

NAME:

ELISA vs PCR

ELISA

- Quantitative diagnostic tool for history of infection
- Measures proteins
- Detects presence of pathogenic specific antibodies
- Can also be used for detection of antibodies
- Longer detection time window
- Often used in the field due to easy-to-use detection method for large and small laboratories
- Making samples and transport of samples is easy as antibodies in blood are relatively stable.
- Pathogen may/may not be present in the organism any longer
- Ex: Herd health can be monitored by screening for changes in antibody status.
- Can test positive for antibodies long after the infection has left the herd – in some cases an organism's entire life
- By comparing previous antibody levels with current status, one can gain insight into whether a new virus or pathogen infection has recently occurred in the herd
- Disease transmittance cannot be identified during the early stages of the disease cycle
- Need a protein/antibody of interest, coat a plate, apply the corresponding antibody/protein respectively, which either has a reporter conjugated to it, or add another detection antibody.
 - Commonly recommended

PCR

- Qualitative diagnostic tool for current status of infection
- Short window of time
- Can tell whether genetic mutation or a pathogen is present or not
- Valuable in early stages of infection when antibodies have not yet been built
- Confirms an organism's clinical disease, a current infection, or diagnosis of death
- Amplifies very small trace of DNA and RNA which are then detected in the assay
- Can make DNA from RNA using the enzyme, reverse transcriptase
- Sample quality is very critical as DNA and RNA are not very stable
- To make it quantitative, special thermocyclers and pretreatment of the starting product is required
- Not the tool of choice in resource-low settings (need fridge/freezer for enzymes, buffers, thermocycler and facilities to run a gel)
- Not recommended unless absolutely essential

- Diagnostic tools
- Detects diseases
- Results are available very quickly – in a matter of hours
- Together, ELISA and PCR give a more complete picture of the infection