**STANDARDIZED NECROPSY REPORT FOR GREAT APES AND OTHER PRIMATES**

**this is a fillable form – if printing / hand writing please circle or highlight need information**

<table>
<thead>
<tr>
<th>Pathology #</th>
<th>Click to enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necropsy Date</td>
<td>Click to choose a date</td>
</tr>
<tr>
<td>Species</td>
<td>Choose a species</td>
</tr>
<tr>
<td>If other, then specify species</td>
<td>Click to enter other species</td>
</tr>
<tr>
<td>Name</td>
<td>Click to enter name</td>
</tr>
<tr>
<td>ISIS/ID</td>
<td>Click to enter ID</td>
</tr>
<tr>
<td>SB#</td>
<td>Click to enter SB#</td>
</tr>
<tr>
<td>Age/DOB</td>
<td>Enter Age or DOB</td>
</tr>
<tr>
<td>DOD</td>
<td>Click to choose a date</td>
</tr>
<tr>
<td>Euthanized</td>
<td>☐ Yes? ☐ No?</td>
</tr>
<tr>
<td>Post-mortem condition of carcass</td>
<td>Choose an item</td>
</tr>
<tr>
<td>Institution</td>
<td>Click to enter Institution Name</td>
</tr>
<tr>
<td>Click to enter Street Address</td>
<td></td>
</tr>
<tr>
<td>Click to enter City, State Zip code</td>
<td></td>
</tr>
<tr>
<td>Contact</td>
<td>Click to enter name</td>
</tr>
<tr>
<td>Contact Email</td>
<td>Click to enter email address</td>
</tr>
<tr>
<td>Prosector (if different from contact)</td>
<td>Click to enter name and email</td>
</tr>
</tbody>
</table>

**Abstract of clinical history:**
Click here to enter text.

**Gross Diagnoses:**
Click here to enter diagnoses

Revised September 2021
**External examination:**

**Measurements:**
- Body weight Click to enter (kg)
- Crown-rump length (sitting height) Click to enter (cm)
- Chest circumference (level of nipples) Click to enter (cm)
- Width across the back at level of axilla Click to enter (cm)
- Abdominal circumference (level of umbilicus) Click to enter (cm)
- Skin fold thickness at dorsum/level of lower ribs Click to enter (cm)
- Depth of abdominal fat Click to enter (cm)
- Depth of fat over throat sac Click to enter (cm)

*If not examined, please enter “NE” in description. Sections of all tissues should be saved in formalin but not all tissues need to be saved frozen or photographed. See “Tissue collection guide” at the end of the worksheets for recommended frozen tissue collection. Please check whether tissues were saved in formalin, frozen and whether a gross photo was taken of lesions.*

<table>
<thead>
<tr>
<th>Site</th>
<th>Description</th>
<th>Formalin</th>
<th>Frozen</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>(fix whole- do not incise)</td>
<td>Ocular discharge?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ears</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nose</td>
<td></td>
<td>Nasal discharge?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammary gland</td>
<td>(incl nipples)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin/Hair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umbilicus</td>
<td>(neonates only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External genitalia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scent glands</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Revised September 2021*
### Subcutis
(note fat, edema, hemorrhage, parasites)

### Head & Neck Region:

<table>
<thead>
<tr>
<th>Site</th>
<th>Description</th>
<th>Formalin</th>
<th>Frozen</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Cavity</td>
<td>(gingiva, lips, cheek)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dentition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larynx/Pharynx</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tongue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tonsils</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laryngeal Air Sacs</td>
<td><a href="#">See appendix for air sac examination</a></td>
<td>Are they symmetrical yes☐ no☐?</td>
<td>Are there septa yes☐ no☐?</td>
<td></td>
</tr>
<tr>
<td>Salivary glands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thyroids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parathyroids</td>
<td></td>
<td>Combined weight Click to enter (g)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymph Nodes</td>
<td>(cervical)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esophagus</td>
<td></td>
<td></td>
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</tbody>
</table>

**Other Notes:**

*Revised September 2021*
## Thoracic Cavity:

<table>
<thead>
<tr>
<th>Site</th>
<th>Description</th>
<th>Formalin</th>
<th>Frozen</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavity</td>
<td>Note effusions/hemorrhage: volume [Click to enter (ml)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pleural Adhesions yes☐ no☐?</td>
<td></td>
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<tr>
<td></td>
<td>Mediastinal adipose yes☐ no☐?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thymus</td>
<td>Weight [Click to enter (g)] Size [Click to enter x Click to enter x Click to enter (cm)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pericardium</td>
<td>Effusion yes☐ no☐? Volume [Click to enter (ml)] Pericardial fat yes☐ no☐?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Vessels</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart *</td>
<td>(See appendix for requested photographs and measurements)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight [Click to enter (g)] Circumference at groove [Click to enter (cm)]</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Trachea/Bronchi</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lungs</td>
<td>Weight: Left [Click to enter (g)] Right [Click to enter (g)]</td>
<td></td>
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<tr>
<td>Lymph Nodes</td>
<td>(tracheobronchial)</td>
<td></td>
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<tr>
<td>Diaphragm</td>
<td></td>
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</tbody>
</table>

**Other Notes:**
**Abdominal Cavity:**
*For sections of gastrointestinal tract, remember to note contents*

<table>
<thead>
<tr>
<th>Site</th>
<th>Description</th>
<th>Formalin</th>
<th>Frozen</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cavity</td>
<td>Effusion yes ☐ no ☐? Volume [Click to enter] (ml)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adipose yes ☐ no ☐? Amount: [Click to enter]</td>
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</tr>
<tr>
<td></td>
<td>Adhesions yes ☐ no ☐? If yes, severity: [Click to enter]</td>
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</tr>
<tr>
<td>Liver</td>
<td>Weight [Click to enter] (g)</td>
<td></td>
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</tr>
<tr>
<td>Gall Bladder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stomach</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Duodenum</td>
<td></td>
<td></td>
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<tr>
<td>Pancreas</td>
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<tr>
<td>Jejunum</td>
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<tr>
<td>Ileum</td>
<td></td>
<td></td>
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<tr>
<td>Cecum/Appendix</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Colon</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rectum</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lymph nodes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mesenteric)</td>
<td></td>
<td></td>
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</tbody>
</table>

*Revised September 2021*
<table>
<thead>
<tr>
<th>Site</th>
<th>Description</th>
<th>Formalin</th>
<th>Frozen</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spleen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal Aorta</td>
<td>(open past bifurcation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adrenals</td>
<td>(weigh/measure L and R)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kidneys</td>
<td>(weigh/measure L and R)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ureters</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urinary bladder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gonads</td>
<td>(ovaries/testes)</td>
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<td></td>
</tr>
<tr>
<td>Uterus / Cervix</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Prostate / Penis</td>
<td>/ Seminal vesicles</td>
<td></td>
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</tr>
</tbody>
</table>

Other Notes:

Revised September 2021
### CNS / Musculoskeletal/Other:

<table>
<thead>
<tr>
<th>Site</th>
<th>Description</th>
<th>Formalin</th>
<th>Frozen</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skeletal Muscle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal Column</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bone Marrow (femur or rib)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain (describe also meninges)</td>
<td>Weight Click to enter (g)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pituitary</td>
<td>Weight Click to enter (g)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trigeminal ganglia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinal cord</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peripheral nerve (brachial plexus &amp; sciatic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymph Nodes</td>
<td>Specify other submitted sites: Click to enter</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Other Notes:
Cardiac Worksheet *see GAHP Recommended Cardiac Necropsy Protocol for details:

### Whole Heart Submission

**Photographs:**
- ☐ In situ
- ☐ Heart base
- ☐ 4 Views: Anterior, Right, Posterior, Left

**Measurements:**
- Heart weight  [Click to enter (g)]
- Heart circumference  [Click to enter (cm)]

**Fixed in Formalin to Submit:**
- ☐ Entire heart

### Selected Section Submission

**Photographs:**
- ☐ In situ
- ☐ Heart base
- ☐ R AV valve
- ☐ L AV valve
- ☐ 4 Views: Anterior, Right, Posterior, Left
- ☐ 3 (or 4 for gorillas) slab sections from apex
- ☐ Pulmonic valve
- ☐ Aortic valve

