

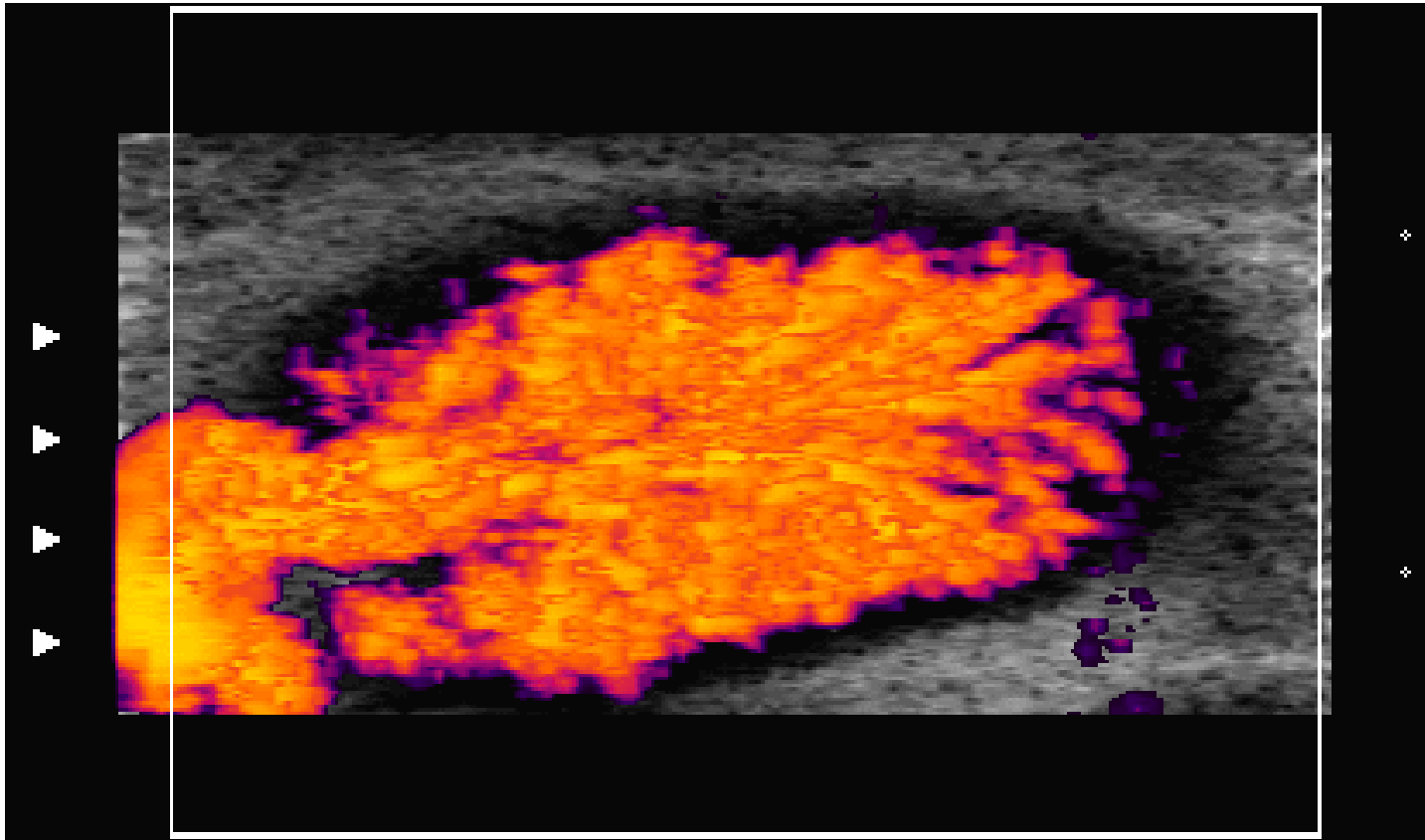
# Lymph Two

*You see only what you know.--*  
Goethe

Kimberly Burnham, PhD

[www.VisualizeHealth.net](http://www.VisualizeHealth.net)

