Chapter 7: Skeletal System

I. Introduction

II. Bone Structure

A. Parts of a Long Bone
1. An expanded end of a long bone is called an_______________.
2. An epiphysis articulates with _____________________________.
3. Articular cartilage is located _____________________________.
4. The shaft of a long bone is called a _________________.
5. The _________________________ is the widening part of the bone between the diaphysis and the epiphysis.
6. Periosteum is _____________________________.
7. Periosteum functions to _____________________________.
8. Processes provide sites for _____________________________.
9. The wall of the diaphysis is composed of ___________________________.
10. Compact bone has _____________________________.
11. The epiphyses are largely composed of ___________________________.
12. Spongy bone consists of bony plates called ___________________________.
13. A bone usually has _____________________________.
14. A semi-rigid tube with a hollow chamber called____________________ runs through the diaphysis.
15. Endosteum lines _____________________________.
16. Endosteum contains _____________________________.
17. The tissue that fills the spaces of bone is called _____________________________.
18. The two forms of marrow are _____________________________.

B. Microscopic Structure
1. Introduction
   a. one cells are called _____________________________.
   b. Lacunae are _____________________________.
   c. Lacunae form _____________________________.
   d. Osteocysts transport _____________________________.
   e. Cellular processes of osteocysts pass through ________ .
   f. The extracellular matrix of bone is composed of ________

   _____________________________.

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2. Compact Bones
   a. An osteon is _____________________________.
   b. The substance of compact bone is formed from _____________________________.
   c. Each central canal contains _____________________________.
   d. Perforating canals connect___________________________.
   e. Perforating canals contain _____________________________.

3. Spongy Bone
   a. Spongy bone is also composed of _____________________________.
      and _____________________________.
   b. Unlike compact bone, the bone cells do not _____________________________.
      _____________________________.
   c. Instead the cells lie within _____________________________.
   d. Osteocytes get nutrients from _____________________________.

III. Bone Development and Growth
   A. Introduction
   1. Parts of the skeleton begin to form ___.
   2. Bony structures continue to grow until _____________________________.
   3. Bones form by replacing ___________.
   4. Intramembranous bones originate within _____________________________.
   5. Endochondral bones originate _____.

   B. Intramembranous Bones
   1. Examples of intramembranous bones are _____________________________.
   2. Osteogenesis is _____________________________.
   3. During their development, _____________________________.
      appear at the sites of their future bones.
   4. _____________________________.
      supply the connective tissue layers.
   5. Osteoblasts are _____________________________.
   6. Osteoblasts deposit _____________________________.
   7. Spongy bone can become___________________________.
   8. As development continues, osteoblasts may become surrounded
      by___________________________.

9. Extracellular matrix enclosing the processes of osteoblasts gives rise to _____________.
10. Once isolated, osteoblasts become _________________________________.
11. Periosteum comes from _________________________________.
12. Compact bone is formed by _________________________________.
13. Intramembranous ossification is _________________________________.

C. Endochondral Bones
1. Most of the bones of the skeleton are _________________________________.
2. Endochondral bones develop as _________________________________.
3. Eventually the cartilage _________________________________.
4. As the cartilage decomposes, ________________ forms from ________________ _____________________.
5. ________________________________ invade the disintegrating tissue.
6. Some of the cells differentiate into _________________________________.
7. Osteoblasts form _________________________________.
8. Endochondral ossification is _________________________________.
9. The primary ossification center is _________________________________.
10. Secondary ossification centers appear _________________________________.
11. The epiphyseal plate is _________________________________.

D. Growth at the Epiphyseal Plate
1. In a long bone, the diaphysis is separated from the epiphysis by _________________________________.
2. The cartilaginous cells form _________________________________.
3. The first layer is composed of _________________________________.
4. The first layer anchors _________________________________.
5. The second layer includes _________________________________.
6. As new cells appear, the cartilaginous plate _________________________________.
7. The third layer is formed by _________________________________.
8. The cells of the third layer _________________________________.
9. The fourth layer is composed of _________________________________.
10. Osteoclasts break down _________________________________.
11. Osteoclasts originate from _________________________________.
12. Osteoclasts secrete _________________________________.
13. Osteoclasts phagocytize _________________________________.
14. After osteoclasts remove the extracellular matrix,
15. A long bone continues to lengthen while __________________________. 
16. Lengthening of the bone is no longer possible once __________________________. 
17. The medullary cavity forms when __________________________. 
18. The bone in the __________________________ remains spongy. 
19. Hyaline cartilage on the ends persists as __________________________.

