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## Instructions for Sample Submission / Shipping - Diagnostic Real-time PCR

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Real-time PCR Research and Diagnostics Core Facility  
Department of Medicine & Epidemiology  
School of Veterinary Medicine  
3110 Tupper Hall  
University of California, Davis  
Davis, CA 95616  
Website: <http://www.vetmed.ucdavis.edu/vme/tagmanservice/>

Phone: 530.752.7991  
Fax: 530.754.6862

### Sample collection information:

Keep sample cool at all times to preserve DNA integrity and accuracy of PCR testing

1. **Whole blood** – 2 ml EDTA (purple top) tube: **\*\*DO NOT SEND SERUM\*\***
2. **Cerebral Spinal Fluid (CSF)** – at least 0.5ml in EDTA (purple top) tube
3. **Aqueous fluid** – at least 0.5ml in EDTA (purple top) tube
4. **Tissue** – 25-100 mg of fresh or frozen tissue with **no** preservative
5. **Tracheal wash** – ~5 ml in leak proof container (i.e. purple/red top blood tube)
6. **Joint tap** (synovial fluid) – at least 0.5 ml in EDTA (purple top) tube
7. **Swabs** – synthetic swab (no cotton tipped swabs please) in a red top tube or EDTA (purple top) tube.  
Swabs from currettes are okay, but please snap swab off into a blood tube after sampling - do not put swab back into media
8. **Feces** – fresh as possible, no more than one fecal cup or one collection tube full (fecal/rectal swabs okay)
9. **Urine** – ~5-10 ml in EDTA (purple top) tube
10. **Pericardial fluid** – at least 0.5ml in EDTA (purple top) tube
11. **Ascites** – EDTA (purple top) tube
12. **Bacterial culture** – bacterial cells with **no** media in a micro-centrifuge tube.
13. **Paraffinized Tissue (FFPE)** - three or four 20-25 micron scrolls. Tissue can not be fixed in formalin for more than 24 hours. Paraffin blocks can also be submitted.

### Packing/Shipping Instructions:

1. Write patient and owner's name on sample.
2. Include a completed Sample Submission Form (page 2) with each shipment.
3. Below is a condensed version of the IATA regulations (Air Transport Association). Most samples (some cultures are excluded - see below\*) fall under Biological substance category B - UN 3373. Full instructions can be found at:  
[http://www.iata.org/whatwedo/cargo/dangerous\\_goods/Documents/DGR52\\_PI650\\_EN.pdf](http://www.iata.org/whatwedo/cargo/dangerous_goods/Documents/DGR52_PI650_EN.pdf)  
\*A few cultures may be considered Biological substance category A and have more stringent shipping regulations. Please see pages 128-129 of the document found here for these exceptions:  
[http://www.iata.org/whatwedo/cargo/dangerous\\_goods/Documents/DGR52\\_InfectiousSubstances\(DGR362\).pdf](http://www.iata.org/whatwedo/cargo/dangerous_goods/Documents/DGR52_InfectiousSubstances(DGR362).pdf)
  - Samples should be shipped in a rigid container (i.e. cardboard or styrofoam box)
  - Include an ice pack and absorbant material to absorb condensation (no ice needed for fixed tissues)
  - Sample should be in a leak/spill proof container.
4. **Ship overnight** (the laboratory is open Monday-Friday). Samples must be received by 11am for same day processing.
5. Use FedEx or other express courier (**DO NOT** use USPS as all packages are held on campus at a central sorting facility before distribution).

### Shipping address:

**Real-time PCR Research and Diagnostics Core Facility**  
3110 Tupper Hall  
One Shields Avenue  
UC Davis, SVM  
Davis, CA 95616-8737  
Tel: 530.752.7991



## Diagnostic Real-time PCR Sample Submission Form

Real-time PCR Research and Diagnostics Core Facility  
 Department of Medicine & Epidemiology  
 School of Veterinary Medicine  
 3110 Tupper Hall  
 University of California, Davis  
 Davis, CA 95616