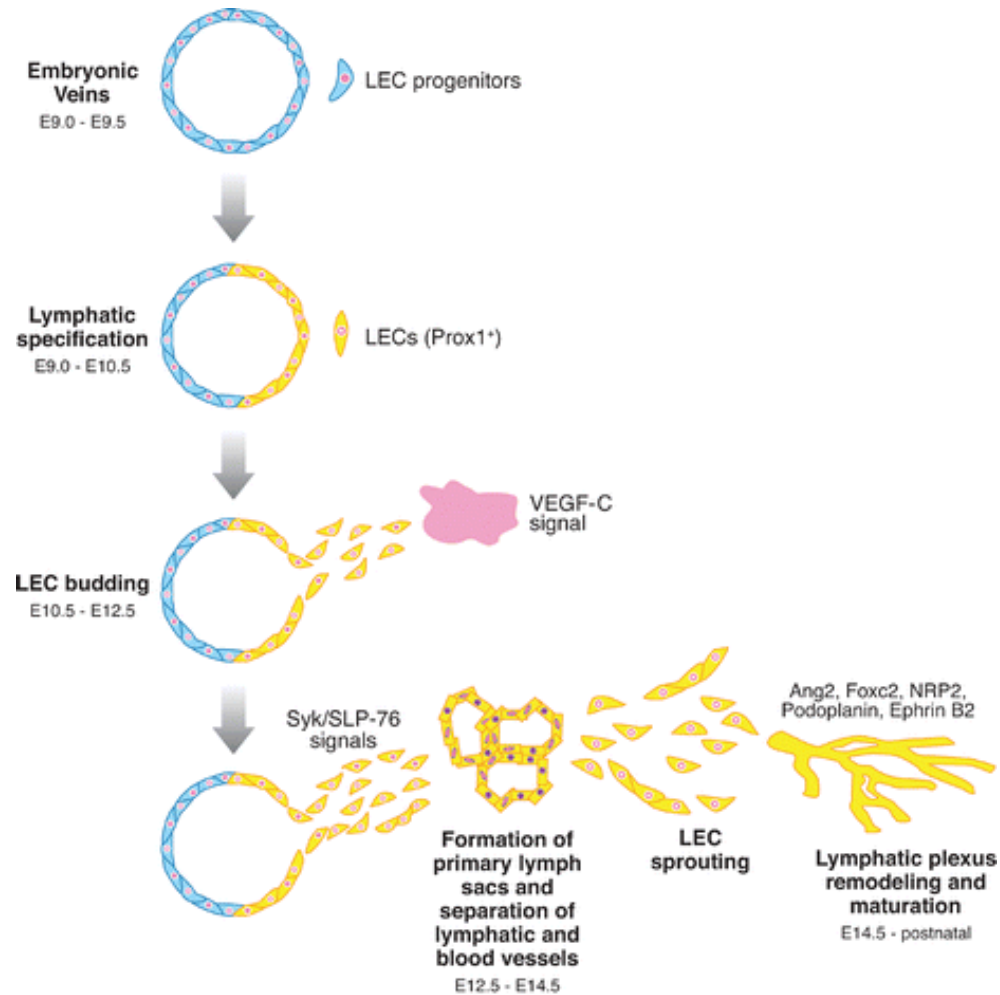
# Lymph Node Ultrasound



- <http://www.gehealthcare.com/user/ultrasound/images/msuly3d.gif>

# Embryology

<http://embryology.med.unsw.edu.au/Notes/heart31.htm>



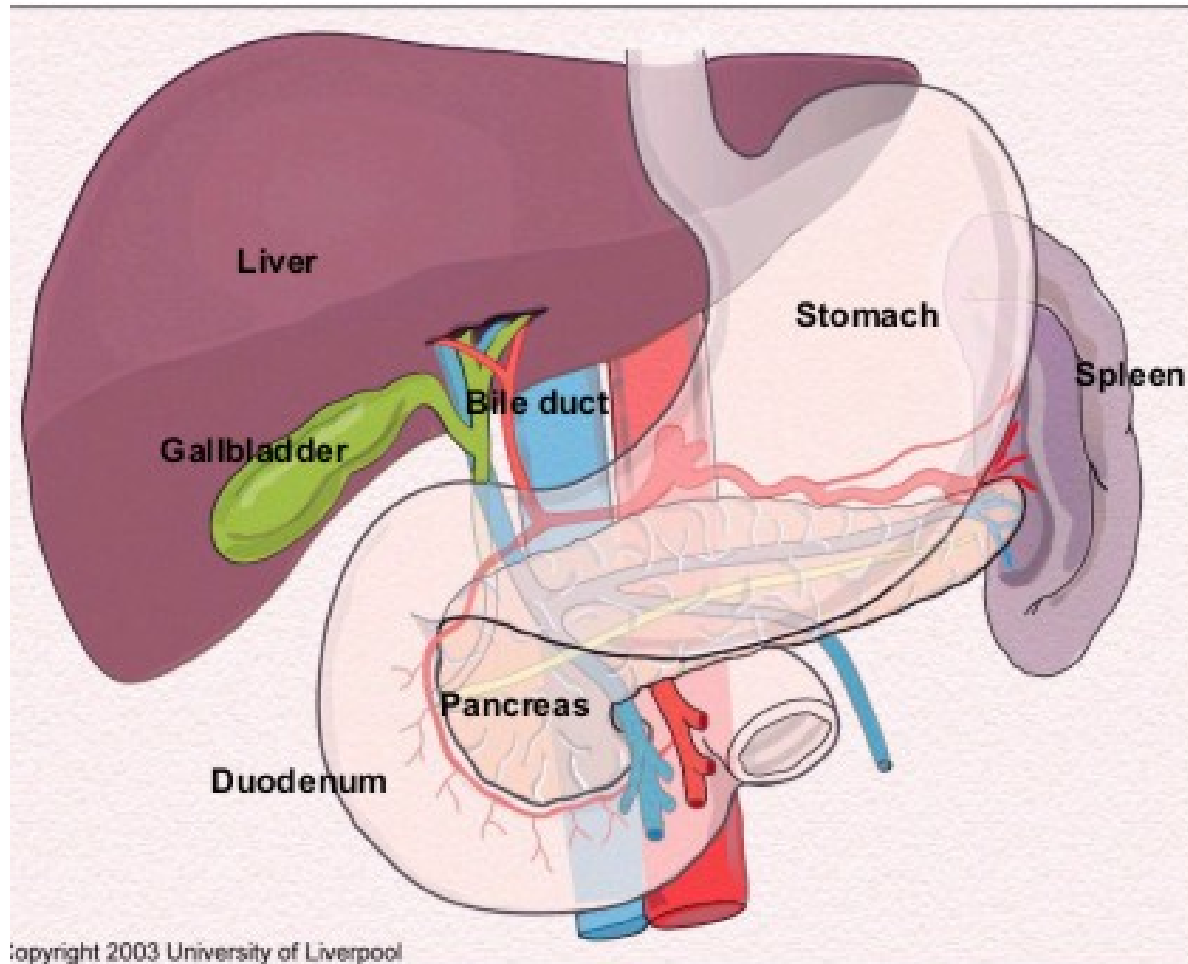
Oliver G, Alitalo K. 2005.  
Annu. Rev. Cell Dev. Biol. 21:457-83

# Spleen

- Chapter Two: Spleen
- Compression Syndromes
- Type I Dysfunctions for the Spleen
- A Convergence Syndrome of the Spleen
- Splenic Vessels Relaxation
- Spleen Plug
- Disruptions of Membrane of Spleen
- Splenic Protocol
- Ligament Fiber Therapy to Affect Spleen Mobility

# The Gut

[www.liv.ac.uk/surgery/ Backgrounda.html](http://www.liv.ac.uk/surgery/Backgrounda.html)





# Chapter 3: Thymus

- 1. Azygos Vein Syndrome
- 2. Internal Iliac Vein Syndrome
- 3. Internal Jugular Vein Syndrome
- 4. Hepatic Vein Syndrome
- 5. Spinal Vein Syndrome
- 6. The Sacrum Syndrome

Lymphatic Tissue

	<u>Slide #</u>
Ileum (lamina propria) (diffuse lymphatic tissue, lymphatic nodules)	75 A
Appendix (lymphatic nodules- cortex and medulla, germinal centers)	76 A
Palatine Tonsil (nodules- germinal centers, connective tissue capsule- incomplete, strati- squamous, epith./ stratified col. epith.)	45 A
Lymph Node (cortex/medulla, connective tissue capsule- trabeculae, nodules, sub- capsular and trabecular sinuses, medullary cords and sinuses)	42 A
Lymph Node (silver stain) (cortex/medulla, capsule, trabeculae, nodules, germinal centers, medullary cords, medullary sinuses, reticular fibers)	72-2B

Spleen

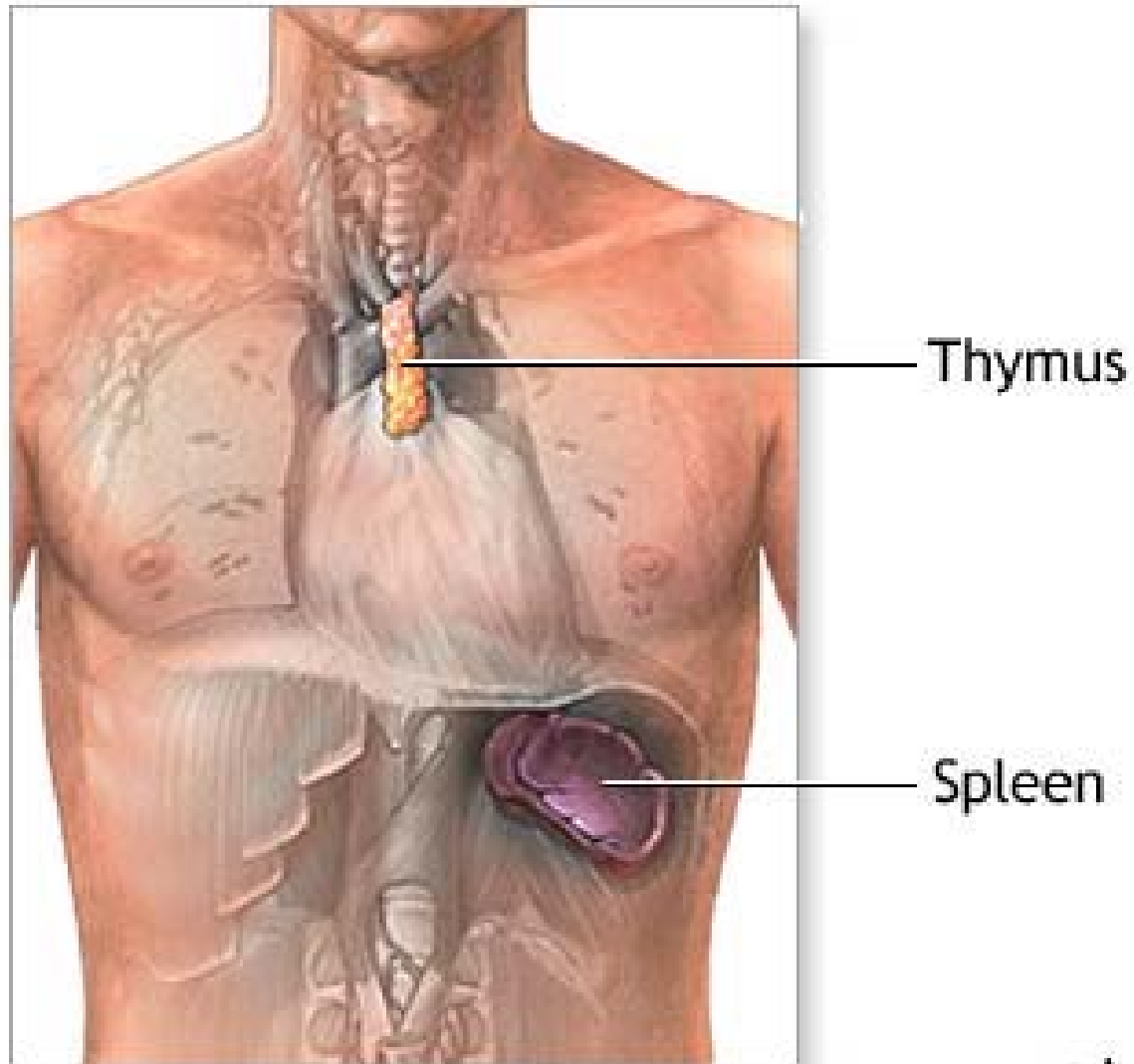
	<u>Slide #</u>
Human Spleen (connective tissue capsule, trabeculae, red pulp, white pulp, trabecular arteries & veins, nodules, central arteries, sheathed arteries, venous sinuses)	43 A
Spleen (silver stain) (connective tissue capsule, trabeculae, trabecular arteries & veins, nodules- cortex & medulla, central arteries, sheathed arteries)	75-1 B

