

# How to Create a Comprehensive Serology Testing Plan

Prior to diagnostic testing, it's important to determine what factors would lead to the most comprehensive assessment of an animal's condition. Each case must be evaluated individually in order to establish the most practical diagnostic testing route.

## Collection Guidelines

### *What is an ideal serum sample?*

Since most serologic testing utilizes serum, blood should be collected in a clot tube (i.e. red top or tiger striped tube). The serum should be removed from the clot and transferred to a blood tube that has no additive. Non-hemolyzed samples are best for testing, but generally samples that are mildly hemolyzed can be used.

## General Serology Guidelines

### *What does it mean if antibodies to an agent are identified through serology testing?*

Possible considerations:

- If there are clinical signs associated with the agent in question:
  - Suspected agent may be cause of clinical signs.
- If there are no clinical signs associated with the agent in question:
  - Animal may be harboring the agent, but be asymptomatic.
  - Animal may have been exposed, but its body fought off the suspected agent.

## Prior to Testing

### *Should additional samples be collected, prior to therapeutic treatment, in case further testing is needed?*

Possible considerations:

- Is a different type of sample needed for possible further tests?
  - What is the most practical sample to collect?
    - Example: Tissues may lead to a more definitive result, but are they practical to collect?
- Establish a plan for sample collection based on possible further testing:
  - Collect multiple samples of the same type at the same time
    - Example: Blood to be used for additional testing
  - Collect multiple samples of the same type over a certain period of time
    - Example: Paired blood samples to evaluate titer levels
  - Collect different types of samples at the same time
    - Example: Blood and urine, even if only blood tests are initially requested

## Result Interpretation and Follow Up Questions

### *Following testing, what could results mean?*

Possible considerations:

- If a serology screening yields a positive result for antibodies to an agent:
  - Would a rtPCR test lead to a more comprehensive understanding of the situation?
    - Example: Following a positive serology test for leptospirosis, a rtPCR test on urine may hopefully identify and confirm the cause of the animal's illness.
    - Example: Following a positive serology test for Johne's Disease, a rtPCR test on feces may yield a negative result because the organism is shed intermittently, even though the animal actually has Johne's Disease.
- If a serology screening yields a negative result for antibodies to an agent:
  - Has there been a sufficient incubation period for the agent to produce antibodies?
    - Should testing be conducted again, at a later time?
  - Does the agent primarily stimulate a cell mediated immunity (fungal infections) instead of producing antibodies?
  - Consider the testing methodology – more sensitive tests have some false positives, but some specific tests have some false negatives.