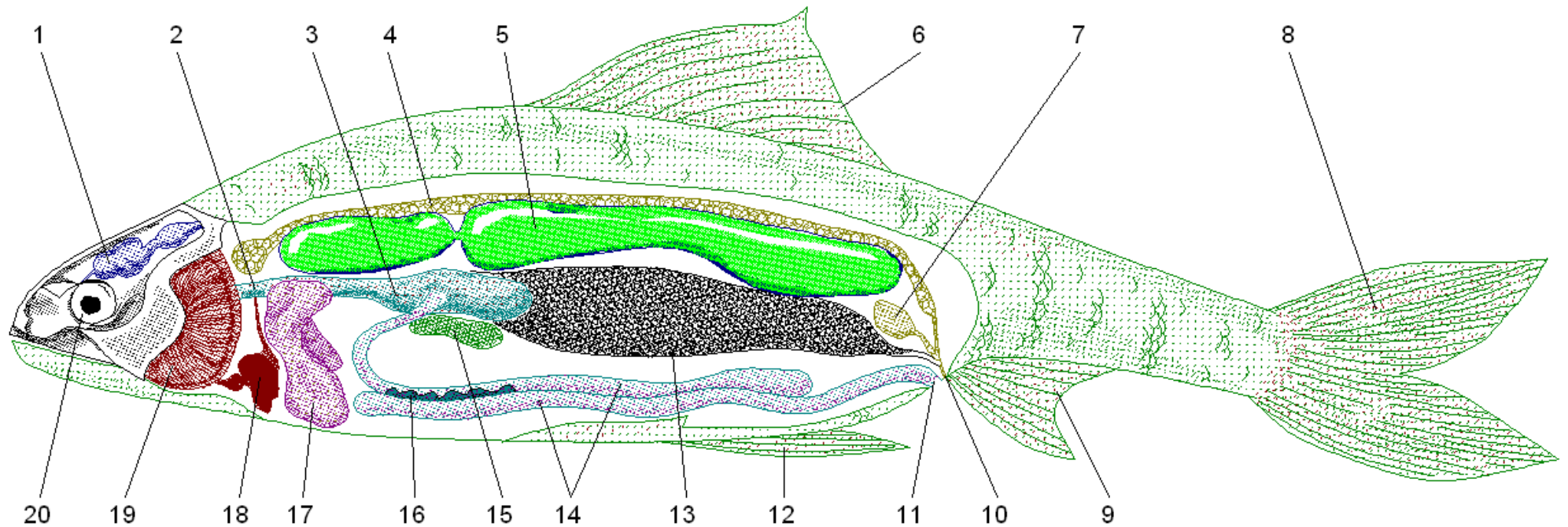


## Dissection of a Bony Fish

**External and Superficial Anatomy.** Locate the eyes and nares (anterior to the eyes). As in the shark, the nares lead to an olfactory sac. the eye, you will find the flap-like operculum. Lift the operculum to expose and examine the gills. Identify the dorsal fin , pectoral fin , pelvic fin , anal fin , and caudal fin. The membranous portions of the fins are supported by spiny fin rays. Because the dorsal and ventral portions of the caudal fin of your fish are symmetric, this type of fin is homocercal. The anus and urogenital pore is located between the pelvic and anal fins (the anus is the larger and more anterior of the two). Remove a few scales from your specimen, make a wet mount, and observe under low power. This type of scale is a ctenoid scale (referring to the serrations on their outer margin). Note also the growth lines (like rings of a tree). Carefully open the jaw of your animal and note the position and arrangement of the teeth. Compare the structure of the ctenoid scale to that of a ganoid and cycloid scale on display. What differences can be seen? How do each of these scales differ from that of the shark?

**Skeletal System.** The bony fish skeleton is composed of two main sections: an axial skeleton (bones of the skull, vertebral column, and ribs) and the appendicular skeleton ( pectoral and pelvic girdles and their associated fins). Examine the structure of the fish skeleton on display. Compare to that of the shark, if available.

**Internal Organs.** Begin your dissection with your scalpel, then switch to scissors when the scalpel incision is large enough to permit their use. Turn your animal on its back and make a longitudinal incision (slightly off-center) from just anterior of the pectoral fins to half a centimeter or so from the anus. Make two transverse incisions on the left side of your animal from each end of the ventral longitudinal cut to the dorsal surface. Remove the body wall by connecting these two cuts with a longitudinal incision. If present, carefully remove any of the yellow fat to expose the underlying viscera. Locate the esophagus and stomach. The blind pouch at the posterior of the stomach is the cardiac portion while the pyloric portion of the stomach opens to one side and connects to the intestine. Beneath the stomach you will find the spleen and the intestinal diverticula ( pyloric caecae ; near the union of the pyloric stomach and duodenum). Locate the pancreas in the S-shaped intestinal fold and the prominent liver (anterior to the stomach and intestine). The gonad is positioned above the stomach and below the swim bladder. If your specimen is male, his testes are paired while female specimens will have a single ovary. Identify the paired kidneys (dorsal to the swim bladder) and trace the Wolffian duct to the urinary bladder. Slit open the swim bladder and identify the red capillary beds that make up the gas glands. These structures control the gas mixture in the bladder and therefore the buoyancy of the fish. Make a longitudinal incision through both the stomach and intestine, rinse them out, and examine under a dissecting microscope. What adaptations do you see that increase the surface area of each?



1	BRAIN	6	DORSAL FIN	11	ANUS	16	PANCREAS
2	ESOPHAGUS	7	URINARY BLADDER	12	PELVIC FIN	17	LIVER
3	STOMACH	8	CAUDAL FIN	13	GONAD	18	HEART
4	KIDNEY	8	ANAL FIN	14	INTESTINE	19	GILLS
5	SWIM BLADDER	10	UROGENITAL PORE	15	SPLEEN	20	EYE