Thymus Gland

Human Fetal Thymus (connective tissue capsule, trabeculae, incomplete lobules, cortex (Hassl's corpuscles), medulla (epithelioreticular cells).	44 A
Adolescent Thymus (cortex, medulla, Hassel's corpuscles, epithelioreticular cells).	79-2 B
Adult Thymus (involution- adipose tissue).	79-3 B

# Thymus and Spleen

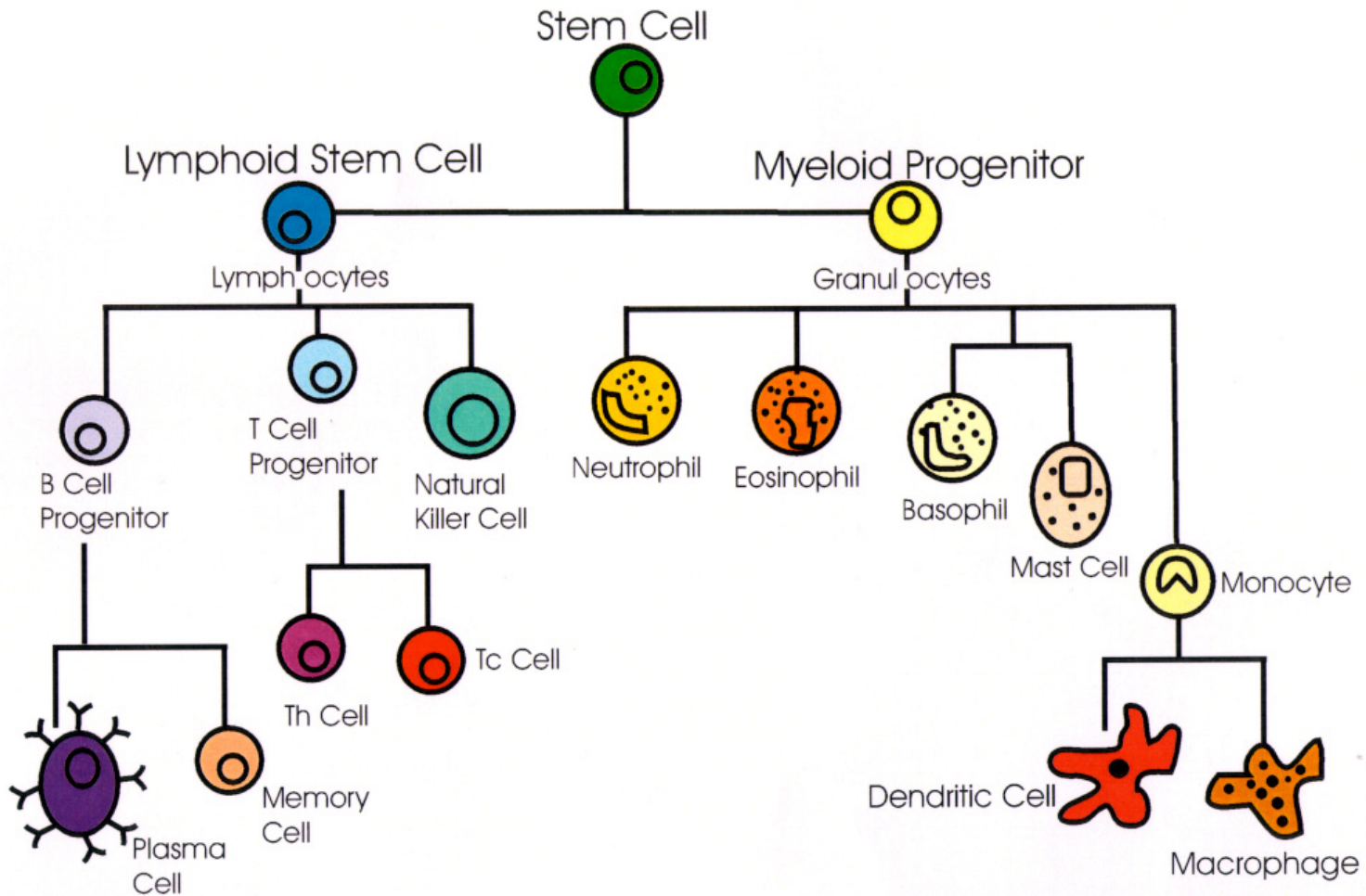
[http://www.besthealth.com/besthealth/bodyguide/reftext/images/Thymus\\_spleen.jpg](http://www.besthealth.com/besthealth/bodyguide/reftext/images/Thymus_spleen.jpg)



# Cells of the Immune System

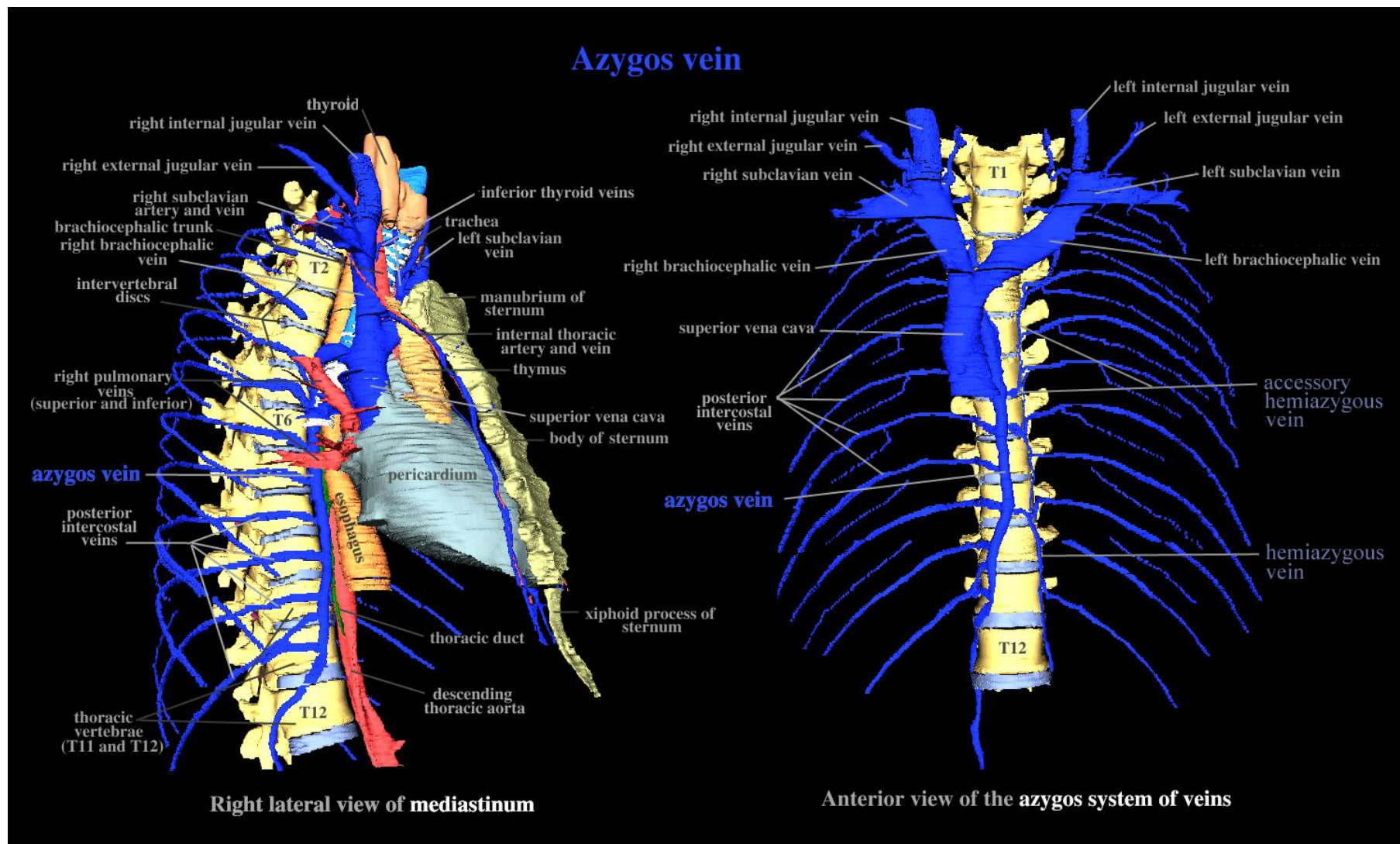
[www.omsusa.org/pranzatelli-immune.htm](http://www.omsusa.org/pranzatelli-immune.htm)

