

Adult Male Leatherback Necropsy Report for Dc Tag # RRT033/RRT034

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Florida Atlantic University¹, Northeast Fisheries Science Center², University of Georgia and
University of Tennessee³

May 17-18, 2007

Test	Voucher	Histo	Parasite	Bact.	Viro	Life hist	Chem tox	Bio tox	Storage Location <i>All sent to UGA VDIL</i>
Sample Code 1									
Carapace		X	<input type="checkbox"/>			<input type="checkbox"/>			
Plastron		X	<input type="checkbox"/>			<input type="checkbox"/>			
Skin		X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				sent for DNA
Head/skull		X				<input type="checkbox"/>			
Bone		X				<input type="checkbox"/>			
Muscle		X	<input type="checkbox"/>			X			tox sent to Dr. J. Keller
Trachea		X							
Lung		X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Thyroid		X							
Thymus		X							
Heart		X	<input type="checkbox"/>	<input type="checkbox"/>					
Heart Vessels		X	<input type="checkbox"/>						
Spleen		X		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	
Blood (and serum)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				red top, pink top, green top
Liver	X	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		X	X	tox sent to Dr. J. Keller
Gallbladder		X	<input type="checkbox"/>						
Esophagus		X	<input type="checkbox"/>						
Stomach		X	<input type="checkbox"/>						contents sent to J Wyneken for ID
Stomach CONTENTS ..	X	X					X	X	tox sent to Dr. J. Keller
Pancreas		X							
Intestine/SMALL		X	X		<input type="checkbox"/>				
Intestine/LARGE		X	X		<input type="checkbox"/>				
Intestinal CONTENTS ..	X	X					X	X	tox sent to Dr. J. Keller
Adrenals		<input type="checkbox"/>							not definitively found
Kidney		X		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
Urinary bladder		X	<input type="checkbox"/>						
Gonads, ducts		X							testes
Fat	<input type="checkbox"/>	X					<input type="checkbox"/>	<input type="checkbox"/>	
Brain		X		<input type="checkbox"/>					
Pituitary		X							
Spinal cord		X							
Salt gland		X							

Front Flipper & eye sent to Dr. Larisa
Avens for aging studies
Eye sent to J. Wyneken for Dr. Kerstin
Fritshes dissection for optical properties.
Larynx sent to Dr. Joy Reidenberg
Fluid from the bronchi frozen and sent
to Dr. D.L. Miller

Test	Voucher	Histo	Parasite	Bact.	Viol	Life hist	Chem tox	Bio tox	Stored...
Sample Code 2-3									
Carapace						<input type="checkbox"/>			
Plastron						<input type="checkbox"/>			
Head/skull						<input type="checkbox"/>			
Bone						x			humerus to Dr. Avens
Stomach CONTENTS ..	x					x			Sent to Dr. Wyneken
Sample Code 4-5									
Carapace						<input type="checkbox"/>			
Plastron						<input type="checkbox"/>			
Head/skull						<input type="checkbox"/>			
Bone						<input type="checkbox"/>			

Adapted from Sample Necropsy Report from Sea Turtles (modified from Geraci and Lounsbury, 1993)

Ancillary diagnostics:

- Photos Xray *CT scan of head*
- Blood: x CBC x Chem Smear
- Fluids: Chem Bacteriology Virology Other _____

Where: _____

- Stored samples** Foreign bodies: Bullet x Stomach contents Hooks
- Monofilament Balloon Plastic Tar Other

Where: Dr. J. Wyneken's freezer for ID _____

Storage Chronology (Storage technique, freeze-thaw cycles (times), where tissues were sent, etc.)

The turtle was allowed to sit on deck for 24 h before freezing. It remained frozen until 4 days prior to necropsy. It was placed in a refrigerated room with a fresh water hose running on it. The head was bagged and propped up to prevent any water from entering the airways or mouth. Gauze squares with petroleum jelly were placed over the eyes to protect them from dehydration. All samples were collected over a two day period. When requested, frozen samples were not allowed to thaw. Otherwise, the samples all were thawed once, then were refrozen or preserved in 10% buffered formalin. All preserved tissues were sent to Dr. Debra Miller at the UGA Veterinary Diagnostics and Investigations Lab (Tifton, Georgia). Duplicate frozen samples were sent to her as well for a diagnostic necropsy. Dr. Larisa Avens (NMFS – Beaufort received 1 frozen eye and a humerus for aging studies. Dr. Jeanette Wyneken collected the remaining heart tissue, one testis, 1 frozen eye from dissection in her lab by Dr. Kerstin Fritsches, and frozen samples of the stomach and intestinal contents for identification by N. Desjardin. The dissected head and airways were retained in Dr. Ketten's lab. The carapace and plastron were retained by NMFS NE lab at Woods hole for possible reconstruction.

Sea turtle Necropsy Report

----- EXTERNAL EXAM -----

Ab=Abnormal NF=No Findings NE=Not Examined

Descriptions-include color, number, size, distribution , texture of lesions

Date 17-18 May 2007 Time 9 AM - 5 PM

<p>Carapace <input checked="" type="checkbox"/> Ab <input type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Trauma <input type="checkbox"/> Propeller wound <input type="checkbox"/> Puncture wounds <input type="checkbox"/> Missing scutes <input type="checkbox"/> Bites <input type="checkbox"/> Tumors</p>	<p>Description/additional comments: Mid-dorsal ridge abraded to bone, 1st, 2nd, & 3rd lateral ridges abraded anteriorly</p>
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<p>Carapace Epibiota <input type="checkbox"/> Ab <input type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Epibiota types <input type="checkbox"/> Sponges <input checked="" type="checkbox"/> Barnacle <input type="checkbox"/> Polychaetes <input type="checkbox"/> Goose barnacles <input type="checkbox"/> Leeches <input type="checkbox"/> Amphipod <input type="checkbox"/> Bryozoans <input type="checkbox"/> Other _____</p>	<p>Description/additional comments: 1 small barnacle.</p>
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<p>Plastron <input type="checkbox"/> Ab <input type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Trauma <input type="checkbox"/> Propeller wound <input type="checkbox"/> Puncture wounds <input type="checkbox"/> Missing scutes <input type="checkbox"/> Bites <input type="checkbox"/> Tumors</p>	<p>Description/additional comments: Left & Right ventral ridges were abraded</p>
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<p>Plastron Epibiota <input type="checkbox"/> Ab <input checked="" type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Epibiota types <input type="checkbox"/> Sponges <input type="checkbox"/> Barnacle <input type="checkbox"/> Polychaetes <input type="checkbox"/> Goose barnacles <input type="checkbox"/> Leeches <input type="checkbox"/> Amphipod <input type="checkbox"/> Bryozoans <input type="checkbox"/> Other _____</p>	<p>Description/additional comments:</p>
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<p>Integument (Skin) <input checked="" type="checkbox"/> Ab <input type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Trauma <input type="checkbox"/> Sloughing <input type="checkbox"/> Necrosis <input type="checkbox"/> net wounds <input type="checkbox"/> Fishing line/rope <input type="checkbox"/> Tumors <input type="checkbox"/> Propeller wounds <input checked="" type="checkbox"/> Other <u>abrasions & bruising around axilla of both flippers edema and bruising on ventral rt. axilla; 4 cm laceration thru the skin & conn. Tissue on rt. shoulder.</u></p> <p>Region: <input checked="" type="checkbox"/> Head <input type="checkbox"/> Neck <input checked="" type="checkbox"/> Front Flippers <input checked="" type="checkbox"/> Rear flippers <input type="checkbox"/> Tail Left rear foot missing distal phalanges from digits 3-5. Digit 4 is thickened distally. These were healed injuries.</p>	<p>Description/additional comments: The crew that caught this turtle reported that it had the gangions wrapped tightly around its flippers. The bruising, edema & abrasions are consistent with this report.</p>
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<p>Integument Epibiota <input type="checkbox"/> Ab <input checked="" type="checkbox"/> NF <input type="checkbox"/> NE</p> <p style="text-align: center;">Description/additional</p> <p>Epibiota types <input type="checkbox"/> Sponges <input checked="" type="checkbox"/> Barnacle <input type="checkbox"/> Polychaetes <input type="checkbox"/> Goose barnacles <input type="checkbox"/> Leeches <input type="checkbox"/> Amphipod <input type="checkbox"/> Bryozoans <input type="checkbox"/> Other _____</p>	<p>Description/additional comments: 2 small barnacles on right shoulder—common on leatherbacks in this region.</p>
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<p>Eyes <input checked="" type="checkbox"/> Ab <input type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Location <input checked="" type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Both</p> <p>Discharge <input type="checkbox"/> Ab <input checked="" type="checkbox"/> NF <input type="checkbox"/> NE</p> <p>Location: <input type="checkbox"/> Ocular <input type="checkbox"/> Nasal <input type="checkbox"/> Oral 5 For ocular <input type="checkbox"/> Right <input type="checkbox"/> Left <input type="checkbox"/> Bilateral</p> <p>Color: _____</p>	<p>Description/additional comments: lens missing from right eye.</p> <p>Description/additional comments:</p>
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Cloaca <input type="checkbox"/> Ab x NF <input type="checkbox"/> NE <input type="checkbox"/> Swollen <input type="checkbox"/> Prolapsed Feces color: _____ Check for sex x cloaca beyond carapace x yes <input type="checkbox"/> no Glans penis x yes <input type="checkbox"/> no	Description/additional comments:
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Code 1 Only

-----MUSCULOSKELETAL SYSTEM-----

Skeleton and joints <input type="checkbox"/> Ab x NF <input type="checkbox"/> NE Fractures: x Yes <input type="checkbox"/> No <input type="checkbox"/> Dislocation If yes where _____ <input type="checkbox"/> Deformities If yes where _____	Description/additional comments: There was a simple fracture of the lateral jugal and postorbital bones found on CT but not obvious
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Musculature x Ab <input type="checkbox"/> NF <input type="checkbox"/> NE	Description/additional comments:
Characteristics <input type="checkbox"/> Abscesses <input type="checkbox"/> Clotted blood <input type="checkbox"/> Gelatinized <input type="checkbox"/> Necrosis <input type="checkbox"/> Parasites <input type="checkbox"/> Cysts x Other (Specify) _general decomposition suggesting turtle was dead for hours period before freezing_.	

Coelomic cavity x Ab <input type="checkbox"/> NF <input type="checkbox"/> NE	Description/additional comments:
Fluid amount: ____~6-7 Liters_____ ml Color: _red tinged_____	Postmortem changes in color and texture that are consistent with freezing and thawing.
Characteristics x Clear <input type="checkbox"/> Cloudy x Blood tinged <input type="checkbox"/> Hemorrhage <input type="checkbox"/> Blood clots <input type="checkbox"/> Adhesions <input type="checkbox"/> Plaques <input type="checkbox"/> Caseous material	
Peritoneum Normal Characteristics <input type="checkbox"/> Tumors <input type="checkbox"/> Abscesses /granulomas <input type="checkbox"/> Congested <input type="checkbox"/> Hemorrhage <input type="checkbox"/> Clotted blood <input type="checkbox"/> Parasites (trematodes in mesenteric arteries)--SAVE	

-----RESPIRATORY SYSTEM-----

Trachea/Bronchi	<input checked="" type="checkbox"/> Ab	<input type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Abnormal Tissue:	<input type="checkbox"/> Trachea	<input checked="" type="checkbox"/> Bronchi		
Characteristics				
Mucosa:	<input checked="" type="checkbox"/> White, stained with red	<input type="checkbox"/> Vessels congested with blood		
	<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Ulcers		
Trauma:	<input type="checkbox"/> Punctures	<input type="checkbox"/> Lacerations		
Fluid:	<input type="checkbox"/> Serous	<input type="checkbox"/> Mucooid	<input type="checkbox"/> Purulent	
Fluid or foam:				
Color: <u>Right and</u> left bronchi contain fluid. ~16 cc in right. Left & right bronchi contained considerable fluid that remained frozen; it was collected for possible analysis.				
Parasites (SAVE): Number <u> 0 </u>				

Lungs	<input checked="" type="checkbox"/> Ab	<input type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				Large quantities of frothy fluid in the lungs and bronchi that extend the length of the lung.
Color: <u> </u> lungs appeared normal in size, structure, and color				
Lesion location:	<input type="checkbox"/> Left	<input type="checkbox"/> Right	<input type="checkbox"/> Both	
	<input type="checkbox"/> Cranial	<input type="checkbox"/> Caudal	<input type="checkbox"/> Dorsal	
	<input type="checkbox"/> Ventral	<input type="checkbox"/> Middle		
distribution:	<input type="checkbox"/> Diffuse	<input type="checkbox"/> Focal	<input type="checkbox"/> Multifocal	
severity:	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	

-----ENDOCRINE SYSTEM-----

Thyroid	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Describe: large approx. 3 ms x4 cm, oval, deep reddish brown, gelatinous.				

Thymus	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Describe: lobular, pale pink and somewhat diffuse, embedded in fat.				

