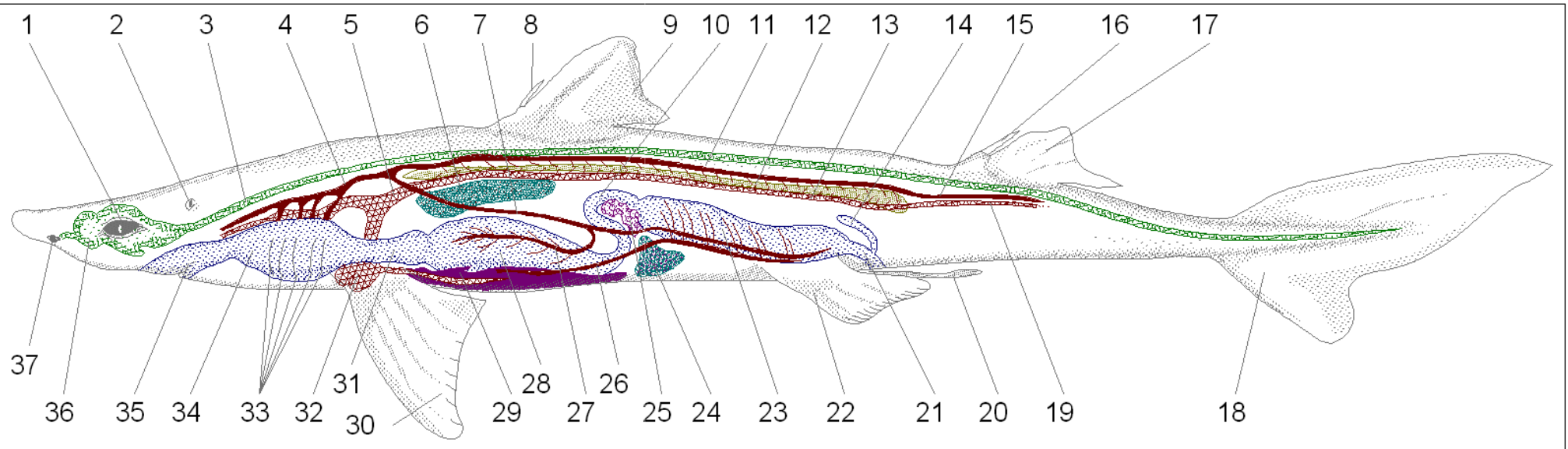


Dissection of the Shark: *Squalus* spp.

PROCEDURE:

- 1. External and Superficial Anatomy.** Locate the eyes with their immovable lids. Directly anterior to the eyes you will find the nares (divided into an incurrent and excurrent aperture). The incurrent aperture leads to the olfactory sac in the interior of the animal (a chemoreceptive organ). the eye, locate the six pharyngeal slits (a spiracle and five gill slits). Identify the first (anterior) dorsal fin, second (posterior) dorsal fin, pectoral fin, pelvic fin, and caudal fin. Because vertebral column runs into the caudal fin and turns dorsally into the upper lobe of the fin, the shark is said to have a heterocercal tail. Locate the vent between the pelvic fins (leading from the cloaca). If you have a male, the pelvic fins are modified as claspers. Compare your animal to one of the opposite sex. Depending on the species of your shark, dorsal spines may or may not be present (to avoid injury, snip them off if they are present). run your fingers in an anterior, then posterior direction to feel the placoid scales projecting out of the skin. If available, examine the demonstration slides of these placoid scales on display. Carefully open the jaw of your animal and note the position and arrangement of the teeth.
 - 2. Skeletal System.** Examine the shark skeleton on display. The skeleton is divided into two main portions: the axial skeleton (skull and vertebrae) and the appendicular skeleton (supporting the fins). The skull consists of the chondrocranium (neurocranium) and splanchnocranium (visceral skeleton). The chondrocranium encloses the brain while the visceral skeleton supports the jaws and pharynx. Locate the pectoral girdle and skeleton associated with the pectoral fins. Do the same for the pelvic girdle and unpaired dorsal fins.
 - 3. Internal Organs and Major Circulatory Structures.** Use your scalpel to begin your incisions, then your scissors. Be careful not to cut too deep with the scalpel (only deep enough to expose the body cavity) and hold the scissors to avoid destroying viscera. Turn your animal on its back and make a longitudinal incision (slightly off-center) from just anterior of the pectoral fins to the vent. Detour around the vent and continue to the posterior of the body cavity. Then lay the animal on its right side and make a transverse incision (in the animal's left side) at the front and rear of your first cut. The incision should run from the ventral cut to the dorsal surface so the skin can be lifted and the organs exposed (use your scalpel to free the tissue near the gill slits before lifting the skin). Note the shiny peritoneum lining the body cavity. Locate the esophagus and stomach. The first portion of the intestine leaving the stomach is the duodenum. Directly behind this is the ileum (valvular intestine). Make a longitudinal slit in the valvular intestine, flush it out with water, and locate the spiral valve. What do you think is the function of the spiral valve? The intestinal segment directly behind the spiral valve is the large intestine. It is connected to the cloaca, a common collecting area for feces, urine, and, in females, the eggs. Note also the rectal gland, which, along with the gills, is an important organ of salt excretion. The three-lobed liver is situated directly beneath the stomach (you should also identify the greenish gall bladder). Caudal to the liver, identify the spleen and pancreas. The kidneys are the long, organs situated on the dorsal wall of the body cavity. Identify the paired uteri or testes (depending on the persuasion of your beast). If you have a gravid (pregnant) female, slit open the uteri to expose the pups (let other members of the class see the results of your dissection). If available, examine the pickled shark pups on demonstration. Identify the heart and the major arteries and veins of your specimen.
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|------------------------|------------------------|-------------------|
| 1 EYE | 14 RECTAL GLAND | 27 GASTRIC ARTERY |
| 2 SPIRACLE | 15 CAUDAL ARTERY | 28 STOMACH |
| 3 SPINAL CORD | 16 SECOND DORSAL SPINE | 29 LIVER |
| 4 DORSAL AORTA | 17 SECOND DORSAL FIN | 30 PECTORAL FIN |
| 5 CARDINAL SINUS | 18 CAUDAL FIN | 31 ESOPHAGUS |
| 6 TESTIS | 19 CAUDAL VEIN | 32 HEART |
| 7 COELIAC AXIS ARTERY | 20 CLASPER | 33 GILL SLITS |
| 8 FIRST DORSAL SPINE | 21 CLOACA | 34 PHARYNX |
| 9 FIRST DORSAL FIN | 22 PELVIC FIN | 35 MOUTH |
| 10 DUODENUM | 23 ILEUM | 36 BRAIN |
| 11 DORSAL AORTA | 24 SPLEEN | 37 NOSTRIL |
| 12 KIDNEY | 25 PANCREAS | |
| 13 POST. CARDINAL VEIN | 26 HEPATIC PORTAL VEIN | |