

Clinical Pathology



Laboratory Manual: UP Clients

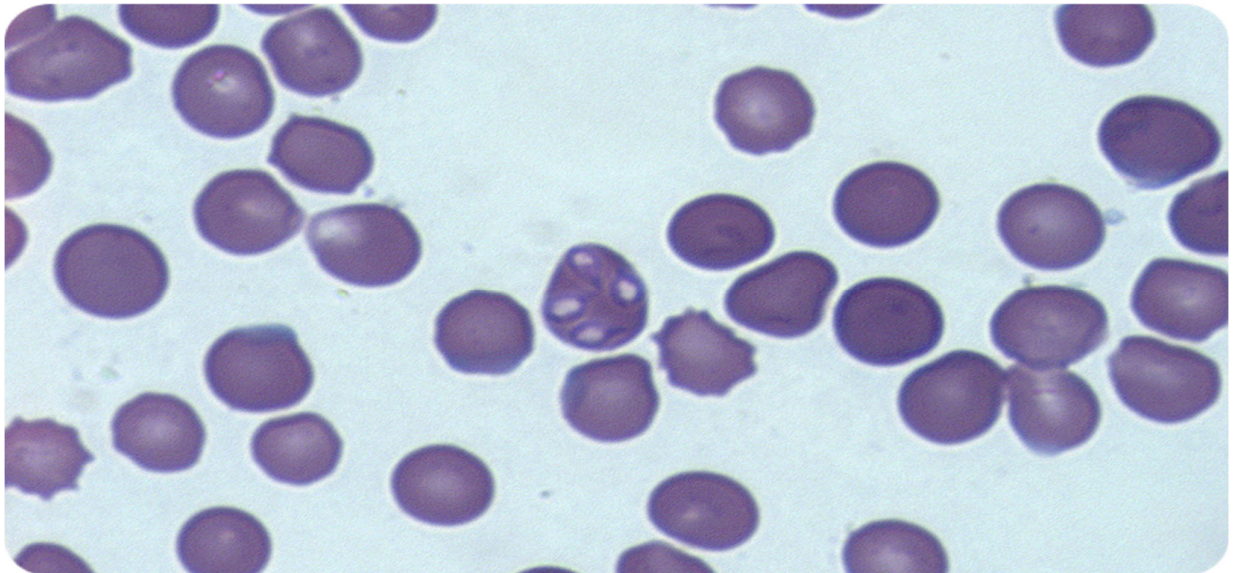


TABLE OF CONTENTS

INTRODUCTION	3
TURN-AROUND-TIMES, SAMPLE DEADLINES AND RELEASE OF RESULTS	5
RESEARCH SUPPORT	8
SAMPLING AND SAMPLING TUBES	11
PROFILES AND TESTS	16

INTRODUCTION

The clinical pathology laboratory is situated on floor 3 of the Onderstepoort Veterinary Academic Hospital (OVAH).

The lab offers haematology, clinical chemistry (including hormones and blood-gas/acid-base analysis), haemostasis, cytology and urinalysis testing for domestic species as well as for exotic/ wildlife species when possible. The lab is staffed by 3 specialist clinical pathologists, 1 clinical pathology resident, 4 veterinary laboratory technologists and 2 support staff members.

Our services are open primarily to clinicians from the OVAH and researchers from the Faculty of Veterinary Science. The lab also accepts samples from private practitioners in southern Africa, as well as samples from researchers in other UP faculties, outside universities and biomedical institutions. In addition, the laboratory performs tests on samples sent from other veterinary clinical pathology laboratories in South Africa.

CONTACT DETAILS

Reception: +27 12 529 8199

After-hours and weekends (technologist on call): +27 72 224 9612

Prof Emma Hooijberg, Clinical pathologist and Section Head:
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Prof Amelia Goddard, Clinical pathologist, Head of Department:
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Mrs Carien Muller, Control technologist: carien.muller@up.ac.za

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For more details please see our website:

<https://www.up.ac.za/companion-animal-clinical-studies/article/2851096/clinical-pathology>

TURN-AROUND-TIMES, SAMPLE DEADLINES AND RELEASE OF RESULTS

TURN-AROUND TIMES

Please note that maintenance and quality control procedures take place daily from 8:00 to 9:00 and it is often not technically possible to start running samples before 9:00.

