



香港城市大學  
City University of Hong Kong



# CITYU VETERINARY DIAGNOSTIC LABORATORY

## MESSAGE FROM THE DIRECTOR

Welcome to the 3rd edition of volume four of the newsletter.

In this edition we highlight new mycoplasma tests and results of some of the fantastic data emerging from CityU VDL in the molecular section.

Also showcased are two recent cases seen at CityU VDL featuring the diversity of investigations the laboratory can undertake.

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

## IN THIS ISSUE

- **MESSAGE FROM THE DIRECTOR**
- **SNIPPETS**
  - New registered specialist, Dr Steve Mills
  - Serum electrophoresis testing in cats
  - Sending formalin fixed tissues to CityU VDL
- **TESTING TIPS**
  - Mycoplasma PCR tests
  - Feline TSH testing
  - PCR findings in cats
- **CASE REPORT**
  - Intersex dog found at spaying
  - Allamanda plant toxicity in a dog
- **SECTION PROFILE**
  - Histopathology

## SNIPPETS

- We are pleased to announce Dr Steve Mills is now a registered specialist clinical pathologist in Hong Kong, recognising his unique skills and qualifications.
- Serum electrophoresis is a very useful test in cats with increased globulin to differentiate either FIP (broad globulin increases) or lymphoma (sharp peak in a specific type of globulin).
- For optimum fixation of histopathology samples, ensure the sample is placed in an appropriately sized container, approved for use with formalin. If the sample is very large, fix briefly in the clinic, then transport in a double-sealed plastic bag without formalin to CityU VDL and we can complete the fixation process for you.

## TESTING TIPS

### Mycoplasma PCR tests now available

CityU VDL is pleased to offer a new molecular test for Mycoplasma diagnosis.

Mycoplasma is genus of bacteria lacking a cell wall and is difficult to grow and identify under usual microbiology culture conditions. Fortunately, molecular testing by real time PCR does not have this limitation. CityU VDL is pleased to announce we can now offer a mycoplasma PCR test for the detection of a wide range of 36 different mycoplasma species.

These mycoplasmas can be detected in a variety of animal species including reptiles, snakes, lizards, pigs, cats, birds and chickens to genus level. For speciation, additional testing would be required.

This is an exciting opportunity for veterinary practitioners to offer a new testing option to investigate upper respiratory tract disease or screen for carriers, particularly for reptile owners.

The most common cause of nasal discharge in captive turtles and tortoises is upper respiratory tract disease or mycoplasmosis associated with *Mycoplasma agassizii* (detected by this PCR test).

*Mycoplasma* organisms can be secondary opportunistic pathogens in virus infections and complicated pneumonia cases in cats and can complicate cases of conjunctivitis caused by primary pathogens such as Feline herpes virus-1 or *Chlamydomphila psittaci*.

*Mycoplasma* spp. are pathogens of the respiratory system of psittacine birds and can cause air-sacculitis. Clinical signs can include increased respiratory rates, dyspnoea, nasal discharge and sinusitis.

Samples to collect:

All species: a nasal swab or fluid from a nasal flush

For **cats**: a conjunctival swab

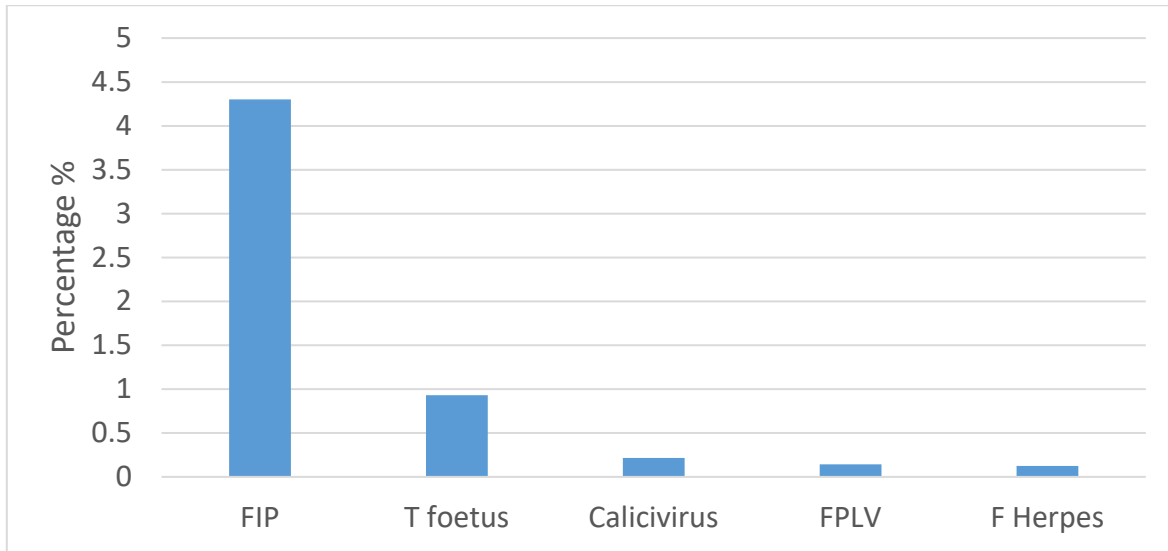
### Feline TSH testing now available at CityU VDL

Testing for TSH in cats is now available at CityU VDL. TSH serum concentrations should be interpreted together with serum total T4 (TT4) and free T4 (fT4) concentrations. If TSH is detected, hyperthyroidism is unlikely. If TSH is undetectable with high-normal, or equivocal TT4 or fT4 this is consistent with early hyperthyroidism, while undetectable TSH with either or both high TT4 and fT4 is consistent with hyperthyroidism. High TSH serum concentrations are occasionally seen in cats after treatment with radioiodine and also in cats with clinical signs consistent with hypothyroidism.

Sample to collect: 1.3 mL serum sample (plain tube)

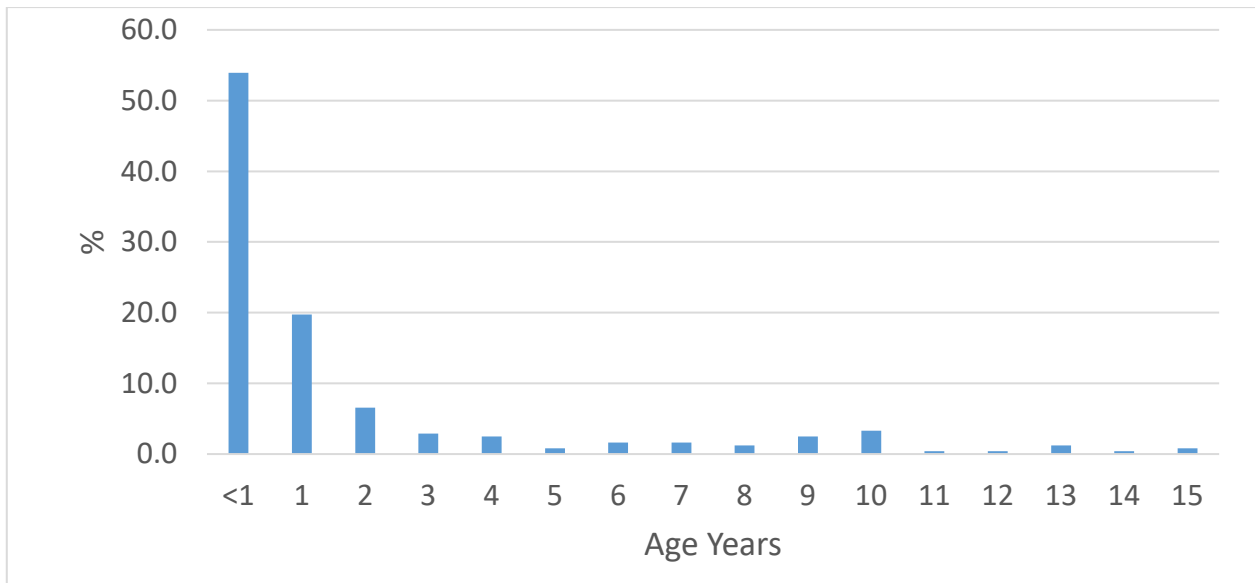
### Infectious disease of cats in Hong Kong diagnosed by molecular (PCR) methods at CityU VDL

Analysis of the data for feline samples submitted to CityU VDL for molecular testing over the past four years revealed some interesting trends. The most common disease diagnosed by this method was feline coronavirus causing feline infectious peritonitis (FIP). Data in graph 1 shows the five most common infectious agents identified including FIP, *Tritrichomonas fetus*, Calicivirus, Feline panleukopaenia virus, and Feline herpes virus. Other feline infectious agents are likely to be significant but their diagnosis is usually achieved in-clinic and the data is not included in this analysis.



