

BIOLOGY 1100

VANCOUVER COMMUNITY COLLEGE

Instructor: Maria Morlin

September 2020 – hybrid course

Lab #3: Vertebrates (Topic 19 continued in manual)

Outline

- Vertebrate lab summary of demonstrations
- Objectives
- Student submissions of dissections
- Notes on pigs and lancelets
- Resources

Vertebrate lab summary of demonstrations

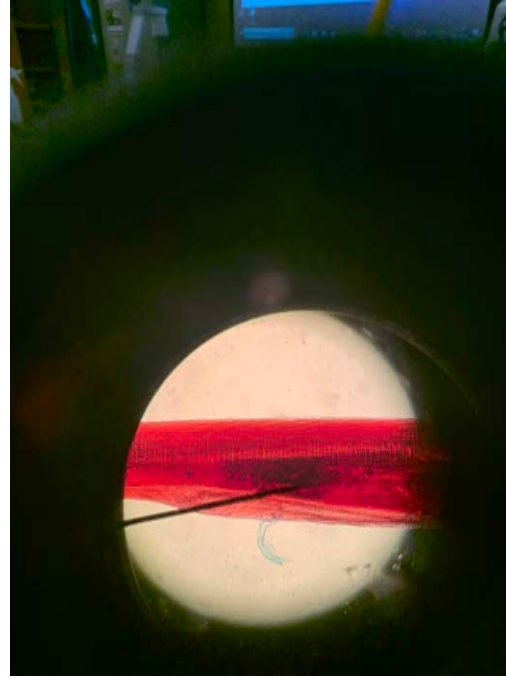
Maria demonstrated:

1. A dissected foetal pig – external and internal features.
2. Robyn provided student stations: lancelet slides – longitudinal specimen, cross sections along the length of the lancelet, and a preserved lancelet.
3. Observations of the lancelet and pigs completed the table on animal characteristics.

Objectives

1. Capture and identify characteristics of the vertebrate groups: symmetry, locomotion, body cavity, digestive openings, circulatory system, habitat, respiratory organs, excretory system, locomotion, support, segmentation, appendages, nervous system.
2. Fill out table for: lancelet and pig.
3. Continue to develop observation skills, use of microscopes and dissection tools to investigate tissue and organ systems of invertebrates.
4. Investigate the origin of vertebrates, by examining an extant example of a simple chordate.

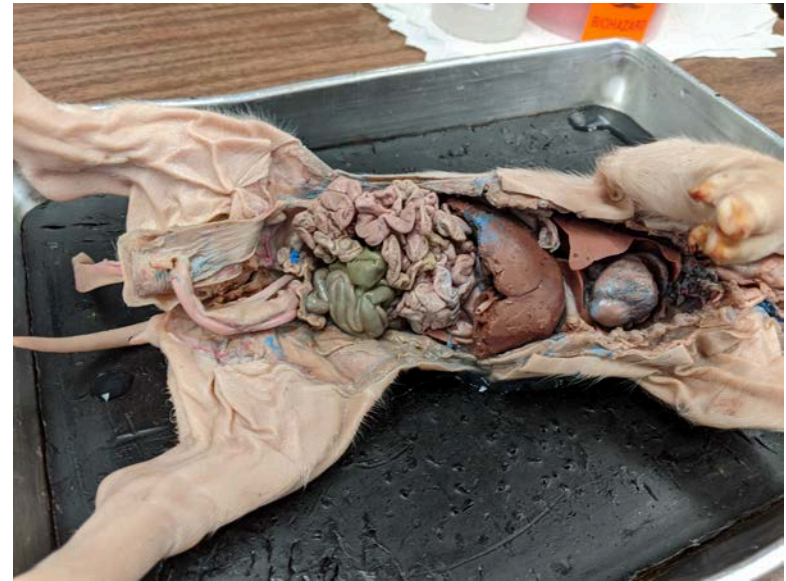
Student submissions



Lancelet specimen under the microscope: photos by Safaa

Identify the segmental muscle, dorsal fin, dorsal nerve cord, notochord, pharynx (use the lab manual).

Student submissions



Lancelet slides – longitudinal and cross section. Identify: muscle segmentation gill bars, pharynx and gill slits.

Foetal pig (F) – dissected: Identify - lungs, heart, liver, small intestine, spleen, large intestine, ovary, uterine duct. Note bilateral symmetry, closed circulatory system (blood vessels evident), hair, cloven hooves.

Photos submitted by Andrea.

Notes on pigs and lancelets

Pigs are even-toed ungulates – Arteriodactyla. Interestingly the front toes (3rd and 4th) bear weight and the back toes are reduced & directed backward (thumb is entirely missing). The front toes are cloven hooves, and the hard outer layer consists of keratin – like your fingernails!

Cetaceans are also in the Arteriodactyla group, as are hippos, camels, mouse deer, deer, giraffes, pronghorns, and the family that contains cattle, sheep, goats and bison. The odd-toed ungulates – Perissodactyla – bear weight on the third toe, and include horses, zebras, and rhinoceroses.

Pigs of course are mammals, and as such have hair and mammary glands.

Lancelets are not a fish – they have no fins, vertebrae or skeleton. They do have all characteristics of chordates however: pharyngeal slits, notochord, dorsal nerve cord, and post-anal tail. Lancelets are filter feeders with the pharynx situated in an atrial cavity where it functions to filter food particles from water which is taken in through the mouth and expelled through the atriopore. The gill slits strain food from the water. Gas exchange occurs through the body wall. The notochord is a cartilage-like rod to support the body. The tentacles strain larger particles from entering the mouth, but also have some sensory cells. Lancelets are also called amphioxus – which means "both ends pointed."

Resources

- The lab handout and the book or lecture slides are the best resources for the lab, both available on the class website.
- This is a nice video of tunicates and lancelets:
 - <https://www.youtube.com/watch?v=BPGJF3nzyWI>
- Here are a couple of videos about the evolution of arteriodactyls:
 - <https://www.youtube.com/watch?v=PpfknPHPZno&t=73s>
 - <https://www.youtube.com/watch?v=AnXvBv4NsFs>