**Measurements:**
- Heart weight  [Click to enter (g)]
- Heart circumference  [Click to enter (cm)]
- R AV valve  [Click to enter (cm)]
- Pulmonic valve  [Click to enter (cm)]
- L AV valve  [Click to enter (cm)]
- Aortic valve  [Click to enter (cm)]

**Fixed in Formalin to Submit:**
- ☐ 3 or 4 cm slab cross-section
- ☐ R Atrium-Ventricle with R AV valve
- ☐ Interventricular septum w/ aortic valve
- ☐ L Atrium-Ventricle with L AV valve

Revised September 2021
☐ Aorta

☐ Conduction System (if submitting for detailed protocol)
GUIDE TO THE NONHUMAN PRIMATE POST MORTEM EXAMINATION
TIPS FOR TISSUE COLLECTION DURING THE NECROPSY EXAMINATION

Collection of tissues
Tissues to be fixed in 10% neutral buffered formalin should be less than 0.5 cm thick to (exception is brain, see below) allow for adequate penetration of formalin for fixation.

Initial fixation should be in a volume of fixative 10 times the volume of the tissues. Agitation of the tissues during the first 24 hrs is helpful to prevent pieces from sticking together and inhibiting fixation.

Labeling of specimens
If pieces are small or not readily recognizable (eg. individual lymph nodes) they can be fixed in cassettes or embedding bags or wrapped in tissue paper labeled with pencil or indelible ink. Another alternative is to submit lymph nodes with attached identifiable tissue, eg. axillary with brachial plexus, inguinal with skin, bronchial with bronchus, etc.

Sections from hollow viscera or skin can be stretched flat on paper (serosal side down) and allowed to adhere momentarily before being placed in formalin with the piece of paper. The paper can be labeled with the location from which the tissue came.

The formalin container should be labeled with the animals name or number, the age and sex, the date and location, and the name of the prosector.

Tissues to be Frozen
Archiving or biobanking is an important component of a thorough post mortem examination. Frozen tissues can provide a resource for pathogen discovery, toxicology, nutritional analysis, and genetic studies. Freezing at refrigerator freezer temperatures (about 0° F or –18-20° C) is adequate for toxicology and most nutritional studies, while ultralow temperatures (about -80° C or colder) are better for genetic studies and pathogen discovery.

Recommended tissues:
Samples to be held at -20 C include 5-10 gm of liver, kidney, fat, stomach content, lower GI content.
Ssamples to be held at -80 C include 1-2 g lung, liver, kidney spleen, brain, and any specific lesions for which you can envision wanting pathogen discovery.

Additional samples
Swabs
Serum retrieved from chicken fat clots by centrifugation

Containers for freezing:
For -80 wrap small samples individually in foil and put together in a freezer safe baggie. For -20 place tissues in individual freezer safe baggies such as WhirlPak. Liquids can be frozen in freezer-safe cryotubes.

**Tissues to be preserved (10% neutral buffered formalin)**

From the skin submit at least one piece without lesions, a nipple and mammary gland tissue, scent gland, and any lesions and subcutaneous or ectoparasites.

Axillary and or inguinal lymph nodes may be submitted whole from small animals and should be sectioned transversely through the hilus in large primates.

Mandibular, and/or parotid salivary glands should be sectioned to include lymph node with the former and ear canal with the latter.

Thyroids, if it is a small primate, may be left attached to the larynx and submitted with the base of tongue, pharynx, esophagus as a block. In larger primates, take sections transversely through the thyroids trying to incorporate the parathyroids in the section.

Trachea and esophagus and laryngeal air sac sections may be submitted as a block.

Cervical lymph nodes may be submitted whole if small or sectioned transversely.

Rib or femur can be used as a source of bone marrow. A marrow touch imprint may be made and air dried for marrow cytology.

Section of thymus or anterior pericardium should be taken perpendicular to the front of the heart.

Heart: See cardiac necropsy protocol for recommended measurements, photos and prosection guidelines.

