



香港城市大學
City University of Hong Kong



CITYU VETERINARY DIAGNOSTIC LABORATORY

MESSAGE FROM THE DIRECTOR

Welcome to the second edition of volume three of the newsletter.

In this newsletter we showcase the wide range of proficiency testing the various laboratories at CityU VDL participate in, a range of news and Dr Jeanine Sandy highlights the various immunohistochemical stains available at CityU VDL in Hong Kong. We also profile anatomic pathologist, Dr May Tse.

- Dr Fraser Hill, Anatomic Pathologist, Director of CityU VDL

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International Collaboration

In addition to our local on-site pathologists, CityU VDL has expanded the veterinary expertise available in Hong Kong by partnering with Lacuna Diagnostics for cytology and blood films review. Using the latest in imaging scanning technology, the board certified clinical pathologists at Lacuna Diagnostics can review and comment on the cases with CityU VDL

Reporting Formats

In an effort to reduce our “paper footprint” and lessen our impacts on the environment, we are trying to limit the amount of paper generated by the laboratory. To assist us in this endeavor, please consider whether you require the “fax” and “mailed” version of laboratory reports in addition to the emailed version. Please send an email to infovdl@cityu.edu.hk to request an update to your reporting formats – every small contribution helps.

PROFICIENCY TESTING

CityU VDL participates in a wide range of proficiency programmes to ensure accurate results are generated within the laboratories

These include:

1. Hong Kong Institute of Medical Laboratory Sciences Quality Assurance Programme
 - a. Haematology (Complete Blood Count)
 - b. Clinical Chemistry
 - c. Serology (Coagulation Tests)
 - d. Anatomical Pathology (Histological Staining, Immunohistochemical Staining)
2. IFM Quality Services
 - a. Microbiology (Veterinary Antibiotics, Veterinary Identification of microorganisms)
3. Australian Animal Pathology Standards Program
 - a. Histoproficiency

Participating in these external programmes allows the technologists and pathologists to check their result validity against a range of other participants and ensure they are working at optimum efficiency and accuracy.

REQUESTS FROM THE SECTIONS

Sample Labelling

Please label all samples and specimens with the sample site collected from. This helps the technologists and the pathologists ensure all samples are processed correctly and interpretations are tailored specifically for the problem.

For cytology cases and blood smears, please use glass slides with frosted ends and write any information about the sample collection site on the frosted part of the slide with pencil.

With non-frosted slides there can be issues once dry in determining the side of the slide the sample has been applied to. If you are using non-frosted slides, mark the sample side with a diamond pencil or suitable marker.

TESTING TIPS

Immunostaining explained: Immunohistochemistry and immunocytochemistry

By Dr Jeanine Sandy, BVSc (Hons), PhD, MANZVSC, DACVP

Registered specialist veterinary pathology

Immunohistochemistry (IHC) is a powerful tool, mainly used to identify which cell line has become neoplastic. Identifying the neoplastic cell type can be very useful in providing prognostic information as well as helping to decide which treatment regimen is more likely to be successful. Useful information is gained by positive results, but negative results may also help to 'rule out' other tumour types.

A major limitation in the use of this test requires the understanding that neoplastic cells are by nature, genetically damaged cells. Therefore, tumour cells can 'forget' how to make various proteins to which immunohistochemistry or immunocytochemistry markers target. So a negative result only tells us that the cell in question does not have sufficient protein to be detectable (the cell never made that protein or is so genetically damaged that it no longer remembers how to make that protein).

For example: double negative lymphomas. Sometimes lymphomas fail to stain with either T or B cell markers. This may mean that the tumour cell is not a T or B lymphocyte OR the tumour cell is a T or B lymphocyte but no longer expresses enough protein to be detectable.

Another limitation of this test, especially for cytology samples, is the quality of the material to be stained. Cytology samples (and sometimes biopsy samples) with lots of necrosis of cells or crush artefact are not suitable for this test. Your pathologist will generally indicate on your report if slides are or are not suitable for immunocytochemistry.