Haematology

- Complete Blood Count – 4 hours
- Coombs' test – 2 hours
- Blood typing – 2 hours
- Crossmatching – 4 hours
- Chemotherapy blood count – 1 hour
- Emergency cases – 1 hour

Chemistry

- General clinical chemistry – 4 hours
- Emergency general clinical chemistry – 1 hour
- Blood gas – 20 minutes
- Electrophoresis – Fridays only
- Emergency electrophoresis as agreed with on-duty Clinical Pathologists – same day if submitted before 12:00, otherwise next day

Cytology

- General cytology – 6 hours
- CSF – 2 hours

- Emergency cases as agreed with on-duty Clinical Pathologists
– 1 hour
- Full urinalysis – 2 hours

Hormones (incl. phenobarbital and Vit B12)

- General endocrine samples – batched and run on Mondays, Wednesdays and Fridays – 4 hours
- Emergency cases as agreed with on-duty Clinical Pathologists
– 4 hours (Tues/ Thurs)

Haemostasis (please notify lab of sample beforehand)

- PT, aPTT, Fib, D-dimers, Antithrombin – 3 hours
- Emergency cases – 2 hours
- TEG – 3 hours (initial sections of TEG available for viewing from 1 hour)

Emergency cases

For a sample to be handled as an emergency (turnaround time around 1hr), the laboratory must be notified when the sample enters the reception area. To record this, there is an Emergency Sample List (orange sheet) that needs to be filled in by the clinician/ student submitting the sample. Emergency samples sent up in the chute must be accompanied by a note or telephone call clearly informing the laboratory that the sample is an emergency. For samples to be handled as priority (not emergency but analysed before routine samples), the sample must be recorded on the blue Priority Sample sheet.

SAMPLE DEADLINE TIMES

Routine laboratory opening times: weekdays 8:00-16:30

Sample submission deadline: 15:30

All attempts will be made to process these samples by 16:30

Samples submitted after 15:30 will not be reported on the same day.

Results may only be available after 10:00 the following working day.

Only emergency cases will be fully processed after 15:30.

This is however subject to the **clinician (not student) discussing the case first** with the on-duty clinical pathologist.

RELEASE OF PRELIMINARY RESULTS

Laboratory test results are reported on the UVIS platform. No analyser printouts will routinely be given by technologists to students or clinicians as these results have not been validated and may not be correct. The only exceptions to this are the haematology results from SAM oncology patients requested on UVIS as a Chemotherapy CBC, or when UVIS fails.

Any other requests for analyser printouts must be discussed with the clinical pathologist (not the technologist) on duty.

ACCESS TO LABORATORY AREAS

Access to the analytical laboratory rooms is restricted to laboratory staff only.

Clinicians may use the blood-gas, Abaxis haematology and Heska chemistry analysers after-hours, after having received the appropriate training. Clinicians may not use these analysers during laboratory hours. Students are not allowed to use these analysers at any time.

RESEARCH SUPPORT

1. It is advisable to discuss general ideas at an early stage in the planning of your research. Please contact Dr Yolandi Rautenbach (yolandi.rautenbach@up.ac.za) with queries.
2. The Research Ethics Committee requires a Consent to Provide Services letter from the Clinical Pathology Laboratory, for any research project intending to make use of our services or biobank. In order to provide this letter, we require the following information:
 - Sample types, volumes and numbers
 - Proposed sample preservation and transport
 - Proposed list of tests to be conducted
 - Sample handling post-analysis (processing and storage/ collection by researcher/ destruction)
 - Processing and storage protocol, if applicable. Storage space is available in our Biobank (-80°C)
 - Proposed time schedule
 - Method of remuneration (cost point number for UP researchers, full invoicing details for external researchers)
 - Names of research leader and co-workers.
3. A meeting may be arranged with the researcher to discuss further details of the research testing, as well as the timing of the testing.
4. A quote will be issued, based on the information provided.
5. Once details have been finalised and the quote has been accepted, a Consent to Provide Services agreement will be signed by one of the clinical pathologists. This agreement should be used as part of the documentation submitted for Research/ Animal Ethics Approval.