**Graph 1: Frequency of positive PCR diagnoses of feline infectious disease in Hong Kong from samples at CityU VDL**

FIP disease can present in cats of many ages but is more commonly seen in cats one year or younger (graph 2) and particularly younger than 7-months.



**Graph 2: Frequency of age of FIP diagnosis of cats at CityU VDL**

Comparisons with data from Australia revealed very similar trends in the ages affected and the distribution of age (Table 1). Cats as old as 15-years can present with disease so FIP should be considered in the differential diagnosis of all ages of cats.

**Table 1: age range and of cats affected with FIP in Hong Kong compared with Australia**

Age affected	Hong Kong	Australia*
< 7 months	45%	54%
< 1 year	54%	majority
Age range	1 month to 15 years	2 months to 15 years

\*Worthing et al. Risk factors for FIP in Australian Cats. J Fel Med Surg, 2012, 14, 6.

## Case reports:

### Intersex confirmed in a dog at spaying

A 6-month-old mixed breed dog presented for spaying (figure 1). Clinical examination prior to surgery was consistent with external female genitalia (figure 2).



Figure 1

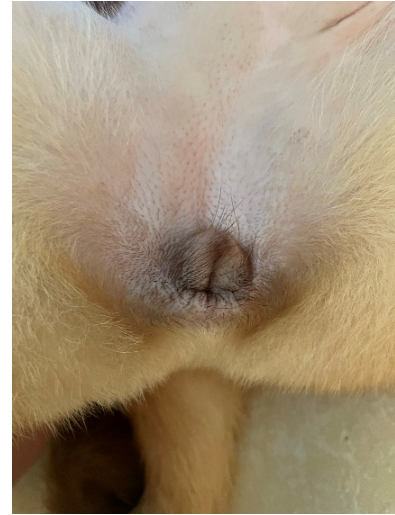


Figure 2

During the surgical procedure, no uterus or ovaries were apparent but two testicle like structures were located just caudal to the kidneys in the abdominal cavity (figure 3) and sent to CityU VDL for further examination. Gross examination identified two, 15-mm-long oval tissues with attached adipose tissue (figure 4) and histopathological examination confirmed well-formed seminiferous tubules without spermatozoa (figure 5).



Figure 3

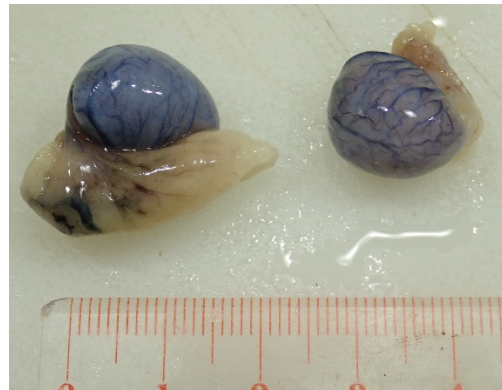


Figure 4

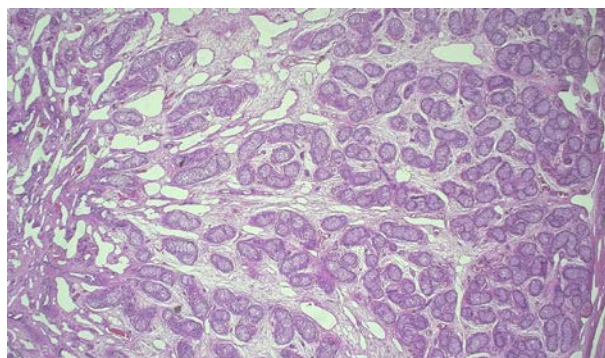


Figure 5



This pattern of an externally female dog without ovaries or a uterus but retained testicles fits the definition of testicular feminization syndrome. This is an inherited sex-linked recessive disorder, a rare form of a male pseudohermaphroditism, characterized by androgen insensitivity resulting from an absence or abnormal cytosol receptor for androgens. Thus, despite possessing a male karyotype the dog phenotypically presents as female.

