



# Common Veterinary Diagnostic Tests

## ELISA

The ELISA (Enzyme Linked Immunosorbent Assay) is one of the most readily available and widely used point of care tests in veterinary medicine due to its quick results and ease of use. In animal shelters, they are used to detect antibodies or antigens of common pathogens, may be used to assess antibody titers, or even to detect hormone levels. In general, ELISA tests are pre-coated by the manufacturer with an antibody or antigen, which captures and binds the antigen or antibody in the patient's sample, as well as an enzyme substrate resulting in a color change. Commonly used SNAP® tests are flow devices that utilize ELISA technologies.

## Molecular Assays

PCR, RT-PCR, and real-time PCR tests (Polymerase Chain Reaction) can detect tiny quantities of nucleic acid of an infectious agent, making them extremely sensitive diagnostic tests. These tests may even identify subclinical carriers or those with latent infections. However, positive PCR results do not definitively indicate whether the organism detected is the cause of an animal's clinical signs or even if the results indicate an active infection. For instance, a positive PCR result indicates the presence of a pathogen but not whether it is alive or dead. Furthermore, extra care must be taken to avoid sample contamination as even a small amount of pathogen will result in a positive test.

## Serum Antibody Titers

Antibodies are part of an immune response to disease. Titers may help determine whether an animal has protective levels of antibodies against a particular pathogen. These tests are very useful in performing risk assessments in infectious disease outbreaks. Important limitations include:

- Titers cannot distinguish between maternal antibodies and vaccination or previous exposure to the particular pathogen.
- A single titer measurement cannot distinguish between previous and current, active infection.
- The lack of "protective" titers may not mean that the animal is susceptible to disease.
- Titer detection alone does not establish the cause of disease.

## Culture

Microbiological culture involves using a medium to replicate infectious organisms, most commonly bacterial or fungal agents. Other than ringworm which can be cultured in-house, most cultures are sent to diagnostic laboratories. Cultures can identify live pathogens and their species; an antibiotic sensitivity test, performed on the cultured pathogen, can aid in determining which treatments are

likely to be effective. Culture and sensitivity testing may be indicated to guide treatment if first-line antibiotics have not achieved proper response in respiratory, skin, or GI diseases. Extra care should be taken to avoid sample contamination and concurrent use of antibiotics must be considered when interpreting results.