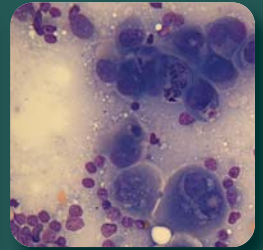
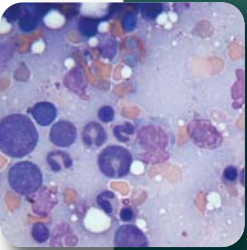




Langford

VETERINARY SERVICES

Diagnostic Laboratories



Dedicated to Excellence

ECVCP-approved training laboratory

Why choose us?

Comprehensive Laboratory Service

- The Diagnostic Laboratories are part of Langford Veterinary Services (LVS), which is a totally owned Company of the University of Bristol.
- We offer a fully comprehensive laboratory service across the species.
- We are a dynamic customer focussed business providing an extensive high quality range of laboratory tests.
- We are an ECVC (European College of Veterinary Clinical Pathology) approved training laboratory.

Quality Assurance

- We participate in RIQAS Biochemistry, NEQAS Bacteriology and Haematology QA schemes.

Ease of Sample Submission

- In order to help you provide the best service to your client, we provide:
 - FREEPOST envelopes for sample submission.
 - Viral Transport Medium (VTM) for feline virus isolation samples.
 - Competitive and flexible pricing.
 - Please contact us to discuss pricing for bulk submissions:
Tel 0117 928 9412, Fax 0117 928 9613,
Email lvslab@langfordvets.co.uk

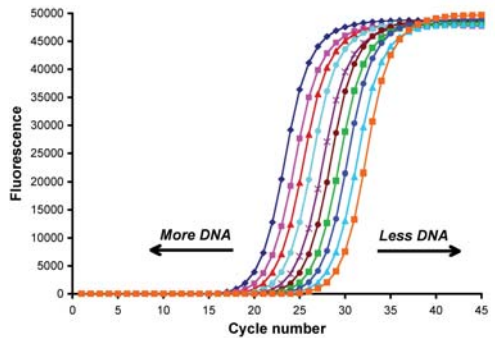
One stop shop

- We offer services in the disciplines of haematology, cytology, biochemistry, clinical microbiology, molecular diagnostics (QPCR) and histopathology to cover the majority of your lab requirements.
- We use the University of Bristol's (School of Clinical Veterinary Science) Clinical Immunology and histopathology laboratories.
- We provide services to veterinary surgeons in general practice, as well as our own practices and referral hospitals (Small Animals, Equine

and Farm Animals), so whatever type of practice you are, we can help.

Molecular Diagnostic Unit (QPCR)

- The Molecular Diagnostic Unit was the first veterinary diagnostic laboratory in the UK to offer state of the art quantitative real-time PCR (QPCR) assays to veterinary surgeons.
- Research and development of new diagnostic and genetic QPCR tests is a long term commitment for the diagnostic laboratories.



Lipoprotein Analysis

- We are the only UK laboratory to offer this service for the investigation of hyperlipidaemia.
- Lipoprotein analysis includes chemical analysis, polyanion precipitation and lipoprotein electrophoresis.

Clinical Expertise

- Our clinical pathologists work together with the clinicians at the University of Bristol's School of Clinical Veterinary Science and are involved with clinical cases. As well as reporting on your samples they are happy to discuss the results with you.

High Quality Services

- Our clinical pathologists, research staff and skilled technical staff ensure we provide a high quality service.

Our services

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Haematology & Cytology

Standard haematology examinations (full blood counts). **Each and every haematology includes a smear examination: fresh smears are deeply appreciated!**

- Bone marrow aspirates - Do call us to discuss your case.
- Clotting studies - PT/APTT and D - dimers.
- Blood from laboratory animal species, with the exception of primates.
- Exotic mammal, bird, reptile, amphibian and fish blood.
- Fibrinogen (in large animals).

The Haematology laboratory participates in the national quality assurance scheme (NEQAS) to ensure the ongoing reliability and quality of results.