Adrenal glands	<input type="checkbox"/> Ab	<input type="checkbox"/> NF	<input checked="" type="checkbox"/> NE	Description/additional comments:
If unable to find, save peritoneal lining over kidneys Peritoneal lining and anterior poles of the kidneys were submitted for histopath. Adrenals may be incorporated into the anterior kidney in this species. The anterior kidney lobes were white.				
Characteristics				
	<input type="checkbox"/> Normal	<input type="checkbox"/> Enlarged		
Dimensions	cm x cm			

-----CARDIOVASCULAR SYSTEM-----

Pericardial sac <input type="checkbox"/> Ab x NF <input type="checkbox"/> NE Fluid <u> </u> ml not measured. Clear fluid.	Description/additional comments:
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Pulmonary arteries and Aorta x Ab <input type="checkbox"/> NF <input type="checkbox"/> NE Characteristics <input type="checkbox"/> Thrombi <input type="checkbox"/> Plaques <input type="checkbox"/> Ruptures x Parasites (Trematodes--SAVE) Number <u> </u> Size <u> </u>	Description/additional comments: Black streaks at the bases of the great vessels that may be parasites were excised and submitted for histopath.
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Atria <input type="checkbox"/> Ab x NF <input type="checkbox"/> NE <input type="checkbox"/> Left <input type="checkbox"/> Right <input type="checkbox"/> Both <input type="checkbox"/> Flaccid <input type="checkbox"/> Stiff <input type="checkbox"/> Thickened <input type="checkbox"/> Dilated <input type="checkbox"/> Hemorrhage <input type="checkbox"/> Pale areas Dimensions <u> </u> cm x cm Thickness of wall <u> </u> cm	Description/additional comments: not measured
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Ventricle x Ab <input type="checkbox"/> NF <input type="checkbox"/> NE Dimensions (cm x cm) <u> </u> left, <u> </u> right Thickness of wall right <u> </u> cm, left <u> </u> cm, central <u> </u> cm <input type="checkbox"/> Hemorrhage <input type="checkbox"/> Pale areas <input type="checkbox"/> Parasites	Description/additional comments: Walls seemed unusually thin (<1 cm in most areas).
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Spleen <input type="checkbox"/> Ab x NF <input type="checkbox"/> NE Dimensions <u> </u> ~7 <u> </u> cm x <u> </u> ~15 <u> </u> cm <input type="checkbox"/> Abscesses/granulomas <input type="checkbox"/> Masses <input type="checkbox"/> Scars (fibrosis) <input type="checkbox"/> Friable Color: <u> </u> dark red <u> </u>	Description/additional comments: Not measured directly/appeared normal
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Stomach	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				
<input type="checkbox"/> Clotted blood	<input type="checkbox"/> Thickened	<input type="checkbox"/> Ruptures/laceration		
<input type="checkbox"/> Volvulus (twist)	<input type="checkbox"/> Erosions			
Ulcers:	<input type="checkbox"/> Mild	<input type="checkbox"/> Moderate	<input type="checkbox"/> Severe	
	<input type="checkbox"/> Focal	<input type="checkbox"/> Multifocal	<input type="checkbox"/> Focally-extensive	
	<input type="checkbox"/> Extensive			
Mucosa:	<input type="checkbox"/> color <u> </u> pink to pale pink <u> </u>			
Contents:	<input type="checkbox"/> Empty	<input checked="" type="checkbox"/> Fluid	<input type="checkbox"/> Dilated with gas	
	<input type="checkbox"/> Mucus	<input type="checkbox"/> Sand	<input type="checkbox"/> Rocks	
	x Other: <u> </u> cloudy digesta <u> </u>			
Food:	<input type="checkbox"/> Fish	<input type="checkbox"/> Bivalves	<input type="checkbox"/> Crustaceans	
	<input type="checkbox"/> Cephalopods	<input type="checkbox"/> Gastropods	<input type="checkbox"/> Other <u> </u>	
	<input type="checkbox"/> Undigested	<input type="checkbox"/> Partially digested	<input checked="" type="checkbox"/> Digested	
Parasites:	<input type="checkbox"/> Yes	x No		
	<input type="checkbox"/> <50	<input type="checkbox"/> >50		

Mesentery	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Some unidentified tissues submitted.				
Characteristics				
<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Clotted blood	<input type="checkbox"/> Masses		
<input type="checkbox"/> Parasites (trematodes in mesenteric arteries)--SAVE				

Pancreas	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				
<input type="checkbox"/> Loss of lobulation	<input type="checkbox"/> Necrotic	<input type="checkbox"/> Edema	<input type="checkbox"/> Inflamed	
<input type="checkbox"/> Color <u> </u> pink (probably postmortem change) <u> </u>				

Small Intestine	<input checked="" type="checkbox"/> Ab	<input type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				Several ulcers were found in the wall of the duodenum/ ileum. A large encapsulated mass was found at the ileal-caecal junction. Both ulcers and the mass were submitted for histopath.
<input type="checkbox"/> Empty	<input type="checkbox"/> Bile	<input checked="" type="checkbox"/> Digesta	<input type="checkbox"/> Other <u> </u> several small ulcers <u> </u>	
x Parasites (SAVE)				
Color: <u> </u> pale pink to deep pink (probably postmortem changes) <u> </u>				
<input type="checkbox"/> Torsion/volvulus	<input type="checkbox"/> Perforation	<input type="checkbox"/> Masses	<input checked="" type="checkbox"/> Abscesses	
<input type="checkbox"/> Constrictions	<input type="checkbox"/> Diverticula			

Colon	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				
<input type="checkbox"/> Torsion/volvulus	<input type="checkbox"/> Perforation	<input type="checkbox"/> Masses	<input type="checkbox"/> Abscesses	
<input type="checkbox"/> Constrictions				
x Normal	<input type="checkbox"/> Empty	<input type="checkbox"/> Feces	<input type="checkbox"/> Fresh blood	
<input type="checkbox"/> Tarry <u> </u> Other <u> </u>				
<input type="checkbox"/> Parasites--SAVE <u> </u>				
Color: <u> </u> pink (post-mortem coloration) <u> </u>				

----- URINARY TRACT -----

Kidneys	<input checked="" type="checkbox"/> Ab	<input type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
				Not measured (removed in part by volunteers).
Characteristics				Both right and left kidneys seemed enlarged (lobes appeared swollen)
Dimensions _____ cm x _____ cm				compared to their relative size in neonates and in cheloniids.
Cortex and Medulla color: <u>dark red with white dorsal and anterior lobes</u>				
(freezer artifact or sexual segment??) _____				
Lesions:				
<input type="checkbox"/> Dilated with blood		<input type="checkbox"/> Hemorrhage		<input type="checkbox"/> Clotted blood
<input type="checkbox"/> Abscesses/granulomas		<input type="checkbox"/> Parasites		<input type="checkbox"/> Cysts
<input type="checkbox"/> Dilated with urine		<input type="checkbox"/> Masses		<input type="checkbox"/> Calculi
<input type="checkbox"/> Congestion		<input type="checkbox"/> Necrosis (focal, multifocal, diffuse)		
Left _____				
Right _____				

Ureters	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				
<input type="checkbox"/> Dilated		<input type="checkbox"/> Abscesses		
<input type="checkbox"/> Granulomas		<input type="checkbox"/> Calculi (SAVE)		

Urethra	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				
Patent: <input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No		
Lesion: <input type="checkbox"/> Ulcers		<input type="checkbox"/> Calculi		<input type="checkbox"/> Strictures

Urinary bladder	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				
<input type="checkbox"/> Empty <input checked="" type="checkbox"/> Dilated		<input type="checkbox"/> Thickened		<input type="checkbox"/> Tumors
Mucosa: <input type="checkbox"/> Hemorrhagic		<input type="checkbox"/> Ulcerated		
<input type="checkbox"/> Masses		<input type="checkbox"/> Plaques		<input type="checkbox"/> Necrotic

-----REPRODUCTIVE TRACT-----

Gonads	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				Ductus deferens and epididymus was bilaterally enlarged and packed with white material submitted for histopath. (note: this male turtle was caught in waters also used by females in route to nesting beaches. He appeared to be reproductively active.
Sex:	<input checked="" type="checkbox"/> Male	<input type="checkbox"/> Female		
Maturity:	<input checked="" type="checkbox"/> Mature	<input type="checkbox"/> Immature		
<input checked="" type="checkbox"/> Enlarged	<input type="checkbox"/> Involuted	<input type="checkbox"/> Masses	<input type="checkbox"/> Follicles	

Uterus	<input type="checkbox"/> Ab	<input type="checkbox"/> NF	<input checked="" type="checkbox"/> NE	Description/additional comments:
Characteristics				
<input type="checkbox"/> Enlarged	<input type="checkbox"/> Dilated with fluid	<input type="checkbox"/> Hemorrhagic		
<input type="checkbox"/> Tumors	<input type="checkbox"/> Masses	<input type="checkbox"/> Mucus	<input type="checkbox"/> Eggs	

-----NERVOUS SYSTEM-----

Dura mater and Inside calvarium	<input type="checkbox"/> Ab	<input checked="" type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Characteristics				Braincase seemed normal as did meninges. Brain was autolyzed.
<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Clotted blood	<input type="checkbox"/> Abscesses/Granulomas		

Central Nervous System	<input checked="" type="checkbox"/> Ab	<input type="checkbox"/> NF	<input type="checkbox"/> NE	Description/additional comments:
Lesions:	<input checked="" type="checkbox"/> Brain	<input type="checkbox"/> Spinal Cord		Olfactory nerve was necrotic.
Characteristics				Brain and spinal cord were autolyzed.
<input type="checkbox"/> Distended vessels	<input type="checkbox"/> Abscesses/Granulomas	<input type="checkbox"/> Clotted blood		
<input type="checkbox"/> Hemorrhage	<input type="checkbox"/> Asymmetry	<input type="checkbox"/> Edema		

Other information: The external dorsal surface of the head had multiple healed areas that were circular or ovoid. 1 series of 3 depressed areas were suggestive of maxillary and mandibular beak marks (perhaps the turtle was bitten by another leatherback). There is another healed region on the inferior surface of the right mandible posterior to the symphysis. There was an incomplete fracture of the jugal near the postorbital bones posterior to the eye (found on CT exam).

All samples were submitted to Dr. Debra Miller (UGA, VDIL) for diagnostic necropsy. Dr. Miller's report is attached.



The University of Georgia

College of Veterinary Medicine
Veterinary Diagnostic and Investigational Laboratory

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Cooperating with:
Georgia Department of
Agriculture

Sheryan Epperly, Research Fishery Biologist, Sea Turtle Team Leader
National Marine Fisheries
75 Virginia Beach Drive
Miami, Florida 33149
305-361-4207

Dear Sheryan,

Following is the necropsy report for UGA Tifton VDIL case number 23598-07, an adult male Leatherback sea turtle (RRT033/RRT034).

Gross (Gross findings are as reported by Dr. Wyneken)

This turtle was entangled in longline gangions and died underwater or shortly after coming on board the boat (it was not moving at all after arriving on board). It was an adult male. It was frozen then taken unfrozen to WHOI where Dr. Wyneken led the full necropsy.

The turtle had a couple of lesions that might be parasites, a necrotic olfactory tract, and a wound that looks like a recent healing hook wound in its mouth.

Additionally, there were several older lesions healing on the skull (possible bites from other leatherbacks). Its bronchi were full of water (frozen). Frozen fluid was included in the samples.

Collected are frozen tissues (liver, kidney, blood, muscle, fat, skin, fluid from bronchi) plus a full set of samples for histological examination. Photos of necropsy were taken.

Histological Examination

Multiple tissues are examined. There is freeze artifact and autolysis that precludes detailed histological interpretation but tissue type and general changes remain discernible. Cell types often are not discernible except to note that they are either granulocytes (heterophils/eosinophil/basophil) or mononuclear.

The tissue labeled as from the base of a great vessel and suspected to be a parasite, appears to be the wall of a vessel with a possible blood supply (suspect aorta). There is suggestion of fibrosis that may represent past (or perhaps present) parasite migration or presence. A parasite was not observed and inflammatory cells were not noted.

The tissue labeled as acoustic and adjacent fats contained adipose (fat), skeletal muscle, few vascular spaces and occasional connective tissue (collagen fibers). Scattered throughout primarily the adipose were clumps of intracellular (adipocytes) and extracellular pigment that was golden/brown and generally in short acicular (needle-like) or occasionally granular appearance. Clumps of granules generally stain for melanin but the areas of more diffuse pigment do not definitely stain for melanin, acid-fast or hemosiderin. Breakdown pigment (such as lipofuscin) remains the most likely not significant.

The section of brain is examined. There is one focus of what appears to be mild fibrosis surrounding a central region of mixed cells (including heterophils/eosinophils and mononuclear cells). However, this may simply be a reflection of cut (i.e. through a vessel that has a cellular postmortem clot) rather than a pathological change. No nerve tissue examined appeared necrotic.

The tissue labeled as a lesion on the roof of the mouth is examined and has perivascular infiltrated of mixed inflammatory cells in the deeper regions. There is moderate proliferation of the epithelial mucosa with margination of nuclear chromatin in most cells (presumed to be an artifact of freezing). Electron microscopic examination of these cells did not reveal any evidence of viral particles. There is ulceration and cores of cellular debris that extend into the submucosa but are mostly bordered by epithelial mucosa. This is a healing superficial lesions.

The tissue labeled as an oral cavity cyst contains a squamous epithelial lined structure filled with laminated keratin. There are moderate numbers of mixed inflammatory cells surrounding this cyst. Golden/brown pigment (as described above) is present in the surrounding fat. This cyst is likely an incidental finding and the inflammatory cells are likely secondary to rupture or leakage of the cyst contents into the surrounding tissue.

The tissue labeled as the papillae lesion is examined. The submucosa (or core of the papilla is expanded by mild amounts of pale homogeneous eosinophilic material (edema fluid). Pigment (as described above) is observed in a few areas but inflammatory cells are not noted. A special immunohistochemical stain for smooth muscle was done on all papillae (slides 9, 38 and 49). The only smooth muscle present in the papillae is that associated with vessel walls.

The tissue labeled as a GI mass is layers of amorphous cellular debris that appears to be occasionally admixed with foreign material (ingesta, presumptive). A special stain for fungi was negative. Based upon these findings and the gross photos, this was likely an old lesion (parasite, foreign material, etc) that was walled off within the intestine and at this time, represents an incidental finding.

The tissue labeled as ulcer in the small intestine and normal intestine has a granuloma that is characterized by a centrally located foreign object that is interpreted as a parasite fragment (postmortem and freeze artifact makes further interpretation difficult). The wall of the granuloma is concentric fibrosis with minimal inflammatory cells. This is most suggestive of a foreign material (or parasite) that has been walled off by the body.

The sections of gonad reveal numerous sperm, especially in the ducts.

The section of mesenteric fat does not appear to be brown fat but rather is similar to that described above and appears to be infiltrated by edema fluid with scattered golden pigment. In one area there is suggestion of saponification that may explain the gross appearance.

The tissue labeled as thyroid has no obvious cysts. The follicles vary markedly in size, which may be age related and are found from <0.5mm to 1-2mm diameter.

Thymus is not found. The tissue labeled as thymus is fat and is as described above with fluid and scattered pigment.

The tissues labeled as heart vessels have perivascular foci of homogenization of stroma with cellular disruption and basophilic deposits that are most suggestive of cellular debris (possible degeneration or necrosis or less likely mineralization). Golden pigmentation also is present in these areas. These findings may be due in part to artifact (freeze and autolysis) but likely also represent terminal events.

The section of heart that is presumed to be from the ventricle region is unremarkable. The other section appears to be from the atrium near the heart base as it has multiple luminal (vessels) areas but both striated cardiac

muscle as well as occasional collagenous tissue are found. There are multiple areas of primarily perivascular infiltrates of heterophils/eosinophils and mononuclear cells. These infiltrates often replace the normal architecture and suggest a mild endocarditis or myocarditis that may have a parasitic etiology but are likely incidental findings.

The lung has minimal numbers of interstitial infiltrates of heterophils/eosinophils, which are interpreted as incidental. This was probably a quick response to water in the lungs.

The liver has pronounced freeze artifact but otherwise appears to only have pigment clumps (in the section they appear as melanomacrophage centers). This typical of reptiles.

Similar to the liver, the spleen and kidney have freeze artifact but otherwise only scattered pigment.

Adrenal gland is not found. Only kidney is found.

The tissue labeled as urinary bladder has multiple variably-sized lymphoid aggregates (some contain heterophils/Eosinophils) and most aggregates appear to be subserosal. Occasionally there are perivascular infiltrates of mixed cells (mononuclear cells and heterophils/eosinophils). Lymphoid aggregates are likely reflective of chronic antigenic stimulation and the occasional eosinophils and heterophils suggest that antigenic stimulation (parasitic or bacterial) is likely low-grade but active.

The esophagus has one small lymphoid nodule.

There is one perivascular focus of mild numbers of mixed inflammatory cells (mononuclear and heterophils/eosinophils) noted in the tissue labeled as stomach. Similar to the urinary bladder, this likely represents chronic and active but low-grade antigenic (e.g., parasitic, bacterial) stimulation.

The tissue labeled as small intestine has advanced autolysis but there is one area that is suggestive of a granuloma and 2 dilated crypts. There appears to be moderate numbers of heterophils/eosinophils throughout the lamina propria and may be reflective of enteroparasitism. Similarly, the tissue labeled as large intestine has advanced autolysis but appears to have multiple scattered lymphoid nodules and moderate numbers of heterophils/eosinophils throughout the lamina propria (again the latter likely reflecting parasites).

There are two sections of fat with minimal fluid and rare pigment.

One of the sections of skeletal muscle has minimal pigment (melanin) around occasional vessels. This is common in reptiles.

The section of skin has one deep focus suggestive of a granuloma and is likely an incidental finding.

The tissue suspected to be a possible gland is adipose and has minimal fluid and rare pigment. One section of unknown tissue is fat and appears as above (minimal fluid).

One tissue labeled as 'unknown' appears to be a network of vessels (or cavities although they appear to contain blood) surrounded by a stroma of hematopoietic tissue or perhaps simply heterophils/eosinophils and mononuclear cells. At one aspect there is a focus of bacterial colonies (possible postmortem). Anatomical location of this tissue section is identified as from the mesentery.

Another section of tissue labeled as 'unknown' is skeletal muscle and is unremarkable.

One section of bone is circular (anatomical site is long bone from the forelimb). The marrow cavity seems to be predominated by fat but this may be reflective of location.

The tissue labeled as head/skull is composed of cartilage, bone and connective tissue and is essentially unremarkable.

Multiple sections of the tissue labeled as skin from the head are examined and in these views are essentially unremarkable.

The tissue labeled as 'bone lesion' appears to have evidence of remodeling and perhaps some fibrous replacement (scarring). This is interpreted as an old (healed) wound.

Other tissues were essentially unremarkable.

Urinalysis microscopic Exam: No sperm or urates were observed in the fluid specimen submitted and described as from the cloacal region. Cellular debris and a plethora of bacteria were found.

Virus Isolation: No Virus was detected.

Bacterial Culture:

Liver and Kidney: No significant bacterial growth occurred in sections of liver and kidney

Blood: *Salmonella spp*, *Streptococcus* alpha hemolytic, *Streptococcus* non-hemolytic, and *Serratia proteamaculans* were culture from the blood but these tend to be opportunistic, environmental contaminants, or post mortem growth.

Toxicological tests are pending but are not part of the routine diagnostic work-up of this case.

Comments: Evidence of a pre-existing infectious process or pre-existing disease that resulted in death or severe debilitation was not found. The lesions present were either incidental findings or healed wounds. It is important to note that granulomas are common findings in reptiles because that is a common response of a reptile's body to offending agents. Further, vascular changes noted grossly are suggestive of terminal events secondary to shock.

Respectfully Submitted,



Debra Lee Miller, D.V.M., Ph.D.

Associate Professor/Veterinary Pathologist

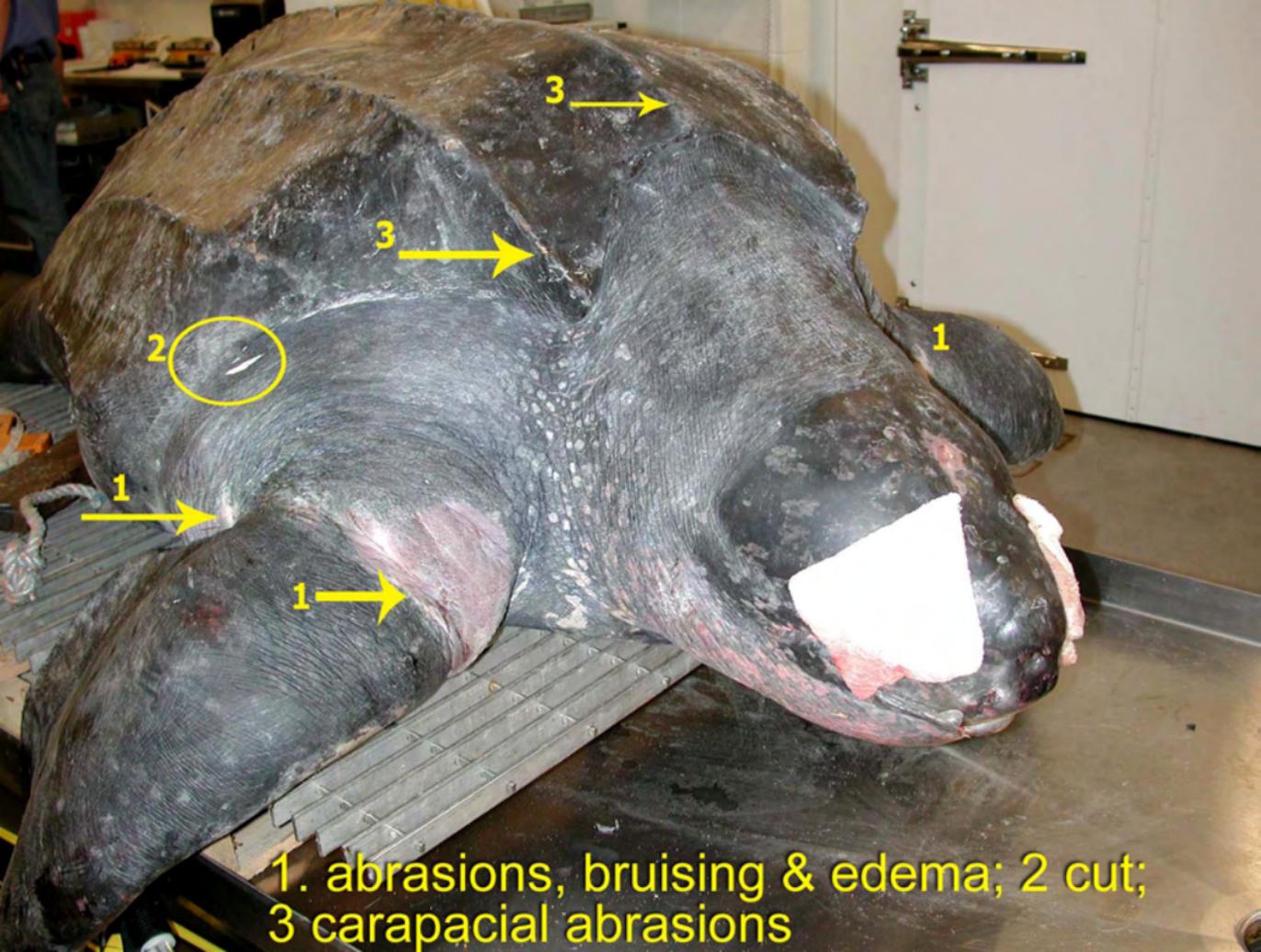
email: millerdl@uga.edu



Thawing position



Transport from refrigeration to lab.



1. abrasions, bruising & edema; 2 cut;
3 carapacial abrasions



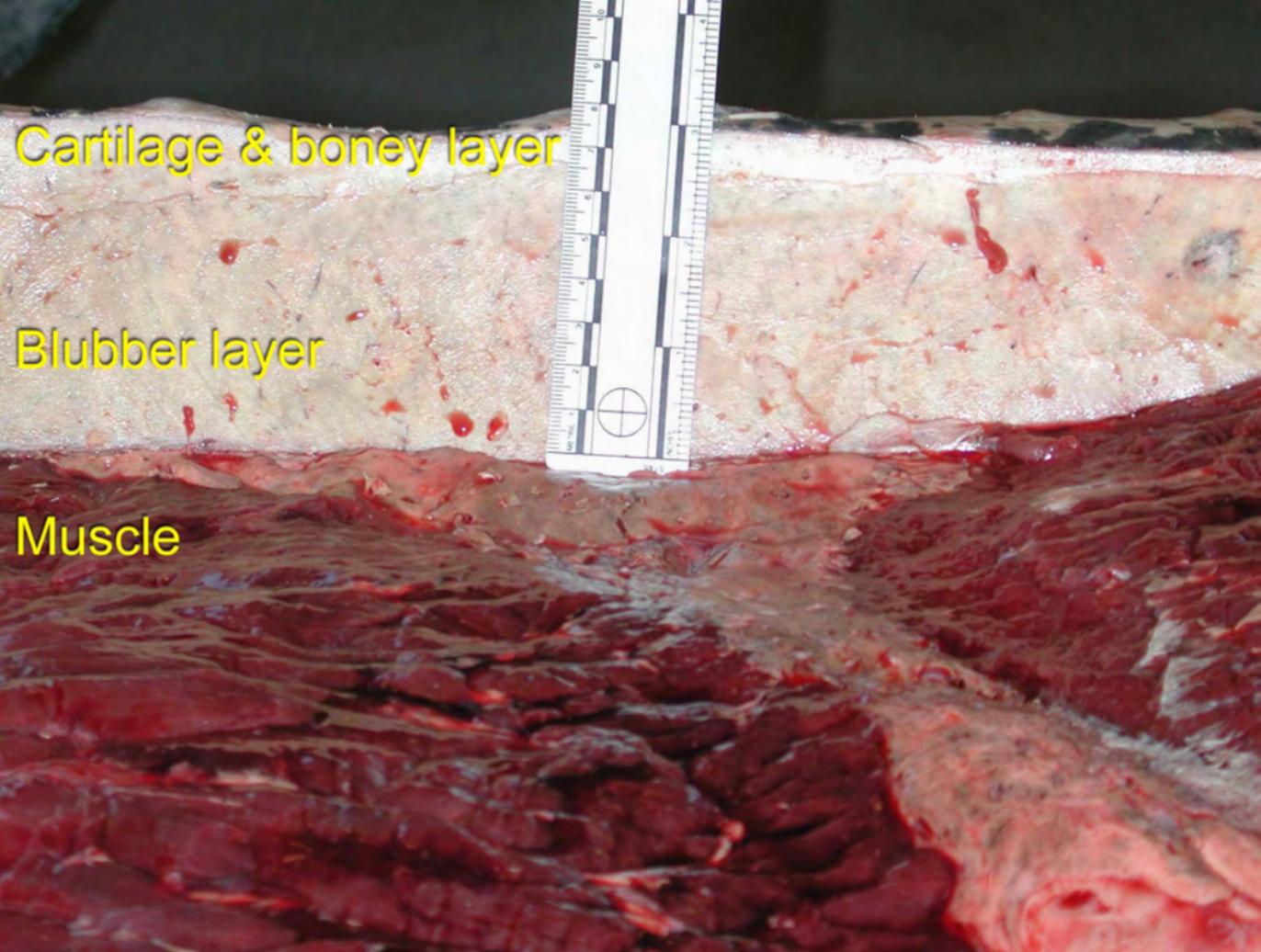
Left rear flipper
(partial amputation)