6. Proof of Animal Ethics Approval must be sent to Dr Rautenbach before any testing takes place.
7. In terms of the Animal Disease Act (35 of 1984), a Section 20 permit must accompany any biological material to be used for research purposes. It is the legal responsibility of the researcher to determine whether a Section 20 permit is required, and to obtain one before acquiring transporting any research samples. No research testing will be run in the clinical pathology lab without a Section 20 permit, if relevant. We can supply researchers with details for filing out the Facilities (Part 5) section of the application form. Please see <https://www.daff.gov.za/daffweb3/Branches/Agricultural-Production-Health-Food-Safety/Animal-Health/Epidemiology/researchapproval>.
8. The final date of testing must be confirmed by the Control Technologist, Mrs Carien Muller. The researcher will be asked to sign a sample submission form confirming the number of samples and analyses to be run.
9. Payment:
 - Costs are based on the list of fees issued by the Section from time to time (available from the Section upon request).
 - Account set-up and/ or cost point details should be submitted to Dr Yolandi Rautenbach and Mrs Carien Muller 30 days prior to testing.
 - An account for the costs of tests performed will be tendered on the last day (or nearest working day) of every month. Payment is to be made promptly upon receipt of such account and in any case not less than 30 days after the account is rendered.

- Any other arrangement must be cleared with Prof Emma Hooijberg (emma.hooijberg@up.ac.za), and should not contravene any regulations issued by the University of Pretoria in regard to debtors.

SAMPLING AND SAMPLING TUBES

SAMPLE COLLECTION

- Samples from larger animals should be collected directly into Vacutainer tubes
- Samples from smaller animals may be collected into a syringe. After blood is collected into a syringe, the needle should be removed, and the blood gently pushed into an open tube containing the appropriate anticoagulant. All tubes (including serum tubes with a clot activator) should be gently inverted several times to mix the blood with the anticoagulant or clot activator
- Sodium citrate (blue top) tubes must be filled to the line on the tube; other tubes should be at least 30% full
- If there will be a delay of more than an hour between sample collection and the arrival of the sample in the lab: EDTA whole blood samples for haematology should be placed in the fridge and a blood smear made from fresh blood; plasma or serum for chemistry, coagulation and endocrine testing should generally be prepared as follows:
 - Serum tubes are left to clot for 20-30 min, then centrifuged. Anti-coagulated blood (heparin, citrate, EDTA) can be spun immediately.
 - Remove the serum or plasma and place into a plain tube. Label with the patient name and material type (serum or EDTA/ heparin/ citrated plasma)
 - Place the sample into the fridge (chemistry, hormones) or freezer (coagulation assays, ACTH).

- Avoid haemolysis by drawing blood cleanly and quickly, and aliquoting off serum or plasma. Do not freeze whole blood, unseparated serum or unseparated plasma.
- Avoid lipaemia by starving patients before blood collection, where possible.
- Please identify all samples appropriately. Sample tubes should be labelled with the patient name and surname or patient ID sticker. Slides should be labelled with the patient name and localisation (e.g. liver, skin). Tubes containing various types of body fluids should be labelled as such (e.g. synovial fluid, CSF).
- The information on the sample should match the information on the request form.
- The submitted material must be appropriate for the tests requested (see later).
- Please label slides with pencil only, as pen/ marker washes off in the fixative.

HAEMATOLOGY

The standard tube for haematology is EDTA (purple top). Once blood has been collected, the tube should be inverted several times to mix the blood with the anticoagulant. EDTA whole blood can be stored in the fridge but must never be frozen. If the blood will take more than an hour to get to the lab, please also make a blood smear from the fresh sample and submit with the EDTA tube.

Heparin whole blood (green top Vacutainer; orange top pediatric tube) is used for haematology instead of EDTA blood in some exotic species.

HAEMOSTASIS

Coagulation assays are performed on citrated plasma (blue top). Blood should be collected directly into the Vacutainer tube where possible, after drawing off an initial 1-2 mL of blood into a serum discard tube. This is to ensure that no tissue factor (released from damaged endothelial cells during venipuncture) enters the citrated blood sample. The tube must be filled to the fill line marked on the tube to ensure the correct ratio of citrate to blood (1:9). The tube must be centrifuged and the plasma separated as soon as possible after collection. The citrated plasma should be placed into a clearly labelled plain tube. For samples that are to be transported to the lab, it is recommended to freeze the plasma and send the sample on ice.

Thromboelastography (TEG) requires whole citrated blood samples (i.e. do not centrifuge). The optimal time for running TEG is exactly 30 minutes after collection. TEG assay may be performed up to two hours after collection on citrated whole blood that has been kept in the fridge. Please inform the laboratory before requesting a TEG assay.