Lungs: if possible inflate at least one lobe by instilling clean buffered formalin into the bronchus under slight pressure. Fix at least one lobe from each side and preferably samples from all lobes. In little animals the entire "pluck" may be fixed after perfusion.

Take sections of all levels of the GI tract including: gastric cardia, fundus and pylorus; duodenum at the level of the bile duct with pancreas attached; anterior, middle and distal jejenum; ileum; ileoceccolic junction with attached nodes; cecum and (in apes) appendix; ascending, transverse and descending colon. Open loops of bowel to allow exposure of the mucosa and allow serosa to adhere momentarily to a piece of paper before placing both bowel section and paper in formalin; or gently inject formalin into closed loops.
Liver: One section should include bile ducts and gall bladder and take sections from at least one other lobe.

Make sure sections of spleen are very thin if the spleen is congested; formalin does not penetrate as far in very bloody tissues.

Mesenteric (jejunal) nodes should be sectioned transversely; colonic nodes may be left with colon sections.

Take sections from each kidney: cut the left one longitudinally and the right one transversely so they will be identifiable.

Fix small adrenals whole and section larger ones (left - longitudinal and right transversely) making sure to use a very sharp knife or new scalpel blade so as not to squash these very soft glands.

Bladder sections should include fundus and trigone. Make sure to include round ligaments (umbilical arteries) in neonates.

Section the prostate with the urethra and seminal vesicles transversely. Section testes transversely.

In small females fix the vulva, vagina, cervix, uterus and ovaries as a block after making a longitudinal slit to allow penetration of formalin. Rectum and bladder (opened) can also be included in this block. In somewhat larger animals make a longitudinal section through the entire track. In large primates make transverse sections of each part of the track and the ovaries.

If gravid: weigh and measure placenta and fetus. Perform a post mortem examination of the fetus. Take sections of disc from periphery and center and from extraplacental fetal membranes. Take sections of major organs and tissues of fetus.

The brain should be fixed whole, or, if too large for containers, may be cut in half longitudinally (preferred) or transversely through the midbrain. It should be allowed to fix for at least a week before sectioning transversely (coronally) into 0.5-1.0 cm slabs to look for lesions. Submit the entire brain if possible and let the pathologist do the sectioning, otherwise submit slabs from medulla, pons and cerebellum, midbrain, thalamus and hypothalamus, prefrontal, frontal, parietal and occipital cortex including hippocampus and lateral ventricles with choroid plexus. In older apes it is especially important to examine prefrontal and frontal cortex and hippocampus for senile plaques and vascular changes.
Instead, institutions may elect to send brains to the Great Ape Aging Project (separate protocol). This is a research project which does not perform diagnostic histopathology (as of Jan 2015). If histopathology is desired, the prosecting pathologist may need to modify diagnostic tissue handling/selection. Contact the Great Ape Aging Project PIs for more information.

Fix the pituitary whole. Put pituitary in an embedding bag if it is small. Also remove and fix the Gasserian (trigeminal) ganglia.

Spinal cord - if clinical signs warrant, remove the cord intact and preserve it whole or in anatomic segments (eg. cervical, anterior thoracic etc.)

Take bone marrow by splitting or sawing across the femur, to get a cylinder and then make parallel longitudinal cuts to the marrow. Try to fix complete cross sections or hemi-sections of the marrow.

Take sections of any and all lesions, putting them in embedding bags if they need special labeling.

Remember, it's better to save "too many" tissues than to risk missing essential lesions or details.

This represents a lot of work on the part of the prosector, often under less than comfortable conditions. But the effort expended at the time of the gross post mortem is much appreciated by the histopathologist, and is crucial to our investigations of the causes of morbidity and mortality of free-living nonhuman primate

THANK YOU !!!!!!
WORKSHEET
GREAT APE TAG PLACENTAL EXAMINATION

Dam name ___________________________ Stud book # ___________________________
Infant/fetus weight __________________ gm, Infant crown-rump length _______________ cm Sex: M  F  U
Status of infant (circle all that apply):  term, preterm, alive healthy, alive weak or ill, dead, singleton, twin, vaginal
birth, C-section, other ________________________________________________________

