidays interrupt the normal test schedule.
10. The laboratory reserves the right to determine the suitability of a specimen for testing.

Codes: AGID Agar Gel Immunodiffusion Assay; **ELISA** Enzyme Linked Immunosorbent Assay; **HI** Hemagglutination Inhibition Assay **IFA** Indirect Fluorescent Antibody Test; **RPA** Rapid Plate Agglutination

NOTE: Turnaround time (business days) is based on one-time testing with a negative result. Suspect samples will be retested or forwarded to NVSL requiring additional time. The turnaround time for some ELISA testing is dependent on the number of samples submitted to the lab. Samples may be held until an adequate number of samples are available for efficient use of test reagents. Contact the laboratory if a more rapid turnaround is required.

If shipping to PSU, do not use the US Postal Service

TEST/AGENT	SITE	PROCEDURE	TISSUE/ SPECIMEN	SHIPPING*	SETUP	EST. TURN AROUND	REMARKS
Avian Encephalomyelitis (AE)	NBC PSU	ELISA (BioChek) ELISA (IDEXX)	0.5 mL serum	gel pack	M - F	2 - 14 days	
Avian influenza (AI)	NBC	AGID ELISA (BioChek)	0.5 mL serum eggs	gel pack (serum)	M - F	2 days	See Virology (Avian) section for virus isolation information. ELISA performed on serum, only
	PSU	AGID					
	PVL	AGID	0.5 mL serum				
Bordetella avium (BA)	PSU	ELISA (Synbiotics)	0.5 mL serum	gel pack	M - F	2 - 14 days	See Bacteriology Section for culture information
Chicken anemia virus (CAV)	NBC	ELISA (BioChek)	0.5 mL serum	gel pack	M - F	2 – 14 days	
	PSU	ELISA (IDEXX)					
Hemorrhagic enteritis (HE)	PSU	ELISA (Synbiotics)	0.5 mL serum	gel pack	M - F	2 - 14 days	
Infectious bronchitis virus (IBV)	NBC	ELISA (BioChek)	0.5 mL serum	gel pack	M - F	2 - 14 days	See Virology (Avian) section for virus isolation information.
	PSU	ELISA (IDEXX)					
Infectious bursal disease (IBD) Gumboro	NBC	ELISA (BioCheK)	0.5 mL serum	gel pack	M - F	2 – 14 days	See Virology (Avian) section for virus isolation information
	PSU	ELISA (IDEXX)					
	PVL	AGID					
Infectious laryngotracheitis virus (ILTV)	NBC	ELISA (BioChek)	0.5 ml serum	gel pack	M – F	2- 14 days	Used for epidemiological surveillance of broilers over 6 weeks old outside of endemic areas
Mycoplasma gallisepticum (MG)	NBC	ELISA (BioChek), RPA	0.5 mL serum	gel pack	M - F	1 - 14 days	See Molecular and Bacteriology Sections for agent detection information DO NOT FREEZE
	PSU	RPA					
	PVL	RPA					
		HI					
Mycoplasma meleagridis (MM)	PVL	RPA	0.5 mL serum	gel pack	M - F	1 day	DO NOT FREEZE

TEST AGENT	SITE	PROCEDURE	TISSUE/SPECIMEN	SHIPPING	SETUP	EST. TURN AROUND	REMARKS
Mycoplasma synoviae (MS)	NBC	ELISA (BioChek), RPA	0.5 mL serum	gel pack	M - F	1 - 14 days	See Molecular and Bacteriology Sections for agent detection information DO NOT FREEZE
	PSU	RPA					
	PVL	RPA HI					
Paramyxovirus Type 1 : Newcastle Disease (NDV)	NBC	ELISA (BioChek)	0.5 mL serum	gel pack	M - F	2 - 14 days	See Virology (Avian) section for virus isolation information
	PSU	ELISA (IDEXX)					
Reovirus	NBC	ELISA (BioChek)	0.5 mL serum	gel pack	M - F	2 - 14 days	See Virology (Avian) section for virus isolation information.
	PSU	ELISA (IDEXX)					
Salmonella pullorum (Typhoid)	NBC	RPA, Tube agglutination	0.5 mL serum	gel pack	M - F	2 days	Samples must be received no later than 2 pm Th.for tube agglutination tests
	PSU	RPA			M - F		
	PVL	RPA, Tube agglutination			M,T,W,Th		
Salmonella Enteriditis - Typhimurium	NBC	ELISA (BioChek)	0.5 ml serum	gel pack	M - F	2 – 14 days	

MAMMALIAN SEROLOGY

Properly performed serology requires appropriate amounts of uncontaminated serum. Specimen collection technique and timely submission significantly impact the quality of the laboratory results. The following outline is provided to assist in the submission of specimens for optimal results. Check individual tests under "remarks" for special handling requirements.

1. Aseptically collect adequate amounts of blood for the number of tests requested.
2. Collect blood in a clean, tightly sealed, leak proof tube or container (red top tube or serum separator tube).
3. Leave tubes in a horizontal position at ambient room temperature (not below freezing).
4. Submit specimens as soon as possible. Store specimens refrigerated if submission is delayed.
5. Pack samples securely to prevent breakage. Packages should contain ice packs if samples will be in transit more than 24 hours or during warmer months of the year. Use courier service whenever possible as the routine delays which occur in mailing can result in deterioration of sample quality.
6. Fill out submission forms completely and legibly and submit with samples. Be sure to indicate the tests to be performed as well as clinical history and purpose of test, (e.g. sale, diagnostic, etc.). Number all specimens to match forms using consecutive numbers only. Submissions should be signed by an accredited veterinarian.
7. Whenever possible, send clear serum which has been aseptically transferred to a sterile red top serum tube. We will accept clotted whole blood samples with the understanding that they may have to be reported as hemolyzed or non-testable if they arrive in poor condition.
8. The test schedules are flexible. In some instances setup is based on demand with a minimum and maximum time shown. Contact the serology section of the laboratory to which you are submitting specimens in advance when you need a group of animals tested within certain time constraints. Allow 1-2 days for transport of samples between PADLS laboratory locations.
9. Acute serum specimens will be tested within the same run as convalescent specimens when submitted together.
10. Turn-around time is defined in working-days as the time elapsed between the date (and time) that the specimens are received in the laboratory until the date (and time) that the results are recorded in the Laboratory Information Management System (LIMS), or, the time the testing is completed. Suspect specimens will be retested requiring additional time.