The testis is often undescended and the ovaries, uterus, fallopian tubes, and upper third of the vagina are typically absent, although the labia is well formed.

Acknowledgements: thanks to Dr's Jane Gray and Natalie Tononi at SPCA Wan Chai for this interesting case.

### *Allamanda cathartica* plant toxicity in a dog

A one-year-old castrated male poodle cross dog died after an acute episode of lethargy and twitching. The dog had been completely normal all day after an initial two-hour walk early that morning.

Around 6 pm, the dog was allowed to run free in the garden for a while before returning indoors. Soon after, the dog became lethargic and developed twitching, so was taken to the emergency clinic in status epilepticus. Despite emergence treatment, the dog deteriorated and died within two hours.

Post mortem examination found grass and plant material within the stomach. Leaves from the plant were still intact and were photographed (figure 6).

Subsequent consultation by the owner with a botanist identified the leaves were derived from the *Allamanda* plant (figure 7).

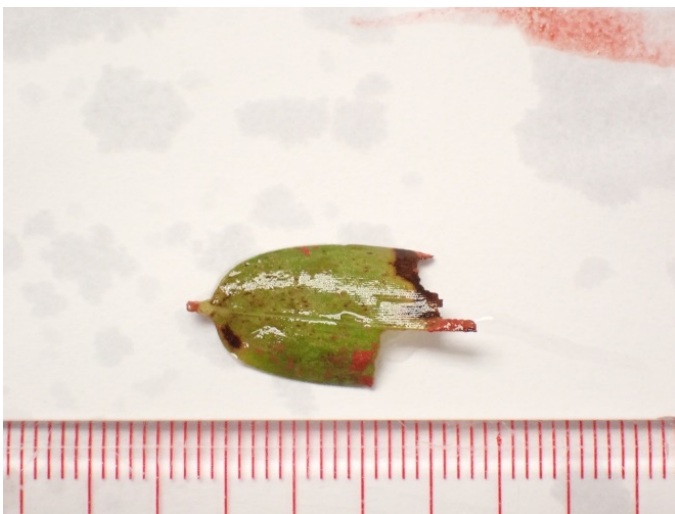


Figure 6: one of many partial leaf fragments found in the stomach



Figure 7: *Allamanda cathartica*\*

\*[https://www3.ha.org.hk/toxicplant/en/allamanda\\_schottii.html](https://www3.ha.org.hk/toxicplant/en/allamanda_schottii.html)

Histopathological examination found peracute myocardial degeneration (figure 8), a characteristic of the cardiotoxin found in the oleander family of plants (of which *Allamanda* is a member).