Right rear flipper (normal)



Ventral muscle

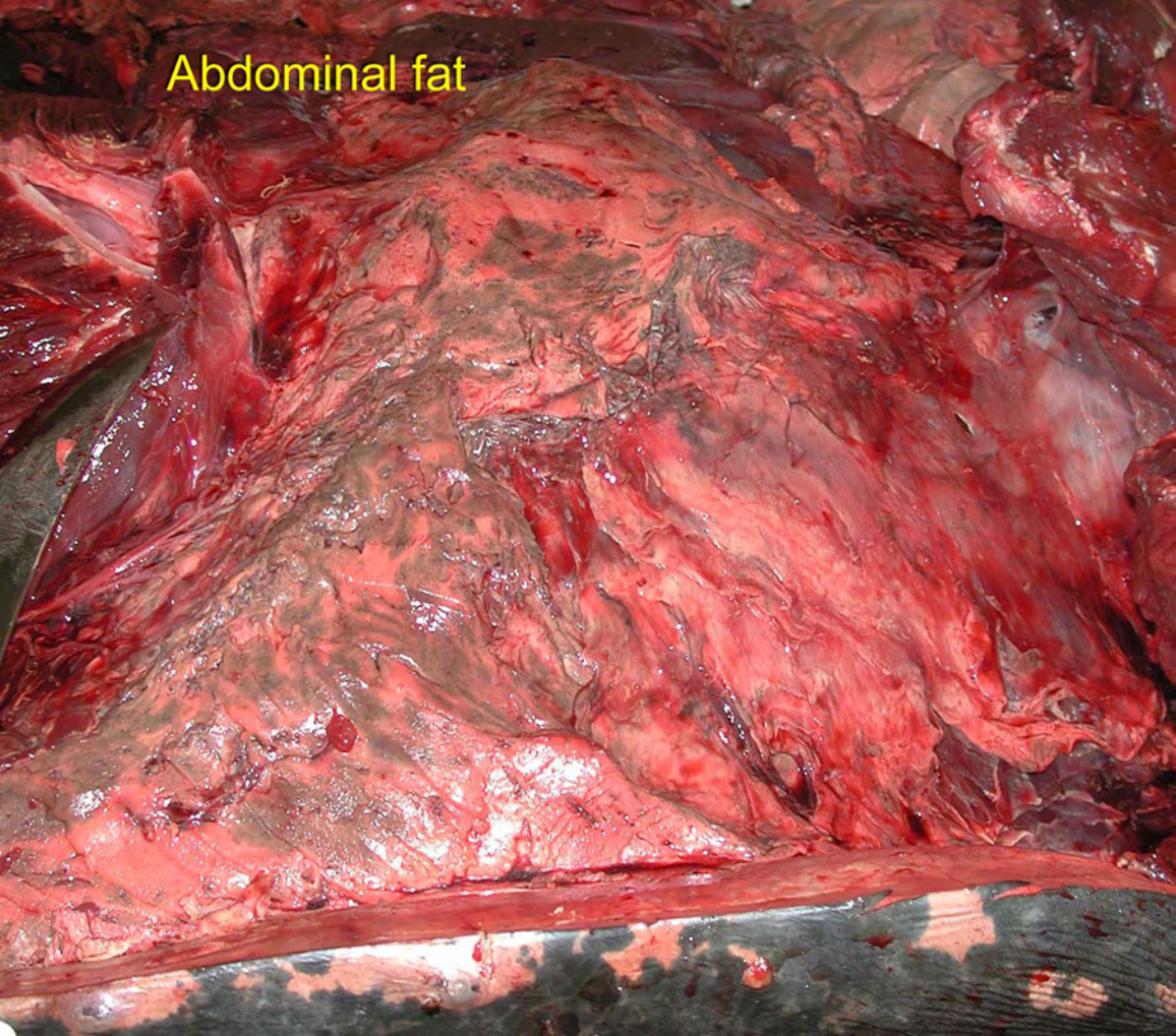
A photograph showing a cross-section of biological tissue. A ruler is placed vertically in the center for scale. The tissue is divided into three distinct layers. The top layer is light-colored and appears fibrous. The middle layer is a thick, white, translucent band. The bottom layer is a thick, dark red, fibrous mass. The ruler has markings in centimeters and millimeters, with a circular logo in the middle. The labels are in yellow text on the left side of the image.

Cartilage & boney layer

Blubber layer

Muscle

Abdominal fat





D-COROS
DARRT ~~033/034~~
Leatherback
18-May-07

**ID number wrong
on card should be
RRT033/034**

**Probable healing
bite.**

Somaris/5 3D
Ex: 1
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Se: 602/15
Im: 7/7
: 0.0

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2007 May 17 M D-cor05
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2007 May 17
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Spin: -130
Tilt: -17

512 x 512

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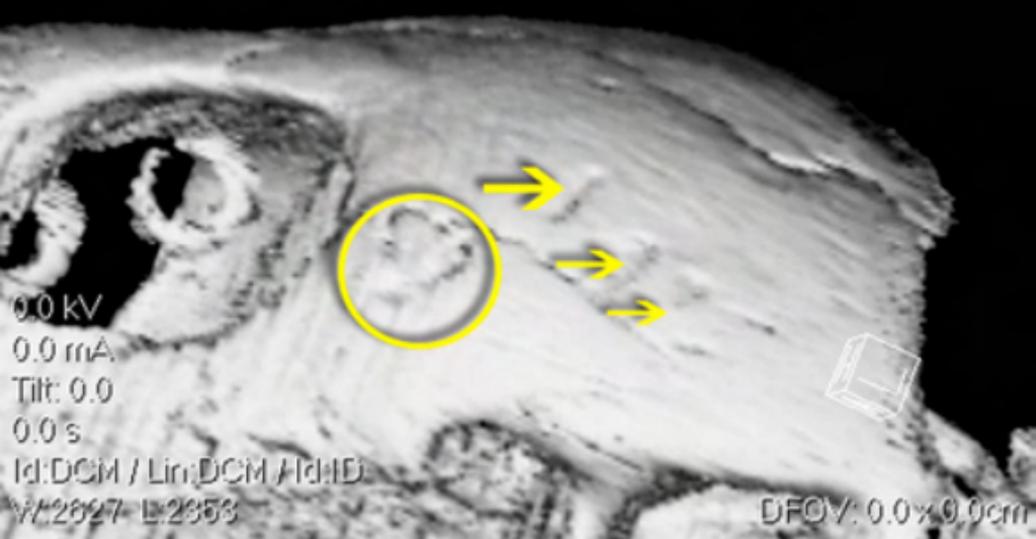
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Somaris/5 3D
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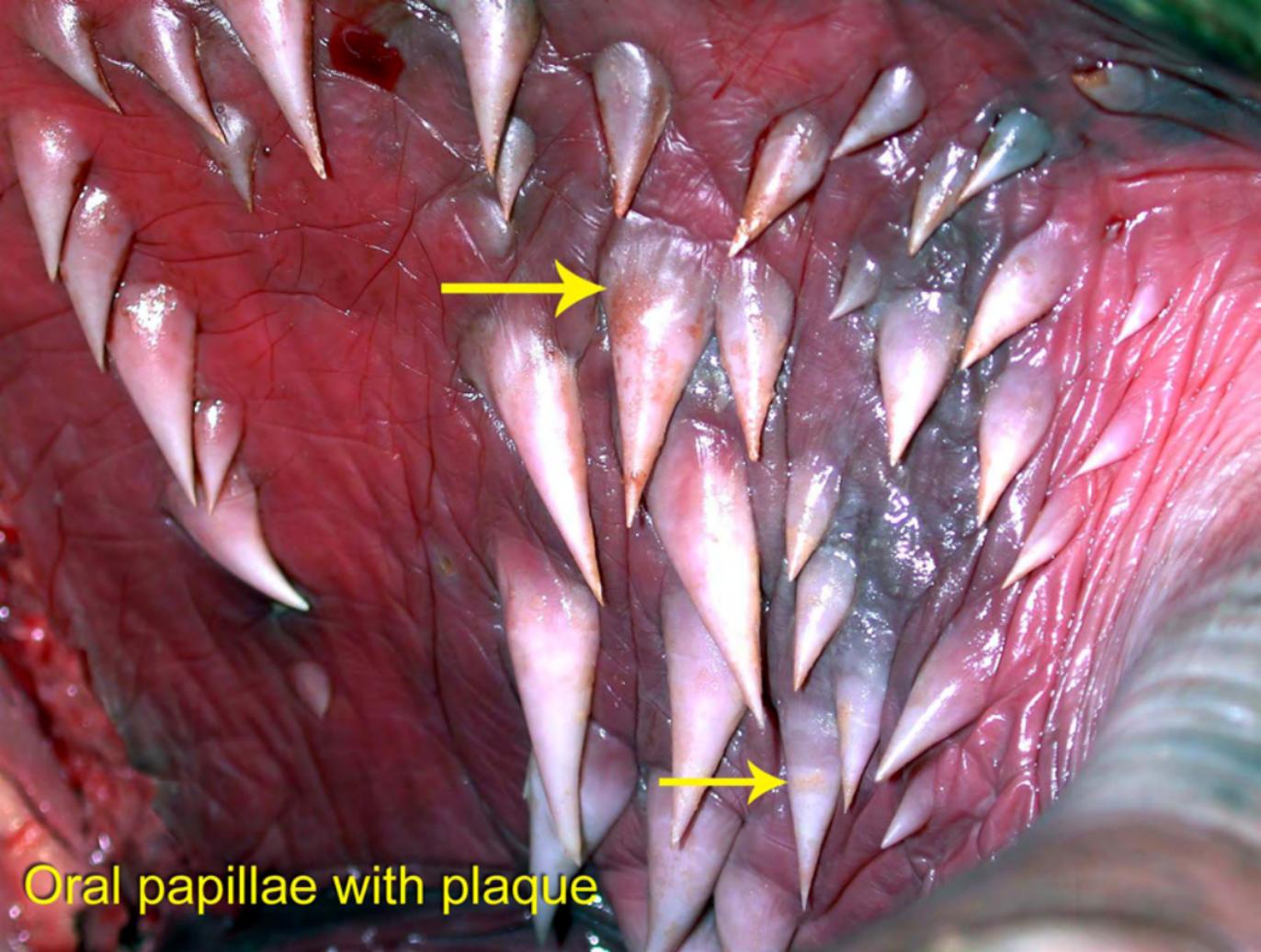
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512 x 512