PLEASE INSERT PHOTOGRAPHS OF BOTH SIDES OF THE PLACENTA WITH ATTACHED CORD AND
MEMBRANES DESCRIPTIONS AND MORPHOMETRICS OF THE PLACENTA AND CORD

PLACENTA (Circle all that apply): complete, partial, disc, membranes, cord, fresh, desiccated, clean,
contaminated, meconium, hemorrhage.
Describe other ____________________________________________________________________________

Umbilical cord:
Cord length ______________ cm, Cord diameter __________ cm, Twists: N= __________
Cord cut surface: number of arteries ______ vein(s) __________ other structures? __________.
Warthin’s jelly __________ Desiccation? ____________
Cord color (white, tan, brown, green, red. Other ____________),
Lesions: hematomas, exudate, edema, knots (N=________),
other __________________________________________________________________________
Cord insertion: central, marginal, on disc, within membranes

Fetal membranes
Insertion; percent ______________ location: marginal, circumvallate, circummarginal
Color __________ Exudates? __________ Hemorrhage? __________
Trimmed placental weight (minus membranes and cord) ______________ gm
Placental disc greatest diameter ______________ cm x thickness ______________ cm
Fetal surface (photograph): WNL, smooth, rough, vessels, thrombi, hemorrhage, percent surface affected
__________________________________________________ other __________
Maternal surface (photograph): WNL, complete, disrupted, excessively nodular or masses, hematomas, pallor,
fibrin, percent surface affected ______________ other __________
Parenchyma cut surface: normal (= meaty, spongy, red); lesions: marginal, central, dark, pallor, exudative,
percent disc affected ______________ Other __________________________________________________________________________
Samples taken:
Histology/formalin – location and number of samples
Culture: (bacterial, fungal viral)
Frozen (refrigerator freezer, ultralow freezer, Liquid nitrogen, dry ice)

Adapted from: http://www.uptodate.com/contents/gross-examination-of-the-placenta#

Revised September 2021
You may use this diagram to note extent and location of lesions.
WORKSHEET
GREAT APE TAG FETUS/NEONATE/INFANT POSTMORTEM EXAMINATION

Identification number or name_____________________________ Stud Book #____________________

Age ___________ days. Weight __________________gm. Crown-rump length ________________cm.

Placenta available? Yes No, eaten by dam, eaten by other group members, fate unknown, other?__________________

Post mortem condition (fresh, mild, moderate or severe autolysis)
Post mortem interval (death to examination):___________________ hours, days

Other body measurements: head circumference ____________cm, thoracic circumference ______cm,
abdominal circumference ________________________cm

EXTERNAL EXAMINATION (circle all that apply or describe)

Nutritional status: emaciated, thin, adequate, abundant fat, other______________________________

Muscle development: hypoplastic or atrophic, well-muscled, pink, dark red

Umbilicus: Fresh desiccated, color____________________ (stump length ______cm),

Hair coat: naked, sparse, luxuriant, head only, epilates easily, other____________________________________________________________________

Skin: hemorrhage, other discoloration, lacerations, maceration, other__________________________,
location of lesions _____________________________________________________________________

Peripheral lymph nodes: indicate nodes examined and any abnormalities _______________________
__________________________________________________________________________________

ORAL CAVITY:

Dentition: erupted teeth______________________, enamel (pigmented, pitted, linear erosions, on ___________ teeth,

Palate: intact, cleft (photo or describe ______________________)

Tongue: pigmented, coated, erosions, plaques, ulcerations, other______________________________

Lips and buccal surfaces: NSL, lacerations, hemorrhage, other _________________________________

EYES: NSL, micro-ophthalmia, cornea cloudy, lens opaque, hemorrhage, other____________________

EARS: pinna: hemorrhage, lacerations, other __________________________________________________

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NECK REGION:

Thyroid(s): flat, visible follicles, nodular, red, amber, tan, parathyroids visible? ☐ Yes ☐ No
Retropharyngeal and mandibular lymph nodes: small, enlarged, other____________________________
Esophagus: empty, full, dilated, thickened, erosions, ulcerations, plaques, other

INTERNAL EXAMINATION:

Viscera position (photo viscera in situ): normal, situs inversus, individual organs displaced___________

THORAX: negative pressure? Yes No. Effusion? none, clear, serosanguinous, blood, pus, fibrin, other
_________________________________________________________ amount ____________ cc

THYMUS: mediastinal only, mediastinal and cervical, size: _____ cm x ____ cm x ____ cm; ______ __gm

HEART: Pericardial effusion? ☐ Yes ☐ No , character___________, epicardial fat: none, little, moderate,
abundant, moderate, little, serous atrophy; epicardial fibrosis? ☐ Yes ☐ No. Please photo (all 4 sides if
possible).

DUCTUS ARTERIOSUS: open, probe patent, closed, length __________ cm

Mid-Ventricular transverse section __________ cm from apex: right ventricular free wall
________________________ cm, left ventricular free wall _________________ cm, septum ____________ cm;
Open along lines of flow: Foramen ovale ( closed, open, probe patent, dye patent)

Myocardium: NSL, pale streaking, masses, other__________________________

Right AV valve circumference __________ cm, Left AV valve circumference_______________ cm,
pulmonic valve circumference __________ cm, aortic valve circumference _________________ cm

Valves (RtAV): normal number of leaflets, abnormal number leaflets (photo or describe), smooth nodules,
rough nodules, adherent thrombi? Other:

___________________________________________________________________________

LAV valve: normal number of leaflets, abnormal number of leaflets (photo or describe), smooth nodules,
rough nodules, adherent thrombi? Other:

Pulmonic valve: normal number of leaflets, abnormal number of leaflets (photo or describe), smooth
nodules, rough nodules, adherent thrombi? Other:

_______________________________________________________________

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Aortic valve: normal number of leaflets, abnormal number of leaflets (Photo or describe), smooth nodules, rough nodules, adherent thrombi? Other:

Coronary ostia: number and location (photo if possible):

LUNGS:
Color: light pink, red, purple, other ________________; Atelectasis: none, partial, diffuse) weight
left ____________ gm, right ____________ gm,
Lobation left N= _______________, right N= ___________________________
Cut surface: aerated, dry, oozes fluid: clear, foamy, tan, pink, red, other __________________________.
Trachea and Bronchi: clear, foam, thin fluid, bloody fluid, mucus, pus
Hilar (tracheobronchial) lymph nodes; small, enlarged, cut surface: dry, oozes lymph, exudate?
Other __________________________________________________________________________________

ABDOMINAL CAVITY: Effusions? ☐ Yes ☐ No. Type: clear, serosanguinous, blood, pus, fibrin.
Adhesions Yes, No. Character: fibrinous, fibrous, easily broken down, firm, other __________________________
Diaphragm: intact, hernia, other __________________________
Omental and mesenteric fat: none, sparse, moderate, abundant. Color: white, off white, yellow, orange
LIVER: extends beyond sternum? ☐ Yes ☐ No ________________________ cm); Weight ____________gm
Color (tan, brown, red-brown, dark red/purple, green tinged, other __________________________),
Gall bladder: empty, full, opaque, translucent. Bile: yellow, green, brown, red, watery, chunks or flakes.
Other? __________________________________________________________________________________
Umbilical vein/falciform ligament: NSL, thickened, rough surface, discolored, other ________________

SPLEEN: Size __________ cm x __________ cm x __________ cm. Weight: ____________ gm;
Color: pale, dark red, purple, other ________________ cut surface (dry, oozes blood, exudate, nodules,
visible white pulp), Other __________________________________________________________________

KIDNEYS:
Left kidney ____________ cm x ____________ cm x ____________ cm. Weight ____________ gm
Right kidney ____________ cm x ____________ cm x ____________ cm. Weight ____________ gm

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Capsules: smooth, pitted, undulating, other__________; capsule peels easily, with difficulty, other, Cut surface: pale streaks (fibrosis), wedge shaped foci pale or red (infarcts), exudates, Other__________

ADRENALS: Left _______ cm x _______ cm x _______ cm Weight________________________
Right _______ cm x _______ cm X_______ cm. Weight____________________
Cortex__________, medulla____________________ lesions?