Phone: 530.752.7991  
 Fax: 530.754.6862

<http://www.vetmed.ucdavis.edu/vme/tagmanservice>

**Date:** \_\_\_\_\_

**Veterinarian:** \_\_\_\_\_

**Clinic or Hospital:** \_\_\_\_\_

**Address (billing):** \_\_\_\_\_

\_\_\_\_\_

**Phone:** \_\_\_\_\_

**How would you like the results reported? (check all that apply)**

**Fax:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Your Federal Tax ID (FTID/FEIN - found on W9 tax form) #:** \_\_\_\_\_

(All first time customers must provide valid FTID #; samples can not be processed otherwise)

Patient:	Owner:	Species:	Sample Type*:	Test Requested:
1.				
Clinical signs: _____				
2.				
Clinical signs: _____				
3.				
Clinical signs: _____				
4.				
Clinical signs: _____				
5.				
Clinical signs: _____				

(For more samples please use back side)

**\*If you want to combine (pool) multiple sample types to save costs, please indicate above.**

**Comments:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How did you hear about us?  Website  Mailings  Conference  Referral  Facebook

Other (\_\_\_\_\_)



## FedEx Online Reduced Price Program\* (optional) Enrollment Form

A negotiated contract between FedEx and the Real-time PCR Core Facility allows our clients to receive University bulk discounted pricing for FedEx Priority Overnight shipping. Join our FedEx reduced price program and **save up to 50% on shipping costs** compared to standard listed rates when sending packages from anywhere in the United States and internationally to the Real-time PCR Research and Diagnostic Core Facility!

### Why enroll in the FedEx reduced price program?

- 1.) Enrollment is free and easy!
- 2.) Using the online FedEx shipping website is an easy way to create shipments, and we provide detailed instructions to make it even easier!
- 3.) You pay nothing upfront for shipping. We will bill your clinic for shipping when we bill you for our PCR services.
- 4.) Not only will you be able to use your online account to create shipments, but you can also print shipping labels, sign up to receive tracking notifications via email, schedule a pickup (or find the nearest drop off location), and view weekly/monthly shipping summaries.

You're three steps away from saving up to 50% on FedEx shipping costs!

**Step 1** Fill out the contact information below:

**Contact Person:** \_\_\_\_\_

**Clinic or Hospital:** \_\_\_\_\_

**Address (billing):** \_\_\_\_\_

\_\_\_\_\_

**Phone:** \_\_\_\_\_

**FAX:** \_\_\_\_\_

**Email address:** \_\_\_\_\_  
(of contact person)

**Step 2:** Fax this Enrollment Form to the Real-time PCR Research and Diagnostics Core Facility at 530-754-6862.

**Step 3:** Within one business day we will fax you your clinic's UserID, Password, and instructions so you can create shipments online anytime!

**\* The FedEx reduced price program can only be used to ship packages to the Real-time PCR Core Facility. Abuse of the program by shipping elsewhere will lead to immediate deactivation.**