Codes: **AGID** - agar gel immunodiffusion; **BAPA** - buffered acidified plate assay**; Card** - Rapid Card Test; **cELISA** - competitive enzyme-linked immunosorbent assay; **CF** - complement fixation; **ELISA** – enzyme-linked immunosorbent assay; **FPA** - fluorescent polarization assay; **HA** - hemagglutination; **HI** - hemagglutination inhibition, **IHA** - indirect hemagglutination assay; **MA** – microagglutination, **RSAT** - rapid slide agglutination test; **RAP** - rapid automated presumptive, **SN** - serum neutralization, **SPT** - standard plate test, **STT** - standard tube test

NOTE: Specimens should be sent to arrive by at least 2:00 PM the day **before** the scheduled laboratory test day.

Export testing or special needs: Contact the PADLS laboratory prior to sample collection to schedule all necessary tests. Large volume export testing especially requires advance notification due to limited availability of some reagents and to allow scheduling of technical time to ensure timely reporting of results.

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	SETUP	EST. TURN AROUND	REMARKS
Anaplasma	PVL	cELISA	bovine	1 mL serum	Th	1 day (if neg)	Domestic sheep may also be tested for diagnostic purposes only. Presumptive positive results will be sent to NVSL for confirmatory testing. **Presumptive positive results may take as long as 14 days to confirm.**
Bluetongue	PVL	AGID	ruminants	1 mL serum	W	2 days (if neg)	Presumptive bluetongue cELISA positive specimens are reset in duplicate. If <u>all three</u> settings are positive the specimen is reported as positive. Any other result than positive generates an "equivocal" result.
		cELISA			W, Th	1 day (if neg)	
Bovine Leukemia (BLV, bovine leukosis virus)	NBC	AGID	bovine	1 mL serum	as needed	2 days	Please contact lab before shipping large groups of (300 +) samples to assure availability of testing**.** **The turn-around time for large groups of samples submitted upon request may be 1-5 days.**
	PSU	ELISA			as needed	1 day	
	PVL	AGID			M - Th	3 days	
		ELISA			upon request	1 - 2 days	
Bovine Pregnancy (Pregnancy)	PVL	ELISA	bovine	1 mL serum	as needed	1 - 4 days	**Bovine**: The test provides accurate detection of pregnancy as early as 28 days post-breeding. The test can be used ≥ 60 days post-calving. **Buffalo**: The test provides accurate detection of pregnancy from 30 days post-breeding. The test can be used from 60 days post-calving. **Caprine**: The test provides accurate detection of pregnancy from 28 days post-breeding. **Ovine**: The test provides accurate detection of pregnancy from 35 days post-breeding.
Bovine Pre-purchase Panel	PSU PVL	• BLV ELISA • [pi BVD microplate] • Johne's ELISA • *Neospora* ELISA	bovine	Serum: -2 tubes per animal use p.i. BVD submission guidelines (See Mammalian Virology)	See listings under individual tests	7 - 12 days	Please see p.i. BVD under Mammalian Virology for additional sample handling requirements. ☞ p.i. BVD performed only at PSU
Bovine Reproductive Panel	PSU PVL	• BVD SN • IBR SN • Leptopira • *Neospora* ELISA	bovine	3 mL serum	See listings under individual tests	7 - 12 days	☞ BVD SN and IBR SN tests performed only at PSU ☞Leptospirosis testing performed only at PVL
Bovine Respiratory Panel	PSU	• BRSV SN • BVD SN • IBR SN • PI-3 HI		3 mL serum	M	7 - 12 days	☞BVD SN test performed only at PSU ☞BRSV SN test is performed at the Texas Veterinary Medical Diagnostic Laboratory (TVMDL)

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	SETUP	EST. TURN AROUND	REMARKS
Bovine Viral Diarrhea (BVD)	PSU	Ear notch Ag.-cap ELISA	bovine camelids	Ear notch	as needed	1 - 3 days	BVD Ag-cap ELISA can be run on serum of animals ≥ 3 mos old. Ear notches can be tested at any age. ☞SN test performed only at PSU. Samples must be received before 2 PM on Friday Camelids: tested by SN or pi BVD microplate <u>Note:</u> p.i. BVD test performed only at PSU. Please see p.i. BVD under 'Mammalian Virology' for additional sample handling requirements.
		Serum Ag-cap ELISA		1 mL serum	as needed		
		SN			M	7 - 12 days	
		pi BVD microplate					
	PVL	Ear notch Ag.-cap ELISA		Ear notch	as needed	1 - 3 days	
		Serum Ag-cap ELISA		1 mL serum	as needed		
Brucellosis (*Brucella abortus*)	PSU	Card BAPA	bovine caprine cervine porcine	1 mL serum	M - F	1 -2 days	Unless specific tests are requested, those necessary for Pennsylvania classification will be performed. Because of non-specific reactions on the screening test, an additional test may be necessary to confirm negative status. Cervids are tested by Card Agglutination, Rivanol or Fluorescent Polarimetry Assay.
	PVL	BAPA Card CF FPA SPT STT RAP Rivanol	bovine caprine cervine equine porcine	1 mL serum	M – F M – F upon request M - F M – F M, T, W M – F M - F	1 – 2 days 1 – 2 days 3 days 1 – 2 days 1 – 2 days 2 - 5 days 1- 2 days 1- 2 days	
		Ring Test	bovine	50 mL milk (min.)	M - Th	1 – 2 days	Milk samples can be submitted as: • Frozen/refrigerated fresh whole milk • Frozen/refrigerated preserved whole milk
Brucellosis, Canine (*Brucella canis)*	PVL	RSAT	canine	0.5 mL serum	M - F	1 day	
Caprine Arthritis Encephalitis (CAE)	PVL						*see Small Ruminant Lentivirus (SRLV)*
Epizootic Hemorrhagic Disease (EHD)	PVL	AGID	ruminants	1 mL serum	Upon request	3-5 days	If a domesticated ruminant is positive or inconclusive the Bluetongue cELISA is performed (at no charge) to eliminate BT cross-reaction with EHD.
Equine Infectious Anemia (EIA)	NBC	AGID (Coggins)	equine	1 mL serum	M - F	1 – 2 days	For same day ELISA results, samples must be received by noon. Results for samples received after noon will be available the next day
		ELISA				1 day	
	PVL	AGID (Coggins)				1 - 2 days	
		cELISA				1 day	
Equine Rhinopneumonitis (EHV 1,4)	PSU	SN	equine	1 mL serum	M	7 - 10 days	
Infectious Bovine Rhinotracheitis (IBR)	PSU	SN	bovine	1 mL serum	M	7 days	See 'Mammalian Virology' for virus isolation