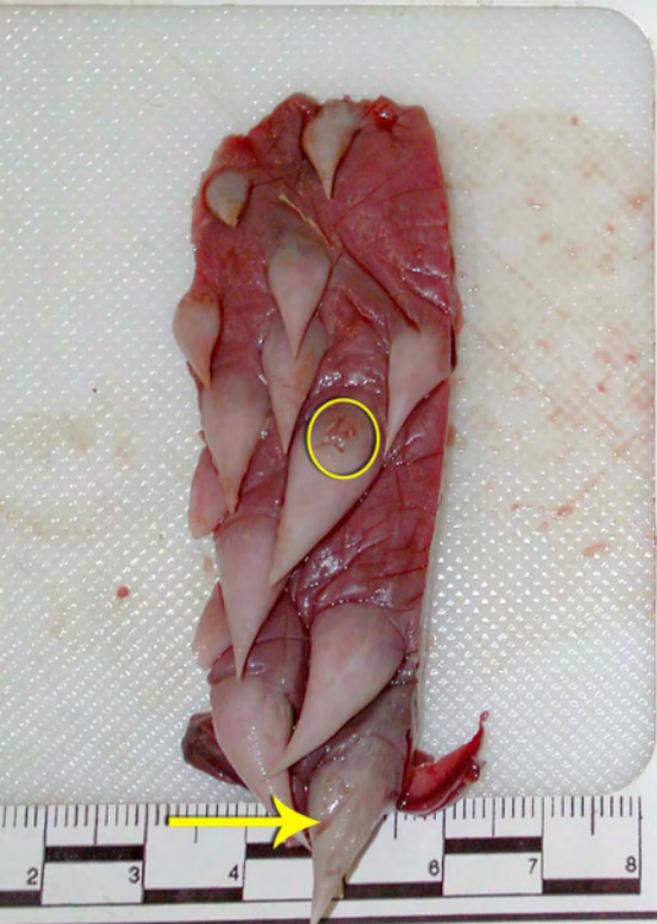


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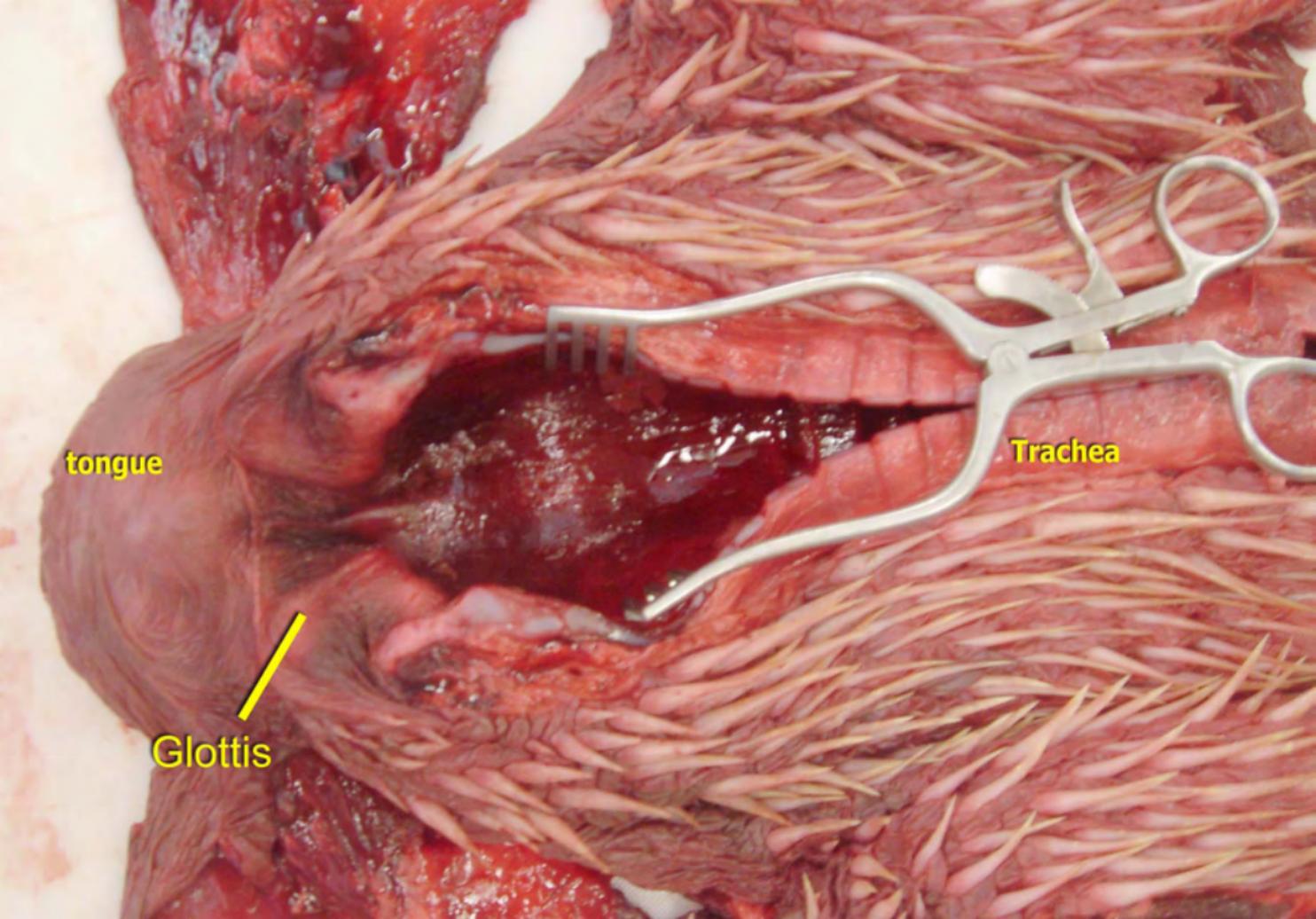
Oral papillae with plaque



D-COROS
~~DERRT 03/04~~
Leatherback
18-May-07

**ID wrong on card. Should be
RRT033/034.**

Oral papillae with eroded area

An anatomical dissection of a larynx, showing the tongue, glottis, and trachea. The larynx is the central focus, with the tongue to the left and the trachea to the right. Surgical instruments, including a pair of forceps and a retractor, are used to hold the tissue open. The trachea is characterized by its cartilaginous rings. The glottis is the opening between the vocal folds. The tongue is a large, muscular structure. The surrounding tissue is reddish and fibrous.