### Real-time PCR Assays

Abbreviation	Price	Bacteria	Sample Type
bc:A.phago	\$42.00	<i>Anaplasma phagocytophilum</i> (Tick Fever, formerly E.equi)	Tick, whole blood, spleen or liver
bc:A.platys	\$42.00	<i>Anaplasma platys</i>	Tick or whole blood
bc:Bart	\$42.00	<i>Bartonella spp</i> (including <i>henselae</i> )	Whole blood or tissue
bc:B.burg	\$42.00	<i>Borrelia burgdorferi</i> (Lyme Disease)	Tick, synovial fluid, skin biopsy, CSF or urine
bc:Bord	\$42.00	<i>Bordetella bronchiseptica</i>	Oropharyngeal swab or nasal swab
bc:Chlam	\$42.00	<i>Chlamydomphila felis/psittaci</i>	Ocular swab, cloacal/choanal swab, placenta, feces, whole blood, liver or spleen
bc:ChlamPN	\$42.00	<i>Chlamydomphila pneumoniae</i>	Bronchial wash, sputum or nasopharyngeal/tracheal aspirate/swab
CD 16AB	\$57.00	<i>Clostridium difficile</i> Toxins A and B (quantitative load)	Feces, bacterial isolate or colon
bc:CD PLP	\$42.00	<i>Corynebacterium pseudotuberculosis</i> (Pigeon Fever)	Whole blood, abcess swab, skin biopsy or soil
bc:E.canis	\$42.00	<i>Ehrlichia canis</i>	Whole blood, tick, feces or bone marrow
bc:E.chaff	\$42.00	<i>Ehrlichia chaffeensis</i>	Whole blood
bc:F.tul	\$42.00	<i>Francisella tularensis</i>	Whole blood, soil or ticks
bc:L.intra	\$42.00	<i>Lawsonia intracellularis</i> PCR	Feces, fecal/rectal swab, illium or tonsillar tissue
	\$18.00	<i>Lawsonia intracellularis</i> IPMA serology	Serum
bc:Lepto	\$42.00	<i>Leptospira spp</i>	Urine, CSF, aqueous humor
bc:L.mono	\$42.00	<i>Listeria monocytogenes</i>	CSF, whole blood, feces or placenta
MecA	\$42.00	Methicillin resistance gene MecA	Culture, urine or nasopharyngeal swab
bc:MAC	\$42.00	<i>Mycobacterium Avium Complex</i>	Feces, colon, spleen, bone marrow, lymph node, liver or kidney
bc:MTC	\$42.00	<i>Mycobacterium spp</i>	Feces, liver, spleen, lung, kidney, bone marrow, lymph node or colon
bc:CD Large	\$42.00	<i>Mycoplasma haemofelis and haemocanis (Haemobartonella)</i>	Whole blood
bc:M.felis	\$42.00	<i>Mycoplasma felis</i>	Tissue only
bc:M.lamae	\$42.00	<i>Mycoplasma haemolamae</i>	Whole blood
bc:Cat small	\$42.00	<i>Mycoplasma haemominutum</i> (cat small form)	Whole blood
bc:Dog small	\$42.00	<i>Mycoplasma haematoparvum</i> (dog small form)	Whole blood
bc:M.ovis	\$42.00	<i>Mycoplasma ovis</i>	Whole blood
bc:M.tur	\$42.00	<i>Mycoplasma turicensis</i> (Swiss form)	Whole blood
bc:N.hel	\$42.00	<i>Neorickettsia helminthoeca</i> (Salmon poisoning)	Lymph node aspirates, feces, spleen or liver
bc:PHF	1 sample \$42.00	<i>Neorickettsia risticii</i> (Potomac Horse Fever) Both samples must be from same animal	Whole blood, feces, bone marrow or tissue
	2 samples \$65.00		
bc:R.equi	\$42.00	<i>Rhodococcus equi</i> (vapA)	Tracheal swab, tracheal wash or feces
bc:rickrick	\$42.00	<i>Rickettsia spp</i> (including RMSF)	Tick or whole blood
bc:SalmA	\$42.00	<i>Salmonella spp</i>	Feces, bile, environmental swabs or GI tissue
bc:S.equi	\$42.00	<i>Streptococcus equi equi</i> (Strangles, quantitative load)	Guttural pouch lavage or nasal swab

Abbreviation	Price	Fungi	Sample Type
fu:A.fumi	\$42.00	<i>Aspergillus fumigatus</i>	Fluids or tissues at site of infection
fu:C.albicans	\$42.00	<i>Candida albicans</i>	Fluids or tissues at site of infection
fu:C.immitis	\$42.00	<i>Coccidioides immitis</i> (Valley Fever)	Fluids or tissues at site of infection
fu:C.posadasii	\$42.00	<i>Coccidioides posadasii</i> (Valley Fever)	Fluids or tissues at site of infection
fu:C.neo	\$42.00	<i>Cryptococcus neoformans</i>	Fluids or tissues at site of infection
fu:M.canis	\$42.00	<i>Microsporium canis</i>	Fluids or tissues at site of infection
fu:S.schen	\$42.00	<i>Sporothrix schenckii</i>	Soil, skin biopsy, sputum, synovial fluid, CSF or swab of lesion
fu:T.ment	\$42.00	<i>Trichophyton mentagrophytes</i>	Fluids or tissues at site of infection

