ARTICULATIONS (JOINTS)
(Notes to accompany lab demonstration dissection)

Joint = junction between 2 or more bones; 3 classifications

Classification of Joints: Based on the structure and type of movement allowed

Fibrous Joints (synarthrotic; immovable)
eg. sutures, at interosseus ligaments, teeth w/in jaw

Cartilaginous Joints (amphiarthrotic; slightly movable)
eg. epiphyseal disks, symphysis pubis

Synovial Joints (diarthrotic; freely movable)
- joint capsule
- articular cartilage
- synovial fluid
- several types based on type of movement:
  ball & socket, condyloid, gliding, hinge, pivot, saddle
  (students are not responsible for knowing these sub-classifications)

General Structure of a Synovial Joint
Bring the handout showing the features of a typical diarthrotic joint with you during the demonstration dissection of the calf joint.

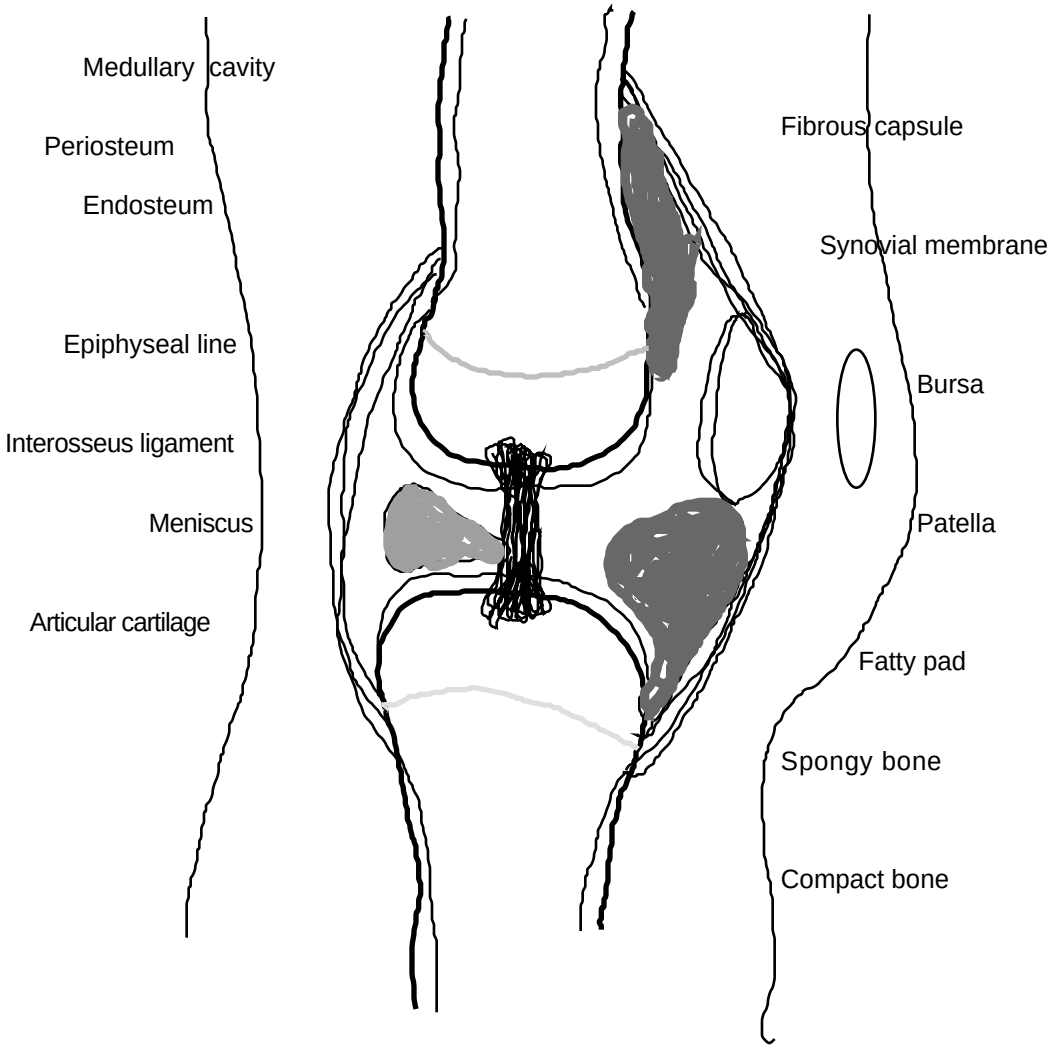
Synovial membranes
- line joint cavities
- highly vascular; loose c.t., & several cell types including adipocytes, squamous cells, secretory cells, and macrophages
- synovia contains albumin, mucin, fats and mineral salts
  1) lubricates articulating surfaces w/in joints
  2) nourishes chondrocytes of articular cartilages (avascular)
  3) cushions shock

Typical Features (see handout)

Types of Joint Movements
You should familiarize yourself with the types of movements produced at diarthrotic joints during muscle contraction, esp. for the levers exercise next week.

