



**Aquaculture Pathology Laboratory  
School of Animal and Comparative Biomedical Sciences  
University of Arizona**

**Laboratory Diagnostic Service Price List  
For Penaeid and Freshwater Shrimp and other Crustaceans  
Effective July 1, 2015**

By submitting samples to the University of Arizona Aquaculture Pathology Laboratory (UAZ-APL), you acknowledge that the samples become the property of UAZ-APL. Prepared Hematoxylin & Eosin slides and *in situ* hybridization slides are kept as part of the laboratory records.

**Histological Studies**

Definition: A subset is defined as any group of specimens from the same pond, tank or source with the same collection date.

**1. Diagnostic procedures by direct microscopy of wet mounts, tissue smears, or by routine histopathology.**

**Pricing is per subset.**

- |  |               |
|--|---------------|
| a. Eggs, larvae, postlarvae (up to PL 30) - 1-50 shrimp/subset and early juveniles (> PL31 ~0.9 grams) 1-10 shrimp/subset.         | \$160.00      |
| b. Juveniles (~1gram to <12 grams); first 1-5 shrimp/subset: Each additional shrimp within this subset will be charged at \$32.00. | \$160.00      |
| c. Adults (>12 grams); first 1-5 shrimp/subset: Each additional shrimp within this subset will be charged at \$38.00.              | \$190.00      |
| d. Duplicate Hematoxylin and Eosin (H&E) slides.   | \$12.00/slide |
| e. Tissues received in cassettes for processing, sectioning, H&E staining only (no dissection, no analysis, 1 slide/block).        | \$15.00/block |
| f. Paraffin blocks received for sectioning, H&E staining and analysis (no processing).   | \$30.00/block |
| g. Wet mounts / gross observations.  | \$75.00/hour  |
| h. Special stains – please call 520-621-4438 or email aquapath@ag.arizona.edu for quotation.                                       |               |

**2. *In situ* hybridization (gene probe) for selected pathogens**

WSSV, IHNV, TSV, YHV, HPV, MBV, IMNV, PvNV, Rickettsia-like bacteria and

*Hepatobacter penaei* (NHP), *Enterocytozoon hepatopenaei* (EHP)

- a. \$70.00 basic set-up fee; plus
- b. \$30.00 per slide

**Standard (conventional) PCR and Real-time (quantitative) qPCR testing**

**Definition:** A sample is defined as one “specimen” submitted for testing. This can be one frozen shrimp, one tube with hemolymph from one shrimp, one tube of pooled hemolymph from up to 5 juvenile shrimp or broodstock, a pooled homogenate of PLs, etc. Client must indicate if samples are to be assayed as pooled or individual samples.

**1. Standard PCR (RT-PCR) detection for selected pathogens**

**DNA systemic pathogens:** IHNV, WSSV, *Spiroplasma penaei*, Crayfish plague (*A. astaci*), Rickettsia-like bacteria

**DNA enteric pathogens:** MBV, BP, HPV, SMV, *Hepatobacter penaei* (NHP), *Vibrio harveyi*, *V. parahaemolyticus*, *V. parahaemolyticus* (AHPND strains), *Enterocytozoon hepatopenaei* (EHP)

**RNA viruses:** TSV, YHV, GAV, IMNV, PvNV, MoV, LSNV, MrNV

**Proper sample(s) for:**

**DNA/RNA systemic pathogens:** Pleopods, hemolymph, muscle tissue or whole postlarvae.

**DNA enteric pathogens:** Hepatopancreas, feces or whole postlarvae.

- a. Shrimp tissue (ethanol preserved or frozen), hemolymph, feed & feces requiring extraction. \$43.00/pathogen per sample
- b. Either a pair of DNA systemic pathogens; a pair of DNA enteric pathogens; or a pair of RNA viruses from the same extracted sample. (e.g. IHNV/WSSV, TSV/YHV or BP/MBV) \$70.00/pathogen per sample pair
- c. Additional pathogens from the same extracted sample. \$30.00/pathogen per sample
- d. Extracted DNA or RNA sample. \$30.00/pathogen per sample
- e. Water samples for either RNA or DNA pathogens. \$50.00/filter per sample plus the cost of testing of above pathogen(s)

**2. Real Time qPCR (qRT-PCR) for selected pathogens**

**DNA systemic pathogens:** IHNV & WSSV

**DNA enteric pathogens:** MBV, HPV & *Hepatobacter penaei* (NHP), *V. parahaemolyticus* (EMS/AHPND strains)

**RNA viruses:** TSV, YHV & IMNV

**Proper sample for:**

**DNA/RNA systemic pathogens:** Pleopods, hemolymph, muscle tissue or whole postlarvae.

**DNA enteric pathogens:** Hepatopancreas, feces or whole postlarvae.

- a. Basic set-up fee; in addition to cost of procedure. \$70.00
- b. Shrimp tissue (ethanol preserved or frozen), hemolymph, feed & feces that require extraction. \$43.00/pathogen per sample
- c. Either a pair of DNA systemic pathogens; a pair of DNA enteric pathogens; or a pair of RNA viruses from the same extracted sample. (e.g. IHNV/WSSV, TSV/YHV or HPV/MBV) \$70.00/pathogen per sample pair
- d. Additional pathogens from the same extracted sample. \$30.00/pathogen per sample
- e. Extracted DNA or RNA sample. \$30.00/pathogen per sample
- f. Water samples for either DNA or RNA pathogens \$50.00/filter per sample plus cost of testing of above pathogen(s) plus a \$70 set-up fee

