

OBJECTIVES STUDY GUIDE UNIT 3 BLOOD VESSELS – IMMUNE SYSTEM

Know the 3 types of blood vessels and the 3 tunics of the blood vessel wall and what each tunic is composed of

Define artery and define vein

Know the 4 types of arteries and the main characteristics of each type including the structure of the wall

Know the 3 types of capillaries and the basic characteristics of each

Define capillary bed and know the 2 types of these include the special features of the capillary bed which allow for control of flow

Distinguish between venules and veins include the structure of the vessel wall and any modifications which help blood flow know what capacitance vessels and blood reservoirs are

define varicose veins and hemorrhoids and venous sinuses and vascular anastomoses and metarteriole

Define blood flow, blood pressure, resistance

Know the 3 factors which affect the resistance

Understand the relationship between blood flow, blood pressure and resistance

Define systemic blood pressure and arterial blood pressure know the 2 factors which are reflected in the arterial blood pressure be able to distinguish between systolic pressure and diastolic pressure and know the standard values for each define pulse pressure and mean arterial pressure (map)

Understand capillary blood pressure and the reasons why it is different from arterial blood pressure

Understand venous pressure and the factors affecting venous return

Know the 3 main factors influencing blood pressure

$BP = CO \times PR$ $CO = SV \times HR$ so $BP = SV \times HR \times PR$

Review the factors controlling cardiac output

Understand the short term factors that control blood flow by altering blood pressure and peripheral resistance understand that the short term controls of blood pressure are neural or chemical and that they act by altering peripheral resistance

Know the 2 goals of short term neural control of blood pressure and the ways by which these controls operate

Understand the role of the vasomotor center in the short term neural control of blood vessel diameter

Understand what baroreceptors are and where they are and how they operate (what is their function)

Understand what chemoreceptors are and where they are and how they operate

Understand the function of higher brain centers in the neural control of short term changes in BP and PR

Know the 8 factors which are part of the chemical control of short term changes in BP and PR and the direction of effect for each chemical.

Understand the role of the kidney in long term control of BP include knowledge of the renin-angiotensin System

Know what a sphygmomanometer is and what it is used for and the basic use of the instrument.

Define vital signs and know the standard values.

Define hypotension and orthostatic hypotension and know what the normal values are

Define hypertension know the normal value and the factors related to essential hypertension

Understand autoregulation of blood flow to tissues and include an understanding of hydrostatic pressure, osmotic pressure and circulatory shock.

Know the structure of lymphoid vessels including why they are so leaky

Know the drainage of the lymph system including the areas of the body drained.

Define lymph and name its characteristics including how it is transported.

Know what lymphoid cells are and the different lymphoid tissues

Know the different lymphoid organs, their basic structural features and their basic function

Know what tonsils are and what Peyer's patches are also include M.A.L.T.

Understand that there are 2 intrinsic defense systems 1) nonspecific and 2) specific or adaptive

Understand how the nonspecific is the second line of defense and know what the first line of defense is

Know how the first line of defense works and how secretions are specific barriers

Understand the nonspecific defense system including the role of different blood cell types, what a phagocyte is and how it works, methods of killing used by these cells, what a natural killer cell is

Understand inflammation including what the response does and the 4 cardinal signs of inflammation

Understand the basis for each sign, the steps involved and the functions of each sign

Know about phagocyte mobilization and the sequence of cell activation include margination and diapedesis and infectious granulomas

Understand what the complement system is and how it operates include complement fixation and membrane attack complex

Define interferon and know the basic mechanism of action

Define fever and understand how and why it occurs

Define the immune response and immunology

Know the 3 important aspects of the immune response

Understand that the specific defense system has 2 overlapping arms - humoral and cell mediated

Define antigen and hapten and know the difference

Know what an antigenic determinant is and what is meant by self antigens

Know what the major histocompatibility complex is and why it is important

Know the 3 crucial cell types of the immune system

Know basic information about lymphocytes including where they are made, what types there are

Know what clonal selection of B and T cells is, what immunological memory is and what active and passive immunity is include examples of each

Understand first and second antigen challenge and how the body responds to each

Know the 5 classes of antibodies, the basic antibody structure and which is a monomer a dimer or a pentamer

Understand which is secreted when

Understand the mechanism of antibody diversity, what defensive mechanisms are used by antibodies

Understand the role of complement in the immune response and what monoclonal antibodies