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	SETUP	EST. TURN AROUND	REMARKS
Johne's Disease *(Mycobacterium paratuberculosis)*	PSU	ELISA	ruminants	1 mL serum	M - F	1 - 5 days	On Johne's testing marked "diagnostic", the default test is the ELISA test. The AGID test is performed on cattle and goats, only (no sheep) *See 'Bacteriology' for fecal culture* *See 'Molecular Diagnostics' for PCR*
	PVL	AGID			M - W	2 days	
		ELISA			M - F	1 - 5 days	
Leptospira	PVL	MAT	canine equine porcine ruminants	1 mL serum	Th Samples screened and titered the same day, if time allows.	1 - 6 days for negative results 3 - 7 days for positive results	*L. bratislava* test is performed routinely for caprine, ovine, canine, equine and porcine species. *L. bratislava* is available for cattle upon request
Bovine, TB Gamma Interferon test	PVL	Culture & ELISA	bovine	10 ml heparinized (green top) blood tube. **(7) ml** of blood is required. A minimum of 7 ml blood	M-Th	Same day sample drop-off preferrred. Next day result. Samples must arrive at the lab within 30 hours of collection and must be maintained between **62 and 82 degrees** Fahrenheit.	The time and date of sample collection must be recorded on submission form. Please contact the labs for sample collection and shipping instructions.
Neospora caninum	PSU	ELISA	bovine	1 mL serum	as needed	1 day	
	PVL				W		
Ovine Progressive Pneumonia (OPP)	PVL						***see*** *Small Ruminant Lentivirus (SRLV)*
Parainfluenza Type 3 (PI-3)	PSU	HI	bovine	1 mL serum	M	1 - 5 days	☞Bovine PI-3 test performed only at PSU *See 'Mammalian Virology' for virus isolation*
Porcine Reproductive & Respiratory Syndrome (PRRS)	PVL	ELISA	porcine	1 mL serum	M - F	1 day	
Pseudorabies (PRV)	PVL	ELISA (PRV gpI differential)	porcine	1 mL serum	M - F	2 days	
Small Ruminant Lentivirus (SRLV) *[CAE/OPP]*	PVL	cELISA	caprine ovine	1 mL serum	M	1 day	Veterinary Medical Research and Development, Inc. (VMRD), has renamed the CAE kit, "Small Ruminant Lentivirus Antibody Test Kit, cELISA". The test kit remains unchanged but the manufacture now states that

							this competitive, enzyme-linked, immunosorbent assay (cELISA) detects antibodies to caprine arthritis encephalitis (CAEV) in goat sera **or** ovine progressive pneumonia virus (OPPV) in sheep sera. The positive cutoff of 35 percent inhibition remains the same for either CAEV or OPPV assay. The test name on your report will reflect this change. Please call the lab at 717-787-8808 with any questions.
Toxoplasma		IHA	mammals	1 mL serum	Upon request	7 - 14 days	☞Test forwarded to another lab
West Nile Virus	PVL	IgM-capture ELISA	equine	1 mL serum	W (or by arrangement)	3 days	Testing on equine samples only. Submission form should include signs and vaccine history on neurologic animals. Vaccine does not interfere with IgM test.

TOXICOLOGY

Toxicology is performed only at NBC. Enclose a detailed history with submissions, including clinical signs, lesions, tentative diagnosis, a list of drugs administered, and the response to previous treatments. A complete history may enable us to decide which additional tests are warranted.

In situations involving small animals, reptiles, or birds where the amount of sample indicated below may not be available, please submit as large a sample as possible. Each individual specimen must be in a separate, clean, clearly labeled container. Containers should be freezable, such as plastic bags. For liquids, use clean glass/plastic containers. **Purity of sample is of extreme importance in toxicology.**

Do not use preservatives with the exception that EDTA or heparin should be used as anticoagulants for whole blood samples. Serum should be separated from the clot. Containers should be as full as possible, but allow for expansion if samples are to be frozen. If "source materials" are obtained, ship them in a separate package. **Do not ship them in the same package as the tissue samples.** Information regarding their availability, means of exposure, and an estimate of amount ingested should be included. Enclose the label or a list of all chemicals and concentrations on the label.

If a topical or injected toxicant is suspected, submit a large area of tissue from the suspected absorption site. Many poisons produce microscopic changes in tissues. Therefore, always submit sections of tissues in 10% formalin for histopathologic examination in addition to the fresh or frozen tissues required for chemical analysis.

If other analyses are desired, or if you have questions, please call the laboratory. At present, samples are kept 6 months after date of submission unless we are specifically advised to the contrary. **Please allow an extra 1-2 days turn-around time if samples must be transferred between PADLS labs for testing.**

