



360 DIAGNOSTICS™

Zebrafish Testing Services



FishVet
Group

The zebrafish has proven to be a powerful research tool in such fields as genetics, developmental biology, toxicology, and neuroscience. Therefore, having a zebrafish health surveillance program is a critical component in ensuring that a health issue does not compromise the results of this research.

Through a strategic alliance with the Fish Vet Group (FVG), the world's leading dedicated aquaculture health provider, Charles River now offers the most comprehensive zebrafish testing services to help proactively monitor the health of zebrafish colonies. With over 20 years of experience in aquatic animal health management in support of aquaculture around the world, FVG can apply this proven approach to diagnostics, veterinary science, and biosecurity to aquatic research programs.

Available Services:

- Signature Inspection
- Diagnostic investigations
- Infectious disease PCR
- Standard and research histopathology
- Microbiology, virology, and parasitology
- Program development and consultation

EVERY STEP OF THE WAY

Signature Inspection

Includes:

- Gross necropsy with skin scrape, gill clip, and intestinal wet mounts inspected for parasites
- Aerobic bacterial cultures of spleen/kidney for primary and opportunistic bacteria, which includes the identification of up to three dominant isolates
- Virus isolation from pooled tissues on two cell lines; this includes molecular identification if CPE exists
- Surveillance for known pathogens of zebrafish (e.g., *Mycobacteria* spp., *E. ictulari*, *F. columnare*) using highly sensitive PCR-based assays
- Histopathologic examination for infectious and non-infectious disease

Signature Inspection

Most aquatic systems have conditions that favor the spread of pathogenic organisms, most of which are known to be zoonotic. The Fish Vet Group advocates frequent screening utilizing a health monitoring program that combines disease surveillance and screening methodologies to characterize the health status within a system or facility.

Our Signature Inspection service is a science-based approach to health monitoring that applies validated testing methodology to sample populations within a facility. The Signature Inspection provides a 95% confidence level in detection, assuming pathogen prevalence is at least 5%. This approach to health monitoring in aquatic systems is based on the recommendations of the Office International Des Epizooties (OIE) and the American Fisheries Society-Fish Health Section.

Diagnostic Investigations

This service is a targeted investigation to understand the cause of an acute mortality event or failure to thrive, as opposed to defining the pathogen landscape via the Signature Inspection. It is performed on fish submitted live (if possible), and includes histology, microbiology, virology, and necropsy/parasite analysis.

Infectious Disease PCR

PCR is an important component of any health surveillance program due to its speed, accuracy and precision. It is commonly utilized for targeted surveillance for a specific agent or agents, or for confirmatory testing. Our high-throughput molecular assays are capable of rapidly testing for over 70 aquatic pathogens, including bacteria, viruses, fungi, and parasites. PCR testing is available for individual agents or as part of a panel.

Standard and Research Histopathology

Standard pathology (including necropsy and histopathology) is often used to help identify the possible cause of sick or moribund animals, including non-infectious disease, or to correlate findings of other assays such as PCR, microbiology, or virology. Because most zebrafish colonies are housed in closed systems, it is critical that an accurate diagnostic assessment is conducted quickly to minimize the spread of disease to the remaining colony.

Research histopathology is geared towards supporting studies by allowing investigators to submit samples for processing, and then digitally access the results and related images. The secure, cloud-based digital pathology system utilizes Aperio software to help researchers more rapidly assess subtle morphologic changes across study groups.

Microbiology, Virology, and Parasitology

The laboratory maintains a wide array of bacteria culture media and multiple cell lines for viral isolation. Staff employ a customized approach by selecting the appropriate culture media and conditions to increase the detection level of the agents in question. Coupled with broad-based culture and microscopy techniques, samples can be screened and pathogens detected with a high level of confidence. Additionally, the laboratory offers a USDA-approved spring viremia of carp (SVC) assay for screening fish colonies and obtaining health certification prior to international export.

Program Development and Consultation

A comprehensive health monitoring program continuously investigates fish for specific pathogens and opportunistic agents, and requires combining multiple disease surveillance methodologies to fully characterize the health landscape of a population. Our experts will work with you to evaluate your facility's risks and options, and develop an effective monitoring program.