HAEMATOLOGY	Sample	Turnaround	Information
APTT & PT	Citrate plasma	Same day	Please contact lab before sampling
Bone marrow cytology	BM smears, EDTA	Same or next day	Includes full haematology if EDTA sample is submitted
Canine anaemia profile	EDTA & smears	Same or next day	Full haematology, reticulocyte count, Coombs' test
Coombs' test	EDTA	Same day	See immunology
D-Dimers	Citrate plasma	Same day	Help rule out DIC in dogs
Feline anaemia profile	EDTA & smears	Same day - FIA PCR 1 week	Full haematology, reticulocyte count, haemoplasma PCR, FIV Ab & FeLV Ag
Fibrinogen	EDTA	Same day	Equine/Bovine only
Full haematology	EDTA & smears	Same day	Hct, Hb, RBC, MCV, MCH, MCHC, Platelets, WBC, WBC differential, smear comment
Iron status	Serum	3-5 days	Iron concentration + total iron binding + % transferrin saturation
Reticulocyte count	EDTA	Same day	New Methylene blue stain

The clinical pathologists have a keen interest in cytology and are happy to accept samples from domestic, exotic and laboratory animal species.

- Aspirates from superficial masses.
- Ultrasound guided or surgically obtained cytology samples - aspirates or impression smears.
- Flushes and washes from airways and prostates.
- Cerebrospinal fluid: contact us for advice on sample storage.
- Superficial samples such as tape strips.
- We are always available to discuss the cases and are delighted to advise on sample collection and handling.

CYTOLOGY	Sample	Turnaround	Information
Body cavity fluid analysis	EDTA & plain tube	Same day	Automated cell count, TP, ALB, GLOB, cytology
CSF Analysis	EDTA & plain tube	Same day	Manual cell count, TP, cytology - please contact lab before sampling
FNA/Impression smears	Smears	Same day	
Lavages/washes/flushes	EDTA	Same day	
Synovial fluid analysis	EDTA & plain tube	Same day	Automated cell count, TP, cytology
Urine	EDTA	Same day	
Vaginal smear	Smears	Same day	Evaluate reproductive status

Biochemistry

This laboratory offers a wide range of biochemical testing in serum, plasma, urine and other fluids from companion, farm and exotic animals. The KoneLab60i analyser is combined with selected manual methods to provide a broad range of tests.

The Biochemistry laboratory participates in the national quality assurance scheme (RIQAS) to ensure the ongoing reliability and quality of results.

BIOCHEMISTRY	Sample	Turnaround	Information
B12 + folate (Canine/Feline)	Serum	Usually 5-7 days	Fasted. 1 ml minimum volume
Basic biochemistry Canine/Feline	Serum or Hep plasma	Same day	UREA, CREAT, TP, ALB, GLOB, ALT, ALP
Bile acids (dynamic: pre & post prandial)	Serum	Same day	Time: 0 and 2 hours post feeding
Biochemistry (Bovine)	Serum or Hep plasma	Same day	UREA, CREAT, TP, ALB, GLOB, GGT, GLDH, BHB, Ca, Mg
Biochemistry (Equine)	Serum or Hep plasma	Same day	UREA, CREAT, TP, ALB, GLOB, AST, ALP, GGT, GLDH, CK
Digoxin	Serum or Hep plasma	5-7 days	Time: 8 hours post Digoxin administration Allow 5 days on treatment before testing
Extended biochemistry (Canine/feline)	Serum or Hep plasma & OxF	Same day	UREA, CREAT, TP, ALB, GLOB, ALT, ALP, GGT, Tot.BIL, GLU, Ca, Phos, Na, K
Lead	Whole blood in Hep tube	7 days	
Lipid electrophoresis	EDTA plasma	3-5 days	For the investigation of hyperlipidaemia. We have established our own reference intervals for dogs.
Lipid profile analysis	EDTA plasma	3-5 days	Includes Electrophoresis + Precipitation
Occult blood in faeces	Faeces	Same day	
Osmolality	Serum/plasma/ Urine	Same day	Osmometer (freezing point)
Phenobarbitone	Serum	5-7 days	(Not serum gel) Allow 2-3 weeks on treatment before testing
Potassium bromide	Serum	Same day	Serum levels may take at least 4 months to stabilise
Serum protein electrophoresis	Serum	5 days	We have established our own reference intervals for dogs and cats
TLI Canine/Feline	Serum	Usually 5 days	1 ml minimum volume
Acute phase proteins	Serum	Usually 3 days	Canine: CRP and/or haptoglobin Feline: a1GP and/or haptoglobin Equine: SAA and/or haptoglobin

Urinalysis & Endocrinology

URINALYSIS	Sample	Turnaround	Information
Bacterial culture	Urine in sterile container	3 days	Aerobic culture and sensitivity
Basic urinalysis	Urine	Same day	USG, pH, PROT, GLU, blood, ketones, UPC ratio, sediment examination
Calculus analysis	Calculi	2-3 weeks	
Cytology	EDTA	Same day	
Fractional excretion of electrolytes	Urine & Serum	Same day	Na, K, Cl
Sediment examination	Urine	Same day	
Urine protein to creatinine ratio (UPC)	Urine	Same day	
Urine screen	Urine in sterile container		Basic urinalysis & bacterial culture



