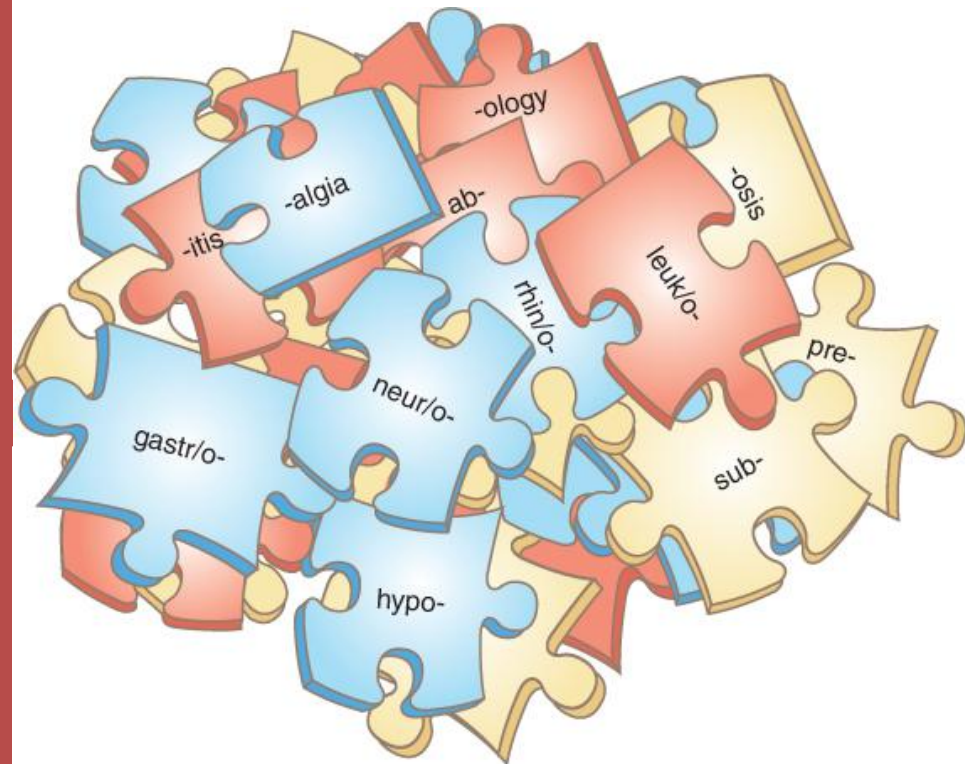


Medical Terminology

The language of medicine



Al-Farabi Kazakh
National
University
Higher School of
Medicine





Textbook

1- Medical Terminology Systems

BY **Barbara A. Gyls, Mary Ellen Wedding,**
SEVENTH EDITION.

2- ANATOMY PHYSIOLOGY The Unity of Form and
Function BY **KENNETH S. SALADIN** and
CAROL L. SCHROEDER. Eighth Edition



Prefixes of Number and Measurement

- Micro- mono-
- uni- multi-
- Poly- primi-
- quadri- tri-



LEARNING OUTCOMES

(Reference-medical terminology Systems P 2-30)

- Identify the four word elements used to build medical words.
- Divide medical words into their component parts.
- Apply the basic rules to define and build medical words.



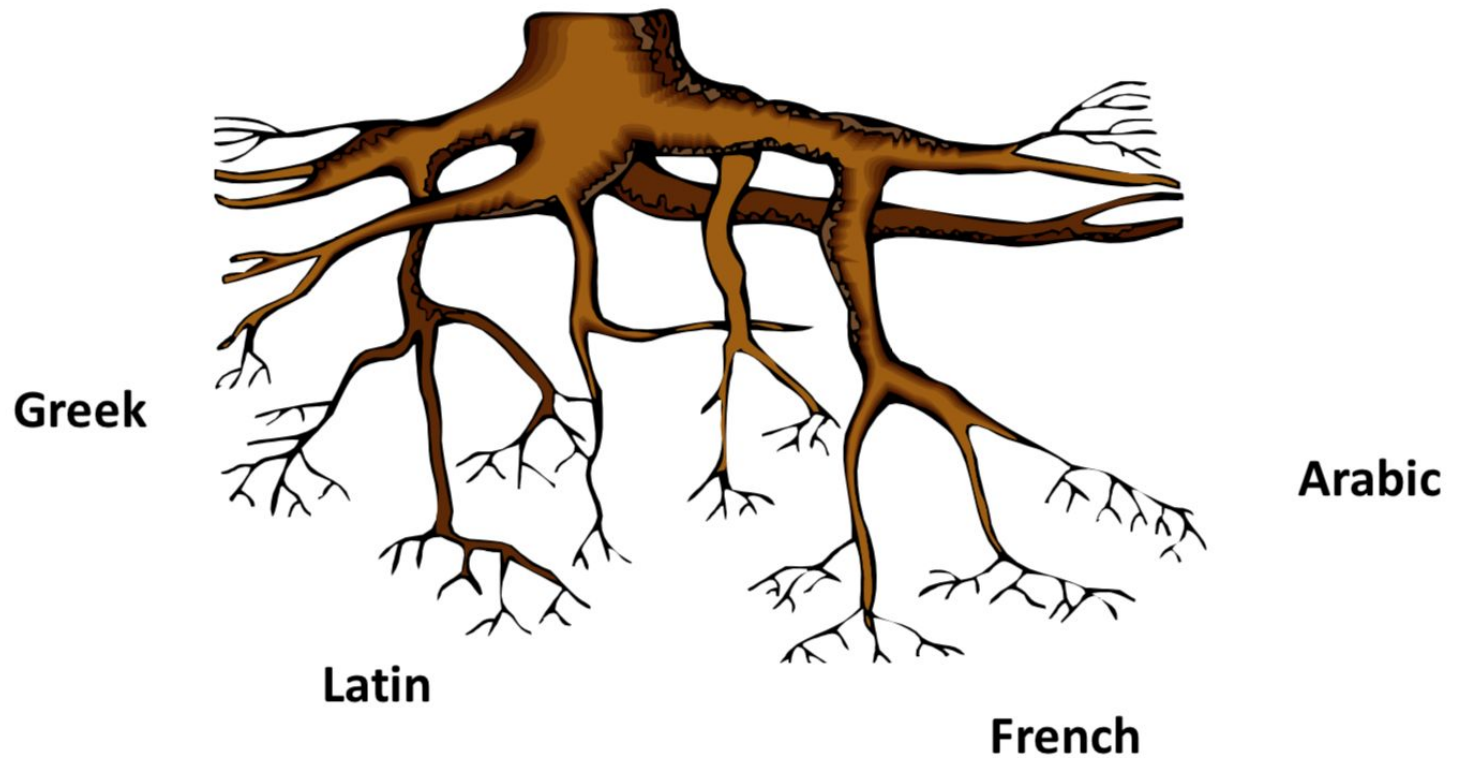
Introduction





Medicine is a different language





Current medical vocabulary includes terms built from **Greek** and **Latin** word parts, **eponyms**, **acronyms**, and terms from **modern language**

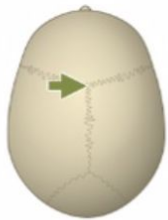


History of medical terminology

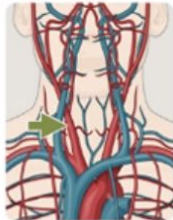


Greek origin

Bregma



Carotid

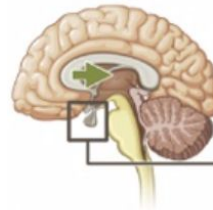


Neuron



Latin origin

Fornix

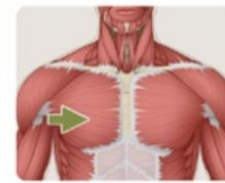


Glans



Anterior pituitary gland

Pectoralis



Sacrum



Tectum

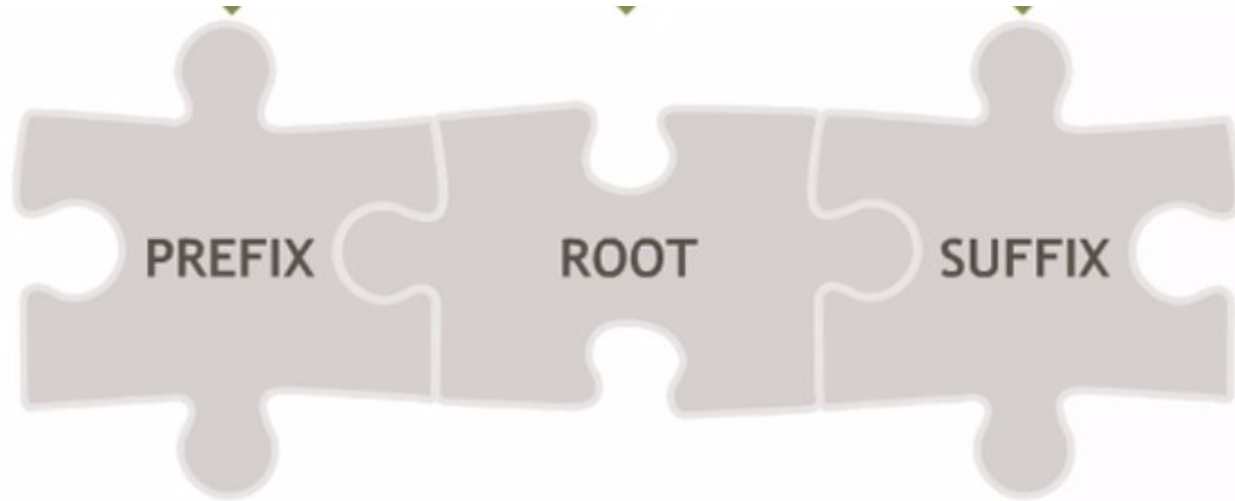


first to attribute illness to physical cause, so it became a primary language to describe the body.