BLADDER: empty, full _____________cc, color: clear, yellow, red, opaque, granular, other ____________,
Round ligaments (umbilical arteries) (NSL, hemorrhage, fibrin, exudates)

STOMACH: empty, full, distended. Content: water, mucus, curdled milk, other _________________.
Mucosa: NSL, multifocal erosison, red or black spots, ulceration, discoloration, describe or other

DUODENUM: content: empty, scant, abundant, mucus, curdled milk, other ____________________
Mucosa: Tan, green, brown, red, other ________________________________

PANCREAS: Size: NSL, abundant, scant, Other __________________________
Color/appearance: cream-colored, tan, brown, hemorrhagic, edematous, other __________________

JEJUNUM: content: empty, scant, abundant, mucus, color of content ________________other
Color of content and mucosa: tan, green, brown, red, other ________________________________

ILEUM: content: empty, scant, abundant, mucus, color of content ________________other
Color of content and mucosa: tan, green, brown, red, other ________________________________

CECUM: content: empty, scant, abundant, mucus, feces, other ____________________________
Color of content and mucosa: tan, green, brown, red, other ________________________________

APPENDIX: _____________ cm long x _________________ cm diameter. Content: empty, scant, abundant, mucus, feces, other ____________________________
Color of content and mucosa: tan, green, brown, red, other ________________________________

COLON: empty, scant, abundant, mucus, feces, other ____________________________
Color of content and mucosa: tan, green, brown, red, other ________________________________

RECTUM: Content: empty, distended, liquid feces, pasty feces, formed normal feces, hard dry feces
Color of content and mucosa: tan, green, brown, red, other ________________________________

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MESENTERIC, ILEOCECAL and COLONIC LYMPH NODES: small, enlarged, cut surface edematous, bulging cortex, Other ____________________________

PERIAORTIC and INTERNAL ILIAC LYMPH NODES:
SKULL: sutures (open, closed) PHOTO; Anterior Fontanelle closed, open _cm x _cm; posterior fontanelle closed, open _______ cm x ___ cm. (Photo if possible)

BRAIN: meninges (wet, dry, congestion, edema, exudates, hemorrhage, other_____________) 
Weight __________________________gm

SPINE:
Spinal column: NSL, spinal bifida, scoliosis, kyphosis, other defects
_____________________________________
Spinal cord: not examined, NSL, hemorrhage, exudates other__________________________

APPENDICULAR SKELETON:
Growth plates and costochondral junctions: NSL, wide, flared, inflamed, other:
_____________________________________
Ration of cortices to medullary cavity: ____________________________________________

ANCILLARY DIAGNOSTICS:
Cultures ______________________________________________________
Tissues frozen ____________________________________________________
Cytogenetics ______________________________________________________

PLEASE SUMMARIZE YOUR IMPRESSION OF THIS CASE:
POST MORTEM EXAMINATION OF THE AIR SACS OF APES

Information on air sac anatomy is especially important for bonobos, chimpanzees and orangutans as there are no definitive papers on their air sac anatomy

Examine the skin over the air sac for signs of fistulae or scars. Note thickness of the skin and presence/amount of fat.

Incise the air sac through the skin on the anterior (ventral) aspect.

Note color and texture of air sac lining.

Note presence of absence of exudates, and character of exudate.

Note presence or absence of compartmentalization by connective tissue.

Note extent of air sacs (e.g. under clavical, into axilla, etc.)

Is there a central compartment?

Are the lateral sacs symmetrical (they may vary in size in chimpanzees and bonobos)

Identify and describe the opening(s) from the larynx into the air sac (e.g. single slit-like opening or paired oval openings). Are the openings parallel or perpendicular to the long axis of the larynx and trachea. Note any exudate within the ostia

Note the location, size and shape of the opening in the larynx (e.g. from lateral saccules or centrally at the base of the epiglottis).

Cultures: Please culture several different sites within the air sacs (we need data to determine if infections are "homogeneous" or compartmentalized).

Diagrams of air sacs to aid in measurements and descriptions.
Gorilla air sacs (From Dixon)  Chimpanzee air sacs (From Swindler & Wood)