### Real-time PCR Assays

Abbreviation	Price	Parasites	Sample Type
pc:B.diver	\$42.00	<i>Babesia</i> spp (including canis, divergens, gibsoni)	Tick or whole blood
pc:B.caballi	\$42.00	<i>Babesia caballi</i> (Equine piroplasmosis)	Whole blood
pc.B.conradae	\$42.00	<i>Babesia conradae</i>	Whole blood
pc:Crypto.limoB	\$42.00	<i>Cryptosporidium</i> spp	Feces
pc:C.felis	\$42.00	<i>Cryptosporidium felis</i>	Feces
pc:Giardia	\$42.00	<i>Giardia</i> spp ( <i>lamblia</i> and <i>intestinalis</i> )	Feces or GI tract tissue
pc:Neosp	\$42.00	<i>Neospora hughesi</i> and <i>caninum</i>	Aborted material, brain, heart or CSF
pc:Leish	\$42.00	<i>Leishmania</i>	Whole blood
pc:S.neuro	\$42.00	<i>Sarcocystis neuron</i>	Brain
pc:Tox18	\$42.00	<i>Toxoplasma gondii</i>	Whole blood, CSF, feces, brain or placenta
pc:T.equi	\$42.00	<i>Theileria equi</i> (Equine piroplasmosis, formerly <i>Babesia equi</i> )	Whole blood
pc:T.foetus	\$42.00	<i>Tritrichomonas foetus</i>	Feces or GI tract tissue

Abbreviation	Price	Virus	Sample Type
v:BLV	\$42.00	Bovine Leukemia Virus	Whole blood or milk
v:BPV	\$42.00	Bovine Papillomavirus 1 and 2	Skin biopsy or sarcoid swabs
v:CAV2	\$42.00	Canine Adenovirus 2	Nasal swab, ocular swab or whole blood
v:CRCVS	\$57.00	Canine Respiratory Coronavirus	Nasal swab, tracheal swab or lung tissue
v:CDV	\$57.00	Canine Distemper Virus	CSF, ocular/nasal swab, whole blood, tissue or urine
v:CHV	\$42.00	Canine Herpes Virus	Whole blood, ocular/nasal swab, lung or liver
v:CIV	\$57.00	Canine Influenza Virus (H3N8)	Nasal swab or wash, tracheal swab, guttural pouch lavage or lung tissue
v:CPIV	\$57.00	Canine Parainfluenza Virus	Ocular/nasal swab or trachea
v:COPV	\$42.00	Canine Oral Papillomavirus	Mucosal biopsies including lesions
v:CPV1	\$42.00	Canine Parvovirus 1 (Minute Virus)	Feces, whole blood or GI tissue
v:CParV2	\$42.00	Canine Parvovirus 2	Feces or GI tissue
v:EAV	\$57.00	Equine Arteritis Virus (EVA)	Nasal swab, conjunctival swab, semen, whole blood or placenta
EHV1 DNA	1 sample \$57.00 2 samples \$80.00	Equine Herpesvirus 1 (quantitative load) and genotype (neurotropic, and non-neurotropic) Both samples must be from same animal	Nasal swab, whole blood, nasal wash, tracheal lavage, CSF, marrow, placenta, lung or liver
EHV1 RNA	Please inquire	Equine Herpesvirus 1 transcript; presence or absence of active replication Only available when EHV1 DNA is positive	Nasal swab, whole blood, nasal wash, tracheal lavage, CSF, marrow, placenta, lung or liver
v:EHV4	\$42.00	Equine Herpesvirus 4	Nasal swab, nasal wash, tracheal lavage, lung or liver
v:EIV A	\$57.00	Equine Influenza A (H3N8)	Nasal swab, nasal wash or lung tissue
v:FCV	\$57.00	Feline Calicivirus	Oropharyngeal swab, whole blood, lung or nasal swab
v:FCoV	\$57.00	Feline Corona Virus (FCoV) - associated with FIP	Peritoneal fluid, whole blood, spleen, kidney, lung or feces
v:FHV1	\$42.00	Feline Herpesvirus 1	Ocular swab, whole blood or oral swab
v:FeLV	\$42.00	Feline Leukemia Virus (FeLV) - exogenous form	Whole blood or tissue
v:FPLV	\$42.00	Feline Parvovirus (Panleukopenia)	Whole blood or lymphatic tissues
v:KHV	*	*Please visit this website for Koi Herpesvirus PCR submissions: <a href="http://www.vetmed.ucdavis.edu/vmth/small_animal/laboratory/forms.cfm">http://www.vetmed.ucdavis.edu/vmth/small_animal/laboratory/forms.cfm</a>	Kidney tissue, liver tissue, spleen tissue, gill, gill biopsy, gill swab
v:WNV	\$57.00	West Nile Virus	CSF, brain, spinal cord, choanal swab, liver, kidney or spleen

