Section 1 Introduction

A) Humans are multicellular organisms
   1) Begin as 1 cell grow into billions
   2) >200 different tissue types
   3) Each of these cell types can be grouped into 4 basic categories
      a) ___________________ Tissue
      b) ___________________ Tissue
      c) ___________________ Tissue
      d) ___________________ Tissue
   4) Each organ is composed of >1 tissue type

B) __________________________ group of similar cells that perform a specific function

C) In some tissues the cells are bound together in a tissue by __________________——specialized attachments that aid in the tissue’s function

1) __________________________
   a) Structure: Membrane __________________ attach adjacent cell membranes
   b) Function:
      (1) __________________________ leak proof sheets
      (2) Prevents substances from passing between cells
   c) Example: __________________________

2) __________________________
   a) Structure: intercellular filaments (__________________) holds adjacent cell membranes together without touching
   b) Function: Allow __________________________ when pulled/stressed
   c) Example: __________________________

3) __________________________
   a) Structure: adjacent cell membrane __________________ join adjacent cells
   b) Function: Allows __________________________ to pass from cell to cell for communication
   c) Example: __________________________

Section 2 Epithelial Tissues

A) General Characteristics
   1) __________________________
   2) Tightly packed cells
   3) Continuous __________________________
   4) __________________________ entire body
   5) __________________________ most body cavities
B) General Functions
1) _______________
   a) Injury
   b) Prevent dehydration/waterproofing
   c) Boundary to pathogenic invasion
2) _______________
   a) Nutrients, Ions, water
3) _______________ urine formation
4) _______________
   a) Mucous, Sweat, Oil

C) Naming Epithelial Tissues
1) _______________ cell shapes at the free surface
   a) _______________ flat/squat
   b) _______________ cube
   c) _______________ tall
2) Number of cell _______________
   a) _______________ single
   b) _______________ >1, many
3) _______________ deep most cell surface
4) _______________ joins epithelium to underlying connective tissues

D) Simple Squamous Epithelium
1) Structure: single layer of flat cells (‘floor tiles’)
2) Function:
   a) _______________
   b) _______________
3) Example:
   a) _______________ diffusion provides exchange of respiratory gases
   b) _______________ filters blood in urine formation

E) Simple Cuboidal Epithelium
1) Structure: single layer of cuboidal cells
2) Function:
   a) _______________
   b) _______________
3) Example:
   a) _______________ secretes hormones
   b) _______________ urine formation

F) Simple Columnar Epithelium
1) Structure:
   a) single layer of tall cells
   b) Mucosae: _______________
2) Function:
   a) _______________
   b) _______________
3) Example: lines the lumen of the _______________
G) Stratified Squamous Epithelium
   1) Structure: many layers of flat cells
      a) Named for cell shape _______________
   2) Function: _______________
   3) Example: _______________

H) Pseudostratified Ciliated Columnar Epithelium
   1) Structure: looks like >1 cell layer
      a) _______________
      b) _______________
   2) Function:
      a) _______________ cilia sweep mucous away from sensitive areas
      b) _______________ goblet cells
   3) Example: _______________

I) Transitional Epithelium
   1) Structure: highly modified
      a) _______________
      b) _______________ (specialized junctions)
   2) Function: _______________
   3) Example: _______________

J) Glandular Epithelium
   1) Gland: 1/more cells that make and secrete a product/secreton
      a) Usually includes a _______________
      b) _______________ (watery)
   2) _______________: secrete OUTSIDE body
      a) _______________
      b) _______________
   3) _______________: secrete INSIDE body (bloodstream)
      a) _______________

Section 3 Connective Tissues

A) Diverse Group
   1) _______________
   2) _______________
   3) _______________
   4) _______________
   5) _______________
   6) _______________
   7) _______________

B) General Characteristics
   1) Most abundant
   2) Widely distributed
   3) Binds organs together
   4) Protect
   5) Fill spaces
   6) Produces blood cells
   7) Stores lipids
   8) Stores minerals
C) ___________________
1) Extracellular/NON living substance secreted and surrounds CT Cells
2) Varies between CTs  \textit{Fluid} \leftrightarrow \textit{gel-like} \leftrightarrow \textit{firm} \leftrightarrow \textit{hard}
3) Composition may include
   a) _______________ ___ hydrophilic
   b) _______________ ___
   c) _______________ ___ (protein) tensile strength
   d) _______________ ___ (protein) stretch and recoil
   e) _______________ ___ very thin collagen fiber/forms soft framework

D) Cells
1) Unique names
   a) _______________ (suffix) ‘builder’ produces matrix
   b) _______________ (suffix) mature cell

E) Blood
1) Matrix: _______________
   a) Composition:
      (1) Liquid-- _______________
      (2) Proteins-- _______________
   b) Function:
      (1) Transport: _______________
      (2) Distribute: - _______________
      (3) Protect: - _______________
      (4) _______________ ______ blood pH 7.4
2) Cells:
   a) _______________ ‘RBC’
      (1) _______________
      (2) Biconcave disc
      (3) Filled with _______________(protein)
      (4) Transports: _______________
   b) _______________ ‘WBC’
      (1) _______________ unique shapes
      (2) Some have cytoplasmic granules
      (3) Defend against _______________
      (4) Produce _______________ (defend)
      (5) _______________ ______ ‘cell eating’ (defend)
   c) _______________ ______ ‘platelets’
      (1) Cellular fragments-- _______________
      (2) __________ ______ prevent blood loss