A final limitation is based on science and good medicine. Immuno markers are not 100% specific or 100% sensitive, so results of testing should always be interpreted with reference to the clinical behaviour and history of that tumour.

CityU VDL has a wide range of IHC markers available, mainly for biopsy samples, with some markers useful for cytology samples.

Suggested markers can be used individually, in a step wise fashion or as panels.

Your pathologist will generally recommend either a single marker or pair of markers for a tumour, with other markers suggested if the initial ones produce a negative result.

Step wise marking has the advantage of using fewer tests to arrive at a diagnosis, which will save your client money. The downside is that a single marker producing a

negative result then requires further testing, at additional costs, with a delay in the final diagnosis.

IHC panels are available, which have the advantage of performing all relevant testing at the same time using multiple markers.

Please contact the laboratory to order the panels and for pricing.

CityU VDL available panels: (also available individually)

Lymphoma panel:

- Species: Dog and cat: (CD3, PAX5. Or CD3, PAX 5, CD20, CD79a).
- Sample: cytology or biopsy

Melanoma panel:

- Dog: SOX10, S100, Melan A
- Cat: S100, Melan A
- Sample: Biopsy

Round cell tumour panel:

- Dog: IBA1, CD18, MUM1, SOX10, cKIT + [lymphoma panel]
- Cat: IBA1, CD18 + [lymphoma panel]
- Sample: Biopsy

Spindle cell tumours:

- Dog and cats. Vimentin, Smooth muscle actin, DOG1, S100, VWF, MNF116, AE1/AE3
- Sample: Biopsy

Endocrine tumours:

- Dog. Synaptophysin, S100, NSE
- Cat. Chromogranin A, Synaptophysin, S100, NSE
- Sample: Biopsy

Neurological tumour:

- Dog and cat: S100, NSE, GFAP
- Sample: Biopsy

Epithelial tumour:

- Dog and cat: AE1/AE 3, MNF116
- Sample: Biopsy.