CLINICAL CHEMISTRY AND HORMONES

Serum is the preferred sample material, but we will accept heparin plasma. If there will be a delay before testing, serum/ plasma must be aliquoted off, as explained above. Samples can be kept in the fridge for analysis within 24 hrs, but should be frozen if analysis will be delayed beyond 24 hrs.

Exceptions:

ACTH: Collect into an EDTA tube. If the sample will reach the lab within 4 hrs, simply keep the sample cool in a fridge or cooler box. If analysis will be delayed by > 4hrs, then centrifuge the sample, aliquot off the plasma, place the plasma into a plain tube and freeze.

Transport on ice. This sample must reach the lab within 24 hrs.

Ammonia: Collect into EDTA and bring to the lab for immediate analysis. If sample analysis will be delayed at all, then centrifuge the tube, aliquot off the plasma, place into a plain tube, freeze immediately and transport frozen. Please inform the laboratory before requesting an ammonia assay.

BLOOD GAS/ ACID-BASE ANALYSIS

Heparinised whole blood in a syringe or a lithium heparin (green) vacutainer tube is required. When using a syringe, the minimum blood fill volume is as follows:

- 200 µL for 1 mL syringe
- 800 µL for 3 mL syringe
- 1.5 mL for 5 mL syringe

The sample must be free of excess air and blood clots and must be analysed within 15 minutes of collection.

CYTOLOGY

Fluid samples: Must be collected into an EDTA tube. The samples must reach the laboratory within 8 hours (nucleated cells degenerate). Keep the samples cool after collection (fridge or cool box). It is also recommended to make 2 direct smears of the fluid straight after collection, if there will be a delay between sampling and analysis. CSF must be examined within 30 minutes of collection.

Fine needle aspirates: Label slides, place in a safe container and send to the lab unstained. Do not send samples for cytology and samples in formalin in the same package.

PROFILES AND TESTS

Prices can be found on UVIS

	TEST CODE	SAMPLE	TURN-AROUND-TIME	COMMENT
HAEMATOLOGY				
Avian Complete Blood Count	AVIAN CBC	EDTA or Heparin, Smear	4 hrs	
Blood Smear Examination	BLSM	EDTA, Smear	4 hrs	
Blood Typing	BLD TYP	EDTA	2 hrs	Dogs and cats
Blood Smear Differential Exotics	BL DIFF EX	Smear	4 hrs	
Buffy Coat Examination	BUFFY	EDTA	4 hrs	
Chemo CBC	CHEMO CBC	EDTA	1 hr	No differential count
Complete Blood Count	CBC	EDTA	4 hrs	
Coombs' Test (Canine)	COOMBS	EDTA	2 hrs	Dogs only
In-Saline Agglutination	ISA	EDTA	4 hrs	
Machine Blood Count	MBC	EDTA	4 hrs	No differential count
Machine Blood Count (Abaxis)	MBC(ABAXIS)	EDTA	4 hrs	After-hours only
Packed Cell Volume	PCV	EDTA	4 hrs	
PCV & TPP	PCV/TPP	EDTA, Heparin	4 hrs	
Platelet Count	PLT	EDTA, Na-Citrate	4 hrs	
Reptile Complete Blood Count	REPTILE CBC	EDTA, Heparin	4 hrs	
Reticulocytes	RET	EDTA	4 hrs	
Wright-Giemsa Stain	WG	Smear	4 hrs	
Cross Match	COMPAT 1, 2, 3, 4, 5	EDTA, Serum	4 hrs	EDTA and serum from recipient and donor(s)
CLINICAL CHEMISTRY				