F) Areolar (Loose Fibrous)
1) Matrix: (web) loose arrangement _______________
2) Cells: _______________
3) Example: _______________
G) Dense Fibrous CT
   1) Matrix: _______________
   2) Cells: _______________
   3) Function: _______________
   4) Example: _______________

H) Cartilage (less hard/more flexible than bone)
   1) Hyaline Cartilage (most abundant)
      a) matrix: _______________
      b) cells: _______________
      c) Example:
         (1) _______________ ‘voicebox’
         (2) _______________ ‘windpipe’
         (3) _______________ ‘articular cartilage’
         (4) ________________ model for bone
   2) Elastic Cartilage
      a) matrix: ______________________ ‘bendable’
      b) cells: _______________
      c) Example: _______________
   3) Fibrocartilage
      a) matrix: _______________ allows compression/ cushioning
      b) cells: _______________
      c) Example: _______________

I) Reticular Tissue
   1) Matrix: _______________
   2) Cells: _______________
   3) Function: Network of proteins/soft internal framework
   4) Example:
      a) _______________
      b) _______________

J) Adipose
   1) Matrix: _______________
   2) cells: _______________
      a) ________________ ____ filled with triglycerides
   3) Function:
      a) ________________ under the skin
      b) ________________ kidney, heart, eye
      c) ________________
K) Bone (osseous tissue)

1) Matrix:
   a) ____________________ flexibility
   b) ____________________ hardness/brittle

2) Cells:
   a) ____________________ mature bone cells
   b) ____________________ ‘builders’ of the matrix
   c) ____________________ spaces in the matrix for bone cells

3) Compact Bone:
   a) Structure:
      (1) organized into cylindrical tubes called ______________
      (2) ____________________ blood vessels and nerves
      (3) ____________________ channels interconnecting blood supply with cells
   b) Example: skeleton

4) Spongy Bone:
   a) Structure:
      (1) ____________________ irregularly arranged plates
      (2) Lots of spaces filled with ___________________________ (blood cell formation)
   b) Example: Center of the ends of long bones

Section 4 Muscular Tissue

A) General Characteristics
   1) Highly specialized to ____________________
   2) Produces body movements
   3) Proteins
      a) ____________________
      b) ____________________

B) Skeletal Muscle Tissue
   1) Structure:
      a) Long cylindrical cells
      b) ______________
      c) ______________ arrangement of actin and myosin
      d) ______________ attach muscle to bone
   2) Function:______________

C) Smooth Muscle Tissue (_________________ muscle)
   1) Structure:
      a) ______________ shaped cells
      b) ______________
      c) Single nucleus
   2) Function:______________
      a) Much slower contractions
      b) ______________ movement of substances through body tubes
D) Cardiac Muscle Tissue
1) Structure:
   a) Short cells
   b) Branched arrangement
   c) Single nucleus
   d) ______________
   e) _______________ (gap junction)
2) Function:
   a) Involuntary
   b) Contractions pump blood to body systems

Section 5 Nervous Tissue

A) General
1) ______________
2) ______________
3) ______________
4) ______________
5) Functional Characteristics
   a) _______________ receptors monitor environment and send information to brain and spinal cord.
   b) _______________ data processing of sensory information to determine appropriate response based on current conditions and past experience.
   c) _______________ impulses carry out response/ order to the appropriate effector

B) Neurons
1) Structure:
   a) _______________ major site of metabolism—cytoplasm and nucleus
   b) _______________ ‘tree-like’ long cellular extensions with membrane proteins that sense stimuli resulting in a nervous impulse (______________)
   c) _______________ single cellular extension that carries nervous impulses away from cell body
   d) Length: microscopic ↔ approx. 3 ft long

B) Neuroglia (Glial cells)
1) ______________
2) Most of nervous tissue
3) Provide nourishment
4) Immune function
5) ______________
Section 6 Tissue Repair

A) Protection from injury
1) ________________
2) Secretions: ________________

B) Injury → Tissue repair
1) ________________replacement of the same tissue type
2) ________________dense fibrous CT → scar
3) Dependent
   a) Type of tissue damage
   b) Severity of damage

C) Events of tissue repair
1) ________________
   a) Stop blood less
   b) Holds edges of the wound together
   c) Seals off area
   d) Result: scab formation
2) ________________forms
   a) Delicate pink tissue
   b) Lots of blood capillaries
   c) Immune cells (phagocytes)
   d) ________________work to permanently seal gap
3) Permanent Repair
   a) ________________regenerates beneath scab with underlying scar tissue
   b) Scar may be visible/invisible

C) Regeneration ability of the tissue varies with the tissue

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<th>Tissues that Regenerate Easily</th>
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