tongue

Glottis

Trachea

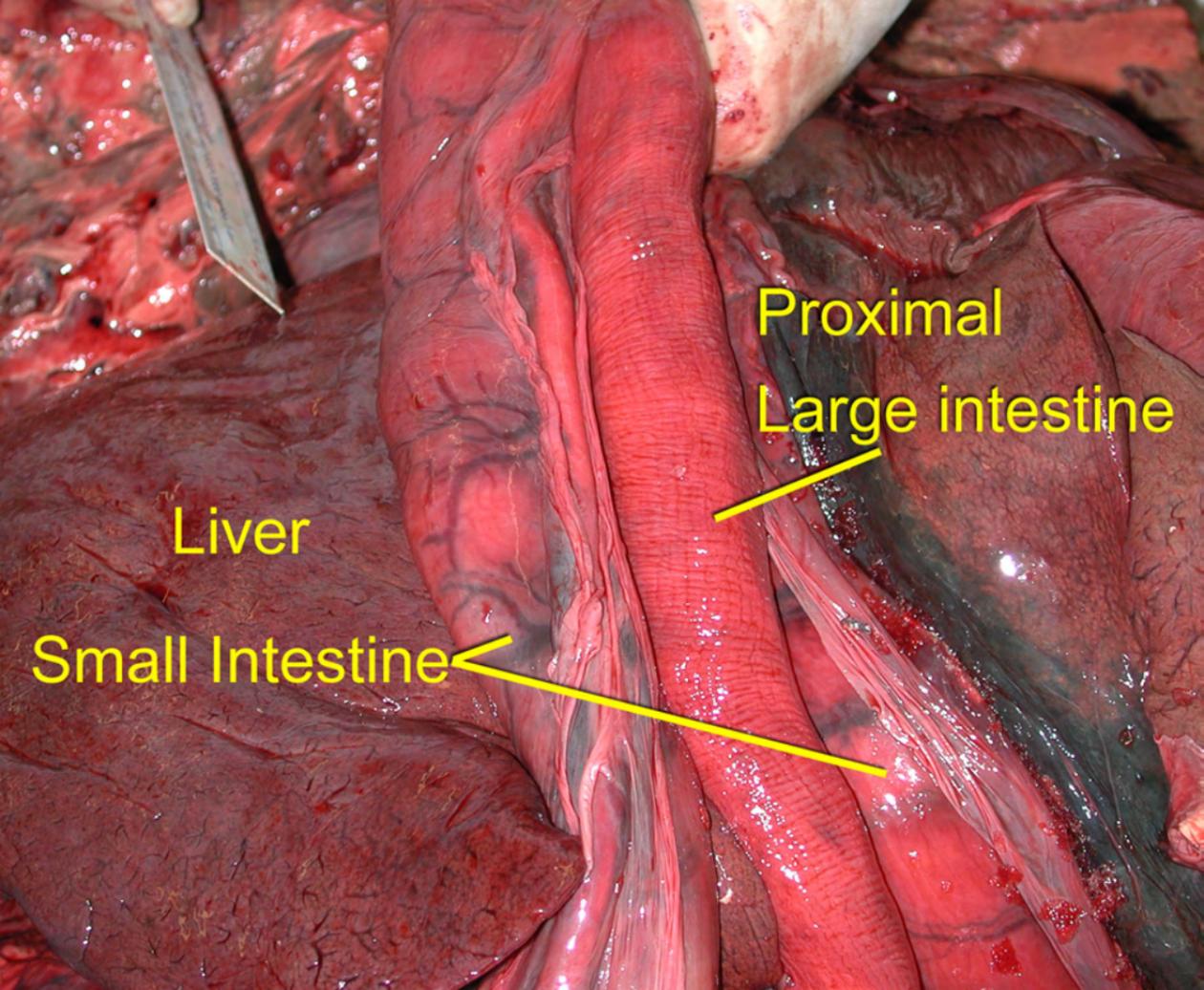


DC RRT 033
RRT 034
5-18-07

small intest

Intestinal
erosion



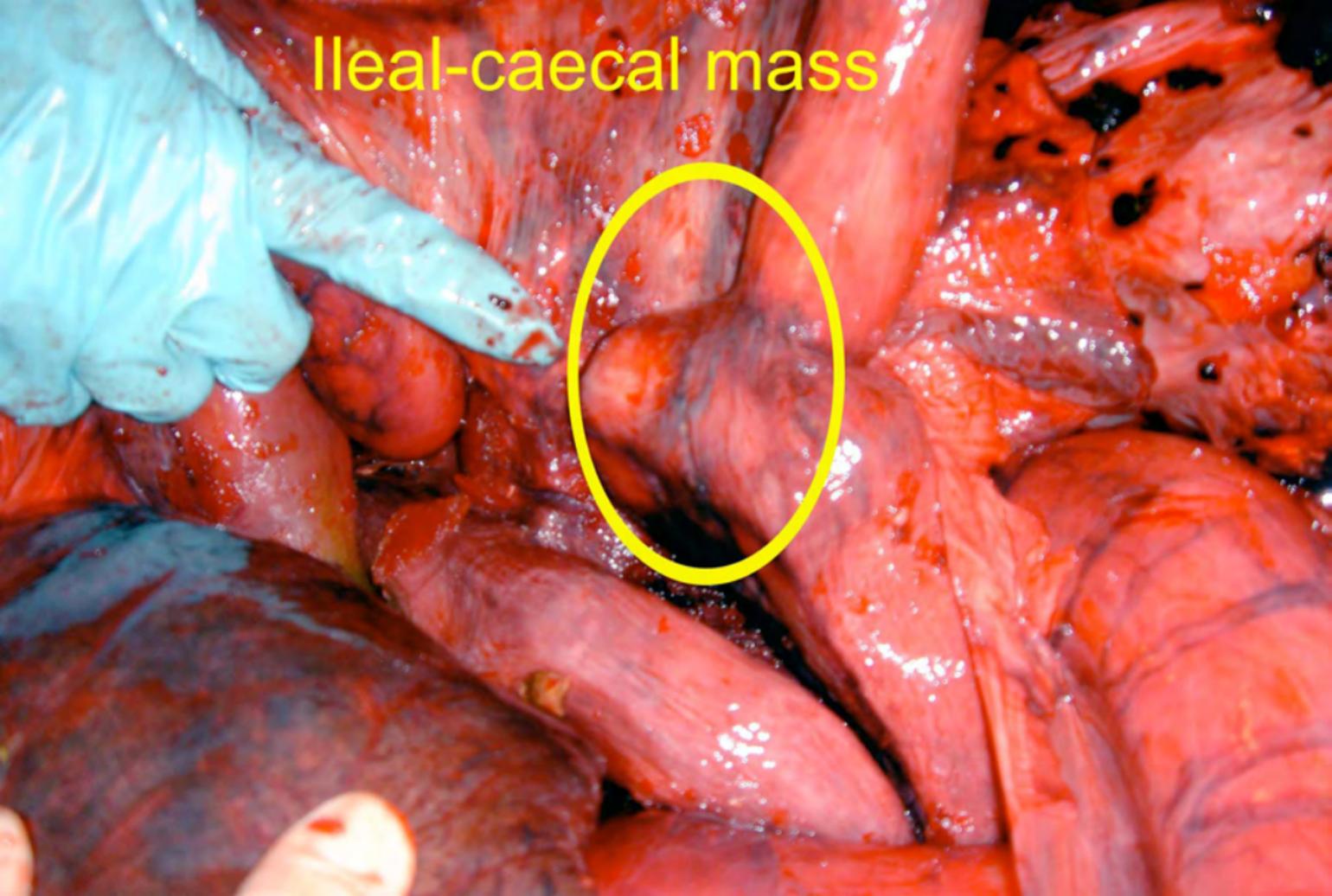


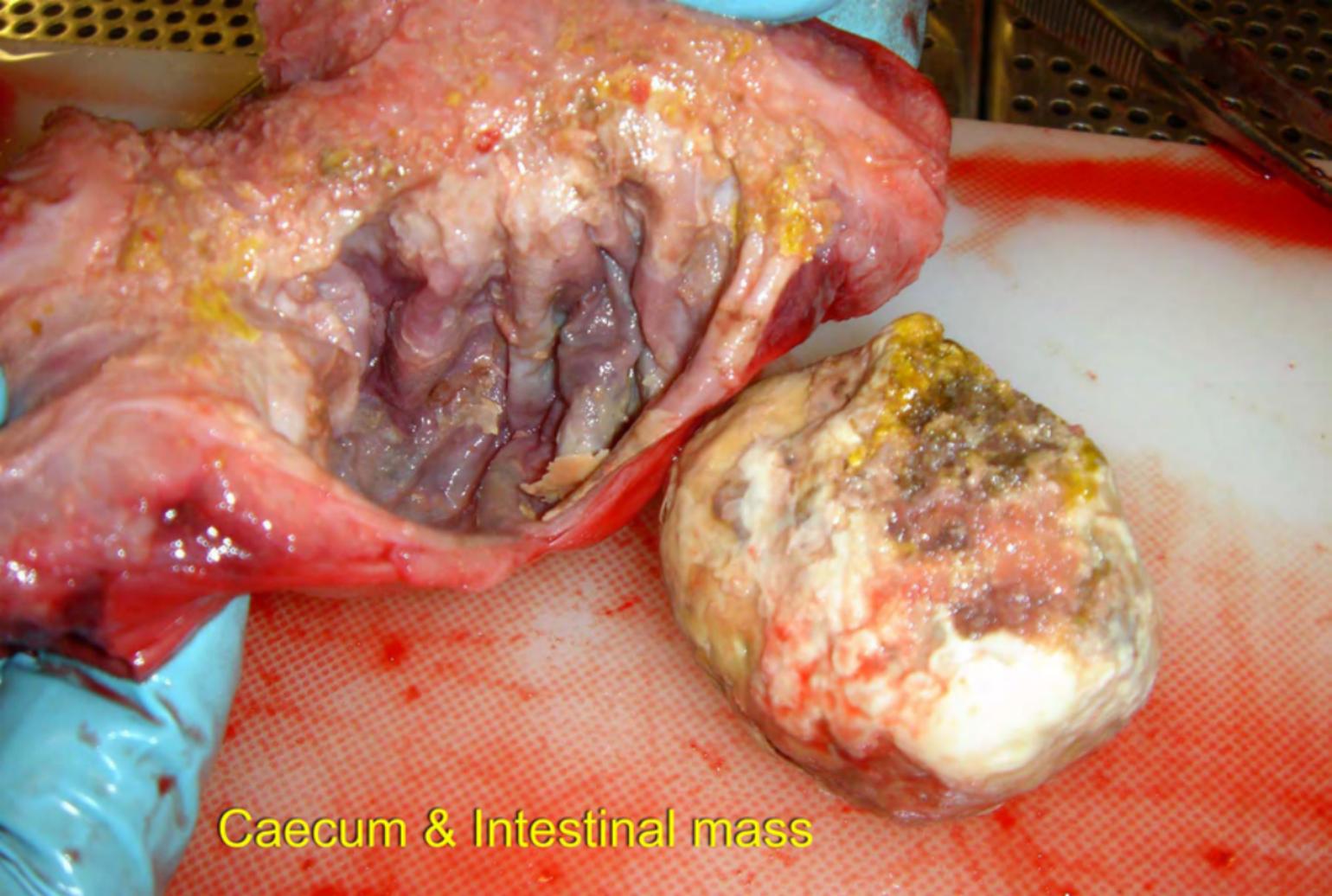
Liver

Small Intestine

Proximal
Large intestine

Ileal-caecal mass

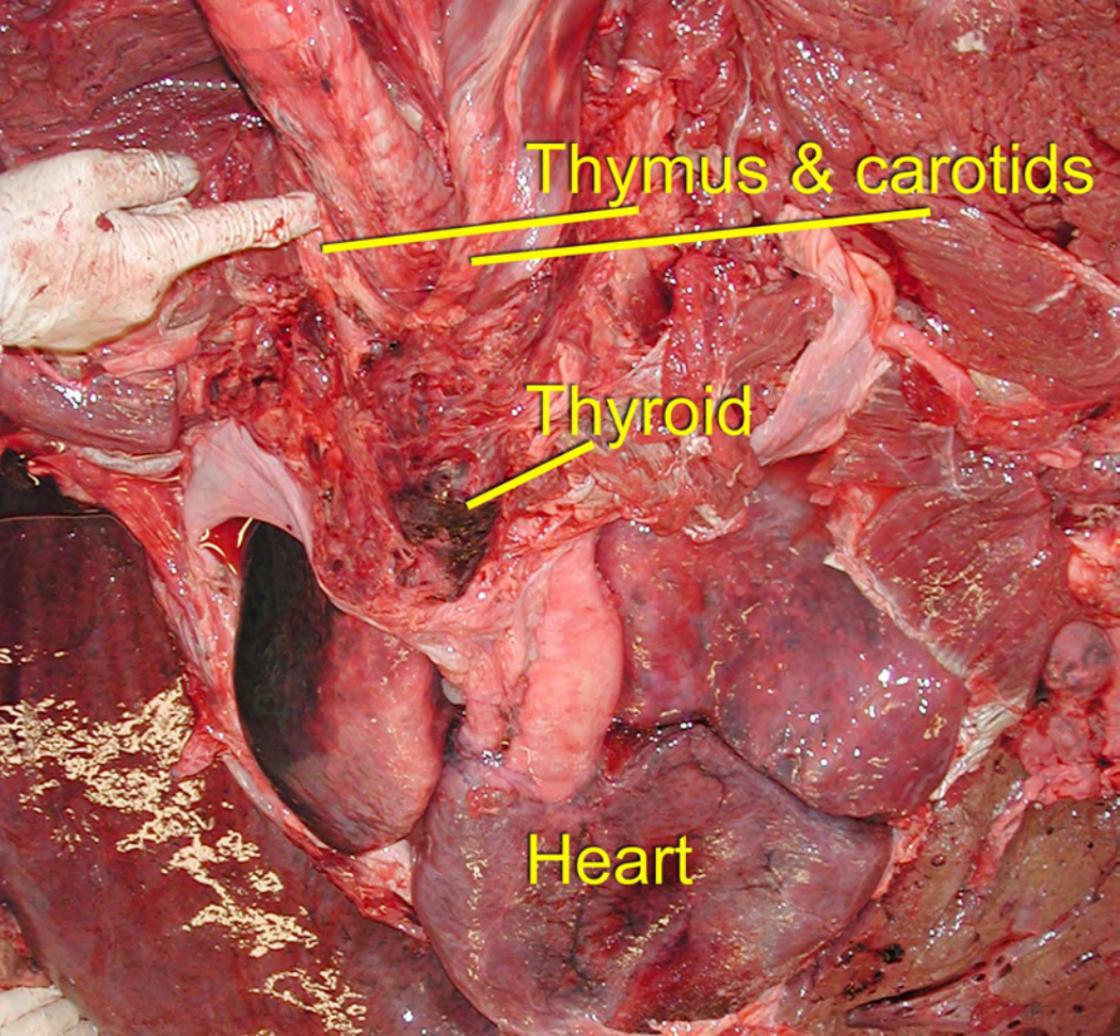




Caecum & Intestinal mass



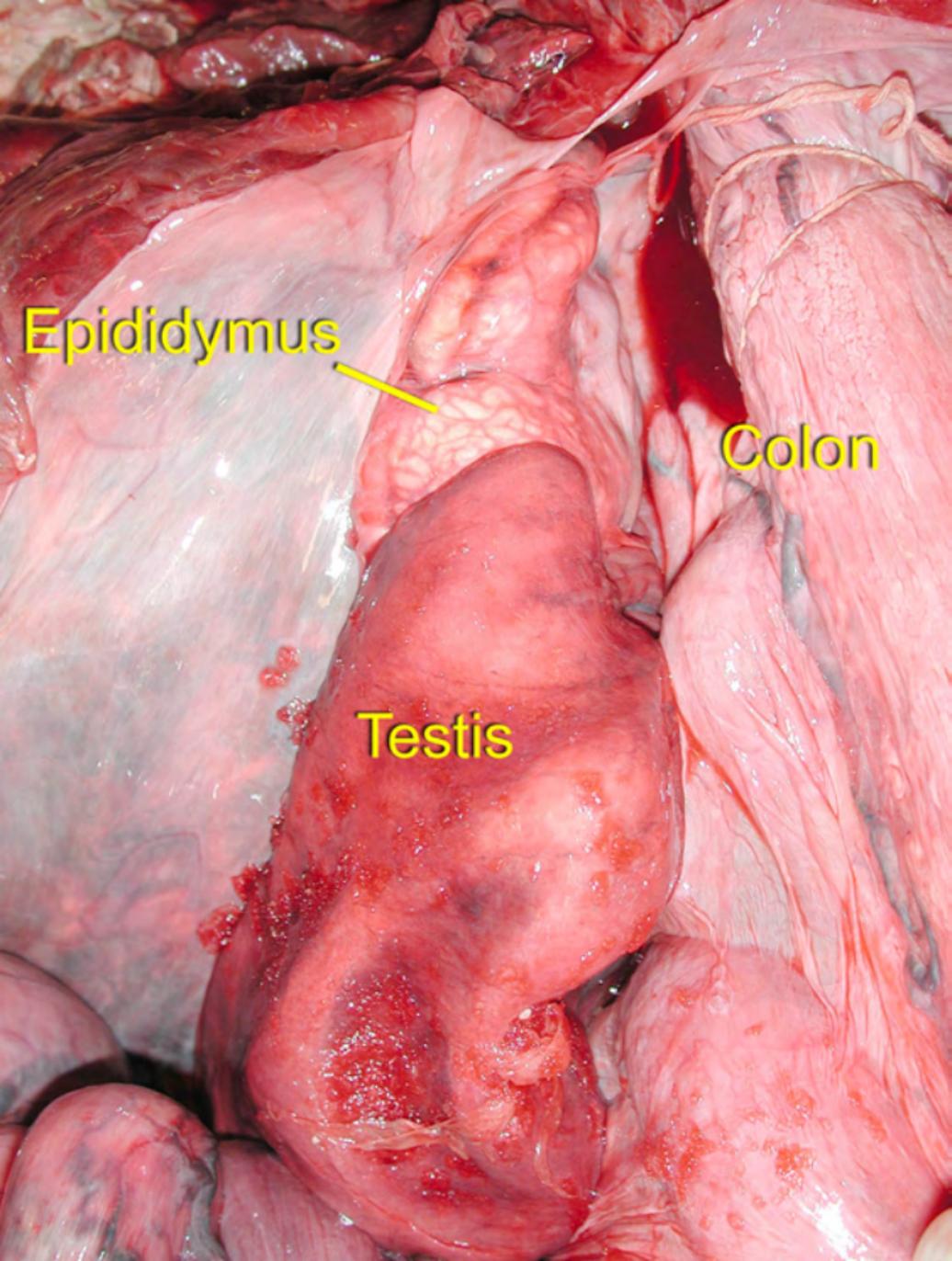
cut mass



Thymus & carotids

Thyroid

Heart

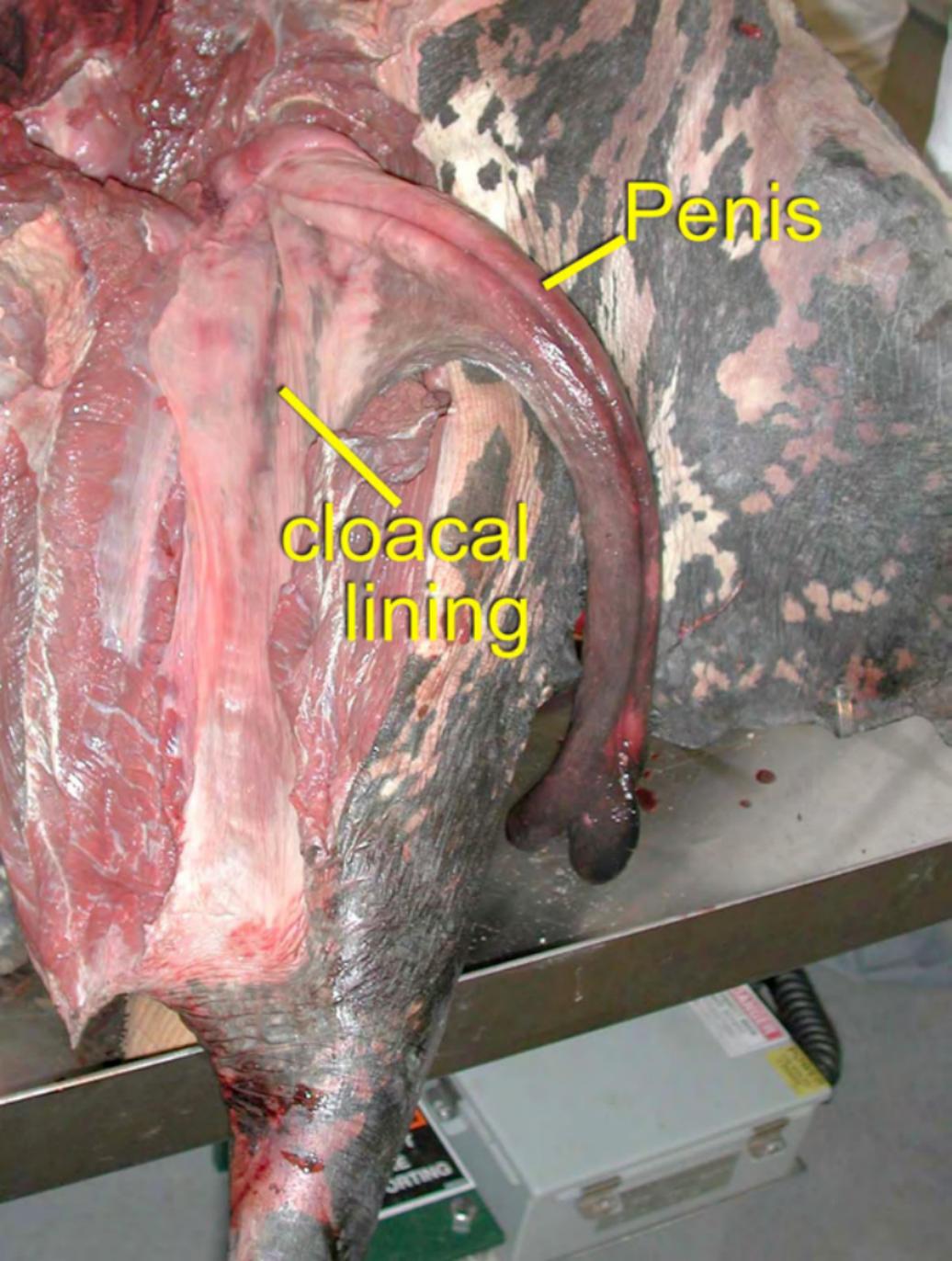


Epididymus

This is a photograph of a male anatomical dissection. The central focus is the testis, a large, reddish, oval-shaped organ. Above it is the epididymus, a smaller, more textured structure. To the right, a portion of the colon is visible, secured with surgical ties. The surrounding area is filled with various tissues, including muscle and connective tissue, all in shades of pink and red. A yellow arrow points from the 'Epididymus' label to the corresponding structure.