## Cells of the Immune System



# Azygos Vein

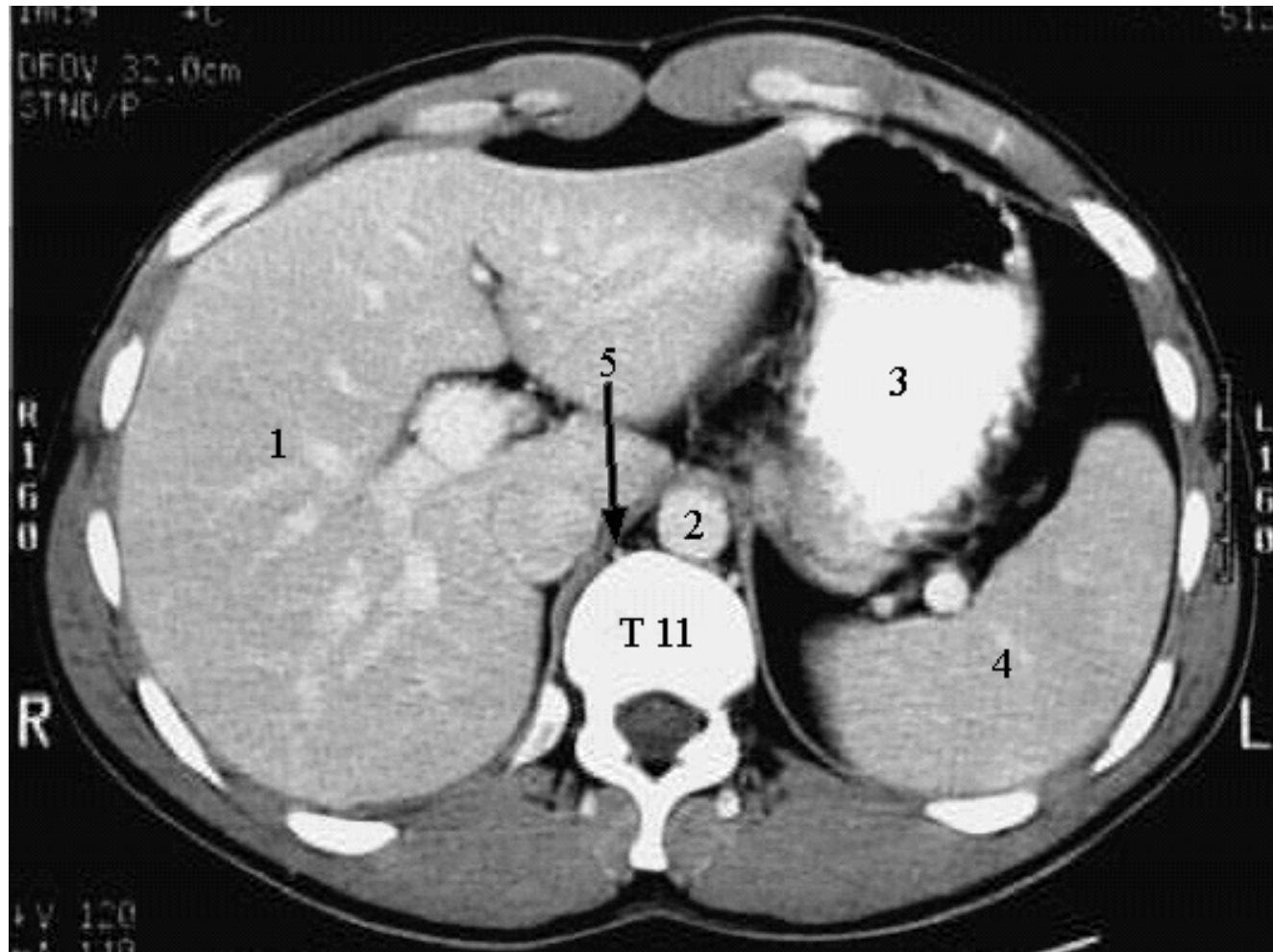
[anatquest.nlm.nih.gov/aq/ImageXml?xml=DSR1100](http://anatquest.nlm.nih.gov/aq/ImageXml?xml=DSR1100)



# 5 Azygos Vein

1 Liver, 2 Aorta, 3 Stomach, 4 Spleen

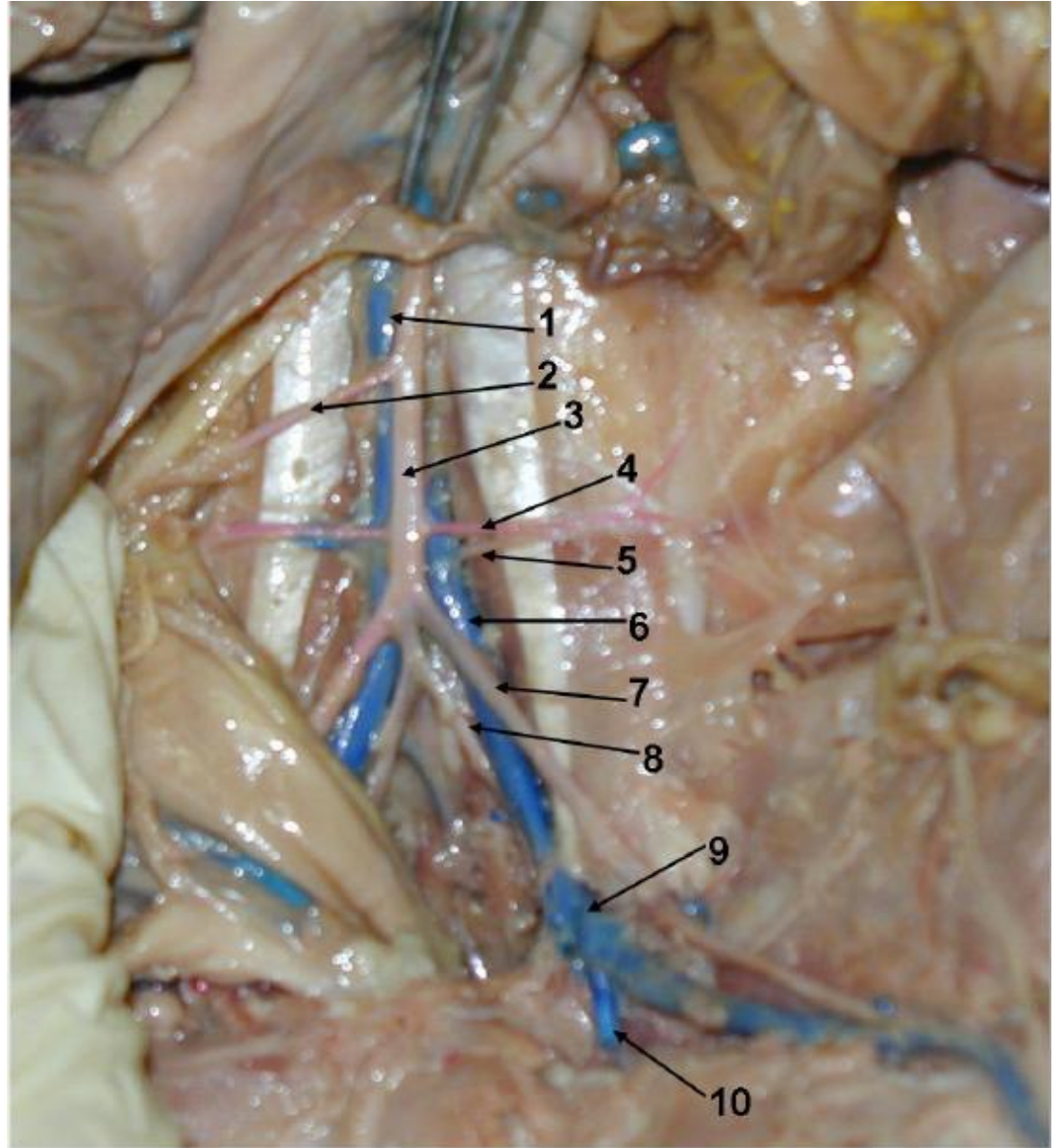
[anatomy.med.umich.edu/.../abdomen\\_cross\\_1.html](http://anatomy.med.umich.edu/.../abdomen_cross_1.html)