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Aflatoxins (see mycotoxins)	NBC	LC/MS						
Algal toxins (anatoxin, microcystins, nodularin)	NBC	LC/MS	any	100 mL water 5-10 g liver	clean glass bottle Whirl-pak® or Zip-top plastic bag	Cold with ice packs	7 Days	
Anion panel (water): chloride, fluoride, nitrate, nitrite, phosphate, sulfate	NBC	Ion chromatography	any	100 mL water	Use bottles provided by an extension agent, public health official, or an empty distilled water bottle.	Chilled/ frozen in insulated container with gel packs	1 - 3 days	
Anion panel (biological fluids): chloride, nitrate, nitrite, phosphate, sulfate	NBC	Ion chromatography	any	2 - 5 mL serum 1 - 2 mL ocular fluid	clean well-sealed container	Chilled/ frozen in insulated container with gel packs	1 - 3 days	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Anion - single	NBC	Ion chromatography	any	2 - 5 mL water or serum 1 – 2 mL ocular fluid	clean well-sealed container	chilled/ frozen in insulated container with gel packs	1 - 3 days	
<u>Anticoagulant rodenticide screen</u>: brodifacoum bromadiolone chlorophacinone coumafuryl difenacoum difethialone diphacinone pindone valone wafarin	NBC	HPLC	any	20 g liver bait	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	5 days	Stomach contents may not be useful due to length of time required for clinical signs to develop after a single exposure. Literature reports indicate blood may contain higher toxin concentrations than serum, although both have been used successfully.
				2 mL whole blood	EDTA or heparin Vacutainer	chilled (**not frozen**) in insulated container with gel packs		
Avitrol 4-aminopyridine	NBC	GC/MS	any	Crop contents suspect bait	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	5 days	
Bromide (single anion)	NBC	Ion Chromato-graphy	any	1 mL serum or drug solution	Take sample in red top vacutainer tube and remove serum from clot Ship in clean vacutainer tube or plastic vial	chilled/frozen in insulated container with gel packs	1 - 3 days	Therapeutic monitoring for treatment with NaBr or KBr or verification of drug solution concentration
Calcium	NBC	ICP/MS	any	any	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	1 - 3 days	This is a useful adjunctive test to confirm ethylene glycol toxicosis.
Carbamate Insecticides	NBC	GC/MS with LC/MS when needed	any	Serum, liver, baits, stomach contents	See organic chemical screen	see organic chemical screen	5 days	Screens for carbamate pesticides
Chloride	NBC	Ion Chromatography	any	Serum, ocular fluid or water	clean well-sealed container	chilled/frozen in insulated container with gel packs	1 - 3 days	
Chlorinated hydrocarbon insecticide screen	NBC	GC/ECD	any	5 g liver, bait, fat or brain	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	5 - 7 days	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Cholinesterase, blood	NBC	Spectrophotometry	any	1 mL whole blood	EDTA tube	chilled	2 - 5 days	Cholinesterase activity is often used to assess significance of exposure to organophosphate, and less reliably, carbamate pesticides.
Cholinesterase, brain or retina	NBC	Spectrophotometry	any	1 eye (cattle or sheep only) ½ brain (right or left hemisphere). For small rodent or bird, submit entire brain	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	2 - 5 days	Cholinesterase values may vary among different brain regions; most laboratories use an entire half in order to assure consistency of results. Cholinesterase activity is often used to assess significance of exposure to organophosphate, and less reliably, carbamate pesticides.
Convulsants screen (penitrem, roquefortine, strychnine, cyanide [prussic acid])	NBC	LC/MS	any				5 days	
Copper	NBC	ICP/MS	any	liver biopsy 100 mg wet-weight fresh tissue	Whirl-pak® or Zip-top plastic bags or clean well sealed plastic or glass tubes	chilled/frozen in insulated container with gel packs	3 days	Useful for nutritional assessment of copper status. Copper levels in the blood have variable diagnostic reliability.
				2 mL serum	red top tube			
				2 mL plasma	purple or green top			
Cyanide	NBC	Test strip	any	1 - 5 mL whole blood	EDTA tube	chilled	1-3days	Cyanide is volatilized by stomach acid, so stomach contents must be frozen as quickly as possible and shipped in an airtight container.
				10 g stomach/rumen/crop contents/feed	air-tight container	frozen in insulated container with gel packs		
				200 g forage or feed	plastic bag	same		
Drug Analysis (Single Drug)	NBC	LC/MS	any	2 - 3 mL serum	serum or red top tube	chilled in insulated container with gel packs	5 days	Call lab for drug availability
				10 mL urine	plastic tube or container			
				10 g liver	plastic container or Zip-top bag			

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Drug screen, prepurchase	NBC	ELISA GC/MS LC/MS	equine	5 mL serum	serum or red top tube	chilled in insulated container with gel packs	5 days for screen If positive on screen, confirmation will take 5 more days	Corticosteroids, tranquilizers, non-steroidal anti-inflammatories
				10-20 mL urine	plastic vial			
<u>Electrolytes panel</u> (magnesium, calcium, chloride, phosphorus, potassium, sodium)	NBC	ICP/MS & IC		ocular fluid serum	serum or red top tube, with clot removed from serum samples	chilled in insulated container with gel packs	3 days	
Ethylene glycol (antifreeze) screen	NBC	GC/MS	any	10 g kidney	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	3-5 days	Kidney calcium concentration is a useful confirmation in suspected ethylene glycol toxicosis.
				10 g bait				
				10 mL urine	plastic vial			
				2 mL serum	serum or red top tube			
Fat Content	NBC	Solvent extraction	any	10 g liver	plastic bag	chilled/frozen in insulated container with gel packs	5 days	
Fumonisins **(see mycotoxins)**	NBC	LC/MS						
<u>Ionophore screen</u>: monensin, narasin, salinomycin, lasalocid, laidlomycin, maduramicin	NBC	LC/MS	any	400 g feed or GI contents	plastic bag	dry chilled or frozen	5 days	
Iron	NBC	ICP/MS	any	5 g liver	Whirl-pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	3 days	
				2 – 3 mL serum	serum or red top tube			
LC/MS Screen	NBC	LC/MS	any	10 mL urine	plastic vial	chilled/frozen in insulated container with gel packs	5 days minimum	This screen tests for a wide variety of pesticides and drugs. For specific questions please call the laboratory
				100 g rumen or stomach contents	Whirl-pak® or Zip-top plastic bag			
				10 g liver				
				2-3 mL serum				

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
LC/MS confirmation of GC/MS or LC/MS screens	NBC	LC/MS	any				3 - 7 days following test request	
Lead (blood) : *see Mineral panel/screening*								
Macrolide endectocides: ivermectin, moxidectin doramectin, eprinomectin, selamectin	NBC	LC/MS	any	5 g brain 5 g liver 5 g fat 5 g feed	Whirl-Pak® or Zip-top plastic bag	chilled/frozen in container with gel packs	5 days	Call laboratory if specimen is not one of those listed.
				50 – 100 mL milk	plastic container			
Melamine and cyanuric acid	NBC	GC/MS	any	20 g feed	Whirl-Pak® or Zip-top plastic bag	chilled/frozen in container with gel packs	5 - 7 days	
Mercury *see Mineral panel/screen - mercury*								
Pesticide screen: Metaldehyde	NBC	See organic chemical screen						