ENDOCRINOLOGY	Sample	Turnaround	Information
ACTH stimulation test (Canine)	Serum/Hep plasma	1-3 days	Time: 0 and 2 hours
ACTH stimulation test (Feline)	Serum/Hep plasma	1-3 days	Time: 0, 60 and 90 minutes
Dexamethasone suppression test	Serum/Hep plasma	1-3 days	Time: 0, 3 and 8 hours
Free T4 (ED)	Serum	Usually 5-7 days	Method: Dialysis
Fructosamine	Serum (not serum gel)	2-4 days	
Total T4	Serum	1-3 days	
Total T4 + TSH (Canine)	Serum	1-3 days	
TSH (Canine)	Serum	1-3 days	
Urine cortisol: creatinine ratio	Urine	1-3 days	

Molecular Diagnostic Unit (QPCR)

The Molecular Diagnostic Unit was the first veterinary diagnostic laboratory in the UK to offer state of the art quantitative real-time PCR (QPCR) assays. They give our clinical pathologists much more information than can be derived from conventional PCR, allowing them to provide a better diagnostic service to the veterinary surgeon.

INFECTIOUS DISEASE QPCRs	Sample	Turnaround	Information
<i>Chlamydomydia felis</i> QPCR	Dry or VTM swab	1-3 days	Quantitative PCR
FHV QPCR	Dry or VTM swab	1-3 days	Quantitative PCR
<i>Chlamydomydia felis</i> + FHV QPCR	Dry or VTM swab	1-3 days	Quantitative PCR
FeLV DNA QPCR (provirus)	EDTA blood or bone marrow	5-7 days	Quantitative PCR. Bone marrow sample should be an aspirate collected in an EDTA tube
FeLV DNA QPCR + FeLV Ag	EDTA blood	5-7 days	Quantitative PCR and ELISA
FIV DNA QPCR (provirus)	EDTA blood	5-7 days	Quantitative PCR
FIV DNA QPCR + FIV Ab	EDTA blood	5-7 days	Quantitative PCR and ELISA
FeLV QPCR + FIV QPCR	EDTA blood	5-7 days	Quantitative PCRs
FeLV QPCR + FIV QPCR + FeLV Ag + FIV Ab	EDTA blood	5-7 days	Quantitative PCRs and ELISAs
Feline haemoplasma QPCR	EDTA blood	5-7 days	Detects and quantifies three feline haemoplasma species
Canine haemoplasma QPCR	EDTA blood	5-7 days	Detects and quantifies two canine haemoplasma species
<i>Tritrichomonas foetus</i> QPCR	Faeces Min 0.5g	5-7 days	Includes internal amplification control to reduce false negatives
GENETIC DISEASE QPCRs	Sample	Turnaround	Information
Feline hypertrophic cardiomyopathy QPCR	EDTA blood or buccal swab	7-10 days	For Ragdoll and Maine Coon breeds
Feline polycystic kidney disease QPCR (PKD)	EDTA blood or buccal swab	7-10 days	For Persian and related breeds
Feline pyruvate kinase deficiency QPCR	EDTA blood or buccal swab	7-10 days	For Abyssinian, Somali and related breeds



Virology-Serology & Immunology

This laboratory's expertise is in feline virology. The technicians are experienced and skilled in the many serological and culture methods for most of the major feline viruses.

VIRUS ISOLATION	Sample	Turnaround	Information
FHV / FCV isolation	Swab in VTM	4-8 days	Isolation
Pox virus isolation	Scab	4-10 days	Isolation
VIRUS ISOLATION + QPCR	Sample	Turnaround	Information
FCV/FHV isolation + FHV QPCR	Swab in VTM	4-8 days 1 - 3 days	Isolation and Quantitative PCR
FCV/FHV isolation + <i>Chlamydomphila felis</i> QPCR	Swab in VTM	4-8 days 1 - 3 days	Isolation and Quantitative PCR
FCV/FHV isolation + FHV QPCR + <i>Chlamydomphila felis</i> QPCR	Swab in VTM	4-8 days 1 - 3 days	Isolation and Quantitative PCR
SEROLOGY	Sample	Turnaround	Information
Viral screen	EDTA	1-3 days	FIV Ab (ELISA), FeLV Ag (ELISA) Coronavirus Ab (ELISA)
FIV Ab	EDTA	Same or next day	ELISA
FeLV Ag	EDTA	Same or next day	ELISA
FIV Ab + FeLV Ag	EDTA	Same or next day	ELISA
Coronavirus (FIP) Ab	Serum	1-3 days	ELISA
<i>Chlamydomphila felis</i> Ab	Serum	1-3 days	IFA
FCV Ab	Serum	1-2 weeks	Viral neutralisation
FHV Ab	Serum	1-2 weeks	Viral neutralisation
Pox Virus Ab	Serum	1-2 weeks	Viral neutralisation

