THE FUNDAMENTALS OF BODY DESIGN

2002-2003

(The Gross Anatomy Component of P2P1)

A. Timetable

Lectures are held in the Anatomy Lecture Theatre; dissection classes are held in the Gross Anatomy Laboratories.

Introduction Aug. 30	10:00 - 12:00	Lecture Theatre	Development of Body Form: Zygote to Embryo. *Crawford*
	1:00 - 2:00	Lecture Theatre	Introduction to Gross Anatomy: Superficial Muscles of the Back. *Crawford*
	2:00 - 5:00	Gross Laboratory	Orientation to Gross Anatomy Laboratory & Superficial Dissection of Back. *Crawford*
1. Sept. 6	1:00 - 2:00	Lecture Theatre	A Segmented System: Spinal Nerves (Introduction to the Nervous System). *Vogl*
	2:00 - 5:00	Gross Laboratory	Deep Dissection of Back & Spinal Cord. *Vogl*
2. Sept. 13	1:00 - 2:00	Lecture Theatre	Introduction to Radiological Anatomy. *Crawford*
	2:00 - 3:30	Lecture Theatre	Bones & Joints. *Slonecker*
	3:30 - 4:30	Gross Laboratory	Demonstration of Bones & Joints. *Slonecker*
3. Sept. 20	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Thorax (1): General Organization of the Thoracic Walls, Pleural Cavities & Lungs. *Church*
	2:00 - 5:00	Gross Laboratory	Dissection of the Thoracic Walls, Pleural Cavities & Lungs. *Church*
4. Sept. 27	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Thorax (2): Middle Mediastinum & Heart. *Crawford*
	2:00 - 3:00	Lecture Theatre	Radiological Anatomy of the Thorax. *Crawford*
	3:00 - 5:00	Gross Laboratory	Dissection of the Middle Mediastinum & Heart. *Crawford*
5. Oct. 4	1:00 - 2:00	Lecture Theatre	The Autonomic Nervous System. *Vogl*
	2:00 - 3:00	Lecture Theatre	Gross Anatomy of the Thorax (3): Superior & Posterior Regions of the Mediastinum. *Church*
	3:00 - 3:30	Gross Laboratory	Demonstration of Autonomic Nervous System. *Vogl*
	3:30 - 5:00	Gross Laboratory	Dissection of Superior & Posterior Regions of the Mediastinum. *Church*
6. Oct. 11	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Abdomen (1): Anterior Abdominal Wall & Inguinal Region. *Church*
	2:00 - 5:00	Gross Laboratory	Dissection of Anterior Abdominal Wall & Inguinal Region. *Church*
7. Oct. 18	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Abdomen (2): General Organization of the Peritoneum & Viscera. *Church*
	2:00 - 5:00	Gross Laboratory	Exploration of Abdominal Cavity. *Church*
8. Oct. 25	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Abdomen (3): Foregut Organs & Vessels. *Doroudi*
	2:00 - 5:00	Gross Laboratory	Dissection of Foregut Organs & Vessels. *Doroudi*
9. Nov. 1	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Abdomen (4): Midgut & Hindgut Organs & Vessels. *Doroudi*

	2:00 - 5:00	Gross Laboratory	Dissection of Midgut & Hindgut Organs & Vessels. *Doroudi*
10. Nov. 8	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Pelvis (1): Pelvic Viscera & Urinary System. *Vogl*
	2:00 - 5:00	Gross Laboratory	Dissection of Pelvic Viscera & Urinary System. *Vogl*
11. Nov. 15	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Pelvis (2): Posterior Abdominal & Pelvic Walls and Lumbosacral Plexus. *Vogl*
	2:00 - 5:00	Gross Laboratory	Dissection of Posterior Abdominal & Pelvic Walls and Lumbosacral Plexus. *Vogl*
12. Nov. 22	1:00 - 2:00	Lecture Theatre	Gross Anatomy of the Pelvis (3): The Perineum. *Vogl*
	2:00 - 3:00	Gross Laboratory	Demonstration of Perineal Structures. *Vogl*
13. Nov. 29	1:00 - 2:00	Lecture Theatre	Introduction to Gross Anatomy of the Head, Neck & Cranial Nerves. *Vogl*
	2:00 - 3:00	Lecture Theatre	Cranial Nerve V. *Vogl*
	3:00 - 5:00	Gross Laboratory	Superficial Dissection of Head & Cranial Nerve V. *Vogl*
14. Dec. 6	1:00 - 2:00	Lecture Theatre	Cranial Nerve VII. *Slonecker*
	2:00 - 5:00	Gross Laboratory	Superficial Dissection of Head & Cranial Nerve VII. *Slonecker*

B. Overview and General Learning Objectives

P2P1 contains a gross anatomy component termed "The Fundamentals of Body Design". This component has at least one lecture and laboratory scheduled each week and involves a detailed dissection of the vertebral canal and body core regions (thorax, abdomen and pelvis). P2P1 also contains introductory sessions on the somatic and autonomic nervous systems, embryology, radiological anatomy, head and neck anatomy, cranial nerves and bones/joints.