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Alanine Aminotransferase	ALT	Serum, Heparin	4 hrs	
Albumin	ALB	Serum, Heparin	4 hrs	
Alkaline Phosphatase	ALP	Serum, Heparin	4 hrs	
Ammonia	AMM	EDTA	1 hr	Inform lab before drawing sample, measure immediately
Ammonium Tolerance	AMM TOL	EDTA	1 hr	
Amylase	AMS	Serum, Heparin	4 hrs	
Arterial Blood Gas	ABG	Heparin	20 min	
Aspartate Aminotransferase	AST	Serum, Heparin	4 hrs	
B-Hydroxy butyrate	B-HB	Serum	n/a	For research only, please pre-arrange
Bile Acid - Pre & Post Sample	BA PROF	Serum x2	4 hrs	
Bile Acid Post Sample	BA POST	Serum	4 hrs	
Bile Acid Single/Pre Sample	BA SINGLE	Serum	4 hrs	
Calcium	CA	Serum, Heparin	4 hrs	
Chloride	CL	Serum, Heparin	4 hrs	
Cholesterol	CHOL	Serum, Heparin	4 hrs	
C-Reactive Protein (Canine)	CRP	Serum	4 hrs	Dogs only
Creatine Kinase	CK	Serum, Heparin	4 hrs	
Creatinine	CREAT	Serum, Heparin	4 hrs	
Elective Surgery Profile (Equine)	PRE-ANAES EQ	Serum, Heparin	4 hrs	TSP, ALB, GLOB, CREAT
Equine Chemistry Panel	CHEM PANEL EQ	Serum, Heparin	4 hrs	TSP, ALB, GLOB, UN, CREAT, SIP, AST, CK, GLU, GGT, BILT, CA
Equine Colic Profile	COLIC PROF	Serum, Heparin	4 hrs	TSP, ALB, GLOB, CREAT, CL, VBG

CLINICAL PATHOLOGY LABORATORY MANUAL 2023

Gamma-Glutamyl Transferase	GGT	Serum, Heparin	4 hrs	
General Medical Profile (Avian)	GEN MED PROF AVIAN	Serum, Heparin	4 hrs	BA SINGLE, URIC, AMS, CHOL, CK, VBG
General Medical Profile (Primate)	GEN MED PROF PRIM	Serum, Heparin	4 hrs	TSP, ALB, GLOB, UN, CREAT, GGT, AMS, BA SINGLE, VBG
General Medical Profile (Reptile)	GEN MED PROF REP	Serum, Heparin	4 hrs	URIC, SIP, CA
General Medical Profile (Small Animal)	GEN MED PROF SA	Serum, Heparin	4 hrs	TSP, ALB, GLOB, UN, CREAT, SIP, ALT, ALP, CHOL, GLU, NA, K, CL, CA, CA-I, MG
Globulin	GLOB		4 hrs	Calculated from TSP and ALB
Glucose	GLU	Serum, Heparin	4 hrs	
Glutamate Dehydrogenase	GLDH	Serum, Heparin	4 hrs	
Hepatic Profile (Primate)	HEP PROF PRIM	Serum, Heparin	4 hrs	TSP, ALB, GLOB, GGT, BA SINGLE
Hepatic Profile (Small Animal)	HEP PROF SA	Serum, Heparin	4 hrs	TSP, ALB, GLOB, ALT, ALP, BA PROF
Ionised Calcium	CA-I	Serum, Heparin	20 min	
Iron	IRON	Serum	4 hrs	
Lactate	LACT	Serum, Heparin	20 min	
Lipase DGGR	LIP	Serum, Heparin	4 hrs	
Magnesium	MG	Serum, Heparin	4 hrs	
Minor Medical Profile (Avian)	MIN MED PROF AVIAN	Serum, Heparin	4 hrs	BA SINGLE, URIC
Minor Medical Profile (Small Animal)	MIN MED PROF SA	Serum, Heparin	4 hrs	TSP, ALB, GLOB, UN, CREAT, ALT, ALP, NA, K
Non-Esterified Fatty Acids	NEFA	Serum	n/a	For research only, please pre-arrange
Peritoneal Fluid Bilirubin	PERITON FL BILI	Fluid	4 hrs	

CLINICAL PATHOLOGY LABORATORY MANUAL 2023

Peritoneal Fluid Creatinine	PERITON FL CREAT	Fluid	4 hrs	
Peritoneal Fluid Urea	PERITON FL UN	Fluid	4 hrs	
Phenobarbitone	PHENOBARB	Serum	Mon/ Wed/ Fri	
Pleural Fluid Cholesterol	PLEURAL FL CHOL	Fluid	4 hrs	
Pleural Fluid Triglyceride	PLEURAL FL TRIG	Fluid	4 hrs	
Potassium	K	Serum, Heparin	4 hrs	
Pre-Anaesthetic Profile (Small Animal)	PRE-ANAES SA	Serum, Heparin	4 hrs	ALB, CREAT
Renal Profile (Primate)	RENAL PROF PRIM	Serum, Heparin	4 hrs	UN, CREAT, VBG
Renal Profile (Small Animal)	RENAL PROF SA	Serum, Heparin	4 hrs	UN, CREAT, SIP, ALB, NA, K, CL CA
Serum Amyloid A	SAA	Serum	4 hrs	Horses, domestic cats – routine; discuss other species with lab
Serum Inorganic Phosphate	SIP	Serum, Heparin	4 hrs	
Serum Prot Elec Exotics	SPE EX	Serum	Friday only	
Serum Protein Electrophoresis	SPE	Serum	Friday only	
Sodium	NA	Serum, Heparin	4 hrs	
Total Bilirubin	BILT	Serum, Heparin	4 hrs	
Total Serum Protein	TSP	Serum, Heparin	4 hrs	
Triglyceride	TRIG	Serum, Heparin	4 hrs	
Urea	UN	Serum, Heparin	4 hrs	
Uric Acid	URIC	Serum, Heparin	4 hrs	
Venous Blood Gas	VBG	Heparin	20 min	
CYTOLOGY				
Bone Marrow Aspirate Examination	BONE MARROW ASP	Slides, EDTA	6 hrs	Clinical pathologist will

Bone Marrow Aspirate - 2 Sites	BONE MARROW ASP 2	Slides, EDTA	6 hrs	assist with sample collection
Bronchoalveolar Lavage	BAL	Fluid	6 hrs	
CSF Analysis	CSF	CSF	2 hrs	
Cytology Site 1	CYTO 1	Slide	6 hrs	
Cytology Site 2-5	CYTO 2, 3, 4, 5	Slide	6 hrs	
Cytology stains	STAIN	Slide	6 hrs	
Fluid Cell Count	FLU CELL COUNT	EDTA	6 hrs	
Miscellaneous Fluid Analysis	MISC FLU	EDTA + Serum	6 hrs	E.g. seroma, cyst
Pericardial Fluid Analysis	PERICARD FL	EDTA + Serum	6 hrs	
Peritoneal Fluid Analysis	PERITONEAL FL	EDTA + Serum	6 hrs	
Pleural Fluid Analysis	PLEURAL FL	EDTA + Serum	6 hrs	
Synovial Fluid Analysis	SYNOVIAL FL	EDTA + Serum	6 hrs	
Synovial Fluid Analysis Site 2-4	SYNOVIAL FL 2,3, 4, 5	EDTA + Serum	6 hrs	
Trans-Tracheal Aspirate	TTA	Fluid	6 hrs	
HAEMOSTASIS				
Antithrombin	ANT	Na-Citrate	4 hrs	Please inform lab beforehand
D-Dimer	DDIM	Na-Citrate	4 hrs	
Fibrinogen	FIB	Na-Citrate	4 hrs	Full coagulation profile: TEG, PT, PTT, ANT, DDIM, FIB
Full Coagulation Profile	COAG PROF	Na-Citrate	4 hrs	
Mini Coagulation Profile	MIN COAG PROF	Na-Citrate	4 hrs	Minor coagulation profile: TEG, PT, DDIM
Partial Thromboplastin Time	PTT	Na-Citrate	4 hrs	
Prothrombin Time	PT	Na-Citrate	4 hrs	PT/PTT Combo: PT, PTT
PT/PTT Combo	PT PTT COMBO	Na-Citrate	4 hrs	