IMMUNODIAGNOSTIC TESTS	Sample	Turnaround	Information
Antinuclear antibody (Dog, cat, horse)	Serum	Approx 1 week	Full titration and pattern description
Blood cross match (Dog, cat, horse)	EDTA blood & serum from donors and recipient	Same or next day	
Coombs' test (Dog - IgG, IgM, C3) (Cat - IgG, IgM) (Horse - IgG, IgM)	EDTA blood	Same or next day	Full titration of polyvalent and class-specific reagents (IgG, IgM, C3) at both 4°C and 37°C
Feline blood typing (Cat)	EDTA blood	Same or next day	
Rheumatoid factor (Dog, Cat, Horse)	Serum or synovial fluid in EDTA	Approx 1 week	Full titration

Microbiology

This laboratory processes appropriate samples from companion, farm and exotic animals (and the environment) which may be infected, in a carrier state or harbouring potentially infectious bacteria. Experienced technicians have an array of techniques for identification of organisms.

The laboratory employs microscopy and Wood's lamp fluorescence for the detection of fungal elements in hair samples from companion, farm and exotic animals. Samples of hair, skin, nail and biopsy material where mycosis is suspected are also cultured for the presence of dermatophytes and differentiation from non-dermatophytes.

The laboratory also handles high numbers of samples, mostly faecal and hair/skin samples for the presence of endo- and ecto- parasites.

The Bacteriology laboratory participates in the national quality assurance scheme (NEQAS) to ensure the ongoing reliability and quality of results.

BACTERIOLOGY	Sample	Turnaround	Information
Blood culture		5-7 days	Per pair of bottles
Culture & sensitivity	Swab/Tissue/ Fluid	3-5 days	Aerobic culture / Anaerobic culture (site-dependent)/ Antibiotic sensitivities (where relevant)
Culture & sensitivity (urine)	Urine	3 days	Aerobic culture / Antibiotic sensitivities (for significant isolate(s))
Faecal screen	Faeces	2-4 days	Bacterial culture & parasitology
Mycobacterial screening (AAFB)	Smear	Next day	ZN stain
MYCOLOGY	Sample	Turnaround	Information
Fungal culture (Non-dermatophyte)		5 days	
Ringworm diagnosis (Dermatophytes)	Hair/skin	10-12 days	Wood's lamp, microscopy & dermatophyte culture
ECTOPARASITES	Sample	Turnaround	Information
Skin parasites	Skin scrape	Next day	
PARASITOLOGY	Sample	Turnaround	Information
Cryptosporidium	Faeces	Next day	Modified ZN stain
Faecal parasitology	Faeces	Same or next day	
Faecal screen	Faeces		Bacterial culture & parasitology
<i>Trichostrongylus axei</i> PCR	Faeces Minimum 0.5g	5-7 days	Includes internal amplification control to avoid false negatives
SEROLOGY	Sample	Turnaround	Information
Aspergillus	Serum	2 weeks	Precipitation test (Antibodies)
Cryptococcus	Serum	10-15 days	Antigen
Leptospira Full screen	Serum	10-15 days	Canicola, Ictero, Bratislava, grippo, hardjo, pomona
Neospora Ab	Serum/CSF	3-5 days	IFA
Toxoplasma IgG + IgM (Canine/Feline)	Serum/CSF	3-5 days	IFA