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Mineral panel screen (heavy metals): arsenic, cadmium, lead, selenium, thallium	NBC	ICP/MS	any	5 g liver and/or kidney	all solid environmental samples: Whirl-Pak® or Zip-top plastic bags (no metal contact)	water, tissues, serum/plasma/ urine, chilled/ frozen in insulated container with gel packs whole blood chilled (not frozen) in insulated container with gel packs other samples in sturdy shipping container.	3 days	
				5 g stomach/ rumen/crop contents				
				5 g suspect material				
				100 mL water	water samples: consult laboratory			
				100 g feed	tissue samples: Whirl-Pak® or Zip-top bag			
				2-5 mL whole blood	whole blood: EDTA vacutainer preferred			
Mineral panel screen-Complete (tissue, feed, biological fluids, 16 elements, selenium, but no mercury): arsenic, cadmium, calcium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, phosphorus, potassium, selenium, sodium, thallium, zinc	NBC	ICP/MS	any	100 g feed	all solid environmental samples: Whirl-Pak® or Zip-top plastic bags (no metal contact)	water, tissues, serum, plasma, urine chilled in insulated container with gel packs.	3 days	The postmortem specimens of choice are liver and kidney. Liver is the sample of choice for evaluation of nutritionally important elements (e.g., Ca, Cu, Zn, Fe, Mg, Mn, Mo), whereas kidney is best for evaluation of toxic elements (e.g., As, Pb, Hg, Tl). It is suggested that both samples be analyzed for optimal evaluation of sudden death or unthriftiness where clinical and/or diagnostic findings are inconclusive. For live animals both serum and whole blood should be submitted. Avoid contact with rubber if zinc is of interest. Herd-based testing is available.
				5 g suspect material				
				5 g stomach/ rumen/crop contents	tissue samples: Whirl-Pak® or Zip-top bag.			
				5 g liver and/or kidney				
				100 mL water	water samples: consult laboratory			
				2 - 5 mL urine	plastic container			
				2 mL serum and 2 mL whole blood	serum/plasma royal blue top vacutainer tubes			
Mineral panel screen (tissue or biopsy nutritional metal screen): calcium, cobalt, copper, iron, magnesium, manganese, molybdenum, selenium, zinc	NBC	ICP/MS	any	5 to 30 g liver or 100 mg wet weight liver biopsy	Whirl-Pak® or Zip-top bags	chilled/frozen in insulated container with gel packs	3 days	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Mineral panel screen (biological fluid metal screen): calcium, copper, soluble iron, magnesium, total phosphorus, selenium, sodium, potassium, zinc	NBC	ICP/MS	any	3 mL serum	take sample in royal blue top vacutainer tube, remove from clot, ship in clean royal blue top tube or plastic vial	chilled/frozen in insulated container with gel packs	3 days	This test provides total phosphorus (Pi) and nonprecipitable iron, rather than the total phosphorus and total iron reported in the serum mineral analysis. The test thus eliminates the need for a separate Pi analysis and removes the interference of hemolyzed cells on serum Fe. Herd-based testing is available.
Mineral panel: (ocular fluid) calcium, chloride, magnesium, sodium, phosphorus, potassium	NBC	ICP/MS	any	1-2 mL ocular fluid	plastic vial or red top tube	chilled/frozen in insulated container with gel packs	3 days	
Mineral screen: lead (blood)	NBC	AA	any	1 mL whole blood	Preferred: EDTA tube Also acceptable: heparin tube (See mineral panel)	chilled in insulated container with gel packs	1 - 3 days	
				tissues	plastic bag or container			
Mineral screen: mercury	NBC	AA	any	1 mL whole blood	Preferred: EDTA tube Second best: heparin tube	chilled (not frozen) in insulated container with gel packs	7 days	
				5 g liver and/or kidney	tissues in Whirl-Pak® or Zip-top plastic bag			
				5 g suspect material				

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Mineral screen: selenium (blood, milk, serum, tissue)	NBC	ICP/MS	any	2 mL whole blood	lavender top tube	chilled/frozen in insulated container with gel pack	7 days	Preferred sample is whole blood - send cold or frozen. Serum – spin down and separate before freezing Defined feed - please state the expected level of selenium (<10ppm). Results are intended for clinical or diagnostic use only.
				2 mL serum	royal blue serum tube or red top serum tube			
				5 g liver	plastic bag			
				5 mL milk	plastic container			
Mineral screen: selenium (feed)	NBC	ICP/MS	any	100 g feed (defined or undefined)	plastic bag	chilled/frozen in insulated container with gel pack	7 days	Defined feed - please state the expected level of selenium (<10ppm). Results are intended for clinical or diagnostic use only.
Mineral screen: single element, not mercury or selenium	NBC	ICP/MS AA	any	100 g feed	all solid environmental samples; Whirl-Pak® or Zip-top plastic bags (no metal contact)	water, tissues, serum, plasma, urine chilled in insulated container with gel packs	3 days	
				5 g suspect material				
				5 g ea. liver, kidney	tissue samples: Whirl-Pak® or Zip-top bag			
				5 g stomach/ rumen/crop contents				
				100 mL water	water samples: consult laboratory			
				2-5 mL urine	plastic container			
				2 mL serum and 2 mL whole blood	serum/plasma - royal blue top vacutainer tubes			

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Mineral screen: single element, non-routine	NBC	ICP/MS	any	100 g feed	all solid environmental samples; Whirl-Pak® or Zip-top plastic bags (no metal contact)	water, tissues, serum, plasma, urine chilled in insulated container with gel packs	3 days	
				5 g suspect material				
				5 g ea. liver, kidney	tissue samples: Whirl-Pak® or Zip-top bag			
				5 g stomach/ rumen/crop contents				
				100 mL water	water samples: consult laboratory			
				2-5 mL urine	plastic container			
				2 mL serum and 2 mL whole blood	serum/plasma - royal blue top vacutainer tubes,			
Monensin *(see 'Ionophore screen')*								
<u>Mycotoxins</u>: aflatoxins, DON, DAS, fumonisins, ochratoxin, T-2 toxin, zearalenone	NBC	LC/MS	any	1 kg feed, silage	if dry, submit in plastic bag or carton; if high moisture, ship frozen	insulated container with gel packs if high moisture and frozen	7-10 days	Representative sampling is extremely important for all feed analyses as mycotoxins are generally present in isolated spots. Collect feed from 8-12 different locations from a feed lot or storage bin. Mix it thoroughly and submit a kilogram for testing.
Nitrates /Nitrites (feed)	NBC	Test Strip	any	feed, forage	If dry, submit in plastic bag or carton; if high moisture, ship frozen	insulated container with gel packs if high moisture and frozen	3 days	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Nitrates /Nitrites (serum, ocular fluid)	NBC	Ion Chroma-tography	any	5 mL serum or blood	royal blue serum tube or red top serum tube	chilled/frozen in insulated container with gel packs	3 days	
				aqueous humor	plastic tube			
				whole eye	Zip-top or Whirl-Pak® bags			
Nonsteroidal Anti-inflammatory Screen	NBC	LC/MS	any	2 mL serum	red top tube	chilled/frozen in insulated container with gel packs	5 days	Includes: flunixin, ibuprofen, indomethacin, ketoprofen, meloxicam, mefanamic acid, oxyphenylbutazone, phenylbutazone, salicylic acid, tolmetin, diclofenac
				5 g liver	Whirl-Pak® bag			
				10 mL urine	plastic tube			
Organic Chemical Screen	NBC	GC/MS	any	5 mL serum	red top tube	chilled or frozen on gel packs	3 - 5 days	This screen tests for a wide variety of pesticides, drugs, pollutants, and industrial chemicals. For specific questions, please call the laboratory
				10 mL urine	plastic vial			
				100 g rumen/ stomach/crop contents, liver 400 g suspect material	Whirl-Pak® or Zip-top plastic bag			
				1 liter water	distilled water bottle			
PCBs (total)	NBC	GC/ECD	any	5 g tissues or biological samples, preferably liver, fat or brain	plastic or Whirl-Pak® bag	chilled/frozen in insulated container with gel packs	5 days	Quantitated Aroclor 1260
pH	NBC	pH Meter	water, biological fluids	100 mL water, GI contents	clean plastic container	chilled on gel packs	1 day	

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Plant identification	NBC	Examination	any	Whole plant, including roots, or rumen/GI contents; if weed in hay, submit representative sample of suspect plant material only	plastic bag if fresh	pressed or chilled if fresh	5 - 7 days	Contact laboratory before submittal. When submitting a fresh plant, roots should be wrapped in wet newspaper and the entire plant placed in a plastic bag. When chilled, the plant will arrive in good condition.
Selenium *(see mineral panel/screening)*								
Starlicide (3-chloro-p-toluidine HCI)	NBC	GC/MS	any	crop contents suspect bait	Whirl-Pak® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	5 days	
Strychnine	NBC	GC/MS	any	400 g suspect material	Whirl-Pack® or Zip-top plastic bag	chilled/frozen in insulated container with gel packs	5 days	
				100 g rumen, stomach or crop contents				
				100 g liver				
				10 mL urine	plastic tube			
				3 mL serum	red top tube			
<u>Tranquilizer Screen</u>: Xylazine, medetomidine ketamine, diazepam, acepromazine, hydomorphone, midazolam, fluphenazine, detomidine.	NBC	LC/MS	any	2 mL serum	red top tube	chilled/ frozen in insulated container with gel packs	5 - 7 days	
				5 g liver	plastic or Whirl-Pak® bag			

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUES/ SPECIMENS	CONTAINER	SHIPPING	EST. TURN AROUND	REMARKS
Vitamin E	NBC	HPLC	any	4 mL serum	royal blue serum or red top serum tube	chilled or frozen in insulated container with gel packs	7 days	Protect from light Serum-spin down and separate before freezing
				5 g liver	plastic bag	fresh, frozen, dry		
Vomitoxin (deoxynivalenol DON) (see mycotoxins)	NBC	LC/MS						
Warfarin (see Anticoagulant screen)	NBC	HPLC						
Zearalenone (see mycotoxins)	NBC	LC/MS						
Zinc (serum)	NBC	ICP/MS	any	1 mL serum	Take sample in royal blue top vacutainer tube; remove from clot, ship in clean royal blue top tube or plastic vial.	chilled/frozen in insulated container with gel packs	1 - 3 days	Zinc will leach out from other rubber-stopper tubes and invalidate the assay for zinc Please obtain the sample in a royal blue (trace metals) vacutainer tube (clot type), separate it from the clot, and transfer it to a clean royal blue top tube or plastic vial. Hemolyzed samples should be avoided.
Zinc phosphide	NBC	GC/MS	any	stomach contents bait feed	Whirl-Pak® or Zip-top plastic bag	chilled or frozen in insulated container with gel packs	5 days	

AVIAN VIROLOGY

PADLS provides diagnostic virology service for avian, mammalian and aquatic species. In the avian virology laboratory, virus isolation is conducted routinely in cell culture and embryonated chicken eggs (ECE). Assays used to identify viruses following isolation include, but are not limited to, hemagglutination (HA), hemagglutination inhibition (HI), direct/indirect Immunofluorescence assays (FA/IFA), agar gel immunodiffusion (AGID), monoclonal antibody based Dot-ELISA, and molecular PCR/real-time polymerase chain assays (PCR/rtPCR). Although virus isolation and identification is prearranged on a weekly schedule, emergency designated submissions are processed immediately upon arrival. The cell culture section maintains a variety of cell lines and SPF certified ECE to provide isolation and identification of viruses from a variety of avian sample types.

Tissues for virus isolation should be collected as aseptically as possible and placed in sterile tubes or whirlpak bags containing BHI. Likewise, samples suspected of containing Chlamydia should be placed in Chlamydia transport media (CTM). BHI and CTM are available from PADLS laboratories at no cost.

Note: A virus isolation and identification workup typically takes 1 to 3 weeks. Some viral pathogens, however, may require multiple serial passages in ECE or tissue culture to allow for amplification/identification or to confirm a negative result. Hence, some virus isolations may require more than a month to resolve.

Legend: * = preferred specimen
AGID-agar gel immunodiffusion, **CI**-Chlamydia isolation, **CTM**-Chlamydia transport media, **ECE**-embryonated chicken eggs, **FA/IFA**-fluorescent antibody/indirect fluorescent antibody; **PCR** = polymerase chain reaction, **VI**-virus isolation, **BHI**-brain heart infusion

TEST/AGENT	SITE	PROCEDURE	SPECIES	TISSUE/SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Fowl Adenovirus Type 1 (FAV–1)	NBC	VI	chickens quail turkeys	cloacal swab feces intestines kidney liver lung* pharynx tracheal swab	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 – 14 days	Test is set up M - F BHI is available through NBC, PSU and PVL
	PSU	VI						
Fowl Adenovirus Type 2: (FAV-2) Hemorrhagic Enteritis Virus Avian Splenomegaly and Marble Spleen Disease	PSU	AGID	chickens pheasants turkeys,	intestine spleen*	Leak-proof container with BHI	overnight shipment on ice Do not freeze	48 – 72 hours	Test is set up M - F
Avian Encephalomyelitis Virus (AEV)	PSU	FA VI	chickens pheasants quail turkeys	brain*	Leak-proof container with BHI	overnight shipment on ice Do not freeze	21 - 28 days	Test is set up on M – F PCR can be performed by arrangement. See under Molecular Diagnostics

