

## **SAVC DAY 1 SKILLS FOR THE VETERINARY TECHNOLOGIST**

### **GENERAL LABORATORY PRACTISE**

- Understanding and knowledge of basic laboratory rules
- Understanding of basic principles of quality control
- Correct and appropriate receipt, handling, labelling and storage of samples
- Follow instructions according to Standard Operating Procedures
- Conduct work practices in an ethical and professional manner and in accordance with relevant legislation, regulation and codes of practice
- Understanding of use, cleaning, maintenance and calibration of laboratory equipment
- Understanding of laboratory safety and biohazards
- Maintain security, integrity, traceability and identity of samples, sub-samples and work records
- Set up and use a microscope correctly (Inverted / stereo and light microscopes)
- Work with zoonotic and infectious diseases protecting yourself and the public
- Basic sample administration under supervision

### **MICROBIOLOGY**

- Understand the process of media preparation and be able to follow the preparation instruction of basic media.
- Work with aseptic techniques
- Pour plates and use the correct methods to streak bacteria cultures
- Incubate plates under suitable atmospheric and temperature conditions
- Isolate and identify common causative agent (pathogen)
- Understand and use the most applicable biochemical and physiological techniques for the identification of reference bacteria
- Staining and microscopic examination of basic isolates
- Understand the principle of the anti-biogram test and be able to set up an anti-biogram plate

### **HISTOLOGY**

- Receive and handle the histology specimen correctly.
- Know what the macroscopic evaluation of the specimen include.
- Understand the principles of Tissue processing.
- Know how to embed tissue samples in paraffin wax.
- Cut 5 micron sections from tissue blocks.
- Stain the sections with the Haematoxylin and Eosin staining method.
- Do special staining techniques to demonstrate:
  - Carbohydrate, mucin and glycogen using Periodic Acid Schiff's staining.
  - Gram stain
  - TB using Ziehl-Neelson staining.
- Set up and use a microscope correctly to evaluate stained slides against control slides.

## **HAEMATOLOGY**

- Understand the basic use of a Haematology analyser(semi and fully automated)
- Correct use of a dilution pipette for manual cell counting methods (basic manual haematocrit)
- Correct use of Pasteur and other pipettes
- Preparation of wedge and thick blood smears
- Staining and evaluation (Red and white cell morphology) of blood smears
- Performing manual cell counts – Neubauer counting chamber
- Set-up of Winthrobe ESR (Erythrocyte Sedimentation Rate)
- Understand the principle of White blood cell differential count (Identification of Thrombocytes, Red and White blood cells as well as blood parasites)
- Basic principles an automated haematology cell counter / instruments
- Performing and obtaining micro-haematocrit values with micro-haematocrit centrifuge

## **BIOCHEMISTRY**

- Understanding the application of the sampling materials (tubes for specific tests)
- Aliquot of serum and plasma
- Scoring of sample condition
- Pipetting of serum and plasma
- Understanding the rationale of tests being performed
- Understanding the method of testing used and the rules that apply (e.g. Spectrophotometer and ion selective electrodes as well as colorimetric principals)
- Quality control and adjustments of calibration curves
- Ensure reliability of results

## **VIROLOGY**

- Inoculation of embryonated eggs via the Allantoic Sac route for viral enumeration
- Candling of eggs to differentiate between dead and alive
- Aseptic harvesting of egg allantoic fluids
- Slow speed centrifugation with bench top centrifuge
- Perform HI and HA under guidance

## **SEROLOGY**

- Use of pipette, single channels and multi-channels
- Preparation of Buffers and test reagents:
  - Calculations: understand and performing of basic calculations
  - Adjusting of pH's of buffers
- Setting up of microscopes
- Using of bench top centrifuges
- Able to perform ELISA tests under guidance

## **ENTOMOLOGY**

- Fixation and preservation of arthropod samples
- Preparation of mounts and pinning of insects and acarines
- Identification of ecto-parasites to genus level:
  - Ticks
  - Flies

- Mites
- Lice

## **PROTOZOLOGY**

- Evaluation of samples for valid testing
- Preservation and transportation of parasitic material
- Preparation of solutions used for parasitological examinations
- Blood smears for examination, identification and quantification
- Coccidia flotation tests
- Identify the most common protozoa to genus level

## **HELMINTOLOGY**

- Evaluation of samples for valid testing
- Perform McMaster faecal egg count
- Visser filter method for eggs examination
- Faecal flotation
- Bearmann's technique and faecal culture
- Calculations: FERT, EPG, reagent preparation and larval number estimation
- Staining, dehydration and mounting of samples
- Identification of common nematode, trematode and cestode parasites of sheep and cattle to genus level

## **MOLECULAR BIOLOGY**

- Understand the hazards and risks in the molecular biology laboratory
- Ability to accurately pipette small quantities of reagents
- Preparations and dilutions of reagents, primers and nucleotides
- Extraction of DNA and RNA from variety of samples
- Prevent/minimise DNA and RNA contamination
- Set up Polymerase Chain Reaction procedure on a thermocycler
- Prepare agarose gel for electrophoresis
- Perform electrophoresis, read and record results

## **CELL CULTURE**

- Retrieve or obtain the cell lines or tissue sample from fresh or preserved sources and prepare a culture
- Select specified culture media and add any necessary growth agents or nutrients
- Incubate cells or tissue in specified conditions
- Inoculate the media with the specified amount of sample
- Culture of cell lines and tissue to specifications without contaminating the original sample and the environment
- Monitor growth of tissue and cell lines and products to ensure viability
- Able to count cells and contaminants and recognising normal and abnormal cells
- Able to detect contamination
- Passage samples by sub culturing to preserve or grow cell lines
- Harvest cells or cell products to optimise yields
- Storing of cells to ensure viability under supervision
- Maintain records of active and stored tissue and cell lines under supervision

**[Council: 26-27 July 2016]**