

SKELETAL SYSTEM INTRODUCTION

10/22/81, rvsd 19 Oct 99, 16 Oct 00, 21 Oct 02, 15 Oct 03, 18 Oct 04, 15 Oct 08, 14Oct09, 12Oct11
fr. S&M p 109-, Martini's 5th: p183-192, Martini's 7th: 180-201 ,8th: 185-194, 9th: 169-196

Skeleton has 206 individual bones> Bones are living structures, capable of growth, adaptation and repair.

Functions: support vertebral column
 movement/leverage humerus to ulna
 protection calvarium of skull
 mineral reservoir Calcium storage
 hematopoiesis Red marrow creates blood

Types of bones: long humerus, tibia, etc
 (p 171) short carpals of wrist
 flat parietal of skull
 irregular vertebra, facial bones

Bone anatomy: pages 173 (poor)
diaphysis (to grow between): shaft
epiphysis (to grow upon): ends
compact bone outer portion, very strong
periosteum dense irregular C.T., capsule-like
medullary cavity hollow center, filled with yellow marrow (see next)
yellow bone marrow fat storage
endosteum connective tissue lines inside compact bone
cancellous, spongy (cancel: lattice) bone filled with red marrow for hematopoiesis
epiphyseal cartilage or line site of secondary ossification (elongation)
diploe (double in Gk) cancellous bone

Microscopic anatomy: page 176, 178
Haversian system Unit of structure
Haversian canal central canal, carries blood vessel
lamellae concentric rings of bone around central canal
lacunae chambers in which osteocytes reside, define lamellae
osteocyte bone cell
canaliculi osteocyte protoplasmic extensions, maintain bone

Blood reaches by **Volkman's canals** from periosteum or marrow.

Cancellous bone is not in concentric rings, rather **in line of stress**.
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Composition:
 Cells: osteocytes
 Matrix:
 Fibers: collagen fibers,
 ground substance: hydroxyapatite: $3Ca_3 (PO_4)_2 \cdot Ca(OH)_2$

Similar in strength to reinforced concrete: strong not brittle