Although the gross anatomy sessions in "The Fundamentals of Body Design" encompass many of the guiding principles of P2P1, they are NOT necessarily integrated with the themes of each week in P2P1. Rather, the gross anatomy sessions in P2P1 together constitute a longitudinal lecture and laboratory dissection course that will provide students with an understanding of the normal gross anatomical structure of the core regions of the body. As such, the material presented in "The Fundamentals of Body Design" is key to many of the other activities that students undertake in P2P1 and P2P2, including case-based learning sessions and family practice visits. Information provided in "The Fundamentals of Body Design" which is of direct relevance to the Pulmonary, Cardiovascular, FERGU, Reproduction Growth & Development and Gastrointestinal Systems Blocks will be reviewed briefly in each of the relevant Blocks in P2P2. Material not covered in "The Fundamentals of Body Design" (gross anatomy of the upper and lower limbs, head and neck gross anatomy) is integrated respectively into the Musculoskeletal and Brain & Behaviour Blocks in P2P2 as lectures and dissection laboratories.

The "Fundamentals of Body Design" component will meet the following general learning objectives:

a) It will enable students to develop a vocabulary of terminology and a network of anatomical concepts that are fundamental to the body as a whole. Students will use general anatomical terminology to describe a body region and structures within a body region.

b) Students will be able to describe the major events in the development of and major characteristic features of the general vertebrate body plan.

c) Students will be provided with an understanding of the normal gross anatomy of the core regions of the body (thorax, abdomen and pelvis) and their major organ systems (respiratory, cardiovascular, gastrointestinal and genitourinary). This understanding forms the basis for performing competent physical examinations and invasive procedures, demonstrating normal and abnormal physical signs, and interpreting image data that reveal internal structures.

d) In relation to the nervous system, students will be able to define the terms central, peripheral, somatic, visceral and autonomic and will be able to identify the major component parts of a spinal nerve and of the autonomic nervous system.

C. Specific Learning Objectives for P2P1:

These are listed for each week of the course.

Aug. 30. Introduction.

A. Development of Body Form: Zygote to Embryo
Dr. Crawford

Before We Are Born pp. 35 - 95

This lecture will provide an overview of early human development, beginning at fertilization:

- fertilization
- cleavage
- gastrulation and the formation of the primary germ layers
- neurulation
- development of somites and coeloms
- pattern of folding that leads to the development of the basic adult vertebrate body plan

B. Introduction to Gross Anatomy: Superficial Muscles of the Back
Dr. Crawford

Clinically Oriented Anatomy pp. 467 - 468
Grant's Dissector pp. 129-136

In preparation for the deep dissection of the vertebral canal, identify on dissections and describe the general attachments of the following muscles:

- Trapezius
- Latissimus dorsi
- Rhomboideus major and minor
- Levator scapulae
- Erector spinae (as a group - you do not need to learn individual components)

Be able to identify:

Bones — Scapula
- Spine
- Acromion
- Superior, inferior and lateral angles
- Superior, lateral and medial borders

Accessory nerve (cranial nerve XI)

Sept. 6. Week 1.

Introduction to the Nervous System. *Dr. Vogl*

A. A Segmented System: Spinal Nerves
B. Deep Dissection of the Back and Spinal Cord

Clinically Oriented Anatomy pp. 477 - 489
Grant's Dissector pp. 129 - 136 & 139 - 142

Be able to:

- describe the embryological basis for the segmental organization of the nervous system.
- indicate the two major subdivisions of the nervous system (peripheral and central)
- indicate the two major classes of nerve fibers (somatic, visceral) and the general functions of each
- describe a simple somatic reflex arc
- define a peripheral ganglion
- indicate the vertebral regions of the body and describe how spinal nerves are numbered from C1 to Co (coccygeal) in relation to vertebrae
- define, both from an embryological perspective and in the adult (as used clinically):
  - a dermatome
  - a myotome

Be able to describe and identify the major components of a spinal nerve:

- dorsal and ventral roots
- dorsal root ganglion
- spinal nerve
- dorsal and ventral rami

be able to indicate the sensory and/or motor components contained in each of the above listed structures

Be able to identify:

- spinal dura, arachnoid and pia
- subarachnoid space and the epidural space
- cauda equina and filum terminale

be able to indicate, in children and in adults, at which vertebral level the spinal cord terminates and at which vertebral level the subarachnoid space terminates

Clinical Correlates:

- epidural space - Identification and clinical use
- lumbar puncture - Diagnostic and therapeutic
- disc protrusion - Sciatica

Sept. 13. Week 2.

A. Introduction to Radiological Anatomy
Dr. Crawford

Clinically Oriented Anatomy pp. 53 - 58

This lecture will introduce some of the basic principles of radiology. It will describe:

- how a radiograph is generated
- how different materials affect X-rays
- the different radiographic densities:
  - bone
  - water
  - fat
  - air
- how materials of different densities combine to form the shadows found on a radiograph

B. The Study of Bones and Joints
Dr. Slonecker

Clinically Oriented Anatomy pp. 15 - 26
Grant's Dissector pp. 217 - 219

Be able to define the general terms used in the study of bones (osteology)

Be able to identify:

- A typical vertebra
  - Body
  - Pedicles
  - Laminae
  - Spinous process
  - Superior and inferior articular processes
  - Superior and inferior vertebral notches
  - Vertebral foramen
- Positions of intervertebral discs
- Vertebral column
  - Curvatures

Be able to orient and articulate two typical vertebrae and indicate the position of an intervertebral foramen

Be aware of some examples of true synovial joints

Be able to describe the characteristics used to group joints:

a) Synovial joints:

Describe the major features of a 'true' or 'synovial' joint
Bone - cartilage - synovial cavity - cartilage - bone
Considerable movement possible

Define what is meant by "range of motion" and review the terminology used to define joint movements:

Flexion	Extension
Abduction	Adduction
Medial rotation (internal)	Lateral rotation (external)
Pronation	Supination
Inversion	Eversion
Protraction	Retraction
Elevation	Depression
Opposition	

b) Other Joint Types (for your interest):

Fibrous: Bones joined by fibrous tissue - no appreciable motion

a. Suture — found in the skull
b. Gomphosis — peg and socket - roots of teeth
c. Syndesmosis — bony surfaces connected by interosseous ligament

Cartilaginous: Bony surfaces connected by cartilage

a. Primary cartilaginous (synchondrosis). Bone - cartilage - bone. Seen between epiphyses and diaphyses of developing bones. No movement possible.
b. Secondary cartilaginous (symphysis). Bone - hyaline cartilage - fibrocartilage - hyaline cartilage - bone. Pubic symphysis, intervertebral body joints (discs). Limited movement possible.

Weeks 3 - 5. The Thorax

Sept. 20. Week 3.

General Organization of Thoracic Walls, Pleural Cavities & Lungs
Dr. Church

Clinically Oriented Anatomy pp. 60 - 114
Grant's Dissector pp. 1 - 18

The objective is to study the gross anatomical features of the thoracic walls, pleural cavities and lungs. Subsequent lectures and laboratories will examine in greater detail the anatomy of the other regions of the thorax and their contents.

Be able to identify and describe orally and in writing the boundaries and major anatomical divisions of the thoracic cavity, together with their contents.

a) Osteology and surface anatomy

Be able to identify:

- A typical thoracic vertebra (N.B. articular facets for the ribs)
- A typical true rib, *i.e.* not the 1st rib (head with articular facets, neck, tubercle with articular facet, angle, shaft, costal groove)
- Sternum:
  - Manubrium (suprasternal notch, facets for articulation of clavicle and 1st and 2nd ribs)
  - Sternal angle (angle of Louis)
  - Body of sternum (facets for articulation of ribs 2 - 7)
  - Xiphoid process
- Costal cartilages
- Intercostal spaces

Be able to describe:

- the boundaries of the thoracic inlet and thoracic outlet (suprapleural membrane and costal margin)
- the anatomical and clinical importance of the horizontal plane joining the sternal angle with the T4/5 intervertebral disc
- the surface projections of the lungs and their fissures and lobes
- the surface projections of the pleural cavities
- how to identify, on a patient, the second rib
- the articulation of a true rib with two adjacent thoracic vertebrae
- the contents of an intercostal space

- the position and numbering of a spinal segmental (intercostal) nerve relative to two thoracic vertebrae and an articulating rib

b) Muscles

Be able to identify:

- Intercostal muscles
- Diaphragm and its central tendon

Be able to describe:

- the circumferential origin of the diaphragm
- the muscles involved in normal quiet respiration and those involved in forced inspiration and expiration

c) Arteries and veins

Be able to identify: - Anterior and posterior intercostal arteries and veins
- Internal thoracic (mammary) arteries and veins

Be aware of the importance of the venous and lymphatic drainage of the breast

d) Nerves

Be able to identify: - Intercostal nerves

Be able to describe the course of an intercostal neurovascular bundle and the importance of this for intercostal nerve block and insertion of chest drains

Why can pathology in the chest present as pain in the abdomen?

e) Suprapleural membrane

Be aware of the clinical importance of the pleural cavities rising above the level of the first rib

f) Pleural cavities

Be able to identify:

- visceral and parietal pleura
- costophrenic angle and costodiaphragmatic recess

Be able to describe:

- the various divisions of the pleura
- the surface projections of the pleural cavities
- the clinical importance of the costodiaphragmatic recess
- the clinical importance of the division between visceral & parietal pleura

g) Mediastinum

Be able to identify:

- Anterior mediastinum: thymus gland, internal thoracic vessels, lymph glands

Be able to describe:

- the anatomical divisions of the mediastinum and their major contents (see below)
- the clinically important relationships of the lungs and pleurae to mediastinal structures

Be able to identify and describe orally and in writing the gross anatomy of the lungs and lower respiratory tree.

a) Trachea

Be able to describe the anatomical relationships of the trachea in the neck and thorax

Be able to identify the bifurcation of the trachea and the vertebral level at which this occurs

b) Primary and secondary bronchi

Be able to describe:

- the clinical importance of the different size and course of the L. and R. primary bronchi
- which structures constitute the conducting portion of the respiratory system

Be able to define and describe the general anatomical features of a bronchopulmonary segment

c) Lungs

Be able to identify:

- Hilus (root)
- Fissures (oblique, horizontal/transverse)
- Lobes (upper, middle and lower on R.; upper and lower on L.)
- Lingula (on L. only)

Be able to list the structures which pass to or from a lung via the hilus or root of the lung (pulmonary A. and V., primary bronchus, bronchial As.)

Be able to describe the surface projections of the lungs

Be able to indicate the anatomical relationships that are important for performing a chest examination

d) Be able to describe the pulmonary vasculature and the pathway it follows to and from the areas of gas exchange

Sept. 27. Week 4.

A. Middle Mediastinum & Heart
Dr. Crawford

Clinically Oriented Anatomy pp. 114 - 142
Grant's Dissector pp. 19 - 28

Be able to identify and describe orally and in writing the gross anatomy of the pericardium, pericardial cavity and surface structures of the heart:

Be able to identify:

a) The pericardial sac:
Be able to distinguish between:
- the fibrous pericardium
- the parietal serous pericardium (serous pericardium)
- the visceral serous pericardium (the epicardium)

b) The following cardiac surface markings:
- the base of the heart
- the apex
- the atrioventricular groove
- the posterior interventricular groove
- the anterior interventricular groove

c) The borders of the following cardiac chambers on the external cardiac surface:
- the right atrium and right atrial appendage
- the right ventricle
- the left atrium and left atrial appendage
- the left ventricle

d) The following coronary vessels:
- right coronary artery
  - posterior descending branch
- left coronary artery
  - circumflex branch
  - anterior interventricular branch (often called the left anterior descending or LAD)
- coronary sinus

e) Be able to describe:
- The surface projections of the heart and pericardium
- In a radiograph, the chambers which form the borders of the cardiac silhouette in P.-A. and lateral projections
- The anatomical relationships of the heart to other structures in the thorax

Be able to identify the following internal cardiac structures:

a) Within the right atrium:
- the right atrial appendage and musculi pectini
- the opening for the tricuspid valve (the R. atrio-ventricular orifice)
- the opening of the superior vena cava
- the opening of the inferior vena cava
- the opening of the coronary sinus
- the interatrial septum
- the fossa ovalis

b) Within the right ventricle:
- the cusps of the tricuspid valve (you do NOT need to know the names of the individual cusps)
- chordae tendinae
- trabeculae carnae
- the interventricular septum
- papillary muscles
- the septomarginal trabeculum (moderator band)
- the pulmonary outflow tract
- the pulmonary valve with its cusps (you do NOT need to know the names of the individual cusps)

c) Within the left atrium:
- the interatrial septum
- the left atrial appendage (rough- and smooth-walled portions)
- the openings for the pulmonary veins
- the opening for the mitral valve (the L. atrio-ventricular orifice)

d) Within the left ventricle:
- the leaflets of the mitral valve (you do NOT need to know the names of the individual cusps)
- chordae tendinae
- papillary muscles
- trabeculae carnae
- the cusps of the aortic valve (you do NOT need to know the names of the individual cusps)

e) Within the ascending aorta:
- the ostia for the right and left coronary arteries

f) Be able to describe:
- the position of the coronary ostia and arrangement and major branches of the coronary arteries
- the structure and characteristic features of each of the four cardiac chambers
- the overall structure of the tricuspid, mitral, aortic and pulmonary valves (individual cusps need not be named)

- the pattern of blood flow through the heart with regard to the arrangement of the cardiac chambers and their valves
- the relationship between the aorta and pulmonary trunk

B. Radiological Anatomy of the Thorax
Dr. Crawford

A separate detailed handout will be provided at the beginning of the lecture

At the end of this session, the student will be able to demonstrate the application of basic anatomical knowledge to the interpretation of imaging studies of the thorax. The student should be able to:

- differentiate between P.-A. and lateral projections
- counts ribs on a P.-A. projection
- identify all of the structures listed in the keys to figures provided in the detailed handout

Oct. 4. Week 5.

A. The Autonomic Nervous System
Dr. Vogl

Clinically Oriented Anatomy pp. 45 - 52 & 301 - 302

Be able to describe and/or define:

- the basic arrangement of visceral motor and visceral sensory pathways as they relate to a typical spinal nerve and to the spinal cord
- the term "autonomic nervous system"
- the terms Sympathetic and Parasympathetic and indicate with which regions of the central nervous system these elements are associated
- the anatomical and functional features that characterize the visceral motor component of the nervous system
- what is meant by paravertebral and prevertebral autonomic systems?
- the major positions of autonomic ganglia in the body
- the general pathways by which autonomics are distributed to the periphery and viscera
- the regions of the central nervous system that retain visceral motor outflow

Be able to identify on prosections:

- sympathetic trunk
  - thoracic, lumbar and sacral ganglia
  - superior, middle and inferior cervical ganglia
  - white and gray rami communicantes
- vagus nerve (cranial nerve X)
- splanchnic nerves (greater)
- prevertebral plexus and associated ganglia

B. Superior and Posterior Regions of the Mediastinum
Dr. Church

Clinically Oriented Anatomy pp. 142 - 157
Grant's Dissector pp. 28 - 35

Be able to identify and describe orally and in writing the gross anatomy of the superior and posterior regions of the mediastinum and understand the anatomical relationships between the listed structures.

Be able to identify and describe the course of:

a) Azygous system of veins
- be able to identify azygous and hemiazygous Vs. and the arch of the azygous V.

- be able to describe the importance of the anastomosis between the portal and systemic venous systems which is found in the lower part of the oesophagus

b) Thoracic duct

c) Oesophagus

Be able to describe:

- the course and anatomical relationships of the oesophagus in the thorax and the diagnostic importance of the relationship of the oesophagus with the arch of the aorta, the left primary (main) bronchus and the left atrium
- the indentations normally seen in the oesophagus on barium swallow

d) Trachea and it's bifurcation into L. and R. primary (main) bronchi

e) Pulmonary trunk and L. and R. pulmonary arteries

f) Aorta

ascending, arch and descending. Be able to name and identify the major branches arising from each part of the thoracic aorta: coronary As.; brachiocephalic A.; L. common carotid; L. subclavian A.; posterior intercostal As.

g) Great veins of the thorax: L. & R. subclavian and internal jugular Vs.; L. & R. brachiocephalic Vs.; superior and inferior vena cavae. Be able to describe the importance of the R. subclavian V. for central venous cannulation

h) L. & R. vagus nerves and recurrent laryngeal nerves

Be able to describe:

- the origin, course, distribution and function of the vagus Ns. in the neck and thorax
- the importance of the intrathoracic course of the L. recurrent laryngeal N. Why can pathology in the thorax present as a change in voice?

i) Ductus arteriosus/Ligamentum arteriosum

j) Sympathetic trunk

Rami communicantes, dorsal root ganglion, splanchnic Ns.

k) L. and R. phrenic Ns. Be able to describe:

- the origin, course and function of the phrenic Ns.
- the clinical importance of the cervical origin of the phrenic Ns.

l) Be able to describe:

- the course and major relationships of the great vessels entering and leaving the heart
- the vertebral levels at which the inferior vena cava, oesophagus, descending thoracic aorta and thoracic lymph duct pierce the diaphragm to enter or leave the thoracic cavity

Weeks 6 - 9: The Abdomen

CONCEPTUAL OVERVIEW:

a) Body cavity lying below the thorax, its walls, roof, floor and viscera lined by serous endothelium - the peritoneum.
b) Attachments of walls and floors defined by vertebral column, ribs and bony pelvis.
c) Encloses the largest part of the gastrointestinal tract, its major glands, blood vessels, lymphatics, kidneys, suprarenal glands, and major parts of the peripheral nervous system.
d) The abdominal cavity is continuous below with the pelvic cavity (which contains the terminal portions of the gastrointestinal tract, the urinary system, and reproductive organs). The pelvic brim (or inlet) is defined as the lower limit of the abdominal cavity.

Oct. 11. Week 6.

Anterior Abdominal Wall & Inguinal Region
Dr. Church

The lecture and the accompanying laboratory will together provide an overview of the anatomy of the anterior abdominal wall and the inguinal regions, with a particular emphasis on hernias.

Clinically Oriented Anatomy pp.181 - 191 & 193 - 198
Grant's Dissector pp. 41 - 51

a) Surface Anatomy

Be able to identify the following surface landmarks:
- costal margin, xiphisternum
- iliac crest, anterior superior iliac spines
- pubic tubercle, pubic crest
- inguinal ligament

Be able to describe:
- subcostal & transtubercular planes, midclavicular line
- the regions of the abdomen employed for ease of description (*i.e.* the anatomical divisions of the abdomen)
- normal surface location of the appendix
- dermatomes of the anterior abdominal wall

b) Anterior Abdominal Wall

Be able to identify:

Fascia - Superficial fascia

- Deep fascia - Rectus sheath
- Fascia transversalis
- Linea alba

Extraperitoneal fat

Peritoneum

Muscles
- External oblique
- Internal oblique
- Transversus abdominis
- Rectus abdominis

Inguinal region
- Inguinal ligament
- Superficial inguinal ring
- Inguinal canal and its contents in males and females
- Conjoint tendon
- Position of deep inguinal ring

In the Male - Identify the spermatic cord in relation to the inguinal rings and inguinal canal

In the Female - Identify the round ligament of the uterus as it exits the superficial inguinal ring. Understand that the female has an inguinal canal and that it contains, as does the male, remnants of the processus vaginalis

Arteries: Inferior epigastric

Nerves: L_1
- Iliohypogastric
- Ilioinguinal

Be able to define:

Hernia

Be able to describe:

- cutaneous innervation of the anterior abdominal wall
- innervation of abdominal musculature
- the functional roles of the anterior abdominal musculature
- the positions of the deep and superficial inguinal rings
- direct and indirect inguinal hernias
- other common sites of herniation involving the abdominal contents

Oct. 18. Week 7.

General Organization of Peritoneum and Viscera
Dr. Church

The lecture and the accompanying laboratory will together provide an overview of the general disposition of the peritoneum and abdominal contents. You should not dissect any of the intra-abdominal structures during the laboratory. Rather, you should take time to explore the general disposition of the abdominal viscera and the peritoneum.

Clinically Oriented Anatomy pp. 209 - 221
Grant's Dissector pp. 55 - 65

N.B. DO NOT REMOVE VISCERA FROM ABDOMINAL CAVITY

a) Be able to identify:

The major abdominal viscera
- distal end of the oesophagus
- stomach
  - cardia
  - fundus
  - body
  - greater and lesser curvatures
  - antrum
  - pylorus
- duodenum
  - four portions
  - greater papilla
- small bowel
  - jejunum
  - ileum
- ileocaecal junction
- appendix
- ascending, transverse, descending and sigmoid portions of large bowel
- liver and gall bladder
  - hilum
  - lobes
  - bile ducts
  - central veins from portal system
- spleen
- pancreas
- kidneys and upper urinary tract
- suprarenal glands

Mesenteries and ligaments. Starting with the oesophagus, trace all components of the GI system to the rectum and identify which are intraperitoneal

(suspended by a mesentery) and which are retroperitoneal (attached to the posterior abdominal wall).

b) Be able to describe:

- the general arrangement of the peritoneum, peritoneal reflections and peritoneal recesses
- the arrangement of the mesenteries and omenta
- the relationships of the major abdominal viscera to each other
- the relationships of the major abdominal viscera to the peritoneum (*i.e.* is the organ intraperitoneal (suspended by mesentery) or is it retroperitoneal (attached to the posterior abdominal wall)).

Oct. 25. Week 8.

Foregut Organs & Vessels
Dr. Doroudi

Clinically Oriented Anatomy pp. 221 - 236 & 257 - 279
Grant's Dissector pp. 65 - 76

N.B. DO NOT REMOVE VISCERA FROM ABDOMINAL CAVITY

Stomach, Duodenum, Pancreas, Liver, Biliary Passages, Portal Vein, Coeliac Trunk and Mesenteric Vessels:

a) Be able to identify:

Stomach
- cardia
- fundus
- body
- greater and lesser curvatures
- antrum
- pylorus

Duodenum
- First part
- Second part
  - Common opening of bile duct and major pancreatic duct
  - Duodenal papilla
- Third part
- Fourth part

Pancreas
- Head
- Neck
- Body
- Tail

Spleen

Liver
- Left lobe
- Right lobe
- Caudate lobe
- Quadrate lobe
- Hepatic veins
- Hepatic portal vein