TEST/AGENT	SITE	PROCEDURE	SPECIES	TISSUE/SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Avian Influenza	NBC	VI	chickens ducks pheasants, quail turkeys, wild birds	air sac cloacal swab intestine lung sinus trachea* tracheal swabs	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up M - F at NBC and PSU VI test is set M-Th at PVL Serotyping is sent to NVSL PCR can be performed by arrangement. See under Molecular Diagnostics Tracheal swabs are preferred for PCR
	PSU	Dot-ELISA HA/HI IFA VI						
	PVL	VI						
Avian Splenomegaly and Marble Spleen Disease (AAV-2)	PSU	AGID FA	chickens chukars, peafowl pheasants	spleen*	Leak-proof with BHI	\overnight shipment on ice Do not freeze	7 days	Test is set up M - F
Chlamydophila: psittaci	PSU	CI	caged/wild birds ducks other fowl pigeons, psittacines turkeys	air sac feces* liver pharyngeal/choanal swab spleen	Leak-proof with CTM	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up M – F PCR can be performed by arrangement. See under Molecular Diagnostics
Duck Enteric Virus (DEV)	PSU	VI	ducks, geese	feces intestine	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 – 14 days	Test is set up M - F
Herpesvirus: non-psittacine	PSU	FA VI	cranes falcons passeriforms, pet birds, pigeons quail, raptors	All organs with gross lesions, oropharyngeal swab	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up M - F

TEST/AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Infectious Bronchitis Virus (IBV)	NBC	VI	chickens	cecal cecal tonsil tonsil, trach./cloacal swabs* trachea lung kidney* oviduct	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 - 21days	PCR can be performed by arrangement. See under Molecular Diagnostics
	PSU	Dot-ELISA IFA Genotyping (S1 gene sequencing) VI						Test is set up M - F Serotyping for only Mass, Conn and Ark 99 PCR can be performed by arrangement. See under Molecular Diagnostics
Infectious Bursal Virus Disease (IBDV)	NBC PSU	VI	chickens, turkeys	bursa* cecal tonsil spleen kidney	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 - 14 days	PCR can be performed by arrangement. See under Molecular Diagnostics
Infectious Laryngotracheitis Virus (ILTV)	NBC PSU	VI	chickens, guinea fowl, peafowl, pheasants	lung trachea* tracheal exudate	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up M - F at NBC Test is set up T-Th at PSU
Orthoreovirus	PSU	VI FA	chickens, Muscovy ducks pigeons turkeys	feces intestine* liver lung pancreas	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up M - F
Paramyxovirus Type 1: Newcastle Disease	NBC PSU PVL	VI PCR	caged/wild birds chicken pigeons turkey	air sac brain kidney liver lung spleen tracheal/cloacal swabs*	Leak-proof with BHI	overnight shipment on ice Do not freeze	3 - 14 days	Test is set up M - F at NBC and PSU Pathotyping sent to NVSL
Paramyxovirus Type 2 (Yucaipa) Paramyxovirus Type 3	PSU	HA HI VI	caged/wild birds chicken turkey	air sac feces lung spleen trachea tracheal/cloacal swabs*	Leak-proof with BHI	overnight shipment on ice Do not freeze	3 - 14 days	Test is set up M - F

TEST/AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Poxvirus	NBC PSU	VI	caged/wild birds chicken turkey	nodular lesions Scab with underlying epithelium* upper respiratory tract	Leak-proof with BHI	overnight shipment on ice Do not freeze	10 - 14 days	Test is set up M - F at NBC and PSU
Psittacine Herpesvirus	PSU	VI FA	psittacine	esophagus intestine liver* lung spleen	Leak-proof with BHI	overnight shipment on ice Do not freeze	5 - 14 days	Test is set up T - F at PSU
Reovirus Viral Arthritis	NBC PSU	VI	chicken	cloaca feces intestines lung spleen synovial joint fluids* tendon sheath	Leak-proof with BHI	overnight shipment on ice Do not freeze	3 - 14 days	Test is set up M-F at NBC Test is set up T-F at PSU
Rotavirus	PSU	IFA VI	chicken pheasant turkeys	feces* intestine	Leak-proof with BHI	overnight shipment on ice Do not freeze	2 – 14 days	Test is set up M – F at PSU
Turkey Viral Hepatitis: picornavirus	PSU	VI	turkey	feces intestine liver* pancreas	Leak-proof with BHI	overnight shipment on ice Do not freeze	7 - 21 days	Test is set up M - F at PSU

MAMMALIAN VIROLOGY

The Mammalian Virology Laboratory provides isolation and identification of viruses from a variety of specimens from different species. Virus isolation is conducted in cell culture on a weekly basis. Virus identification is carried out using immunology and/or molecular assays. The virology laboratory does not accept specimens from canine or feline species unless they are considered wildlife species or involved in a zoonotic problem. Tissues for virus isolation should be collected as aseptically as possible. Viral and chlamydial transport media are available at no cost upon request from PADLS laboratories.

Note: For some specimens, virus isolations may require multiple serial cell passages for amplification and expression of viable and measurable virus in a specimen. Hence, certain virus isolations may require 28 days or longer to process.

Legend: * = preferred specimen

AGID = agar gel immunodiffusion
BHI = brain heart infusion
CI = chlamydia isolation
CTM = chlamydia transport media
FA = fluorescent antibody
LA = latex agglutination
PAGE = polyacrylamide gel electrophoresis
PCR = polymerase chain reaction
VI = virus isolation

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Bluetongue virus; Epizootic hemorrhagic disease	PSU	VI	deer ovine	blood* bone marrow fetal heart heparinized lung lymph nodes semen serum spleen Vaginal secretions from dam	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up on T Serotypes in USA: 2, 10, 11, 13, 17 (see Molecular Diagnostics)
Border disease virus (hairy shaker): flavivirus	PSU	VI FA	ovine	bone marrow brain spleen unclotted blood*	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up on T
Bovine mammalitis virus (BoHV-2): herpesvirus	PSU	VI	Bovine	fluid exudates from lesion* lesions lesion scrapings teat swab	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 21 days	Test is set up on T