# Internal Iliac Vein

[campus.murraystate.edu/.../pelvic.html](http://campus.murraystate.edu/.../pelvic.html)

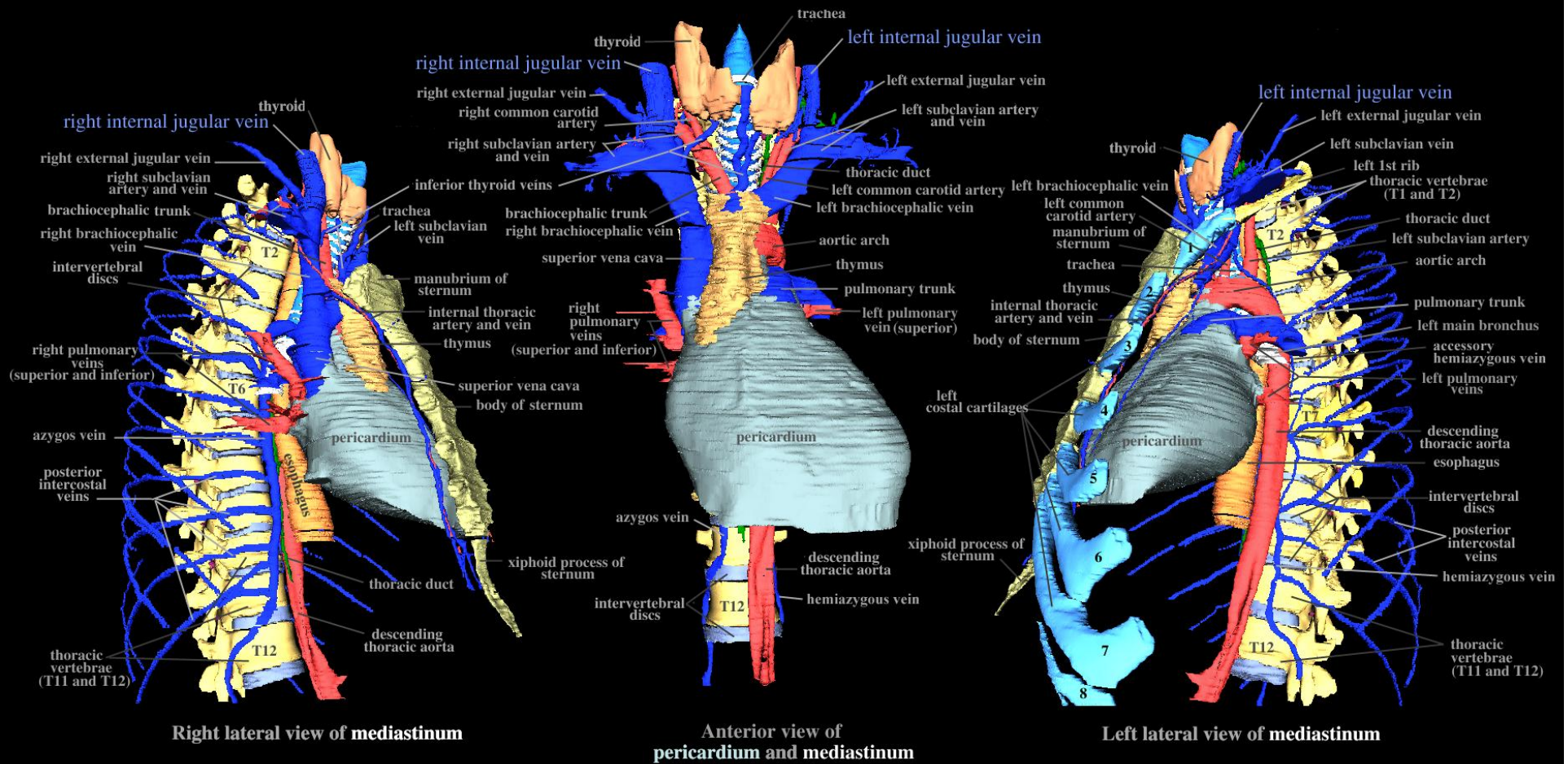
- 1. Posterior Vena Cava
- 2. Caudal Mesenteric Artery
- 3. Dorsal Aorta
- 4. Deep Iliac Circumflex Artery
- 5. Deep Iliac Circumflex Vein
- 6. Common Iliac Vein
- 7. External Iliac Artery
- 8. Internal Iliac Artery
- 9. External Iliac Vein
- 10. Internal Iliac Vein



# Internal Jugular Vein

[anatquest.nlm.nih.gov/aq/ImageXml?xml=DSR1102...](http://anatquest.nlm.nih.gov/aq/ImageXml?xml=DSR1102...)

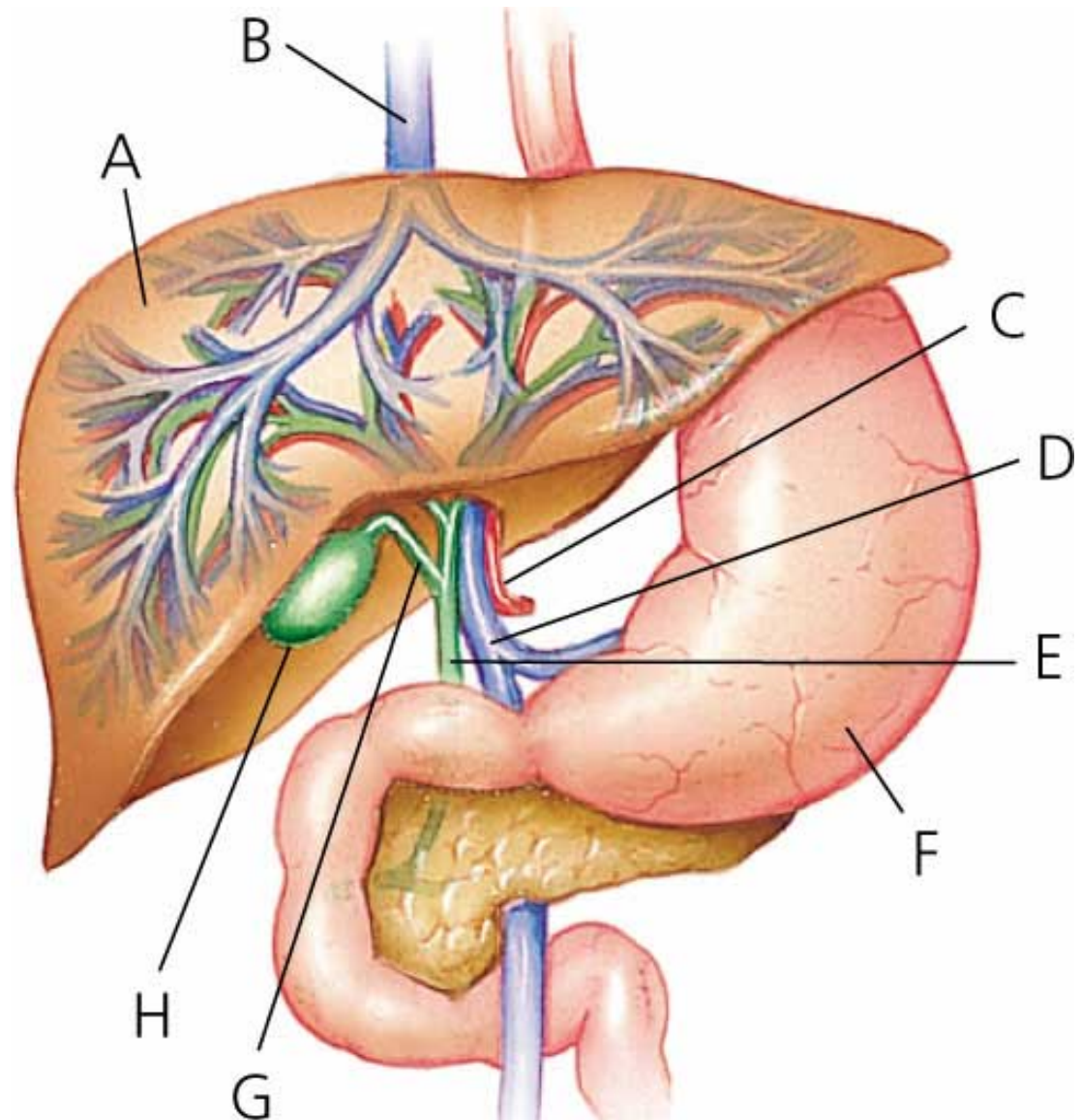
## Internal jugular vein



# Hepatic Vein

[www.yourdictionary.com/ahd/I/I0208700.html](http://www.yourdictionary.com/ahd/I/I0208700.html)

- A. liver
- B. hepatic vein
- C. hepatic artery
- D. portal vein
- E. common bile duct
- F. stomach
- G. cystic duct
- H. gallbladder



# Cardiac Support

- Chapter Four: Cardiac Support and Lymphatics
- Type I Relationships For: Pericardium, Myocardium, Endocardium
  - 1. Type I Relationships for: Pericardium
  - 2. Type I Relationships for: Myocardium
  - 3. Type I Relationships for: Endocardium
- Inferior Vena Cava
  - 1. Inferior Vena Cava Syndrome
  - 2. Compression Syndromes of the Inferior Vena Cava
    - A. Compression Syndrome Abdominal Inferior Vena Cava (new)
    - B. Compression Syndrome Mediastinal Inferior Vena Cava (new)
  - 3. Torsion of the Inferior Vena Cava
  - 4. Stuck Open / Stuck Closed Inferior Vena Cava
- Advance Strain/Counter Strain
  - 1. S/SC 2 - Thoracic Duct
  - 2. SCS 2 - Cistern Chyle
- Type I Relationships for the Lymph System
  - 1. Type I Relationships for the Junction of the Lymph Vessels into the Venous Drainage System
  - 2. Cistern Chyle Type I Relationships
- Other Lymph Node Techniques

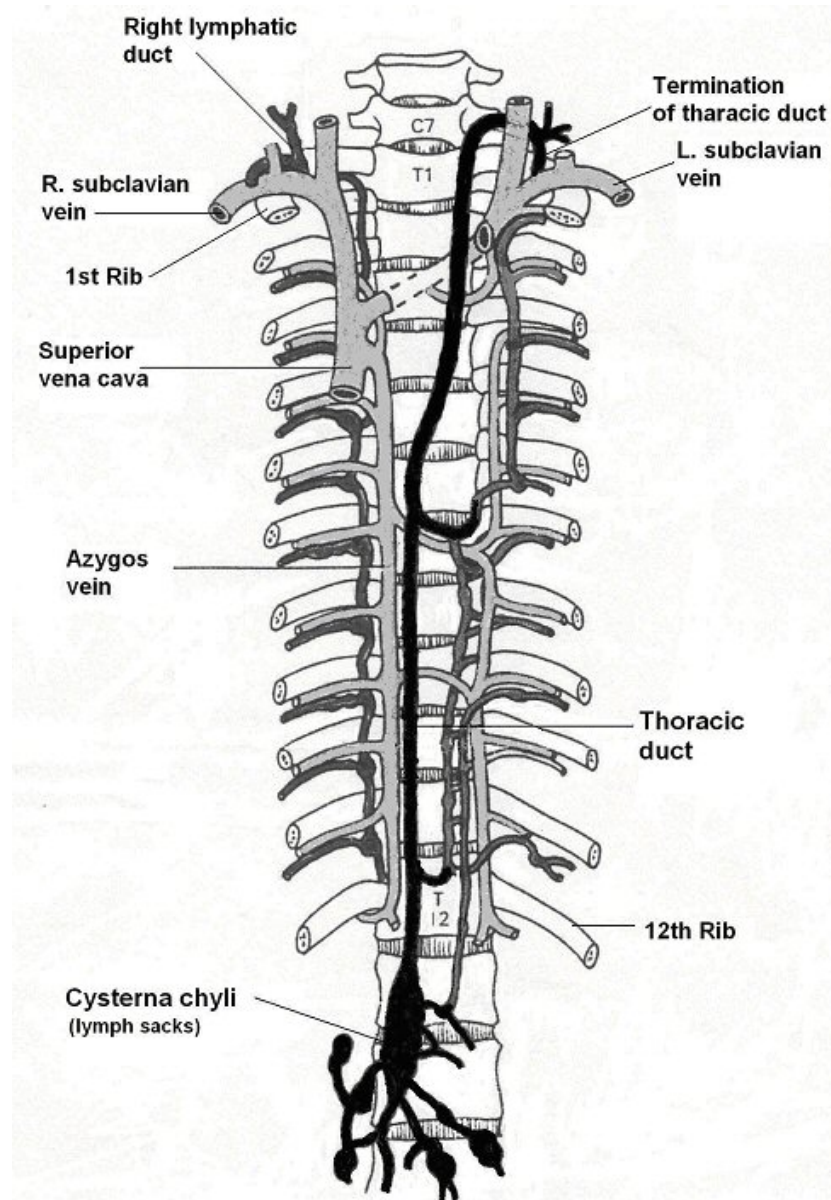
# Viral Infections of the Heart

[http://www.clinical-virology.org/pages/dublin/pages/nvrl\\_cardiac.html](http://www.clinical-virology.org/pages/dublin/pages/nvrl_cardiac.html)

Clinical Manifestation	Common organism	Less common	Specimens
Cardiac disease			
Endocarditis		<i>Coxiella burnetii</i> (Q fever) Typhus (louse borne) Chlamydia species	Serum
Myocarditis	Influenza	Very rarely;	Throat swabs and stool and culture.
Pericarditis	Enteroviruses Coxsackie B	parainfluenza viruses, adenovirus, cytomegalovirus, parvovirus B19, <i>Mycoplasma pneumoniae</i> Coxsackie A ECHO Mumps, Measles Varicella zoster virus Influenza	Serum

# Lymph Terminus

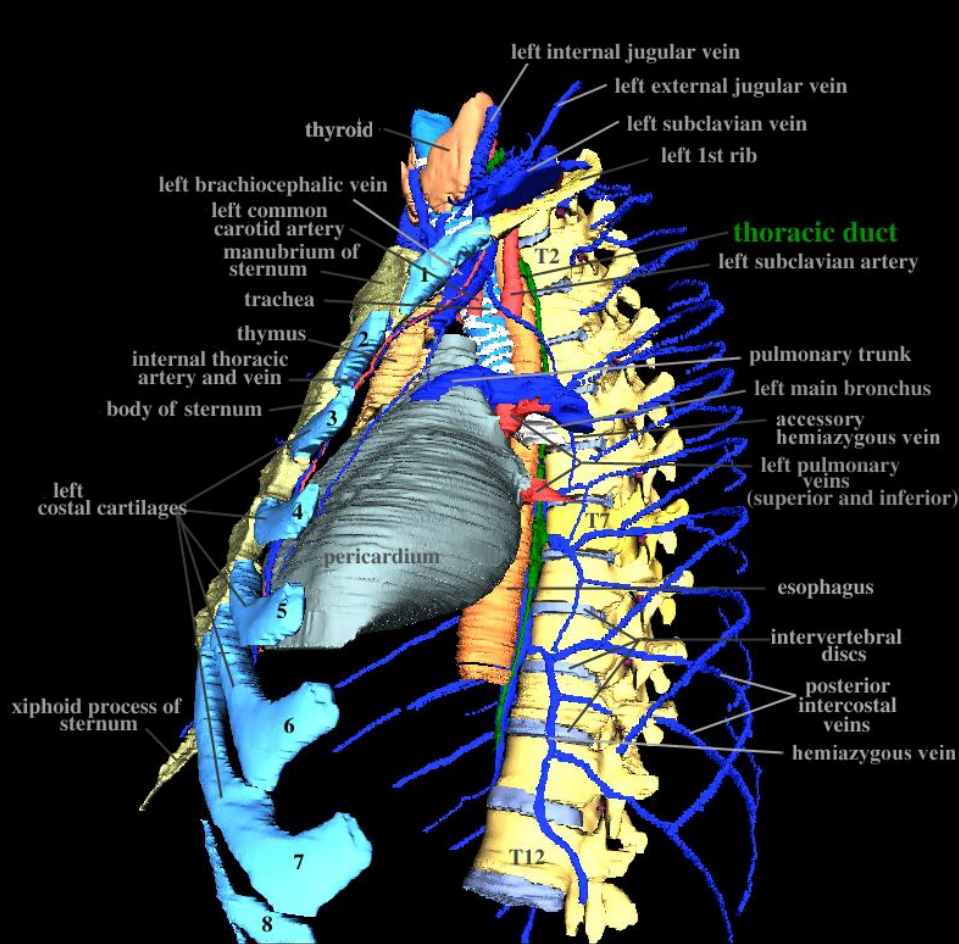
[www.ener-chi.com/poor\\_c.htm](http://www.ener-chi.com/poor_c.htm)