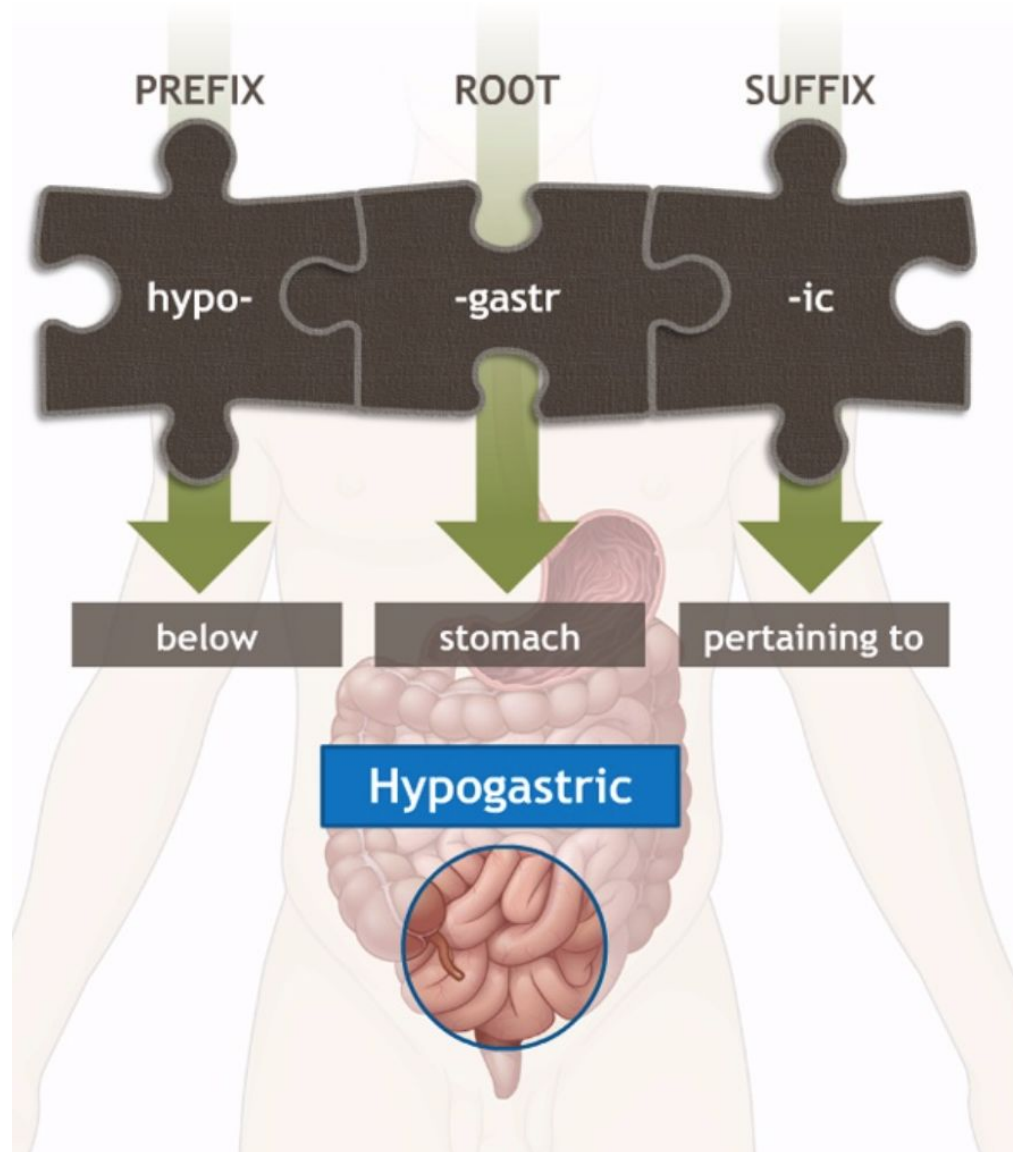
Latin is language of Roman Empire, also had a major influence on medical terminology, so some words have both latin and greek origin.



Basic Elements of Medical word



- Medical terms are like individual jigsaw puzzles. They consist of **prefixes**, **combining forms**, and **suffixes** that make each term unique.





Word Root

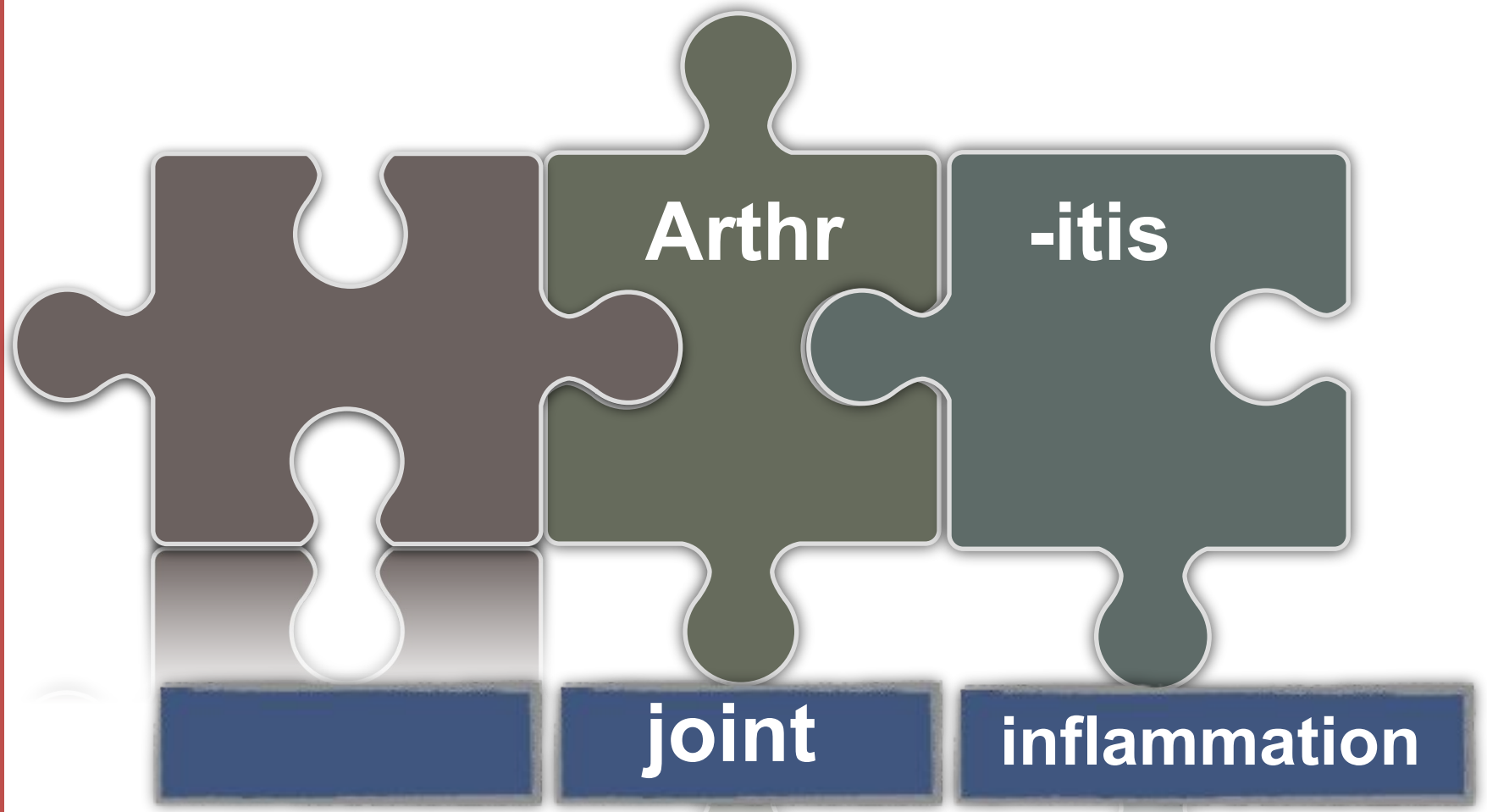
- **The word root is the word part that is the core of the word**
- The word root usually refers to a body part.
- Some root words are derived from the Latin or Greek language.

- arthritis = arthr / itis
- hepatitis = hepat / itis

*Greek Word**Word Root***Kardia (heart)****Cardi****Gaster (stomach)****Gastr****Hepar (liver)****Hepat****Nephros (kidney)****Nephr****Osteon (bone)****oste**



word root



This table lists examples of word roots as well as their phonetic pronunciations. Begin learning the pronunciations as you review the information below.

Greek or Latin Word	Word Root	Meaning	Word Analysis
dermatos (Gr*)	derm	skin	dermat/itis (dĕr-mă-TĪ-tĭs): inflammation of the skin <i>A term that describes a skin disease</i>
nephros (Gr)	nephr	kidney	nephr/oma (nĕ-FRŌ-mă): tumor of the kidney <i>A term that describes a kidney disease</i>
stoma (Gr)	stomat	mouth	stomat/o/pathy (stŏ-mă-TŎP-ă-thĕ): any disease of the mouth <i>A term that describes a mouth disease</i>
cutis (L)	cutane	skin	sub/cutane/ous (sŭb-kŭ-TĀ-nĕ-ŭs): beneath the skin <i>A term that describes the anatomic tissue layer beneath the skin</i>
oris (L)	or	mouth	or/al (OR-ăl): pertaining to the mouth <i>A term that describes an anatomic structure</i>
renes (L)	ren	kidney	ren/al (RĒ-năl): pertains to the kidney <i>A term that describes an anatomic structure</i>

*It is not important to know the origin of a medical word. This information is only provided to illustrate that there may be two different word roots for a single term.



Combining Vowel

- The combining vowel is a word part, usually an
- “o” and is used:
 - – between word roots
 - – between a word root & a suffix to ease pronunciation
 - – thermometer = therm / o / meter
 - – arthropathy = arthr / o / pathy



Combining Vowel

- Oste / o / arthr / it is
- – The combining vowel is used to ease pronunciation;
- therefore, not all medical terms have combining vowels.



Combining form

- A combining form is a word root with the combining vowel attached, separated by a vertical slash
- it is not a word part, rather it is the association of the word root and the combining vowel.



Combining Forms

- Combining forms consist of a **combining vowel**.
- The combining vowel is usually an “o”, but others may be used.

IE: gastr / o pronounced GASTRO.

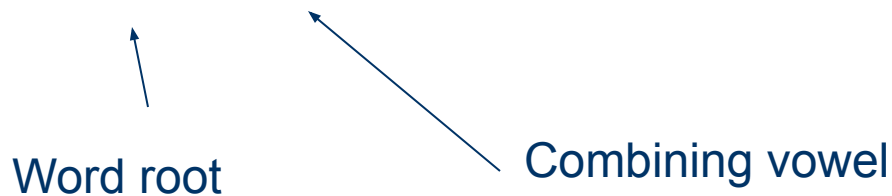


Table 1-2**EXAMPLES OF COMBINING FORMS**

This table illustrates how word roots and vowels create combining forms. Learning combining forms rather than word roots makes pronunciation a little easier because of the terminal vowel. For example, in the table below, the word roots *gastr* and *nephr* are difficult to pronounce, whereas their combining forms *gastr/o* and *nephr/o* are easier to pronounce.

Word Root	+	Vowel	=	Combining Form	Meaning
erythr/	+	<i>o</i>	=	erythr/o	red
gastr/	+	<i>o</i>	=	gastr/o	stomach
hepat/	+	<i>o</i>	=	hepat/o	liver
immun/	+	<i>o</i>	=	immun/o	immune, immunity, safe
nephr/	+	<i>o</i>	=	nephr/o	kidney
oste/	+	<i>o</i>	=	oste/o	bone



Suffixes

- A **suffix** is a word element placed at the end of a word or word root that changes the meaning of the word.
- In the terms tonsill/***itis***, and tonsill/***ectomy***, the suffixes are
 - ***-itis*** (inflammation)
 - **and *-ectomy*** (excision, removal).
- Changing the suffix changes the meaning of the word.
- In medical terminology, a suffix usually indicates a procedure, condition, disease, or part of speech.
- Many suffixes are derived from Greek or Latin words

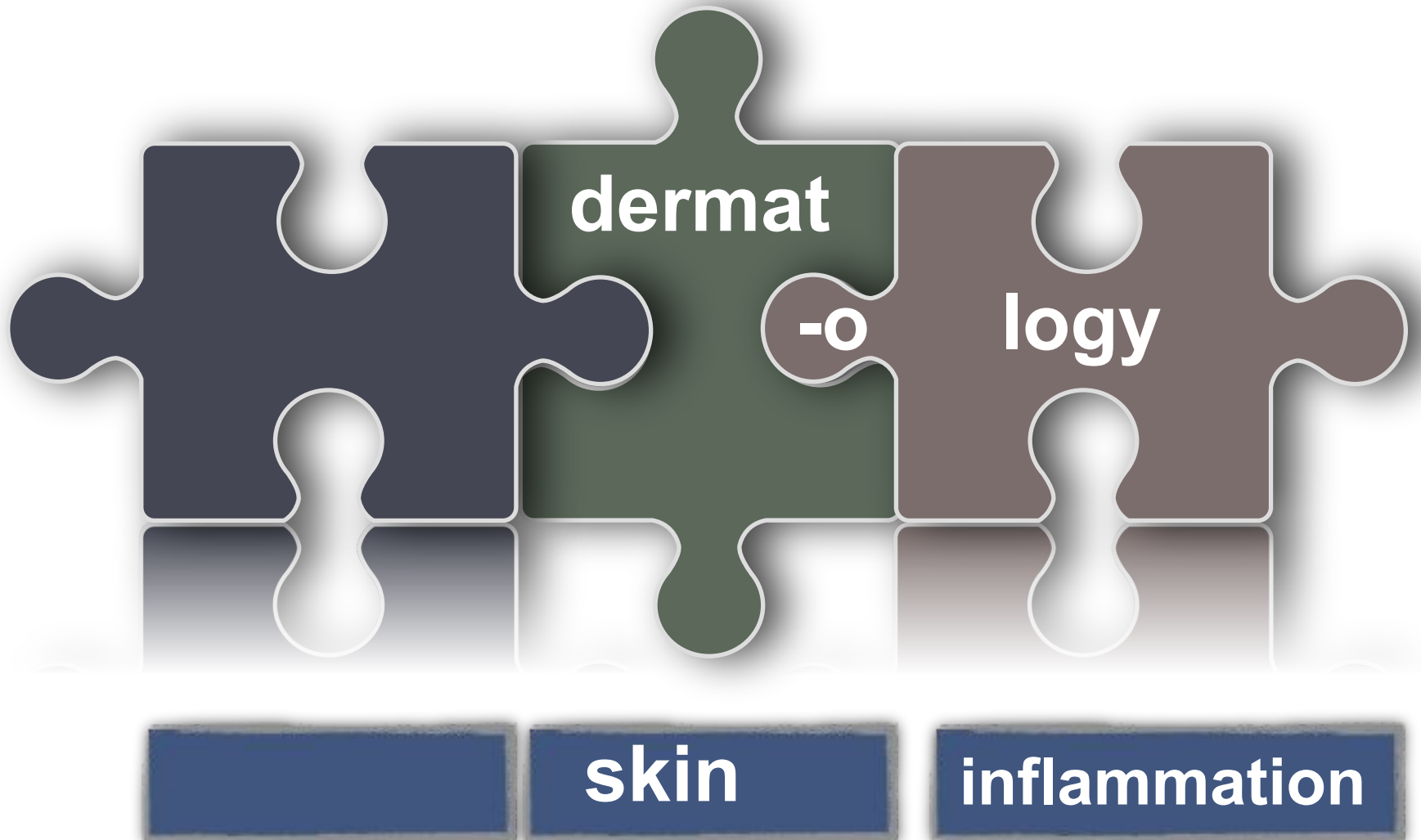


Suffix

- The suffix is a word part attached to the end of the word root to modify its meaning
- – hepatic = hepat / ic
- – hepatitis = hepat / itis



suffix





-Suffix

-Combing form

inflammation

-itis

appendic

-ectomy

appendix

surgical remove



-Suffix

tumor or mass

-oma

hepat/o

-megaly

liver

enlargement



Guidelines

- – When connecting a word root and a suffix, a combining vowel is usually not used if the suffix begins **with a vowel**. Hepat / ic
- – When connecting two word roots, a combining vowel is usually used even if vowels are present at the junction.
- A word root cannot stand alone. A suffix must be added to complete the term.



Leukocytopenia

Word Roots: Leuk / (white)

cyt / (cell)

Combining Vowel / o /

Suffix: / penia (decrease)



- A combining vowel is used between a word root and a suffix that begins with a consonant (not a vowel).
- This is to make pronunciation easier.

Word root: scler / (hardening)

Suffix: / derma (skin)

Term: Scler / o / derma (hardening of the skin)



Combining vowel

Table 1-3**EXAMPLES OF SUFFIXES**

This table lists examples of suffixes as well as their phonetic pronunciations. Begin learning the pronunciations as you review the information below.

Combining Form	+	Suffix	=	Medical Word	Meaning
gastr/o (stomach)	+	<i>-itis</i> (inflammation)	=	gastritis gās-TRĪ-tĭs	inflammation of the stomach
	+	<i>-megaly</i> (enlargement)	=	gastromegaly gās-trō-MĒG-ă-lē	enlargement of the stomach
	+	<i>-oma</i> (tumor)	=	gastroma gās-TRŌ-mă	tumor of the stomach
hepat/o (liver)	+	<i>-itis</i> (inflammation)	=	hepatitis hĕp-ă-TĪ-tĭs	inflammation of the liver
	+	<i>-megaly</i> (enlargement)	=	hepatomegaly hĕp-ă-tō-MĒG-ă-lē	enlargement of the liver
	+	<i>-oma</i> (tumor)	=	hepatoma hĕp-ă-TŌ-mă	tumor of the liver

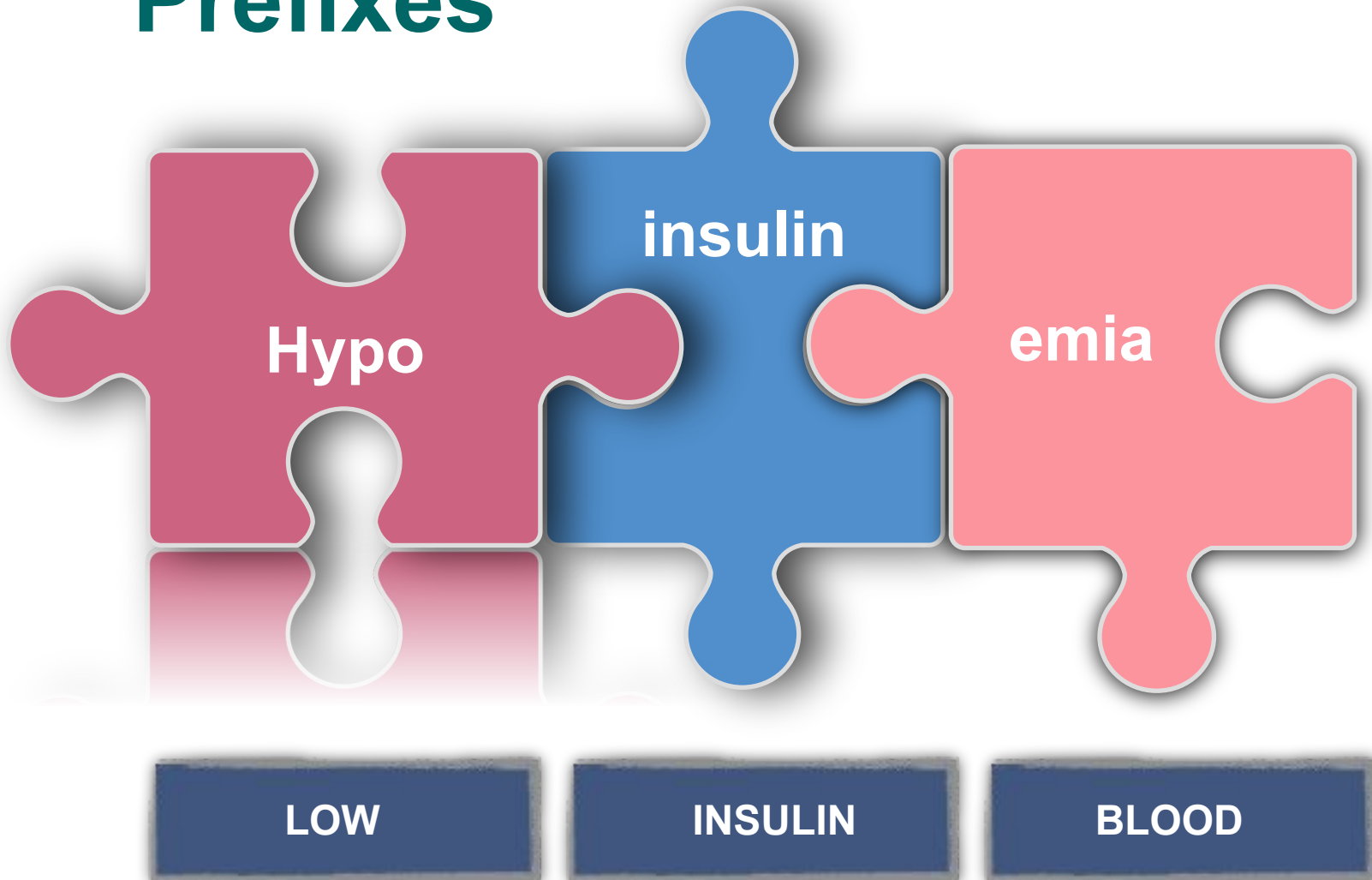


Prefixes

- A prefix is a word element attached to the beginning of a word or word root.
- Adding or changing a prefix changes the meaning of the word.
- The prefix usually indicates a number, time, position, or direction.
- Many of the same prefixes found in medical terminology are also found in the English language



Prefixes



This table lists examples of prefixes as well as their phonetic pronunciations. Begin learning the pronunciations as you review the information below.

Prefix	+	Word Root	+	Suffix	=	Medical Word	Meaning
a- (without)	+	<i>mast</i> (breast)	+	<i>-ia</i> (condition)	=	amastia ă-MĂS-tē-ă	without a breast
hyper- (excessive, above normal)	+	<i>therm</i> (heat)	+	<i>-ia</i> (condition)	=	hyperthermia hī-pēr-THĒR-mē-ă	condition of excessive heat
intra- (in, within)	+	<i>muscul</i> (muscle)	+	<i>-ar</i> (relating to)	=	intramuscular ĭn-tră-MŪS-kŭ-lăr	within the muscle
macro- (large)	+	<i>card</i> (heart)	+	<i>-ia</i> (condition)	=	macrocardia măk-rō-KĀR-dē-ă	condition of a large heart
micro- (small)	+	<i>card</i> (heart)	+	<i>-ia</i> (condition)	=	microcardia mī-krō-KĀR-dē-ă	condition of a small heart

surgical remove



Prefixes of Position

Table 3-2 **Prefixes of Position**

This table lists commonly used prefixes of position along with their meanings and word analyses.

Prefix	Meaning	Word Analysis
epi-	above, upon	epi /gastr/ic (ěp-ĩ-GĀS-trĭk): pertaining to above the stomach gastr: stomach -ic: pertaining to
hypo-	under, below, deficient	hypo /derm/ic (hĩ-pō-DĚR-mĭk): pertaining to under the skin derm: skin -ic: pertaining to <i>Hypodermic injections are given under the skin.</i>
infra-	under, below	infra /cost/al (ĩn-frĕ-KŌS-tĕl): below the ribs cost: ribs -al: pertaining to
sub-		sub /nas/al (sũb-NĀ-sĕl): under the nose nas: nose -al: pertaining to



Prefixes of Position

Table 3-2 Prefixes of Position—cont'd

Prefix	Meaning	Word Analysis
inter-	between	inter/cost/al (ĩn-těr-KŌS-tǎl): between the ribs <i>cost</i> : ribs <i>-al</i> : pertaining to
post-	after, behind	post/nat/al (pŏst-NĀ-tǎl): pertaining to (the period) after birth <i>nat</i> : birth <i>-al</i> : pertaining to
pre-	before, in front of	pre/nat/al (prē-NĀ-tǎl): pertaining to (the period) before birth <i>nat</i> : birth <i>-al</i> : pertaining to
pro-		pro/gnosis (prŏg-NŌ-sīs): knowing before <i>-gnosis</i> : knowing <i>Prognosis is the prediction of the course and end of a disease and the estimated chance of recovery.</i>
retro-	backward, behind	retro/version (rět-rŏ-VĚR-shŭn): turning backwards <i>-version</i> : turning <i>Retroversion refers to tipping backward of an organ (such as the uterus) from its normal position.</i>



Prefixes of Number and Measurement

- Micro- microscope
- mono- mononuclear
- uni- unilateral
- multi- multipara



Prefixes of Number and Measurement

- Poly- polyphobia, polymer
- primi- primigravida
- quadri- quadriplegia
- tri- triceps



Prefixes of Direction

- Ab-abnormal
- ad- adduction, addition
- circum- circumoral, circumference
- peri- periosteitis, perimeter
- ec- ectopia
- ex- excise



Prefixes of Direction

- Para- paranasal
- super-supersensitive
- supra-suprarenal
- anti- antibacterial
- contra- contraception
- brady-slow
- dys- dyspepsia



Prefixes of Direction

- Eu-eupnea
- hetero- different
- homo-homosexual
- mal- malnutrition
- pan- panhysterectomy, panacea
- pseudo- pseudoplegia
- syn- synarthrosis, synthesis
- tachy- tachypnea



summary

- By understanding the meanings of word roots, one can **determine the meaning of complex medical terms** by putting together the smaller parts.



summary

- A combining vowel ***IS*** used to link one root to another root, and before a suffix that begins with a consonant.
- A combining vowel ***IS NOT*** used before a suffix that begins with a vowel.



Defining Medical Words

- Here are the three basic rules for defining medical words using the example term **gastroenteritis**.
- **Rule #1**
 - Define the **suffix**, or last part of the word. In this case, ***-itis***, which means ***inflammation***.
- **Rule #2**
 - Define the first part of the word (which may be a **word root**, **combining form**, or **prefix**). In this case, the combining form ***gastr/o*** means ***stomach***.
- **Rule #3**
 - Define the middle parts of the word. In this case, ***enter/*** means ***intestine***.



Defining Medical Words

- When you analyze ***gastroenteritis*** following the three previous rules, the meaning is revealed as:
 1. inflammation (of)
 2. stomach (and)
 3. intestine
- Thus, the definition of ***gastroenteritis*** is “inflammation (of) stomach (and) intestine.”



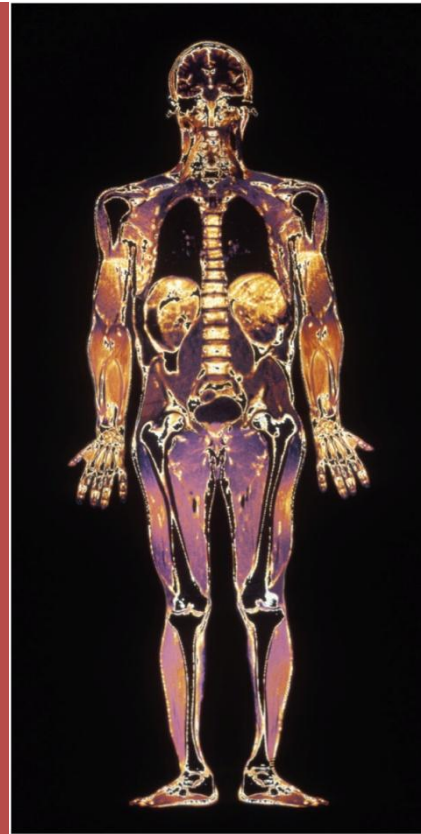
Building Medical Words

- There are three basic rules for building medical words.
- **Rule #1**
 - A word root links a suffix that begins with a vowel.
- **Rule #2**
 - A combining form (root + **o**) links a suffix that begins with a consonant.
- **Rule #3**
 - Use a combining form to link a root to another root to form a compound word.

Orientation to Anatomy



**Al-Farabi Kazakh
National
University
Higher School of
Medicine**



LEARNING OUTCOMES

(Reference-Saladin P 28-38)

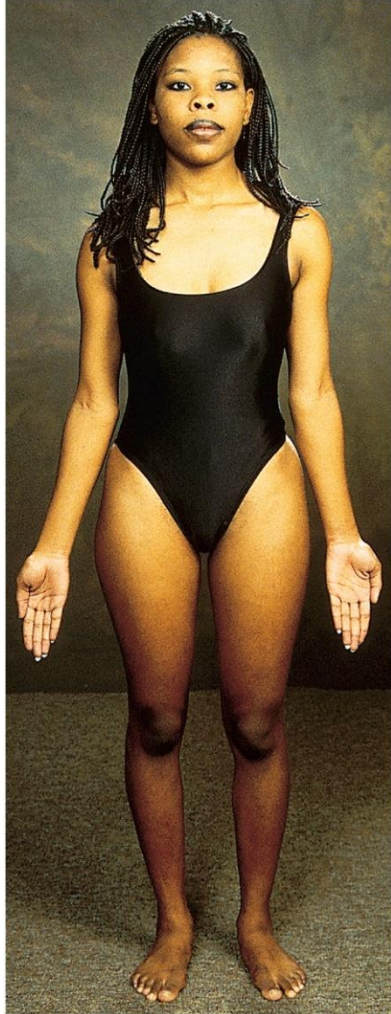
As a result of the lesson you will be able to:

- Demonstrate the anatomical position*
 - Describe the human body using directional and regional terms*
 - Identify three planes most commonly used in the study of anatomy*
 - Distinguish between the posterior (dorsal) and the anterior (ventral) body cavities, identifying their subdivisions and representative organs found in each*
 - Describe serous membrane and explain its function*
-
-



Anatomical Position

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition



© McGraw-Hill Companies/Joe DeGrandis, photographer

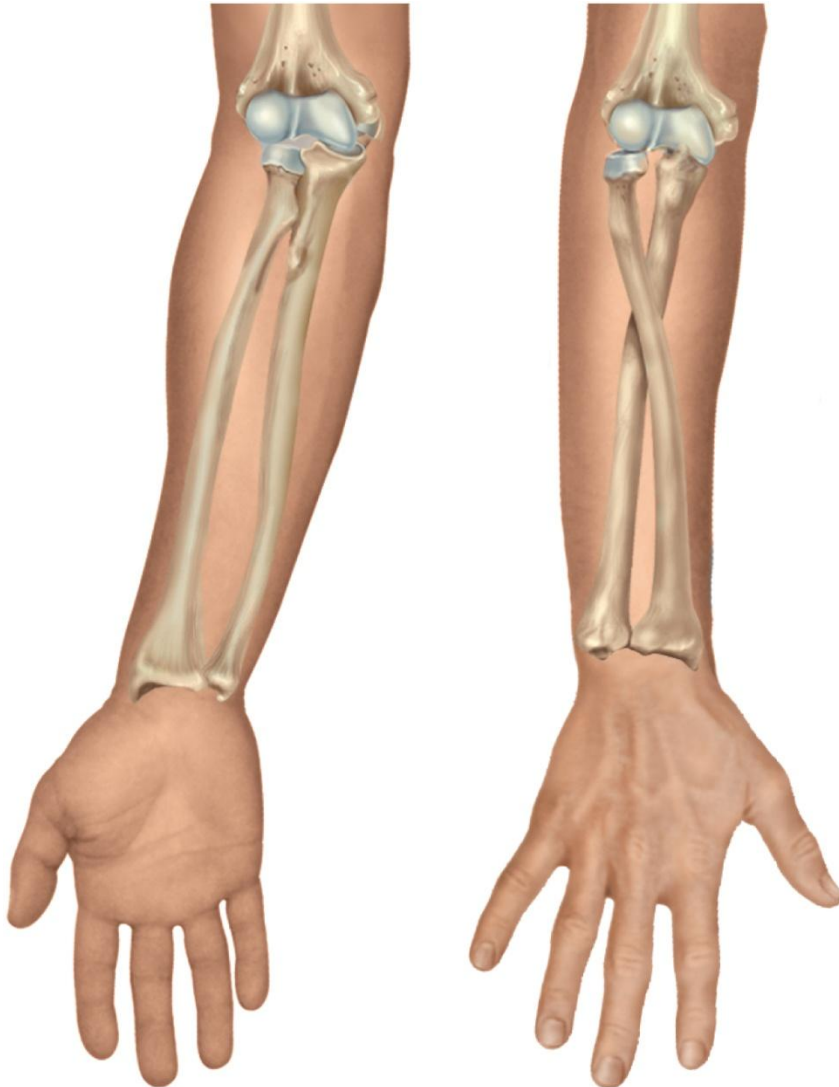
- **Person stands erect**
- **Feet flat on floor**
- **Arms at sides**
- **Palms, face & eyes facing forward**

- Standard frame of reference for anatomical descriptions & dissection

Figure A.1

Forearm Positions

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition

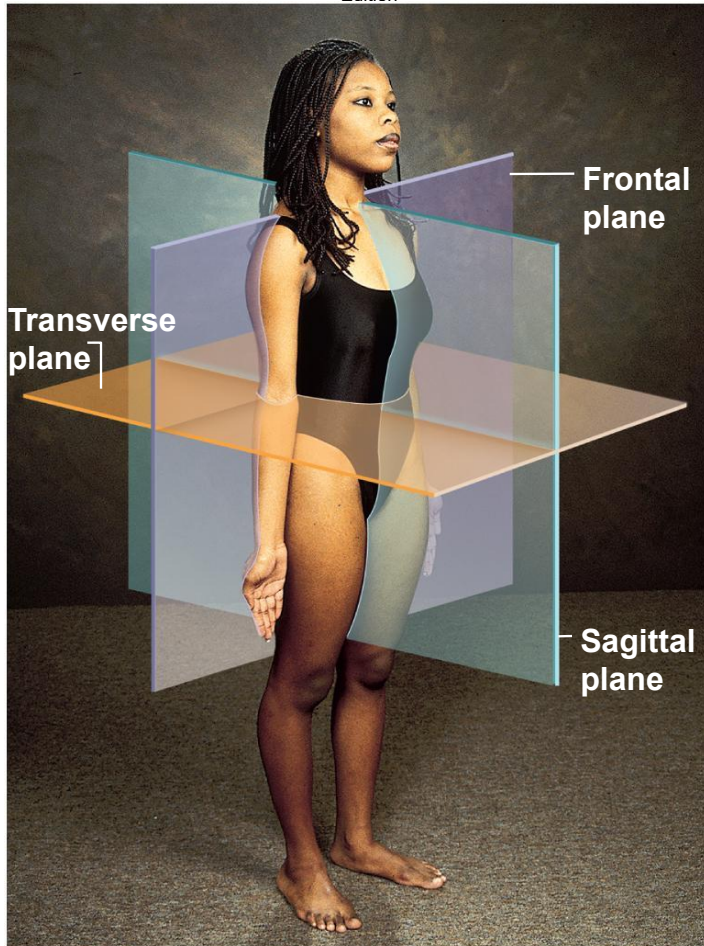


- When **supinated**
 - palms face forward or upward
 - radius & ulna are parallel
- When **pronated**
 - palms face rearward or downward
 - radius & ulna are crossed

Figure A.2

Anatomical Planes and Sections

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition



© McGraw-Hill Companies/Joe DeGrandis, photographer

Figure A.3

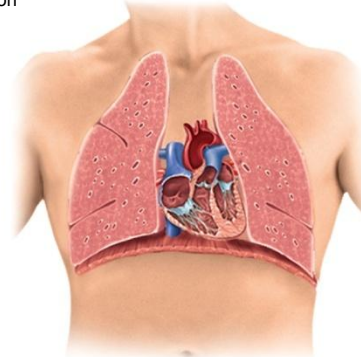
- **Section** implies actual cut or slice to reveal internal anatomy
- **Plane** implies an imaginary flat surface passing through the body
 - **Sagittal plane** divides body into right and left regions
 - **median (midsagittal) plane** divides body or organ into equal halves
 - **Frontal (coronal) plane** divides body into anterior (front) & posterior (back) portions
 - **Transverse (horizontal) plane** divides the body into superior (upper) & inferior (lower) portions

Anatomical Sections

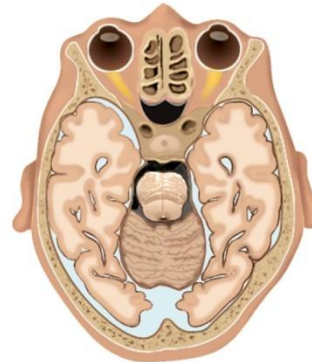
Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition



(a) Sagittal section



(b) Frontal section



(c) Transverse section

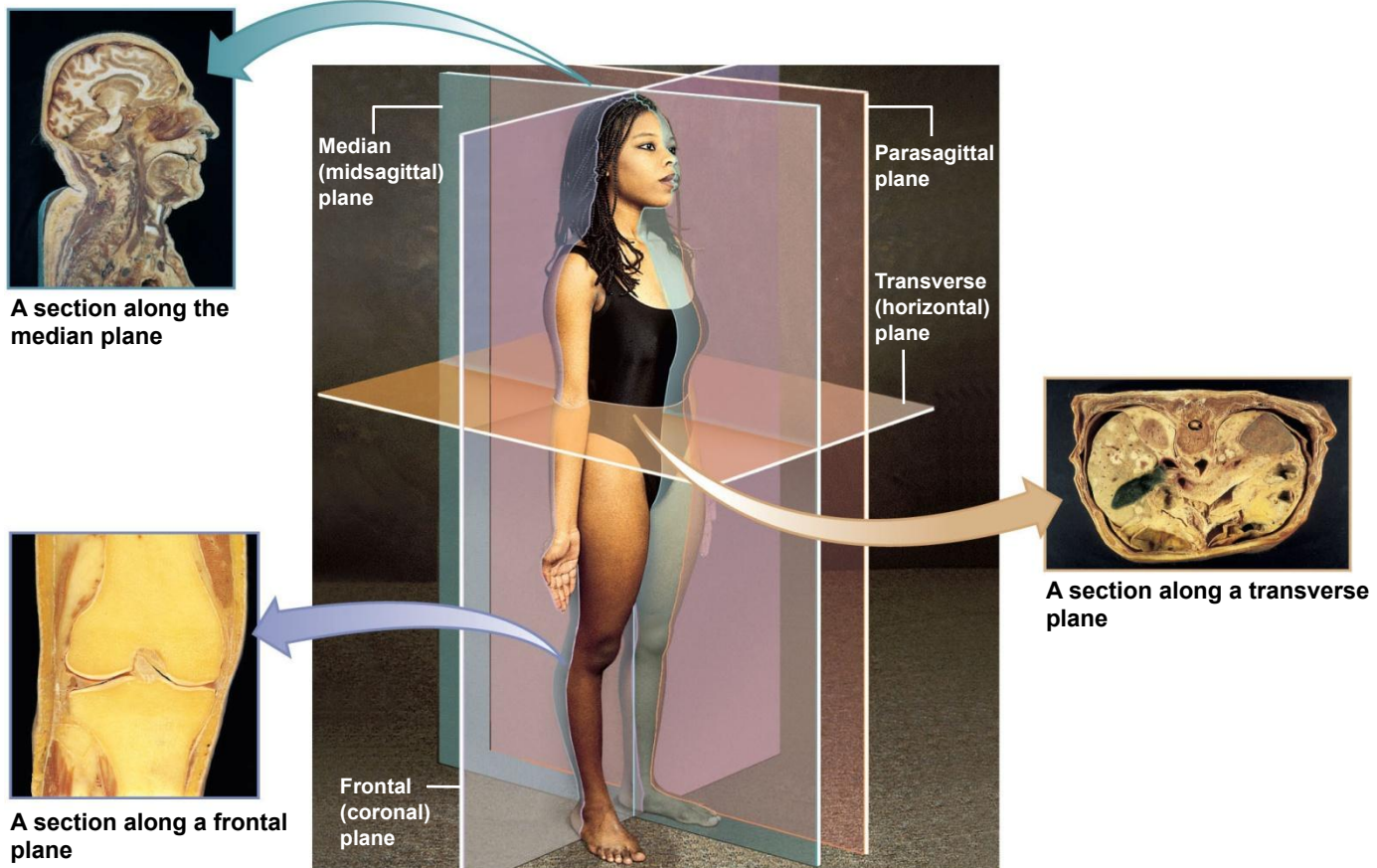
Sagittal

Frontal

Transverse

Figure A.4

Anatomical Planes and Sections



Median Section of the Head

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition

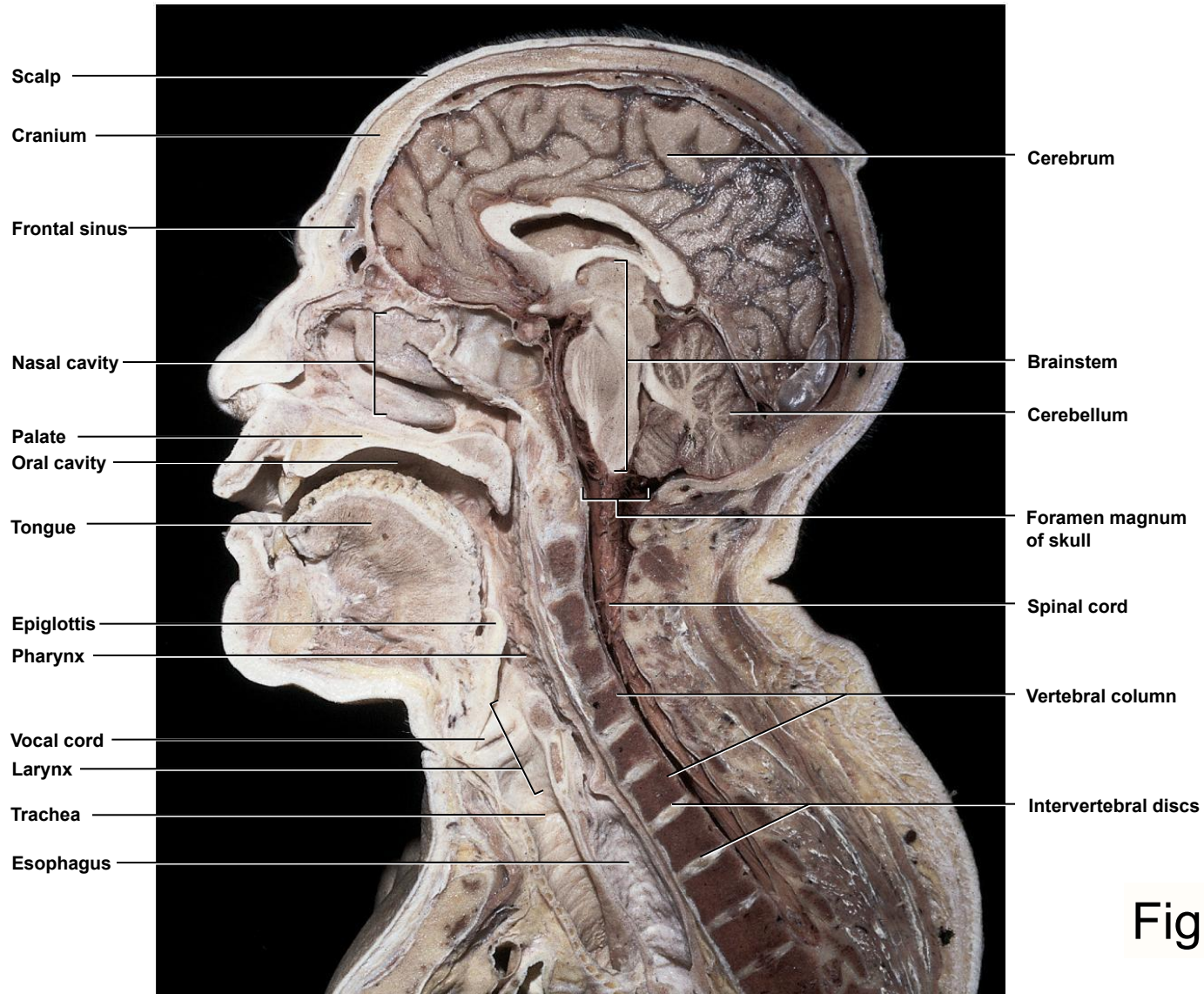


Figure A.17

Dissection of Thoracic Cavity

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition

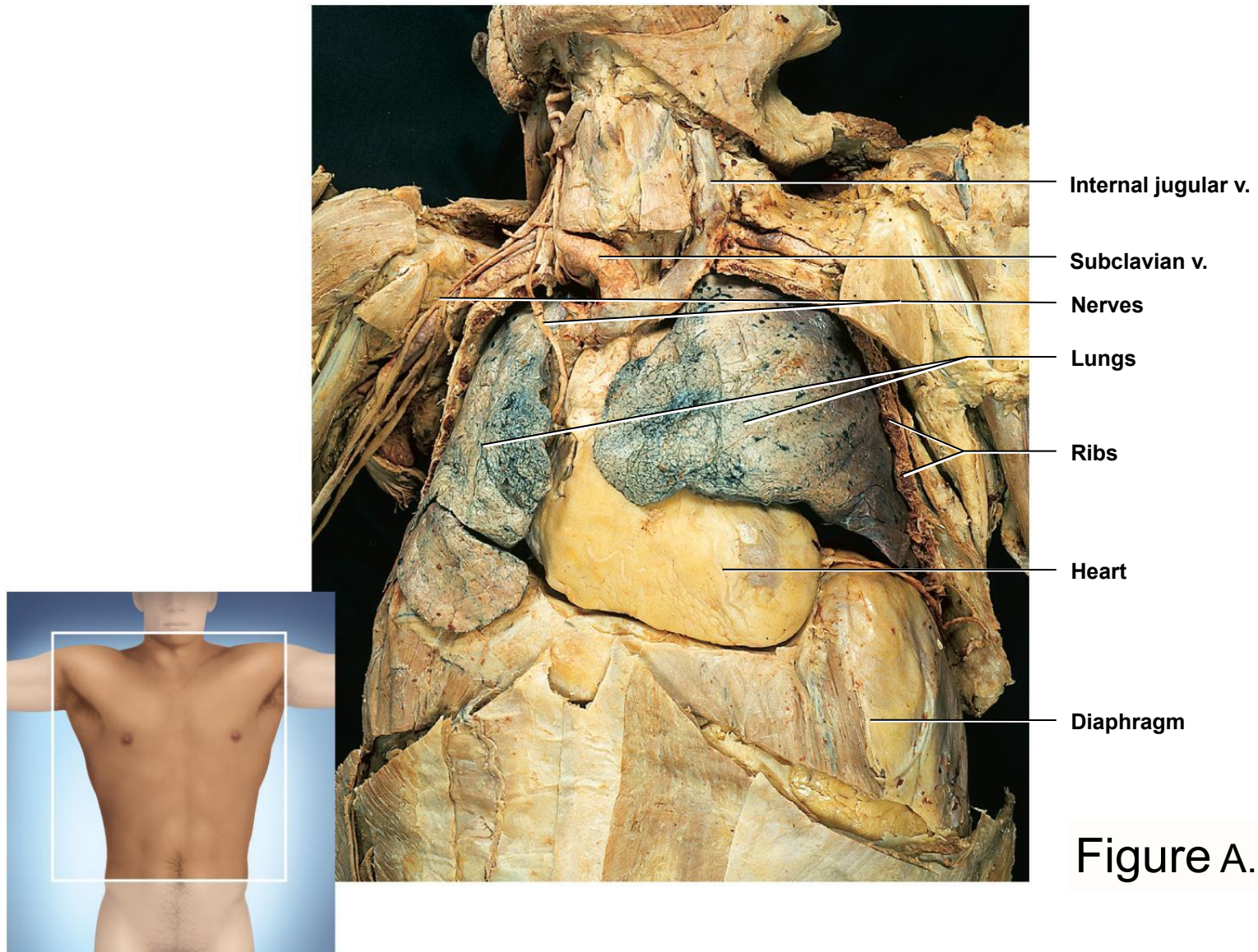
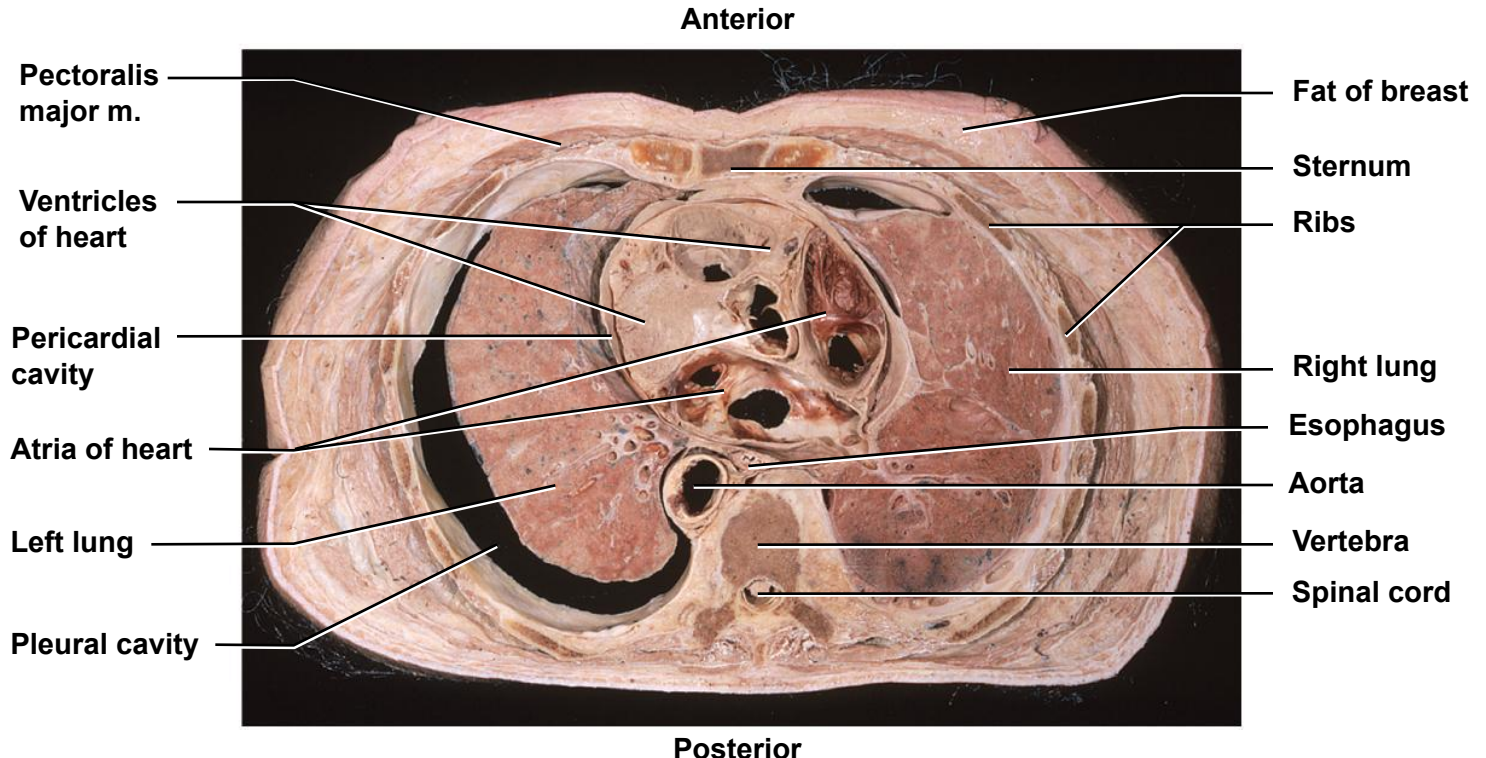
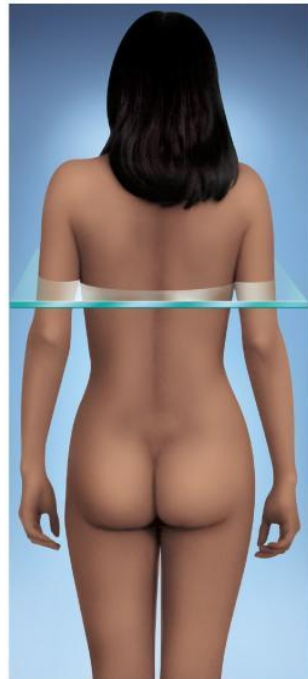


Figure A.18

Transverse Section of Thorax

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition



© McGraw-Hill Companies/Rebecca Gray, photographer/Don Kincaid, dissections

Figure A.19

Dissection of Abdomen

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition

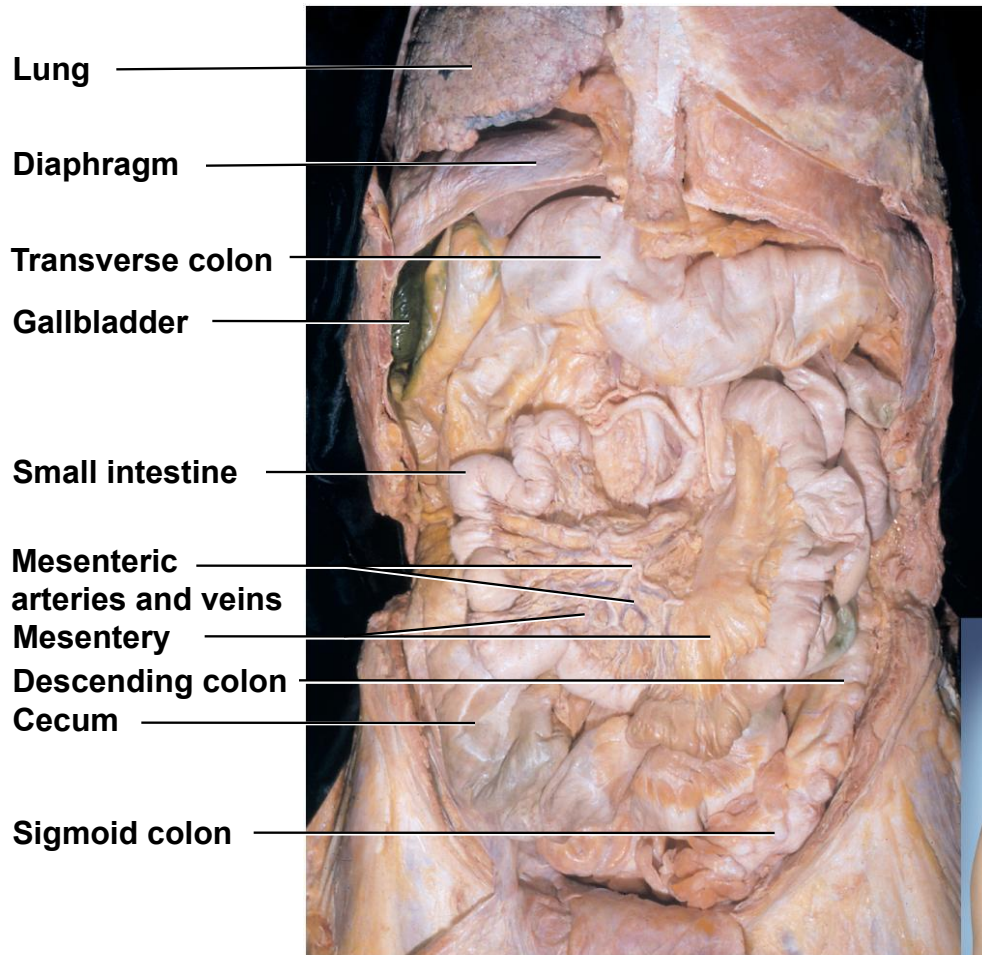
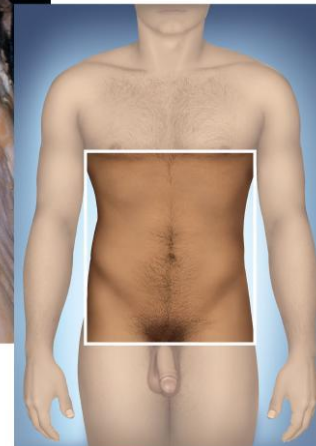
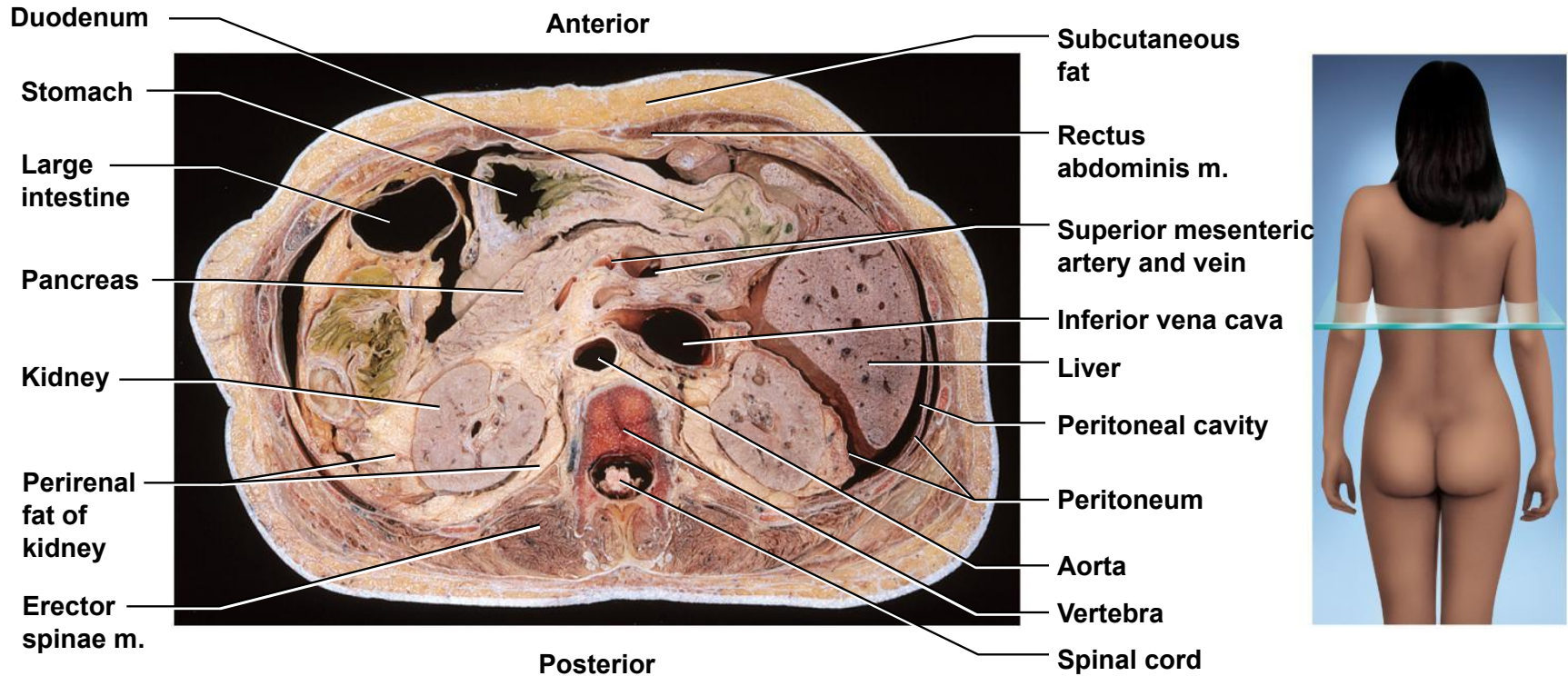


Figure A.20



Transverse Section of Abdomen

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition

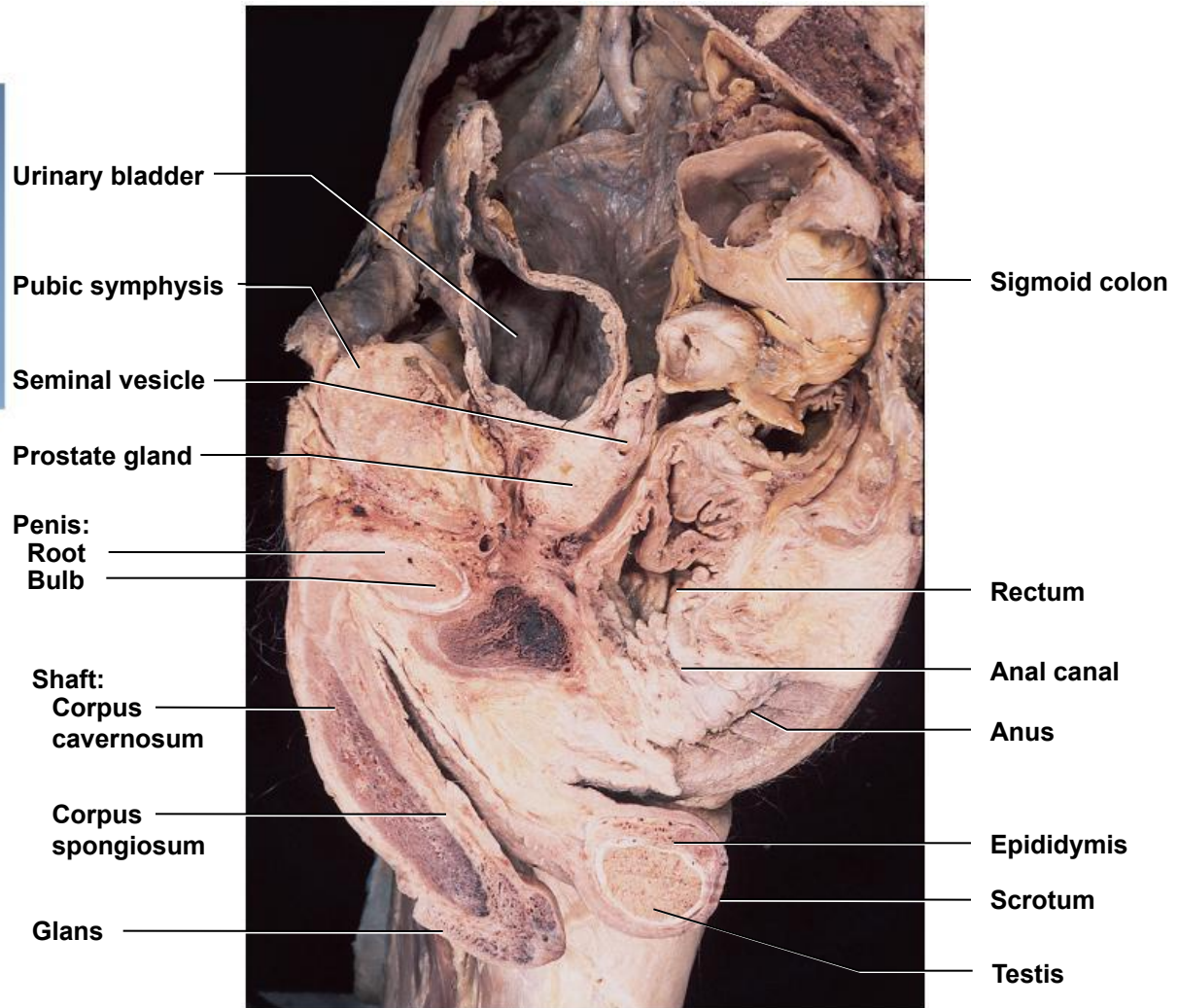


© McGraw-Hill Companies/Rebecca Gray, photographer/Don Kincaid, dissections

Figure A.21

Median Section of Male Pelvic Region

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition



(a) Male

Figure A.22

Median Section of Female Pelvic Region

Anatomy & Physiology: The Unity of Form and Function McGraw-Hill Education; 8th Edition

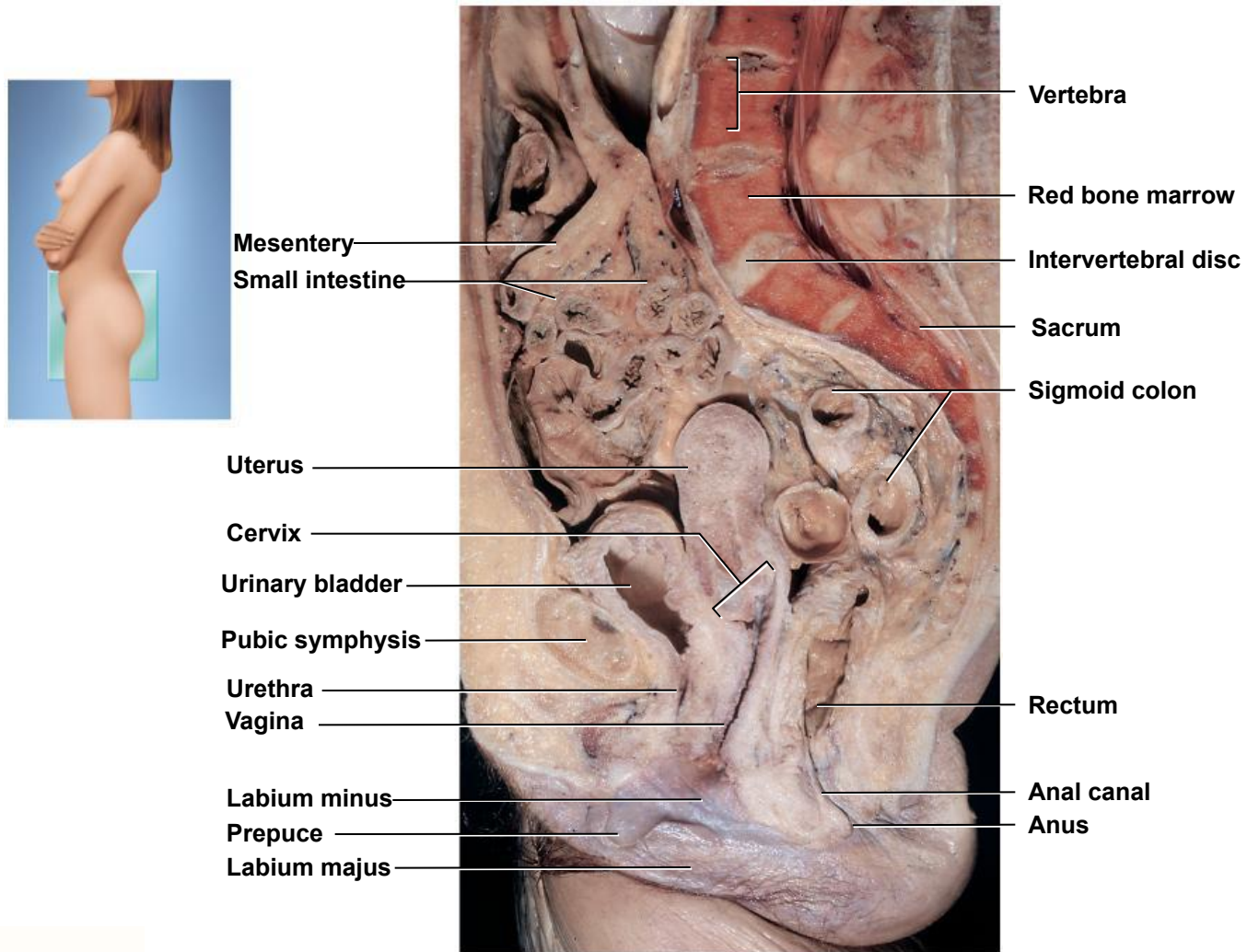


Figure A.22

(b) Female

© McGraw-Hill Companies/Rebecca Gray, photographer/Don Kincaid, dissections

Directional Terms

Ventral / Dorsal

Anterior /Posterior

Superior / Inferior

Proximal / Distal

Medial / Lateral

Superficial / Deep

Cephalic

Rostral

Caudal

- **Intermediate directions** - often given as combinations of these terms (ex. dorsolateral)
- **Different meanings for humans and four-legged animals**
 - **anterior = ventral surface of human** – front of chest & abdomen
 - anterior (cranial) in a four-legged animal is head end
 - **posterior = dorsal surface of human** – last in locomotion – back side
 - posterior (caudal) in a four-legged animal is tail end