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Pathology Bulletin

Histology:

Microscopic examination of tissue sections following formalin fixation (10%) and embedding in paraffin is used to diagnose many different lesions including tumours, lesions in organs or in the skin, or inflammation and infection.

All slides are routinely stained with H.E. (hematoxylin and eosin). Special staining techniques are also available (e.g. for the detection of fungi, mycobacteria, mast cells).

Please remember the following when submitting samples:

- Send a sufficient number of representative samples
- Avoid artefacts during extraction: electrocoagulation, tearing, crushing, and autolysis are detrimental for the analysis
- Ideal sample size: 0.4-1.0 cm (enough tissue to evaluate, small enough for complete fixation, some variation is possible due to extraction technique or case. The evaluation of resection margins requires e.g. submission of all of the tissue (possibly including tumour bed biopsies).
- Formalin fixation is absolutely necessary! Relationship of the volume of fixative: tissue size at least 1:10, better 1:20.
- Do not use other fixatives (e.g. alcohol). It is better to submit the material unfixed (1 work day is generally not a problem).
- At temperatures below zero, the addition of a small amount of alcohol prevents freezing.
- A case history is necessary (on the filled out submission form): e.g. species and breed, age, treatment, clinical signs, extraction site, clinical question, differential diagnoses.
- For an appropriately submitted, fixed sample, the lab report will be ready on the work day after the sample arrives in the laboratory (Monday-Friday). It can take longer for unfixed or hard samples that have to be decalcified or if special stains are necessary.

Cytology:

Microscopic examination of air dried smear preparations is used to evaluate cells (inflammatory cells, tumour cells, cells from organs).

Cytology smears are routinely stained according to Pappenheim. It is also possible to evaluate submissions that have been stained using Diff-Quick®. If necessary, special stains are used (e.g. for fungi, mycobacteria, copper).

Please remember the following when submitting samples:

- Possible techniques: smear following aspiration or puncture, impression smears, cytobrush, tissue swabs rolled onto slides
- In order to avoid autolysis (esp. urine, CSF), the cytology slides should be prepared in the practice
- Avoid artefacts, especially caused by thick smears or the use of too much pressure

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- Always air dry slides, never use heat fixation or cover slips
- Submit puncture material/fluid along with the slides
- Centrifuge fluids with a low amount of cellular material (clear fluids) and use the sediment to prepare the smear (indicate “sediment” on the submission form)
- Bloody fluids should be submitted in EDTA tubes in order to prevent coagulation
- A case history is crucial (please fill out the submission form)
- A cytology report is usually ready on the same day the sample arrives in the laboratory (Monday-Friday)

The charges for histology and cytology depend on the number of problems. For example, examination of multiple skin biopsies for a dermatological case costs only the basic price. If, for example, a tumour is also submitted, the charge would be for two examinations, or twice as much.

Shipping and packaging materials (submission forms, formalin containers, envelopes, containers for slides) are available free of charge at any time.

If additional testing may be of interest, material that can be used for such tests should be included (e.g. swabs for bacterial culture).

Immunohistochemisty:

Goal: Antigen detection in tissue sections from paraffin blocks using tagged antibodies following histological evaluation. Immunohistochemistry is used in addition to histology in the diagnosis of tumous and for the detection of infectious agents in tissues. This type of test cannot be used for the diagnosis of autoimmune diseases.

Determining the cellular origin in tumour diagnostics, e.g.:

- Cytokeratin (epithelial marker)
- Vimentin (mesenchymal marker)
- Melan A (melanocytes)
- CD3/CD79a (T-/B-cells)

Determining expression profiles for prognostic/therapeutic purposes, e.g.:

- C-Kit, Ki-67 (mast cell tumours in dogs)
- Cox-2 (bladder and intestinal tumours)

Detection of infectious agents in tissues, e.g.:

- Feline herpesvirus, parvovirus, FIP

Clonality testing/PARR:

The PARR test (PCR for antigen receptor rearrangement), a molecular test to determine the clonality of lymphocytes in dogs and cats, has become very important. Detection of a monoclonal proliferation of B or T-cells indicates with a high probability that these are the source of a lymphoma.

The great advantage of the technique is that the suspicious cells (derived from a paraffin block or from stained or unstained slides) can be used directly without the need for renewed sampling. All tissues/fluids in which sufficient numbers of lymphocytes are found can be used for testing.