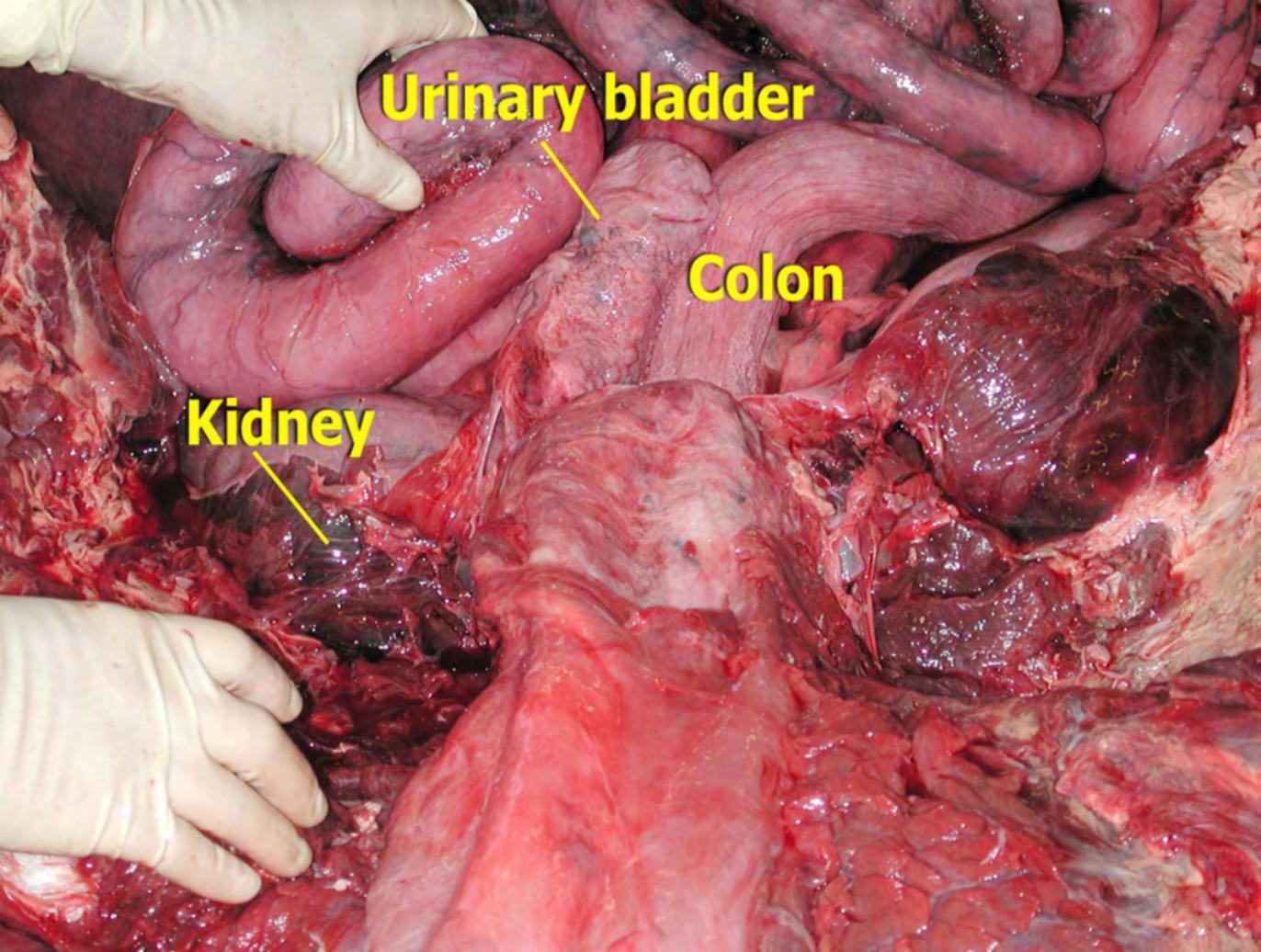
Colon

Testis



Penis

cloacal lining



Urinary bladder

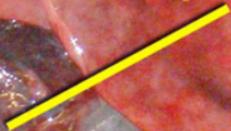
Colon

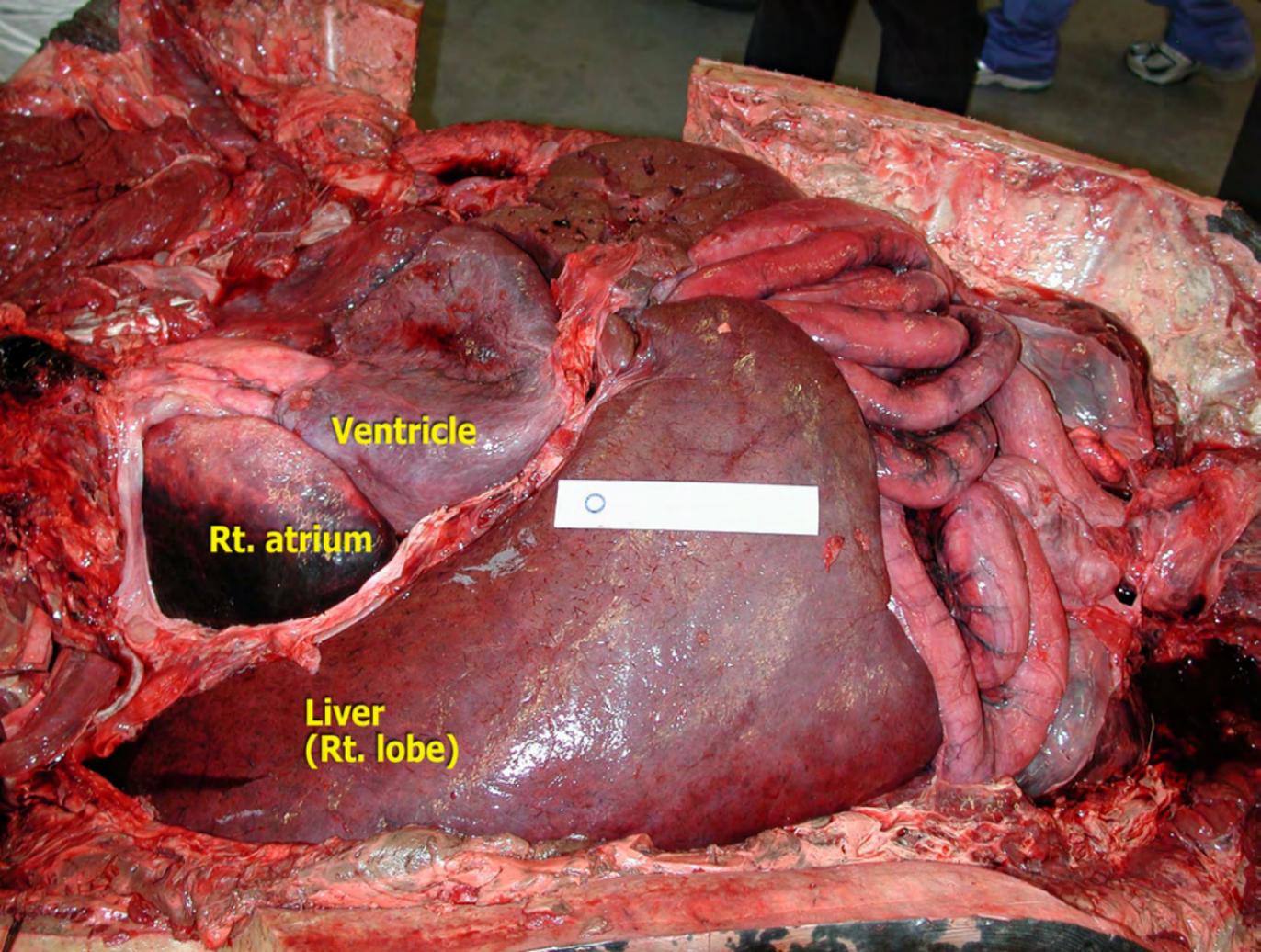
Kidney

Gallbladder



Spleen



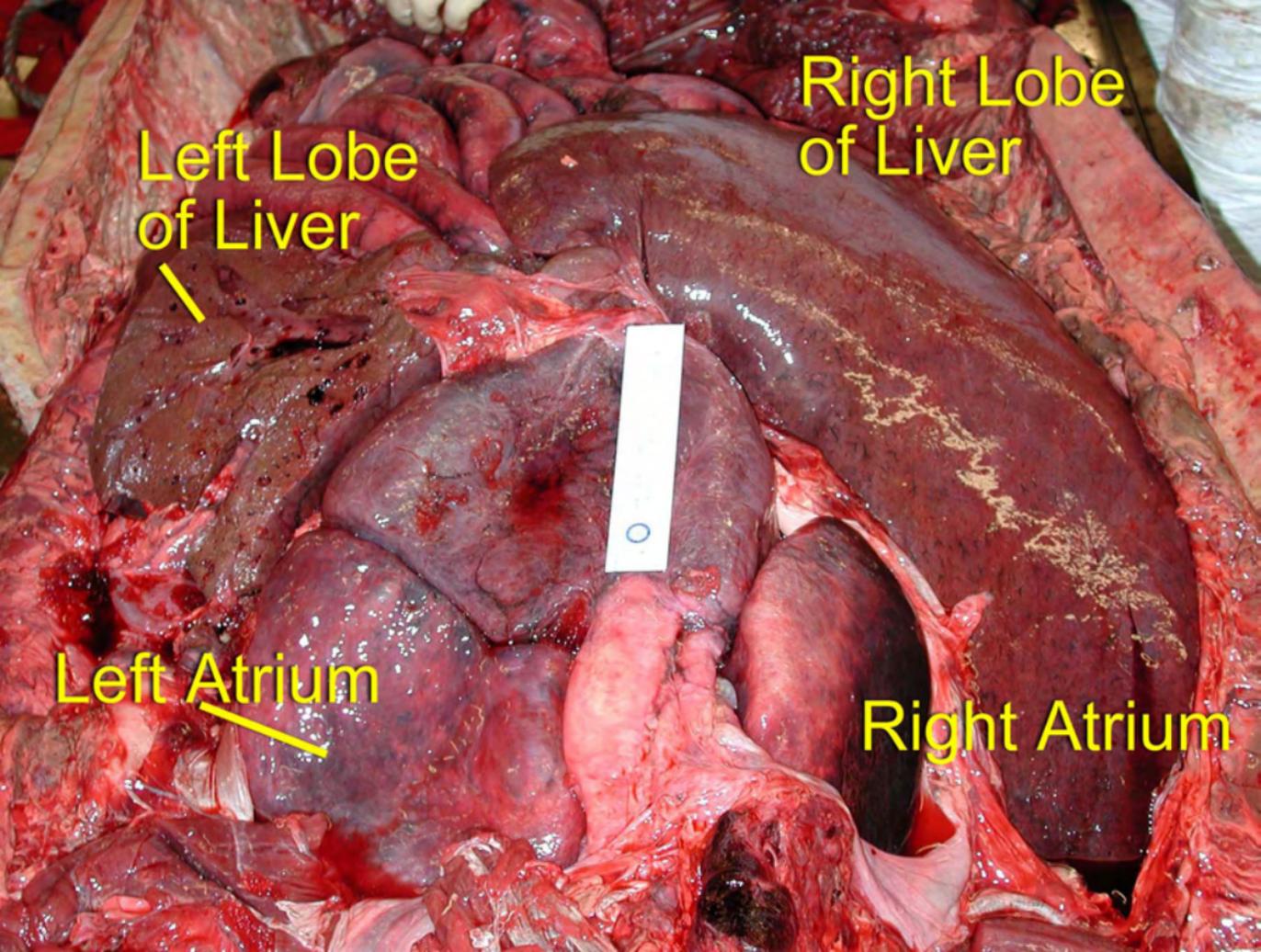


Ventricle

Rt. atrium

Liver
(Rt. lobe)

