

Anatomy & Physiology

Model Guide Book

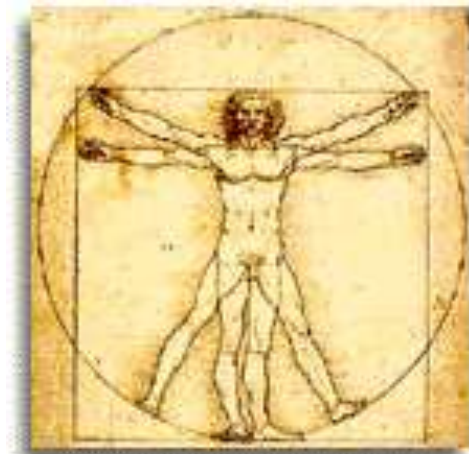


Table of Contents

Tissues.....	7
The Bone (Somso QS 61).....	7
Section of Skin (Somso KS 3 & KS4)	8
Model of the Lymphatic System in the Human Body	11
Bone Structure	12
Skeletal System	13
The Skull.....	13
Artificial Exploded Human Skull (Somso QS 9).....	14
Skull.....	15
Auditory Ossicles.....	16
Thorax	17
Vertebral Column.....	17
Vertebrae	18
Scapula & Humerus.....	20
Radius, Ulna, & Hand	21
Clavicle & Pelvis	22
Femur, Tibia, Fibula, Patella.....	23
Foot	24
Human Skeleton.....	25
Muscular System.....	27
Muscular Arm with Hand.....	27
Leg Muscle	28
Cartilages of the Larynx (Somso GS 6)	30
Functional Model of the Knee Joint.....	31
Functional Model of the Shoulder Joint.....	32
Functional Model of the Elbow Joint	33
Functional Model of the Hip Joint.....	34
Muscles of the Arm with Shoulder Blade (Somo NS 15).....	35
Muscles of the Leg with Base of Pelvis (Somso NS 10)	38

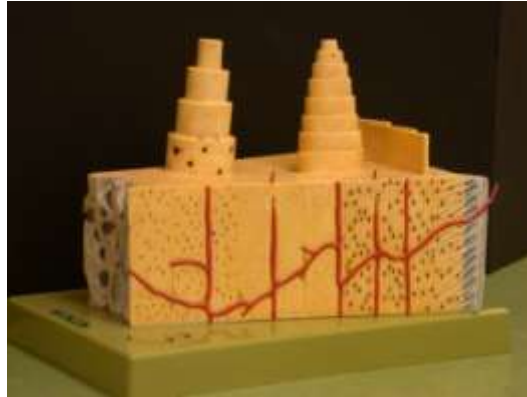
Male Muscle Figure (Somso AS 3).....	40
Muscles of the Human Arm (Altay 6000.31).....	41
Head & Neck Musculature (Altay 6030.10)	42
Cardiovascular/Respiratory System	43
Two Section Heart (HE-1010).....	43
Human Heart & Mediastinum.....	44
The Heart (Somso HS 26)	45
Model of Heart (ALS 300).....	46
The Heart (HS 4).....	48
Vascular Arm	49
Fine Structure of the Artery & Veins (Somso HS 25)	50
Respiratory Organs & Heart.....	51
Lungs, Larynx & Heart (C 243).....	52
Lungs with Heart, Diaphragm, & Larynx (Somso HS 8)	53
Lung with Alveoli (Somso HS 23)	54
Lung Apparatus	55
Lung (Basic Model).....	57
Nervous System	59
Neuron (Somso BS 35)	59
Model of a Synapse (BS 35/3).....	60
Striated Muscle Fiber with Motor End-Plate (Somso BS 36)	61
Transparent Human Brain (BS 25)	62
Transparent Model of the Skull (Somso QS 65/7)	64
The Human Brain (Somso BS 23)	65
Brain Stem (Somso BS 23/2)	66
The Human Brain (C 15)	67
Brain with Arteries.....	68
Brain (Basic Model).....	69
Fifth Cervical Vertebra with Spinal Cord (Somso BS 30).....	70
Model of Spinal Cord with Spinal Canal (Somso BS 31).....	71
Deluxe Spinal Cord.....	72

Spinal Cord with Nerve Branches (Somso BS 33).....	73
Neuron (Altay 6160.27).....	74
Special Senses	75
The Human Eye (Somso CS 20)	75
Eye in Orbit.....	76
Giant Eye	77
The Ear (J 515).....	78
Ear (P-2134).....	79
The Organ of Hearing (Somso DS 3).....	80
The Labyrinth (Somso DS 6)	81
Spiral Organ of Corti (Somso DS 10)	82
Nose & Nasal Cavity (Somso FS 6)	83
Urinary System.....	85
Kidney (K 10)	85
Kidney & Nephron.....	86
Kidney (Somso LS 5)	87
Kidney (Somso K 12)	88
Glomerulus.....	89
Renal Lobule.....	90
Urinary System.....	91
Kidney (Altay 6140.14).....	92
Reproductive System	93
Male Pelvis (Somso MS 2)	93
Male Pelvis	94
Male Pelvis (H 11)	95
Female Pelvis	98
Female Pelvis (Somso MS 3)	99
Human Female Breast.....	100
Female Genital Organs (Somso MS 5).....	101
Uterus (Basic Model).....	102
Female Pelvis (H 10).....	103

Relief Model of the Ovary (Somso MS 51).....	106
Digestive System	107
Molar Tooth (Somso ES 11/5).....	107
Models of Teeth.....	108
Stomach (Basic Model)	109
The Stomach (Somso JS 4)	110
Pancreas with Spleen & Part of the Duodenum (Somso JS 11)	111
Intestinal Villi	112
Model of a Liver Cell (Somso JS 15)	113
Internal Organs	114
Liver & Gallbladder	115
Liver.....	116
Human Digestive System	117
Liver/Gallbladder (Basic Model)	119
Colon (Basic Model)	120
Rectum (Basic Model)	121

Tissues

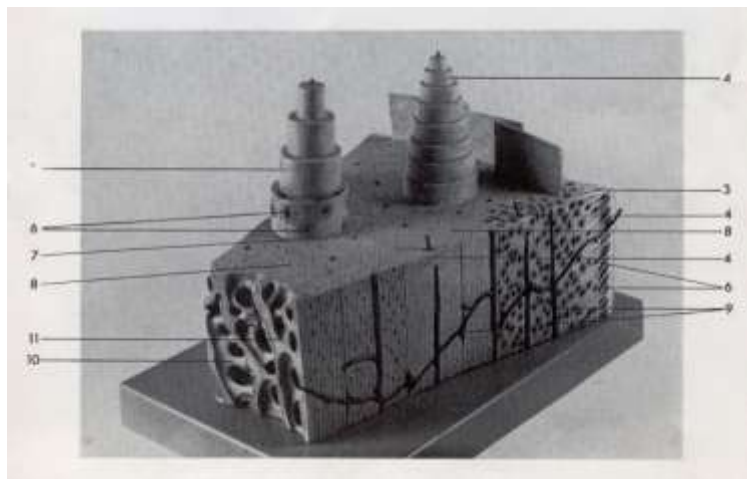
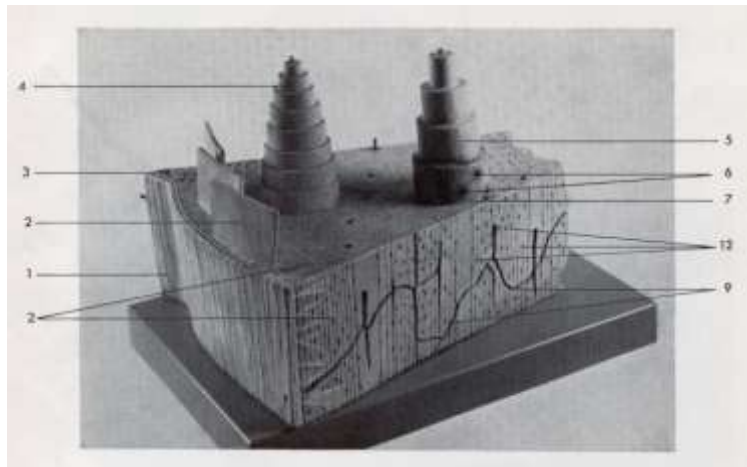
The Bone (Somso QS 61)



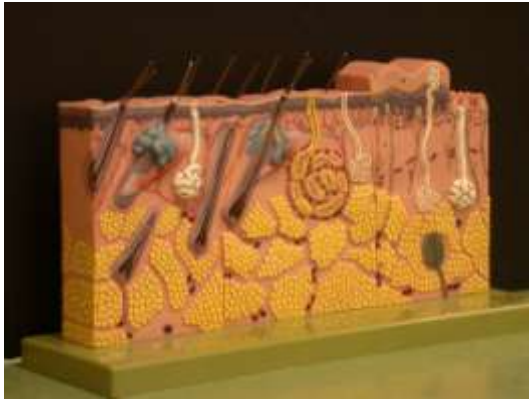
Somso Model QS 61

Wedge-shaped segment from the compact part of a long bone

1. Periosteum
2. Outer general lamellae
3. Perforating fibers of Sharpey
4. Osteon with Haversian vessel
 - Presentation of the spiral run of the collagenous fibrils within the single lamellae
5. Osteon w/presentation of the flattened bone cells
6. Bone cell
7. Branch of the bone cell
8. Intermediate lamellae
9. Volkmann's canals and vessels
10. Endosteum
11. Spongy substance
12. Cavities for the bone cells in the macerated bone

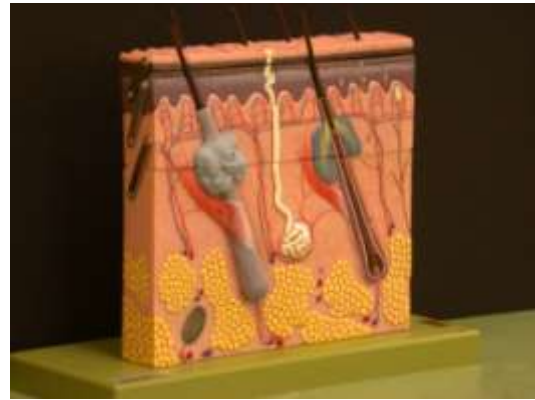


Section of Skin (Somso KS 3 & KS4)



Somso Model KS 3

*Block model with representation in three sections:
A. The hairy skin; B. The skin of the arm pit; C. The hairless skin of the sole of the foot.*



Somso Model KS 4

Block model showing the skin with hair in different planes of section.

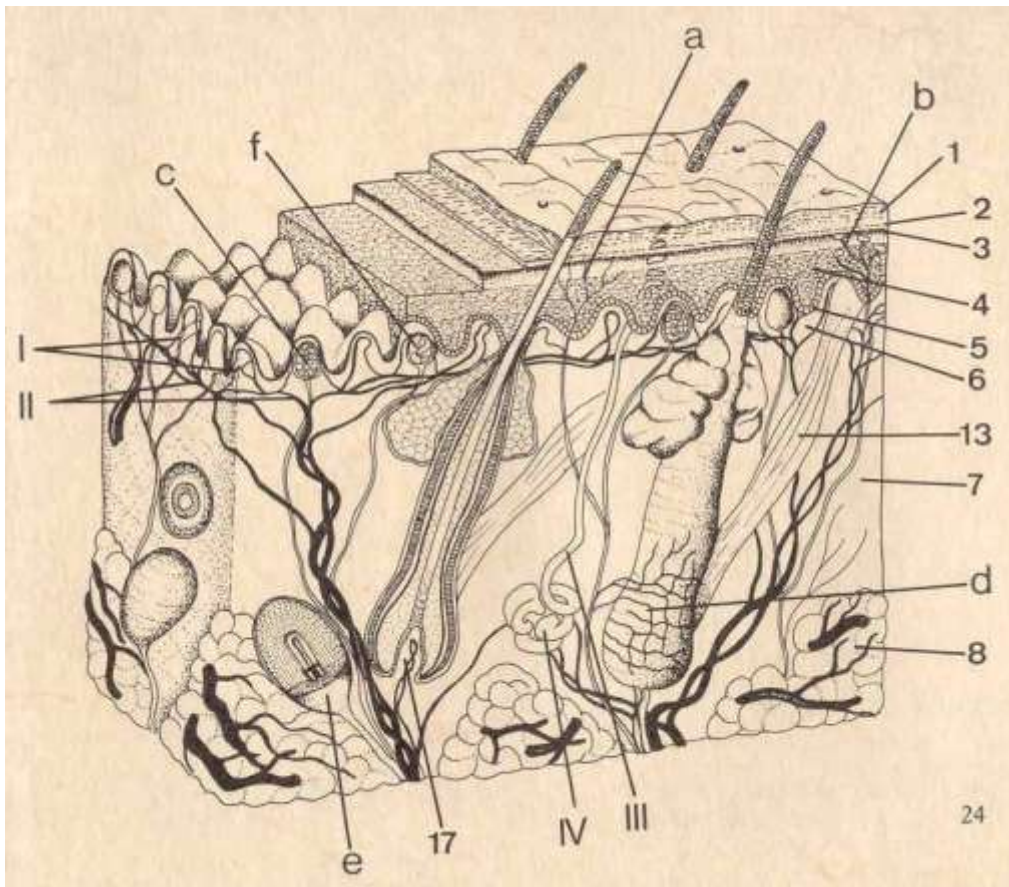
- I. Epidermis
- II. Corium (Dermis)
- III. Subcutis (Hypodermis)
 1. External Horny Layer (Stratum corneum)
 - 1a. Clear Layer (Stratum lucidum) – (KS 3 only)
 2. Internal Hornless Germinative Zone (Stratum germinativum)
 - 2a. Granular Layer (Stratum granulosum)
 - 2b. Prickle-cell Layer (Stratum spinosum)
 - 2c. Cylindrical Layer (Stratum basale)
 3. Papillae
 4. Touch-corpuscles (Meissner's corpuscles)
 5. Adipose Tissue (Panniculus adiposus)
 6. Lamellated Corpuscles (Pacinian corpuscles)
 7. Sweat Glands (Eccrine glands)
 8. Hairs (Pili)
 - 8a. Medullary Substance (Substantia medullaris)
 - 8b. Cortical Substance (Substantia corticalis)
 - 8c. Cuticle of the Hair (Cuticula pili)
 - 8d. Inner Root-Sheath
 - 8e. Outer Root-Sheath
 - 8f. Hyaloid Membrane
 - 8g. Fibrous Layer
 9. Hair (Pilus)

Section of Skin Continued...

10. Hair Shaft (Scapus pili)
11. Hair Root (Radix pili)
 - 11a. Hair Bulb (Bulbus pili)
12. Hair Papilla (Papilla pili)
13. Sebaceous Glands (Glandulae sebaceae)
14. Arrector Pili Muscles (Arrectores pilorum)
15. Sweat Gland of the Arm-Pit (Apocrine gland)
 - 15a. Smooth Muscle Cells
 - 15b. Hyaline Top
 - 15c. Part of the pushed out cell body

Model KS 4 shows additionally...

16. Krause's end bulbs – with nerve coils in connective tissue cover
17. Ruffini's corpuscles – plexus of bare nerve fiber in connective tissue cover in the corium (dermis) and subcutis (hypodermis)
18. Merkel's touch disks in the epidermis
19. Mechanoreceptors as dendriform fibers in the hair follicle



Cutaneous Sensory Organs...

- a) Free nerve endings - For pain & heat sensitivity
- b) Merkel's touch cells in the epithelium
- c) Meissner's tactile corpuscles - For pressure & touch sensitivity
- d) Nerves encircling the root sheath of the hair - For touch sensitivity
- e) Vater-Pacini corpuscles - Mechanoreceptors
- f) Krause's end corpuscle - Receptors of frost

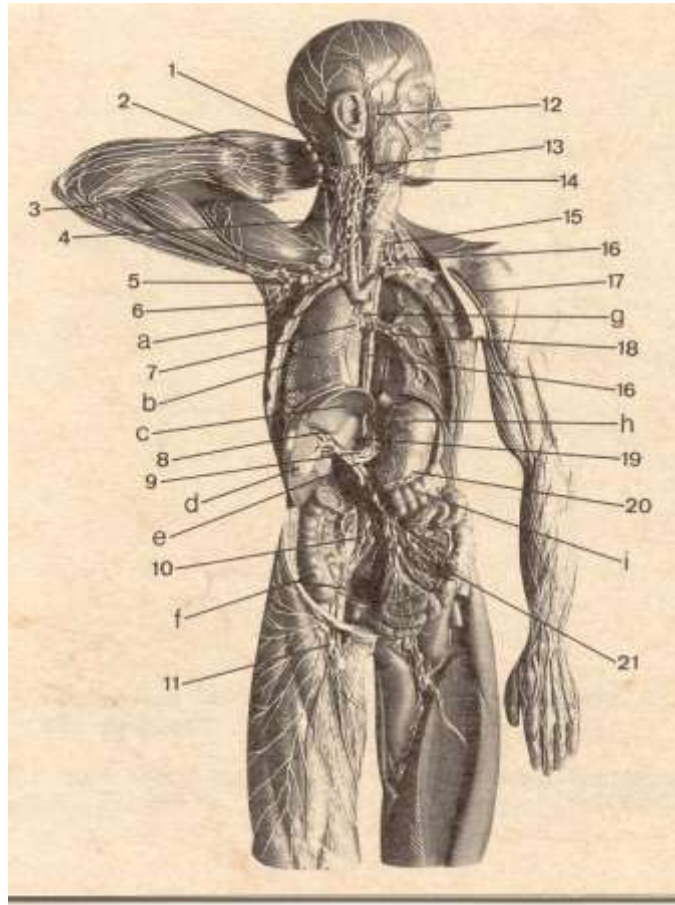
Hair Organs...

- | | |
|--------------------------|-----------------------------------------|
| 1-8. Layers of skin | 13. Arrector pili muscle |
| 9. Hair shaft | 14. Internal root sheath |
| 10. Sebaceous gland | 15. Hair shaft inside its root sheathes |
| 11. Hair follicle | 16. Hair bulb |
| 12. External root sheath | 17. Papilla with blood vessel |

Vessels and glands of the skin...

- I. Capillary loops in papilla
- II. Principal venous network (blue) with supply arteries (red)
- III. Sweat gland outlets
- IV. Sweat gland

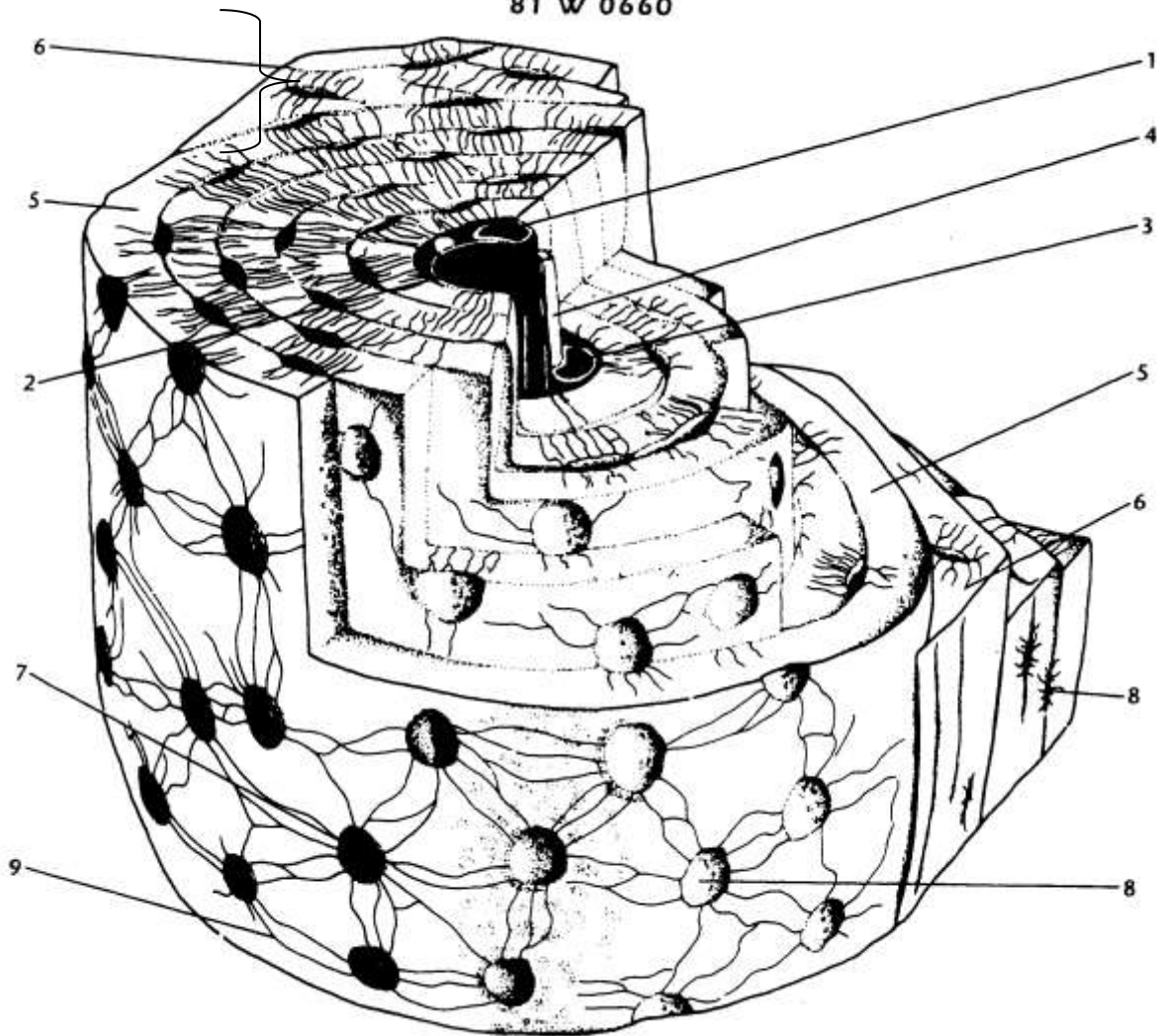
Model of the Lymphatic System in the Human Body



- | | |
|-------------------------------------|-------------------------------------|
| 1. Occipital lymph nodes | 16. Thoracic duct |
| 2. Superficial cervical lymph nodes | 17. Subclavian trunk |
| 3. Cubital lymph nodes | 18. Bronchial lymph nodes |
| 4. Deep cervical lymph nodes | 19. Cisterna chili |
| 5. Axillary lymph nodes | 20. Gastric lymph nodes |
| 6. Right lymphatic duct | 21. Mesenteric lymph nodes |
| 7. Tracheobronchial lymph nodes | a. Right venous angle |
| 8. Hepatic lymph nodes | b. Right lung |
| 9. Coeliac lymph nodes | c. Liver |
| 10. Common iliac lymph nodes | d. Gall bladder |
| 11. Inguinal lymph nodes | e. Portal vein |
| 12. Parotid gland lymph nodes | f. Caecum with appendix vermiformis |
| 13. Submandibular lymph nodes | g. Bifurcation of trachea |
| 14. Submental lymph nodes | h. Stomach |
| 15. Jugular trunk | i. Transverse colon |

Bone Structure

81 W 0660



- 1. Artery
 - 2. Vein
 - 3. Lymph Vessel
 - 4. Nerve
- } These structures all lie in the Haversian canal

- 5. Haversian lamellae
- 6. Interstitial lamellae
- 7. Osteocytes
- 8. Lacunae
- 9. Canaliculi

Skeletal System

The Skull



- A. Coronal suture
- B. Coronoid process
- C. Ethmoid
- D. External acoustic meatus
- E. Frontal
- F. Sphenoid
- G. Lacrimal
- H. Mandible
- I. Mandibular condyle
- J. Mandibular fossa
- K. Maxilla
- L. Mastoid process
- M. Nasal
- N. Parietal
- O. Squamosal suture
- P. Styloid process
- Q. Superior orbital fissure
- R. Temporal
- S. Zygomatic
- T. Zygomatic process of temporal

Artificial Exploded Human Skull (Somso QS 9)



Somso Model QS 9

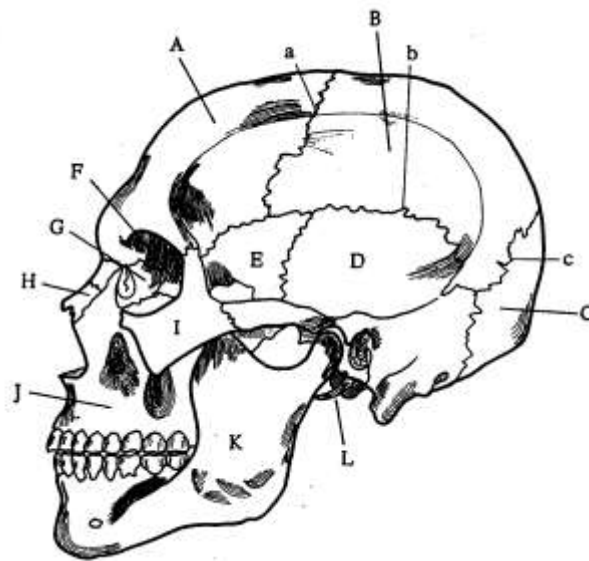
All individual bones on a plastic base, corresponding to the form of the skull, mounted and removable.

Dissectible in 16 parts.

1. Frontal bone
2. Parietal bone
3. Temporal bone
4. Zygomatic bone
5. Nasal bone
6. Occipital bone
7. Maxilla
8. Vomer
9. Ethmoidal bone
10. Sphenoid bone
11. Mandible

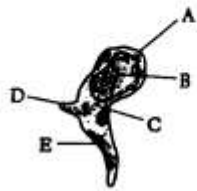


Skull (Lateral View)



- A. Frontal
- B. Parietal
- C. Occipital
- D. Temporal
- E. Sphenoidal
- F. Ethmoid
- G. Lacrimal
- H. Nasal
- I. Zygomatic
- J. Maxilla
- K. Mandible
- L. Styloid Process
 - a. Coronal Suture
 - b. Squamosal Suture
 - c. Lambdoidal Suture

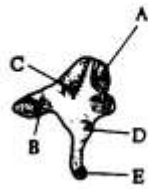
Auditory Ossicles



Left Malleus

Left Malleus (from behind)

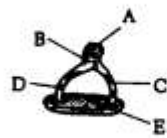
- A. Head
- B. Facet for incus
- C. Neck
- D. Lateral process
- E. Manubrium



Left Incus

Left Incus (from within)

- A. Facet for malleus
- B. Short crus
- C. Body
- D. Long crus
- E. Lenticular process

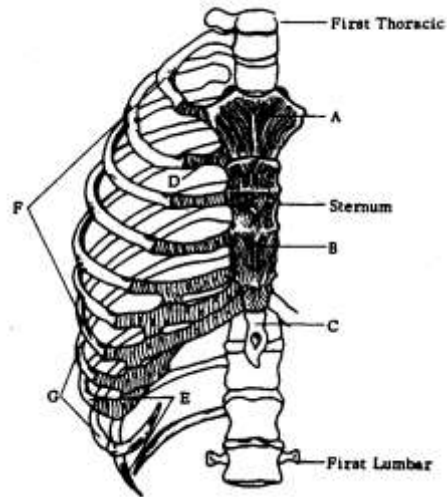


Left Stapes

Left Stapes

- A. Head
- B. Neck
- C. Anterior crus
- D. Posterior crus
- E. Base

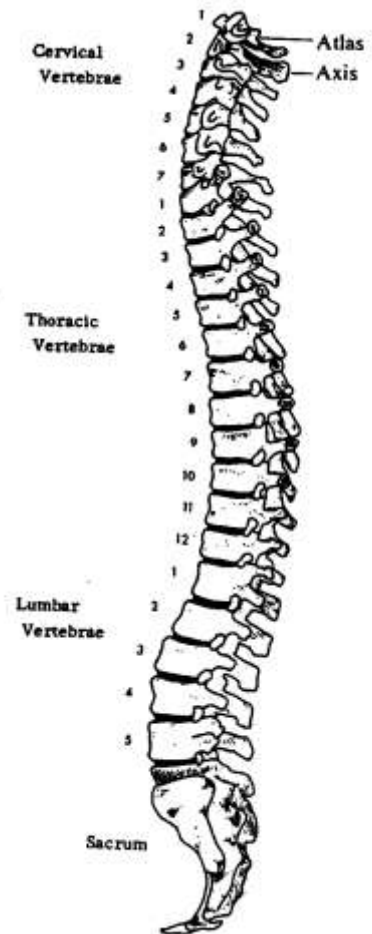
Thorax



- A. Manubrium
- B. Body
- C. Xiphoid Process
- D. Costal Cartilage
- E. False Ribs
- F. Vertebrosteral or True Ribs
- G. Vertebrocostal Ribs

Vertebral Column

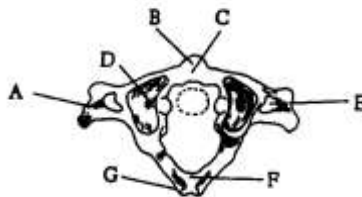
(Lateral View)



Vertebrae

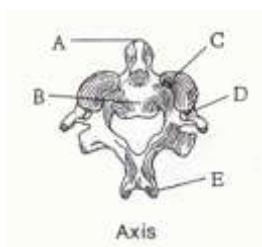
Atlas (First Cervical Vertebra)

- A. Transverse Process
- B. Anterior Tubercle
- C. Anterior Arch
- D. Superior Articular Surface
- E. Foramen Transversarium
- F. Posterior Arch
- G. Posterior Tubercle



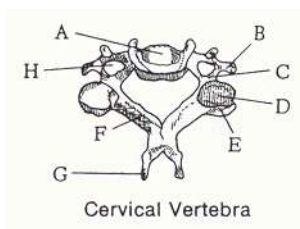
Axis (Second Cervical Vertebra)

- A. Odontoid Process
- B. Body
- C. Superior Articular Surface
- D. Foramen Transversarium
- E. Spinous Process



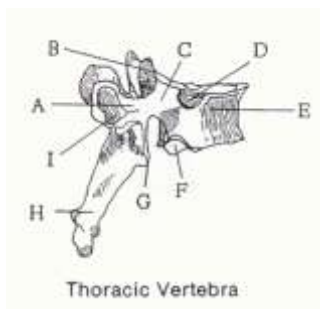
Cervical Vertebra

- A. Body
- B. Transverse Process
- C. Pedicle
- D. Superior Articular Process
- E. Inferior Articular Process
- F. Lamina
- G. Spinous Process
- H. Foramen Transversarium



Thoracic Vertebra

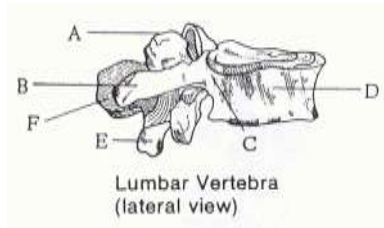
- A. Transverse Process
- B. Superior Articular Process
- C. Pedicle
- D. Demi-facet for head of rib
- E. Body
- F. Demi-facet for head of rib
- G. Inferior Articular Process
- H. Spinous Process
- I. Facet for articular part of tubercle of rib



Vertebrae Cont...

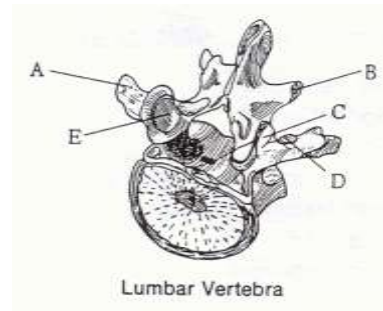
Lumbar Vertebra (lateral view)

- A. Superior Articular Process
- B. Transverse Process
- C. Pedicle
- D. Body
- E. Inferior Articular Process
- F. Spinous Process



Lumbar Vertebra (from above and behind)

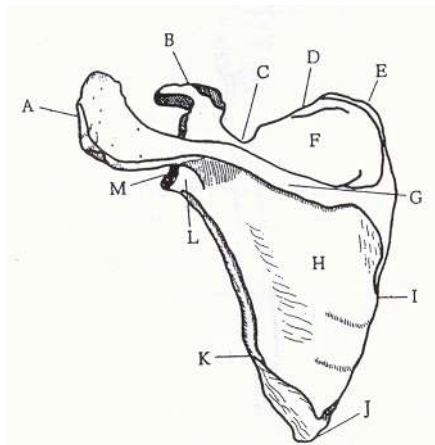
- A. Transverse Process
- B. Inferior Articular Process
- C. Mammillary Process
- D. Accessory Process
- E. Superior Articular Process



Scapula & Humerus

Left Scapula (Dorsal View)

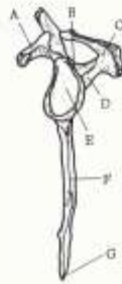
- A. Acromion
- B. Coracoid Process
- C. Scapular Notch
- D. Superior Border
- E. Medial Angle
- F. Supraspinatous Fossa
- G. Spine
- H. Infraspinatous Fossa
- I. Vertebral Border
- J. Inferior Angle
- K. Axillary Border
- L. Neck of Scapula
- M. Lateral Angle



Left Scapula (dorsal view)

Left Scapula (Lateral View)

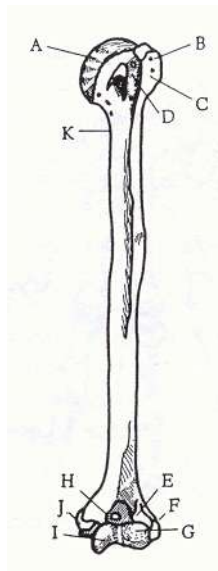
- A. Coracoid
- B. Supraglenoid Tubercle
- C. Acromion
- D. Spine
- E. Glenoid Cavity
- F. Axillary Border
- G. Inferior Angle



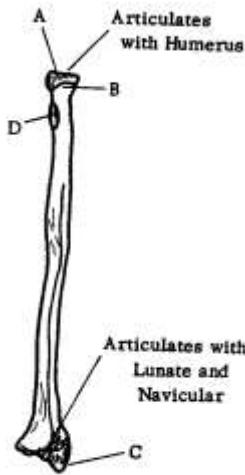
Left Scapula (lateral view)

Left Humerus (Anterior View)

- A. Head
- B. Greater Tubercle
- C. Crest of Greater Tubercle
- D. Intertubercular Groove
- E. Radial Fossa
- F. Lateral Epicondyle
- G. Capitulum
- H. Coronoid Fossa
- I. Trochlea
- J. Medial Epicondyle
- K. Surgical Neck



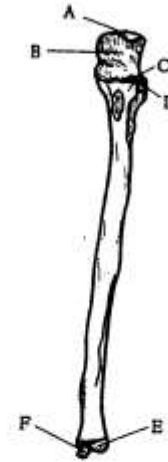
Radius, Ulna, & Hand



Left Radius (anterior aspect)

Left Radius (Anterior Aspect)

- A. Head
- B. Neck
- C. Styloid Process
- D. Radial Tuberosity



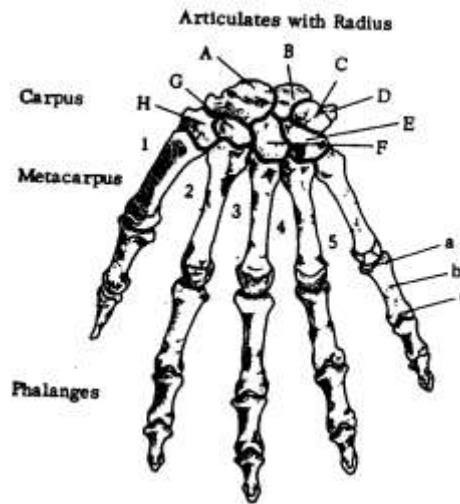
Left Ulna (anterior aspect)

Left Ulna (Anterior Aspect)

- A. Olecranon
- B. Semilunar Notch
- C. Coronoid Process
- D. Radial Notch
- E. Articulates with Radius
- F. Styloid Process

Left Hand (Dorsal Surface)

- A. Navicular
- B. Lunate
- C. Triangular
- D. Pisiform
- E. Hamate
- F. Capitate
- G. Lesser Multangular
- H. Greater Multangular
 - a. Base
 - b. Body
 - c. Head



Clavicle & Pelvis

Left Clavicle (Superior Surface)

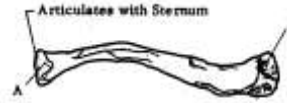
- A. Sternal Extremity
- B. Acromial Extremity



Left Clavicle (superior surface)

Left Clavicle (Inferior Surface)

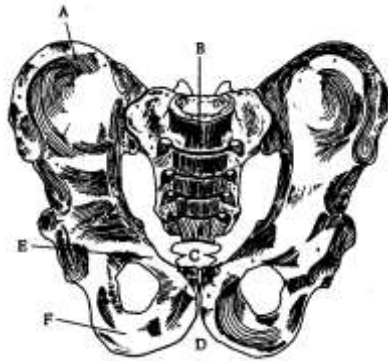
- A. Articulates with cartilage of first rib
- B. Articulates with Acromion of Scapula



Left Clavicle (inferior surface)

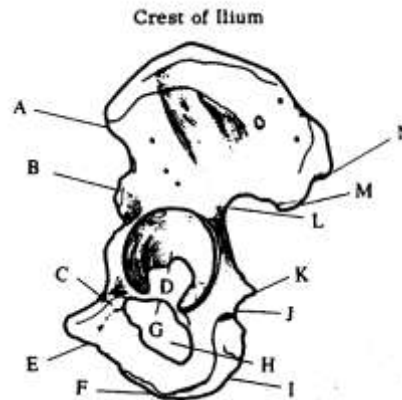
Pelvis

- A. Ilium
- B. Sacrum
- C. Coccyx
- D. Pubic Arch
- E. Pubis
- F. Ischium



Left Innominate

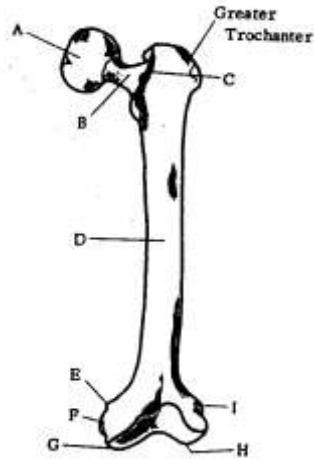
- A. Anterior Superior Spine
- B. Anterior Inferior Spine
- C. Superior Ramus of Pubis
- D. Acetabulum
- E. Inferior Ramus of Pubis
- F. Inferior Ramus of Ischium
- G. Acetabular Notch
- H. Obturator Foramen
- I. Tuberosity of Ischium
- J. Lesser Sciatic Notch
- K. Spine of Ischium
- L. Greater Sciatic Notch
- M. Posterior Inferior Spine
- N. Posterior Superior Spine



Femur, Tibia, Fibula, Patella

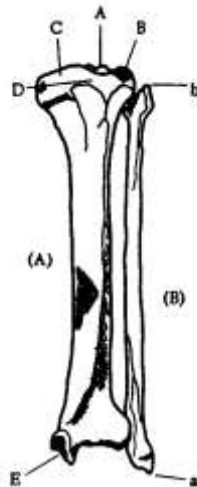
Left Femur (Dorsal View)

- A. Head
- B. Neck
- C. Tubercle
- D. Body
- E. Adductor Tubercle
- F. Medial Epicondyle
- G. Medial Condyle
- H. Lateral Condyle
- I. Lateral Epicondyle



(A) Tibia (Anterior View)

- A. Intercondyloid
- B. Lateral Condyle
- C. Medial Condyle
- D. Tuberosity
- E. Medial Malleolus



(B) Fibula (Anterior View)

- a. Lateral Malleolus
- b. Styloid Process



Patella (Posterior View)

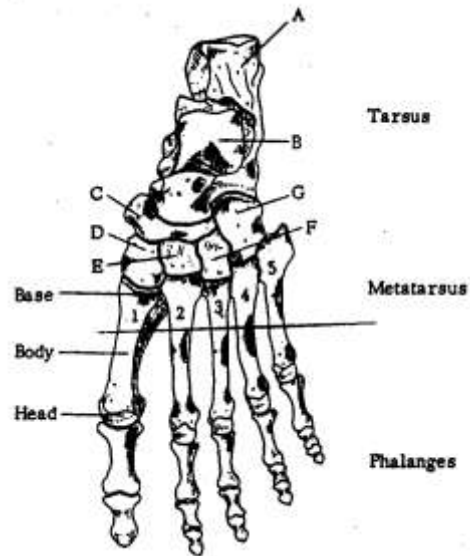
- A. Facet for Medial Condyle
- B. Facet for Articulation with lateral condyle of femur



Foot

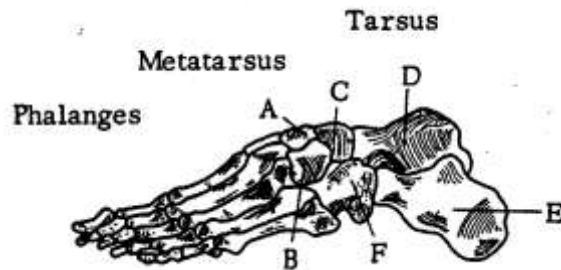
Left Foot (Dorsal Surface)

- A. Calcaneus
- B. Talus
- C. Navicular
- D. First Cuneiform
- E. Second Cuneiform
- F. Third Cuneiform
- G. Cuboid



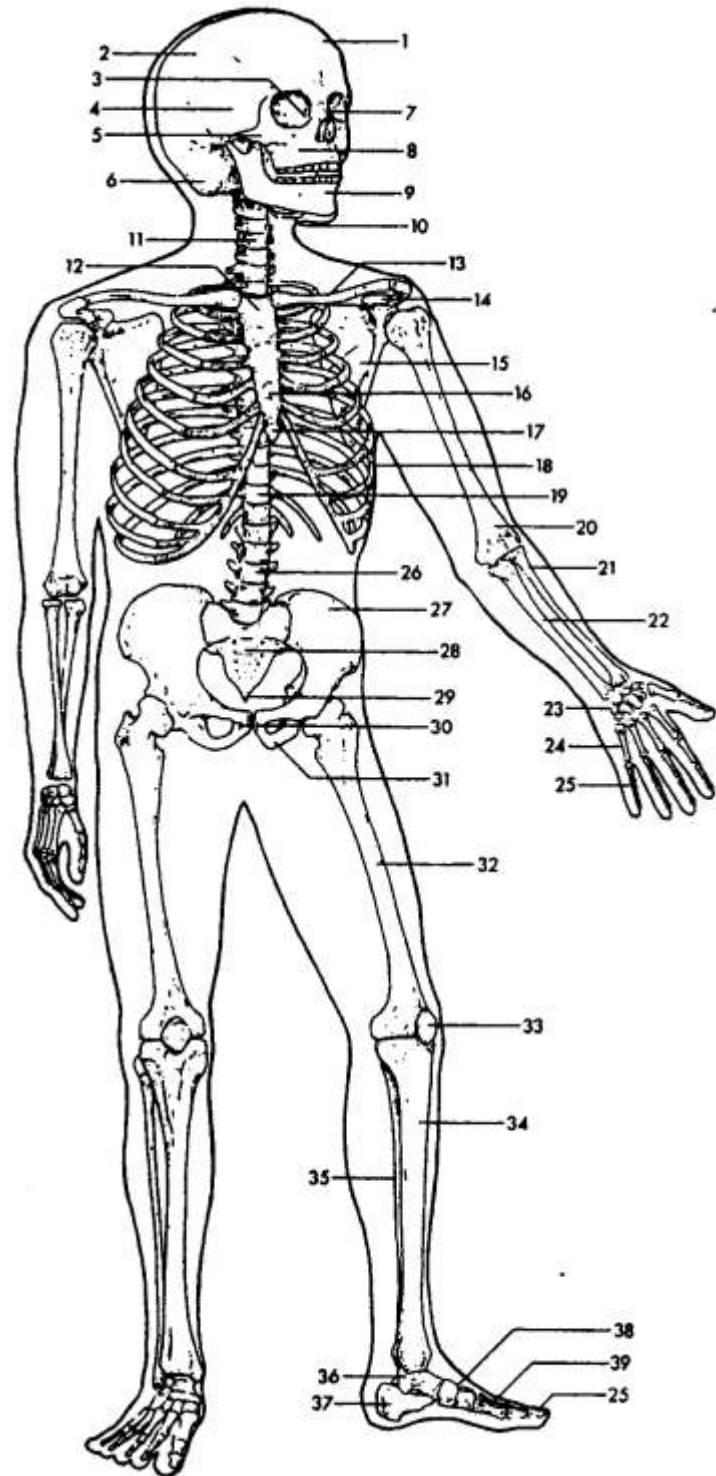
Left Foot (Lateral Aspect)

- A. Second Cuneiform
- B. Third Cuneiform
- C. Navicular
- D. Talus
- E. Calcaneus
- F. Cuboid



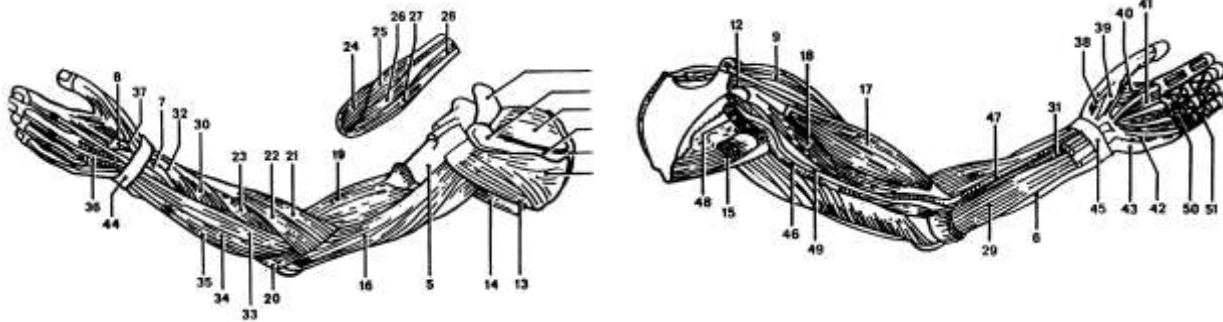
Human Skeleton

1. Frontal
2. Parietal
3. Ethmoid
4. Temporal
5. Zygomatic
6. Occipital
7. Nasal
8. Maxilla
9. Mandible
10. Hyoid
11. Cervical Vertebra (7)
12. Manubrium
13. Clavicle
14. Coracoid
15. Scapula
16. Sternum
17. Xiphoid Process
18. Ribs
19. Thoracic Vertebra (12)
20. Humerus
21. Radius
22. Ulna
23. Carpals
24. Metacarpals
25. Phalanges
26. Lumbar Vertebra (5)
27. Ilium
28. Sacrum (5)
29. Coccyx (3-5)
30. Pubis
31. Ischium
32. Femur
33. Patella
34. Tibia
35. Fibula
36. Talus
37. Calcaneus
38. Tarsals
39. Metatarsals



Muscular System

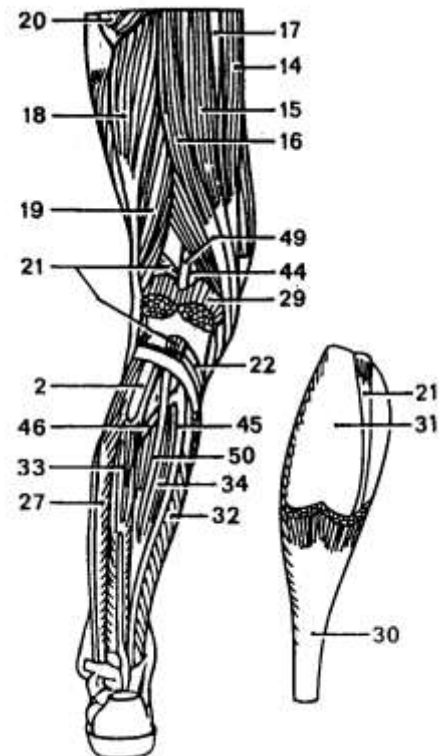
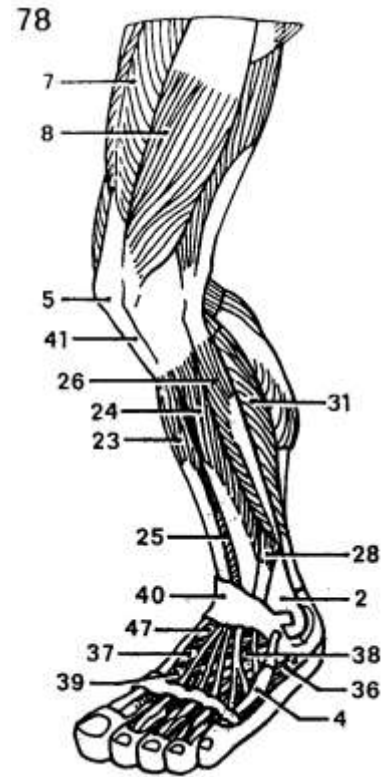
Muscular Arm with Hand



1. Clavicle
2. Acromion
3. Spine of Scapula
4. Scapula
5. Humerus
6. Ulna
7. Radius
8. Metacarpal Bones
9. Deltoid Muscle
10. Supraspinatus Muscle
11. Infraspinatus Muscle
12. Subclavius Muscle
13. Teres Minor Muscle
14. Teres Major Muscle
15. Latissimus Dorsal Muscle
16. Triceps Muscle
17. Biceps (brachii) Muscle
18. Coraco-brachialis Muscle
19. Brachialis Muscle
20. Anconeus Muscle
21. Brachio-radialis Muscle
22. Extensor Carpi Radialis Longus
23. Extensor Carpi Radialis Brevis
24. Pronator Teres Muscle
25. Flexor Carpi Ulnaris Muscle
26. Palmaris Longus Muscle
27. Flexor Carpi Ulnaris Muscle
28. Flexor Digitorum Sublimis
29. Flexor Digitorum Profundus
30. Abductor Pollicis Longus
31. Flexor Pollicis Longus
32. Extensor Pollicis Brevis
33. Extensor Digitorum Communis
34. Extensor Digiti Minimi
35. Extensor Carpi Ulnaris
36. Dorsal Interosseous
37. Extensor Pollicis Longus
38. Abductor Pollicis Brevis
39. Flexor Pollicis Brevis
40. Adductor Pollicis
41. Lumbricales Muscles
42. Flexor Digiti Minimi
43. Abductor Digiti Minimi
44. Extensor Retinaculum
45. Flexor Retinaculum
46. Brachial Artery
47. Radial Artery
48. Brachial Vein
49. Median Nerve
50. Annular Ligaments of Tendon-Sheath
51. Cruciate Ligaments of Tendon-Sheath

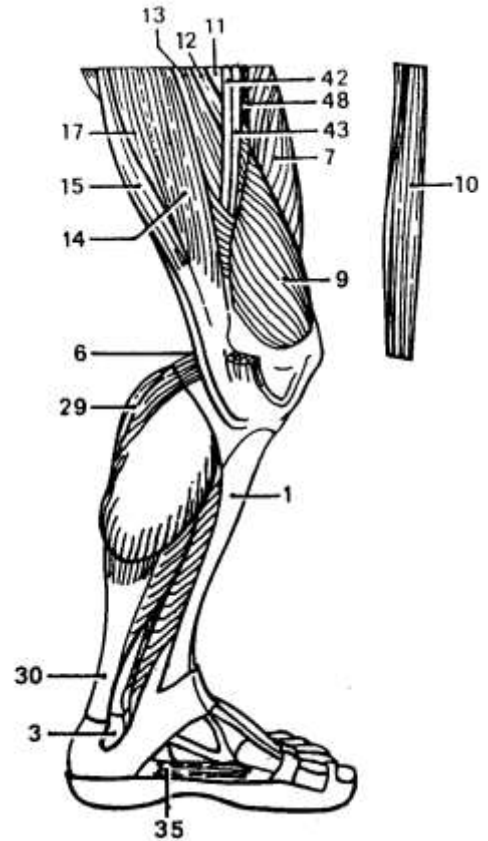
Leg Muscle

1. Tibia, Shinbone
2. Fibula, Calf bone, Peroneal bone
3. Calcaneum, Heel bone
4. Metatarsal bones
5. Patella
6. Popliteal Space
7. Rectus femoris Muscle
8. Vastus Lateralis Muscle
9. Vastus Medialis Muscle
10. Sartorius Muscle
11. Ilio-psoas Muscle
12. Pectineus Muscle
13. Adductor Longus Muscle
14. Gracilis Muscle
15. Semimembranosus Muscle
16. Semitendinosus Muscle
17. Adductor Magnus Muscle
18. Biceps Femoris Muscle (Long head)
19. Biceps Femoris Muscle (Short head)
20. Gluteus Maximus Muscle
21. Plantaris Muscle
22. Popliteus Muscle
23. Tibialis Anterior Muscle
24. Extensor Digitorum Longus
25. Extensor Hallucis Longus
26. Peroneus Longus
27. Peroneus Brevis
28. Peroneus Tertius
29. Gastrocnemius Muscle
30. Calcaneal (Achilles) Tendon
31. Soleus Muscle
32. Flexor Digitorum Longus
33. Flexor Hallucis Longus



Leg Muscle cont...

- 34. Tibialis Posterior Muscle
- 35. Abductor Hallucis Muscle
- 36. Abductor Digiti Minimi Muscle
- 37. Extensor Hallucis Brevis
- 38. Extensor Digitorum Brevis
- 39. Dorsal Interosseous Muscle
- 40. Superior Extensor Retinaculum
- 41. Patellae Ligament
- 42. Femoral Artery
- 43. Deep Femoral Artery
- 44. Popliteal Artery
- 45. Posterior Tibial Artery
- 46. Peroneal Artery
- 47. Dorsal Artery
- 48. Femoral Nerve
- 49. Tibial Nerve
- 50. Sural Nerve



Cartilages of the Larynx (Somso GS 6)



Somso Model GS 6 – Functional Model

1. Thyroid cartilage
 - a. Incisura thyroidea superior
 - b. Incisura thyroidea inferior
 - c. Upper long horn (Cornu superior)
 - d. Lower short horn (Cornu inferius)
2. Cricoid cartilage
3. Cartilage of the epiglottis
4. Arytenoid cartilages
 - e. Processus vocalis
 - f. Processus muscularis
 - g. Cartilage of Santorini
5. Tracheal cartilage
6. Hyoid bone
 - h. Corpus
 - i. Greater horn (Cornu majus)
 - j. Lesser horn (Cornu minus)

Functional Model of the Knee Joint

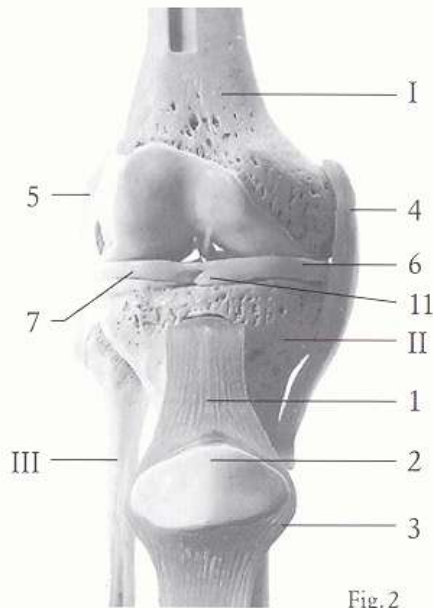


Fig. 2

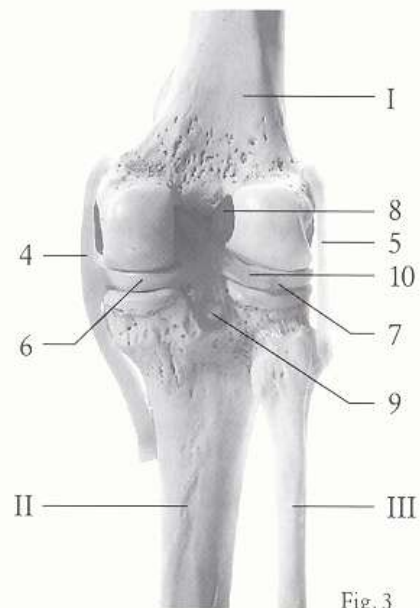


Fig. 3

Explanation of the reference numbers:

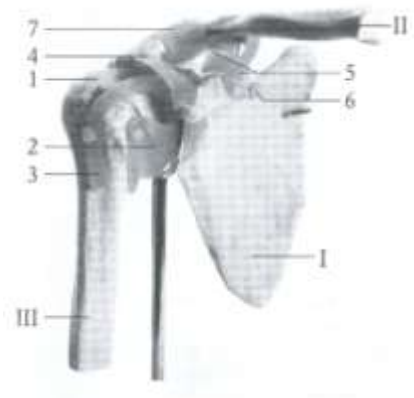
1. **Lig. patellae**, Patellar ligament
 2. **Patella**
 3. **Musc. quadriceps fem.**,
Quadriceps femoris muscle
 4. **Lig. collaterale med.**,
Internal lateral ligament
 5. **Lig. collaterale lat.**,
External lateral ligament
 6. **Meniscus med.**,
Internal semilunar fibro-cartilage
 7. **Meniscus lat.**,
External semilunar fibro-cartilage
 8. **Lig. cruciatum ant.**,
Anterior crucial ligament
 9. **Lig. cruciatum post.**,
Posterior crucial ligament
 10. **Lig. meniscofemorale post.**,
Posterior meniscofemoral ligament
 11. **Lig. transversum genus**,
Transverse ligament of the knee
- I. Femur
II. Tibia
III. Fibula

Functional Model of the Shoulder Joint



Somso Model NS 53 – Functional Model

1. Articular capsule (Capsula articularis)
2. Supplemental ligaments of the articular capsule (Lig. Glenohumeralia)
3. Tendon of the biceps muscle
4. Coracoacromial ligament (Lig. Coracoacromiale)
5. External claviclar ligaments (Lig. Coracoclaviculare)
 - a. Conoid ligament (Lig. Conoideum)
 - b. Trapezoid ligament (Lig. Trapezoideum)
6. Transverse ligament of the scapula (Lig. Transversum scapulae)
7. Lig. Acromioclaviculare
 - I. Scapula
 - II. Clavicle
 - III. Humerus



Shoulder-joint model from the front (ventral)

Functional Model of the Elbow Joint



Somso Model NS 52 – Functional Model

1. Internal or ulnar lateral ligament (Ligamentum collaterale mediale)
2. Radial ligament (Ligamentum radiale)
3. Orbicular ligament (Ligamentum anulare)
4. Bicipital tendon
 - I. Humerus
 - II. Ulna
 - III. Radius



Elbow-joint model from the front (ventral)

Functional Model of the Hip Joint

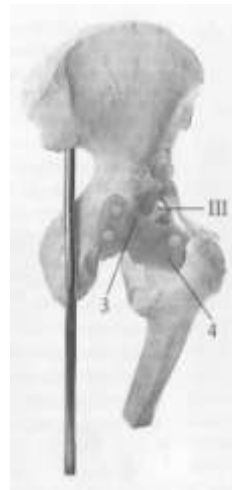


Somso Model NS 51 – Functional Model

1. Ilio-femoral ligament (Ligamentum iliofemorale)
 2. Pubo-femoral ligament (Ligamentum pubofemorale)
 3. Ishio-capsular ligament (Ligamentum ischiofemorale)
 4. Orbicular zone (Zona orbicularis)
 5. Teres femoris ligament (Ligamentum capitis femoris)
- I. Hip bone (Os coxae)
 - II. Femur
 - III. Head of the femur (Caput femoris)



Hip-joint model from
the front (ventral)



Hip-joint model from
the back (dorsal)

Muscles of the Arm with Shoulder Blade (Somo NS 15)

Muscles, Ligaments, and Tendons

1. Supraspinatus muscle (M. supraspinatus)
2. Infraspinatus muscle (M. infraspinatus)
3. Teres major muscle (M. teres major)
4. Teres minor muscle (M. teres minor)
5. Latissimus dorsi muscle (M. latissimus dorsi)
6. Subscapularis muscle (M. subscapularis)
7. Deltoid muscle (M. deltoideus)
8. Pectoralis major muscle (M. pectoralis major)
9. Biceps brachii (M. biceps brachii)
10. Brachialis muscle (M. brachialis)
11. Triceps muscle (M. triceps brachii)
12. Pronator teres muscle (M. pronator teres)
13. Flexor carpi radialis (M. flexor carpi radialis)
14. Palmaris longus muscle (M. vestibul longus)
15. Flexor carpi ulnaris (M. flexor carpi ulnaris)
16. Extensor carpi ulnaris muscle (M. extensor carpi ulnaris)
17. Extensor digitorum muscle (M. extensor digitorum)
18. Extensor carpi radialis brevis muscle (M. extensor carpi radialis brevis)
19. Extensor carpi radialis longus muscle (M. extensor carpi radialis longus)
20. Brachio-radialis muscle (M. brachioradialis)
21. Tendon of the extensor pollicis longus muscle (Tendon of m. extensoris pollicis longi)
22. Extensor pollicis brevis muscle (M. extensor pollicis brevis)
23. Abductor pollicis longus muscle (M. abductor pollicis longus)
24. Flexor digitorum sublimis (M. flexor digitorum superficialis)
25. Supinator muscle (M. supinator)
26. Volar fascia (Fascia antebrachii)
27. Extensor retinaculum (Retinaculum extensorum)
28. Flexor pollicis brevis (M. flexor pollicis brevis)
29. Abductor pollicis brevis muscle (M. abductor pollicis brevis)
30. Adductor pollicis muscle (M. adductor pollicis)
31. Opponens pollicis muscle (M. opponens pollicis)
32. Opponens digiti minimi muscle (M. opponens digiti minimi)



Somso Model NS 15

Muscles of the Arm with Shoulder Blade cont...

Muscles, Ligaments, and Tendons cont...

33. Flexor digiti minimi (M. flexor digiti minimi brevis)
34. Abductor digiti minimi muscle (M. abductor digiti minimi)
35. Lumbrical muscles (Mm. lumbricales)
36. Dorsal interosseous muscles of the hand (Mm. interossei dorsales)
37. Flexor retinaculum of upper limb (Lig. Carpi transversum)
38. Tendon sheath (Vagina fibrosa digitorum manus)
39. Crucial strings of the tendon sheath (Pars cruciformis vaginae fibrosae)
40. Annular strings of the tendon sheath (Pars anularis vaginae fibrosae)
41. Tendon of the flexor pollicis longus (Tendo m. flexoris pollicis longi)
42. Tendons of the flexor digitorum sublimis (Tendines m. flexoris digitoris superficialis)
43. Tendons of the flexor digitorum profundus (Tendines m. flexoris digitoris profundus)
44. Chiasma tendinum

Arteries

45. Axillary arteries (A. axillaries)
46. Subscapular artery (A. subscapularis)
47. Circumflex scapular artery (A. circumflexa scapulae)
48. Posterior circumflex humeral artery (A. circumflexa humeri posterior)
49. Brachial artery (A. brachialis)
50. Profunda brachii artery (A. profunda brachii)
51. Ramus deltoideus
52. Medial collateral artery (A. collateralis media)
53. Radial collateral artery (A. collateralis radialis)
54. Superior ulnar collateral artery (A. collateralis ulnaris superior)
55. Radial artery (A. radialis)
56. Ramus vestibul superficialis
57. Ramus carpeus dorsalis
58. A. metacarpea dorsalis
59. Ulnar artery (A. ulnaris)
60. Common interosseous artery (A. interossea communis)
61. Posterior interosseous artery (A. interossea posterior)
62. Median artery (A. mediana)
63. Arcus vestibul superficialis
64. Palmar digital arteries (A. Digitales palmares communes)
65. Palmar digital arteries (A. Digitales palmares propriae)
66. Dorsal digital arteries (A. Digitales dorsales)

Muscles of the Arm with Shoulder Blade cont...

Nerves

67. Plexus brachialis
68. Axillary nerve (N. axillaris)
69. Medial cutaneous nerve of the forearm (N. cutaneous antebrachii medialis)
70. Musculo-cutaneous nerve (N. musculocutaneous)
71. Median nerve (N. medianus)
72. Anterior interosseous nerve (N. interosseous anterior)
73. Ramus vestibul (N. ulnaris)
74. Ulnar nerve (N. ulnaris)
75. Ramus vestibul (N. ulnaris)
76. Ramus dorsalis (N. ulnaris)
77. Ramus profundus
78. Ramus superficialis
79. N. digitalis vestibul communis
80. Radial nerve (N. radialis)
81. Ramus superficialis (N. radialis)

Bones

82. Scapula
83. Spine of the scapula (Spina scapulae)
84. Coracoid process (Processus coracoideus)
85. Clavicle (Clavicula)
86. Humerus
87. Medial epicondyle of the humerus (Epicondylus medialis)
88. Lateral epicondyle of the humerus (Epicondylus lateralis)
89. Olecranon (tip of the elbow)
90. Ulna
91. Radius
92. Pisiform bone (Os pisiforme)
93. Carpus
94. Metacarpal bone (Ossa metacarpalia)
95. Phalanx I – II – III (Ossa digitorum manus, phalanx proximalis media and distalis)

Muscles of the Leg with Base of Pelvis (Somso NS 10)

Muscles

1. Psoas major muscle
2. Iliacus muscle
3. Gluteus maximus muscle
4. Gluteus medius muscle
5. Piriformis muscle
6. Obturator internus muscle
7. Gemellus muscle
 - a. Superior gemellus muscle
 - b. Inferior gemellus muscle
8. Quadratus femoris muscle
9. Tensor fasciae latae muscle
10. Sartorius muscle
11. Quadriceps femoris muscle
 - a. Rectus femoris muscle
 - b. Vastus medialis muscle
 - c. Vastus lateralis muscle
 - d. Vastus intermedius muscle
 - e. Common tendon of the muscles
12. Pectineus muscle
13. Adductor longus muscle
14. Adductor magnus muscle
15. Gracilis muscle
16. Semitendinosus muscle
17. Semimembranosus muscle
18. Biceps femoris
 - a. Caput longum
 - b. Caput breve
19. Tibialis anterior muscle
20. Extensor hallucis longus muscle
21. Extensor digitorum longus muscle
22. Fibularis longus muscle (peroneus)
23. Fibularis brevis muscle (peroneus)
24. Triceps surae muscle
 - a-b. Gastrocnemius muscle
 - a. Caput mediale
 - b. Caput laterale
 - c. Soleus muscle
 - d. Achilles tendon
25. Plantaris muscle
26. Popliteus muscle
27. Flexor digitorum longus
28. Tibialis posterior muscle
29. Flexor hallucis longus
30. Extensor hallucis brevis muscle
31. Extensor digitorum brevis muscle
32. Abductor hallucis muscle
33. Flexor hallucis brevis
34. Abductor digiti minimi muscle
35. Flexor digiti minimi brevis
36. Flexor digitorum brevis
37. Lumbrical muscles
38. Dorsal interosseous muscles of the foot



Somso Model NS 10

Muscles of the Leg with Base of Pelvis cont.

Vessels

39. External iliac artery
 - a. External iliac vein
40. Internal iliac artery
41. Obturator artery
42. Superior gluteal artery
43. Inferior gluteal artery
44. Internal pudendal artery
45. Femoral artery
 - a. Femoral vein
46. Profunda femoris artery
47. Descending branch of the lateral circumflex artery
48. Ascending branch of the lateral circumflex artery
49. A. circumflexa femoris medialis ramus profundus
50. Perforating arteries
51. Popliteal artery
52. Lateral superior genicular artery
53. Medial superior genicular artery
54. Lateral inferior genicular artery
55. Medial inferior genicular artery
56. Posterior tibial artery
57. Anterior tibial artery
58. Peroneal artery

Nerves

59. Femoral nerve
60. Saphenous nerve
61. Obturator nerve
62. Plenus sacralis
63. Sciatic nerve
64. Medial popliteal nerve & posterior tibial nerve
65. Common peroneal nerve
66. Deep peroneal nerve
67. Superficial peroneal nerve

Bones

68. Fifth lumbar vertebra
69. Sacrum
70. Coccyx
71. Iliac crest
72. Anterior superior iliac spine
73. Pubic bone
74. Pubic symphysis
75. Ischial spine
76. Ischial tuberosity
77. Greater trochanter
78. Lesser trochanter
79. Femur
80. Medial epicondyle of the femur
81. Lateral epicondyle of the femur
82. Kneecap (Patella)
83. Shin-bone (Tibia)
84. Medial malleolus
85. Head of fibula
86. Fibula
87. Lateral malleolus
88. Heel bone (Calcaneus)
89. Navicular bone of the foot
90. I. Metatarsal bone
91. V. Metatarsal bone

Male Muscle Figure (Somso AS 3)

Muscles

1. Frontal ventor of occipito-frontal muscle
2. Orbicularis oculi muscle
3. Nasal muscle
4. Levator muscle of superior lip
5. Greater cygomatic muscle
6. Orbicularis oris muscle
7. Depressor muscle of the mouth
8. Superior auricular muscle
9. Posterior auricular muscle
10. Occipital ventor of occipito-frontal muscle
11. Sternocleidomastoid muscle
12. Scaleni muscles
13. Levator muscle of scapula
14. Trapezial muscle
15. Infraspinous muscle
16. Latissimus dorsi muscle
17. Greatest gluteal muscle
18. Deltoid muscle
19. Serratus anterior muscle
20. Pectoralis major muscle
21. External oblique muscle of abdomen
22. Rectus abdominis muscle
23. Sheath of straight muscle of abdomen
24. Triceps muscle
25. Biceps muscle
26. Extensor carpi radialis longus muscle
27. Extensor digitorum muscle
28. Retinaculum of the extensors
29. Extensor pollicis brevis muscle
30. Brachioradial muscle
31. Sartorius muscle
32. Rectus femoris muscle
33. Pectineal muscle
34. Gracilis muscle
35. Adductor longus muscle
36. Biceps muscle of femur
37. Semitendinous muscle
38. Semimembranous muscle
39. Gastrocnemial muscle
40. Soleus muscle
41. Calcanean tendon
42. Extensor digitorum longus muscle
43. Tibialis anterior muscle
44. Extensor digitorum brevis muscle
45. Long peroneal muscle
46. Inferior retinaculum of extensor muscle



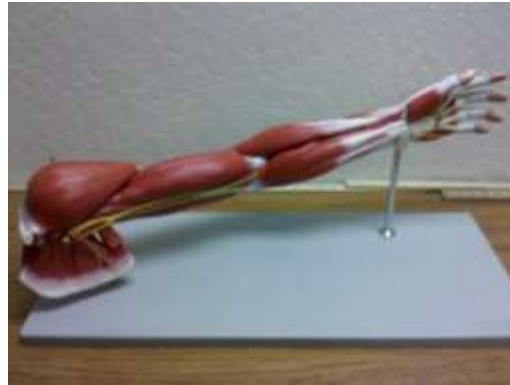
Somso Model AS 3

Bones

- a. Skull
- b. Clavicle
- c. Anterior superior iliac spine
- d. Popliteal
- e. Patella
- f. Tibia
- g. Medial malleolus
- h. Lateral malleolus
- i. Calcaneus (heel bone)

Muscles of the Human Arm (Altay 6000.31)

7 Parts



1. Clavicle
2. Scapula
3. Spine of scapula
4. Acromion of scapula
5. Coracoid process
6. Subscapularis muscle
7. Subclavius muscle
8. Latissimus dorsi muscle
9. Pectoralis minor muscle
10. Supraspinatus muscle
11. Infraspinatus muscle
12. Teres minor muscle
13. Teres major
14. Deltoid
15. Humerus
16. Biceps brachii muscle
 - a. Long head
 - b. Short head
17. Coracobrachialis muscle
18. Brachialis muscle
19. Brachial artery
20. Median nerve
21. Ulnar nerve
22. Triceps brachii muscle
 - a. Medial head
 - b. Long head
 - c. Lateral head
23. Olecranon
24. Radial nerve
25. Profunda brachii artery
26. Medial intermuscular septum
27. Brachioradialis muscle
28. Pronator teres muscle
29. Flexor carpi radialis muscle
30. Palmaris longus muscle
31. Flexor carpi ulnaris muscle
32. Flexor digitorum superficialis m.
33. Flexor pollicis longus muscle
34. Flexor digitorum profundus m.
35. Pronator quadrates muscle
36. Radial artery
37. Ulnar artery
38. Common interosseous artery
39. Anterior interosseous artery
40. Anterior interosseous nerve
41. Superficial palmar branch
42. Extensor carpi radialis longus m.
43. Extensor carpi radialis brevis m.
44. Extensor digitorum muscle
45. Extensor digiti minimi muscle
46. Extensor carpi ulnaris muscle
47. Anconeus muscle
48. Supinator muscle
49. Abductor pollicis longus muscle
50. Extensor pollicis brevis muscle
51. Extensor pollicis longus muscle
52. Extensor indicis muscle
53. Ulna
54. Radius
55. Recurrent interosseous artery
56. Posterior interosseous artery
57. Posterior interosseous nerve
58. Abductor pollicis brevis muscle
59. Flexor pollicis brevis muscle
60. Flexor digitorum superficialis tendon
61. Lumbrical muscles
62. Flexor digiti minimi brevis muscle
63. Abductor digiti minimi muscle
64. Superficial palmar arch
65. Deep palmar branch
66. Deep palmar arch
67. Common palmar digital artery
68. Proper palmar digital artery
69. Common palmar digital nerve
70. Proper palmar digital nerve
71. Adductor pollicis muscle
72. Palmar interosseous muscles
73. Palmar metacarpal artery
74. Metacarpal bone (II)
75. Tendon of extensor digitorum
76. Dorsal aponeurosis (middle finger)
77. Dorsal interosseous muscles
78. Dorsal metacarpal artery
79. Dorsal digital artery

Head & Neck Musculature (Altay 6030.10)



- | | | |
|------------------------------------------------|-----------------------------------------|------------------------------------|
| 1. Frontal belly of occipitofrontalis m. | 25. Sternocleidomastoid muscle | 51. External intercostales muscles |
| 2. Epicranial aponeurosis | 26. Anterior belly of digastric muscle | 52. Intercostales interni muscles |
| 3. Occipital belly of occipitofrontalis muscle | 27. Posterior belly of digastric muscle | 53. Hyoid bone |
| 4. Orbicularis oculi muscle | 28. Stylopharyngeus muscle | 54. Thyroid cartilage |
| 5. Depressor supercilii muscle | 29. Mylohyoid muscle | 55. Thyroid gland |
| 6. Procerus muscle | 30. Hyoglossus muscle | 56. Common carotid artery |
| 7. Nasalis muscle | 31. Sternohyoid muscle | 57. Internal carotid artery |
| 8. Orbicularis muscle | 32. Superior belly of omohyoid muscle | 58. External carotid artery |
| 9. Levator labii superior alaeque nasi muscle | 33. Inferior belly of omohyoid muscle | 59. Superior thyroid artery |
| 10. Levator labii superior muscle | 34. Geniohyoid muscle | 60. Lingual artery |
| 11. Zygomaticus minor muscle | 35. Sternothyroid muscle | 61. Facial artery |
| 12. Zygomaticus major muscle | 36. Thyrohyoid muscle | 62. Occipital artery |
| 13. Risorius muscle | 37. Scalenus anterior muscle | 63. Posterior auricular artery |
| 14. Depressor anguli oris muscle | 38. Scalenus medius muscle | 64. Superficial temporal artery |
| 15. Depressor labii inferior muscle | 39. Posterior scalene muscle | 65. Maxillary artery |
| 16. Mentalis muscle | 40. Levator scapulae muscle | 66. Subclavian artery |
| 17. Buccinator muscle | 41. Splenius capitis muscle | 67. Vertebral artery |
| 18. Auricularis superior muscle | 42. Semispinalis capitis muscle | 68. Thyrocervical trunk |
| 19. Auricularis anterior muscle | 43. Rhomboid minor muscle | 69. Inferior thyroid artery |
| 20. Auricularis posterior muscle | 44. Rhomboid major muscle | 70. Transverse cervical artery |
| 21. Masseter muscle | 45. Trapezius muscle | 71. Suprascapular artery |
| 22. Temporalis muscle | 46. Pectoralis major muscle | 72. Internal thoracic artery |
| 23. Medial pterygoid muscle | 47. Deltoid muscle | 73. Axillary artery |
| 24. Lateral pterygoid muscle | 48. Pectoralis minor muscle | 74. Superior thoracic artery |
| | 49. Supraspinatus muscle | 75. Thoracoacromial artery |
| | 50. Serratus anterior muscle | 76. Lateral thoracic artery |

Cardiovascular/Respiratory System

Two Section Heart (HE-1010)



Model HE-1010

External Anterior Aspect

1. Aorta
2. Brachiocephalic trunk (innominate artery)
3. Left common carotid artery
4. Left subclavian artery
5. Pulmonary trunk
6. Ligamentum arteriosum
7. Left pulmonary artery
8. Right auricle
10. Left auricle
- 11/12. Left/Right Ventricles (respectively)
13. Right coronary artery
14. Left coronary artery
15. Circumflex branch, left coronary artery
16. Great cardiac vein
17. Small cardiac vein
18. Anterior cardiac veins
19. Anterior interventricular descending branch, left coronary artery
20. Oblique vein of left atrium

External Posterior Aspect

9. Superior vena cava
21. Marginal branch, right coronary artery
22. Coronary sinus
23. Middle cardiac vein
24. Posterior interventricular descending branch, right coronary artery

25. Posterior vein of left ventricle
26. Inferior vena cava
27. Left pulmonary veins
28. Right pulmonary veins
29. Right pulmonary artery
30. Left atrium
31. Right atrium

Internal Anterior Aspect

1. Mitral valve
2. Aortic valve
3. Orifice left coronary artery
4. Orifice right coronary artery
5. Pulmonary valve
6. Left & right anterior papillary muscle
7. Medial (conal) papillary muscle
8. Moderator band
9. Supraventricular crest
10. Trabeculae carneae

Internal Posterior Aspect

1. Tricuspid valve
2. Muscular interventricular septum
3. Left & right posterior papillary muscle
4. Chordae tendineae
5. Membranous septum
6. Right anterior papillary muscle
7. Pectinate muscle

Human Heart & Mediastinum



Model 56-6818 (5X Magnification)

1. Aorta
2. Brachiocephalic (innominate) artery
3. Left common carotid artery
4. Left subclavian artery
5. Superficial cardiac plexus
6. Left vagus nerve
7. Recurrent laryngeal nerve
8. Ligamentum arteriosus
9. Right pulmonary artery
10. Left bronchus
11. Left bronchial artery
12. Pulmonary nerve plexus
13. Intercostal arteries
14. Thoracic duct
15. Azygos vein
16. Esophagus
17. Right vagus nerve
18. Right bronchial artery
19. Trachea
20. Right main bronchus
21. Right pulmonary artery
22. Tracheobronchial lymph nodes
23. Right ventricle
24. Left ventricle
25. Left atrium
26. Right atrium
27. Right auricle
28. Conus arteriosus
29. Left auricle
30. Apex
31. Pulmonary artery
32. Aorta
33. Pericardium
34. Superior vena cava
35. Right coronary artery
36. Anterior cardiac veins
37. Left coronary artery
38. Anterior interventricular artery
39. Circumflex artery
40. Great cardiac vein
41. Marginal branch of left coronary artery
42. Oblique vein of left atrium
43. Coronary sinus
44. Dorsal interventricular vein
45. Left dorsal ventricular vein
46. Inferior vena cava
47. Azygos vein
48. Left pulmonary veins
49. Right pulmonary veins
50. Marginal branch of right coronary artery
51. Coronary sinus
52. Anterior interventricular sulcus

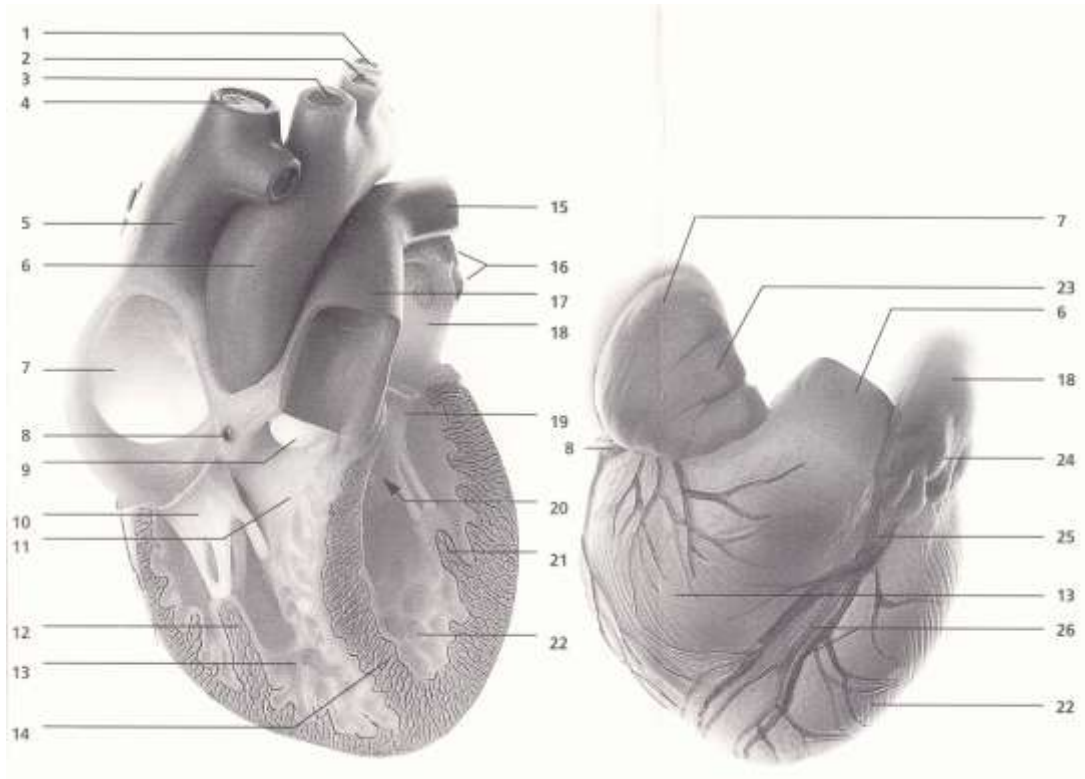
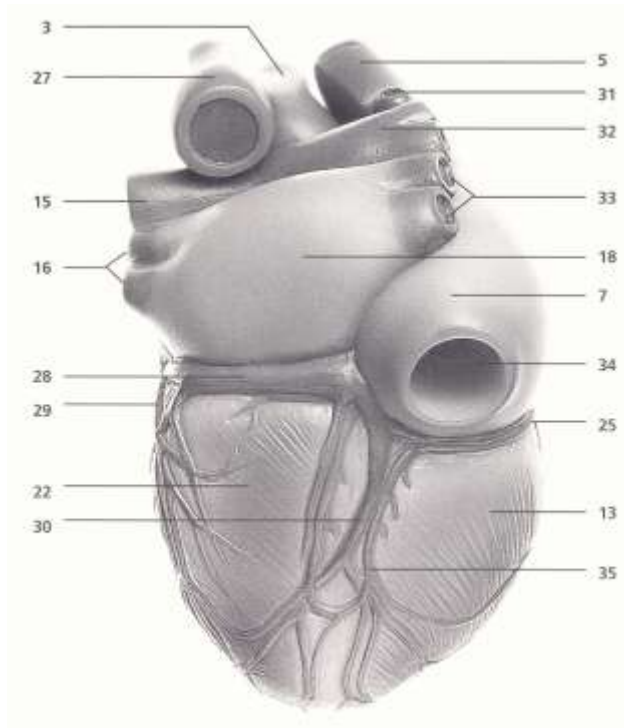
The Heart (Somso HS 26)



Somso Model HS 26 (4 parts)

- A. Apex
- B. Interventricular septum
 - I. Right auricle
 - II. Left auricle
 - a. Right auricular appendage
 - b. Left auricular appendage
 - III. Right ventricle
 - IV. Left ventricle
 - c. Superior vena cava
 - d. Inferior vena cava
 - e. Tricuspid valve
 - f. Pulmonary artery
 - g. Pulmonary veins
 - h. Bicuspid valve
 - i. Aorta
 - k. Semilunar valve
 - A. Tendinous cord
 - 2. Papillary muscles
 - 3. Ascending branch of aorta
 - 4. Right coronary artery
 - 5. Left coronary artery
 - 6. Great heart-vein
 - 7. Arch of aorta

Model of Heart (ALS 300)



Model of Heart Cont...

ALS 300

1. Left subclavian artery
2. Left common carotid artery
3. Right brachiocephalic artery
4. Right & left brachiocephalic vein
5. Superior vena cava
6. Ascending branch of the aorta
7. Right atrium
8. Right coronary artery
9. Pulmonary valve
10. Right tricuspid valve
11. Superior infundibulum
12. Superior right papillary muscles
13. Right ventricle
14. Ventricular septum
15. Left branch of the pulmonary artery
16. Left pulmonary veins
17. Pulmonary artery
18. Left atrium
19. Bicuspid valve or mitral valve
20. Aortic valve
21. Superior left papillary muscles
22. Left ventricle
23. Right auricle of the heart
24. Left auricle of the heart
25. Right coronary artery
26. Superior branch of the left coronary artery
27. Aortic arch
28. Coronary sinus
29. Posterior branch of the left coronary artery
30. Posterior coronary vein
31. Azygous vein
32. Right pulmonary artery
33. Right pulmonary veins
34. Inferior vena cava
35. Posterior branch of the right coronary artery

The Heart (HS 4)



Somso Model HS 4 (2 parts)

- A. Apex
- B. Interventricular septum
- I. Right auricle
- II. Left auricle
 - a) Right auricular appendage
 - b) Left auricular appendage
- III. Right ventricle
- IV. Left ventricle
 - c) Superior vena cava
 - d) Inferior vena cava
 - e) Tricuspid valve
 - f) Pulmonary artery
 - g) Pulmonary vein
 - h) Bicuspid valve
 - i) Aorta
 - k) Semilunar valves
- 1. Tendinous cord
- 2. Papillary muscles
- 3. Ascending branch of aorta
- 4. Right coronary artery
- 5. Left coronary artery
- 6. Coronary Sinus
- 7. Arch of aorta

Vascular Arm



Model ZKJ-688-E

Arteries

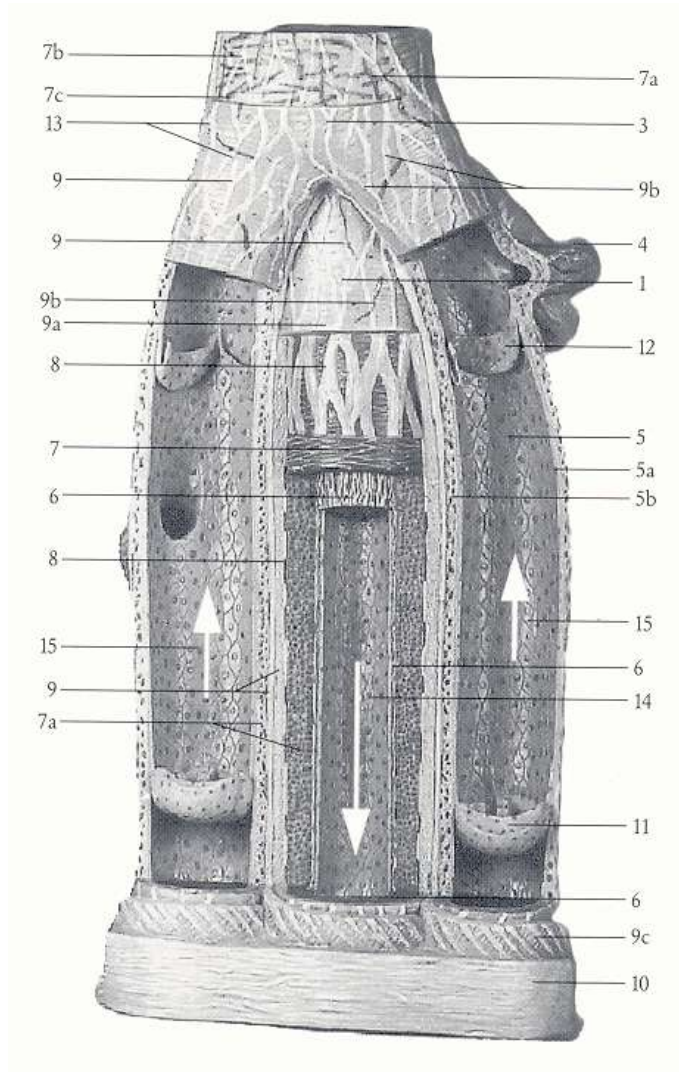
1. axillary
2. humeral circumflex
3. brachial
4. brachial profunda
5. superior ulnar collateral
6. inferior ulnar collateral
7. anterior ulnar recurrent
8. radial
9. ulnar
10. anterior interosseous
11. posterior interosseous
12. deep palmar arch
13. superficial palmar arch
14. middle collateral
15. radial collateral

Veins

16. median
17. vestibul
18. axillary
19. median cubital
20. cephalic
21. accessory cephalic

Fine Structure of the Artery & Veins (Somso HS 25)

1. Artery
2. Artery Exit
3. Vein
4. Vein Exit
5. Intima
 - a. Endothelium
 - b. Fenestrated Layer
6. Membrana Elastica Interna
7. Media
 - a. Smooth Muscle Cells
 - b. Collagenous Fibers
 - c. Elastic Fibers
8. Membrana Elastica Externa
9. Adventitia
 - a. Collagenous Fibers
 - b. Elastic Fibers
 - c. Figure-of-eight turns of the Collagenous Fibers
10. Common Connective Tissue Sheath for Artery & Vein
11. Valve of the vein, closed
12. Valve of the vein, open
13. Muscular cells in the adventitia
14. Direction of blood flow in the artery
15. Direction of blood flow in vein



Somso HS 25

Respiratory Organs & Heart

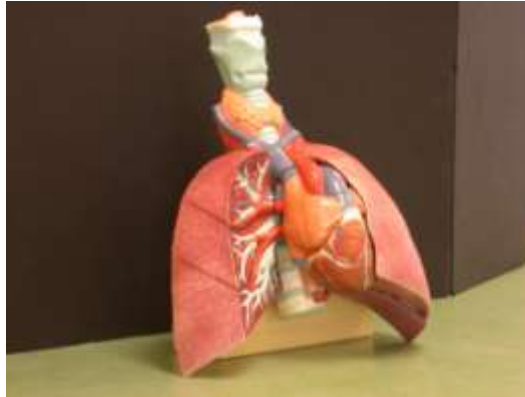
1. Hyoid bone
2. Greater horn of hyoid bone
3. Lesser horn of hyoid bone
4. Median thyrohyoid ligament
5. Lateral thyrohyoid ligament
6. Thyrohyoid membrane
7. Thyrohyoid cartilage
8. Superior horn of thyroid cartilage
9. Inferior horn of thyroid cartilage
10. Epiglottis
11. Arytenoid cartilage
12. Cricoid cartilage
13. Cricothyroid ligament
14. Cricotracheal ligament
15. Cricothyroid muscle
16. Thyroid gland
17. Tracheal cartilages
18. Vocal cords
19. Esophagus
20. Trachea
21. Bifurcation of trachea
22. Right bronchus
23. Left bronchus
24. Right lung
25. Left lung
26. Heart
27. Right atrium
28. Left atrium
29. Right ventricle
30. Left ventricle
31. Bicuspid valve
32. Tricuspid valve
33. Semilunar valve of pulmonary artery
34. Semilunar valve of aorta
35. Aorta
36. Superior vena cava
37. Inferior vena cava
38. Pulmonary artery
39. Pulmonary vein
40. Right coronary artery
41. Left coronary artery



Model #192, A42

42. Anterior coronary veins
43. Posterior coronary veins
44. Coronary sinus
45. Right innominate vein
46. Left innominate vein
47. Right subclavian vein
48. Right jugular vein
49. Left subclavian vein
50. Left jugular vein
51. Right subclavian artery
52. Right carotid artery
53. Left subclavian artery
54. Left carotid artery
55. Aortic arch
56. Thoracic/Descending aorta
57. Thoracic vertebra
58. Intervertebral disc

Lungs, Larynx & Heart (C 243)



Model C 243

1. Hyoid bone
2. Thyroid cartilage
3. Cricoid cartilage
4. Trachea
5. Thyroid gland
6. Median thyroid ligament

I. Lung

- a. Upper lobe
- b. Right middle lobe
- c. Lower lobe

I. Lung

- d. Upper lobe
- e. Right middle lobe
- f. Lower lobe

III. Heart with arteries

1. Right atrium
2. Right ventricle
3. Left atrium
4. Left ventricle
 - a. Right auricle of the heart
 - b. Left auricle of the heart
 - c. Bicuspid valve
 - d. Tricuspid valve
 - e. Valve of pulmonary artery
 - f. Papillary muscle
 - g. Aortic valve
5. Aorta
6. Common carotid artery
7. Common carotid artery
8. Subclavian artery
9. Thoracic aorta
10. Superior vena cava
11. Internal jugular vein
12. Subclavian vein
13. Pulmonary veins
14. Pulmonary artery
15. Inferior vena cava
16. Great cardiac vein
17. Left coronary artery
18. Esophagus
19. Thoracic vertebrae

Lungs with Heart, Diaphragm, & Larynx (Somso HS 8)

- A. Larynx
 - 1. Tongue bone
 - 2. Thyroid cartilage
 - 3. Cricoid cartilage
 - 4. Epiglottis
 - 5. Arytenoid cartilage
- B. Thyroid Gland
- C. Trachea
 - 6. Right tracheal branch
 - 7. Left tracheal branch
 - 8. Bifurcation
 - 9. Crico-tracheal ligament
- D. Esophagus
 - 10. Aorta
- E. Lungs
 - 11. Upper lobe (right lung)
 - 12. Middle lobe (right lung)
 - 13. Lower lobe (right lung)
 - 14. Upper lobe (left lung)
 - 15. Lower lobe (left lung)
- F. Heart
 - 16. Right auricle
 - 17. Left auricle
 - 18. Right auricular appendage
 - 19. Left auricular appendage
 - 20. Right ventricle
 - 21. Left ventricle
 - 22. Vena cava superior
 - 23. Vena cava inferior
 - 24. Pulmonary artery
 - 25. Tricuspid valve
 - 26. Semilunar valves
 - 27. Pulmonary veins
 - 28. Bicuspid valve
 - 29. Semilunar valves
 - 30. Right coronary artery
 - 31. Left coronary artery
 - 32. Common carotid artery
 - 33. Internal jugular vein
- G. Diaphragm



Somso HS 8

Lung with Alveoli (Somso HS 23)



Somso Model HS 23

1. Intra-pulmonary bronchi
2. Non-cartilaginous bronchioles
3. Respiratory bronchioles
4. Alveoli
5. Mucous membrane
6. Elastic fibers
7. Smooth muscle
8. Pulmonary plexus
9. Mucous glands of the bronchi
10. Fibro-cartilaginous layer
11. Pulmonary pleura
12. Limiting membranes
13. Dense capillaries
14. Collagenous fibers
15. Elastic fibers
16. Epithelium
17. Bronchial vein plexus
18. Pulmonary vein
19. Pulmonary artery
20. Bronchial artery
21. Anastomosis between bronchial artery & pulmonary vein
22. Alveolar capillary network
23. Anastomosis of an obstructed artery with pulmonary vein
24. Dense capillary network
25. Anastomosis between pulmonary artery & vein

Lung Apparatus



This apparatus demonstrates how changes in pressure (caused by movement of the diaphragm) are used for respiration. The unit consists of a plastic bell chamber, a large rubber diaphragm with handle, a rubber stopper with a Y-shaped glass tube, and two balloons that act as lungs.

THEORY

Breathing in, with the inrush of air through the nostrils or mouth, gives the impression that there exists some system within the mouth or nose that sucks air in. It was at one time believed that the lungs were a sort of pump, which moved air in and out of the body. In reality, the lungs are merely passive, flexible sacks, which provide a large surface area for the absorption of oxygen by the blood. The movement of air into and out of the lungs is effected by the diaphragm and the muscles of the rib cage. While the diaphragm and the rib cage are each capable of maintaining air movement independently, the diaphragm is normally responsible for nearly 75% of the air movement.

Respiration occurs due to pressure changes with the rib cage. The diaphragm is pulled down and the rib cage is expanded slightly. This causes a slightly lower pressure within the chest cavity, and the lungs expand; air from the atmosphere rushes into the lungs to equalize the pressure. When the muscles of the diaphragm and the rib cage are relaxed the pressure is increased in the lungs, and the air rushes out.

The muscle movement and resulting pressure changes are fairly small, the diaphragm moving, on average, about $\frac{2}{3}$ of an inch during quiet breathing and nearly three inches during deep breathing. A pressure on the chest of about 2 pounds per square inch is sufficient to force the air out of the lungs. It may be noted that under water this pressure is reached at a depth of about 9 inches, and that below this depth the muscles of the diaphragm and chest are unable to maintain respiration.

In the movies one occasionally sees the hero slip underwater and breathe through a straw or reed until the bad guys have gone elsewhere. However, unless the depth of water is less than 9 inches the feat is impossible. And even at a shallower depth the difficulty of working against the water pressure would make such an undertaking difficult and very strenuous.

In addition to the modest pressure changes involved, the volume of air is relatively small. At rest the average adult breathes in 9 to 12 pints of air each minute, at a rate of 10 to 14 breaths per minute. Each inhalation contains about 1 pint of air. In one day a person breathes in roughly 530 cubic feet of air, or a cube eight feet on a side!

OPERATION

Before using the demonstration unit, make sure that the balloons; are deflated when the diaphragm is relaxed. To do this, remove the rubber stopper and pull the diaphragm out, increasing the volume of the bell jar, while holding the diaphragm, and any air in the balloons will be forced out. To ensure a good seal for the rubber stopper, twist it slowly while forcing it into the neck.

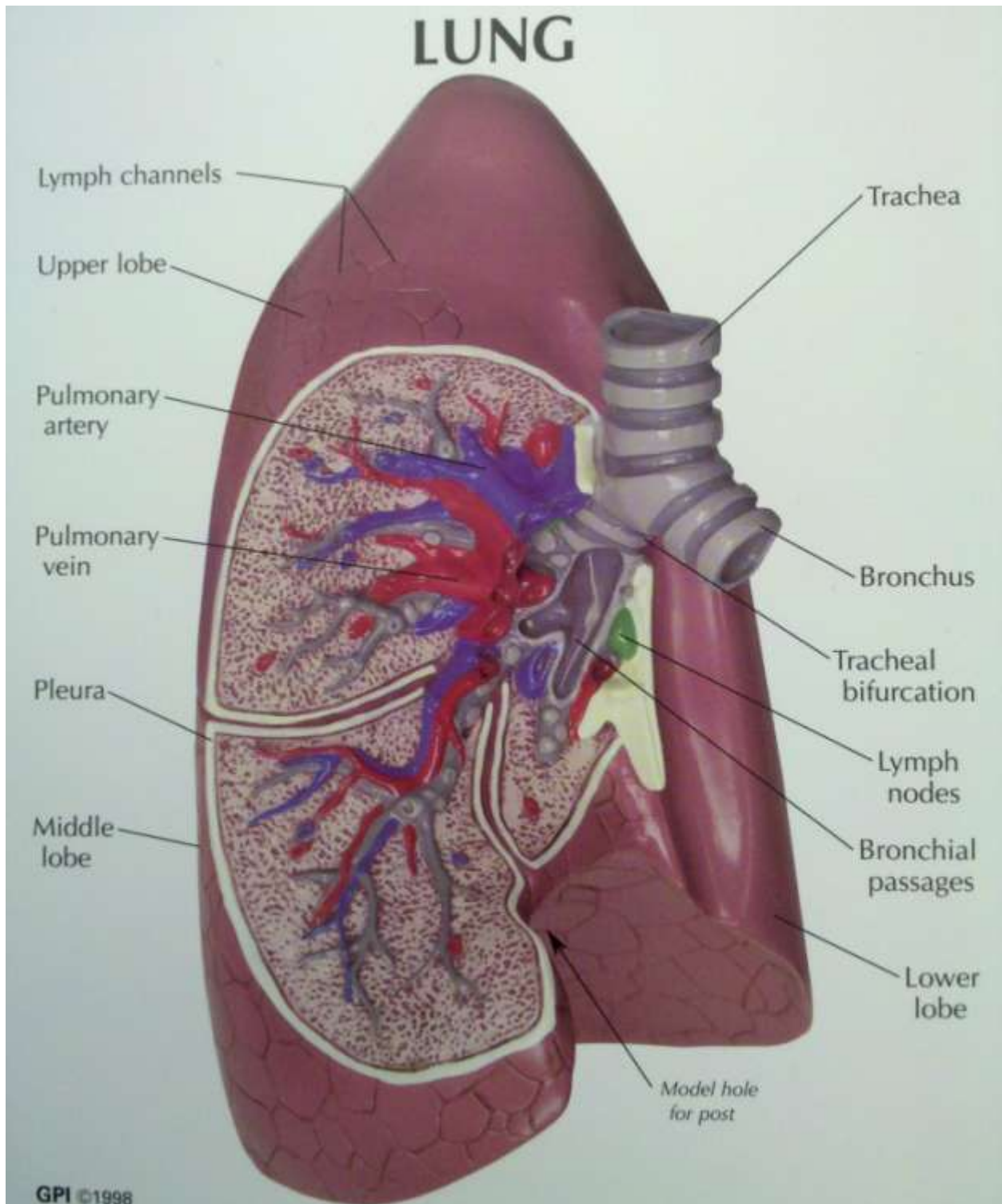
When the diaphragm is pulled down, the volume in the chamber is increased. While the volume is larger, the amount of air in the chamber is the same, and the pressure drops. This is shown by

the ideal gas law, $PV = nRT$ where P is pressure, V is volume, n is the number of moles of gas, R is the universal gas constant, and T is the pressure and volume, so the equation can be simplified to $PV = \text{constant}$. It follows that as the volume is increased the pressure must decrease, and as the volume is decreased the pressure must increase. In this case the only changes are in the pressure and volume, so the equation can be simplified to $PV = \text{constant}$. It follows that as the volume is increased the pressure must decrease, and as the volume is decreased the pressure must increase. In this case pressure and volume are inversely proportional to each other. As one increases the other decreases.

As the pressure within the chamber decreases, a pressure differential is created between the outside atmosphere and the interior of the chamber. Air is forced into the balloons by atmospheric pressure, and they expand. When the diaphragm is released, and allowed to return to the initial position, the volume in the chamber is decreased, increasing the pressure, and forcing the air out of the balloons.

As the diaphragm is alternately pulled down and released, the balloons in the chamber will expand and contract, just as the lungs within the chest cavity expand and contract when breathing.

Lung (Basic Model)



Nervous System

Neuron (Somso BS 35)



Somso Model BS 35

Magnification approx. 2500X

- A. Perikaryon of the nerve cell with dendrites
- B. Peripheral nerve with sheaths
 1. Neurite cone
 2. Nucleus of nerve cell nucleolus
 3. Endoplasmic reticulum
 4. Neurofibrils
 5. Synaptic terminals
 6. Neuraxon
 7. Schwann cell with nucleus
 8. Schwann sheath
 9. Linked Schwann cells at node of Ranvier
 10. Mitochondria
 11. Medullary (Myelin) sheath
 12. Perineural (Endoneural) sheath of connective tissue
 13. Mesaxon
 14. Dendrites
 15. Lysosomes
 16. Neurotubules
 17. Golgi apparatus

Model of a Synapse (BS 35/3)



(Somso model BS 35/3)

1. Presynapse
2. Presynaptic membrane
3. Neuroplasma
4. Endoplasmic reticulum
5. Mitochondrion
6. Neurotubule
7. Neurofilament
8. Presynaptic grid
9. Vesicle
10. Vesicle with neurotransmitter
11. Transmitter release
12. Transmitter gap products
13. Endocytic material absorption
14. Pores for endocytic material absorption
15. Synaptic gap
16. Postsynapse
17. Subsynaptic/postsynaptic membrane
18. Postsynaptic membrane
19. Transmitter receptor molecule reaction

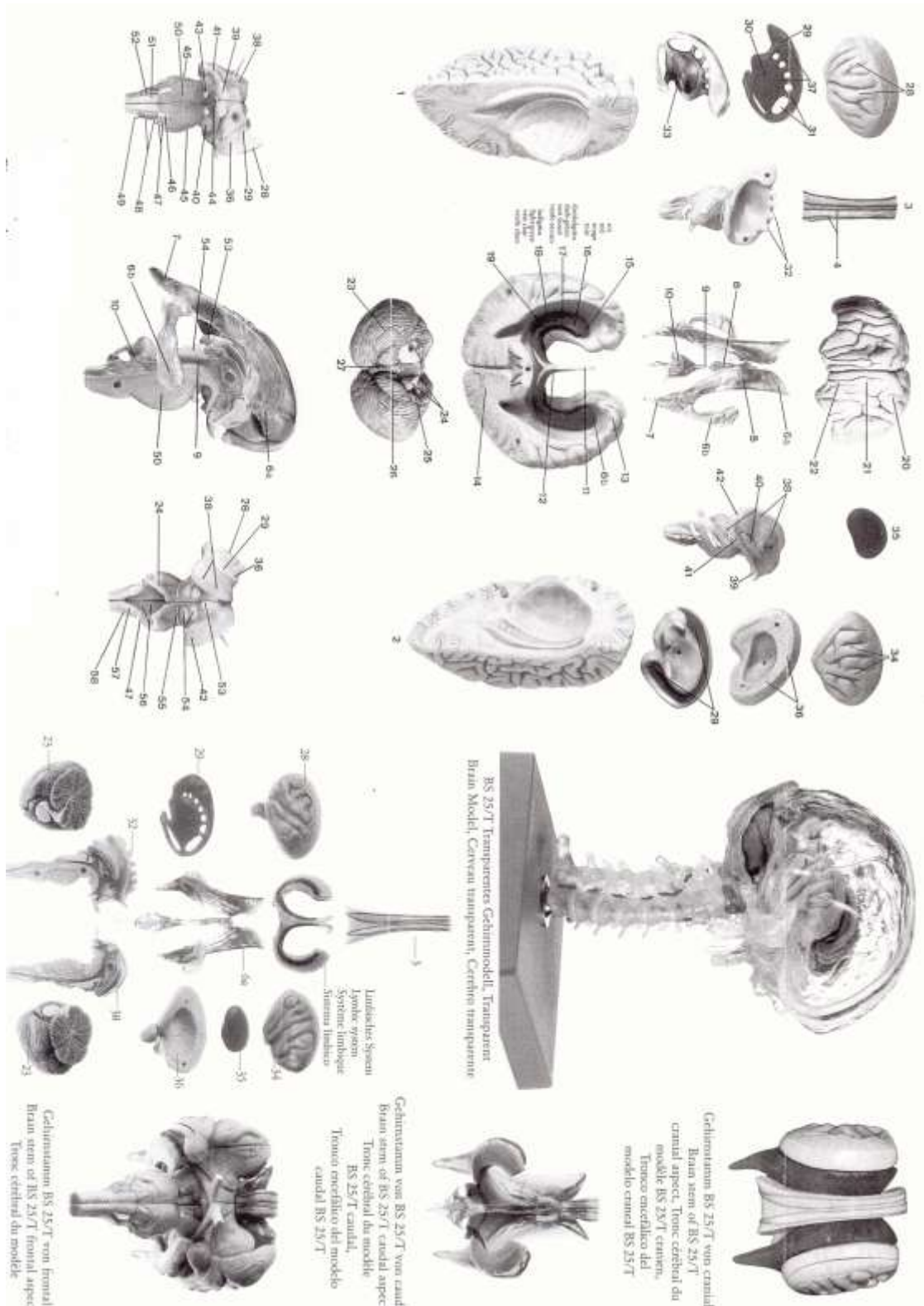
Striated Muscle Fiber with Motor End-Plate (Somso BS 36)



Somso Model BS 36

1. Sarcoplasm cytoplasmic matrix
2. Nuclei
3. Myofibrils
4. Cohnheim's areas
5. Sarcolemma
6. Endomysium
7. Schwann cell
 - 7a. Node of Ranvier
8. Axon
9. End of myelin sheath
10. Cell membrane of synaptic end bulb
11. Axonal terminal
12. Neurofibrils
13. Unknown
14. Synaptic end bulb (knob)
15. Nucleus
16. Mitochondria
17. Motor end plate (junctional folds)
**Hot pink line between #17 and #10 represents the Synaptic Cleft
18. Motor end plate
19. Synaptic vesicles

Transparent Human Brain (BS 25)



Somso Model BS 25

Transparent Human Brain Cont...

Somso Model BS 25

1. Left Cerebral Hemisphere (Cortex)
2. Right Cerebral Hemisphere (Cortex)
3. Callous Corpus (Corpus Callosum)
4. Medial and Lateral Longitudinal Stria of Corpus Callosum
5. Lateral Ventricle
6. a. Anterior Horn of Lateral Ventricle
b. Inferior Horn of Lateral Ventricle
7. Posterior Horn of Lateral Ventricle
8. Third Ventricle
9. Cerebral Aqueduct
10. Fourth Ventricle
11. Body of the Fornix
12. Choroid Plexus
13. Temporal Lobe
14. Occipital Lobe
15. Pes Hippocampi
16. Choroid Plexus
17. Dentate Gyrus
18. Fimbria of Hippocampus
19. Gyrus Parahippocampus
20. Frontal Gyrus
21. Olfactory Bulb
22. Olfactory Tract
23. Cerebellar Hemisphere
24. Cerebellar Peduncles
25. Flocculus
26. Cerebellar Tonsil
27. Vermis of the Cerebellum
28. Left Island of Reil
29. Caudate Nucleus
30. Putamen
31. Openings for Projection Tracts
32. Projection Fiber Bundle of Internal Capsule
33. Pallidum
34. Right Island of Reil
35. Lentiform Nucleus
36. Internal Capsule
37. Striate Body
38. Thalamus
39. Optic Chiasma
40. Crus Cerebri
41. Optic Tract
42. Pulvinar of Thalamus
43. Oculomotor Nerve
44. Mamillary Body
45. Trigeminal Nerve
46. Abducens Nerve
47. Vestibulocochlear Nerve
48. Glossopharyngeal Nerve, Vagus Nerve
49. Olives
50. Pons
51. Pyramids
52. Hypoglossal Nerve
53. Pineal Gland
54. Quadrigeminal Nerve
55. Trochlear Nerve
56. Rhomboid Fossa
57. Tubercle of Nucleus Gracilis
58. Tubercle of Nucleus Cuneatus

Transparent Model of the Skull (Somso QS 65/7)

(Including the Brain and the Cranial Nerves)



Somso Model QS 65/7

Cranial Nerves

- | | |
|-------------------------------|-------------------------------|
| I. Olfactory bulb | XII. Hypoglossal nerve |
| II. Optic nerve | XIII. Intermediate nerve |
| III. Oculomotor nerve | V. 1. Ophthalmic nerve |
| IV. Trochlear nerve | V. 2. Maxillary nerve |
| V. Trigeminal nerve | V. 3. Mandibular nerve |
| VI. Abducens nerve | V. 4. Trigeminal ganglion |
| VII. Facial nerve | V. 5. Buccal nerve |
| VIII. Vestibulocochlear nerve | V. 6. Deep temporal nerve |
| IX. Glossopharyngeal nerve | V. 7. Lingual nerve |
| X. Vagus nerve | V. 8. Inferior alveolar nerve |
| XI. Accessory nerve | V. 9. Auriculotemporal nerve |

Cortical fields according to Brodmann

- a. Motor speech center
- b. Frontal visual gaze center
- c. Motor center for writing
- d. Motor center for walking
- e. Precentral gyrus (primary motor cortical fields, area 4)
- f. Postcentral gyrus (primary sensory cortical fields, areas 1, 2, & 3)
- g. Primary center for taste
- h. Sensory fields for object & tactile recognition
- i. Sensory fields for taking action
- k. Fields for visual-spatial memory
- l. Primary auditory cortex (area 41)
- m. Secondary auditory cortex (area 42)
- n. Sensory center for speech according to Wernicke (area 22)
- o. Tertiary auditory cortical fields (comprehension of speech & music) (area 21)
- p. Tertiary visual cortical fields (area 19)
- s. Secondary visual cortical fields (image comprehension) (area 18)
- s. Primary center for vision (visual perception) (calcarine area, area 17)
- t. Cingulate gyrus – part of the limbic system (emotional coloration of sensory stimuli)
- u. Hippocampal cortex – part of the limbic system
- v. Prepiriform area – secondary olfactory centers for smell

The Human Brain (Somso BS 23)



Somso Model BS 23

- | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> A. Cerebrum B. Cerebellum C. Mesencephalon D. Pons E. Medulla oblongata 1. Corpus callosum 2. Anterior horn of the lateral ventricle 3. Posterior horn 4. Inferior horn 5. Hippocampus major 6. Interventricular foramen 7. Arbor vitae 8. Vermis 9. Hemispheres 10. Horizontal fissure 11. The tonsil 12. The flocculus 13. The peduncle of the flocculus 14. The dorsal tectum of mid-brain 15. The ventral cerebral peduncles 16. Median longitudinal groove 17. The middle cerebellar peduncles 18. Fourth ventricle 19. Median longitudinal fissure 20. The pyramids 21. The olive 22. Decussation of pyramids 23. Posterior longitudinal fissure 24. Fasciculus gracilis 25. Tuberculum nuclei gracilis 26. Posterior intermediate sulcus 27. Fasciculus cuneatus 28. Olfactory nerves 29. Anterior perforated substance 30. Optic nerve | <ul style="list-style-type: none"> F. Frontal lobe G. Parietal lobe H. Temporal lobe I. Occipital lobe K. Lateral Sulcus 31. Optic chiasma 32. Oculomotor nerve 33. Trochlear nerve 34. Trigeminal nerve 35. Abducens nerve 36. Facial nerve 37. Vestibulocochlear (auditory) nerve 38. Glossopharyngeal nerve 39. Vagus nerve 40. Accessory nerve 41. Hypoglossal nerve 42. 1st & 2nd cervical nerves 43. Optic tract 44. Internal geniculate body 45. Thalamus 46. Hypophysis (Pituitary gland) 47. Tuber cinereum 48. Mamillary body 49. External geniculate body a. Pons b. Spinal cord central canal c. Arbor vitae d. Fourth ventricle e. Aqueduct of mid-brain f. Anterior medullary velum g. Third ventricle h. Anterior commissure i. Tectum of mid-brain k. Posterior commissure | <ul style="list-style-type: none"> l. Fornix m. Mamillary body n. Interventricular foramen o. Corpus callosum p. Knee of corpus callosum q. Rostrum of the corpus callosum r. Septum lucidum s. Splenium of the corpus callosum |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Brain Stem (Somso BS 23/2)



Somso Model BS 23/2

- C. Mesencephalon
 - D. Pons
 - E. Medulla oblongata
- | | |
|------------------------------------|-------------------------------------------------------|
| 6. Interventricular foramen | 32. Oculomotor nerve |
| 14. The dorsal tectum of mid-brain | 33. Trochlear nerve |
| 15. The ventral cerebral peduncles | 34. Trigeminal nerve |
| 16. Median longitudinal groove | 35. Abducens nerve |
| 17. Middle cerebellar peduncles | 36. Facial nerve |
| 18. Fourth ventricle | 37. Vestibulocochlear) nerve |
| 19. Median longitudinal fissure | 38. Glossopharyngeal nerve |
| 20. The pyramids | 39. Vagus nerve |
| 21. The olive | 40. Accessory nerve |
| 22. Decussation of pyramids | 41. Hypoglossal nerve |
| 23. Posterior longitudinal fissure | 42. 1 st & 2 nd cervical nerves |
| 24. Fasciculus gracilis | 43. Optic tract |
| 25. Tuberculum nuclei gracilis | 45. Thalamus |
| 26. Posterior intermediate sulcus | 46. Hypophysis (Pituitary gland) |
| 27. Fasciculus cuneatus | 47. Tuber cinereum |
| 29. Anterior perforated substance | 48. Mamillary body |
| 30. Optic nerve | 49. External geniculate body |
| 31. Optic chiasma | |
- a. Grey substance of the pons
 - b. Central canal of the spinal cord
 - c. Arbor vitae
 - d. Fourth ventricle
 - e. Aqueduct of mid-brain
 - f. Anterior medullary velum
 - g. Third ventricle

The Human Brain (C 15)



3B Model C 15

- A. Cerebrum
 - 3. Frontal lobe
 - 4. Parietal lobe
 - 5. Occipital lobe
 - 6. Temporal lobe
 - 7. Lateral cerebral fissure
 - Lateral ventricle
 - a. Anterior horn
 - b. Posterior horn
 - c. Inferior horn
 - d. Hippocampus
- B. Cerebellum
 - 21. Arbor vitae
 - e. Vermis
 - f. Hemispheres
 - g. Tonsil
 - h. Flocculus
 - i. Peduncle of flocculus
- C. Mesencephalon (Midbrain)
 - k. Ventral cerebral peduncles
 - l. Dorsal tectum
- D. Pons
 - m. Median longitudinal fissure
 - n. Middle cerebellar peduncles
- E. Medulla oblongata
 - o. Anterior median fissure
 - p. Pyramids
 - q. Olive
 - r. Posterior intermediate sulcus
 - s. Posterior longitudinal fissure
 - t. Fasciculus gracilis
 - u. 1st cervical nerve (C1)
 - v. 2nd cervical nerve (C2)
- 8. Corpus callosum
 - a. Knee of corpus callosum
 - b. Rostrum of corpus callosum
- 9. Septum pellucidum
- 10. Fornix
- 11. Anterior commissure
- 12. Middle commissure
- 13. Posterior commissure
- 14. Thalamus
- 15. Foramen of Monroe
- 16. Cerebral aqueduct
- 17. 4th ventricle
- 18. Pineal body
- 19. Tectum
- 20. Anterior medullary velum
- 21. Arbor vitae
- 22. Mamillary body
- 23. Hypophysis (Pituitary gland)
- 24. Optic chiasma

The Twelve Cranial Nerves

- I. Olfactory
- II. Optic
- III. Oculomotor
- IV. Trochlear
- V. Trigeminal
- VI. Abducens
- VII. Facial
- VIII. Vestibulocochlear (Auditory)
- IX. Glossopharyngeal
- X. Vagus
- XI. Accessory
- XII. Hypoglossal

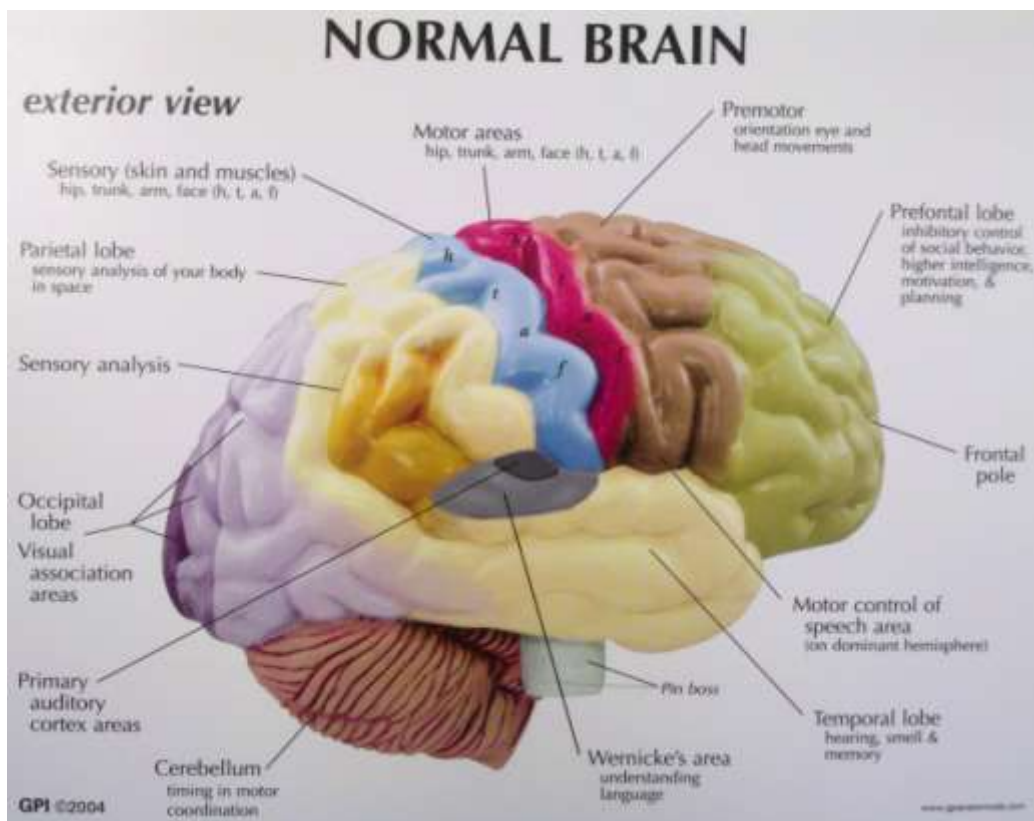
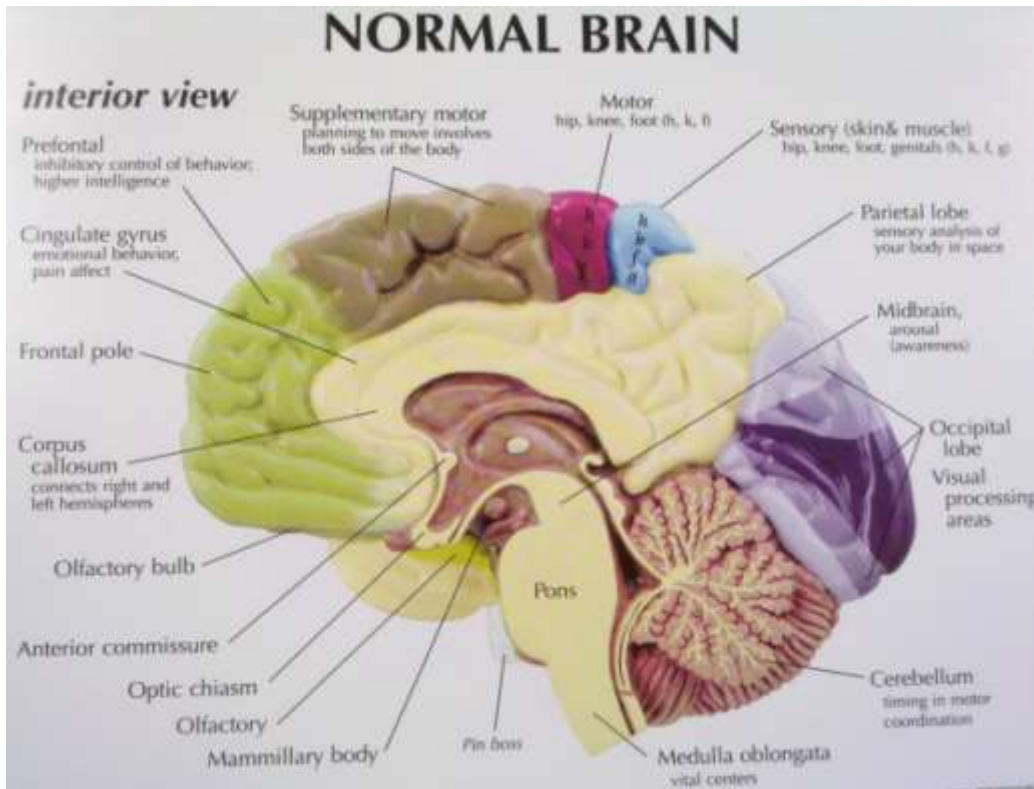
Brain with Arteries



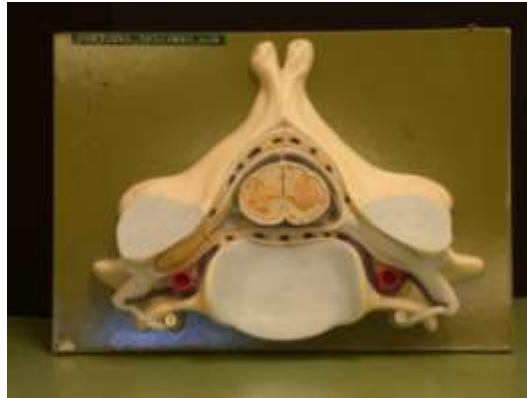
Altay Model 6160.14

- I. Cerebrum
 1. Frontal lobe
 2. Parietal lobe
 3. Temporal lobe
 4. Occipital lobe
 5. Insula
 6. Hippocampus
 7. Lateral ventricles
 8. Corpus callosum
 9. Fornix
 10. Internal carotid artery
 11. Middle cerebral artery
 12. Anterior cerebral artery
 13. Posterior cerebral artery
 14. Basilar artery
 15. Vertebral artery
- II. Cerebellum
 16. Vermis of cerebellum
 17. Hemisphere of cerebellum
 18. Superior cerebellar artery
 19. Anterior inferior cerebellar artery
 20. Posterior inferior cerebellar artery
- III. Diencephalon
 21. Thalamus
 22. Hypothalamus
 23. Hypophysis
 24. Optic nerve (II)
 25. Pineal body
 26. Medial geniculate body
 27. Lateral geniculate body
- IV. Mesencephalon
 28. Superior colliculi
 29. Inferior colliculi
 30. Trochlear nerve (IV)
 31. Oculomotor nerve (III)
- V. Pons
 32. Trigeminal nerve (V)
 33. Abducens nerve (VI)
 34. Facial nerve (VII)
 35. Vestibulocochlear nerve (VIII)
- VI. Medulla oblongata
 36. Pyramid
 37. Olive
 38. Glossopharyngeal nerve (IX)
 39. Vagus nerve (X)
 40. Accessory nerve (XI)
 41. Hypoglossal nerve (XII)

Brain (Basic Model)



Fifth Cervical Vertebra with Spinal Cord (Somso BS 30)



Somso Model BS 30

1. Body of the vertebra
2. Transverse process
3. Vertebral arch
4. Spinose process
5. Yellow ligament
6. Posterior longitudinal ligament
7. Vertebral artery
8. Vertebral vein
9. Dura mater of the spinal cord
10. Epidural cavity
11. Subdural cavity
12. Arachnoid of the spinal cord
13. Subarachnoid cavity
14. Internal vertebral venous plexus
15. Denticulate ligament
16. Subarachnoid septum of spinal cord
17. Ventral root of cervical nerve
18. Dorsal root of cervical nerve
19. Spinal ganglion
20. Anterior ramus of nerve
21. Posterior ramus of nerve
22. Sympatic trunk
23. Ramus communicans between sympathetic trunk & spinal nerve
24. Pia mater of the spinal cord
25. Anterior median fissure
26. Anterior lateral sulcus
27. Posterior lateral sulcus
28. Posterior median fissure
29. Posterior glial septum
30. Anterior funicle
31. Lateral funicle
32. Posterior funicle
33. White substance
34. Gray substance
35. Central canal
36. Anterior horn
37. Lateral horn
38. Posterior horn

Model of Spinal Cord with Spinal Canal (Somso BS 31)

Somso Model BS 31

Bones

- a) Temporal bone
- b) Occipital bone
- c) First cervical vertebra
- d) Seventh cervical vertebra
- e) First rib
- f) Twelfth rib
- g) First lumbar vertebra
- h) Fifth lumbar vertebra
- i) Sacrum

Brain, Cerebrum

- A. Frontal lobe
- B. Insula
- C. Pons
- D. Cerebellum
- E. Spinal Cord

The Twelve Cerebral Nerves

- I. Olfactory nerves
- II. Optic nerves
- III. Oculomotor nerve
- IV. Trochlear nerve
- V. Trigeminal nerve
- VI. Abducens nerve
- VII. Facial nerve
- VIII. Auditory nerve
- IX. Glossopharyngeal nerve
- X. Vagus nerve
- XI. Accessory nerve
- XII. Hypoglossal nerve

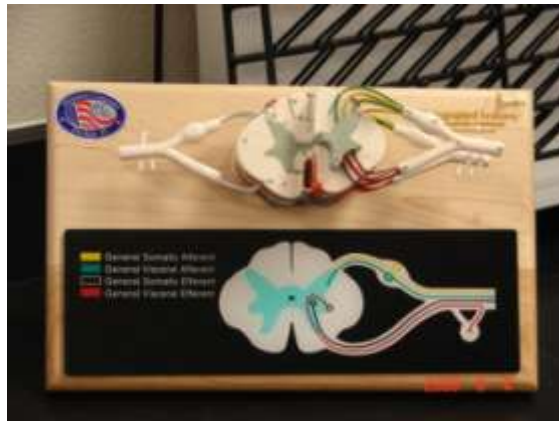
Spinal Cord

- 8 Cervical nerves
 - 12 Thoracic nerves
 - 5 Lumbar nerves
 - 5 Sacral nerves
 - 1 Coccygeal nerve
1. Cervical region of spinal cord
 2. Cervical plexus
 3. Brachial plexus
 4. Thoracic plexus
 5. Anterior tract of spinal cord



6. Anterior median fissure
 - a) Iliohypogastric nerve
 - b) Ilioinguinal nerve
 - c) Genitofemoral nerve
 - d) Lateral cutaneous nerve of the thigh
7. Anterior root of spinal nerve
8. Posterior root of spinal nerve
9. Nerve ganglion
10. Dura mater of the spinal cord
11. Denticulate ligament
12. Lumbar region of spinal cord
13. Lumbar plexus
 - e) Femoral nerve
 - f) Obturator nerve
14. Sacral region of spinal cord
15. Terminal fiber
16. Sacral plexus

Deluxe Spinal Cord



Model #165, A65

1. Dorsal column, white matter
2. Lateral column, white matter
3. Ventral column, white matter
4. Anterior white commissure
5. Dorsal gray horn, gray matter
6. Lateral gray horn, gray matter
7. Ventral gray horn, gray matter
8. Gray commissure
9. Central canal
10. Dorsal median sulcus
11. Dorsal intermediate sulcus
12. Dorsal lateral sulcus
13. Ventral lateral sulcus
14. Ventral median fissure
15. Ventral radicular filaments
16. Anterior spinal artery
17. Sulcal artery
18. Anterior spinal vein
19. Dorsal radicular filaments
20. Left posterolateral spinal vein
21. Left posterolateral spinal artery
22. Posterior spinal vein
23. Dorsal root
24. Spinal ganglion
25. Ventral root
26. Mixed spinal nerve
27. Dorsal ramus of spinal nerve
28. Ventral ramus of spinal nerve
29. Gray ramus communicans
30. White ramus communicans

Spinal Cord with Nerve Branches (Somso BS 33)



Somso BS 33

- A. Cross Section of Spinal Cord (10X)
- B. Piece of Spinal Cord w/Nerves
 1. Gray matter
 2. Ventral horn, gray matter
 3. Lateral horn, gray matter
 4. Gray Commissure
 5. Anterior radicular filaments
 6. Posterior radicular filaments
 7. White matter
 8. Anterior median fissure
 9. Posterior median sulcus
 10. Lateral sulcus
 - a. Anterior lateral sulcus
 - b. Posterior lateral sulcus
 11. Outlet of nerve bundles
 12. Gray matter
 13. Radicular filaments
 14. Gray commissure
 15. Central canal
 16. White matter
 17. Anterior column, white matter
 18. Lateral column, white matter
 19. Anterior median fissure
 20. Posterior median sulcus
 21. Dorsal root ganglion
 22. Anterior/Ventral funicle
 23. Lateral funicle
 24. Posterior/Dorsal funicle

Neuron (Altay 6160.27)

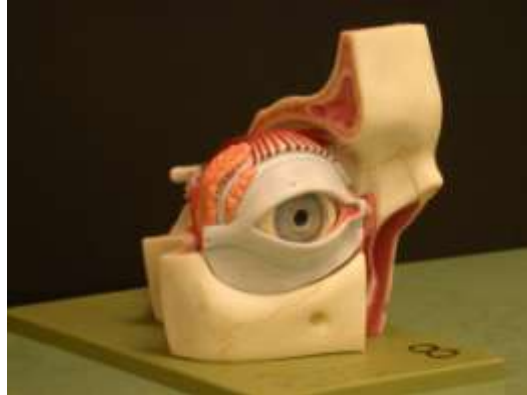
Two Parts



1. Cell body
2. Dendrite
3. Axon
4. Cell membrane
5. Nuclear membrane
6. Nucleolus
7. Chromatin
8. Nuclear pores
9. Rough endoplasmic reticulum
10. Smooth endoplasmic reticulum
11. Golgi complex
12. Mitochondrion
13. Lipid droplet
14. Nissl's body
15. Synapse
16. Myelin sheath
17. Ranvier node
18. Schwann cell

Special Senses

The Human Eye (Somso CS 20)



Somso Model CS 20

1. Superior rectus muscle
2. Inferior rectus muscle
3. Medial rectus muscle
4. Lateral rectus muscle
5. Superior oblique muscle
6. Inferior oblique muscle
7. Sclera
8. Cornea
9. Choroid
10. Iris
11. Retina
12. Vitreous body
13. Aqueous humor
14. The sheath of the optic nerves passes into the sclera at the
15. Entrance point of the ciliary nerves
16. The optic nerve spreads out as retina
17. Ciliary muscle
18. Ciliary crown
19. Venae vorticosae
20. Short & long ciliary nerves
21. Macula
22. Arteries of the retina
23. Veins of the retina

The Lacrimal Organs with Eyelid supports

1. Lacrimal gland
2. Upper part of lacrimal gland
3. Lower part of lacrimal gland
4. Tendon of the levator palpebrae
5. Excretory ducts
6. Superior conjunctival fornix
7. Lacrimal papillas
8. Lacrimal canaliculus
9. Lacrimal sac
10. Superior end of lacrimal sac
11. Superior tarsus of eyelid
12. Inferior tarsus of eyelid
13. Sebaceous gland
14. Lateral palpebral ligament
15. Medial palpebral ligament
16. Palpebral conjunctiva
17. Bulbar conjunctiva
18. Inferior conjunctival fornix

Eye in Orbit



Model 256-6955

1. Superior rectus muscle
2. Orbital fat
3. Tendon of superior oblique muscle
4. Lateral rectus muscle
5. Vorticose vein
6. Ciliary body
7. Ora serrata
8. Central vessels of retina passing into optic nerve
9. Central vessels of retina on retina
10. Optic disc
11. Retina
12. Choroid
13. Sclera
14. Fovea centralis
15. Cornea
16. Iris
17. Lens
18. Ciliary ganglion
19. Central artery of retina
20. Long posterior ciliary arteries
21. Short posterior ciliary arteries
22. Ciliary nerves
23. Inferior rectus muscle
24. Inferior oblique muscle
25. Medial rectus muscle

Giant Eye



Model 81-1156

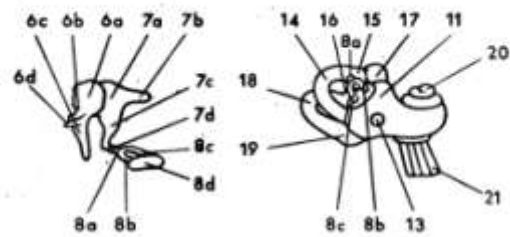
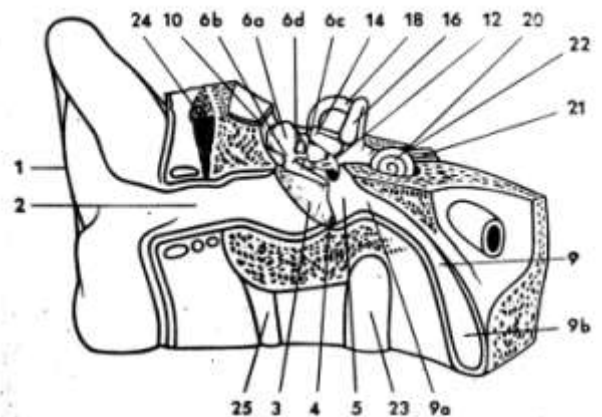
1. Superior rectus muscle
2. Superior oblique tendon
3. Medial rectus muscle
4. Lateral rectus muscle
5. Inferior oblique muscle
6. Inferior rectus muscle
7. Anterior ciliary artery & vein
8. Pupillary margin of iris
9. Peripheral margin of iris
10. Cornea
11. Limbus of cornea
12. Choroid
13. Vorticosse vein
14. Long posterior ciliary artery
15. Short posterior ciliary artery
16. Sclera
17. Optic nerve
18. Lens
19. Canal of Schlemm
20. Ciliary body
21. Ciliary process
22. Ora serrata
23. Retina
24. Choroid (capillary layer)
25. Choroid (vascular layer)
26. Optic disk
27. Superior temporal retinal artery & vein
28. Superior nasal retinal artery & vein
29. Inferior temporal retinal artery & vein
30. Inferior nasal retinal artery & vein
31. Macula lutea
32. Lower eyelid
33. Tarsal gland
34. Conjunctiva
35. Suspensory ligament
36. Orbital fat

The Ear (J 515)



Model J 515

1. Auricle
2. External auditory meatus (Auditory canal)
3. Tympanic membrane (Ear drum)
4. Fibrocartilaginous ring
5. Tympanic cavity
6. Malleus (Hammer)
 - a. Head
 - b. Neck
 - c. Inferior process
 - d. Anterior process
7. Incus (Anvil)
 - a. Body
 - b. Short process
 - c. Posterior process
 - d. Lenticular process
8. Stapes (Stirrup)
 - a. Head
 - b. Anterior leg
 - c. Posterior leg
 - d. Base
9. Eustachian tube
 - a. Tympanic end
 - b. Pharyngeal end
10. Epitympanic recess (Attic)
11. Vestibule
12. Oval window
13. Lateral semicircular canal
15. Ampule of lateral canal
16. Superior semicircular canal
17. Ampule of superior canal
18. Posterior semicircular canal



19. Ampule of posterior canal
20. Cochlea
21. Vestibulocochlear nerve
22. Inner auditory canal
23. Internal carotid artery
24. Temple muscle
25. Styloid process

Ear (P-2134)



Model P-2134

- A. Temporal bone
 - 1. Petrous portion
- B. External ear
 - 2. External auditory meatus
 - 3. Cartilaginous external auditory meatus
 - 4. Auricle of pinna
- C. Middle ear
 - 5. Malleus (hammer)
 - 6. Incus (anvil)
 - 7. Stapes (stirrup)
 - 8. Tympanic membrane
 - 9. Tympanic ring
 - 10. Tensor tympani
 - 11. Tendon of tensor tympani
 - 12. Chorda tympani
 - 13. Eustachian (Auditory) tube
 - 14. Tympanic cavity
 - 15. Promontory
- D. Internal ear
 - 16. Superior semicircular canal
 - 17. Posterior semicircular canal
 - 18. Lateral semicircular canal
 - 19. Ampulla of superior canal
 - 20. Ampulla of posterior canal
 - 21. Ampulla of lateral canal
 - 22. Common crus
 - 23. Vestibule (simple crus)
 - 24. Utricle
 - 25. Otoconia
 - 26. Sacculle
 - 27. Round window (Cochlear opening)
 - 28. Oval window (Vestibular opening)

The Organ of Hearing (Somso DS 3)



Somso Model DS 3

- A. External Ear
 - 1. External Auditory Canal/Meatus
 - 2. Tympanic Membrane (Ear Drum)
 - 3. Tympanic Ring
- B. Middle Ear
 - 4. Tympanum
 - 5. Eustachian Tube
 - 6. Eustachian Tube
 - 7. Malleus (Hammer)
 - 8. Incus (Anvil)
 - 9. Stapes (Stirrup)
 - 10. Lentiform Nodule of Incus
 - 11. Cord of Tympanum
 - 12. Tensor Muscle of Tympanum
- C. Inner Ear
 - 13. Vestibule
 - 14. Fenestra Vestibuli
 - 15. Promontory
 - 16. Fenestra Cochlea
 - 17. Lateral Semicircular Canal
 - a) Ampulla (Lateral)
 - 18. Anterior Semicircular Canal
 - b) Ampulla (Anterior)
 - 19. Posterior Semicircular Canal
 - c) Ampulla (Posterior)
 - 20. Cochlea
 - 21. Vestibulocochlear Nerve
 - 22. Scala Vestibuli (Vestibular Canal)
 - 23. Scala Tympani (Tympanic Canal)
 - 24. Cochlea Duct
 - 25. Organ of Corti

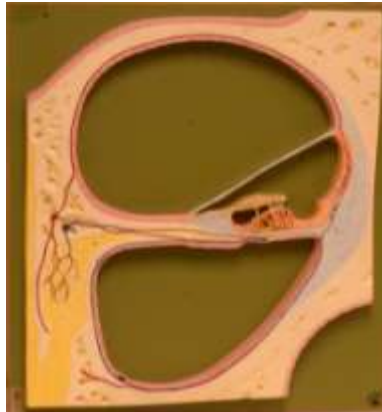
The Labyrinth (Somso DS 6)



Somso Model DS 6

- A. Osseous (bony) labyrinth
- B. Membranaceous (membranous) labyrinth
 - 1. Vestibule
 - a. Fenestra of vestibule
 - b. Fenestra of cochlea
 - c. Secondary tympanic membrane
 - 2. Lateral semicircular canal
 - 3. Anterior semicircular canal
 - 4. Posterior semicircular canal
 - d. Ampulla
 - 5. Cochlea
 - e. Basal turn
 - f. Central turn
 - g. Pointed turn
 - h. Cupola
 - i. Modiolus
 - k. Osseous spiral lamina
 - l. Spiral hamulus of lamina
 - 6. Anterior semicircular duct
 - 7. Posterior semicircular duct
 - m. Common crus of anterior & posterior semicircular duct
 - 8. Utricle
 - 9. Sacculle
 - 10. Endolymphatic duct
 - 11. Utriculosaccular duct
 - n. Membranaceous spiral lamina
 - o. Vestibular wall of cochlear duct
 - p. Scala vestibule
 - q. Scala tympani
 - r. Cochlear duct
 - 12. Vestibulocochlear nerve
 - 13. Cochlear part
 - 14. Vestibular part

Spiral Organ of Corti (Somso DS 10)



Somso Model DS 10

1. Cochlea
2. Scala vestibule
3. Scala tympani
4. Vestibular wall of cochlear duct
5. Osseous spiral lamina
6. Secondary spiral lamina
7. Epithelium of internal spiral sulcus
8. Internal hair cells
9. External hair cells
10. Internal pillar cells
11. External pillar cells
12. Tunnel of Corti
13. Deiters' supporting cells
14. Cells of Hensen
15. Claudius' cells
16. Nuel's space
17. Vestibular lip of limbus
18. Tectorial membrane
19. Cochlear duct
20. Spiral ligament of cochlea
21. Prominent vessel
22. Axis (central bony column of cochlea)
23. Lateral wall of cochlea
24. Spiral ganglion
25. Cochlear nerve
26. Cochlear arteries
27. Tympanic lip of limbus

Nose & Nasal Cavity (Somso FS 6)



Somso Model FS 6 A & B

Osseous nasal cavity (left-handed model)

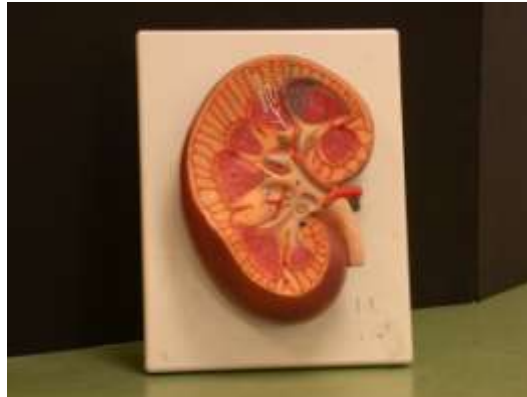
1. Frontal bone (green-blue)
 - a. Frontal sinus
2. Ethmoid bone (dark pink)
 - b. Crista galli
 - c. Cribriform lamina
 - d. Superior nasal concha
 - e. Middle nasal concha
 - f. Uncinate process
 - g. Ethmoidal bulla
 - h. Entrance to ethmoid cells
 - i. Entrance to nasofrontal duct
 - k. Hiatus maxillaris of maxillary sinus
3. Inferior nasal concha (pink)
 - l. Artificial section of inferior nasal concha
 - m. nasolacrimal duct
4. Lacrimal bone (pink)
5. Nasal bone (yellow)
6. Maxilla (yellow)
7. Palatine bone (blue)
 - n. Sphenopalatine foramen
 - o. Greater palatine foramen
8. Sphenoid bone (pink)
 - p. Sphenoidal sinus
9. Nasal cartilages (blue)

Nasal cavity covered with mucous membrane (right-handed model)

10. Nasal septum
 - r. Vomer
 - s. Perpendicular plate
11. Superior nasal concha
12. Middle nasal concha
13. Inferior nasal concha
14. Superior nasal meatus
15. Middle nasal meatus
16. Inferior nasal meatus
17. Pharyngeal opening of Eustachian (auditory) tube
18. Pharyngeal recess
 - t. Sphenoidal sinus
19. Hard palate
20. Soft palate
21. Vestibule of nose
22. Pharyngeal tonsil
23. Palatine tonsil
24. Olfactory bulb
25. Olfactory nerve

Urinary System

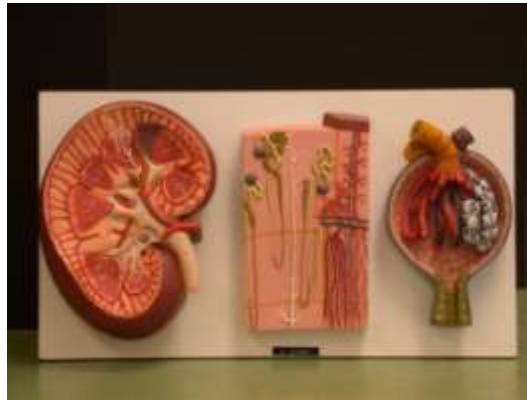
Kidney (K 10)



3B Model K 10

- A. Renal cortex
- B. Medullary substance
 - 1. Renal vein
 - 2. Renal artery
 - 3. Vein arciform of the kidney
 - 4. Artery arciform of the kidney
 - 5. Capillary bed
 - 6. Veins interlobular of the kidney
 - 7. Arteries interlobular of the kidney
 - 8. Afferent vessel
 - 9. Efferent vessel
 - 10. Renal duct
 - 11. Pelvis of ureter
 - 12. Renal calyx
 - 13. Renal papilla
 - 14. Big papillary duct
 - 15. Papillary duct
 - 16. Curvature part of urinary tubules
 - 17. Henle's loop
 - 18. Curvature part of urinary tubules
 - 19. Renal corpuscles
 - 20. Renal pyramid

Kidney & Nephron



3B Model K 10, K 10/1, & K 10/2

K 10 Kidney

- A. Cortex of the kidney
- B. Medulary substance
 - 1. Renal vein
 - 2. Renal artery
 - 3. Vein arciform of the kidney
 - 4. Artery arciform of the kidney
 - 5. Capillary bed
 - 6. Veins interlobular
 - 7. Arteries interlobular
 - 8. Afferent vessel
 - 9. Revelent (efferent) vessel
 - 10. Renal duct
 - 11. Pelvis of ureter
 - 12. Renal calyx
 - 13. Renal papilla
 - 14. Big papillary ducts
 - 15. Papillary duct
 - 16. Curvature part of urinary tubules
 - 17. Henle's loop
 - 18. Curvature part of urinary tubules
 - 19. Renal corpuscles
 - 20. Renal pyramid

K 10/1 Nephron

- A. Cortex of the kidney
- B. Outer medulary substance
- C. Inner medulary substance
 - 1. Corpuscles of the kidney
 - 2. Portia vestibule
 - a. Crus descendens
 - b. Crus ascendens
 - c. Henle's loop
 - 3. Pars intermedia
 - 4. Ramus primaries
 - 5. Papillary duct
 - 6. Vein & artery arciform
 - 7. Veins & arteries interlobular
 - 8. Afferent vessel
 - 9. Revelent (efferent) vessel
 - 10. Capillary bed

K 10/2 Corpuscle of the Kidney

- 1. Afferent vessel
- 2. Glomerulus
- 3. Efferent vessel
- 4. Epicyten
- 5. Bowman's capsule
- 6. Collum

Kidney (Somso LS 5)



Somso LS 5

- A. Marrow of the Kidney
- B. Cortex of the Kidney
 - 1. Renal vein
 - 2. Renal artery
 - 3. Ureter
 - 4. Pelvis of the kidney
 - 5. Calyces of the kidney
 - 6. Renal papillae
 - 7. Renal pyramids
 - 8. Collecting duct
 - 9. Contort renal tubule II
 - 10. Loop of Henle
 - 11. Contort renal tubule I
 - 12. Corpuscles of the kidney
 - 13. Interlobular arteries
 - 14. Afferent vessel
 - 15. Efferent vessel
 - 16. Arcuate arteries
 - 17. Interlobular veins
 - 18. Arcuate veins
 - 19. Papillary ducts
 - 20. Suprarenal gland

Kidney (Somso K 12)



3B Model K 12

1. Cortex
2. Medulla
3. Renal artery
4. Renal vein
5. Renal pyramid
6. Interlobar arteries
7. Interlobar veins
8. Arcuate arteries
9. Interlobular arteries
10. Interlobular veins
11. Arcuate veins
12. Minor calyx
13. Major calyx
14. Columns of Bertini
15. Renal pelvis
16. Renal papilla
17. Ureter
18. Suprarenal gland
19. Suprarenal vein
20. Inferior suprarenal artery

Glomerulus

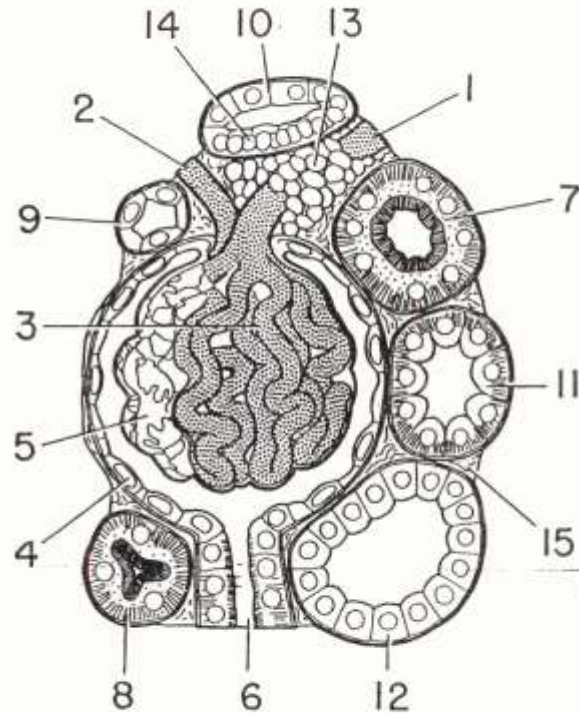
81 W 1331

Key to MUELLER-WARD MODEL of Glomerulus and Cross-Sections of Kidney Tubules. Diagrammatic.

1. Afferent glomerular arteriole.
2. Efferent glomerular arteriole.
3. Capillary loops of glomerulus.
4. Parietal epithelium of Bowman's capsule.
5. Visceral epithelium of Bowman's capsule.
6. Neck of tubule.
7. Proximal convolution.
8. Descending thick limb of Henle's loop.
9. Thin segment of Henle's loop.
10. Ascending thick limb of Henle's loop, at point of contact with afferent glomerular arteriole.
11. Distal convolution.
12. Collecting tubule.
13. Juxtaglomerular apparatus (Polkissen).
14. Macula densa.
15. Connective tissue.

ALL elements of the kidney are bound together by connective tissue. Except for the ascending limb of Henle's loop (10), the arrangement of the tubules around the glomerulus is arbitrary on the model, and not likely to occur in nature. The glomerulus has been simplified for clarity. The afferent arteriole usually penetrates some distance into the glomerulus before breaking up into about 50 capillary loops. The glomerulus contains a central core of connective tissue (not shown on the model), which is divided into several lobes. The capillaries pass as individual loops over the surface of the glomerulus toward its lower pole, then turn inward, and pass for at least part of their length through the connective tissue core, before anastomosing to form the efferent arteriole. The visceral epithelium closely invests the capillary loops, and dips down between the lobes of the glomerulus. The visceral epithelial cells may have polygonal or serrated outlines, or complexly interdigitating borders. All three types of cells may occur on a single capillary loop. The parietal capsular epithelium is of the simple squamous type. A basement membrane is well defined in both glomerulus and tubules.

The proximal convolution and descending thick limb of Henle's loop are lined by cuboidal cells with brush borders. Their basal half contains rod-like mitochondria, and intercellular boundaries are indistinct. The lumen of the tubule may be either expanded or collapsed, according to the state of activity. The thin segment of Henle's loop is lined by flattened cells whose nuclei bulge into the lumen. The thick ascending limb has somewhat granular cuboidal cells. Where it contacts the afferent arteriole, a dense patch of nuclei, the macula densa, occurs on the side facing the artery. The distal convolution is composed of cells showing basal



striations, like those of the proximal convolution, but lacking the brush border. Their free surfaces bulge into the lumen, and their intercellular boundaries are distinct. The collecting tubule, for most of its length, is lined with clear cuboidal cells, but near the lower end, in the papillary duct, the epithelium becomes columnar.

The juxtaglomerular apparatus represents modified cells of the smooth muscle coat of the afferent arteriole. Their cytoplasm varies in different animals from granular to epithelioid. They are not universally present, even in the same species, and appear to be better developed in the outer glomeruli than in the inner. They are in contact with the macula densa of their own loop. Little is known of the function of these two structures. It has been conjectured that they may in some way regulate blood pressure within the glomerulus in response to changes in the urine produced by the particular nephron. It is also suggested that the juxtaglomerular apparatus may be an endocrine gland, producing the substance renin, through which the kidney exerts a profound effect upon blood pressure.

REFERENCES

- H. W. SMITH, *Physiology of the Renal Circulation*, Harvey Lectures, series XXXV, 1939-40.
K. W. ZIMMERMAN, 1935. *Ueber den Bau des Glomerulus der Säugerniere*. *Zeitschr. f. mik.-anat. Forsch.* 52: 176-278.

Renal Lobule

81 W 1330

Key to MUELLER-WARD MODEL of Renal Lobule — Diagrammatic

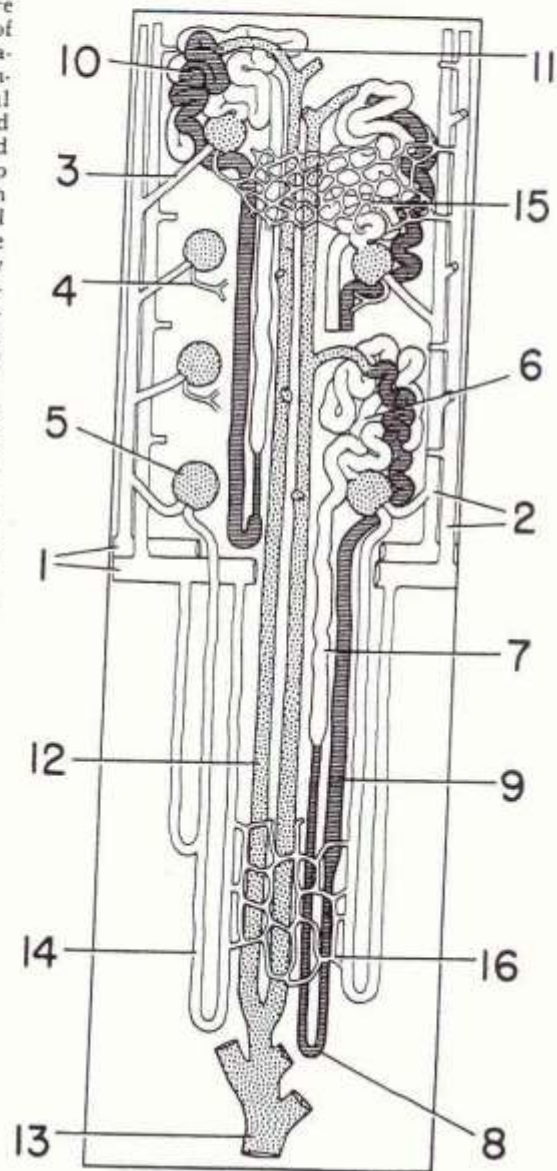
- | | | |
|--------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------|
| 1. Arcuate artery and vein. | 6. Proximal convoluted tubule. | 12. Collecting tubule. |
| 2. Interlobular artery and vein. | 7. Descending thick limb of Henle's loop. | 13. Papillary duct of Bellini. |
| 3. Afferent glomerular arteriole. | 8. Thin segment of Henle's loop. | 14. Vasa recta. |
| 4. Efferent glomerular arteriole. | 9. Ascending thick limb of Henle's loop. | 15. Capillary bed of cortex (extends through entire cortex). |
| 5. Renal corpuscle (glomerulus plus Bowman's capsule). | 10. Distal convoluted tubule. | 16. Capillary bed of medulla (extends through entire medulla). |
| | 11. Arched connecting tubule. | |

MANY more banks of glomeruli occur in the cortex than are represented on the model, and the proportionate length of the medullary elements has been greatly reduced. The fundamental physiological unit of the kidney is the nephron, consisting of the glomerulus, Bowman's capsule, the proximal convoluted tubule, Henle's loop, and the distal convoluted tubule. The blood is filtered in the glomerulus, water and soluble substances, except blood proteins, passing into Bowman's capsule in the same proportions as they occur in the blood. In the proximal tubule water and certain useful substances are resorbed from the provisional urine, while some further components may be added to it by secretory activity on the part of the tubular epithelium. In the remainder of the tubule, resorption of certain substances is continued, while the urine is concentrated further by withdrawal of water. The finished urine flows through the collecting tubules without further change.

Various kinds of loops occur, varying in length of the thin segment, and in the level to which they descend into the medulla. The outermost glomeruli have the shortest loops, and some loops have been described which lack the thin segment entirely. Each loop, however, returns to the vascular pole of its own glomerulus, where it makes contact with the afferent arteriole. The size of the glomerulus varies with the length of the loop, those nearest the medulla being the largest. The glomeruli can be divided into two types on the basis of their vascular relationships. In the outer banks, or *cortical* glomeruli, the efferent arteriole is $\frac{1}{3}$ to $\frac{1}{2}$ the diameter of the afferent, and breaks up immediately into a capillary bed, which first supplies the medullary ray, then passes over to the convoluted portion of the tubules. In the innermost, or *juxtamedullary* glomeruli, the efferent arteriole is as large or larger than the afferent, and passes immediately into the medulla, where it divides to form a bundle of large caliber vessels (vasa recta), which furnish a capillary bed to the medulla, and turn back at various levels to join the arcuate vein, either immediately, or by way of the interlobular veins.

It is probable that blood is normally more or less equally distributed to all the glomeruli. But it can be demonstrated that in response to certain stimuli (shock, infection, toxins, etc.) blood fails to reach the outer levels of the cortex, and instead passes through the juxtamedullary glomeruli, through the vasa recta, and into the arcuate vein. Thus the major part of the cortex is by-passed, the secretion of urine stops, and arterial blood flows away from the kidney by way of the renal vein. The existence of this by-pass is supposed to explain certain types of kidney pathology.

For further information on the circulation of the kidney, see Josep Trueta, *et al.*, *Studies on the Renal Circulation*, Charles C. Thomas, Springfield, Ill., 187 pages, 1947.



Urinary System



Model #145, A55

1. Abdominal aorta
2. Celiac trunk
3. Superior mesenteric artery
4. Right renal artery
5. Left renal artery
6. Inferior vena cava
7. Right renal vein
8. Left renal vein
9. Right testicular vein
10. Left testicular vein
11. Right suprarenal (adrenal) gland
12. Right kidney
13. Cortex
14. Medulla
15. Adipose coat of renal sinus
16. Renal pelvis
17. Renal columns
18. Major calyces
19. Minor calyces
20. Ramification of renal artery & vein
21. Medullary rays of pyramids
22. Renal papilla
23. Renal hilum
24. Ureters (yellow tubing)
25. Right testicular artery
26. Left testicular artery
27. Inferior mesenteric artery
28. Bifurcation of abdominal aorta
29. Right common iliac artery
30. Left common iliac artery
31. Right common iliac vein
32. Left common iliac vein
33. Right femoral artery
34. Left femoral artery
35. Right femoral vein
36. Left femoral vein
37. Urinary bladder
38. Plicae mucosae
39. Trigone
40. Ureteral orifices
41. Uvula vesicae & internal urethral orifice
42. Urethral crest
43. Prostatic utricle
44. Ejaculatory ducts
45. Orifices of prostatic ducts
46. Prostate gland
47. Muscular layer of bladder
48. Serous coat of bladder
49. Ductus deferens
50. Seminal vesicles

Kidney (Altay 6140.14)

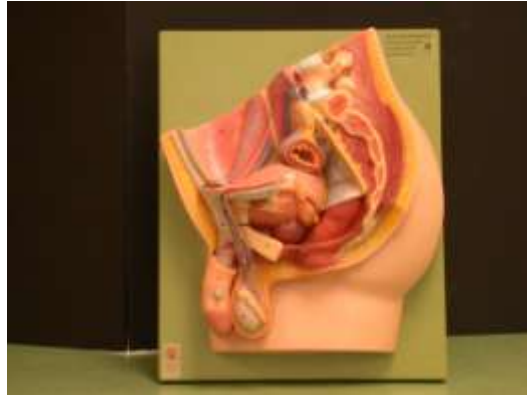
Kidney Section with Renal Nephron & Corpuscle



- I. Kidney with suprarenal gland
 1. Suprarenal gland
 2. Cortex of suprarenal gland
 - a. Zone glomerulosa
 - b. Zone fasciculata
 - c. Zone reticularis
 3. Medulla of suprarenal gland
 4. Kidney
 5. Anterior surface
 6. Posterior surface
 7. Renal cortex
 8. Renal columns
 9. Renal pyramids
 10. Renal papilla
 11. Minor renal calices
 12. Major renal calices
 13. Renal pelvis
 14. Renal artery
 15. Renal vein
 16. Fatty tissue in renal sinus
- II. Nephron
 17. Renal corpuscle
 18. Descending limb
 19. Thin segment
 20. Ascending limb
 21. Collecting tubules
 22. Papillary duct
 23. Arcuate artery
 24. Arcuate vein
 25. Interlobar artery
 26. Interlobar vein
 27. Interlobular artery
 28. Interlobular vein
 29. Straight arterioles
 30. Straight venules
- III. Renal Corpuscle
 31. Renal capsule
 32. Glomerulus
 33. Afferent glomerular arteriole
 34. Efferent glomerular arteriole
 35. Proximal convoluted tubule
 36. Distal convoluted tubule
 37. Macula densa
 38. Juxtaglomerular cell
 39. Podocyt

Reproductive System

Male Pelvis (Somso MS 2)



Somso Model MS 2

1. Pubis
2. Sacrum
3. Coccyx
4. Urinary bladder
 - a. Apex of urinary bladder
 - b. Fundus of bladder
 - c. Muscular coat of bladder
 - d. Mucous membrane of bladder
 - e. Ureter
 - f. Trigone of urinary bladder
5. Prostate
6. Prostatic urethra
 - a. Urethral crest
7. Seminal vesicle
8. Ductus deferens
9. Ureter
10. Corpus cavernosum
11. Penis
12. Glans penis
13. External urethral orifice
14. Ischio-cavernosus muscle
15. Testicle
 - a. Superior end
 - b. Inferior end
16. Epididymis
 - a. Head of epididymis
 - b. Pampiniform plexus
17. Testicular artery
18. Cremaster muscle
19. Spermatic Cord
20. Rectum
21. Common iliac artery
22. Common iliac vein
23. Peritoneum
24. Inguinal ligament
25. Pectineal part of the inguinal liagment
26. Femoral canal
27. Lancuna of the vessels
28. Interfoveolar ligament

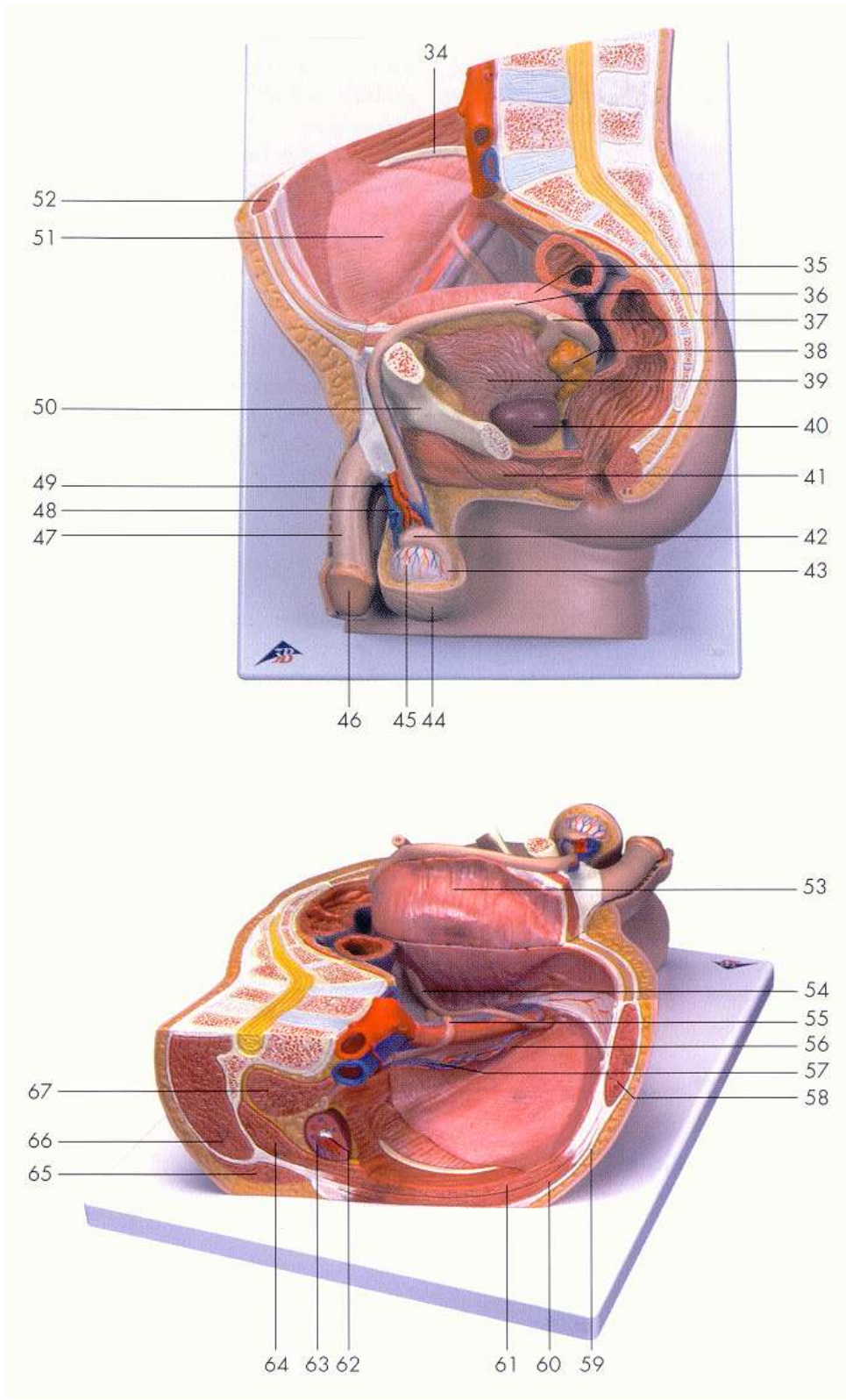
Male Pelvis



1. Penis
2. Foreskin
3. Scrotum
4. Anus
5. Crest of ilium
6. 5th lumbar vertebra
7. Rectus abdominis muscle
8. Pyramidalis muscle
9. Internal oblique muscle
10. Transverse abdominis muscle
11. Multifidus muscle
12. Sacrospinalis muscle
13. Psoas muscle
14. Iliacus muscle
15. Spinal cord
16. Common iliac vein
17. Common iliac artery
18. External iliac artery
19. Internal iliac artery
20. External iliac vein
21. External iliac artery
22. Vesical artery
23. Lateral umbilical ligament
24. Obturator artery & vein
25. Inferior gluteal artery & vein
26. Internal pudendal artery & vein
27. Vesicle venous plexus
28. Prostatic venous plexus
29. Spermatic artery, vein, & nerve
30. Femoral nerve
31. Parietal lymph nodes
32. Ductus deferens
33. Spermatic cord
34. Cremaster muscle
35. External inguinal ring
36. Ureter
37. Urinary bladder
38. Seminal vesicle
39. Ampulla of ductus deferens
40. Prostate
41. Ejaculatory duct
42. Bulbourethral gland
43. Urogenital diaphragm
44. Prostatic urethra
45. Cavernous urethra
46. Bulbus penis
47. Corpus spongiosum
48. Corpus cavernosum
49. Glans penis
50. Bulbocavaernosus muscle
51. Septum of scrotum
52. Testis
53. Epididymis
54. Deep dorsal vein of penis
55. Ischiocavernosus muscle
56. Crus penis
57. Gracilis muscle
58. Pubis
59. Pubic symphysis
60. Suspensory ligament of penis
61. Sphincter ani externus muscle
62. Rectum
63. Coccyx
64. Sacrum

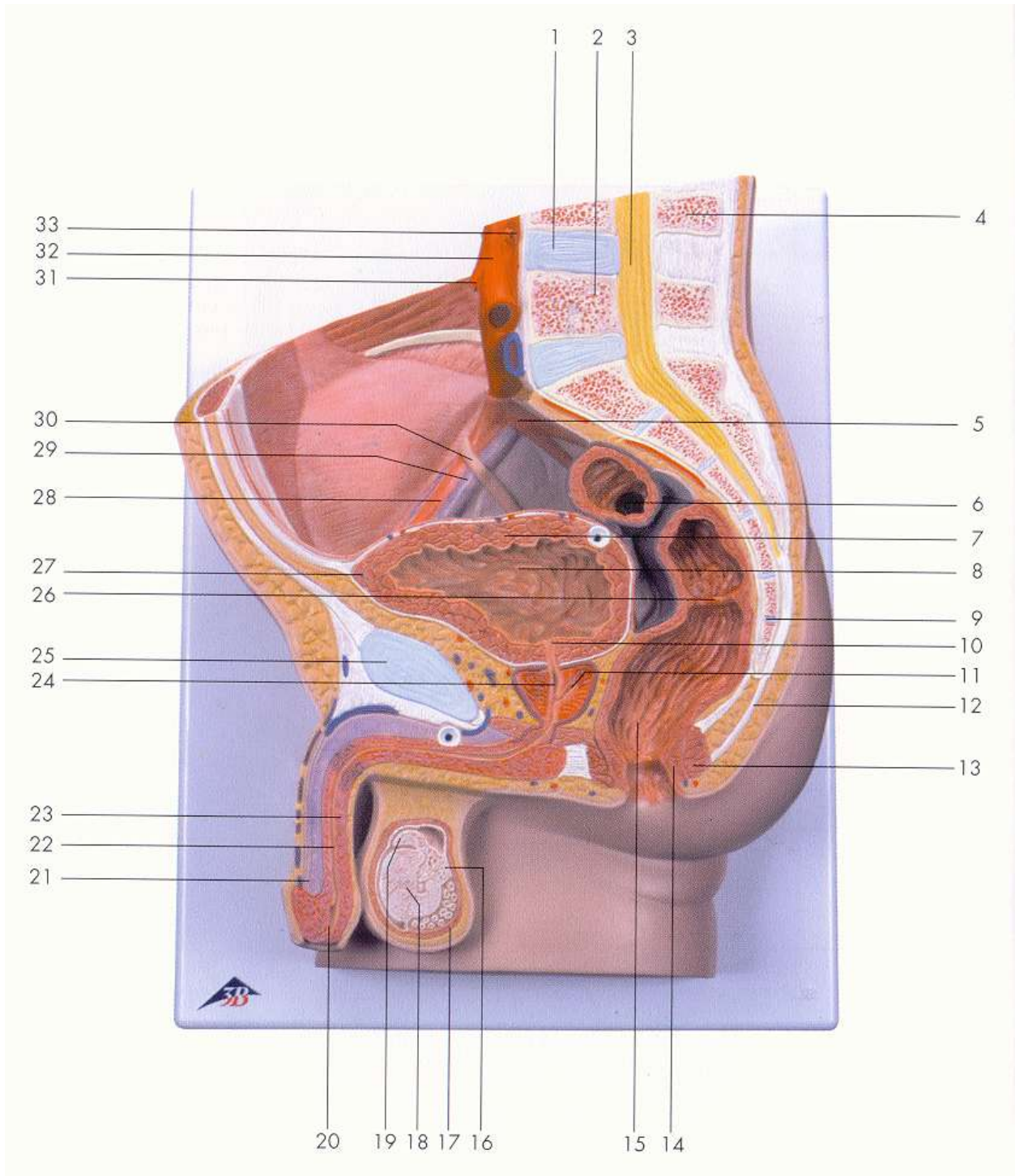
Male Pelvis (H 11)

3B Model H11



Male Pelvis Cont...

3B Model H11



Male Pelvis Cont...

3B Model H11

1. Intervertebral disc
2. Lumbar vertebra
3. Spinal marrow
4. Spinous process
5. Internal iliac artery
6. Sigmoid colon (pelvic colon)
7. Muscular coat of bladder
8. Fundus of bladder
9. Coccygeal bone
10. Internal urethral orifice
11. Prostatic utricle
12. Anococcygeal ligament
13. Sphincter ani externus muscle
14. Sphincter ani internus muscle
15. Rectal ampulla
16. Cauda of epididymus
17. Cremaster muscle
18. Testis
19. Head of epididymus
20. External opening of masculine urethra
21. Cavernous body of penis
22. Spongy part of masculine urethra
23. Spongy part of penis
24. Masculine urethra, prostatic part
25. Pubic symphysis
26. Transverse rectal fold
27. Apex of urinary bladder
28. External iliac artery
29. External iliac vein
30. Right ureter
31. Inferior mesenteric artery
32. Abdominal aorta
33. Renal artery
34. Crest of ilium
35. Bladder
36. Deferent duct (spermatic duct)
37. Left ureter
38. Seminal vesicle
39. Muscular coat of bladder
40. Prostate
41. Bulbospongiosus muscle
42. Head of epididymis
43. Cauda of epididymis
44. Scrotum
45. Testis
46. Glans of penis
47. Penis
48. Spermatic plexus
49. Testicular artery
50. Pubic bone
51. Visceral peritoneum
52. Rectus abdominis muscle
53. Bladder
54. Deferent duct (spermatic duct)
55. Right ureter
56. Right testicular artery
57. Right testicular vein
58. Rectus abdominis muscle
59. Aponeurosis of obliquus externus abdominis muscle
60. Obliquus internus abdominis muscle
61. Transverse abdominis muscle
62. Renal pelvis
63. Renal cortex
64. Quadratus lumborum muscle
65. Latissimus dorsi muscle
66. Erector spinae muscle
67. Psoas major muscle

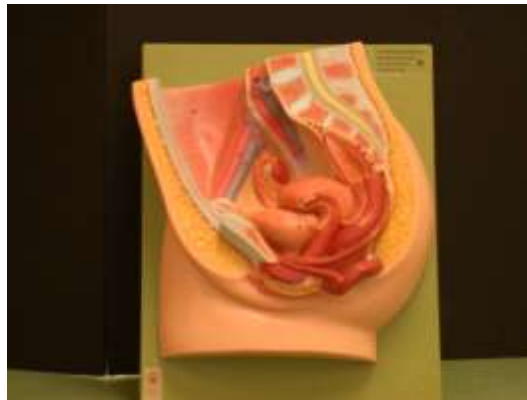
Female Pelvis

1. Mons pubis
2. Anus
3. Labium majus
4. Labium minus
5. Crista iliaca ilium
6. Lumbar vertebra (5th)
7. Rectus abdominis muscle
8. Oblique internus muscle
9. Transverse abdominis muscle
10. Sacrospinalis muscle
11. Multifidus muscle
12. Psoas major muscle
13. Iliacus muscle
14. Iliopsoas muscle
15. Spinal cord
16. Round ligament
17. Uterosacral ligament
18. Broad ligament
19. Ovarian ligament
20. Uterine tube
21. Ovary
22. Uterus
23. Cervix
24. Tunica serosa
25. Tunica muscularis
26. Tunica mucosa
27. Cavum uterum
28. Fornix
29. Vagina
30. Rectum
31. Urethra
32. Urinary bladder
33. Ureter
34. Sacrum
35. Coccyx
36. Pubic symphysis
37. Clitoris
38. Crus of clitoris
39. Bulbus vestibule (bulb of vestibule)
40. Greater vestibular gland
41. Ischiocavernosus muscle
42. Transverse perinea superficialis muscle
43. Sphincter ani externus muscle
44. Piriformis muscle
45. Coccygeal muscle



46. Levator ani muscle
47. Transversus perinea profundus muscle
48. Common iliac artery
49. Common iliac vein
50. Internal iliac artery
51. Internal iliac vein
52. External iliac artery
53. External iliac vein
54. Ovarian artery & vein
55. Obturator artery, vein, & nerve
56. Vesical artery & vein
57. Uterine artery & vein
58. Vaginal artery & vein
59. Superior gluteal artery & vein
60. Pudendal artery, vein, & nerve
61. Parietal lymph node
62. Middle hypogastric nerve plexus
63. Sympathetic nerve trunk
64. First sacral nerve
65. Second sacral nerve
66. Third sacral nerve
67. Fourth sacral nerve
68. Fifth sacral nerve
69. Sacral plexus
70. Lumbosacral nerve trunk
71. External inguinal ring
72. Superficial femoral lymph nodes
73. Inguinal ligament
74. Great saphenous vein
75. Pubis
76. Dorsal clitoral artery, vein, & nerve
77. Posterior femoral cutaneous nerve
78. Inferior epigastric artery & vein
79. Medial umbilical ligament
80. Lateral umbilical ligament

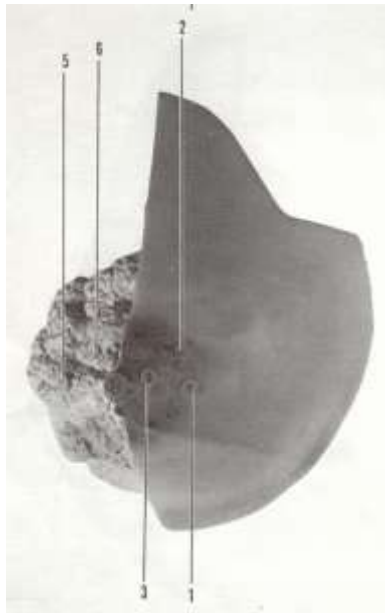
Female Pelvis (Somso MS 3)



Somso Model MS 3

1. Symphysis pubis
2. Sacrum
3. Coccyx
4. Labium majus
5. Labium minus
6. Clitoris
7. Urethra
8. Urinary bladder
9. Broad ligament
10. Vagina
11. Uterus
12. Fornix
13. Cervix
14. Infundibulum
15. Ovary
16. Ovarian ligament
17. Round ligament
18. Rectum
19. Anus

Human Female Breast



Model 56-6600

1. Areola
2. Areolar Glands
3. Papilla
4. Lactiferous Sinus & Duct
5. Parenchyma or Mammary Gland Proper
6. Fat
7. Retinaculum Cutis

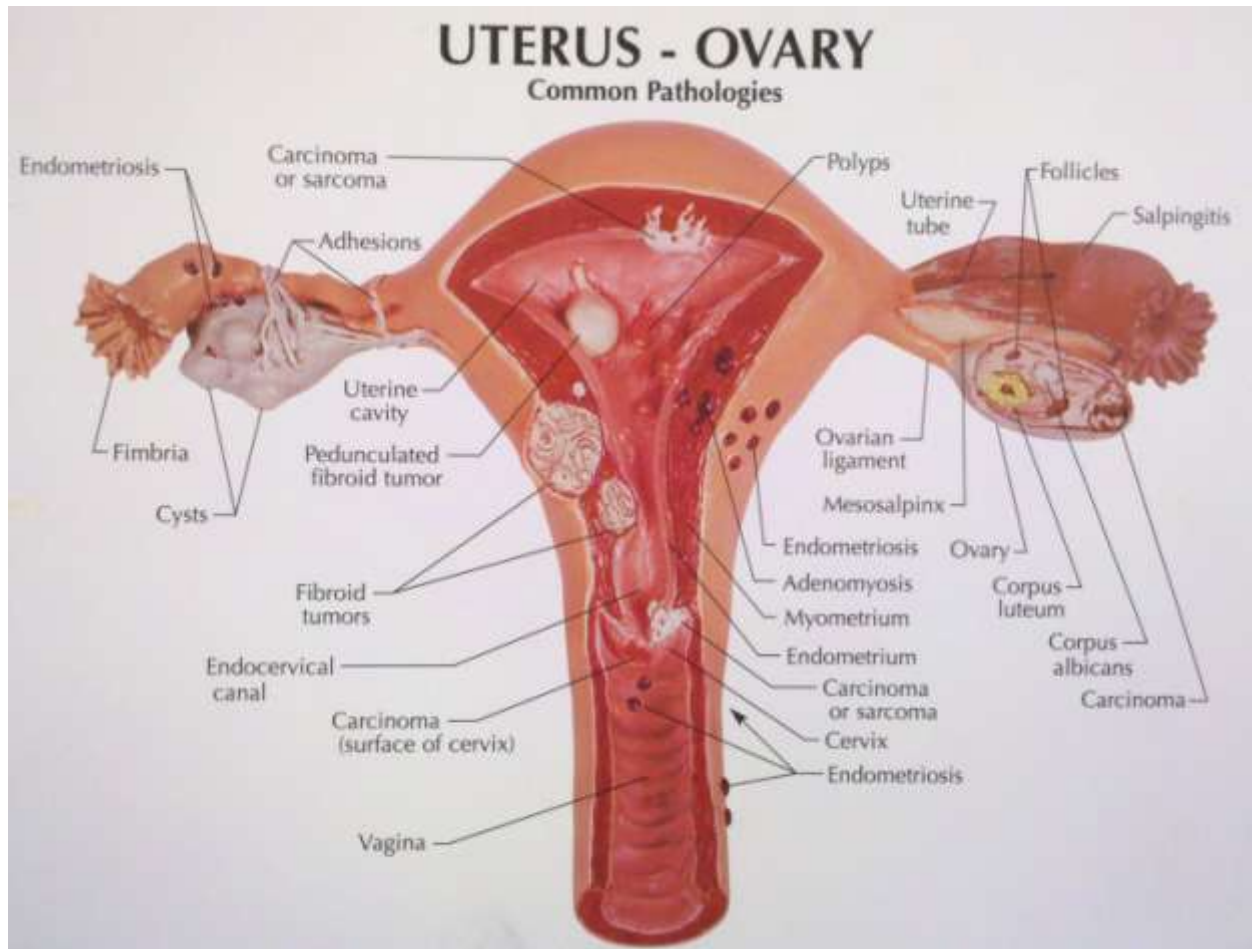
Female Genital Organs (Somso MS 5)



Somso Model MS 5

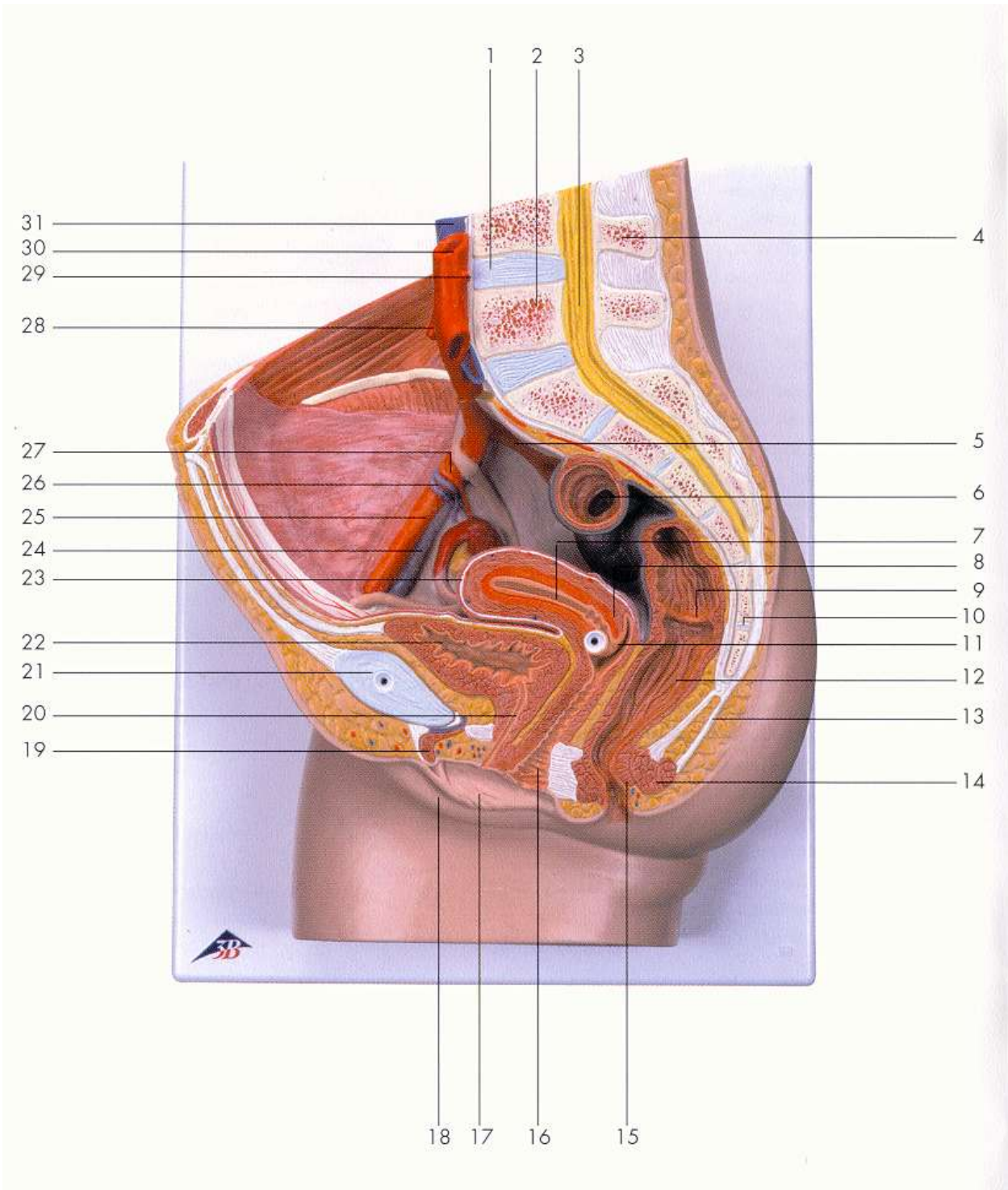
1. Labium majus pudendi
2. Labium minus pudendi
3. Clitoris
4. Prepuce
5. Vagina
6. Body of uterus
7. Neck of uterus
8. Vaginal portion (cervix)
9. Uterine cavity
10. Uterine tube
11. Ovarian fimbria
12. Ovary
13. Ligament of the ovary
14. Round ligament of the uterus
15. Urinary bladder
16. Ureter
17. Rectum
18. Muscle sphincter ani externus
19. Muscle sphincter ani internus

Uterus (Basic Model)



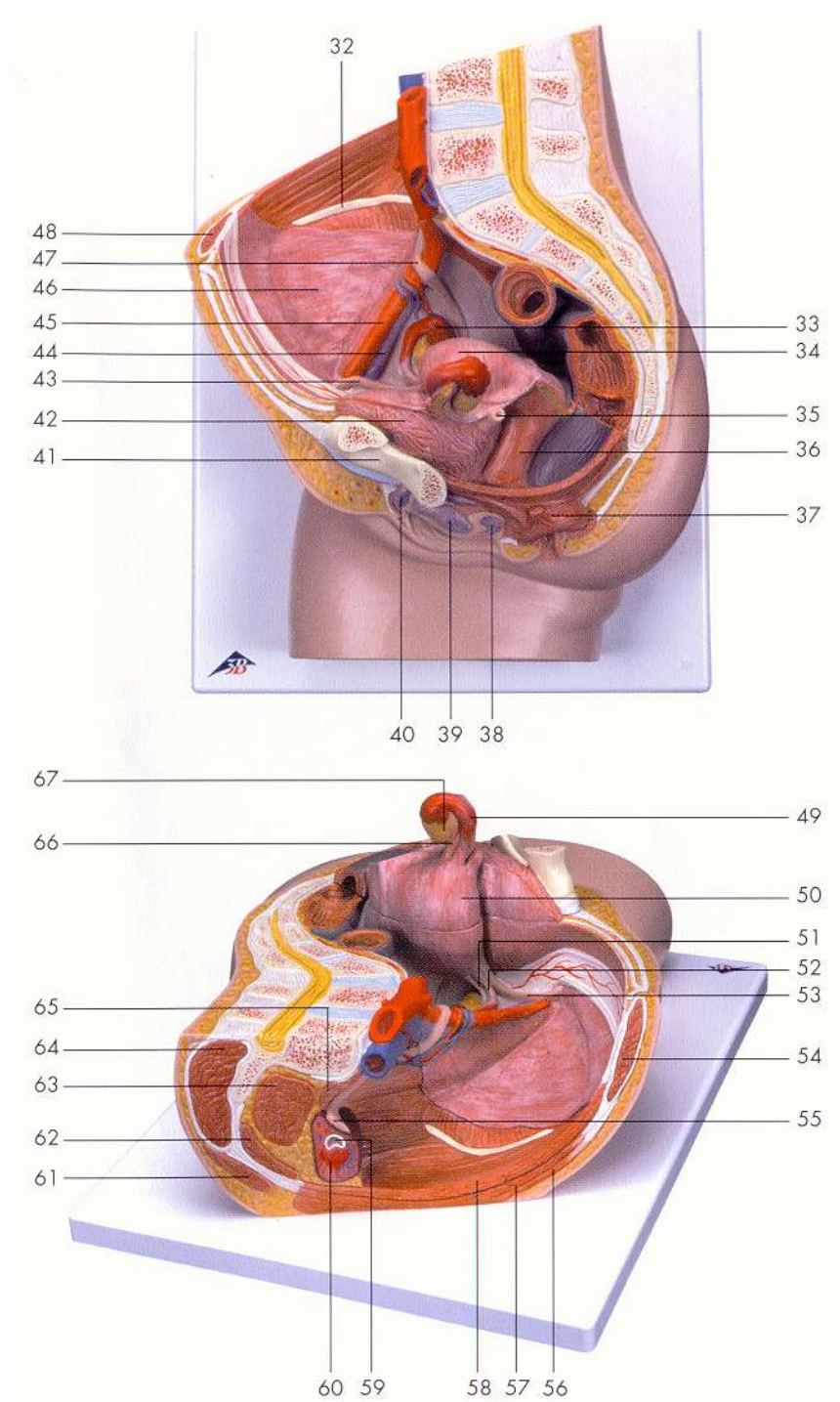
Female Pelvis (H 10)

3B Model H10



Female Pelvis Cont...

3B Model H10

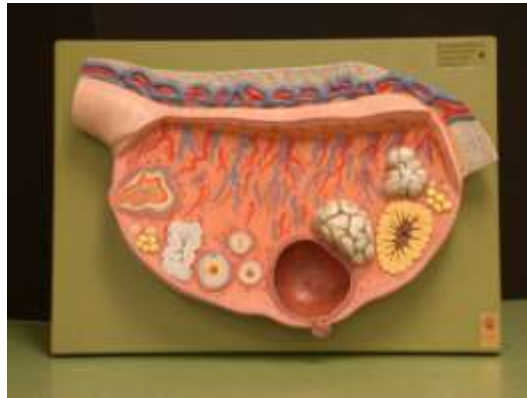


Female Pelvis Cont...

3B Model H10

1. Intervertebral disc
2. Lumbar vertebra
3. Spinal marrow
4. Spinous process
5. Internal iliac artery
6. Sigmoid colon (pelvic colon)
7. Uterine cavity
8. Supravaginal part of cervix uteri
9. Transverse rectal fold
10. Coccygeal bone
11. Opening of uterus
12. Rectal ampulla
13. Anococcygeal ligament
14. Sphincter ani externus muscle
15. Sphincter ani internus muscle
16. Vagina
17. Lesser pudendal lip
18. Greater pudendal lip
19. Cavernous body of clitoris
20. Feminine urethra
21. Pubic symphysis
22. Bladder
23. Fundus of uterus
24. External iliac vein
25. External iliac artery
26. Ovarian vein
27. Ovarian artery
28. Inferior mesenteric artery
29. Renal artery
30. Abdominal aorta
31. Inferior vena cava
32. Crest of ilium
33. Ovary
34. Intestinal surface of uterus
35. Left ureter
36. Vagina
37. Sphincter ani externus muscle
38. Greater vestibular gland
39. Vestibula of vagina
40. Clitoris
41. Pubic bone
42. Bladder
43. Round ligament of uterus
44. External iliac vein
45. External iliac artery
46. Visceral peritoneum
47. Right ureter
48. Rectus abdominis muscle
49. Ovarian canal (uterine tube)
50. Uterus
51. Ampulla of uterine tube
52. Ovarian ligament
53. Round ligament of uterus
54. Rectus abdominis muscle
55. Ureter
56. Obliquus externus abdominis muscle
57. Obliquus internus abdominis muscle
58. Transverse abdominis muscle
59. Renal pelvis
60. Renal cortex
61. Latissimus dorsi muscle
62. Quadratus lumborum muscle
63. Psoas major muscle
64. Erector spinae muscle
65. Psoas minor muscle
66. Ovarian ligament
67. Ovary

Relief Model of the Ovary (Somso MS 51)



Somso Model MS 51

1. Mesovary
2. Germinal epithelium
3. Peritoneal epithelium
4. Tunica albuginae
5. Cortical zone
6. Medullary zone
7. Vessels
8. Smooth muscle cells
9. Primordial follicle
10. Follicle epithelium of primordial follicle
11. Secondary follicle
12. Atretic follicle
13. Cavum folliculi with liquor folliculi
14. Graffian follicle
15. Another follicle shown in section shortly after ovulation
16. Radiate corona
17. Ovum
18. Oolemma
19. Intercal theca of the follicle
20. External theca of the follicle
21. Corpus rubrum
22. Corpus luteum
23. Albicans corpus
24. Hilus with arterial & venous vascular plexus

Digestive System

Molar Tooth (Somso ES 11/5)



Somso Model ES 11/5
Molar with three roots

1. Corona
2. Tubercles of the crown
3. Collum of the tooth
4. Root
5. Enamel
6. Dentin
7. Cement
8. Dental pulp

Models of Teeth

Somso Models



ES 8 – Molar Tooth with carries



ES 11/1, 2, 3

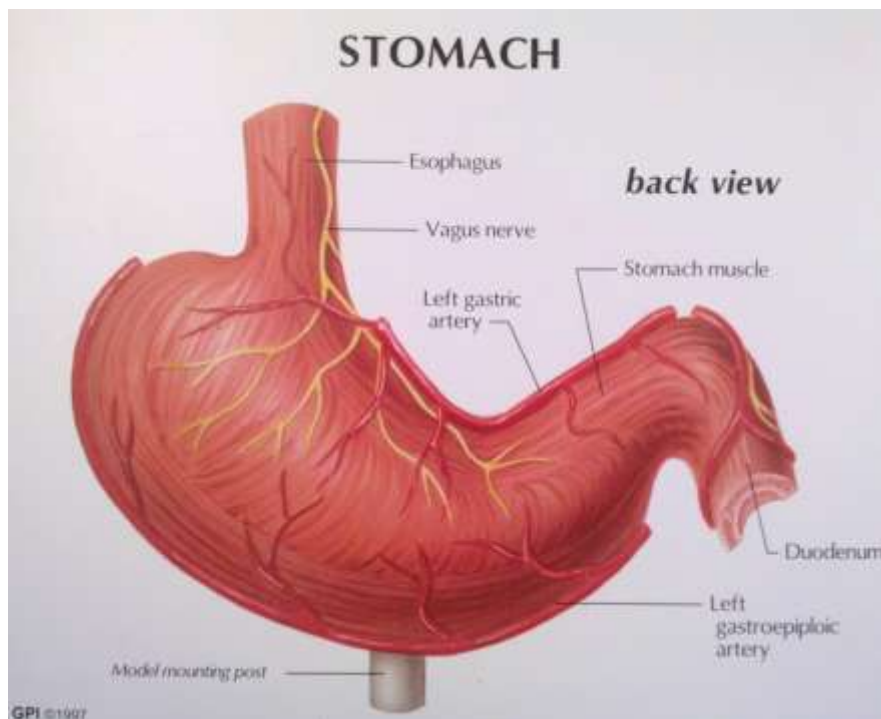
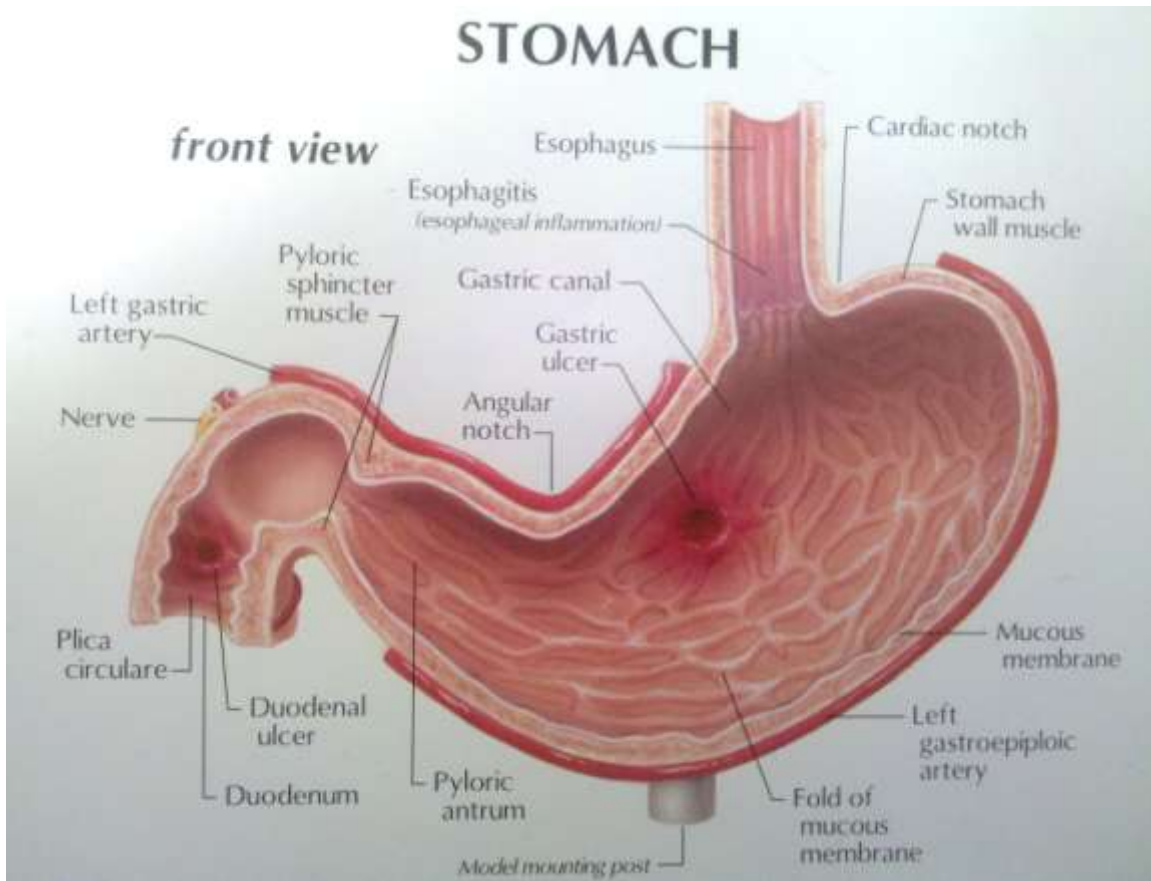
ES 8

1. Corona of tooth with carries
2. Tubercles of crown
3. Collum of tooth
4. Root of tooth
5. Enamel
6. Dentin
7. Cement
8. Dental pulp

ES 11/1, 2, 3

1. Corona of tooth
2. Tubercles of crown
3. Collum of tooth
4. Root of tooth
5. Enamel
6. Dentin
7. Cement
8. Dental pulp

Stomach (Basic Model)



The Stomach (Somso JS 4)



Somso Model JS 4

1. Cardiac orifice
2. Fundus of the stomach
3. Small curvature
4. Big curvature
5. Pylorus
6. Layer of muscular tissue
7. Longitudinal muscular fibers
8. Circular muscular fibers
9. Oblique muscular fibers
10. Peritoneum
11. Left gastric artery
12. Right gastric artery
13. Left gastric epiploic artery
14. Right gastric epiploic artery
15. Left vagus nerve
16. Right vagus nerve
17. Gastric mucous membrane
18. Gastric folds
19. Submucous tunica
20. Section through a fundus gland microscopically enlarged

Pancreas with Spleen & Part of the Duodenum (Somso JS 11)



Somso Model JS 11

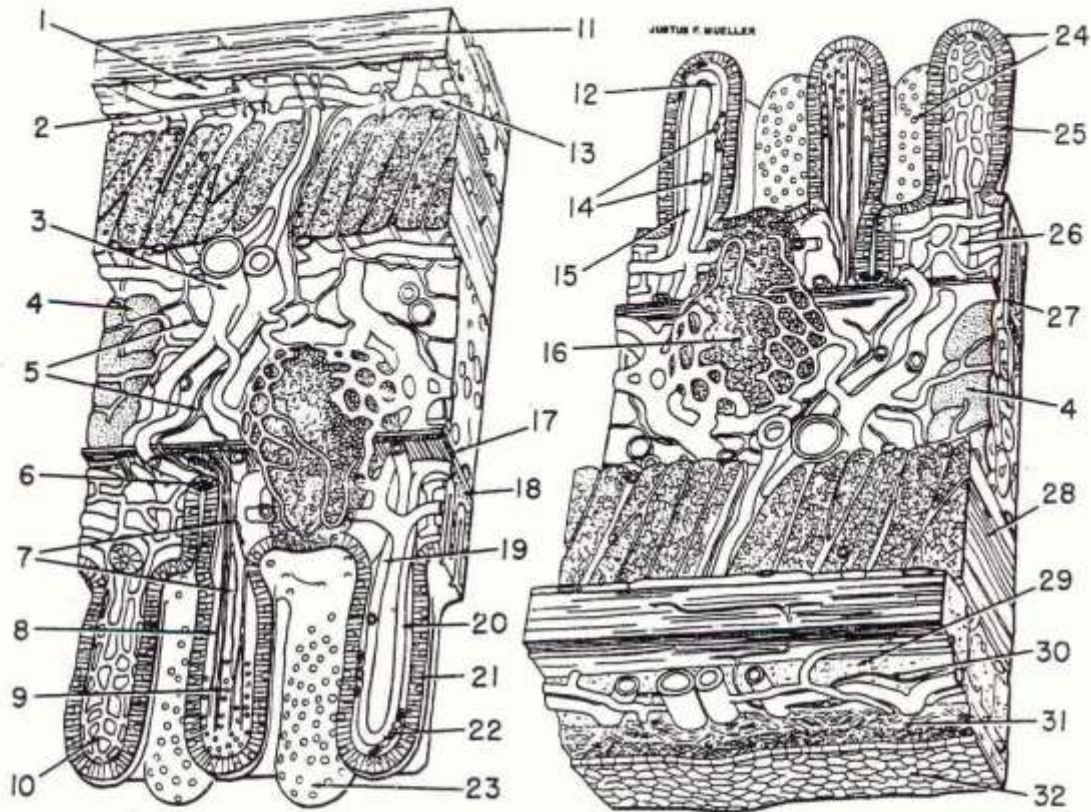
- A. Pancreas
- B. Spleen
- C. Duodenum
 - 1. Pancreatic duct
 - 2. Duct of Santorini
 - 3. Choledochous duct
 - 4. Longitudinal fold of the duodenum
 - 5. Portal vein
 - 6. Splenic vein
 - 7. Superior mesenteric vein
 - 8. Celiac trunk
 - 9. Hepatic artery
 - 10. Splenic artery
 - 11. Gastric artery
 - 12. Gastroduodenal artery
 - 13. Superior mesenteric artery
 - 14. Inferior pancreaticoduodenal artery

Intestinal Villi

(Wards Model 81 W 1332)

8.

Key to MUELLER-WARD Model of the Wall of the Human Small Intestine



- | | | |
|----------------------------------------|------------------------------------------------------|----------------------------------------------|
| 1, 2. Myenteric plexus of Auerbach | 14. Connections of villus capillaries with vein | 24. Goblet or mucous cells |
| 3. Large distributing vessels | 15. Central lacteal of villus | 25. Columnar epithelium of mucosa |
| 4. Brunner's gland | 16. Lymph follicle | 26. Glands (crypts) of Lieberkuhn |
| 5. Submucous plexus of Meissner | 17. Muscularis mucosae | 27. Opening of Brunner's gland into crypt |
| 6. Paneth cells | 18. Cell-rich zone of lamina propria | 28. Circular muscle |
| 7. Nerves of villi and glands | 19. Efferent vein of villus | 29. Subserous connective tissue, loose layer |
| 8. Muscle cells of villus | 20. Afferent artery of villus | 30. Subserous nerve plexus |
| 9. Wandering cells in stroma of villus | 21. Lymphocytes in epithelium | 31. Subserous connective tissue, dense layer |
| 10. Capillary net of villus | 22. Connection of artery and capillary net of villus | 32. Squamous epithelium of serosa |
| 11. Longitudinal muscle layer | 23. Villus | |

The intestinal wall of different mammals varies considerably in relative development and thickness of different layers, and in the finer pattern of circulation. The model represents a microscopic portion of the wall of the small intestine of man, magnified approximately 180x. The villi (23) constitute the inner, the serosa (32) the outer surface of the gut. The longitudinal axis is transverse in the model. The wall of the gut is divisible into several layers from within outward: (a) the mucosa, outwardly bordered by the muscularis mucosae (17); (b) the submucosa; (c) the muscularis propria, consisting of internal and external coats; and (d) the serosa embracing the outer coverings. The relative thickness of these coats varies in different regions and with the state of contraction. The model is

composite in that it shows a Brunner's gland, characteristic of the duodenum, and a large lymph follicle, of the type occurring in the ileum. All muscle of the intestine is smooth muscle. The model shows three breakdowns of the villi to different levels. The cylindrical villi shown are more characteristic of the ileum. Those of the duodenum are tongue or leaf-like, set transversely. The mucosa of the small intestine is thrown into transverse circular or semi-circular folds, the so-called Kerkring's valves or plicae circulares. But a model of gross anatomy would be required to show these, as well as the course of the major blood vessels. See back of key card for further discussion.

Model of a Liver Cell (Somso JS 15)



Somso Model JS 15

1. Nucleoli
2. Chromatin
3. Nucleus membrane
4. Glycogen
5. Golgi apparatus
6. Endoplasmic reticulum
7. Mitochondria
8. Lysosomes
9. Microvilli
10. Bile-duct
11. Plasma membrane

Internal Organs



Model #146, A56

1. Body of pancreas
2. Head of pancreas
3. Tail of pancreas
4. Pancreatic duct
5. Accessory pancreatic duct
6. Papilla major of duodenum
7. Papilla minor of duodenum
8. Duodenum
9. Descending portion of duodenum
10. Inferior portion of duodenum
11. Ascending portion of duodenum
12. Right suprarenal gland
13. Left suprarenal gland
14. Right kidney
15. Left kidney
16. Spleen
17. Hilus of spleen
18. Renal surface
19. Gastric surface
20. Diaphragmatic surface
21. Anterior margin
22. Upper extremity
23. Lower extremity
24. Gastrolial ligament
25. Portion of inferior surface of liver
26. Gallbladder
27. Fundus of gallbladder
28. Neck of gallbladder
29. Cystic duct with spiral valve
30. Hepatic duct
31. Common bile duct
32. Coeliac artery
33. Gastroduodenal artery
34. Superior pancreatico-duodenal artery
35. Hepatic artery
36. Superior mesenteric artery
37. Intestinal arteries
38. Middle colic artery
39. Splenic artery
40. Suprarenal arteries & veins
41. Portal vein
42. Superior mesenteric vein
43. Intestinal veins
44. Middle colic vein
45. Splenic vein
46. Main trunk of portal vein
47. Left gastric artery
48. Splenic artery
49. Right renal artery
50. Right renal vein
51. Left renal artery
52. Left renal vein
53. Hilus of kidney
54. Right ureter
55. Left ureter
56. Branches of portal vein w/in liver
57. Branches of hepatic veins w/in liver
58. Branches of hepatic ducts w/in liver
59. Branches of hepatic artery w/in liver

Liver & Gallbladder



Model #141, A51

1. Right lobe
2. Left lobe
3. Quadrate lobe
4. Caudate (spigelian) lobe
5. Papillary process
6. Caudate process
7. Inferior vena cava
8. Hepatic veins
9. Ramification of hepatic veins in liver
10. Portal vein
11. Ramification of portal vein
12. Hepatic artery
13. Ramification of hepatic artery
14. Hepatic duct
15. Ramification of hepatic duct
16. Cystic duct
17. Gallbladder
18. Round ligament
19. Falciform ligament
20. Coronary ligament, superior leaf
21. Coronary ligament, posterior leaf
22. Ligament of ductus venosus
23. Hepatic veins, branching off from inferior vena cava
24. Pyloric impression
25. Duodenal impression
26. Renal impression
27. Colic impression
28. Esophageal impression

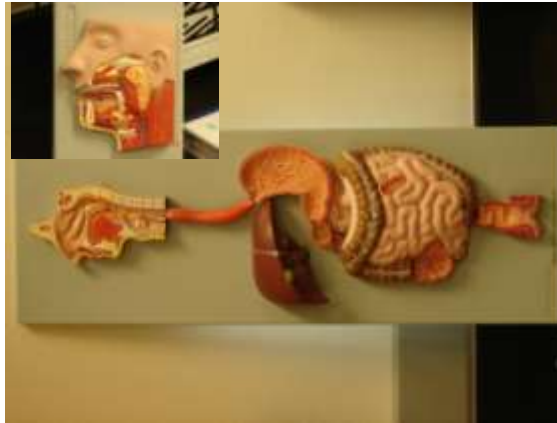
Liver



Altay Model 6090.06

1. Falciform ligament
2. Round ligament of liver
3. Gallbladder
4. Common bile duct
5. Proper hepatic artery
6. Hepatic portal vein
7. Inferior vena cava
8. Lateral-superior area
9. Lateral-inferior area
10. Medial-superior area
11. Medial-inferior area
12. Anterior-superior area
13. Anterior-inferior area
14. Posterior-superior area
15. Posterior-inferior area
16. Left segment of caudate lobe
17. Right segment of caudate lobe

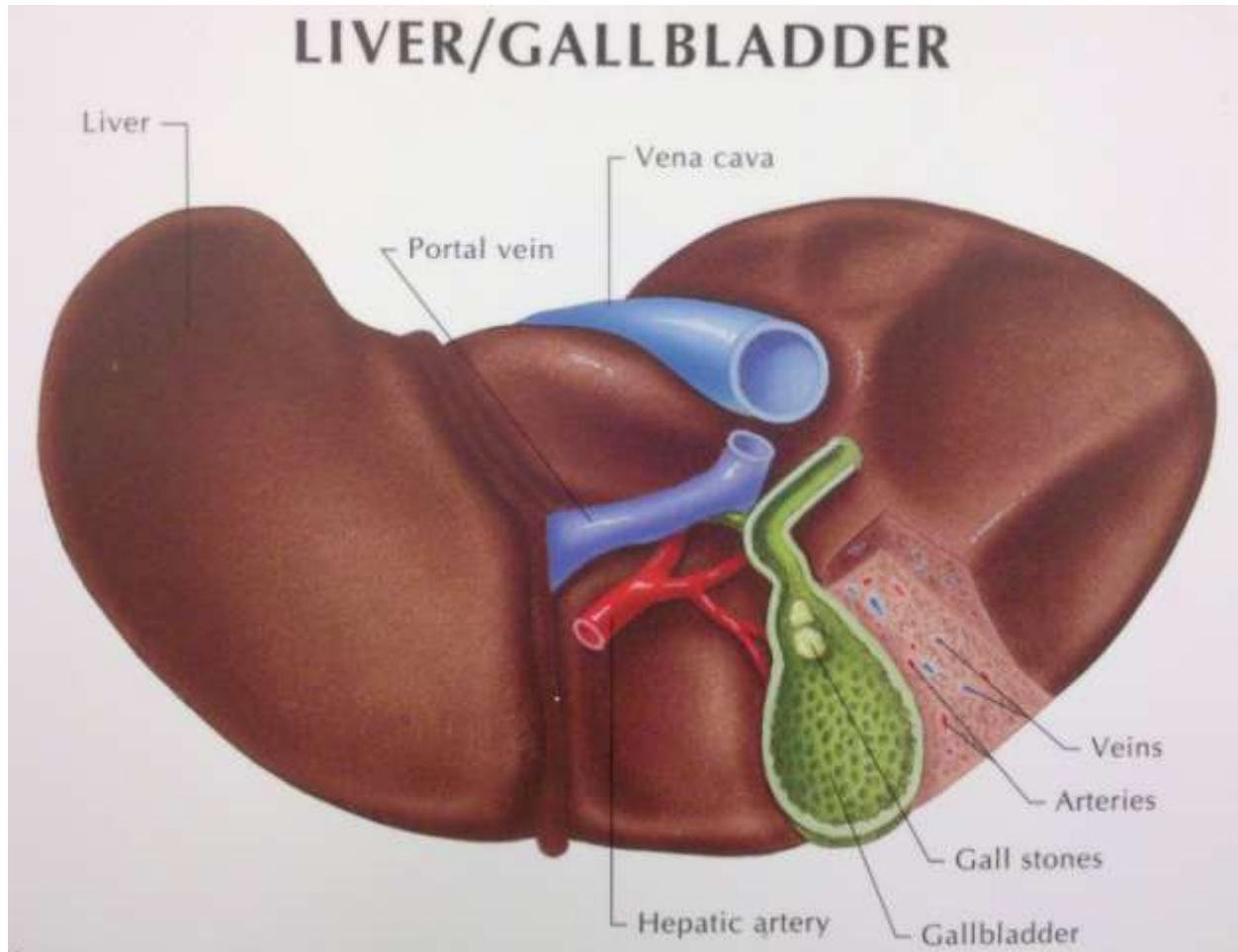
Human Digestive System



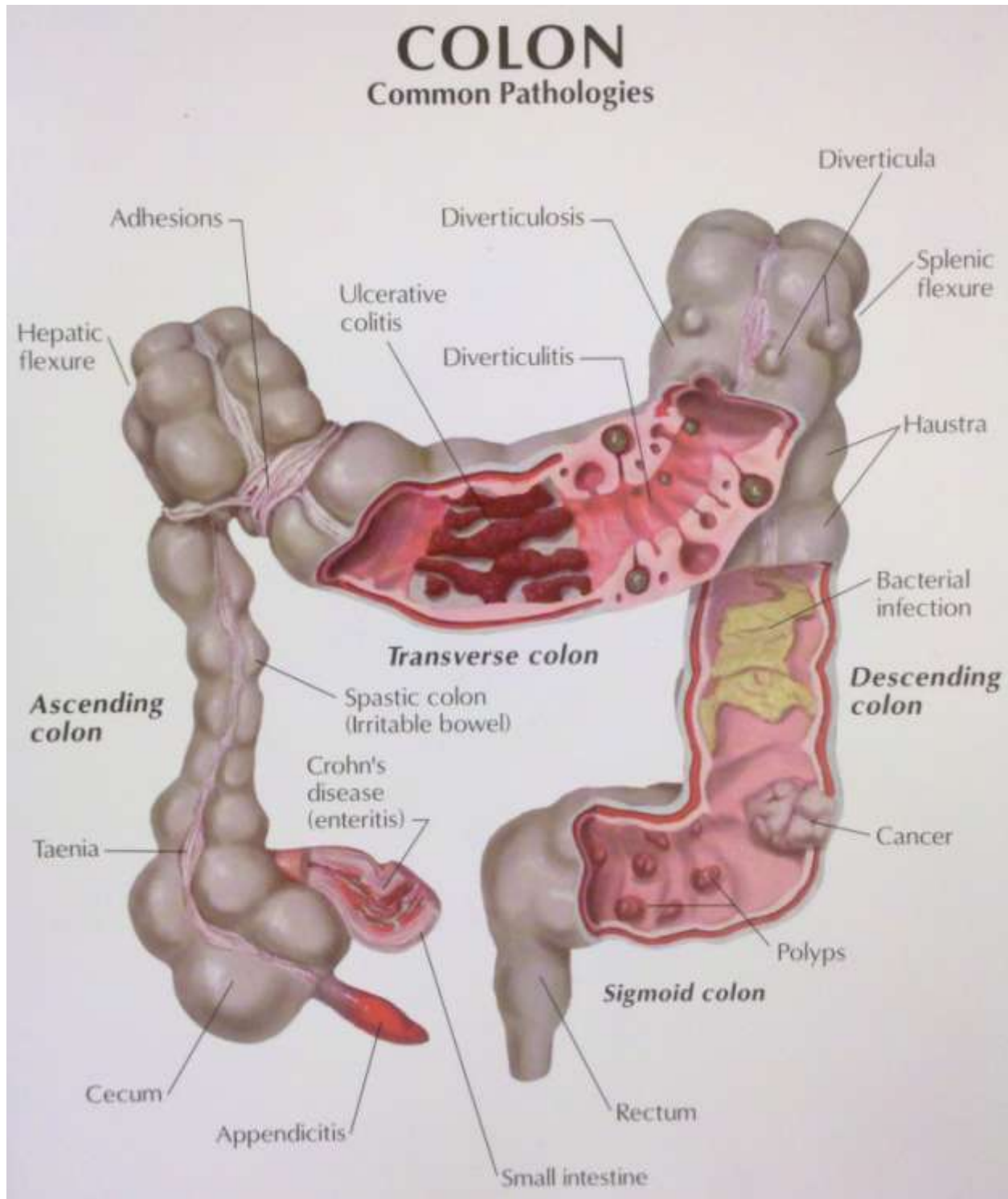
Altay Model 6090.01

1. oral lips
2. hard palate
3. soft palate
4. uvula
5. teeth
6. tongue
7. parotid gland
8. Steno's duct
9. submandibular gland
10. submandibular duct
11. sublingual gland
12. sublingual caruncle
13. nasopharynx
14. pharyngeal opening - auditory tube
15. pharyngeal tonsil
16. oropharynx
17. palatine tonsil
18. laryngopharynx
19. cardia
20. pylorus
21. fornix of stomach
22. body of stomach
23. pyloric antrum
24. duodenum
25. major duodenal papilla
26. minor duodenal papilla
27. jejunum
28. ileum
29. cecum
30. ileocecal valve
31. vermicular appendage
32. ascending colon
33. transverse colon
34. descending colon
35. sigmoid colon
36. rectum
37. anal canal
38. dentate line
39. internal anal sphincter
40. external anal sphincter
41. falciform ligament
42. left lobe of liver
43. right lobe of liver
44. ligamentum teres
45. quadrate lobe
46. caudate lobe
47. gallbladder
48. cystic duct
49. common hepatic duct
50. common bile duct
51. proper hepatic artery
52. portal vein of the liver
53. head of pancreas
54. body of pancreas
55. tail of pancreas
56. pancreatic duct
57. accessory pancreatic duct

Liver/Gallbladder (Basic Model)



Colon (Basic Model)



Rectum (Basic Model)