Understand what cell mediated immunity is, what cell type is involved

Understand how T cells are activated and what role they play in the disease AIDS

STUDY GUIDE LECTURE TEST II

KNOW THE TUNICS OF ARTERIES

KNOW THE STRUCTURAL CHARACTERISTICS OF EACH TUNIC

KNOW THE FUNCTION OF EACH TUNIC

KNOW THE TYPES OF ARTERIES

KNOW THE CHARACTERISTICS OF EACH TYPE OF ARTERY

KNOW THE STRUCTURE AND FUNCTION OF CAPILLARIES

KNOW THE METARTERIOLE STRUCTURE & FUNCTION

KNOW WHAT A TRUE CAPILLARY IS AND HOW IT IS CONTROLLED

KNOW WHAT VASOMOTION IS AND HOW IT IS CONTROLLED

KNOW THE TYPES OF CAPILLARIES

KNOW THE STRUCTURE OF THE DIFFERENT TYPES OF CAPILLARIES

KNOW THE STRUCTURE OF VEINS

KNOW THE STRUCTURE OF VENULES

KNOW WHAT A VASCULAR SINUS AND WHAT A VARICOSE VEIN ARE

KNOW WHY VEINS AND VENULES ARE CALLED BLOOD RESERVOIRS

KNOW WHAT CAPILLARY EXCHANGE IS AND THE MECHANISMS INVOLVED

KNOW WHAT PRESSURES PROMOTE FILTRATION

KNOW WHAT NET FILTRATION PRESSURE IS AND WHAT FACTORS AFFECT IT

KNOW WHAT EDEMA IS

KNOW WHAT AFFECTS BLOOD FLOW

KNOW ABOUT MAP AND RESISTANCE AND CARDIAC OUTPUT

KNOW THE FACTORS WHICH AFFECT RESISTANCE OF BLOOD FLOW

KNOW WHAT VENOUS RETURN IS AND THE FACTORS WHICH AFFECT IT

KNOW THE NEURAL MECHANISMS CONTROLLING BLOOD PRESSURE

KNOW THE HORMONAL CONTROLS OF BLOOD PRESSURE

KNOW WHAT SPECIFIC AND NON-SPECIFIC RESISTANCE ARE

KNOW WHAT THE LYMPHATIC SYSTEM IS AND WHICH STRUCTURES ARE INVOLVED

KNOW THE FUNCTIONS OF THE LYMPHATIC SYSTEM

KNOW WHAT LYMPHATIC CAPILLARIES ARE AND THEIR STRUCTURAL FEATURES AND SPECIAL FEATURES IN DIGESTIVE SYSTEM

KNOW HOW LYMPH FLOWS

KNOW THE LYMPHATIC ORGANS AND TISSUES PRIMARY AND SECONDARY

KNOW ALL STRUCTURAL FEATURES OF THYMUS

" " " " " " LYMPH NODES

" " " " " " SPLEEN

KNOW WHAT LYMPHATIC NODULES ARE WHAT IS MALT

KNOW THE NONSPECIFIC LINES OF DEFENSE IN DETAIL

KNOW WHAT INFLAMMATION IS AND ALL DETAILS

KNOW ABOUT PUS, ABSCESS, FEVER

FOR SPECIFIC RESISTANCE THE TYPES OF LYMPHOCYTES

KNOW THE TYPES OF IMMUNE RESPONSE

KNOW WHAT AN ANTIGEN IS WHAT A HAPTEN IS

KNOW WHAT AN EPITOPE IS WHAT AN ANTIGEN RECEPTOR IS

KNOW THE STRUCTURE OF AN ANTIBODY

KNOW HOW ANTIGEN RECEPTOR IS GENERATED

KNOW ABOUT MHC & WHY IT IS IMPORTANT

KNOW WHAT IS ANTIGEN PRESENTING IS

WHAT ARE CYTOKINES AND WHERE ARE THEY USED

WHAT IS CELL-MEDIATED IMMUNITY

KNOW THE TYPES OF T CELLS AND THEIR FUNCTION

KNOW HOW T-CELL TYPES WORK

KNOW HOW ANTIBODY MEDIATED IMMUNITY WORKS

KNOW THE COMPLEMENT SYSTEM AND HOW IT WORKS

BI 205 OBJECTIVES AND STUDY GUIDE – RESPIRATORY SYSTEM AND DIGESTIVE SYSTEM

Know the major functions of the respiratory system and the 4 distinct processes which occur to accomplish these functions

Know the organs of the respiratory system and define respiratory zone and conducting zone

