Key

Exam 1 Review

1) What is the difference between passive and active transport? What are the two types of passive transport? Active transport requires ATP(energy)
Passive transport is "free"

Simple Diffusion
Crosses thru membrane by itself

Facilitated Diffusion
Uses transport protein channels to cross the membrane

2) As a structure becomes more specialized its quantity decreases.

3) What are the 8 necessary life functions? Which one is the least important (first to go)?

Most important →
1. Maintaining Homeostasis
2. Movement
3. Responsiveness
4. Digestion
5. Metabolism
6. Excretion
7. Growth ← 2nd least important
8. Reproduction *Repro = first to go

4) What are the 5 survival needs?

1. Nutrients
2. Oxygen
3. Water
4. Normal Body Temperature
5. Atmospheric Pressure

5) What is homeostasis and why is it so important?

↳ State of chemical equilibrium (balance) within the body

- Necessary for life and growth
- Body systems work together to maintain
- Deviation from homeostasis = inhibiting normal body functions
- Maintained thru feedback loops & regulatory mechanisms

6) List the levels of structural organization from smallest to largest

Chemicals → Organelles → Cells → Tissue → Organs → Organ System → Organism

7) What are the 4 types of tissue?

1. Muscle
2. Connective
3. Nervous
4. Epithelial

8) Why is keratinized epithelium so important?

- Waterproof
- Highly regenerative
- Temp. regulation
- Retains moisture
- Durability

9) Describe the process of keratinization.

As cells rise to the apical surface, they fill with keratin granules, flatten (squamous), and dry out.

↑ keratin = protein

10) List the functions and specialized features of epithelia.

Functions

- Protects, Covers, Lines
- Filters
- Absorbs nutrients
- Sensory input
- Secretions/Excretions

Specialized features

- Cellularity (forms sheets)
- Tight Junctions
- Polarity (gives cell direction)
- Supported by CT
- Capacity to regenerate
- Innervated, yet avascular (no blood supply, but has nerves)

11) Describe the process of regeneration.

- Mitosis forms new basal cells, which pushes older cells upward (apically)
- Apical cells worn away thru normal mechanical & chemical stresses
- Basal cells are cuboidal or columnar
- Apical cells are squamous
- Cells become squamous as metabolic activity decreases and [redacted] cytoplasm is squished out

12) What are the major classes of connective tissue?

1. Cartilage
2. Osseus (Bone)
3. Blood
4. CT proper (loose & dense)

13) What are the 6 properties of CT?

1. Derived from Mesenchymal stem cell
2. Connects, Protects, & Supports
3. Vascularity
4. Lots of different cell types
5. Extracellular Fibers
6. Ground Substance
   ↳ (plasma in blood)

14) What is ground substance and how is it different than extracellular matrix?

- Amorphous (without shape)
- Homogenous (same throughout)
- Contains:
  - Interstitial Fluid
  - Cell adhesion molecules (CT glue)
  - Protoglycans (ex. Hyaluronic Acid)
    ↳ Help orient fibers forming within tissue
- Fills space between cells
- Waste & nutrient exchange (blood supply)

- Mixture of ground substance & extracellular fibers
- Found between CT cells
- Provides nourishment & support

15) What are some different types of CT cells?

- Fibroblast
- Fibroclast
- Osteoblast
- Osteoclast
- Osteocyte
- Osteoprogenitor
- Hematopoietic Stem cell
- Mesenchymal Stem cell
- Chondroblast
- Chondroclast
- Adipocytes
- Blood cells (RBC & WBC)

16) What are the functions of dense and loose CT?

Loose

- Supports organs it surrounds
- Most widely distributed CT
- Joins together cells of other main tissues & tissues into organs

Dense

- Highly fibrous
- Little vascularity
- Functions to reinforce & bind body structures

17) What are the 4 types of membranes? Where is each one found? ↳ CT & ET

1. Mucous: Lines organs with connection to outside environment
2. Serous: Lines closed body cavities
3. Cutaneous: Organ perpetually exposed to outside environment
4. Synovial: Joints; manufactures synovial fluid

18) The three types of specialized CT are cartilage, bone, and blood. What are the functions, properties, and types of each tissue?

Cartilage

- Protection
- Types:
  1. Hyaline Cartilage
  2. Fibrocartilage
  3. Elastic Cartilage

Bone

- Structure & Protection
- Properties:
  - Composed of collagen fibers & calcium salts
  - VERY vascular
- Types:
  - Spongy
  - Compact

Blood

- Fluid within circulatory system
- Most atypical connective tissue
  ↳ (lots of cell types)

*6 properties of CT

19) What are tendons and ligaments? What does each do?

Tendons

- Muscle to Bone
- Enhances Movement
- Assists in locomotion
- Collagen & Elastic Fibers

Ligaments

- Bone to Bone
- Limits Movement
- Stabilizes Joints
- Resists forces
- Collagen Fibers

20) What is found in the dorsal cavity of an animal?

CNS (central nervous system)
↳ Brain
↳ Spinal Cord

21) What type of CT is adipose tissue? Where is it found and what does it do?

loose CT

shock absorbtion to protect internal organs (around)

★Use the "Epithelial Cheat Sheet" Assignment from class as a good study tool! (IF it has already been graded MAKE SURE to read any comments left on it.)

★Don't forget that the Directional Terms & Nomenclature and Cell Anatomy Labs are fair game on this lecture Exam!