

CHECKLIST

LAB 5: GI, RESPIRATORY AND CARDIOVASCULAR SYSTEMS

Notes:

1. Follow the instructions for dissecting each of the 3 systems in the sequence indicated below. The sequence varies slightly from that in the lab manual. Only some internal organs covered in the lab manual are included in this checklist.
2. Learn the major functions of selected organs in each system. They are indicated in the checklist below. Each lab manual chapter contains excellent descriptions of these functions that you will encounter as you read the dissection instructions.
3. Learn features of selected internal organs by dissecting the organs themselves. These instructions are included in the checklist (but not in the lab manual).

Instructions on exposing internal organs in body cavity & overview of contents of body cavity (Chapter 4)

Note fat bodies in abdominal cavity

GI (DIGESTIVE) SYSTEM FEATURES (Chapter 5)

Mouth & pharynx:

- 1) Nares (=nasal openings) into mouth
 - *Functional correlate: how is the mylohyoid muscle used in breathing?*
- 2) Eustachian tubes opening into pharynx. Follow them from the outer tympanic membrane to the pharynx with a probe. Follow the pharynx into the esophagus.
- 3) Tongue: *how is the tongue used to obtain food?*

GI tract and associated digestive organs:

- 1) Liver: cut off parts of lobes to expose other organs. *The liver is a multi-purpose functional organ. What functions are described in the manual? How many seem to relate directly to the digestive function? Why does it change in size depending on season?*
- 2) Gall bladder: follow bile duct from gall bladder to small intestines.
- 3) Pancreas: small, hard to find; tip: its duct joins the bile duct near the intestines.
- 4) Stomach, small intestines, large intestines. After identifying each region externally:
 - *Cut a longitudinal section through the 3 organs and compare:
Overall wall thickness; thickness of muscle layer, presence of infoldings of the inner wall, and villi (only in the small intestines).*
 - *Cut a cross-section through the wall of each of these organs, put each on a slide and cover with a coverslip. Observe under the microscope to see the separate tissue layers present, and their relative thickness.*
 - *What are the differences in functions between each of these 3 organs of the GI tract?*
- 5) Spleen (see Ch. 4 instructions): move GI tract to right. Spleen lies below it near midline.
- 6) Cloaca: push probe through large intestines to cloacal opening to exterior. *What organ systems empty their products into this common opening? What separate openings replace this single opening in mammals?*

CARDIOVASCULAR SYSTEM FEATURES (Chapter 7; also print figure attached to lab: diagram of major blood vessels)

1) Heart ("*External features of the heart*" section): external positions of single ventricle, two atria, and bulbus cordis/truncus arteriosus.

- *Why is the 3 chambered heart of the amphibian less efficient than the 4-chambered hearts of birds and mammals?*

2) Major arteries ("arches") branching from the truncus arteriosus (*Instructions under "Blood vessels cranial to the heart" section*):

- R & L systemic arches
- R & L pulmonocutaneous arches: branch to form:
 - pulmonary arteries to lungs &
 - cutaneous branches to body wall: *why are these important in amphibian respiration?*
- *What are the names of the TWO arteries leaving the hearts of mammals in place of the single truncus arteriosus? (Answer NOT included in lab manual.)*

3) Veins entering heart: pulmonary veins to left atrium from lungs, vena cava entering right atrium (sinus venosus) from body: cranial and caudal vena cava

4) Blood vessels in abdominal cavity supplying internal organs ("*Blood vessels caudal to the heart" section*):

Selected arteries to find:

- Dorsal aorta: single vessel in abdomen formed behind heart by union of systemic arches
- Dorsal aorta major branches in abdomen to internal organs: liver, GI tract, kidneys
- Dorsal aorta splits to form common iliac arteries continuing into legs (a challenge!)

Selected veins to find:

- Postcaval (caudal/posterior) vena cava in abdomen: receives blood from internal organs
- Hepatic portal vein: from intestines directly to liver (a challenge!)
- *What is the functional difference in arteries and veins - which ones carry oxygenated blood to organs, and which carry deoxygenated blood back to the heart and lungs?*

RESPIRATORY SYSTEM FEATURES

- *Use this examination to follow path of air flow from nares to lungs.*

1) Nares: review connection to pharynx

2) Glottis opening from pharynx to larynx (=cartilagenous tube called trachea in mammals)

3) Lungs: Find larynx branching into two bronchi and entering lungs.

- *Cut a slice of lung tissue and put on a slide to observe lung tissue structure.*