○



Left Lobe
of Liver

Right Lobe
of Liver

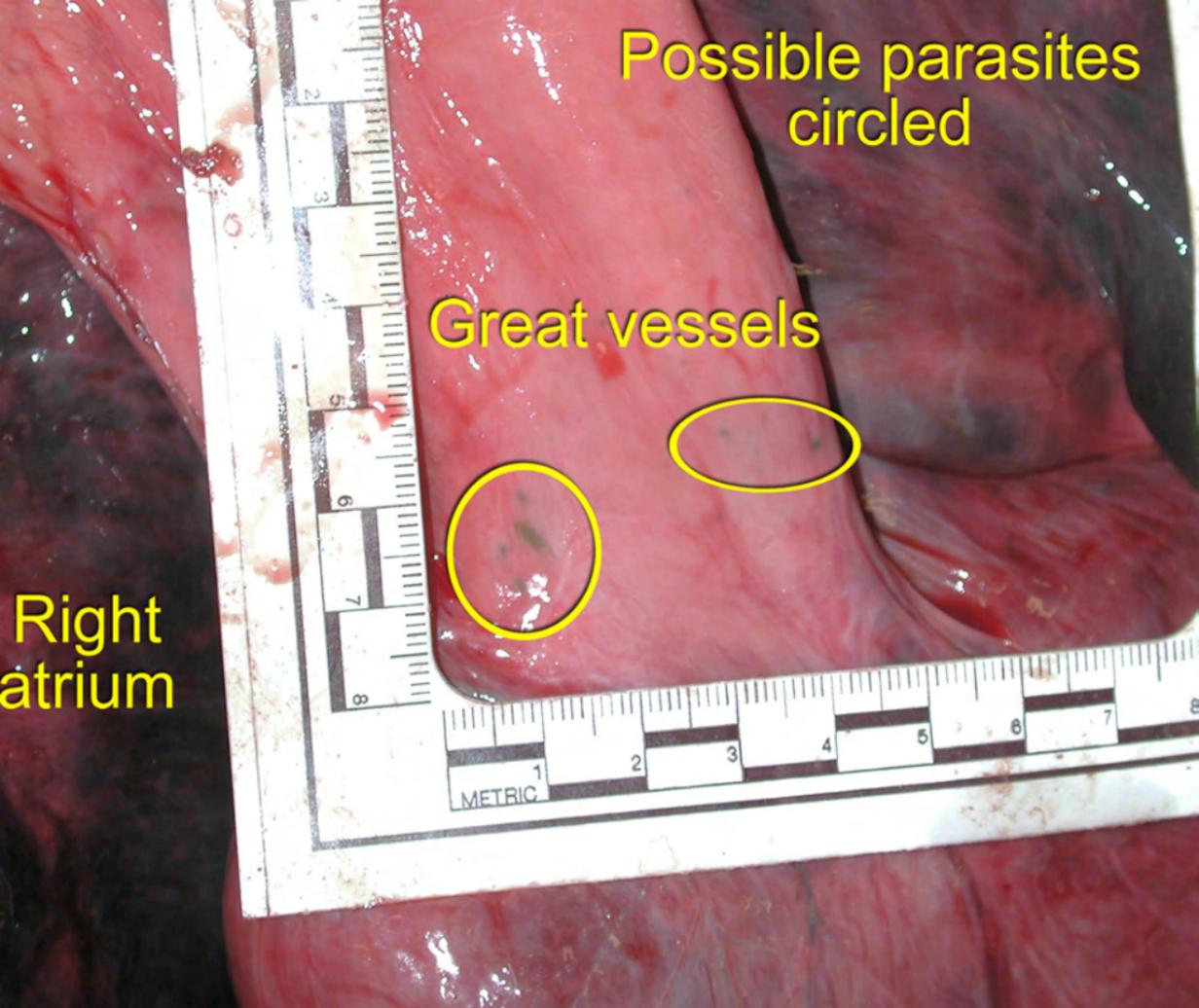
Left Atrium

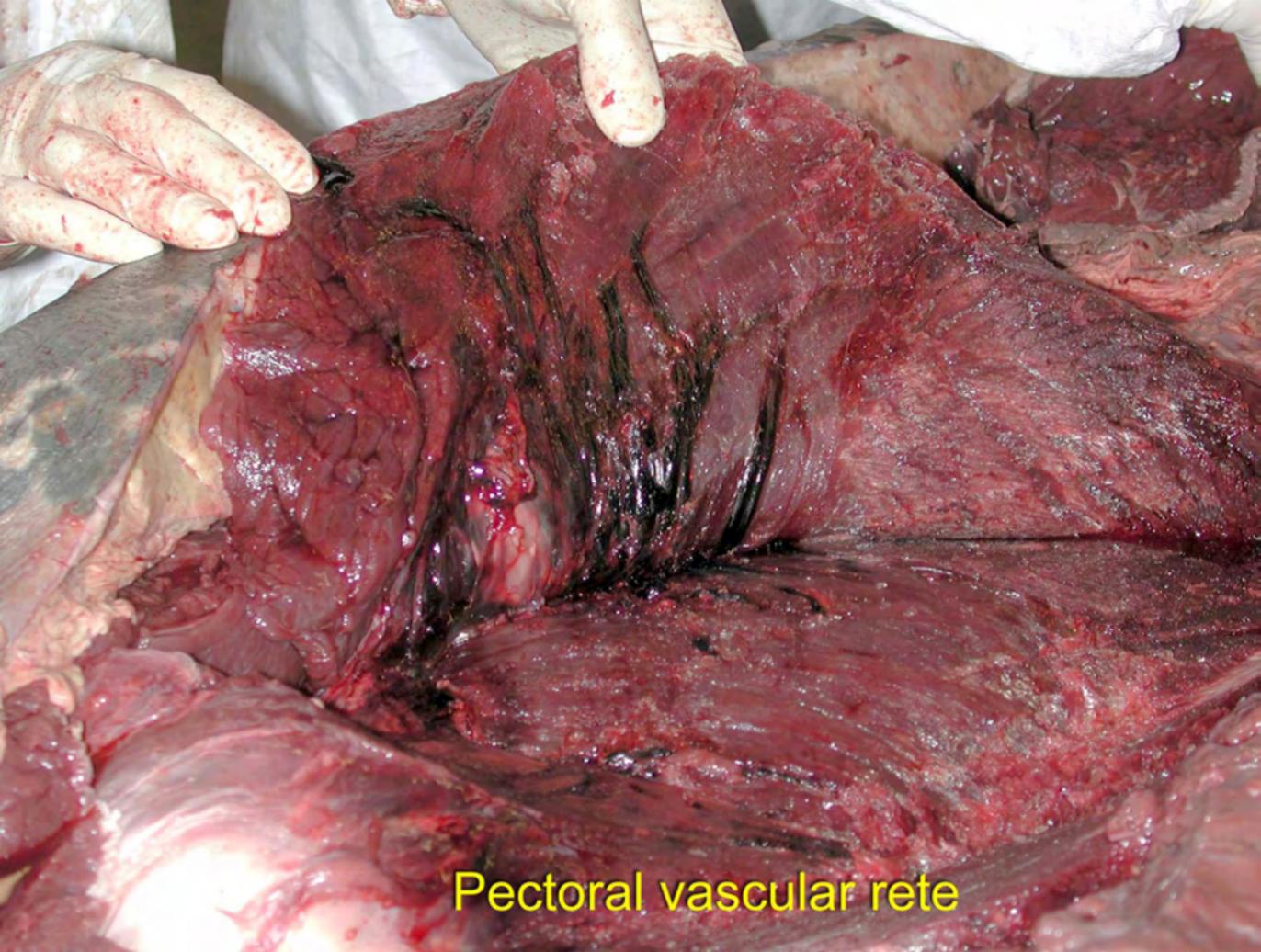
Right Atrium

Possible parasites circled

Great vessels

Right atrium





Pectoral vascular rete



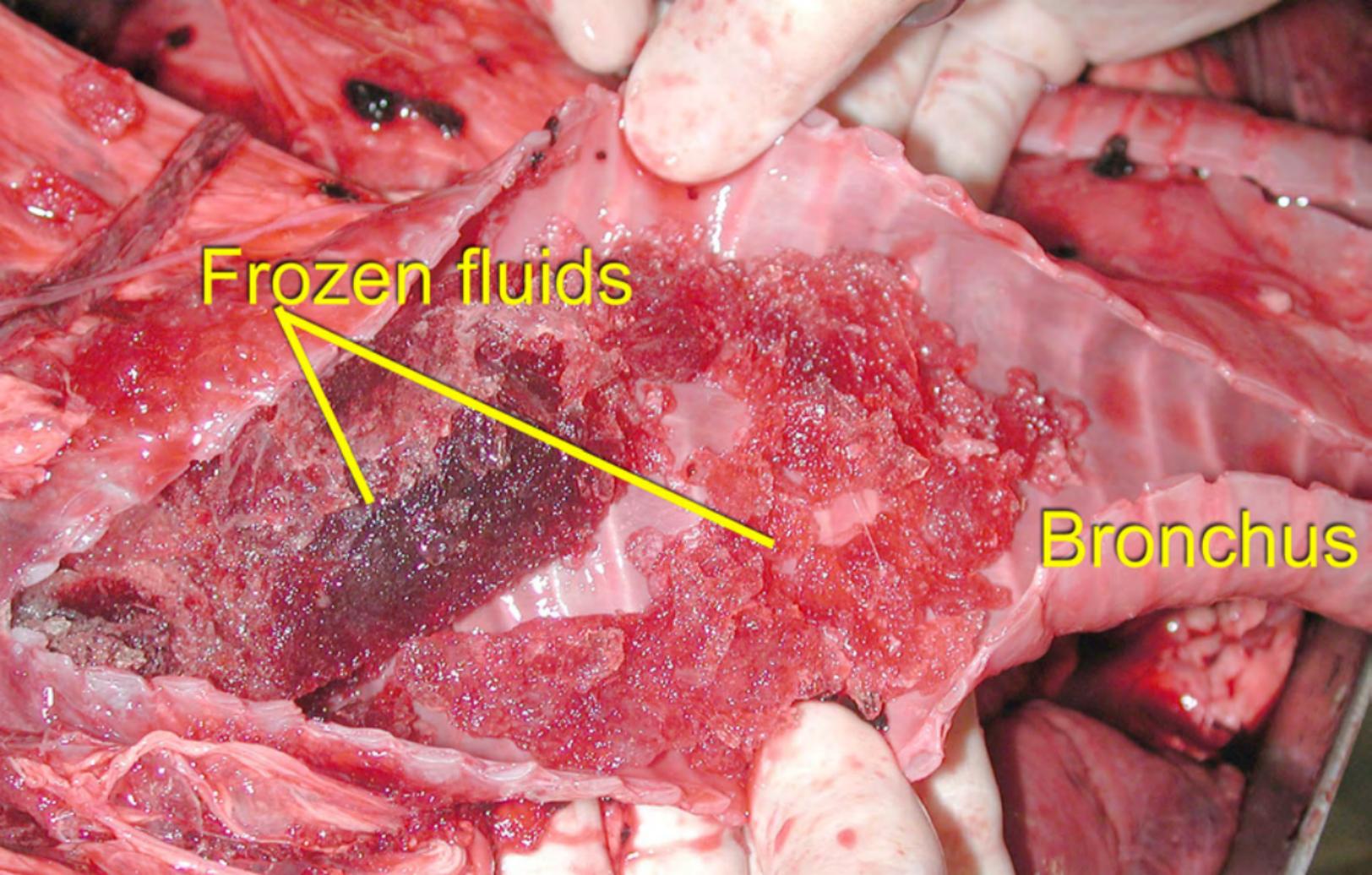
Rete mirabile along thigh and shank

Fluid-filled
bronchus



Lung





Frozen fluids

This image shows a gross pathology specimen, likely a lung, with a large, dark, irregular mass of frozen fluids. The mass is surrounded by pinkish-red tissue, which is identified as the bronchus. The specimen is being held by gloved hands, and the overall appearance is that of a surgical specimen.

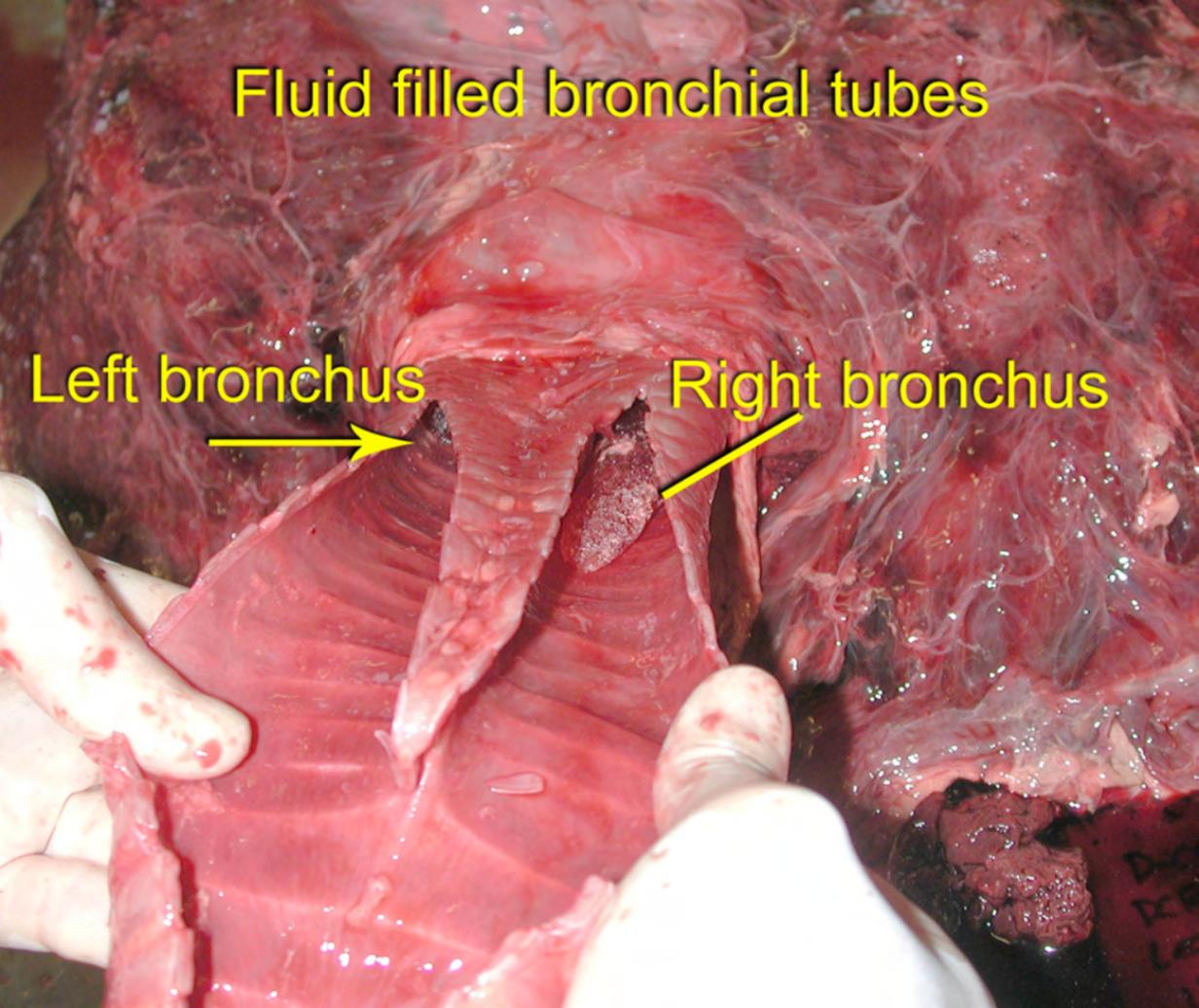
Bronchus

Fluid filled bronchial tubes

Left bronchus



Right bronchus



Brain

salt gland

Necrotic olfactory nerve