### Real-time PCR Panels

Abbreviation	Price	CANINE	Sample Type
Blood Donor: Canine	\$125.00	<b>Blood Transfusion Panel:</b> <i>A. phagocytophilum</i> , <i>E. canis</i> , <i>A. platys</i> , <i>Rickettsia</i> spp, <i>Leishmania</i> , <i>Babesia</i> spp, <i>M. haemocanis</i> , <i>Bartonella</i> spp	Whole blood
Neuro: Canine 1	\$91.00	<b>Neurological I Panel:</b> CDV, <i>N. hughesi</i> and <i>caninum</i> , <i>Toxoplasma gondii</i> , <i>B. burgdorferi</i> <b>* WHOLE BLOOD NOT RECOMMENDED FOR <i>B. burgdorferi</i> and <i>N. hughesi</i> and <i>caninum</i></b>	CSF and/or whole blood*
Neuro: Canine 2 (Encephalitis)	\$125.00	<b>Neurological II Panel:</b> CDV, West Nile Virus, <i>N. hughesi</i> and <i>caninum</i> , <i>Toxoplasma gondii</i> , <i>A. phagocytophilum</i> , <i>Rickettsia</i> spp, <i>E. canis</i> , <i>B. burgdorferi</i> <b>* WHOLE BLOOD NOT RECOMMENDED FOR <i>B. burgdorferi</i> and <i>N. hughesi</i> and <i>caninum</i></b>	CSF and/or whole blood*
Resp: Canine	\$91.00	<b>Respiratory Panel:</b> Canine Influenza Virus (H3N8), <i>B. bronchiseptica</i> , CAV2, CDV, CHV, Parainfluenza, Canine Respiratory Coronavirus	Nasal swab or wash, tracheal swab or wash, guttural pouch lavage or lung
Vector-Borne: Canine	\$91.00	<b>Vector-Borne Disease Panel:</b> <i>A. phagocytophilum</i> , <i>Bartonella</i> spp, <i>E. canis</i> , <i>Rickettsia</i> spp, <i>B. burgdorferi</i> <b>* WHOLE BLOOD NOT RECOMMENDED FOR <i>B. burgdorferi</i></b>	Tick or whole blood*
GI/Diarrhea: Canine	\$91.00	<b>GI/Diarrhea Panel:</b> <i>C. difficile</i> Toxins A and B (quantitative load), <i>Cryptosporidium</i> spp, <i>Salmonella</i> spp, <i>Giardia</i> spp, Canine Parvovirus 2	Feces
Abbreviation	Price	EQUINE	Sample Type
Neuro: Equine	\$72.00-91.00*	<b>Neurological Panel:</b> EHV1 (quantitative load) and genotype (neurotropic, and non-neurotropic), West Nile Virus, <i>N. hughesi</i> and <i>caninum</i> , <i>S. neurona</i> <b>* IF WHOLE BLOOD SUBMITTED ONLY EHV1 AND WNV WILL BE TESTED (\$72)</b>	CSF or brain tissue
Resp: Equine	\$91.00	<b>Respiratory Panel:</b> EHV1 (quantitative load) and genotype (neurotropic, and non-neurotropic), EAV, Influenza A, EHV4, <i>S. equi</i>	Nasal swab or wash, tracheal swab or wash, guttural pouch lavage or lung
Vector-Borne: Equine	\$91.00	<b>Vector-Borne Panel:</b> <i>A. phagocytophilum</i> , <i>Bartonella</i> spp, <i>Rickettsia</i> spp, <i>B. burgdorferi</i> <b>* WHOLE BLOOD NOT RECOMMENDED FOR <i>B. burgdorferi</i></b>	Tick or whole blood*
GI/Diarrhea: Equine	\$91.00	<b>GI/Diarrhea Panel:</b> <i>C. difficile</i> Toxins A and B (quantitative load), <i>L. intracellularis</i> , <i>N. risticii</i> , <i>Salmonella</i> spp, <b>Equine Coronavirus**</b> <b>**For a trial period, we will include Equine Coronavirus (ECV) in the GI/Diarrhea Panel at no extra charge for clients who complete a brief questionnaire. The one page questionnaire will be FAXed to the client upon receipt of the sample(s). This will allow our Facility to correlate ECV PCR results with clinical signs/symptoms in order to improve result interpretations in the future.</b>	Feces
Abbreviation	Price	FELINE	Sample Type
Blood Donor: Feline	\$91.00	<b>Blood Transfusion Panel:</b> <i>M. haemofelis</i> , <i>M. haemominutum</i> , <i>M. turicensis</i> , FeLV, FCoV, <i>Bartonella</i> spp	Whole blood
Neuro: Feline	\$91.00	<b>Neurological Panel:</b> <i>Toxoplasma gondii</i> , FCoV, FeLV	CSF or whole blood
Resp: Feline	\$91.00	<b>Respiratory Panel:</b> <i>B. bronchiseptica</i> , <i>Chlamydomphila felis</i> , FCoV, FHV1	Nasal swab or wash, tracheal swab, guttural pouch lavage or lung
Vector-Borne: Feline	\$91.00	<b>Vector-Borne Disease Panel:</b> <i>A. phagocytophilum</i> , <i>A. platys</i> , <i>Bartonella</i> spp, <i>B. burg</i> , <i>Rickettsia</i> spp	Tick or whole blood
GI/Diarrhea: Feline	\$91.00	<b>GI/Diarrhea Panel:</b> <i>C. difficile</i> Toxins A and B (quantitative load), <i>Cryptosporidium</i> spp, <i>Salmonella</i> spp, <i>Giardia</i> spp, FCoV, Feline Parvovirus (Panleukopenia), Canine Parvovirus 2	Feces
Immune: Feline	\$91.00	<b>Feline Immune Panel:</b> FeLV, Feline Parvovirus (Panleukopenia), Canine Parvovirus 2, <i>Bartonella</i> spp	Whole blood or spleen
Conjunctivitis: Feline	\$91.00	<b>Ocular Conjunctivitis Panel:</b> <i>Chlamydomphila felis</i> , Feline Calicivirus, FHV1	Corneal swab
Uveitis: Feline	\$91.00	<b>Ocular Uveitis Panel:</b> <i>Bartonella</i> spp, <i>Toxoplasma gondii</i> , FHV1, FeLV, FCoV	Aqueous humor
Abbreviation	Price	FUNGUS	Sample Type
Breakout: Fungus	\$91.00	<b>Fungus Breakout Panel:</b> <i>Aspergillus fumigatus</i> , <i>Candida albicans</i> , <i>Cryptococcus neoformans</i> , <i>Microsporium canis</i> , <i>Trichophyton mentagrophytes</i> , <i>Coccidioides immitis</i>	Fluids or tissues of infected area
Abbreviation	Price	BIOSECURITY and INFECTIOUS DISEASE CONTROL (10 samples or more must be submitted at one time to qualify for discounted pricing)	Sample Type
bc:SalmA IDC	\$18.00	<i>Salmonella</i> spp - Any fresh samples will undergo a 20-hour selenite enrichment step before testing.	Fresh or post-selenite enriched feces, fecal swabs, gastric reflux, bedding, surface swabs/washes/gauze
IDC Enteric	\$32.00	<b>IDC Enteric Panel:</b> <i>Salmonella</i> spp, <i>Clostridium difficile</i> toxin A, <i>Clostridium difficile</i> toxin B. Fresh samples will be tested for <i>C. difficile</i> before undergoing a 20-hour selenite enrichment step and testing for <i>Salmonella</i> spp	Feces or fecal swabs
IDC Respiratory	\$35.00	<b>IDC Respiratory Panel:</b> EHV1 (quantitative load) and genotype (neurotropic, and non-neurotropic), EAV, Influenza A, EHV4, <i>S. equi</i>	Nasal swab or wash, tracheal swab or wash, guttural pouch lavage
IDC EHV-1	\$20.00	Equine Herpesvirus 1 (neurotropic and non-neurotropic)	Nasal swab or wash, tracheal swab or wash, guttural pouch lavage
Abbreviation	Price	Avian Sex Determination	Sample Type
ASD	\$15.00	Sex determination for chickens and psittacidae (parrot) family	Whole blood, swab of choana/cloaca/conjunctiva or plucked feather