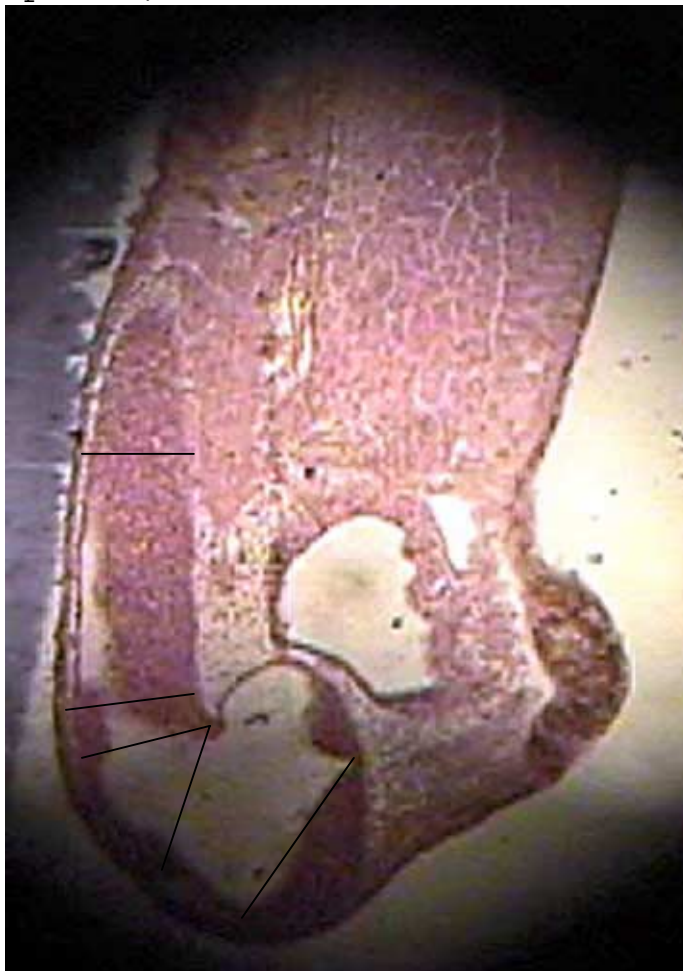


LABORATORY #4, 4 MM FROG EMBRYOS

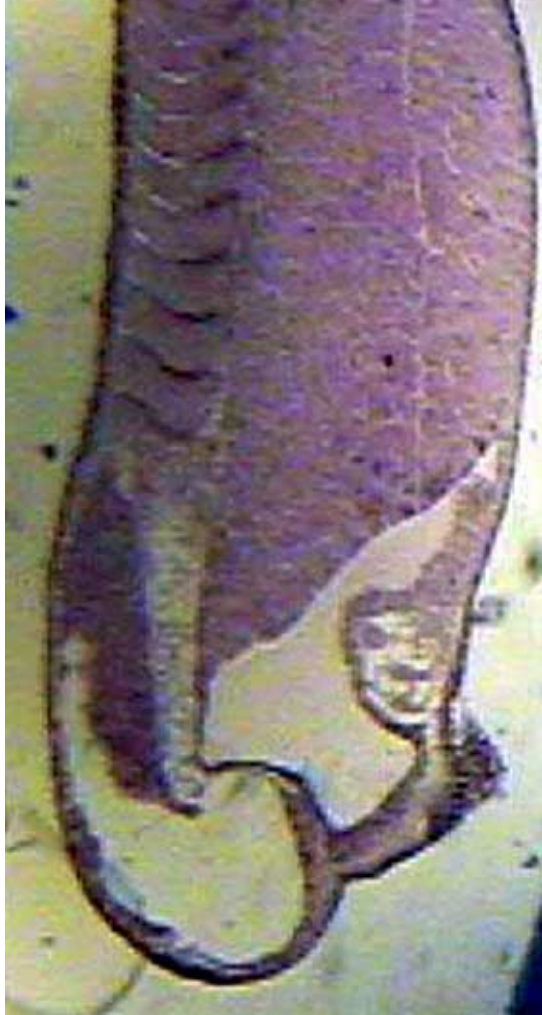
Read the serial sections on the slide from top left to bottom right, just as you read the lines in a book. These go from the very tip of the head to the tail. The major things to see in this stage are the subdivisions of the nervous system, the gut and the mesoderm. There are landmarks which help to tell which part of the nervous system we are in: the forebrain has two divisions, the telencephalon and the diencephalon. The borders between these are the pineal body (epiphysis) on the dorsal surface, and the optic chiasma on the ventral surface. The border between the diencephalon and the midbrain or mesecephalon is a neuromere or narrowing of the nerve tube dorsally, or the tip of the notochord ventrally which terminates at the tuberculum posterius, a groove just posterior to the infundibulum. The hindbrain (rhombencephalon) is separated from the mesencephalon by a neuromere and divided into two parts, the metencephalon and the myelencephalon. The division is in front of the thin roofed myelencephalon, but this division is not visible until the 7mm



stage.

The mesoderm is divided into somites (epimere); mesomere or intermediate mesoderm (containing kidney tubules); and hypomere or lateral plate mesoderm. The coelom is starting to form in the lateral plate at this stage and separates into the somatic mesoderm which is next to the ectoderm and the splanchnic mesoderm which is next to the endoderm.

The landmarks for the heart include constrictions between each of the heart regions: the most dorsal and posterior sinus venosus, into which the common cardinal veins empty, the more anterior atrium, the ventral and curved ventricle, the anterior conus arteriosus from which the ventral aorta and aortic arches



extend.

The landmarks for the gut: foregut goes from the oral plate through the esophageal plug but not as far as to the liver diverticulum. Find the stomodeum and proctodeum, the ectodermal invaginations which unite with the endoderm to form mouth and anus.

Starting at the anterior end, proceed until you see the epiphysis in the roof of the forebrain, a light blue stained

evagination. This marks the end of the telencephalon and beginning of the diencephalon in the roof of the brain, but the floor is still telencephalon.



When you get back to where you can see two optic cups with stalks joining with the floor of the brain at the optic chiasma you are at the border of the tel- and di- in the floor of the brain. However, the roof of the brain by this point has gone into the mesencephalon as shown by the presence of the



neuromere.

Then proceed to a section where you see the notochord so you know you have

gotten into the mesen- at the floor of the brain. You can tell when you get to the hindbrain because you will see the otic vesicles (not optic). At this level you see the foregut, or pharynx.

You can see aortic arches going around the pharynx, from



the ventral aorta.

Then proceed back from the conus which you come to first, to the ventricle, then you will see this curving around to the right and dorsally until you get to the dorsal atrium. Then you will see the common

cardinal veins coming into the sinus venosus from the kidney



region.

In the kidney region look for the glomus, a structure looking like an extension (cluster of grapes) into the coelom from the dorsal aorta. Near this you can see the nephrostome, an opening from the coelom into the nephric tubules. The cilia lining this opening are darkly stained.

ANSWER SHEET FOR LAB #4

NAME _____ HAND IN AT THE END OF LAB
#4.

LABEL THE DIAGRAMS: