

1) Define the following key terms:

- a) Origin –
- b) Insertion –
- c) Flexor –
- d) Extensor –
- e) Agonist –
- f) Antagonist –
- g) Synergist –

2) List the *approximate* origins and insertions for the following (general area is fine):

- a) Trapezius:
- b) Teres Major:
- c) Deltoid:
- d) Latissimus Dorsi:
- e) Biceps Brachii Long Head:
- f) Biceps Brachii Short Head:
- g) Brachialis:
- h) Brachioradialis:

i) Pectoralis Major:

Muscles that move the shoulder girdle

Match the layout of the muscle (origin to insertion) with its movement

Prime mover	Movement	Target	Target motion direction	Origin	Insertion
Subclavius	Stabilizes clavicle during movement by depressing it	Clavicle	Depression	First rib	Inferior surface of clavicle
Pectoralis minor	Rotates shoulder anteriorly (throwing motion); assists with inhalation	Scapula; ribs	Scapula: depresses; ribs: elevates	Anterior surfaces of certain ribs (2–4 or 3–5)	Coracoid process of scapula
Serratus anterior	Moves arm from side of body to front of body; assists with inhalation	Scapula; ribs	Scapula: protracts; ribs: elevates	Muscle slips from certain ribs (1–8 or 1–9)	Anterior surface of vertebral border of scapula
Trapezius	Elevates shoulders (shrugging); pulls shoulder blades together; tilts head backwards	Scapula; cervical spine	Scapula: rotates inferiorly, retracts, elevates, and depresses; spine: extends	Skull; vertebral column	Acromion and spine of scapula; clavicle
Rhomboid major	Stabilizes scapula during pectoral girdle movement	Scapula	Retracts; rotates inferiorly	Thoracic vertebrae (T2–T5)	Medial border of scapula
Rhomboid minor	Stabilizes scapula during pectoral girdle movement	Scapula	Retracts; rotates inferiorly	Cervical and thoracic vertebrae (C7 and T1)	Medial border of scapula

Movement	Target	Target motion direction	Prime mover	Origin	Insertion
Axial muscles					
Brings elbows together; moves elbow up (as during an uppercut punch)	Humerus	Flexion; adduction; medial rotation	Pectoralis major	Clavicle; sternum; cartilage of certain ribs (1–6 or 1–7); aponeurosis of external oblique muscle	Greater tubercle of humerus
Moves elbow back (as in elbowing someone standing behind you); spreads elbows apart	Humerus; scapula	Humerus: extension, adduction, and medial rotation; scapula: depression	Latissimus dorsi	Thoracic vertebrae (T7–T12); lumbar vertebrae; lower ribs (9–12); iliac crest	Intertubercular sulcus of humerus
Scapular muscles					
Lifts arms at shoulder	Humerus	Abduction; flexion; extension; medial and lateral rotation	Deltoid	Trapezius; clavicle; acromion; spine of scapula	Deltoid tuberosity of humerus
Assists pectoralis major in bringing elbows together and stabilizes shoulder joint during movement of the pectoral girdle	Humerus	Medial rotation	Subscapularis	Subscapular fossa of scapula	Lesser tubercle of humerus
Rotates elbow outwards, as during a tennis swing	Humerus	Abduction	Supraspinatus	Supraspinous fossa of scapula	Greater tubercle of humerus
Rotates elbow outwards, as during a tennis swing	Humerus	Extension; adduction	Infraspinatus	Infraspinous fossa of scapula	Greater tubercle of humerus
Assists infraspinatus in rotating elbow outwards	Humerus	Extension; adduction	Teres major	Posterior surface of scapula	Intertubercular sulcus of humerus
Assists infraspinatus in rotating elbow outwards	Humerus	Extension; adduction	Teres minor	Lateral border of dorsal scapular surface	Greater tubercle of humerus
Moves elbow up and across body, as when putting hand on chest	Humerus	Flexion; adduction	Coracobrachialis	Coracoid process of scapula	Medial surface of humerus shaft

Movement	Target	Target motion direction	Prime mover	Origin	Insertion
Anterior muscles (flexion)					
Performs a bicep curl; also allows palm of hand to point toward body while flexing	Forearm	Flexion; supination	Biceps brachii	Coracoid process; tubercle above glenoid cavity	Radial tuberosity
	Forearm	Flexion	Brachialis	Front of distal humerus	Coronoid process of ulna
Assists and stabilizes elbow during bicep-curl motion	Forearm	Flexion	Brachioradialis	Lateral supracondylar ridge at distal end of humerus	Base of styloid process of radius
Posterior muscles (extension)					
Extends forearm, as during a punch	Forearm	Extension	Triceps brachii	Infraglenoid tubercle of scapula; posterior shaft of humerus; posterior humeral shaft distal to radial groove	Olecranon process of ulna
Assists in extending forearm; also allows forearm to extend away from body	Forearm	Extension; abduction	Anconeus	Lateral epicondyle of humerus	Lateral aspect of olecranon process of ulna
Anterior muscles (pronation)					
Turns hand palm-down	Forearm	Pronation	Pronator teres	Medial epicondyle of humerus; coronoid process of ulna	Lateral radius
Assists in turning hand palm-down	Forearm	Pronation	Pronator quadratus	Distal portion of anterior ulnar shaft	Distal surface of anterior radius
Posterior muscles (supination)					
Turns hand palm-up	Forearm	Supination	Supinator	Lateral epicondyle of humerus; proximal ulna	Proximal end of radius

3) Buster Posey, SF Giants catcher, has been complaining of muscle pain in his right biceps brachii. Trace or draw an erythrocyte's journey from the left ventricle of the heart to the biceps brachii to help doctors figure out where a circulation problem may occur.

4) Buster's arm hurts the most during the cocking phase of throwing (seen below) To test the function of his right throwing arm, they need you to list all the anatomical motions (e.g. elbow flexion) muscles, joints, and nerves for the following:

1) Cocking phase seen here:



5) Botulinum toxin (aka botox) is a neurotoxic protein produced by the bacterium *Clostridium botulinum* and related species. It prevents the release of the neurotransmitter acetylcholine from axon endings at the neuromuscular junction, thus causing flaccid paralysis. The LA Dodgers' coach decides to sabotage the Giant's by preventing him from throwing the ball after the cocking motion seen above. To prevent the motion pictured below, what muscles would the evil coach need to "Botox?"

