

LECTURES 16, 17: CARDIOVASCULAR SYSTEM

STRUCTURE: MACROSCOPIC ANATOMY OF HEART

- 1) Describe the orientation and location of the heart in the thorax; define *mediastinum*.
- 2) Describe the structural coverings of the heart; distinguish between the pericardial sac, parietal pericardium, and visceral pericardium. Why is pericardium a serous membrane?
- 3) Identify the layers of the heart wall.
- 4) Identify the four chambers of the heart.
- 5) List the important anatomical features of each chamber (papillary muscles, chordae tendineae).
- 6) Name the heart valves; describe the locations and functions.

STRUCTURE: GROSS ANATOMY OF VASCULATURE

- 7) Identify the main types of blood vessels (arteries, veins, capillaries).
- 8) Identify the three tunics that form the walls of arteries and veins; indicate the specific functions of each.
- 9) Compare and contrast the locations, structures, and functions of elastic arteries, muscular arteries, and arterioles.
- 10) Identify the different types of veins; explain the structural and functional features of veins
- 11) Describe the structure and function of capillaries (continuous, fenestrated, and sinusoidal) and their permeabilities.
- 12) Identify the anatomical features and locations of sinusoids.
- 13) Explain how to distinguish a vein from an artery in histological sections.

PATHWAY: MOVEMENT OF BLOOD

- 14) Describe the mechanism for opening and closing of heart valves during ventricular contraction.
- 15) Distinguish between *pulmonary circuit* and *systemic circuit* (including coronary flow). Trace a drop of blood through the heart, pulmonary, and systemic systems.
- 16) Identify the direction of blood flow and state of oxygenation in the main types of blood vessels (arteries, veins, capillaries)
- 17) Explain the pathway of blood flow through capillary beds, and the role of precapillary sphincters.
- 18) Define a portal system and its function.
- 19) Explain the function of valves in veins.

PATHWAY: ELECTRICAL CONDUCTION

- 20) Identify the components of the conducting system of the heart (SA node, gap junctions, AV node, bundle of His, left and right bundle branches, and Purkinje fibers)
- 21) Trace the electrical conduction pathway of the heart.

Optional:

- 22) Discuss the causes and consequences of coronary artery disease and heart failure, conduction pathway disorders, valve disorders (murmurs), and hypertension.
- 23) Blood