

BIOTECHNOLOGY AND THE DIAGNOSIS AND SURVEILLANCE OF AQUATIC ANIMAL PATHOGENS

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Over the past two decades, immunological and molecular reagents have made an increasing contribution to the development and improvement of diagnostic tests used for the detection and identification of pathogens of aquatic organisms. These tests are either based on the use of monoclonal/polyclonal antibodies directed against pathogen epitopes (e.g. ELISA, immuno-blot, immuno-histochemistry) or based on amplification/detection of nucleic acid sequence(s) specific to the target pathogens (e.g. polymerase chain reaction (PCR), real-time PCR, loop-mediated isothermal amplification (LAMP), *in situ* hybridisation (Luminex).

The laboratory methods that are considered to be international standards for the detection of aquatic animal diseases are described in the OIE *Aquatic Manual*.

Various assays have been developed in recent years for the major pathogens of finfish (e.g. infectious pancreatic necrosis virus, infectious hematopoietic necrosis virus, viral hemorrhagic septicemia virus, infectious salmon anemia virus, *Piscirickettsia salmonis*, *Vibrio* spp, *Aeromonas* spp.,etc.), molluscs (*Bonamia* spp, *Martelia* spp, *Mikrocytos mackini*, *Perkinsus* spp, ostreid herpesvirus-1, abalone herpes-like virus etc.) and crustaceans (e.g. white spot syndrome virus, yellow head virus, infectious myonecrosis virus etc.). Many of these tests have been implemented into routine practice in National and State Government diagnostic laboratories, in private veterinary and pathology clinics as well as in research laboratories around the world. Aquatic animal disease management plans, including health surveillance, export certification, and biosecurity measures, increasingly rely on the use of sensitive and specific biotechnology-based diagnostic tests. As a case study, this presentation describes the emerging abalone herpes-like virus occurring in Australia and the development of diagnostic tests for its detection, study and management.

Keywords: diagnostic tests – aquatic pathogens – OIE *Aquatic Manual*