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Bovine viral diarrhea (BVD)	NBC PVL	IHC	bovine	ear notch, ¼ - ½ inch. Full thickness ear punch or ear notch ½ inch full thickness	red-top tube in formalin	standard shipping	5 – 10 days	Samples in formalin should be shipped within a week of collection
	PSU PVL	Ear notch antigen-capture ELISA	bovine—all ages		red-top tube or sterile container	overnight on ice or gel packs	5 days (indicate if priority)	Samples can be submitted dry and should be shipped immediately after collection or frozen and shipped within 4 weeks. **Dry samples are preferred.** **BVD serum antigen-capture ELISA will done on any serum samples deemed inappropriate for piBVD microplate ***Animals under 3 mos of age should not be tested by serum ELISA**
		Serum antigen-capture ELISA	*bovine>3 months	red-top tube or serum (2-3 mL)	red-top tube			
	PSU	Microplate test for persistently infected (PI) animals	bovine	1 mL sterile serum	red-top tube	overnight on ice or gel packs **directly to PSU**	10 – 20 days	**BVD serum antigen-capture ELISA will done on any serum samples deemed inappropriate for piBVD microplate (for PCR see under Molecular Diagnostics)
		Viral Isolation (VI)	bovine	fetal tissues lung mesenteric lymph nodes nasal secretions oral lesions spleen vaginal secretions whole blood	leak-proof container w/VTM lavender-top EDTA vacutainer for whole blood green-top Heparin tube			
Chlamydophila: psittacosis	PSU	CI	ovine bovine caprine	cotyledon feces/intestinal material fetal tissues liver lung nasal swab placenta spleen	leak-proof container with CTM	overnight shipment on ice Do not freeze	CI: 7 - 14 days	Test is set up on T (for PCR see under Molecular Diagnostics)
Contagious ecthyma (ORF): parapoxvirus	PSU	VI	bovine caprine	lesions on lip* scabs	leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days	Test is set up on T

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Equine rhino-pneumonitis: herpesvirus (EHV 1, 4)	PSU	VI	equine	lung* lymph nodes nasal secretions placenta-fetus thymus*	leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days	Test is set up on T (for PCR see under Molecular Diagnostics)
	PVL	FA		brain (unstained slide)	slide mailer	standard delivery	FA: 2 - 3 days	
Equine rhinovirus	PSU	VI	equine	nasal secretions*	leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days	Test is set up on T
Equine viral arteritis virus: flavivirus	PSU	VI	equine	conjunctival sac fetus lymph nodes nasal secretions nostril pharyngeal secretions placenta semen spleen whole blood	Leak-proof container with BHI, Purple top EDTA vacutainer for whole blood	overnight shipment on ice Do not freeze	VI: 14 -21 days	Test is set up on T
Infectious bovine rhinotracheitis virus	PSU	VI FA	bovine	aborted fetus brain kidney liver lung* nasal secretions ocular secretions* semen serum spleen tracheal segment tracheal swab vaginal secretions	leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days FA: 2 - 3 days	Test is set up on T
Influenza virus	PSU	FA HA VI	equine porcine	lung nasal secretions ocular secretions* tracheal swab	leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days	Test is set up on T

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Neonatal diarrhea -Coronaviruses	PSU PVL	ELISA FA	bovine	feces (10mL) small intestine* feces	feces in leak proof plastic container tissues for FA in BHI in leak-proof container	overnight shipment on ice Do not freeze	2 - 3 days	ELISA is set up on T, Th Do not use glass containers for feces as they may explode
Neonatal diarrhea -Parvoviruses	PSU	VI	bovine, porcine	feces heart intestinal mucosa regional lymph nodes	Leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days	Test is set up on T
Neonatal diarrhea -Rotavirus	PSU PVL	ELISA	bovine porcine	feces small intestine feces	Feces in leak proof plastic container	overnight shipment on ice Do not freeze	2 - 3 days	Do not use glass containers for feces as they may explode
Parainfluenza virus: type 3 (PI_3)	PSU	FA VI	bovine ovine	lung nasal secretions ocular secretions tracheal swab	Leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days FA: 2 - 3 days	Test is set up on T PCR can be performed by arrangement. See under Molecular Diagnostics
Parvovirus (see also neonatal diarrhea)	PSU	FA VI	bovine porcine	lung (mummified fetus) serum from dam or sow vaginal secretions	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up on T
Porcine Circovirus type 2 (PCV-2)	PSU PVL	FA VI	porcine	lung lymph nodes spleen tonsil	Leak-proof container with BHI	overnight shipment on ice Do not freeze	VI: 7 - 14 days FA: 2 - 3 days	PCR can be performed by arrangement. See under Molecular Diagnostics
Porcine inclusion body rhinitis: cytomegalovirus	PSU	VI	porcine	nasal mucosa turbinate	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up on T
Porcine respiratory and reproductive syndrome: Arterivirus; Lelystad agent	NBC PSU	FA VI	porcine	lung serum tonsil	Leak-proof container with BHI	overnight shipment on ice Do not freeze	FA: 2-3 days VI: 14 – 21 days	VI is set up on T PCR is run on F (for PCR see under Molecular Diagnostics)

TEST/ AGENT	SITE	PROCEDURE	SPECIES	TISSUE/ SPECIMEN	CONTAINER	SHIPPING**	EST. TURN AROUND (SEE NOTE)	REMARKS
Poxviruses: cowpox, vaccinia, orthopox, parapox, pseudo cowpox, ORF, bovine papular stomatitis	PSU	VI	bovine porcine rabbit	crusts lesions lesion scrapings liver spleen vesicular fluids	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up on T Debride lesions to obtain viable cells with virus
Pseudorabies (herpesvirus)	PSU	VI FA	bovine ovine porcine	brain (midbrain, pons, medulla) lung nasal secretions serum spinal cord (sheep and cattle) spleen (swine) tonsil vaginal secretion	Leak-proof container with BHI	overnight shipment on ice Do not freeze	FA: 2 - 3 days VI: 7 - 14 days	Test is set up on T
Reovirus	PSU	VI	bovine equine	feces intestinal mucosa nasal secretions pharyngeal secretions	Leak-proof container with BHI	overnight shipment on ice Do not freeze	7 - 14 days	Test is set up on T
Transmissible gastroenteritis: coronavirus	PSU	FA VI	porcine	feces ileum jejunum nasal secretions	Leak-proof container with BHI	overnight shipment on ice Do not freeze	FA: 2 - 3 days VI: 7 - 14 days	Test is set up on T
Unknown virus	PSU	VI	any species	all tissues with lesions	Leak -proof container with BHI	overnight shipment on ice Do not freeze	3 - 45 days serial passages required	Test is set up when cell cultures are prepared
Vesicular stomatitis: rhabdovirus	PSU	VI	bovine equine	epithelial covering of lesions regional lymph nodes tongue swab vesicular fluid whole blood	Leak-proof container with BHI	overnight shipment on ice Do not freeze		**Reportable virus**

****If shipping to PSU, do not use the US Postal Service**