Clinical Terms Related to Joints
bursitis
meniscus injury
strain vs. sprain
rheumatoid arthritis vs. osteoarthritis
carpal tunnel syndrome
ganglion cysts
shoulder separation vs. dislocation
rotator cuff injury

FEATURES OF A TYPICAL DIARTHROTIC JOINT
The Human Knee



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3. Coccyx (A,P)

D. **Lower Appendages (legs)**

1. Femur
    - Femoral head (A)
    - Greater trochanter (A,P)
    - Lesser trochanter (P)
    - Intertrochanteric crest (P)
    - Femoral neck
    - Linea aspera (P)
    - Medial condyle (A)
    - Lateral condyle (A)
    - Medial epicondyle (A)
    - Lateral epicondyle (A)
    - Fovea capitis

2. Patella (A)
    - Patellar ligament (A)

3. Fibula (A,L)
    - Head of fibula (A)
    - Lateral malleolus (L)

4. Tibia (A)
    - Medial condyle (A)
    - Lateral condyle (A)
    - Intercondylar eminence (or spine) (A)
    - Tibial tuberosity (A)
    - Medial malleolus (A)
    - Anterior border (or crest) (A)

5. Tarsals (7, = ankle)

6. Metatarsals (1-5, = foot)

7. Phalanges (1-5, = toes)
    - Proximal phalanx
    - Middle phalanx
    - Distal phalanx

2. Ulna
    - Olecranon process (P)
    - Trochlear notch
    - Coronoid process (A)
    - Radial notch
    - Styloid process (A,P)
3. Radius
    - Radial head (A)
    - Radial neck (A)
    - Radial tuberosity (A)
    - Styloid process (A)
    - Ulnar notch (A) (at distal end)

4. Carpals (8, = wrist)

5. Metacarpals (1-5, = hand)

6. Phalanges (1-5, = fingers)
    - Proximal phalanx
    - Middle phalanx
    - Distal phalanx

C. **Pelvic Girdle**
(A.D.A.M.: Select Bones of the Hip in the anatomical list)

1. Innominate (Os Coxa)
    - Ilium (A)
        - Iliac fossa (A)
        - Iliac crest (A)
        - Anterior inferior iliac spine (A)
        - Anterior superior iliac spine (A)
        - Posterior inferior iliac spine (P)
        - Posterior superior iliac spine (P)
    - Ischium
        - Ischial tuberosity (P) (on which you sit!)
        - Ischial spine (P)
    - Pubis
        - Pubic crest (A)
        - Pubic symphysis (A)
        - Superior pubic ramus (ascending) (A)
        - Ischiopubic ramus (inferior or descending) (P)
    - Acetabulum (A)
    - Obturator foramen (with membrane) (A)
2. Sacrum (A,P)
    - Median sacral crest (P)
    - Sacral foramina (A,P)

Clavicular notch
Jugular notch

2. Ribs (A)
Vertebrosternal (7)
Vertebrochondral (3)
Vertebral (2)
(features:)
costal cartilage
head of rib
tubercle of rib (P)

APPENDICULAR SKELETON

A. **Pectoral Girdle**

1. Clavicle (A)
Acromial extremity (A)
Sternal extremity (A)
Conoid tuberosity

2. Scapula (P, Select scapula & clavicle when in Lateral view)
Acromion process (P)
Coracoid process (P)
Glenoid cavity (L)
Spine (P)
Supraspinous fossa (P)
Infraspinous fossa (P)
Medial border (P)
Lateral border (P)
Subscapular fossa

B. **Upper Appendages (arms)**

1. Humerus (funny bone!)
Greater tubercle (A)
Lesser tubercle (A)
Intertubercular groove (A)
Medial epicondyle (A)
Lateral epicondyle (A)
Olecranon fossa
Head (A)
Anatomical neck (A)
Surgical neck (Which of these two necks are more likely to break? Why?
Trochlea (A) (articulates with...?)
Capitulum (A) (articulates with...?)
Coronoid fossa (A)
Deltoid tuberosity (Why this name?)

B. **Vertebral Column**

1. Types of vertebrae
    - Cervical (C1-C7)
    - Thoracic (T1-T12)
    - Lumbar (L1-L5)
    - Sacral (5, fused to form sacrum)
    - Coccygeal (4, fused to form coccyx)

2. Parts of a typical vertebrae
    - Vertebral foramen
    - Transverse processes
    - Spinous process
    - Lamina
    - Body
    - Pedicle
    - Superior and Inferior articulating facets
    - Intervertebral foramina (b/w vertebrae; significance?)

3. Be able to identify by name the first two cervical vertebrae
    - Atlas (A)
    - Axis (A)
        - Dens (odontoid process) (A)

4. Be able to distinguish between the types of vertebrae
    - Cervical - by the presence of transverse foramina (for?)
    - Thoracic - by the presence of facets that articulate with the rib head and rib tubercle
    - Lumbar - by the absence of the above characteristics, and by the thickness of the body and processes

5. Vertebral Curves
    - Primary (present at birth)
        - Thoracic
        - Sacral
    - Secondary (when do these develop? at different times?)
        - Cervical
        - Lumbar

6. Sacrum (A,P)
    - Median sacral crest (P)
    - Sacral foramina (A,P)

7. Coccyx (A,P)

C. **Thoracic (Rib) Cage**

1. Sternum (A)
    - Manubrium
    - Body (Gladiolus)
    - Xiphoid process