E. Homeostasis of Bone Tissue
1. Throughout life, osteoclasts __________________________ and osteoblasts __________________________.
2. About __________________________ of bone calcium is exchanged each year.

F. Factors Affecting Bone Development, Growth, and Repair
1. Factors that affect bone development, growth, and repair include __________________________.
2. Vitamin D is necessary for __________________________.
3. Lack of vitamin D can lead to the diseases __________________________.
4. Vitamin A is necessary for __________________________.
5. Vitamin C is required for __________________________.
6. Growth hormone stimulates __________________________.
7. In children, the absence of growth hormone leads to __________________________.
8. An excess of growth hormone before the epiphyseal plates ossify leads to __________________________.
9. In adults, an excess of growth hormone leads to __________________________.
10. Thyroxine can halt __________________________ by causing __________________________.
11. Parathyroid hormone stimulates __________________________.
12. Sex hormones promote __________________________.
13. Sex hormones also stimulate __________________________.
14. Females typically reach their maximum heights earlier than males because __________________________.
15. Physical stress stimulates __________________________.
IV. Bone Function

A. Support and Protection
1. Bones give shape to ____________________________________________.
2. The bones of ________________________________ support the body’s weight.
3. The bones of the skull protect ________________________________________.
4. The bones of the ________________________________ protect the heart and lungs.
5. Bones of the pelvic girdle protect ________________________________________.

B. Blood Cell Formation
1. Hematopoiesis is ____________________________________________.
2. Blood cell formation begins ________________________________________.
3. Later in development, blood cells are made ________________________________
4. Marrow is ________________________________ within______________________.
5. Red marrow functions in ____________________________________________.
6. Red marrow occupies ____________________________________________.
7. With increasing age, ________________ replaces red marrow.
8. Yellow marrow stores ____________________________________________.
9. In an adult, red marrow is primarily found ________________________________

C. Inorganic Salt Storage
1. Extracellular matrix of bone tissue includes ______________________________________
2. The salts account for ____________________________________________ by weight.
3. Hydroxyapatites are ____________________________________________.
4. The body requires calcium for ____________________________________________
5. When blood calcium is _______, parathyroid hormone stimulates_____________________
6. Very high blood calcium levels inhibit ________________________________________.
7. Calcitonin stimulates ____________________________________________.
8. Bone tissue contains lesser amounts of ________________________________________
V. Skeletal Organization

A. Number of Bones
1. The number of bones in a human skeleton is around _______.
2. Flat bones of the skull are tightly joined by______________.

B. Divisions of the Skeleton
1. Two major portions of the skeleton are ________________.
2. The axial skeleton contains ________________________.
3. The skull is composed of ________________________.
4. The hyoid bone supports ________________________.
5. The hyoid bone is located ________________________________.
6. The vertebral column consists of ________________________________.
7. The distal end of the column is formed by the_________________________ and the______________________________.
8. The coccyx is also called the ________________________________.
9. The thoracic cage is composed of ________________________________.
10. The appendicular skeleton consists of ________________________________.
11. The pectoral girdle is formed by ________________________________.
12. The pectoral girdle connects ________________________________.
13. The pectoral girdle aids in ________________________________.
14. Each upper limb consists of ________________________________.
15. The humerus, radius, and ulna articulate ________________________________.
16. The wrist bones are called ________________________________.
17. The bones of the palm are called ________________________________.
18. Bones in the fingers are called ________________________________.
19. The pelvic girdle is formed by ________________________________.
20. The pelvic girdle connects ________________________________.
21. The pelvic girdle, sacrum, and coccyx form the ________________________________.
22. Each lower limb consists of ________________________________.
23. The femur and tibia articulate with each other at ________________________________.
24. The kneecap is called the ________________________________.
25. The ankle bones are ________________________________.
26. The bones of the instep of the foot are called ________________________________.
27. Bones of the toes are called ________________________________.