Thromboelastography	TEG	Na-Citrate	3 hrs	
HORMONES				
ACTH Endogenous	ACTH Endog	EDTA (cooled)	Mon/ Wed/ Fri	
ACTH Stimulation 2 Samples	ACTH STIM	Serum x2	Mon/ Wed/ Fri	
Cobalamin (Vit B12)	COBAL	Serum	Mon/ Wed/ Fri	
Cortisol Baseline/Single	CORT BASE	Serum	Mon/ Wed/ Fri	
Cortisol Post 1	CORT POST 1	Serum	Mon/ Wed/ Fri	
Critical Care Prognostication Profile	PROG PROFILE	Serum	Mon/ Wed/ Fri	CORT BASE, TSH, T4-SA
Dexamethasone Suppression - 3 samples	DEXA SUPP 3	Serum x3	Mon/ Wed/ Fri	
Insulin	INS	Serum	Mon/ Wed/ Fri	Horses - routine; please discuss canine cases with lab; not for other species.
Progesterone	PROGEST	Serum	Mon/ Wed/ Fri	
Progesterone urgent	PROGEST URG	Serum	Mon/ Wed/ Fri	
Thyroid Stimulating Hormone	TSH	Serum	Mon/ Wed/ Fri	
Total T4 - Small Animals	T4-SA	Serum	Mon/ Wed/ Fri	
Trypsin-Like Immunoassay	TLI	Serum	Mon/ Wed/ Fri	Dogs only
URINE				
Urine Creatinine	UR CREAT	Urine	4 hrs	
Urine Protein	UR PROTEIN	Urine	4 hrs	
Urine Chloride	UR CL	Urine	4 hrs	
Urine Potassium	UR K	Urine	4 hrs	
Urine Sodium	UR NA	Urine	4 hrs	
Urine Urea	UR UN	Urine	4 hrs	

Complete Urinalysis	COMPLETE UA	Urine	2 hrs	
Urinalysis- No Sediment	UA NO SED	Urine	2 hrs	
Urinalysis - Microscopic	UR MICROSCOPIC	Urine	2 hrs	
Urine Protein/Creatinine Ratio	UPC	Urine	4 hrs	
Urine Cortisol/Creatinine Ratio	UCC	Urine	Mon/ Wed/ Fri	
Urine Na/K	UR NA/K	Urine	4 hrs	
Urine Magnesium	UR MG	Urine	4 hrs	
Urine GGT/Creatinine Ratio	UGC	Urine	4 hrs	
Urine Calcium	UR CA	Urine	4 hrs	

Onderstepoort Clinical Pathology Laboratory

Sample Submission Form

CP number:

Lab number:

Onderstepoort Veterinary Academic Hospital
 Old Soutpan Road (M35)
 Pretoria
 Tel: +27 12 529 8199
 Email: emma.hooijberg@up.ac.za; carien.muller@up.ac.za

Referring Veterinarian
Practice name
Referring vet
Email
Send results to
Tel

Patient Details					
Name					
Owner Name					
Species					
Breed					
Age/Birth date					
Sex	M	F	Neutered	Y	N

Clinical presentation and pertinent history:			
Presumptive diagnosis:	Status:	Emergency	Routine

Please label all slides and sample tubes clearly with the patient name and date and time of collection

✓	Haematology	Sample		
	Avian CBC	EDTA/heparin	ALP	Serum/heparin
	Blood smear examination	EDTA/smear	Ammonia*	EDTA
	Blood typing (canine, feline)	EDTA	Ammonium tolerance*	EDTA
	Blood smear differential (exotics)	Smear	Amylase	Serum/heparin
	Buffy coat examination	EDTA	AST	Serum/heparin
	Chemo CBC	EDTA	Bile acid (pre- and post-prandial)	Serum (x2)
	CBC	EDTA	Bile acid (single)	Serum
	Coomb's test (canine)	EDTA	Calcium	Serum/heparin
	Crossmatch	EDTA & serum	Chloride	Serum/heparin
	ISA test	EDTA	Cholesterol	Serum/heparin
	Machine blood count	EDTA	CRP (canine)	Serum
	PCV	EDTA/heparin	CK	Serum/heparin
	PCV and TP (refractometer)	EDTA/heparin	Creatinine	Serum/heparin
	Platelet count	EDTA/citrate	Equine elective surgery profile	Serum/heparin
	Reptile CBC	EDTA/heparin	Equine chemistry panel	Serum/heparin
	Reticulocytes	EDTA	Equine colic profile	Serum/heparin
	Wright-Giemsa stain	Smear	Fluid bilirubin (peritoneal)	EDTA (fluid)
✓	Clinical chemistry	Sample	Fluid creatinine (peritoneal)	EDTA (fluid)
	ALT	Serum/heparin	Fluid triglyceride (pleural)	EDTA (fluid)
	Albumin	Serum	Fluid urea (peritoneal)	EDTA (fluid)