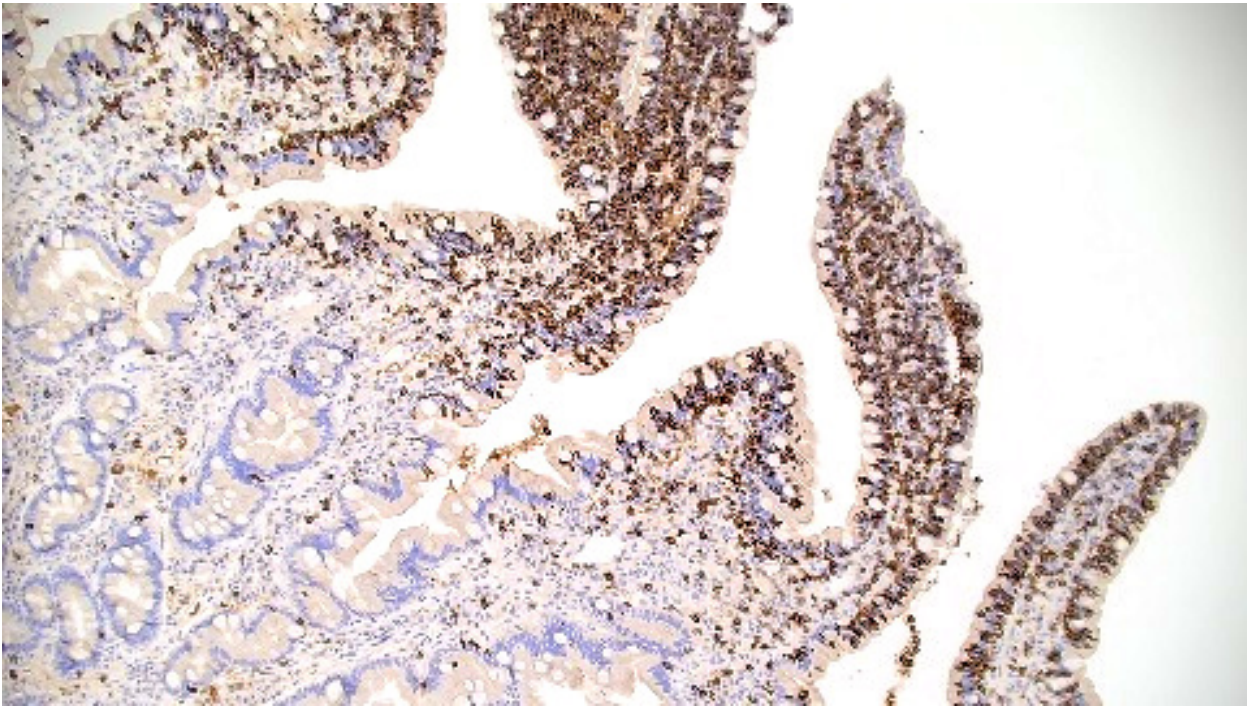


Figure 1: The dark brown stained cells in the image are immunostained neoplastic T lymphocytes. They are located within the lamina propria and between villous enterocytes in the small intestine of a dog with lymphoma

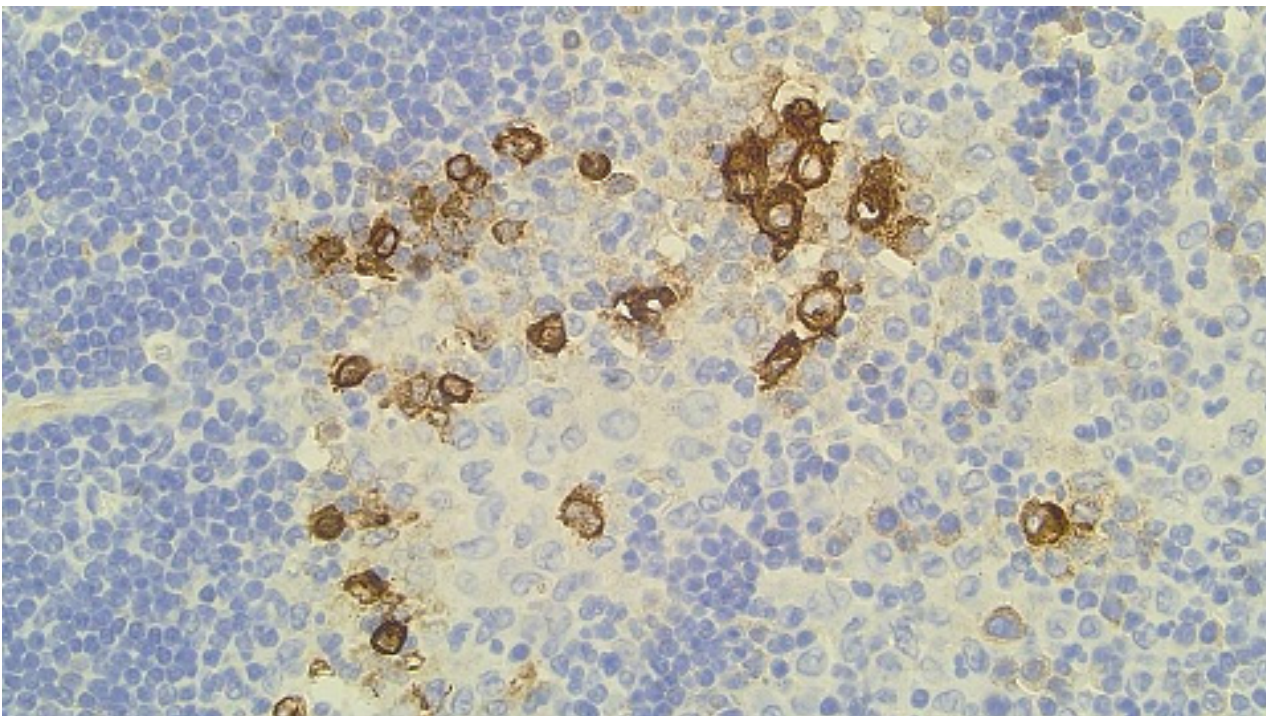


Figure 2: The dark brown stained cells in the image are immunoreacting to the presence of feline infectious peritonitis coronavirus within macrophages. The tissue is lymph node from a ferret.