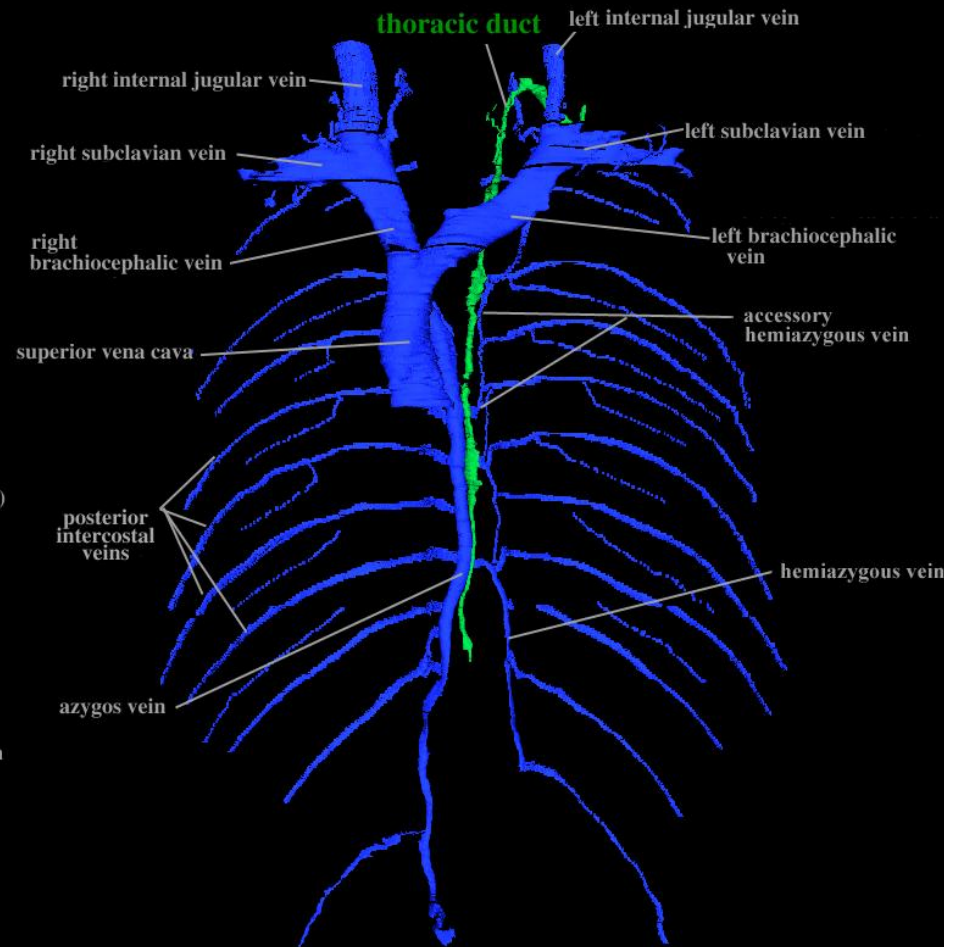
# Thoracic Duct

<http://anatquest.nlm.nih.gov/VisibleHuman/ImageData/Rendered/jpg/DSR110039979.jpg>

## Thoracic duct



Left lateral view of mediastinum  
with descending thoracic aorta removed



Anterior view of thoracic duct and veins

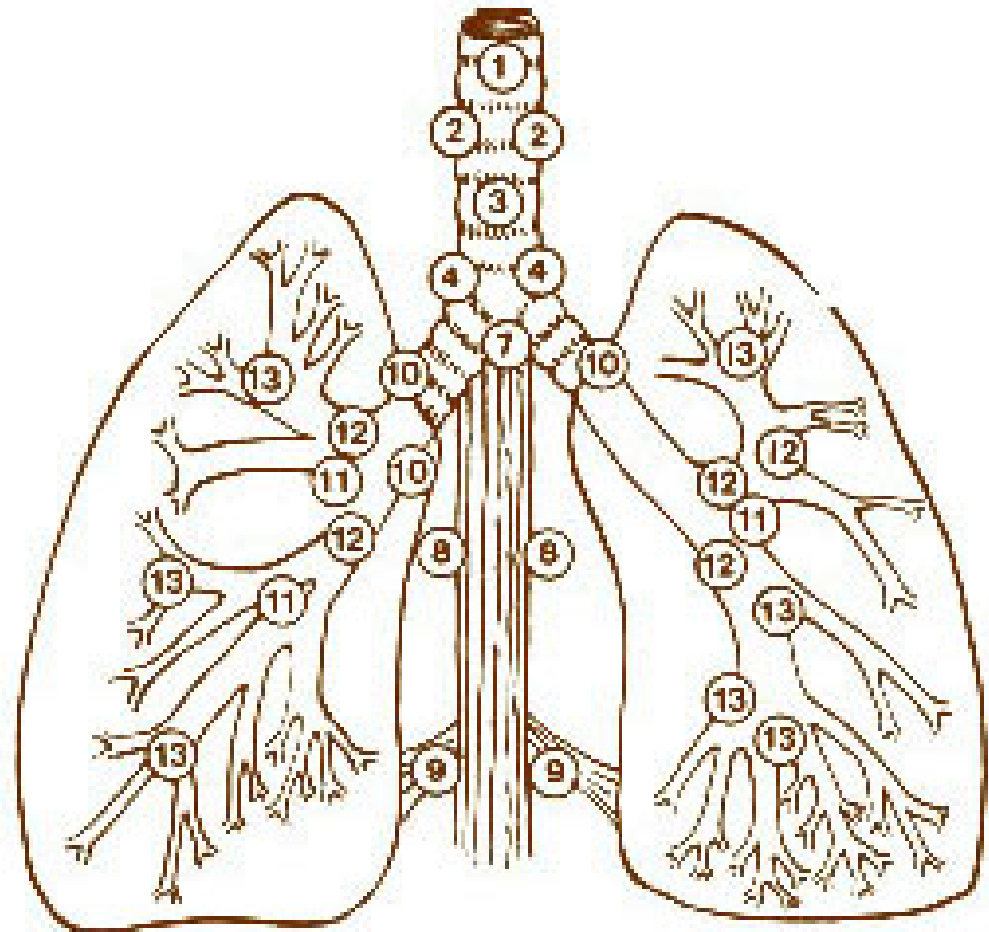
# Lungs

- Chapter Five: Lung and Oxygenation
- AdvSCS for Lymph Nodes For Lungs and Related Tissues
- 1. Right Inferior Tracheo-bronchioles Lymph Nodes ( nodes on the right side of the esophagus, inferior to the right major bronchus)
- 2. Left Inferior Tracheo-bronchioles Lymph Nodes (nodes on the left posterior side of the esophagus, inferior to the left bronchus)
- 3. Right Superior Tracheo-bronchioles Lymph Nodes (at intersection, just distal to the bifurcation of the Major right bronchus, posterior aspect)
- 4. Left Superior Tracheo-bronchioles Lymph Nodes (superior to the Major Left Bronchus, posterior aspect)
- 5. Posterior Mediastinum Lymph Nodes (on the right posterior aspect of the esophagus)
- Lungs for Detox

# Lungs

[training.seer.cancer.gov/ ss\\_module03\\_lung/uni...](http://training.seer.cancer.gov/ss_module03_lung/uni...)