	GGT	Serum/heparin	✓	Haemostasis*	Sample
	Avian general medical profile	Heparin		Antithrombin III*	Citrate
	Primate general medical profile	Serum/heparin		D-dimer*	Citrate
	Reptile general medical profile	Serum/heparin		Fibrinogen*	Citrate
	Small animal general medical profile	Serum/heparin		Full coagulation profile*	Citrate
	Globulin	From TP & Alb		Minor coagulation profile*	Citrate
	Glucose	Serum/heparin		aPTT*	Citrate
	GLDH	Serum/heparin		PT*	Citrate
	Primate hepatic profile	Serum/heparin		PT and aPTT*	Citrate
	Small animal hepatic profile	Serum/heparin			
	Ionised calcium*	Serum/heparin	✓	Endocrinology	Sample
	Iron	Serum		Endogenous ACTH	EDTA
	LDH	Serum/heparin		ACTH stimulation test (2 samples)	Serum (x2)
	Lipase DGGR	Serum/heparin		Cobalamin (vitamin B12)	Serum
	Magnesium	Serum/heparin		Cortisol (baseline/single)	Serum
	Avian minor medical profile	Heparin		Low dose dexamethasone supp test	Serum (x3)
	Small animal minor medical profile	Serum/heparin		Progesterone	Serum
	Phenobarbitone	Serum		TSH (canine, feline)	Serum
	Phosphate (inorganic)	Serum/heparin		TT4	Serum
	Potassium	Serum/heparin		TLI (canine)	Serum
	Small animal pre-anaesthetic profile	Serum/heparin	✓	Urinalysis	Sample
	Primate renal profile	Serum/heparin		Complete urinalysis	Urine
	Small animal renal profile	Serum/heparin		Urine calcium*	Urine
	Serum amyloid A (equine, other)	Serum		Urine chloride*	Urine
	Serum protein electrophoresis	Serum		Urine cortisol: creatinine ratio	Urine
	Exotics protein electrophoresis	Serum/heparin		Urine creatinine*	Urine
	Sodium	Serum/heparin		Urine GGT: creatinine ratio	Urine
	Total bilirubin	Serum/heparin		Urine magnesium*	Urine
	Total serum protein	Serum/heparin		Urine potassium*	Urine
	Triglyceride	Serum/heparin		Urine protein: creatinine ratio	Urine
	Urea	Serum/heparin		Urine sodium*	Urine
	Uric acid	Serum/heparin		Urinalysis – no sediment	Urine

- Please contact the laboratory before collection and submission of samples for the marked (*) tests.
- For submission of cytology, please refer to the cytology request form.
- Samples for haematology, clinical chemistry, haemostasis, cytology and urinalysis received before 15:00 will be resultd on the same day. Samples received after this time will be resultd on the next working day.
- Routine samples submitted for endocrinology (including phenobarbitone) will only be analysed on Mondays, Wednesdays and Fridays. Samples received before 12pm will be resultd the same day. Samples received after this time will be resultd on the next working day.
- Emergency samples will be processed according to the appropriate turnaround time – please refer to the laboratory manual for these times.
- All samples will be processed as routine, unless stated otherwise.

Onderstepoort Clinical Pathology Laboratory

Cytology Request Form

Onderstepoort Veterinary Academic Hospital
 Old Soutpan Road (M35)
 Pretoria
 Tel: +27 12 529 8199
 Email: opclinpathlab@up.ac.za

Referring Veterinarian
Practice name
Referring vet
Email
Send results to
Tel

Patient Details			
Name			
Owner Name			
Species			
Breed			
Age/Birth date			
Sex	M	F	Neutered Y N

Clinical presentation and pertinent history:			
Presumptive diagnosis:	Status:	Emergency	Routine

Please label all slides and sample tubes clearly with the patient name, site of collection/sample type and date of collection

Cytology Request			
	FNA	Site(s):	
	Cytobrush	Site(s):	
	Impression smear	Site(s):	
	Bone marrow		
	Blood smear	Suspected parasites?	Y N
	CSF	Collection site:	Cisternal Lumbar
	BAL		
	TTA/TTW		
	Synovial fluid	Joint(s):	
	Effusion fluid	Peritoneal	Pleural Pericardial
	Miscellaneous fluid	Site(s):	
	Urine sediment	Collection method:	
	Immunocytochemistry	Marker(s):	

For office use only			
CP number:	Lab number:		
Cytology <input type="checkbox"/>	Bone Marrow <input type="checkbox"/>	Blood smear <input type="checkbox"/>	
Number of slides:	Stained?	Y	N
Date received:			