Biliary Tree
- Right and left hepatic ducts
- Common hepatic duct
- Gallbladder
- Cystic duct
- Bile duct (common)

Arteries
- Abdominal Aorta

Coeliac Trunk - Left Gastric
- Common Hepatic - Gastroduodenal
- R. gastroepiploic
- R. gastric
- Hepatic Proper
- R. hepatic
- Cystic
- L. hepatic
- Splenic - Short gastric
- Left gastroepiploic

Superior mesenteric - Ileocolic - Appendicular
- Right colic
- Middle colic
- Marginal

Veins — Inferior vena cava
- Superior mesenteric
- Splenic
- Hepatic portal vein - Porta hepatis

Nerves — Autonomic innervation of the foregut organs

Lymphatics
- Lymphatic drainage of the foregut organs
- Cisterna chyli

b) Be able to describe:
- Relationship of pancreas to duodenum and to major blood vessels (veins and arteries)
- Sympathetic and parasympathetic input to the prevertebral plexus and the route the fibers take to the viscera. What is the significance of the left colic flexure with respect to parasympathetic innervation?

Nov. 1. Week 9.

Midgut & Hindgut Organs and Vessels
Dr. Doroudi

Clinically Oriented Anatomy pp. 244 - 256 & 277 - 279 & 384 - 389 & 395 - 403
Grant's Dissector pp. 68 - 73

N.B. DO NOT REMOVE VISCERA FROM ABDOMINAL CAVITY

Be able to identify:

Viscera

- small intestine
  - jejunum
  - ileum
  - ileocaecal junction
- appendix
- ascending, transverse, descending and sigmoid portions of large intestine
- rectum and anal canal

Arteries

- Inferior mesenteric
  - Left colic
  - Sigmoidal
  - Superior rectal
  - Marginal

Veins

- Portal vein and portal-systemic anastomoses
- Inferior mesenteric

Weeks 10 - 12: The Pelvis

Nov. 8. Week 10.

Pelvic Viscera and Urinary System
Dr. Vogl

Clinically Oriented Anatomy Chapter 3 & pp. 279 - 289
Grant's Dissector pp. 77 - 83 & 100 - 126

a) Be able to identify:

- Peritoneum
  - In Female
    - Rectouterine pouch of Douglas
    - Broad ligament
      - Mesosalpinx
    - Mesovarium
    - Ligament of ovary
    - Suspensory ligament of ovary
    - Round ligament of uterus
- Viscera
  - Rectum
  - Uterus
  - Ovaries
  - Seminal vesicles
  - Prostate
  - Right and left kidneys
    - Renal pelvis
  - Right and left adrenal (suprarenal) glands
  - Ureter:
    - In female, note relationship to uterine artery
    - In male, note relationship to vas deferens
  - Urinary Bladder
  - Urethra
- Arteries
  - Abdominal aorta
    - Renal
    - Gonadal
    - Bifurcation
      - Common iliac
      - Internal iliac
      - External iliac
  - Internal iliac
    - Superior gluteal
    - Obturator
    - Superior vesical
    - Umbilical (obliterated)
    - (Inferior gluteal)
    - (Internal pudendal)
    - Superior vesicle
    - Uterine

		- (Inferior rectal)	
Veins	Inferior vena cava	- Bifurcation	- Common iliac
			- Internal iliac
			- External iliac
		- Right renal vein	
		- Right gonadal vein	
		- Right suprarenal vein	
Nerves	Sciatic nerve	- Lumbosacral trunk L4-5	
		- Ventral ramus S1-3	
	Pudendal nerve		
	Obturator nerve		

b) Be able to describe:

The anatomical relationships between components of the urinary system and other abdominal viscera

Nov. 15. Week 11.

Posterior Abdominal & Pelvic Walls and Lumbosacral Plexus
Dr. Vogl

Clinically Oriented Anatomy Chapter 3 & pp. 297 - 308
Grant's Dissector pp. 77 - 85 & 89 - 92 & 102 - 103

a) Be able to identify:

- Bones
  - A typical lumbar vertebra
    - Body
    - Superior & inferior articular facets
    - Transverse processes
  - Pelvis
    - Sacrum
      - Ala
      - Facet for sacroiliac joint
    - Hip (Pelvic) Bone
      - Facet for sacroiliac joint
      - Acetabulum
      - Acetabular notch
      - Ischiopubic (pubic) arch
      - Greater sciatic notch
      - Lesser sciatic notch
      - Obturator foramen
      - Adductor surface
      - Gluteal surface
      - Ilium
        - Anterior superior iliac spine
        - Crest
        - Iliac fossa
      - Ischium
        - Spine
        - Tuberosity
      - Pubis
        - Tubercle
        - Crest
        - Pectineal line
        - Pubic Symphysis
    - Coccyx
- Ligaments
  - Sacrospinous
  - Sacrotuberous
- Muscles
  - Quadratus lumborum
  - Iliacus
  - Psoas major
  - Transversus abdominis
  - Diaphragm
    - Opening for inferior vena cava
    - Hiatus for esophagus
    - Path of aorta
    - Left and right crura
    - Median, medial, and lateral arcuate ligaments

	Obturator internus	
	Piriformis	
	Levator ani	
Nerves	Lumbar plexus	- Subcostal - Iliohypogastric - Ilioinguinal - Genitofemoral - Lateral cutaneous nerve of the thigh - Femoral - Obturator - Lumbosacral trunk

Nov. 22. Week 12.

The Perineum
Dr. Vogl

Clinically Oriented Anatomy Chapter 3
Grant's Dissector pp. 92 - 99 & 109 - 114

Be able to identify:

Bones — Pelvis
- Coccyx
- Ischiopubic arch
- Pubic symphysis
- Ischial spine
- Ischial tuberosity

Perineum
- Anal triangle
- Urogenital triangle

Anal triangle
- Levator ani
- Ischiorectal fossa
- Pudendal canal
- Pudendal nerve, Internal pudendal artery and vein
- Inferior rectal nerves, arteries and veins
- Obturator internus

Urogenital triangle
- Urogenital diaphragm
- Superficial perineal pouch
  - Corpus cavernosum - crus of clitoris or penis
  - Ischiocavernosus muscle
  - Corpus spongiosum (male)
  - Bulb of the vestibule (female)
  - Bulbospongiosus muscle
  - Superficial transverse perineus muscle
  - Pudendal nerve - Dorsal nerve of clitoris or penis
  - Perineal nerve - Posterior scrotal or Posterior labial nerves
  - Dorsal artery of penis or clitoris
  - Dorsal vein of penis or clitoris
  - Bartholin's glands (female)
- Glans clitoridis, Glans penis
- Vagina
- Urethra (male and female)

Weeks 13 & 14. Introduction to Gross Anatomy of Head, Neck & Cranial Nerves.

Nov. 29. Week 13.

A. Introduction to Gross Anatomy of Head, Neck & Cranial Nerves
Dr. Vogl

Grant's Dissector pp. 221 - 222

Be able to identify the major defined regions or compartments of the head

Be able to describe the relationship between the oral and nasal cavities of the skull with the pharynx in the neck. Describe the position of larynx and palates (soft and hard) with respect to the airway and digestive tracts

On a skull:

- Identify temporal, parietal, frontal, occipital, zygomatic and sphenoid bones
- Regions:
  - Orbits
  - Petrous part of temporal bone (area of inner and middle ear)
  - Temporal region
  - Infratemporal region
  - Nasal cavities
  - Pterygopalatine Fossa
  - Bony boundaries of the oral cavity
    - Hard palate
  - Cranial Cavity:
    - Petrous ridge
    - Greater wing of the sphenoid
    - Anterior, middle and posterior cranial fossae
- Features:
  - Zygomatic arch
  - Supraorbital foramen
  - Infraorbital foramen
  - Mental foramen
  - Foramen spinosum
  - Internal auditory meatus
  - External auditory meatus

Be able to list the names of all the cranial nerves and the regions of the head or neck with which they are associated

Be able to identify the following landmarks on your cadaver (or on your classmates)

Neck
- Anterior and posterior triangles
- Sternocleidomastoid
- Trapezius
- Clavicle
- Margin of mandible

Head
- Mastoid process
- Zygomatic arch
- Vertex
- Angle of mandible
- External auditory meatus (cartilage)
- External nasal apertures (cartilage and bone)
- Orbital fissure
- Oral fissure

B. Cranial Nerve V
Dr. Vogl

Clinically Oriented Anatomy pp. 857 - 862
Grant's Dissector pp. 221 - 224

Be able to
- Describe the general course and distribution of cranial nerve V
- Identify the major muscles of mastication and identify the division of V that innervates them
- Identify the location of the infratemporal region and pterygopalatine fossa
- Describe the innervation of the upper and lower teeth

Dec. 6. Week 14.

Cranial Nerve VII
Dr. Slonecker

Clinically Oriented Anatomy pp. 862 - 864
Grant's Dissector pp. 221 - 224

Be able to:

- Describe the general course and distribution of cranial nerve VII
- Describe the skeletal-motor, visceral-motor (autonomic nervous system) and sensory components of the VIIth cranial nerve and their branches
- Identify orbicularis oris, orbicularis oculi and occipito-frontalis on prosections
- Identify cranial nerve VII on the face
- Identify the parotid gland