- **Regional Lymph Nodes of Lung -- Schematic Drawing for Staging**
- Intrathoracic (showing AJCC Node cate
- **Pulmonary**
  - 12 N1 Peribronchial
  - 11 N1 Intrapulmonic (interlobar)
  - 10 N1 Hilar
  - 13 N1 Segmental
- **Superior mediastinal**
  - 1 N2-3 Superior mediastinal
  - 3 N2-3 Pretracheal, retrotracheal
  - 2 N2-3 Paratracheal
  - 4 N2-3 Lower paratracheal
  - 4 N2-3 Azygos
- **Aortic**
  - 5 N2-3 Subaortic (aortic window)
  - 6 N2-3 Para-aortic (ascending aorta or phrenic)
- **Inferior mediastinal**
  - 7 N2 Carinal
  - 7 N2 Subcarinal
  - 8 N2-3 Paraesophageal
  - 9 N2-3 Pulmonary ligament
- Extrathoracic
- N3 Scalene--along scalenus muscles in base of the neck. The individual scaleni muscles are the scalenus anterior, post medius, and minimus.
- N3 Supraclavicular or transverse cervical.



# Postural Drainage

- Chapter Six: Excretion and Postural Drainage
- Protocol: Position for Postural Drainage
  - 1. Head
  - 2. Face
  - 3. Neck
  - 4. Chest
  - 5. Spine
  - 6. Abdomen
  - 7. Low Back
  - 8. Pelvis
  - 9. Right Arm
  - 10. Left Arm
  - 11. Right leg
  - 12. Left Leg

# Viral Response

- Chapter Seven: Overriding Viral Response
- Viral Load
- For Multiple Sclerosis

# Systems Affected by Viruses

<http://bio.classes.ucsc.edu/bio80j/Lecture%20Slides/LymphSysAffect.gif>



## Systems affected by Viruses

### Lymphatic system

- Epstein-Barr
- HIV
- paramyxovirus (e.g., measles)

### Trachea and lungs

- parainfluenza
- RSV
- influenza
- adenovirus

### Skin

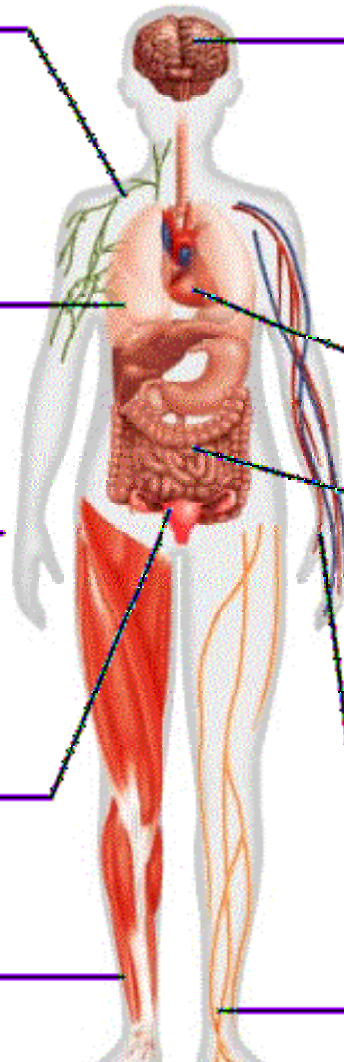
- rubella
- variola
- papillomavirus
- herpes 1
- molluscum contagiosum

### Reproductive system

- herpes 2
- papillomavirus

### Skeletal muscles

- coxsackie virus



### Brain and CNS

- encephalitis
- rabies
- polio virus
- herpes zoster
- yellow fever
- Ebola
- dengue
- West Nile virus

### Heart

- coxsackie virus

### Gastrointestinal tract and liver

- hepatitis A, B, C, D, E
- rotavirus

### Blood vessels and blood cells

- erythrovirus
- Ebola virus
- Hantavirus

### Peripheral nerves

- rabies

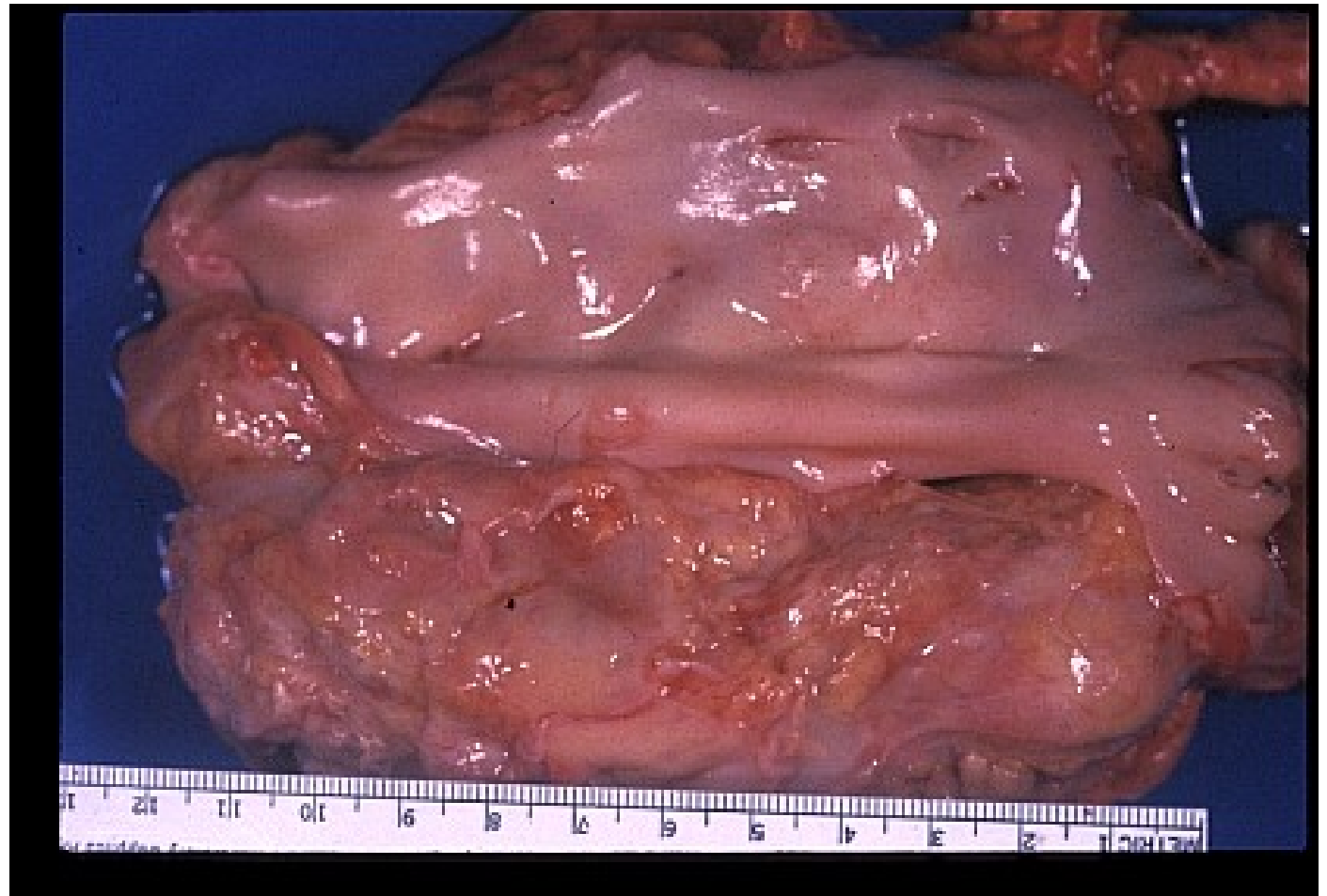
# Kidneys

- Chapter Eight: Toxic Waste
- Toxic Waste - PLUGS or pseudo-sphincters
- Vena Cava Plug at Kidneys
  - Treatment of the Right Ureter
- Renal Arteries
- Pseudo-Sphincters at the Kidneys
- Renal Pelvis
- Edema
- Treatment: Disassociate the Left Renal Artery from the Left Renal Vein
- Disassociate the Right Renal Artery from the Right Renal Vein
- Pseudo -Sphincter of the Inferior Vena Cava as it Moves over the Superior Aspect of the Liver

# Inferior Vena Cava

[www.georgetown.edu/.../ path/cpc/gi\\_colon/10.html](http://www.georgetown.edu/.../path/cpc/gi_colon/10.html)

- Inferior vena cava encased in enlarged lymph nodes.



[www.havemorefromlife.co.uk/  
gallery-1.htm](http://www.havemorefromlife.co.uk/gallery-1.htm)

- Weak digestive tissue, Lymph congestion and congestion of the right kidney