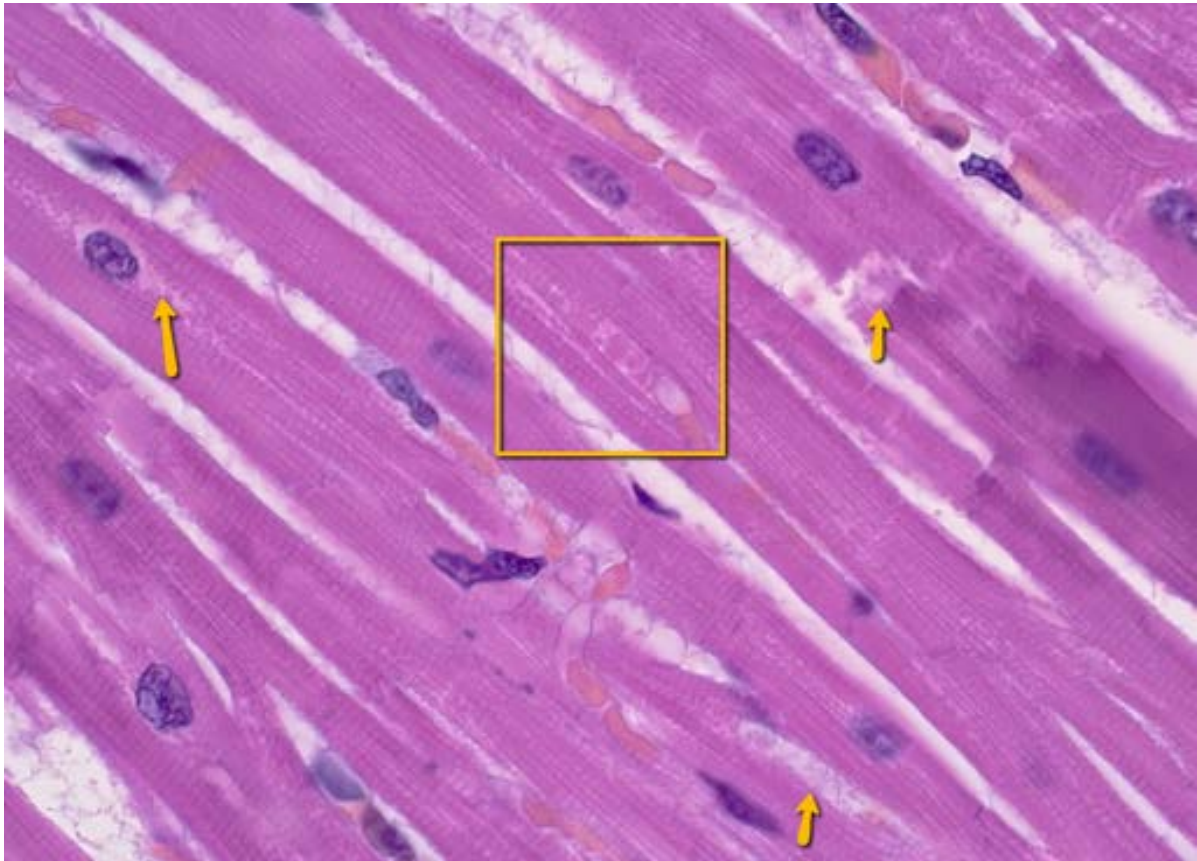


Figure 8: peracute changes within myocardial fibres of the heart (within the yellow square and arrows) consistent with a myocardiotoxic effect

Allamanda cathartica (軟枝黃蟬) is a member of the Apocynaceae (夾竹桃科) family and is known as allamanda or common allamanda. All parts of the plants are poisonous and in some countries, extracts of the plant have traditionally been used to formulate poisonous concoctions to eliminate dogs (<https://plantcaretoday.com/allamanda-plant-poisonous.html>).

The toxic agent in the plant is pleumericin and this can lead to a contact dermatitis, vomiting, diarrhoea, abdominal pain, dehydration and electrolyte disturbances. There is no specific treatment and clinical management includes only supportive therapy. This case was unique as seizures were the presenting clinical sign and death was most likely due to cardiac failure. From plant ingestion to death was very fast, so it is likely metabolic derangements played a role in the clinical signs.

Ingestion of grass could have been the dog's reaction to the irritancy of the leaves and an attempt to induce vomiting or reflected his browsing of a range of plants during his time in the garden. Sudden death in dogs can be frustrating to investigate, so having such a well-documented history and rapid post-mortem is unique and strongly suggests ingestion of the allamanda plant is the cause of death.

This plant is very common in Hong Kong and owners should ensure their dogs cannot ingest it.

Acknowledgements: Dr Roy Jones at East Island 24hr Animal Hospital and the dog owners for their diligence at identifying the plant.

## STAFF PROFILE

### Histology section:

Led by Mr C.K. Mui, the histopathology team of CK and Hobson Ho undertake histology sample preparation and processing at CityU VDL. After fixed samples arrive at the laboratory and following accessioning, they need to be embedded in wax blocks, sections cut on the microtome, then stained for examination. Additional staining with a wide range of special stains and immunohistochemical stains are often applied to define the disease process occurring. Utilising the latest equipment and technology the histology team process hundreds of samples each week, producing high quality sections for the pathologists to interpret.



Figure 9: The CityU VDL histopathology team includes from left to right: Hobson Ho and C.K. Mui.



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