Figure 3: The IHC staining machine is a state of the art, computer controlled, system capable of testing a wide range of cellular markers

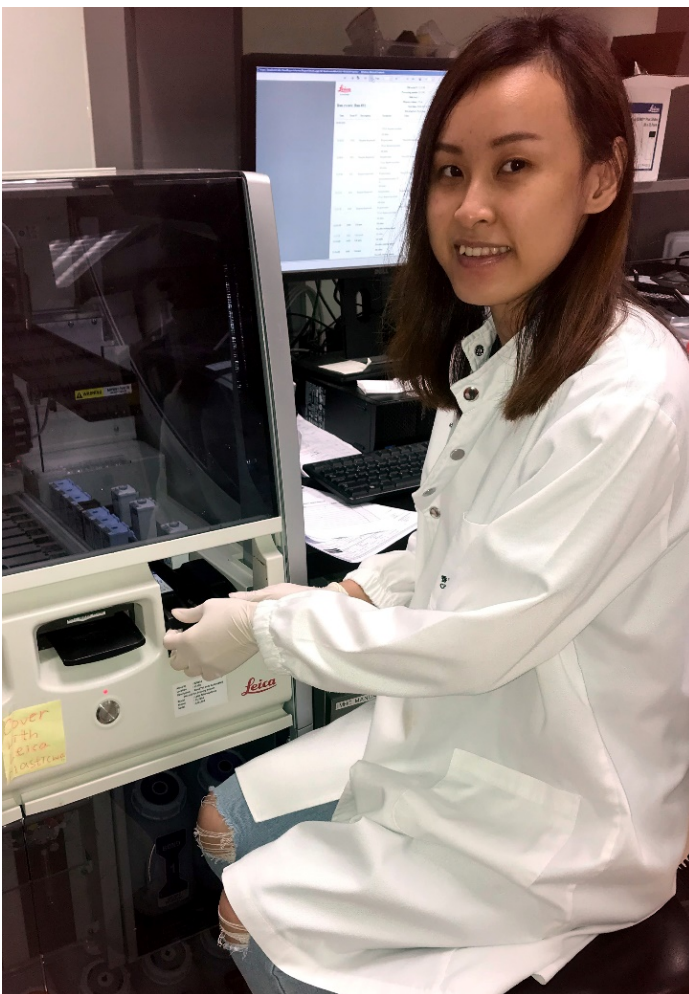


Figure 4: Histology technologist, Miss Candy So prepares the samples and loads the IHC staining machine for the days run.

What is a “mammary strip” and how is it different to a standard biopsy

Similar to the difference in surgical time and complexity in performing a mammary strip as compared to a simple lumpectomy, there is considerable difference in the histological assessment of both these types of submissions. CityU VDL defines a mammary strip (including for pricing purposes) as a section of tissue containing two or more mammary glands and nipples. As well as taking representative sections through each gland and any grossly apparent masses, sections are assessed from each nipple, inter-glandular areas, any lymph nodes and margins to check for early lesions not detectable clinically, and how close any of these lesions are to the surgical margins.

Farewell to Dr Daniela Hernandez Muguero

Dr Hernandez Muguero left CityU VDL at the end of May to return to Mexico and further opportunities in North America. Dr Hernandez Muguero was a great contributor to CityU VDL and we wish her well in her future career.

STAFF PROFILE

Dr. May Tse – BVM&S, MRCVS, DACVP

Registered Specialist Anatomic Pathologist



Dr May Tse was born, grew up and went to school in Hong Kong before studying veterinary science at the University of Edinburgh in Scotland. After graduation and on returning to Hong Kong she worked at the Hong Kong Government Veterinary Diagnostic Laboratory where she developed an interest in anatomic pathology. She undertook an anatomic pathology residency at Cornell University (in conjunction with City University) and successfully completed the American College of Veterinary Pathologists Board examinations in 2018. Dr Tse enjoys all aspects of diagnostic pathology and has a

particular interest in neoplasia and fish pathology. She is a registered specialist in Anatomic Pathology in Hong Kong.

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