**Microbiology**

**1. Molecular identification for bacteria based on 16S rRNA sequencing**

- a. Identification of a cultured bacterial isolate by direct sequencing; includes DNA extraction and preparation. \$45.00
- b. Data analysis is based on the number of samples received. \$75.00/hour
- c. Identification of a mixed bacterial culture - call 520-621-4438 or email aquapath@ag.arizona.edu for a quotation.
- d. Bacterial identification from tissue samples - call 520-621-4438 or email aquapath@ag.arizona.edu, for a quotation.

**2. Bacteriology testing** (e.g., MIC for potential drug vs a panel of isolates, Probiotic testing, plate counts, antibiotic sensitivity, etc.), please call 520-621-4438 or email aquapath@ag.arizona.edu for a quote.

**Positive control tissue, plasmids, etc.**

- a. RNA and DNA tissues in ethanol \$150.00/gram or plasmid
- b. Plasmid DNA \$150.00/ $\mu$ g DNA
- c. Bacterial cultures \$300.00/culture
- d. Paraffin blocks (inquire regarding available pathogens) \$150.00/block
- e. QA documents \$ 10.00/item
- f. Client is responsible for shipping charges.

## **Challenge studies with selected pathogens of shrimp**

UAZ has challenge models available for TSV, WSSV, IMNV, YHV, IHNV and the strain of *Vibrio parahaemolyticus* that causes acute hepatopancreatic necrosis disease (AHPND) for evaluating resistance in selected families and for testing feed additives (probiotics, prebiotics, etc.). To inquire about a study, please contact us by telephone (520-626-1390/ 520-621-4438) or by email (bwhite@ag.arizona.edu or aquapath@ag.arizona.edu), so that a study can be designed for your application.

## **Diagnostic services for finfish/mollusc diseases**

Inquire by telephone (520-621-4438) or by email (aquapath@ag.arizona.edu) regarding availability of the testing and to obtain a quotation.

## **Sample Turnaround time**

Samples are processed in the order that they are received.

1. PCR- routine testing is 3-7 working days for testing under normal workloads. Upon request, an estimated turn around for the results will be determined upon receipt of the sample. Requests of less than 3 working days are considered as rush and the rush fee will apply (see rush fee information below).
2. Histological analysis- depending on the workload, the results will be available 2-3 weeks from the time the sample(s) are received at the laboratory. Upon request, rush services are available for histological analysis.
3. Microbiology/Bacteriology – results are dependent on type of testing requested.

## **Confidentiality**

All results are considered confidential. Results and final reports will only be released to those persons indicated on the Sample Submission Form. Requests from other sources will be directed to the client submitting the samples. Written permission will be required from the original client submitting the samples.

## **Administrative services**

1. The UAZ-APL laboratory operates on a cost recovery basis. Therefore,
  - a. All invoices are due upon receipt and payment will be expected prior to the release of the final report.
  - b. On cases exceeding \$1,000.00 (USD) a pre-payment of the total estimated cost of the case may be required before beginning the testing of the samples. This payment is necessary to cover the costs needed to run the diagnostic tests.
2. Rush fees  
Testing can be expedited upon request. A rush fee for the handling of expedited cases will be charged at 50% above the total cost of the case.
3. Administrative fees
  - a. Upon request, reports will be sent by courier (Federal Express or DHL), if an account number is provided.
  - b. Multiple copies of the original report (with same address). \$ 1.50 each
  - c. Multiple copies of the original report (with different address or addresses). \$ 2.50 each
  - d. Duplicate reports (after the release of the final report). \$ 5.00 each
  - e. Notary of reports \$10.00
  - f. A 3% processing fee will be applied to all credit card payments.
  - g. International wire transfer fees are charged by our bank on wire transfers. Therefore, this fee will be applied to invoices paid by bank wire transfer. Rates differ depending upon the country and amount of the wire transfer.
4. Questions regarding this Price List can be directed to: aquapath@ag.arizona.edu

## **Special note regarding domestic (US) commodity samples for export testing:**

- a. The listed PCR testing/histological analysis costs will apply for all export testing.
- b. The samples are to be sent to the UAZ-APL by a Federal or APHIS-accredited veterinarian, a State Veterinarian, or personnel appropriately designated and supervised by the veterinarian.
- c. The requested information regarding the facility and the samples, on the Sample Submission Form, will need to be filled out and accompany the samples to the laboratory.
- d. Questions regarding # b, above, should not be directed to the UAZ-APL personnel but rather to the USDA/APHIS/Veterinary Services:
  1. New Mexico/Arizona Office: 505-761-3160
  2. District 6 Service Center: 916-854-3900
  3. Dr. Jeff Hoffman: 480-253-1457