Profiles & Histopathology

PROFILES - SCREENS (CLINICAL INVESTIGATIONS)	Sample	Information
Bovine screen	EDTA, smear & SERUM or HEP	Full haem, fibrinogen, UREA, CREAT, TP, ALB, GLOB, GGT, GLDH, BHB, Ca, Mg, Na, K, Cl
Canine anaemia profile	EDTA, smear	Full haem, reticulocyte count, Coombs' test
Canine basic profile	EDTA, smear	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP
Canine extended profile	EDTA, smear & SERUM or HEP & OxF	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP, GGT, Tot. BIL, GLU, CHOL, TRIGS, Ca, Phos, Na, K
Equine screen	EDTA, smear & SERUM or HEP	Full haem, fibrinogen, UREA, CREAT, TP, ALB, GLOB, AST, ALP, GGT, GLDH, CK
Feline anaemia profile	EDTA & smears	Full haem, haemoplasma PCR, FIVAb & FeLVAg, reticulocyte count
Feline basic profile	EDTA, smear & SERUM or HEP	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP
Feline extended profile	EDTA, smear & SERUM or HEP & OxF	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP, GGT, Tot. BIL, GLU, Ca, Phos, Na, K
Feline screen	EDTA, smear & SERUM or HEP	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP, FIVAb & FeLVAg
Feline thin/weight loss profile	EDTA, smear & SERUM or HEP & OxF	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP, GLU, FIVAb & FeLVAg, T4
Rabbit profile	EDTA, smear & SERUM or HEP	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, ALP, AST, CK, Na, K, Ca, PHOS, CHOLEST, TRIGS
Rabbit liver profile	EDTA, smear & SERUM or HEP	Full haem, UREA, CREAT, TP, ALB, GLOB, ALT, GLDH, ALP, GGT, AST, CK, TOTAL BILIRUBIN

HISTOPATHOLOGY - BIOPSY	Sample	Turnaround	Information
Small Biopsy	Formalin fixed tissue	2 - 4 days	Additional charge for special stains (if required)
Large Biopsy (e.g. whole organ, large mammary mass)	Formalin fixed tissue	2 - 4 days	Additional charge for special stains (if required)



Sampling Instructions and requirements

Feline Calici/ Herpes Virus Isolation



Use a plain sterile swab rubbed gently over the affected area (oropharyngeal for oral ulceration/ respiratory signs, cornea for ocular signs) to gather cellular material. The plain swab is then placed in viral

transport media (VTM) and the end trimmed off with scissors to allow the pot to be sealed. Label the pot with the animal's name and the site from which the sample was taken. VTM contains antibiotics and is therefore not suitable for bacterial culture, but aids the survival of viruses.

If there is a delay between collection and sending the sample, it is best stored in the freezer. Viruses cannot be grown from the charcoal media bacteriology swabs.

Feline Herpes/*Chlamydomphila felis* QPCR

Herpesvirus QPCR can be performed on either oropharyngeal or ocular swabs, depending on the clinical signs. *Chlamydomphila felis* QPCR is most usefully performed on conjunctival swabs. A plain swab is all that is required - no transport media is needed for the QPCR tests, although we can perform the tests on samples submitted in VTM. Please do not submit charcoal medium bacteriology swabs for QPCR as it makes the sample much more difficult to handle.

Cytology Smears

Generally, we prefer smears made in a flat 'slide over slide' technique with minimal downward pressure. Try and get the sample as close to the middle of the slide as possible, as this helps us get perfect staining on our automated slide stainer. We charge by site and not numbers of slides - so please don't skimp! Send us everything, spreader slides and any previously stained samples you have checked in - house. Slides should be individually labelled by site, something we find easier on the frosted glass type.

Haematology

To make the most of your haematology, do check your EDTA pots for clots before you send them in - there is very little we can tell from a sample with even a small clot in the lid. **Make fresh blood smears to accompany the EDTA sample:** once air dried, the cell morphology is fixed, giving our haematologists the best chance of picking up subtle changes. Even if you think your smears are less than perfect, we can tell a great deal from them and we are happy to advise on how to do even better!

Bone Marrow

Full instructions on how to get the best bone marrow samples will be available on our website via links from the haematology and cytology sections - please remember to package cytology smears separately from formalin fixed core biopsies to prevent fumes bleaching the cytology slides.

Packaging instructions can be found on our web site:
www.langfordvets.co.uk/laboratory_vetinfo.htm

Submission and Reporting

When you submit samples to us, they will be received by our friendly office staff who will also be your point of contact for any queries.

If you are delivering urgent samples by hand, the office is located on the ground floor of the Churchill Building on the Langford Site of the University of Bristol.

Submission forms that cover all our tests, along with our detailed price list can be downloaded from our website www.langfordvets.co.uk/diagnostic_laboratories.htm

Printed forms are available on request.

We also provide

- **FREEPOST envelopes**
- **Viral Transport Medium (VTM)** for feline virus isolation samples

To order any of the above, please contact:

- **Tel 0117 928 9412/9337**
- **Fax 0117 928 9613**
- **Email lvslab@langfordvets.co.uk**

For prompt receipt of your results, we will fax out all reports to your practice.

Don't forget, our two full time clinical pathologists are willing to discuss results from your cases with you.



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For further information on tests, samples and laboratory staff, please visit our website: www.langfordvets.co.uk/diagnostic_laboratories.htm