Know the functions of the nose and the major anatomical features including nasal cavity, vestibule, vibrissae

Know the 3 parts of the pharynx

Know the 3 important functions of the larynx and what is involved in speech formation

Define laryngitis

Know the 3 layers of the wall of the trachea

Define the RESPIRATORY MEMBRANE include type I cells, type II cells, and their functions

Know the 3 significant features of lung alveoli including what dust cells are and what they do

Know the coverings and gross anatomy of the lung to the extent covered in class

Define pleurisy

Know the 2 phases of pulmonary ventilation

Understand the difference between intrapulmonary pressure and intrapleural pressure

Know the 3 factors which affect the intrapulmonary pressure define atelectasis and pneumothorax

Understand how breathing is due to changes in volume and why it is a mechanical process

Understand Boyle's Law and why pressure and volume are important concepts in breathing

Know that inspiration is an active process and expiration is a passive process and define forced expiration

Know the physical factors influencing pulmonary ventilation including lung compliance, lung elasticity and alveolar surface tension

Understand what these terms mean: tidal volume, inspiratory reserve volume, expiratory reserve volume, residual volume, respiratory capacity, functional residual capacity, vital capacity, total lung capacity

Understand the concept of dead space

Know the neural mechanisms controlling breathing

Know the factors affecting the rate and depth of breathing including the role of higher brain centers

Know what the most important substances are for control of breathing

Define chronic obstructive pulmonary disease and the 2 types discussed in class

Know the 3 types of lung cancer

Know the 2 categories of organs in the digestive system and which organs are in each category

Know the 6 essential activities of the digestive system

Know the intrinsic and extrinsic controls of digestion including neural and hormonal controls

Know what the peritoneum is and what the visceral and parietal peritoneum are

Know the 4 layers of the wall of the alimentary canal and any sublayers present understand any modifications which hint at the function of the layers

Know the enteric nervous system of the alimentary canal and the 2 intrinsic nerve plexuses present

Know the parts of the mouth including these terms: oropharynx, vestibule, labial frenulum, palate

Know the basic anatomy of the tongue including intrinsic and extrinsic muscles, lingual frenulum, 3 types of papillae

Know the functions of the salivary glands, the names of the extrinsic glands, the 2 main cell types in the glands, which cell type secretes what substance, the composition of saliva, and control of salivation

Know the number of primary and permanent teeth, how the teeth are classified and the basic anatomy of a tooth including crown, root, enamel, neck, dentin, pulp cavity, dentinal tubules

Know the basic structure of the pharynx and the esophagus and define heartburn and hiatal hernia

Know the digestive processes occurring in the mouth, pharynx, and esophagus

Define deglutition and mastication and know the 2 phases of deglutition

Know the major regions of the stomach and the greater and lesser curvatures, and the greater and lesser omentum

Know the wall structure of the stomach, including any modifications understand what a gastric pit is and the types of cells in it and what each cell type does and what substances originate from each cell

Know how the stomach protects itself and what gastric ulcers are and what the causes are and what the treatments are

Know what digestive processes occur in the stomach, which substances pass through the stomach and the activity of the stomach essential for life

For the mechanism of urine formation, please know the 3 processes involved, and for each of these processes the important features such as the driving force, the structures involved

Define net filtration pressure and know the factors affecting this parameter

Define glomerular filtration rate and how it is related to net filtration rate

Know how glomerular filtration is regulated – 3 important mechanisms including how the intrinsic system works, how neural controls work and the basics of the renin-angiotensin system

Know other factors produced by renal cells which act locally

Know the basic features of tubular reabsorption including active and passive reabsorption and which substances are not reabsorbed

Understand that different regions of the tubule system, how the capillaries are different in the different regions and the role played by tubular secretion

Know the regulation of urine concentration and volume and the role played by different regions of the tubular system including the vasa recta and the hormone that determines whether dilute or concentrated urine is formed

Know the characteristics and composition of urine

Know the other organs in the urinary system including the 3 layers of the ureter and the bladder wall, the 3 openings in the urinary bladder and the area of the openings, what kidney stones are and the treatments and the sphincter at the bladder-urethra junction

Know the fluid compartments of the body and how they relate to each other

Know how water balance is regulated including control of intake and output and disorders of water balance

Know which electrolytes are regulated and the basics of how they are regulated for sodium ion include the hormones involved for other ions include only the features mentioned in class

Know about acid-base balance and the 3 systems involved in its regulation and how each system operates