

Flashcard Instructions

MOUSE

Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

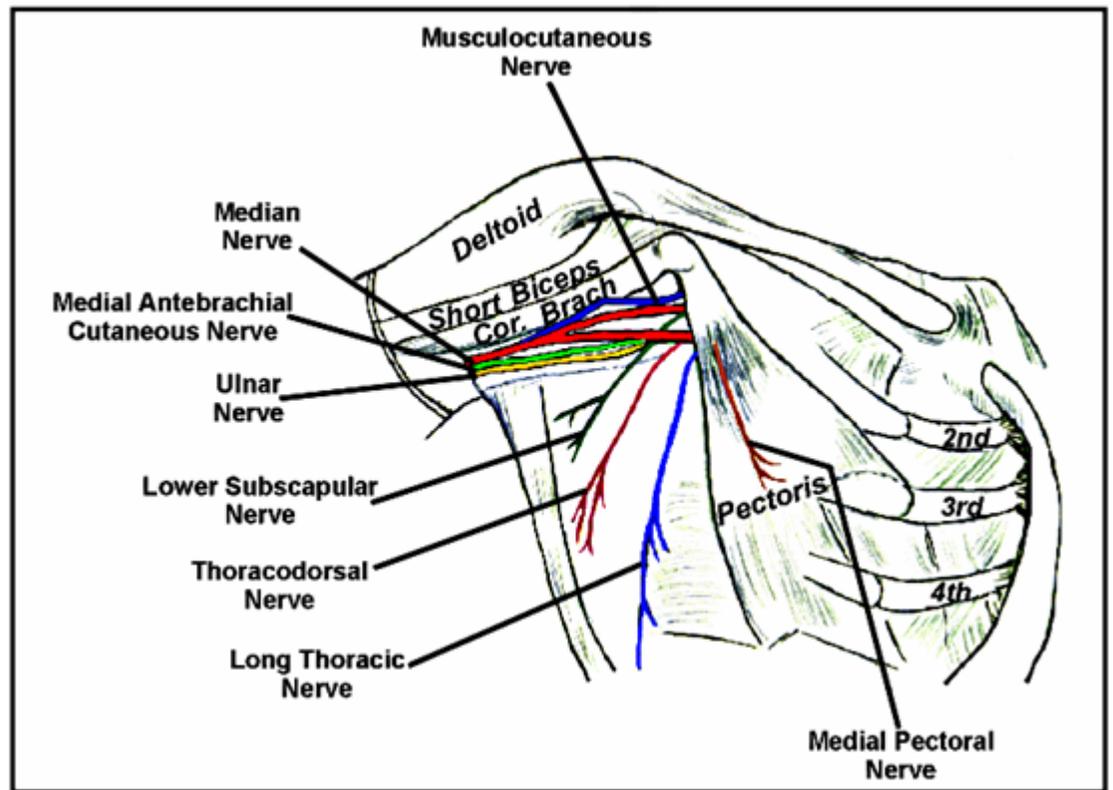
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**What is the function of the intercostobrachial nerve?
Where does it originate?
Can you sacrifice it?**

What is the function of the intercostobrachial nerve?
Where does it originate?
Can you sacrifice it?

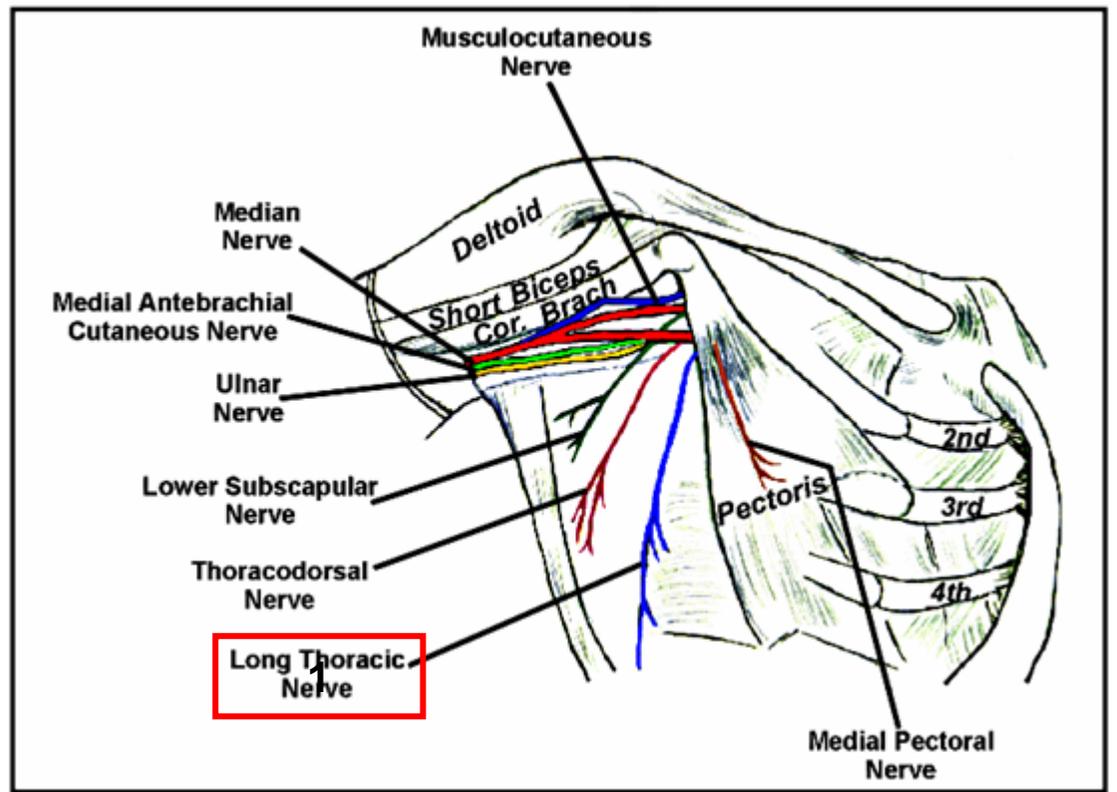
- Provides sensation to the medial arm
- Branches of 2nd intercostal
- Can sacrifice



**What does the long thoracic nerve innervate?
What happens if you damage it?**

What does the long thoracic nerve innervate?
What happens if you damage it?

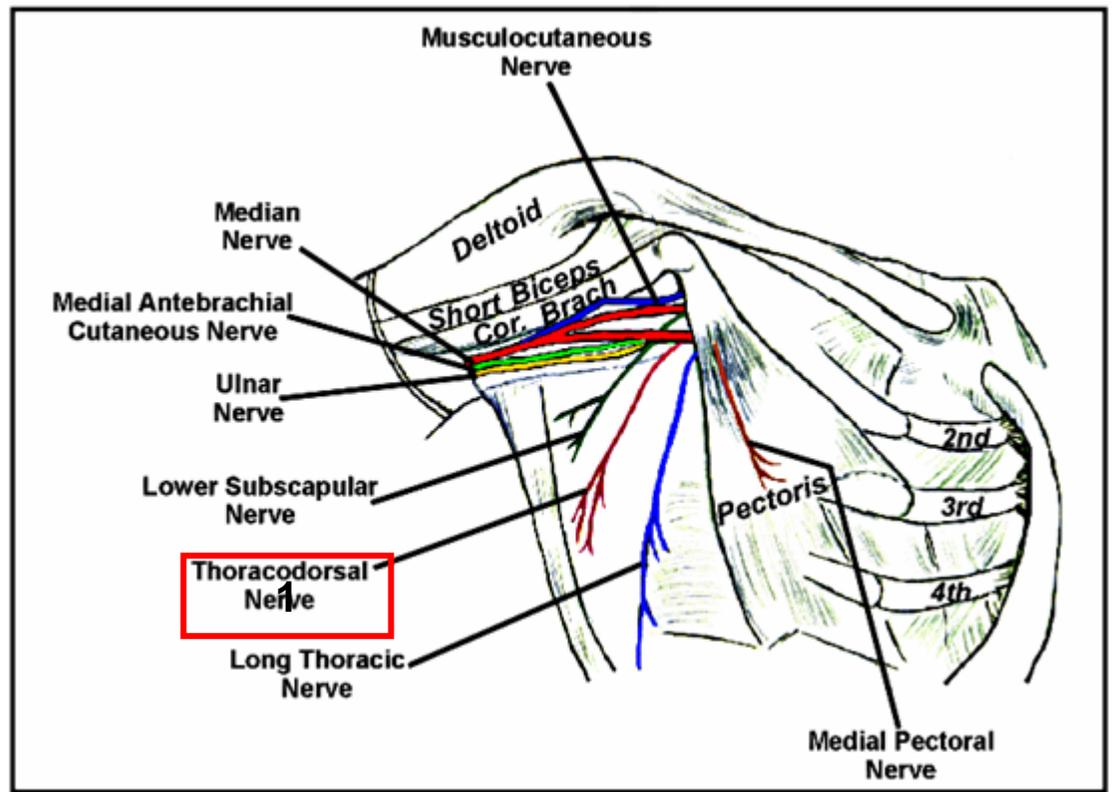
- **Innervates serratus anterior**
- **If you injure it you get a winged scapula**



**What does the thoracodorsal nerve innervate?
What happens if you damage it?**

What does the thoracodorsal nerve innervate? What happens if you damage it?

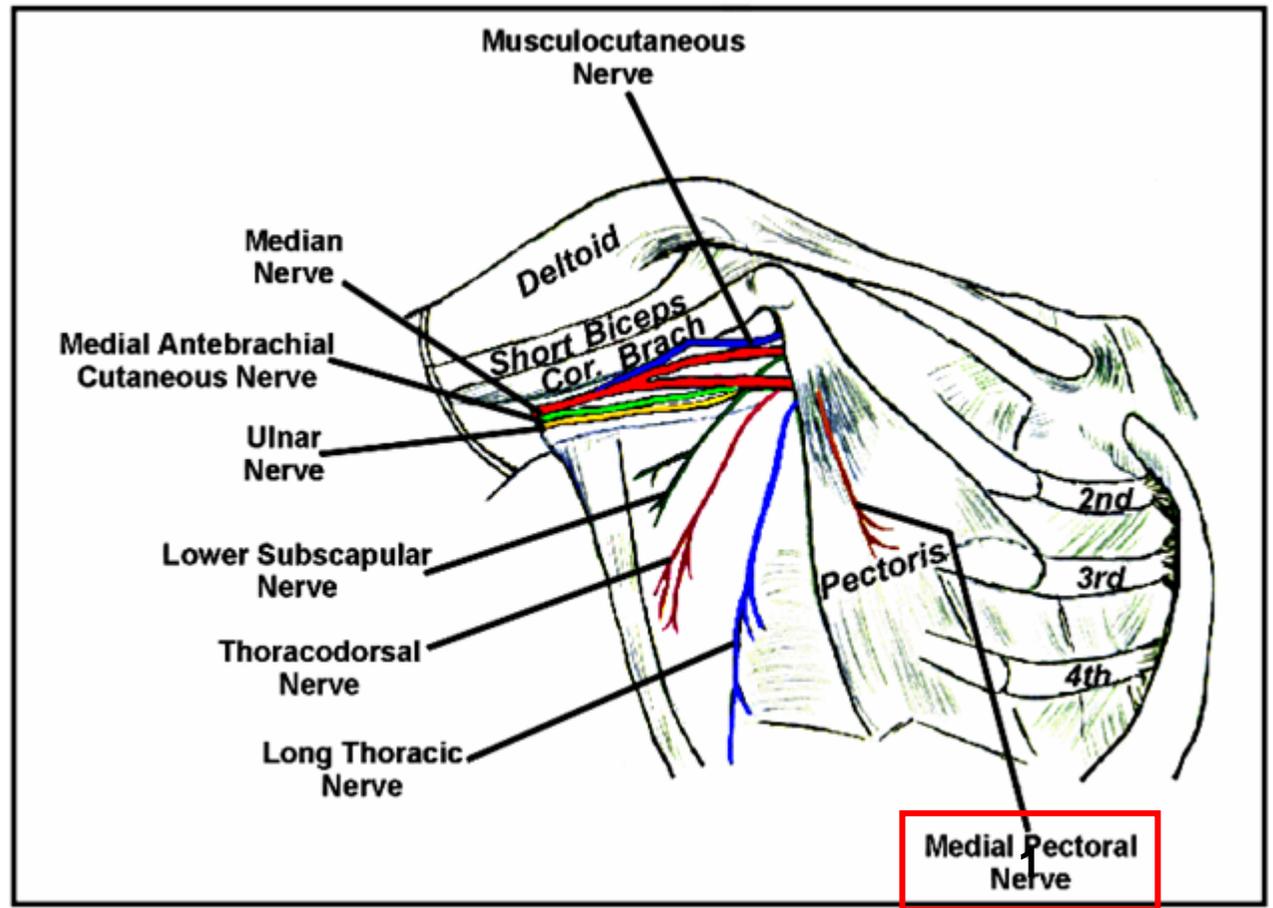
- **Latissimus dorsi**
- **weak arm adduction / pull ups**



**What does the medial pectoral nerve innervate?
Is it medial or lateral?**

What does the medial pectoral nerve innervate? Is it medial or lateral?

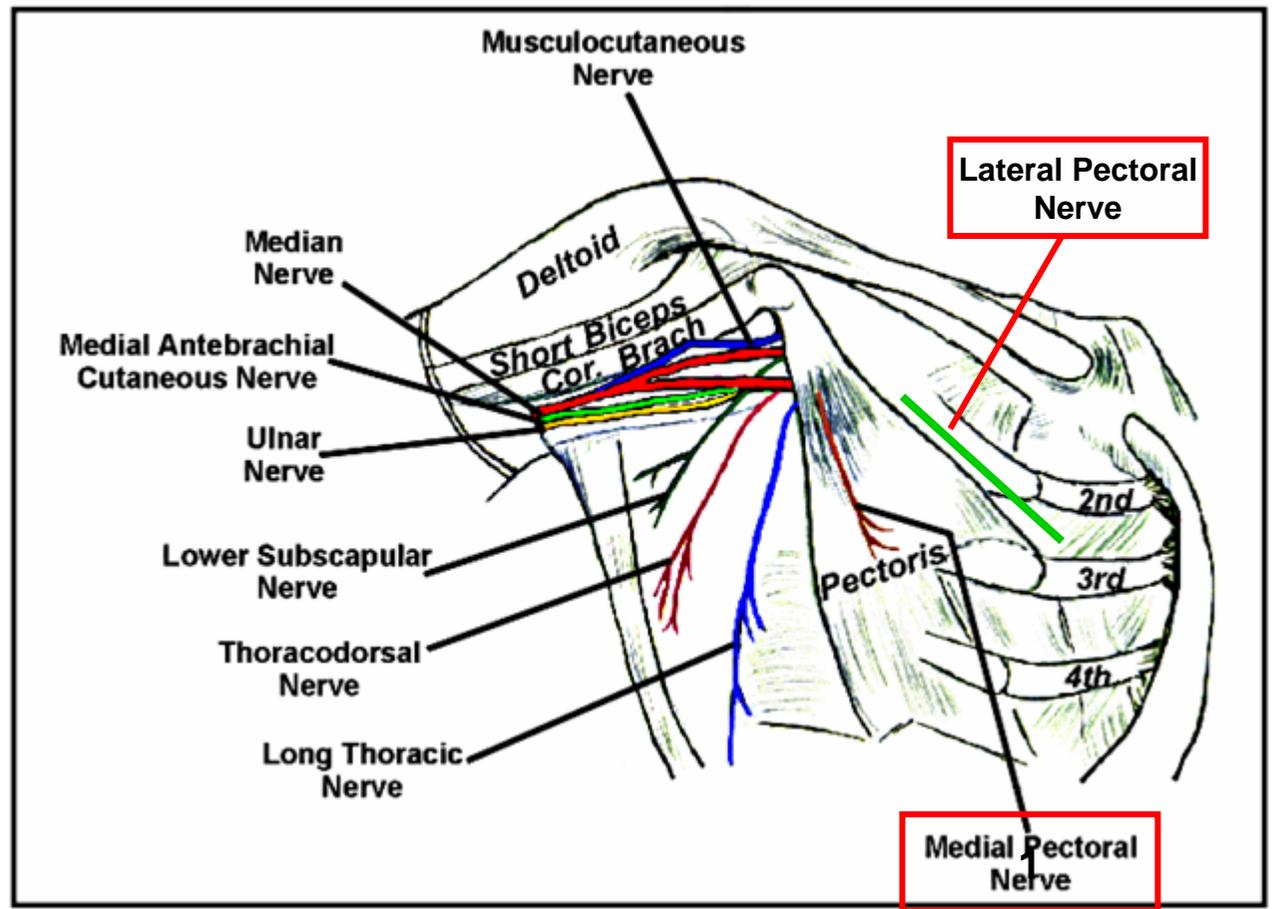
- Pec major and pec minor
- Lateral



What does the lateral pectoral nerve innervate?

What does the lateral pectoral nerve innervate?

- Pec minor only
- It is medial



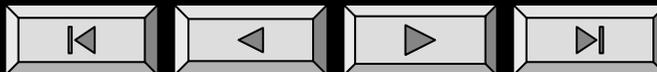
What is Batson's plexus?



What is Batson's plexus?

- **Valveless vertebral veins that allow mets to the spine**

What is Poland syndrome?



What is Poland syndrome?

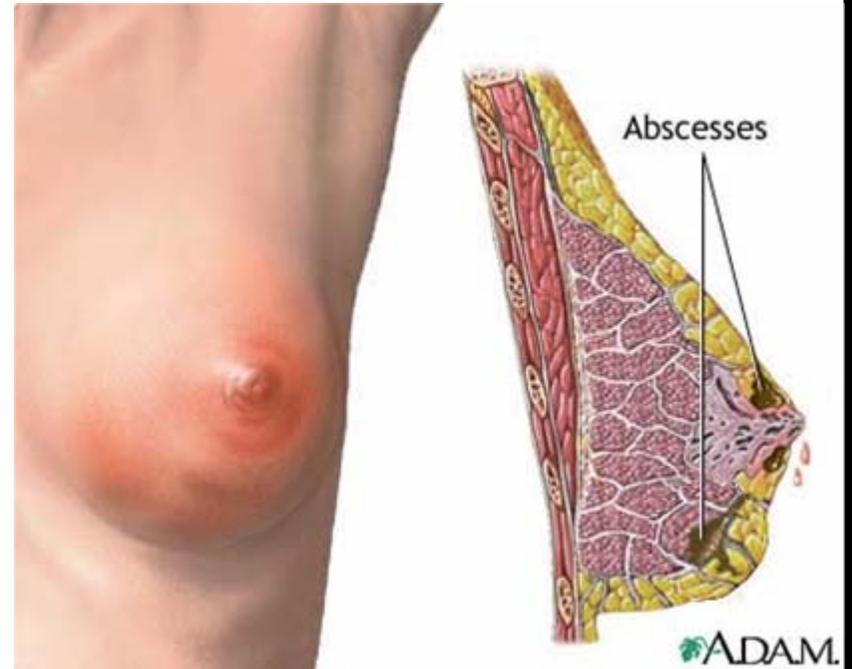
- **Amastia**
- **hypoplastic shoulder**
- **no pectoralis**



What are four treatments for mastodynia?

What are four treatments for mastodynia?

1. Danazol
 2. OCP
 3. evening primose oil
 4. tamoxifen
- Vitamin E not useful



What is Mondor's disease?



What is Mondor's disease?

- **Thrombophlebitis of superficial vein of breast**



What is a finding of PE for Mondor's disease?

What is a finding of PE for Mondor's disease?

- **Cord like mass laterally**

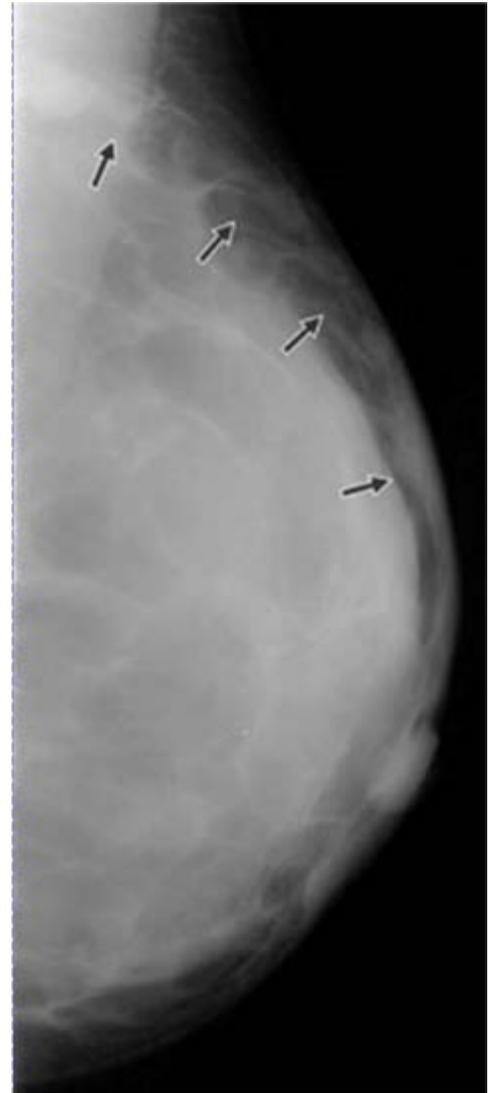


What are mammographic findings of Mondor's Disease?

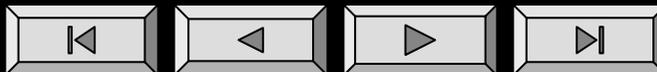


What are mammographic findings of Mondor's Disease?

- A "string of beads" is seen corresponding to a thrombosed vein



How do you treat Mondor's disease?



How do you treat Mondor's disease?

- **NSAIDS**

Describe the four T stages of breast CA?

T1

T2

T3

T4

Describe the four T stages of breast CA?

T1 **< 2cm**

T2 **2-5 cm**

T3 **> 5cm**

T4 **Skin or chest wall**

Describe the four N levels of breast CA?

N1

N2

N3

Mets

Describe the four N levels of breast CA?

N1 **Axillary Nodes**

N2 **Fixed / Matted nodes**

N3 **Internal Mammary Nodes**

Mets **Supracalvicular Nodes**

What is Stage I Breast CA



What is Stage I Breast CA

- T1 < 2cm

What is Stage II breast CA?

What is Stage III Breast CA?

What is Stage IV breast CA?



What is Stage IV breast CA?

- **IV Mets** **Supracalvicular Nodes**
(unlike Lung CA) or further



Fill in Stage I – Stage IV in the chart?

Mets (supraclav nodes)				
N3 internal mammary nodes				
N2 matted or fixed nodes				
N1 Axillary nodes				
No nodes				
	T1 < 2cm	T2 2-5 cm	T3 > 5 cm	T4 skin or chest wall

Fill in Stage I – Stage IV in the chart?

Mets (supraclav nodes)	Stage IV	Stage IV	Stage IV	Stage IV
N3 internal mammary nodes	Stage III	Stage III	Stage III	Stage III
N2 matted or fixed nodes	Stage III	Stage III	Stage III	Stage III
N1 Axillary nodes	Stage I	Stage II	Stage II	Stage III
No nodes	Stage I	Stage II	Stage II	Stage III
	T1 < 2cm	T2 2-5 cm	T3 > 5 cm	T4 skin or chest wall

Where is the most common site of breast CA metastasis?

Where is the most common site of breast CA metastasis?

- **Bone**
- **Lung**
- **Brain**

What is the significance of Her 2 neu?

What is the significance of Her 2 neu?

- **Marker for breast CA that implies a worse prognosis**

What are four genes that indicate a worse prognosis for breast CA?

What are four genes that indicate a worse prognosis for breast CA?

- 1. P53**
- 2. Erb B 2**
- 3. Cathepsin**
- 4. Her 2 neu**

Roughly how old is a 1 cm tumor?



Roughly how old is a 1 cm tumor?

- **5 years**

What is the impact of tamoxifen in reducing the risk of breast CA?

What is the impact of tamoxifen in reducing the risk of breast CA?

- **Reduces by 50% in high risk patients**

What are the risks of Tamoxifen?



What are the risks of Tamoxifen?

- **Increase risk of**
 - **endometrial CA**
 - **DVT**

What is the mechanism of Tamoxifen?

What is the mechanism of Tamoxifen?

- **A non-steroidal anti-estrogen**

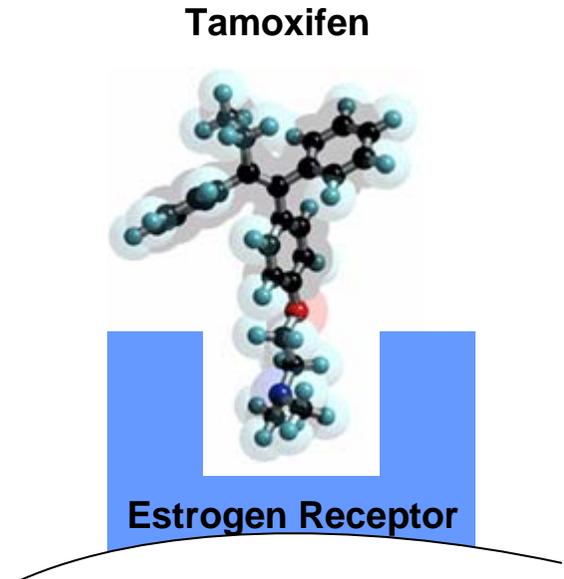
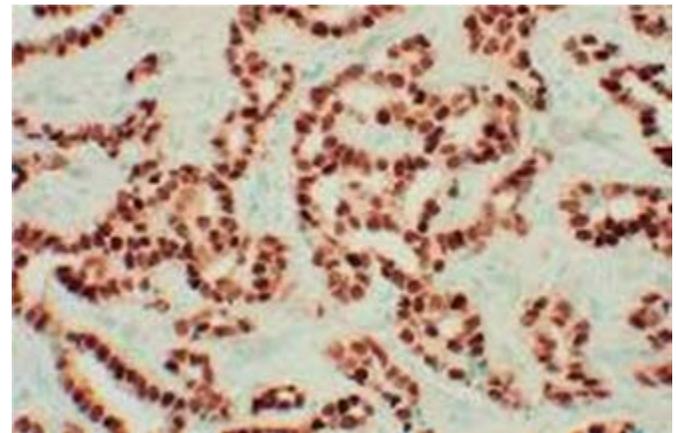


Fig. Estrogen receptor, immunostain. Positive staining of tumor cell nuclei with monoclonal antibody to estrogen receptor



What is the mechanism of Herceptin

What is the mechanism of Herceptin

- **Monoclonal antibody**
 - **Binds to HER2 receptor sites thereby blocking further growth by interrupting the growth signal**

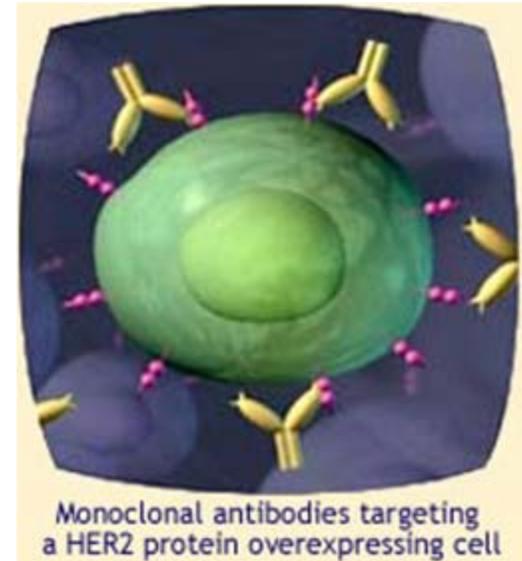
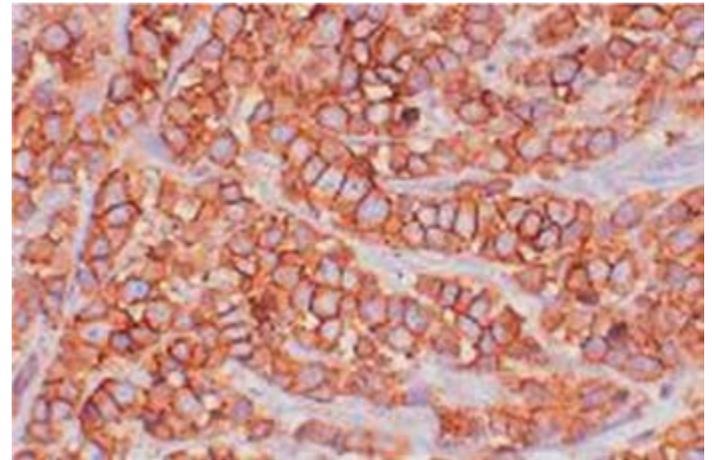


Fig. Her-2/neu overexpression. Infiltrating carcinoma with strong membrane immunoreactivity representing Her-2/neu overexpression



What is the only finding in fibrocystic disease that increases risk for breast CA?



What is the only finding in fibrocystic disease that increases risk for breast CA?

- **Atypical hyperplasia increases risk by 4X**

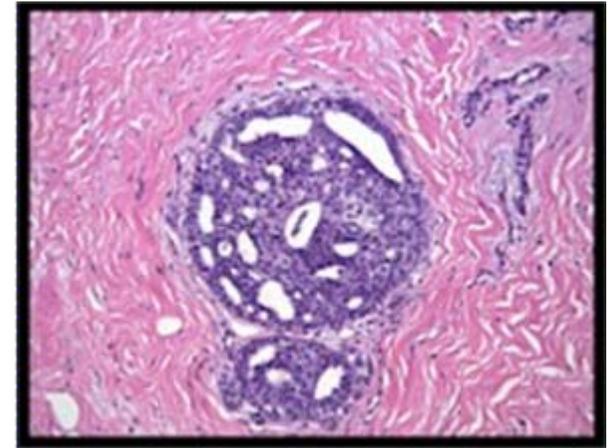


Fig. Atypical ductal hyperplasia

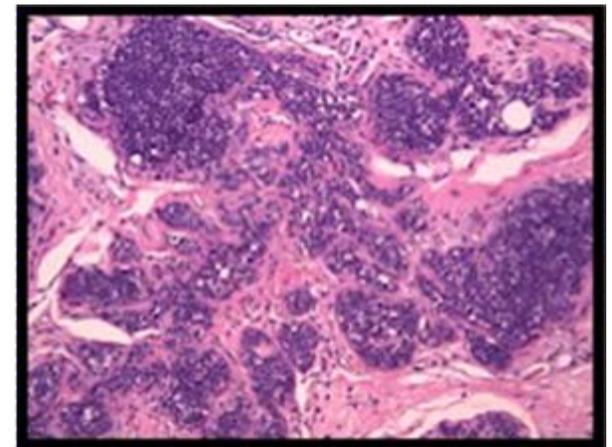


Fig. Atypical lobular hyperplasia

List the prognosis of ER / PR from best to worse?

List the prognosis of ER / PR from best to worse?

1. ER + PR +
2. ER⁻PR +
3. ER + PR⁻
4. ER⁻PR⁻

“ER is the worst”

What is a *PRECURSOR* of invasive carcinoma of the breast?

What is a *PRECURSOR* of invasive carcinoma of the breast?

- **DCIS**

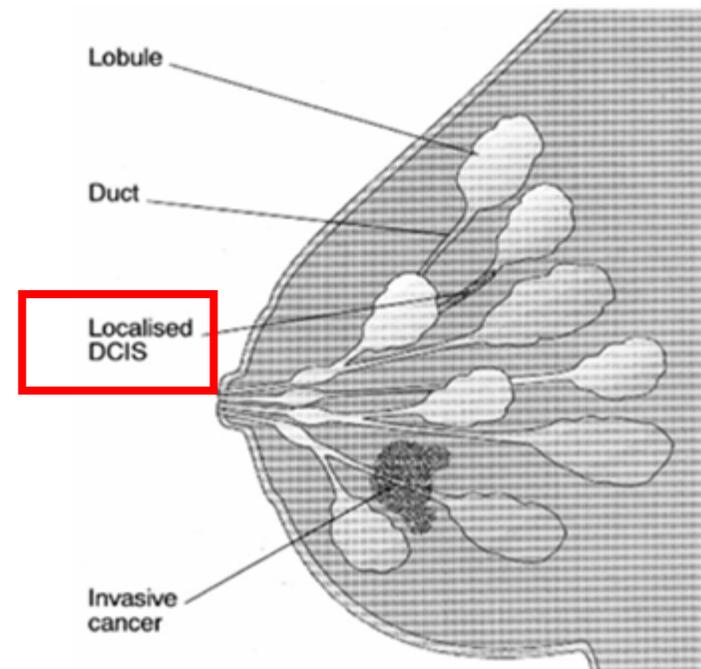
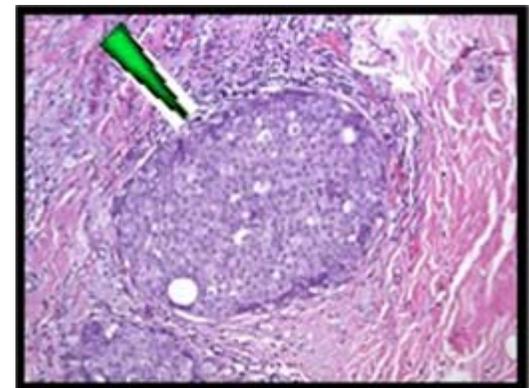


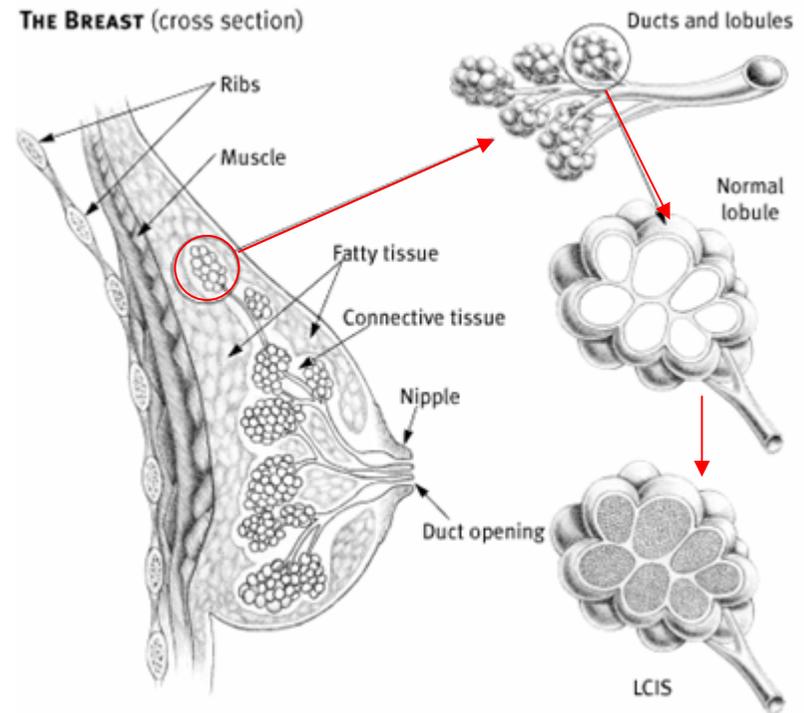
Fig. Ductal Carcinoma in situ (DCIS) (also called Intraductal Carcinoma)



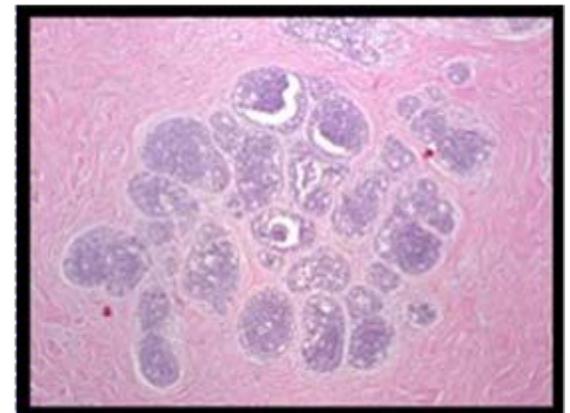
What is a *MARKER* for invasive carcinoma of the breast?

What is a *MARKER* for invasive carcinoma of the breast?

- **LCIS**



Lobular Carcinoma in situ (LCIS) is a growth that stays in the milk lobules of the breast. It is a warning of increased cancer risk for both breasts. Women with LCIS have about a 1% risk per year of developing invasive breast cancer in either breast.



What % of DCIS develops into invasive carcinoma?

What % of DCIS develops into invasive carcinoma?

- **50%**

What is the treatment for DCIS?

What is the treatment for DCIS?

- **Usually lumpectomy plus radiation**
- **Mastectomy sometimes if:**
 - **high grade**
 - **large tumor**
 - **poor margins**



What % of DCIS recurrence is invasive?



What % of DCIS recurrence is invasive?

- **50%**

What % of LCIS develops into invasive carcinoma of the breast?

What % of LCIS develops into invasive carcinoma of the breast?

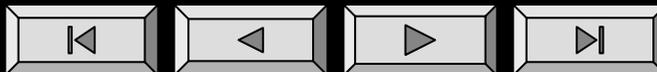
- **30-40%**

What is one difference between DCIS and LCIS

What is one difference between DCIS and LCIS

- **LCIS leads to invasive carcinoma in either breast**

What is the treatment for LCIS?



What is the treatment for LCIS?

- **Nothing**
- **Tamoxifen**
- **Bilateral mastectomy**

What is characteristic of Comedo breast CA and what are the treatment implications?

What is characteristic of Comedo breast CA and what are the treatment implications?

- Often multicentric
- Poor prognosis
- Do mastectomy

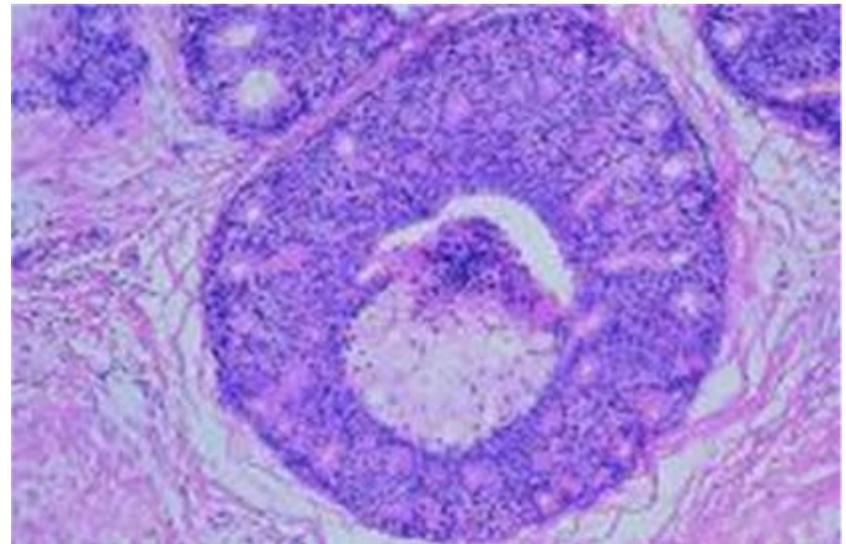


Fig. Intraductal carcinoma, comedo type. Distended duct with intact basement membrane and central tumor necrosis

What is Paget's disease of the breast?

What is Paget's disease of the breast?

- **Eczematous lesion of the nipple**
- **Caused by underlying DCIS or Ductal CA**



What % of Cystosarcoma Phyllodes are malignant?

What % of Cystosarcoma Phyllodes are malignant?

- 10%



How do Cystosarcoma Phyllodes spread?

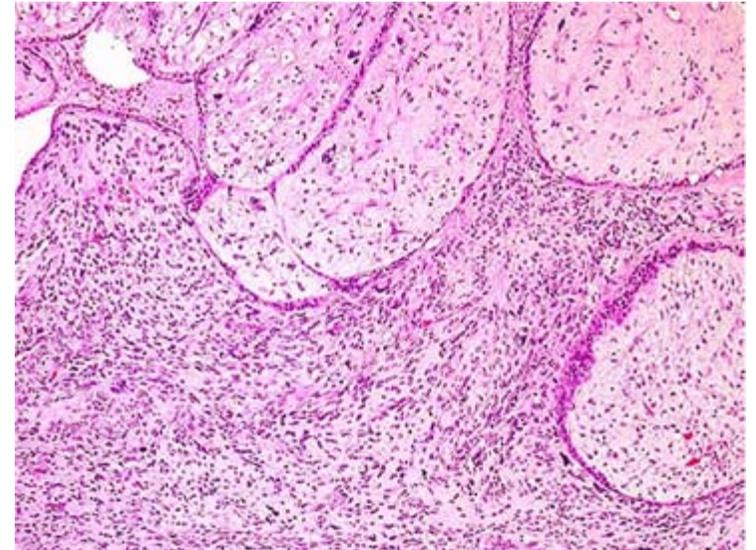
How do Cystosarcoma Phyllodes spread?

- **Hematogenously**
- **Therefore, rare nodal mets**

**What is the treatment for Cystosarcoma
Phyllodes?**

What is the treatment for Cystosarcoma Phyllodes?

- **Wide local excision**
- **Axillary node dissection not indicated**
- **Rarely mastectomy**



Women with BRCA, what % will have CA by age 70?

Women with BRCA, what % will have CA by age 70?

- **85%**

Which BRCA is associated with ovarian CA?



Which BRCA is associated with ovarian CA?

- **BRCA I**
 - **50% is associated with ovarian CA**



Which BRCA is associated with male breast CA?

Which BRCA is associated with male breast CA?

- **BRCA II**

What are the indications for RT after mastectomy?

What are the indications for RT after mastectomy?

1. > 4 nodes
2. skin or chest wall involvement
3. + margins

What is Stewart Treves?



What is Stewart Treves?

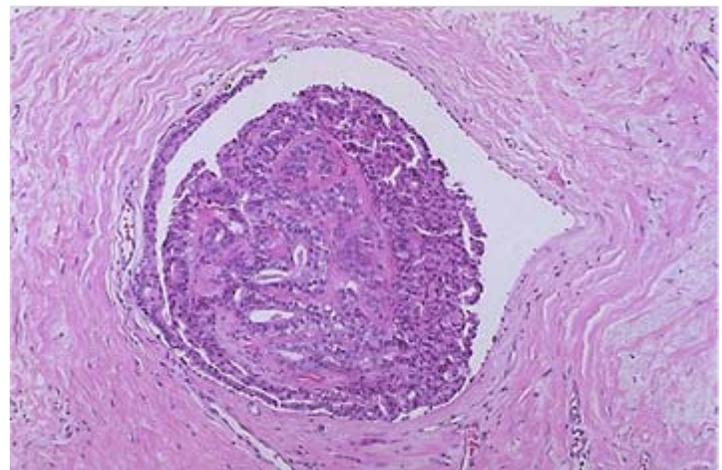
- **Lymphagiosarcoma in lymphedematous limb**
- **Presents with purplish mass on arm approximately 10 years s/p MRM**

What is the number one cause of bloody nipple discharge?



What is the number one cause of bloody nipple discharge?

- **Intraductal Papilloma**



What % of nipple discharge caused by intraductal papilloma is serous?

What % of nipple discharge caused by intraductal papilloma is serous?

- **50%**

Is there a risk of CA with Intraductal Papillomas?

Is there a risk of CA with Intraductal Papillomas?

- **No risk of CA**

Flashcard Instructions

MOUSE

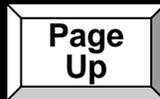
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



At what level does the Vena cava cross the diaphragm?

At what level does the **V**ena cava cross the diaphragm?

- **T8**

VET = 8 – 10 – 12

At what level does the Esophagus (vagi) cross the diaphragm?

At what level does the **E**sophagus (vagi) cross the diaphragm?

- **T10**

VET = 8 – 10 – 12

At what level does the Thoracic Duct cross the diaphragm?

At what level does the Thoracic Duct cross the diaphragm?

- **T12**

VET = 8 – 10 – 12

At what level does the Aorta cross the diaphragm?

VE(TA) = 8 – 10 – 12

At what level does the Aorta cross the diaphragm?

- **T12**

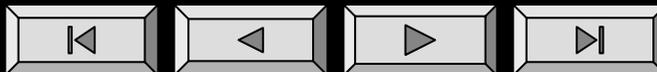
VET = 8 – 10 – 12

What is the function of Type I alveoli?

What is the function of Type I alveoli?

- **Functional gas exchange**

What is the function of Type II Alveoli?



What is the function of Type II Alveoli?

- **Produce surfactant (decrease surface tension)**
 - **1% of alveoli**

What PFTs must be performed before a thoracotomy?



What PFTs must be performed before a thoracotomy?

- **FEV1 > 2 L for pneumonectomy**
> 1 L for lobectomy
> .6 L wedge

What predictive post op FEV1 is needed?



What predictive post op FEV1 is needed?

- **FEV1 > 0.8**

What is the number #1 lung CA?



What is the number #1 lung CA?

- **Adenocarcinoma**

What lung CA is associated with PTH like substances?

What lung CA is associated with PTH like substances?

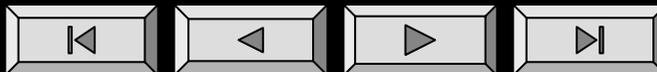
- **Squamous (hypercalcemia)**

What lung CA is associated with ACTH and ADH?

What lung CA is associated with ACTH and ADH?

- **Small Cell**

What are the four T levels of lung CA?



What are the four T levels of lung CA?

T1 < 3 cm

T2 > 3 cm

T3 = Resectable: invades chest, pericardium, diaphragm

- less than 2cm from carina

T4 = unresectable invasion of

- mediastinum, heart, great vessels, esophagus, trachea, vertebra, effusion



What are the three N stages of Lung CA?

What are the three N stages of Lung CA?

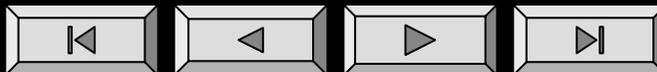
N1 = ipsi hilar nodes

N2 = ipsi mediastinal nodes

N3 = unresectable

- **contralateral**
- **scalene**
- **subclavian**

What is Stage I Lung CA?

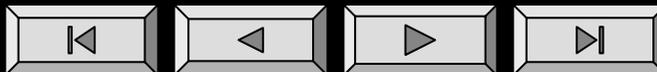


What is Stage I Lung CA?

- T1-2
- NO

T1 < 3 cm, T2 > 3 cm

What is Stage II Lung CA?



What is Stage II Lung CA?

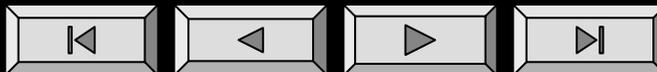
- T2

T2 > 3 cm

- N1

ipsi hilar nodes

What is Stage IIIa Lung CA?



What is Stage IIIa Lung CA?

Up to:

- **T3** **invades chest, pericardium, diaphragm
(less than 2cm from carina**
- **N2** **ipsi mediastinal nodes**

What is Stage IIIb Lung CA?



What is Stage IIIb Lung CA?

Unresectable

- **T4** **T4 = unresectable invasion of mediastinum, heart, great vessels, esophagus, trachea, vertebra, effusion**
or
- **N3** **N3 = unresectable, contralateral, scalene, subclavian**

What is Stage IV lung CA?



What is Stage IV lung CA?

- **IV Mets**

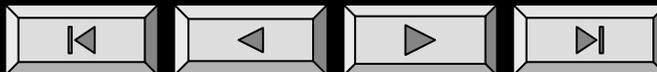
Fill out the following staging chart for Lung CA?

Distant Mets				
N3 unresectable – contralateral scalene or subclavian				
N2 ipsi mediastinal nodes				
N1 ipsi hilar nodes				
	T1 < 3 cm	T2 > 3 cm	T3 invades chest, pericardium, diaphragm (less than 2cm from carina	T4 unresectable invasion of mediastinum, heart, great vessels, esophagus, trachea, vertebra, effusion

Fill out the following staging chart for Lung CA?

Distant Mets	Stage IV	Stage IV	Stage IV	Stage IV
N3 unresectable – contralateral scalene or subclavian	Stage IIIb	Stage IIIb	Stage IIIb	Stage IIIb
N2 ipsi mediastinal nodes	Stage IIIa	Stage IIIa	Stage IIIa	Stage IIIb
N1 ipsi hilar nodes	Stage II	Stage II	Stage IIIa	Stage IIIb
No	Stage I	Stage I	Stage IIIa	Stage IIIb
	T1 < 3 cm	T2 > 3 cm	T3 invades chest, pericardium, diaphragm (less than 2cm from carina)	T4 unresectable invasion of mediastinum, heart, great vessels, esophagus, trachea, vertebra, effusion

What is a Pancoast tumor?



What is a Pancoast tumor?

- Tumor that involves sympathetic chain (Horner syndrome) and / or ulnar nerve

Can the left lung drain to the right mediastinum?

Can the left lung drain to the right mediastinum?

- **Yes**

Is a thymoma an indication for resection?

Is a thymoma an indication for resection?

- **Yes**



What % of myasthenia gravis cases are improved by resecting the thymus?

What % of myasthenia gravis cases are improved by resecting the thymus?

- **90%**

What % of patients with myasthenia gravis have a thymoma?

What % of patients with myasthenia gravis have a thymoma?

- **10%**

What do “popcorn” lesions on a CXR usually indicate?



What do “popcorn” lesions on a CXR usually indicate?

- **Hamartoma**

What % of thoracic outlet syndromes involve the artery or vein?

What % of thoracic outlet syndromes involve the artery or vein?

- **Only 1-3%**

What are the most common presenting symptoms of thoracic outlet syndrome?

What are the most common presenting symptoms of thoracic outlet syndrome?

- **Ulnar nerve parasthesias**

What is the male : female ratio for spontaneous pneumothorax?



What is the male to female ratio for spontaneous pneumothorax?

- **10:1 male**

What % of spontaneous pneumothoraxes recur the first time?

What % of spontaneous pneumothoraxes recur the first time?

- **50%**

What % of spontaneous pneumothoraxes recur the second time?

What % of spontaneous pneumothoraxes recur the second time?

- **75%**

When is a thoracoscopy indicated for spontaneous pneumothoraxes?

When is a thoracoscopy indicated for spontaneous pneumothoraxes?

- **2nd recurrence**
- **Continuous air leak**

When does a post MI VSD present?



When does a post MI VSD present?

- **Day 2-7**

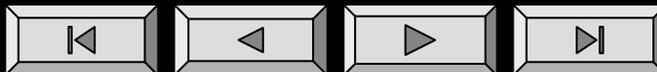
What % of MI lead to a post MI VSD?

What % of MI lead to a post MI VSD?

- **2%**



What is the clinical finding of a post MI VSD?



What is the clinical finding of a post MI VSD?

- **pan-systolic murmur**

What is the most common cause of Superior Vena Cava Syndrome?

What is the most common cause of Superior Vena Cava Syndrome?

- **90% due to lung CA**

What is the treatment for Superior Vena Cava Syndrome?

What is the treatment for Superior Vena Cava Syndrome?

- RT

What is Takayasu arteritis?



What is Takayasu arteritis?

- **Arteritis of:**
 - **Aorta**
 - **thoracic**
 - **abdominal**
 - **Pulmonary artery**

Who most commonly gets Takayasu arteritis?



Who most commonly gets Takayasu arteritis?

- **Young females**

How do you diagnose Takayasu arteritis?



How do you diagnose Takayasu arteritis?

- **Angiogram**

What are the disadvantages for Tissue valve replacements?

What are the disadvantages for Tissue valve replacements?

- **Shorter lasting**

What are the advantages for Tissue valve replacements?

What are the advantages for Tissue valve replacements?

- **No need for anti-coagulation**

What are the indications for Tissue valve replacements?

What are the indications for **Tissue** valve replacements?

- **Used for all **T**ricuspid repairs**
- **Used in patients that:**
 - **may become pregnant**
 - **Coumadin contraindicated**

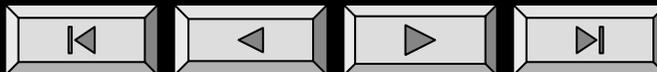
What valve disease does Rheumatic heart disease lead to?



What valve disease does Rheumatic heart disease lead to?

- **Mitral stenosis**

What can lead to mitral regurgitation?



What can lead to mitral regurgitation?

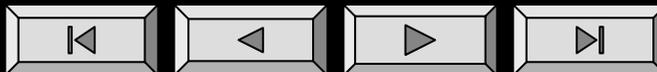
- **MI**
- **Valve degeneration**

What is the most common cause of a non-iatrogenic chylothorax?

What is the most common cause of a non-iatrogenic chylothorax?

- **Posterior mediastinal tumor**
 - **75% lymphoma**

Is RT used for chylothorax?



Is RT used for chylothorax?

- Yes

What is the first and second line of treatment for a thoracic duct injury?



What is the first and second line of treatment for a thoracic duct injury?

- 1. Drainage / NPO X 2 weeks**
- 2. R thoracotomy and ligate duct**

What are three landmarks for the anatomy of the thoracic duct?

What are three landmarks for the anatomy of the thoracic duct?

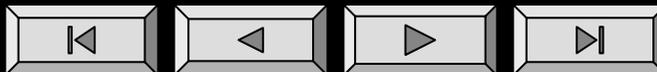
- **Enters chest on right at with aorta at T12**
- **Crosses to left at T4**
- **Joins IJ/subclavian junction**

What are the indications to operate on a thoracic aortic aneurysm?

What are the indications to operate on a thoracic aortic aneurysm?

- If > 8 cm
- If symptomatic

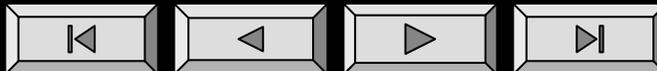
What is a type A aortic dissection?



What is a type A aortic dissection?

- **Involves ascending aorta**
- **Must operate**

Describe a type B aortic aneurysm and treatment?



Describe a type B aortic aneurysm and treatment?

- **Does not involve ascending aorta**
- **Medical management (HTN control)**

What is the leading cause of death in the United States?



What is the leading cause of death in the United States?

- **CAD**

What are the indications for a CABG?



What are the indications for a CABG?

1. **Intractable symptoms**
2. **> 50% left main stenosis**
3. **Triple vessel disease**
4. **70% LAD + 1 other vessel**

What is the re-stenosis rate for angioplasty?



What is the re-stenosis rate for angioplasty?

- **80 % patent in 1 yr.**

What is the re-stenosis rate for a vein graft?

What is the re-stenosis rate for a vein graft?

- **80% patent at 5 years**

What is the patency rate of IMA grafts?

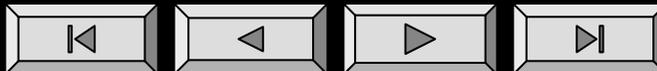


What is the patency rate of IMA grafts?

- **95% patency at 20 years**



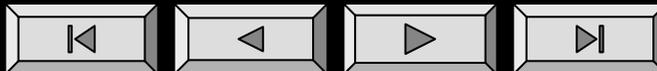
What is the most common congenital cardiac defect?



What is the most common congenital cardiac defect?

- **VSD**

What % of VSD close on their own?



What % of VSD close on their own?

- **50%**

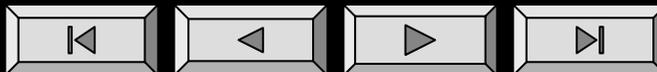
What are the indications to operate on a VSD?



What are the indications to operate on a VSD?

- **Symptomatic (failure to thrive)**

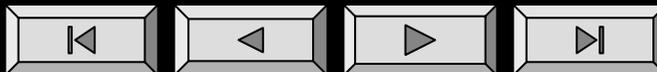
What is the first line treatment for PDA?



What is the first line treatment for PDA?

- **indomethacin**

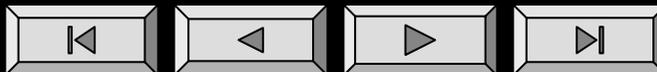
What is the indication for surgical repair of a PDA?



What is the indication for surgical repair of a PDA?

- **Indomethacin does not close by 6 mos of age**

What is IABP?



What is IABP?

- **Augments diastolic coronary blood flow**
- **Reduces afterload**
- **Works by inflating during diastole**
 - **inflates 40 msec before T wave, deflates with p wave**



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or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

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Slide



Previous
Slide



*Answer
or Next
Question*



Last
Slide

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What does the colon actively secrete?

What does the colon actively secrete?

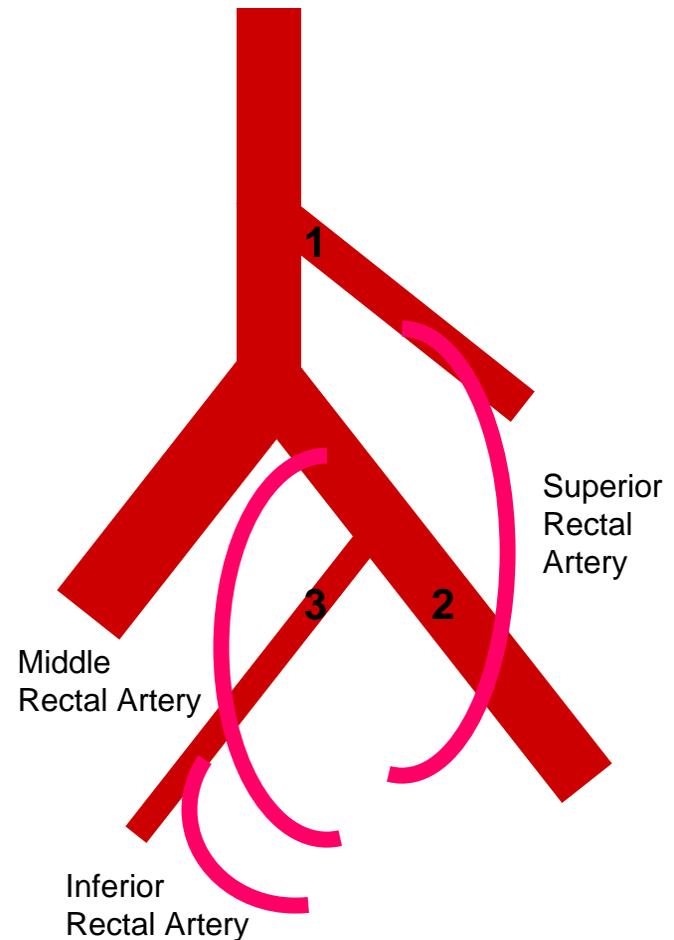
1. K

2. HCO₃

Where do the superior, middle, and inferior rectal arteries originate?

Where do the superior, middle, and inferior rectal arteries originate?

- Superior off IMA (1)
- Middle of internal iliac (2)
- Inferior off internal pudendal (3) (off internal iliac)



What two nerves innervate the external sphincter?

What two nerves innervate the external sphincter?

- **Inferior Rectal branch (internal pudendal)**
- and
- **Perineal branch (S4)**

What is the first line of treatment for squamous cell CA of the anal canal?

What is the first line of treatment for squamous cell CA of the anal canal?

- **Chemo and radiation**
 - **NIGRO protocol**

What is the treatment for recurrent squamous cell CA of the anal canal?

What is the treatment for recurrent squamous cell CA of the anal canal?

- **APR**

How long does it take to transform a polyp into cancer?

How long does it take to transform a polyp into cancer?

- **8 years**

What is the definition and treatment for T1 rectal cancer?

What is the definition and treatment for T1 rectal cancer?

- **Limited to submucosa**
- **Transanal excision**

What is a contraindication to transanal resection?

What is a contraindication to transanal resection?

1. Poor differentiation

2. Neuro-vascular invasion

What is the treatment for T2 rectal cancer?

What is the treatment for T2 rectal cancer?

- **APR**
 - **because 20% have node involvement**

What stage of rectal cancer get chemo and radiation?

What stage of rectal cancer get chemo and radiation?

- **Stage II, Stage III**

What stage of colon cancer get chemo and radiation?

What stage of colon cancer get chemo and radiation?

- **None**
- **Stage III (node +), and stage IV gets chemo**

What three mutations are known to be linked to colon cancer?

What three mutations are known to be linked to colon cancer?

1. p53 mutation 85%

2. DCC mutation 70%

3. ras mutation 50%

Familial Adenomatous Polyposis:

- 1. What is the genetic transmission pattern?**
- 2. What gene is it linked to?**
- 3. What is the age of onset**

Familial Adenomatous Polyposis:

1. What is the genetic transmission pattern?
2. What gene is it linked to?
3. What is the age of onset

- **Autosomal dominant**
- **APC gene**
- **By age 40**

What is the treatment for Familial Adenomatous Polyposis?

What is the treatment for Familial Adenomatous Polyposis?

- **Prophylactic total colectomy**

What additional screening is necessary for Familial Adenomatous Polyposis?

What additional screening is necessary for Familial Adenomatous Polyposis?

- **Need to survey duodenum for upper GI polyps**
- **Screen for desmoids, which although are benign, are difficult to manage**

What is the medical treatment for polyps in Familial Adenomatous Polyposis?

What is the medical treatment for polyps in Familial Adenomatous Polyposis?

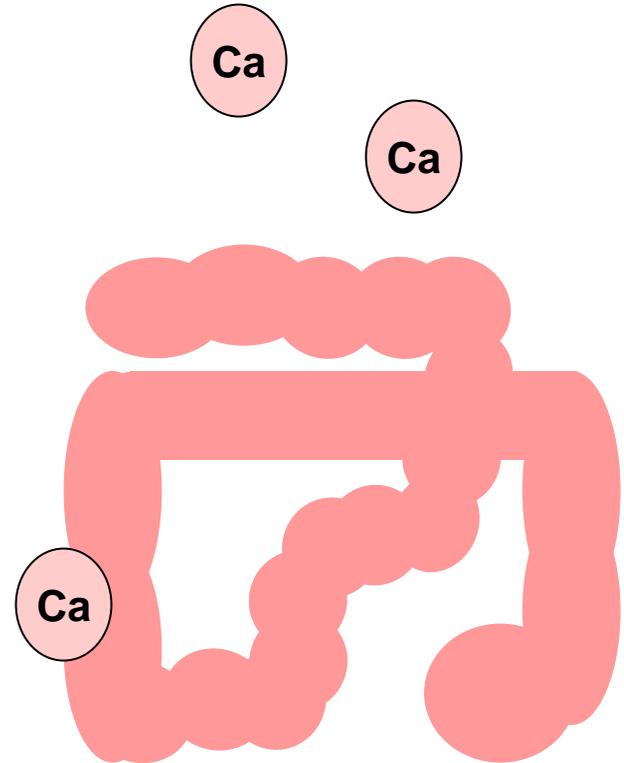
- **Sulindac**

What is Lynch I?



What is Lynch I?

- **Right sided colon CA**
- **Multiple cancers**
- **Young patients**

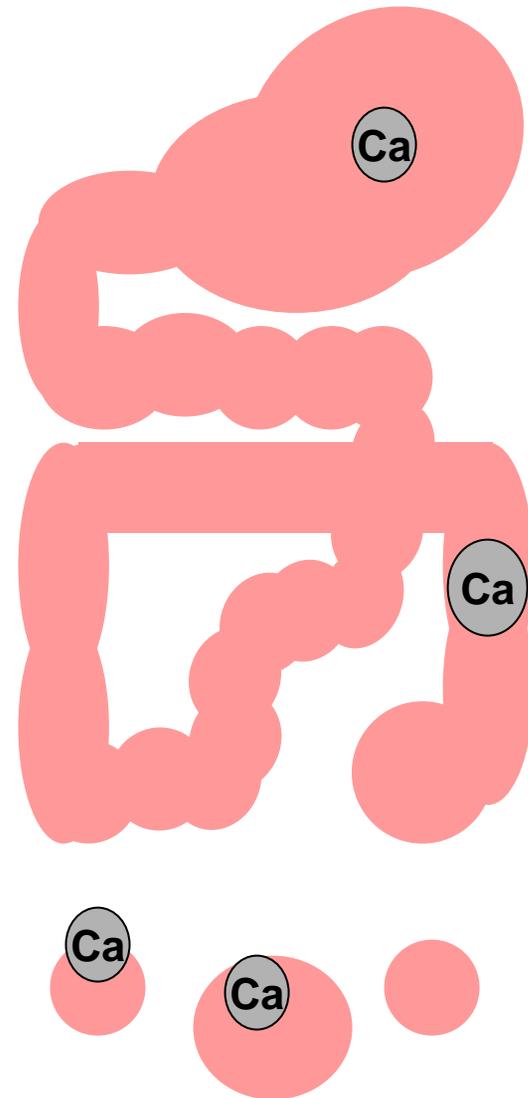


What is Lynch II?



What is Lynch II?

- **Colon CA with associated:**
 - **Stomach CA**
 - **Ovary CA**
 - **Bladder CA**



What is another name for Lynch syndromes?

What is another name for Lynch syndromes?

- **Hereditary Non-Polyposis Colon Cancer**

What is the definition for Lynch syndrome?

What is the definition for Lynch syndrome?

- **Amsterdam criteria:**
 - **3 first degree relatives over**
 - **2 generations**

What is Gardner's syndrome?

What is Gardner's syndrome?

- **Colon cancer and desmoid tumors**

What is Turcot's syndrome?

What is Turcot's syndrome?

- **Colon cancer and brain tumors**

What is Peutz Jeghers?



What is Peutz Jeghers?

1. Polyposis (not colon CA)

and

2. Mucocutaneous pigmentation

What is the treatment for sigmoid volvulus?

What is the treatment for sigmoid volvulus?

- **Decompress with scope**
- **Prep bowel**
- **Sigmoid colectomy during same admission**

What is the treatment for cecal volvulus?

What is the treatment for cecal volvulus?

- **Unlikely to decompress**
- **Therefore take to OR:**
 - **right hemicolectomy with ileo transverse anastomosis**
 - **some try cecopexy**

What is the treatment for carcinoid involving the appendix?

What is the treatment for carcinoid involving the appendix?

- **Appendectomy**
- **If > 2cm or involving the base then do right hemicolectomy**

What is proper management if appendectomy findings are a normal appendix but positive Crohns disease?

What is proper management of appendectomy findings are a normal appendix but positive Crohns disease?

- **Perform appy (unless cecum is very inflamed)**
 - **Studies show it does not increase rates of fistula**

How do you treat a perianal abscess in Crohn's disease?

How do you treat a perianal abscess in Crohn's disease?

- **Incision and drainage as any abscess.**

What is the impact of a proctocolectomy on the extraintestinal symptoms of Ulcerative colitis?

What is the impact of a proctocolectomy on the extaintestinal symptoms of Ulcerative colitis?

- **May help:**
 - **skin**
 - **anemia**
- **Does NOT help:**
 - **sclerosing cholangitis**
 - **arthritis**

What disease is HLA B27 associated with?

What disease is HLA B27 associated with?

- **Sacroilitis**

What is the medical treatment for pouchitis?

What is the medical treatment for pouchitis?

- Rx with Flagyl

or

- Short chain fatty acid enemas

What is the medical treatment for Pyoderma Gangrenosum?

What is the medical treatment for Pyoderma Gangrenosum?

- **Dapsone**

and / or

- **Topical or systemic steroids**

Where are Fissure in Ano located ?

Where are Fissure in Ano located ?

- **10% anterior in woman**
- **Nearly all others posterior midline**

If the fissure is not midline, what should you think?

If the fissure is not midline, what should you think?

- **IBD**
- **TB**
- **Syphilis**

What are five treatments for Fissure in Ano?

What is the treatment for Fissure in Ano?

- **Keep stool loose (fiber, water)**
- **Rx sitz baths**
- **Some try nitroglycerine creme (inc. O2 for ischemia)**
- **Some try Botox (relaxes sphincter)**
- **If persists, then Lateral Internal Sphincterotomy**

What is Bowen's disease?

-What % are invasive?

-How do you treat?

What is Bowen's disease?

-How do you treat?

- **Intraepidermal squamous cell carcinoma**
- **5%**
- **Wide local excision**

What % of Bowen's is malignant?

What % of Bowen's are invasive?

5%

How do you treat Bowen's Disease?

How do you treat Bowen's Disease?

- **Wide local excision**

**What is perianal Paget's disease?
-How do you diagnose it?**

What is perianal Paget's disease?

- How invasive is it?
- How do you diagnose it?

- **Rare intraepidermal apocrine glands neoplasm**
- **Long pre-invasive stage**
- **+PAS stain**

What % of patients with colonic AVM have:

-aortic stenosis?

-CAD?

What % of patients with colonic AVM have:

-Aortic stenosis? • 25%

-CAD? • 50%

What is a colonoscopy finding for Campylobacter infectious colitis?

What is a colonoscopy finding for Campylobacter infectious colitis?

- **Aphthous ulcers**

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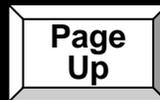
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Slide**



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**Answer
or Next
Question**



**Last
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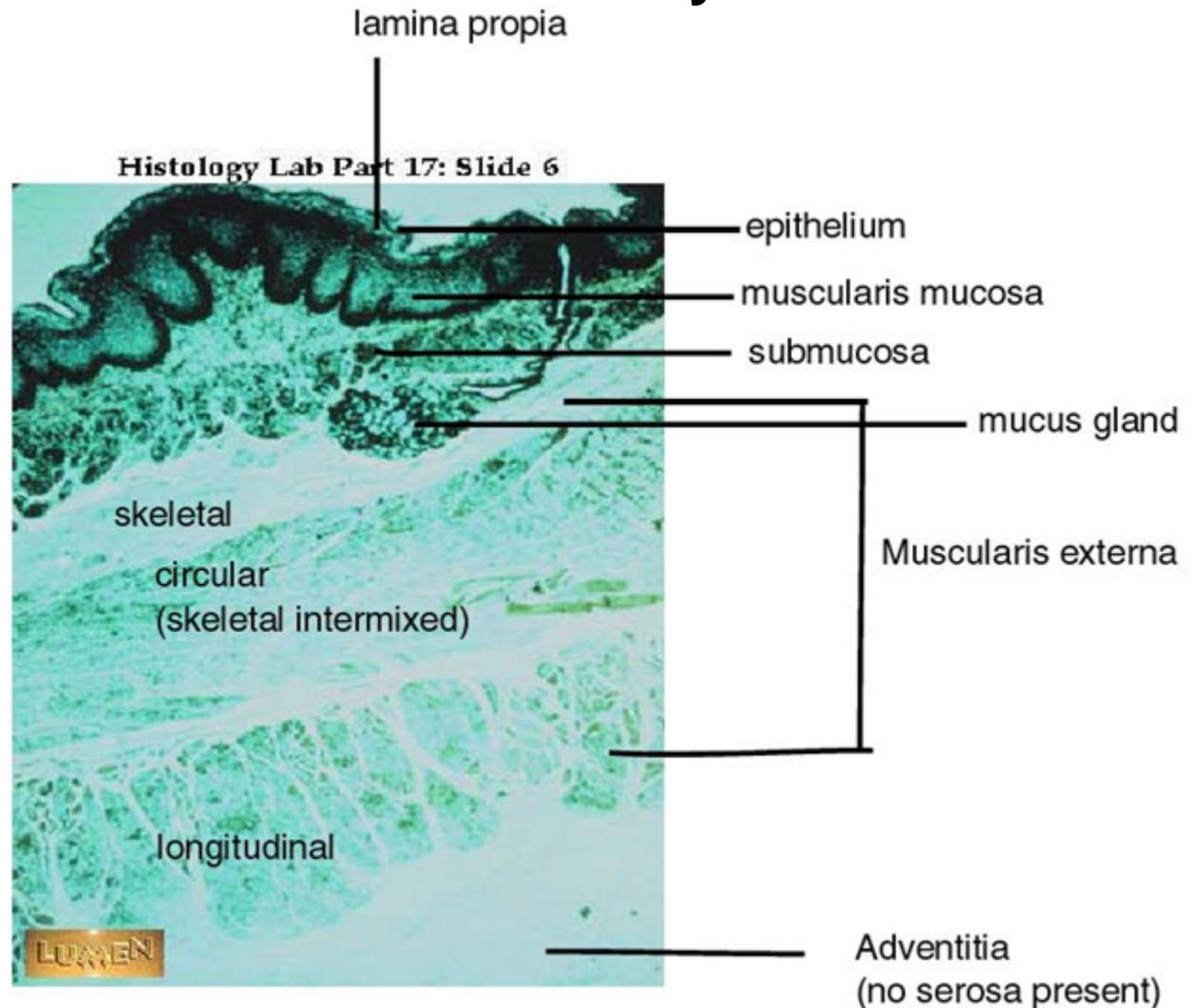
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What is unique about the mucosal layers of the esophagus?

What is unique about the mucosal layers of the esophagus?

- **No serosa**



Esophagus epithelium is nonkeratinized stratified squamous epithelium. This changes to thin simple columnar epithelium in the transition to the stomach.

What is the strongest layer in the esophagus?

What is the strongest layer in the esophagus?

- **Mucosa is the strongest layer**
 - **in small bowel submucosa is strongest**

What initiates swallow in peristalsis ?

What initiates swallow in peristalsis ?

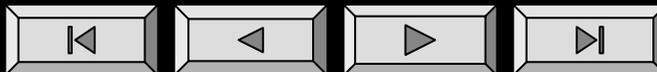
1. Central input initiates swallow

What initiates primary peristalsis ?

What initiates primary peristalsis ?

1. Swallow initiates primary peristalsis

What initiates secondary peristalsis?



What initiates secondary peristalsis?

1. Distension initiates secondary peristalsis

At rest what is the state of the sphincters?

At rest what is the state of the sphincters?

- **Contracted**

What is normal LES tone?



What is normal LES tone?

- **15-25 mmHg**

What is normal LES length?

What is normal LES length?

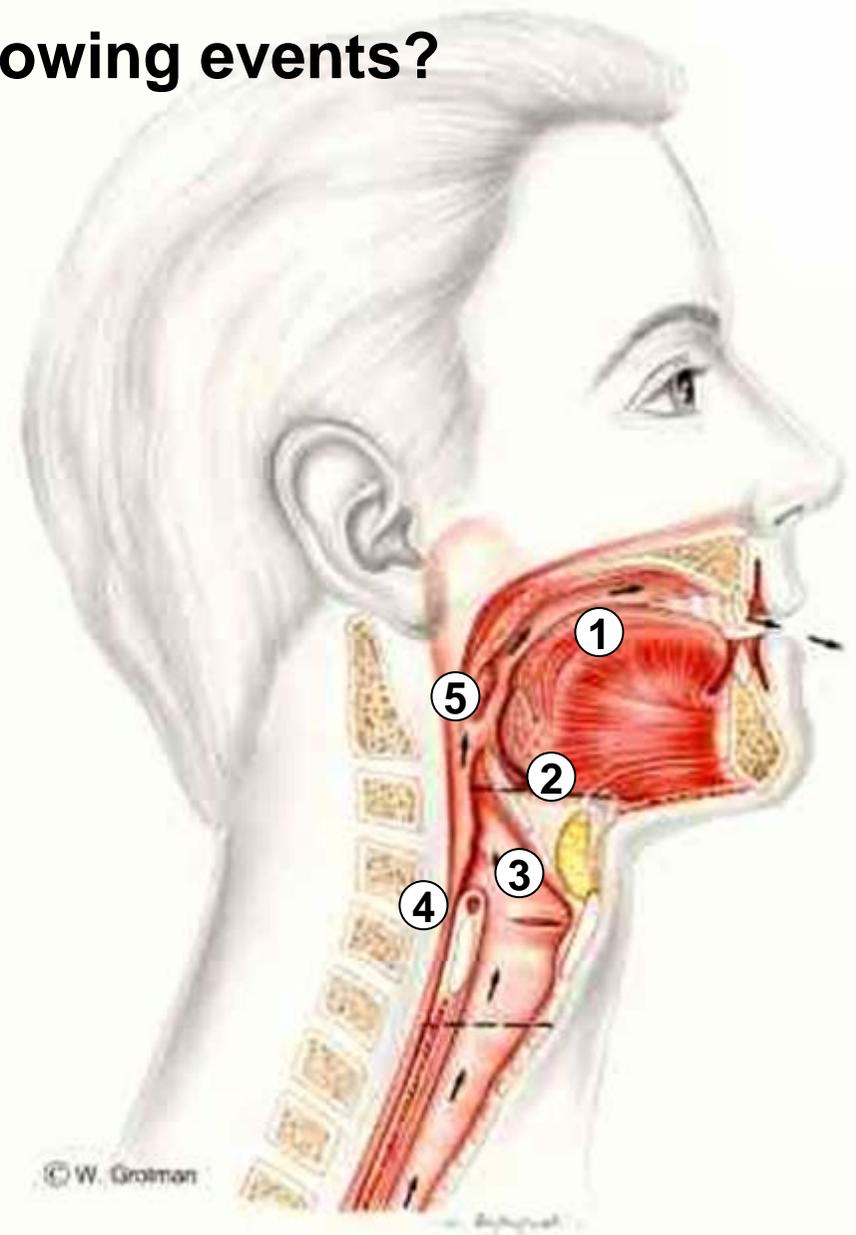
- 4 cm

What is the order of swallowing events?



What is the order of swallowing events?

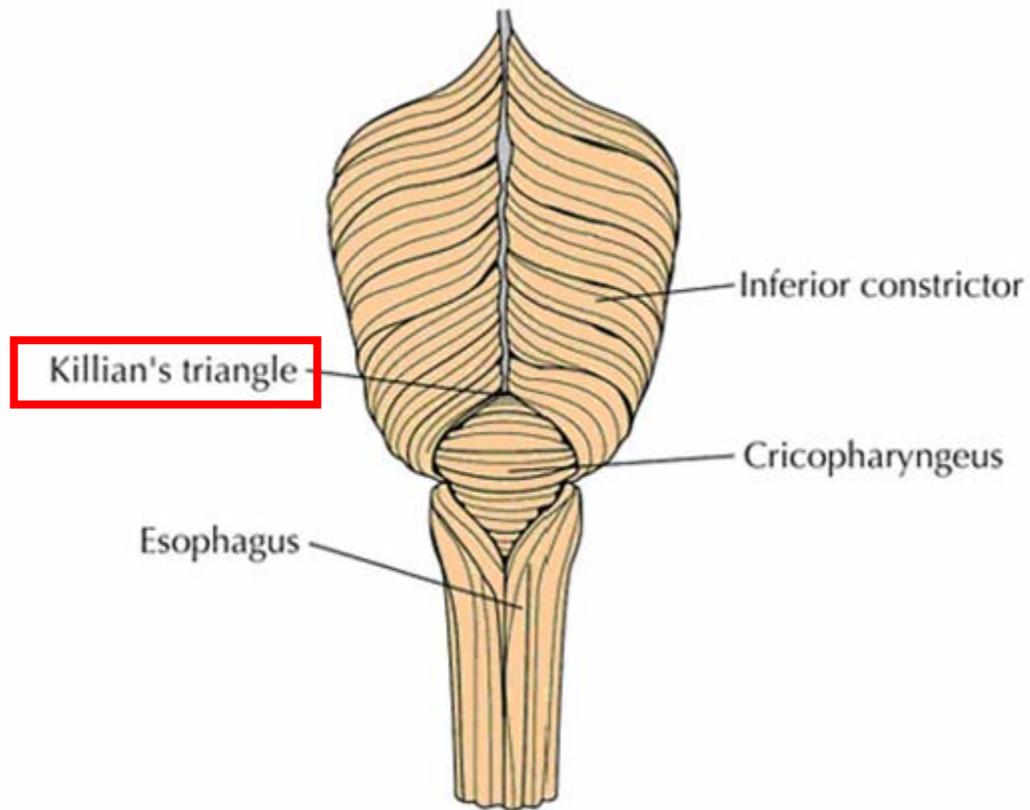
1. **Soft palate closes nasopharynx**
2. **Larynx up**
3. **Larynx closes**
4. **UES relaxes**
5. **Pharyngeal contraction**



Where does Zencker's diverticulum occur?

Where does Zencker's diverticulum occur?

- Occurs in Killian's triangle

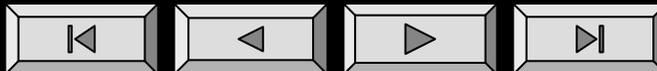


What causes a Zencker's diverticulum?

What causes a Zencker's diverticulum?

- **Due to increase pressure (pulsion tic)**

How do you treat Zencker's diverticulum?



How do you treat Zencker's diverticulum?

- **Treat with myotomy and diverticulectomy/plexy**
 - **approach via left cervical incision**

**What is the treatment of paraesophageal hernia?
-Why?**

What is the treatment of paraesophageal hernia? -Why?

- **Surgery**

- **because of risk of incarceration/strangulation**

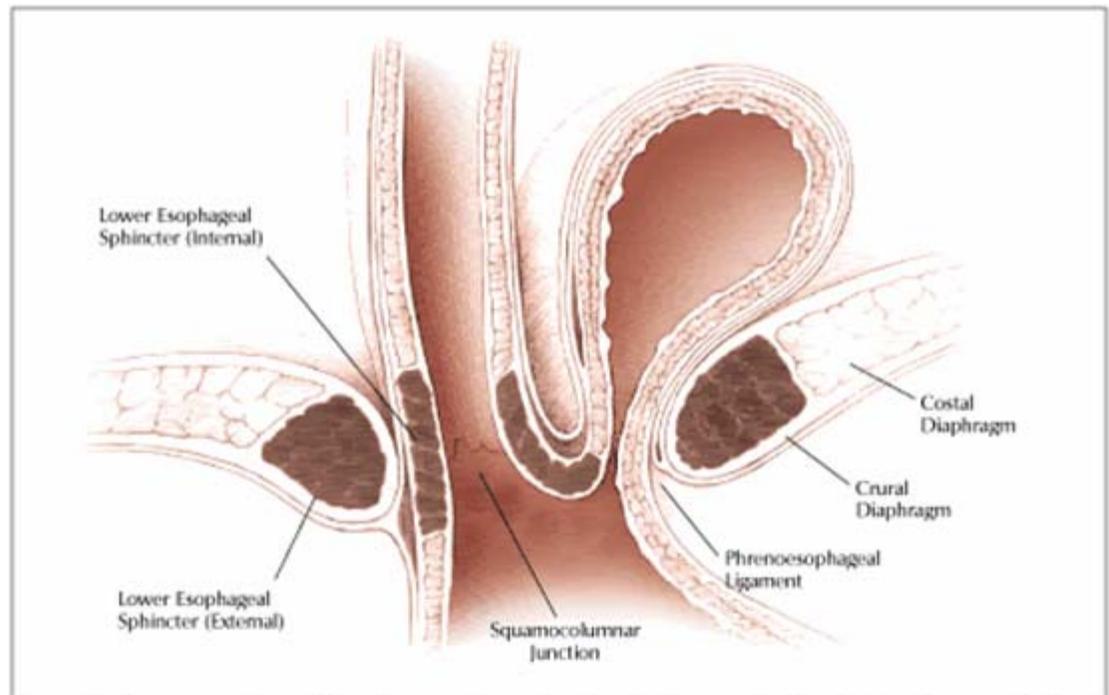


Figure 1. In paraesophageal hernia, a portion of the stomach—and sometimes part of the peritoneal sac containing the spleen or colon—migrates into the chest cavity through the esophageal hiatus (as shown here) or a defect in

the diaphragm. The key finding is an undisplaced lower esophageal sphincter that remains anchored to the diaphragm by the phrenoesophageal ligament. (Adapted from Mittal, *Am J Med* 103:33S, 1997)

What is the medical treatment for diffuse esophageal spasm?

What is the medical treatment for diffuse esophageal spasm?

- **Ca channel blockers**

What is Boerhaave's?

- What is the key in treatment?

What is Boerhaave's?

- What is the key in treatment?

- **Esophageal rupture**
- **Key to survival is early diagnosis**
 - **85% dead after 36 hrs.**

What is Achalasia?



What is Achalasia?

- **Absence of peristalsis and esophageal dilation**

What causes Achalasia?



What causes Achalasia?

- **Decreased ganglion cells in Auerbach's plexus**

What imaging finding is diagnostic of Achalasia?



What imaging finding is diagnostic of Achalasia?

- **Birds beak on Barium swallow**

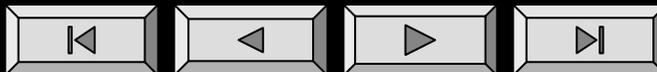


What does mamometry show with Achalasia?

What does manometry show with Achalasia?

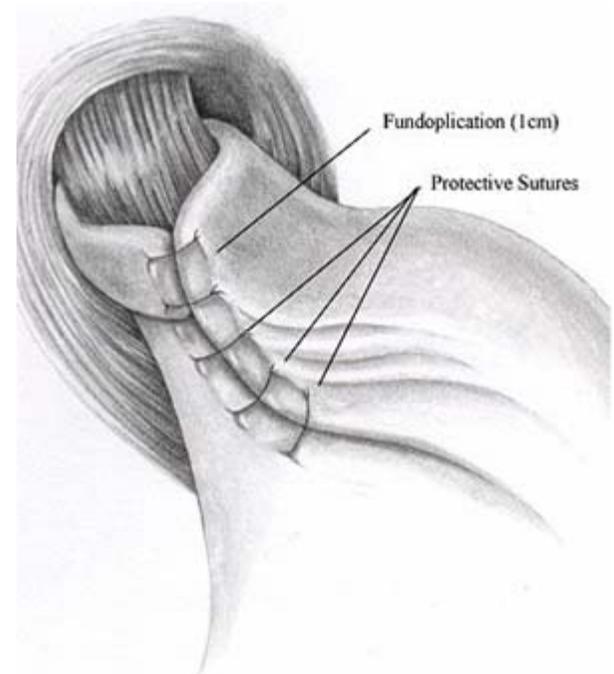
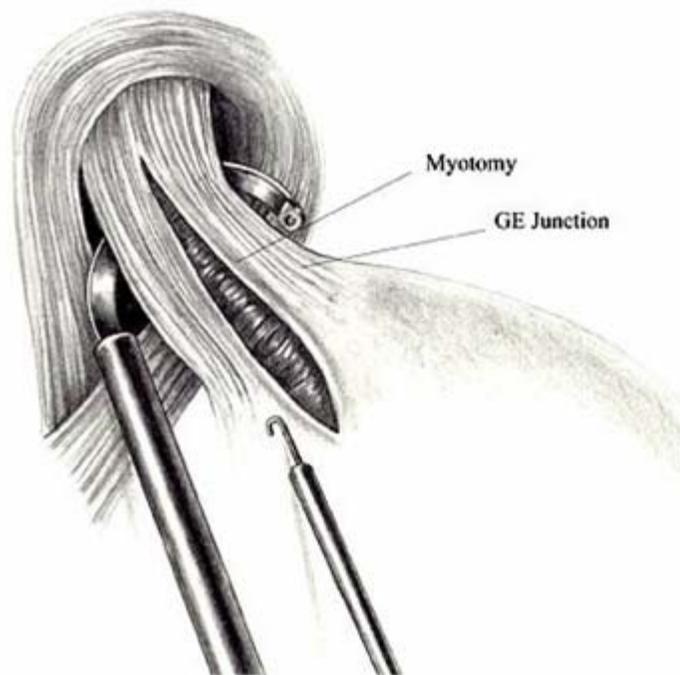
- **No peristalsis**
- **High LES pressure**
 - **failure to relax**

What is the treatment for Achalasia?



What is the treatment for Achalasia?

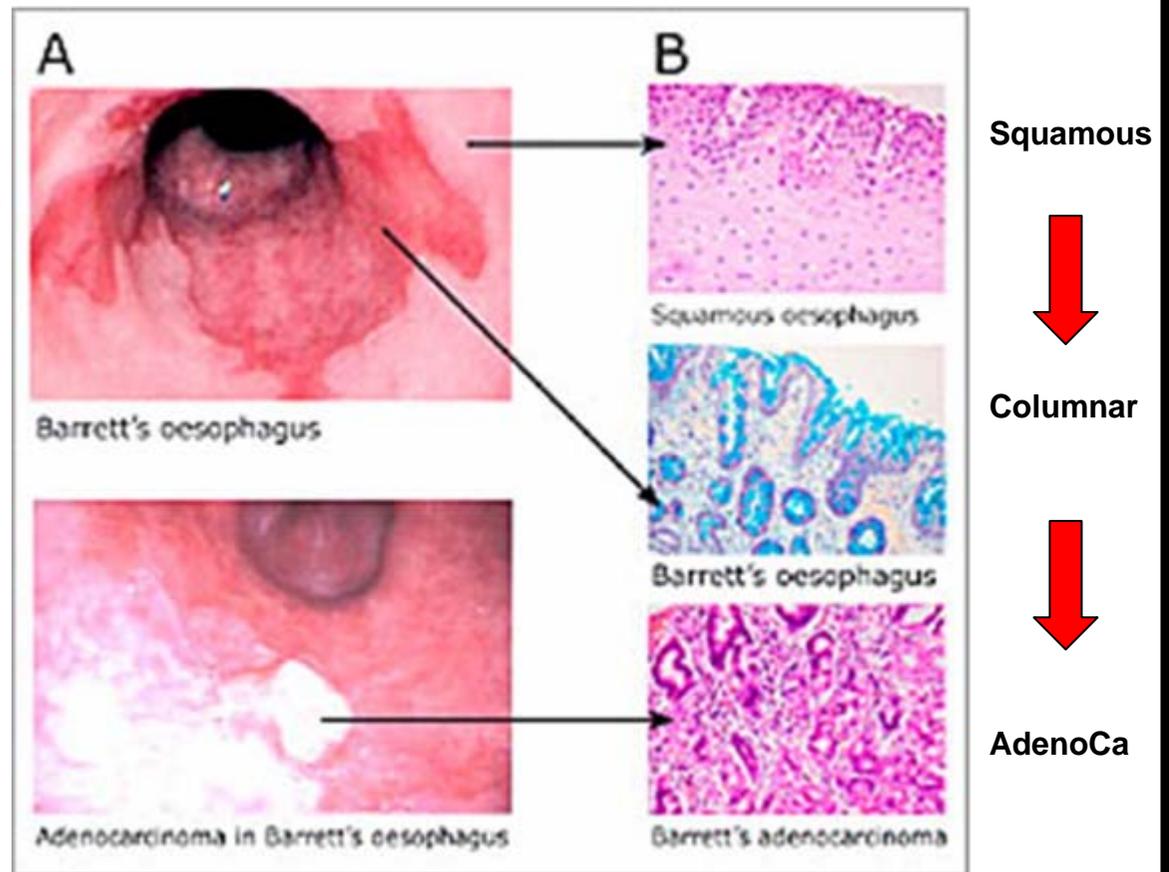
- **Heller myotomy
(Laparoscopic/thoracoscopic)**



What is Barrett's esophagus?

What is Barrett's esophagus?

- **Metaplasia from squamous cells to columnar cells**



What is the risk of Barrett's esophagus?

What is the risk of Barrett's esophagus?

- 1-2% get adenocarcinoma (30-100x increased risk)

What gene is linked to Barrett's esophagus?



What gene is linked to Barrett's esophagus?

- **P53 tumor suppressor gene**

What are three important risk factors for esophageal cancer?

What are three important risk factors for esophageal cancer?

- 1. Achalasia**
- 2. Barrett's esophagus**
- 3. Chemical ingestion**

**What is the most common esophageal cancer?
-What used to be most common?**

**What is the most common esophageal cancer?
-What used to be most common?**

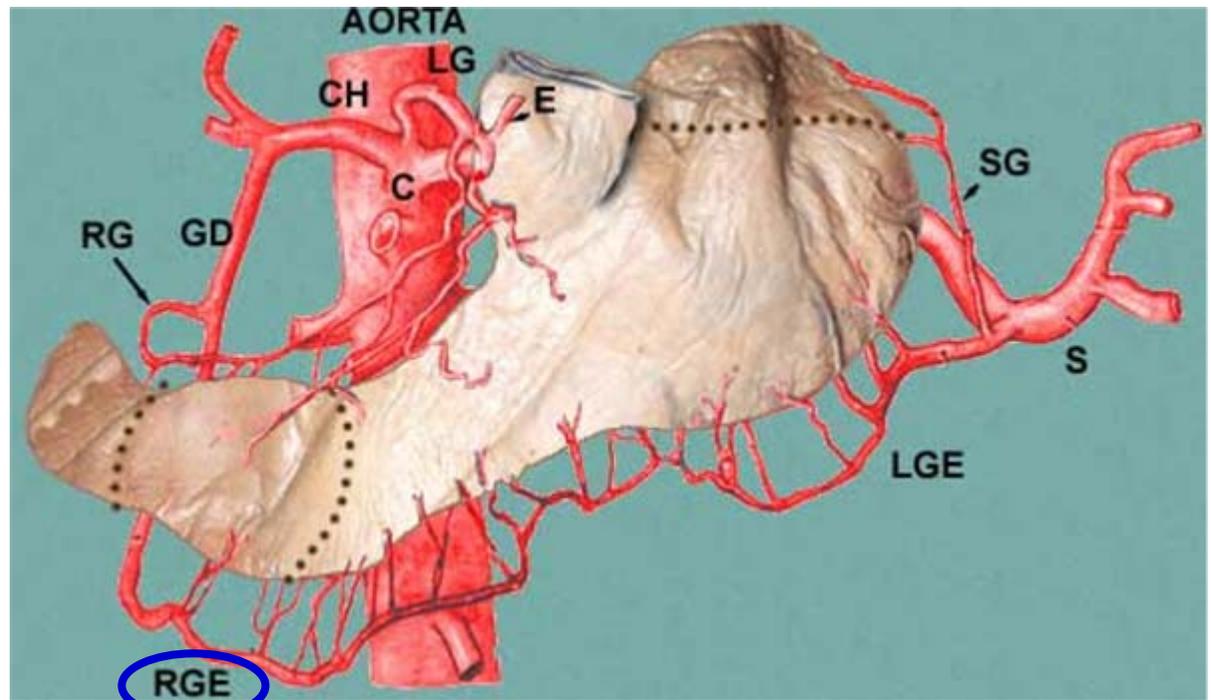
- **Adenocarcinoma**
- **Squamous cell carcinoma**

When replacing esophagus with stomach, what is an important artery to preserve?

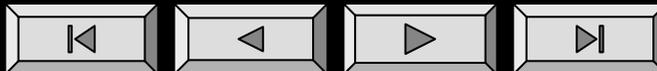
When replacing esophagus with stomach, what is an important artery to preserve?

- **Right gastroepiploic artery**
 - **is the main supply to the stomach when used to replace the esophagus**

- celiac **C**
- left gastric **LG**
- esophageal **E**
- splenic **S**
- short gastric **SG**
- left gastroepiploic **LGE**
- common hepatic **CH**
- gastroduodenal **GD**
- right gastric **RG**
- right gastroepiploic **RGE**



What is the treatment for a Leiomyoma?

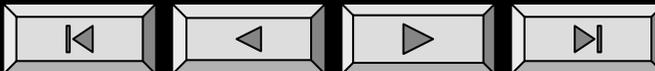


What is the treatment for a Leiomyoma?

- If symptomatic or $> 5\text{cm}$, excise by enucleation via thoracotomy
 - Right thoracotomy if middle esophagus
 - Left thoracotomy if lower esophagus



Do you biopsy a Leiomyoma on ERD



Do you biopsy a Leiomyoma on ERD

- **Never**



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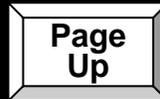
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**Answer
or Next
Question**



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What is a Null hypothesis?

What is a Null hypothesis?

- **No difference exists**

“**Noll**” difference

What is type I error?

What is type I error?

- When you **REJECT** the null hypothesis incorrectly

What is a type II error?

What is a type **II** error?

- When you **ACCEPT** null hypothesis incorrectly

“two(II) CC’s”

What is a type III error?

What is a type III error?

- A conclusion not supported by data

“Three(III) T’s”

What is a prospective cohort study?

What is a prospective cohort study?

- **Non-random assignment to treatment groups**

What is meta analysis?

What is meta analysis?

- **Review / statistical combining of data**
 - **from different studies**

What is an ANOVA test?

What is an ANOVA test?

- **Is a t-test for > 2 samples of quantitative data**

What are non-parametric statistics?

What are non-parametric statistics?

- **Used for qualitative data analysis**

For non parametric statistics, describe nominal and ordinal qualitative variables?

For non parametric statistics, describe nominal and ordinal qualitative variables?

- **Nominal = named**
 - e.g. color
- **Ordinal = on a scale**
 - pain scale of 1-10

What is prevalence?

What is prevalence?

- **# of people having disease in population studied**
 - **higher with disease that last long time**

What is incidence?



What is incidence?

- # of newly diagnosed cases in population in certain time
 - Usually per year

What is sensitivity?



What is sensitivity?

- **Ability to detect disease**

$$= \frac{\text{\# with positive test result (test positive)}}{\text{\# that have disease (true positive)}}$$

What is specificity?

What is specificity?

- Ability to state no disease present

$$= \frac{\text{\# with negative test result (test negative)}}{\text{\# without disease (true negative)}}$$

What cell is responsible for fever in atelectasis?

What cell is responsible for fever in atelectasis?

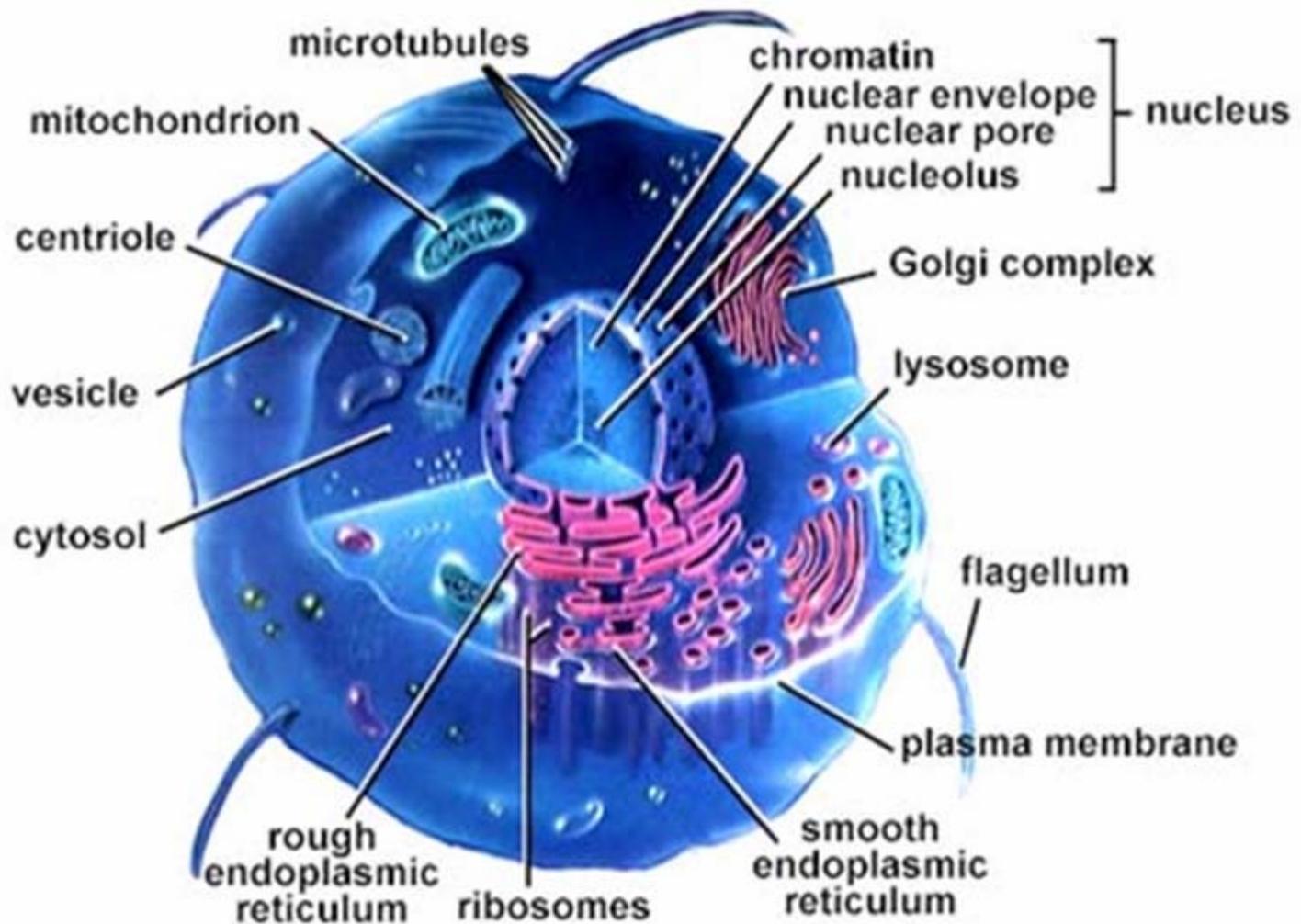
- **Alveolar macrophages**

What is unique about mitochondria

What is unique about mitochondria

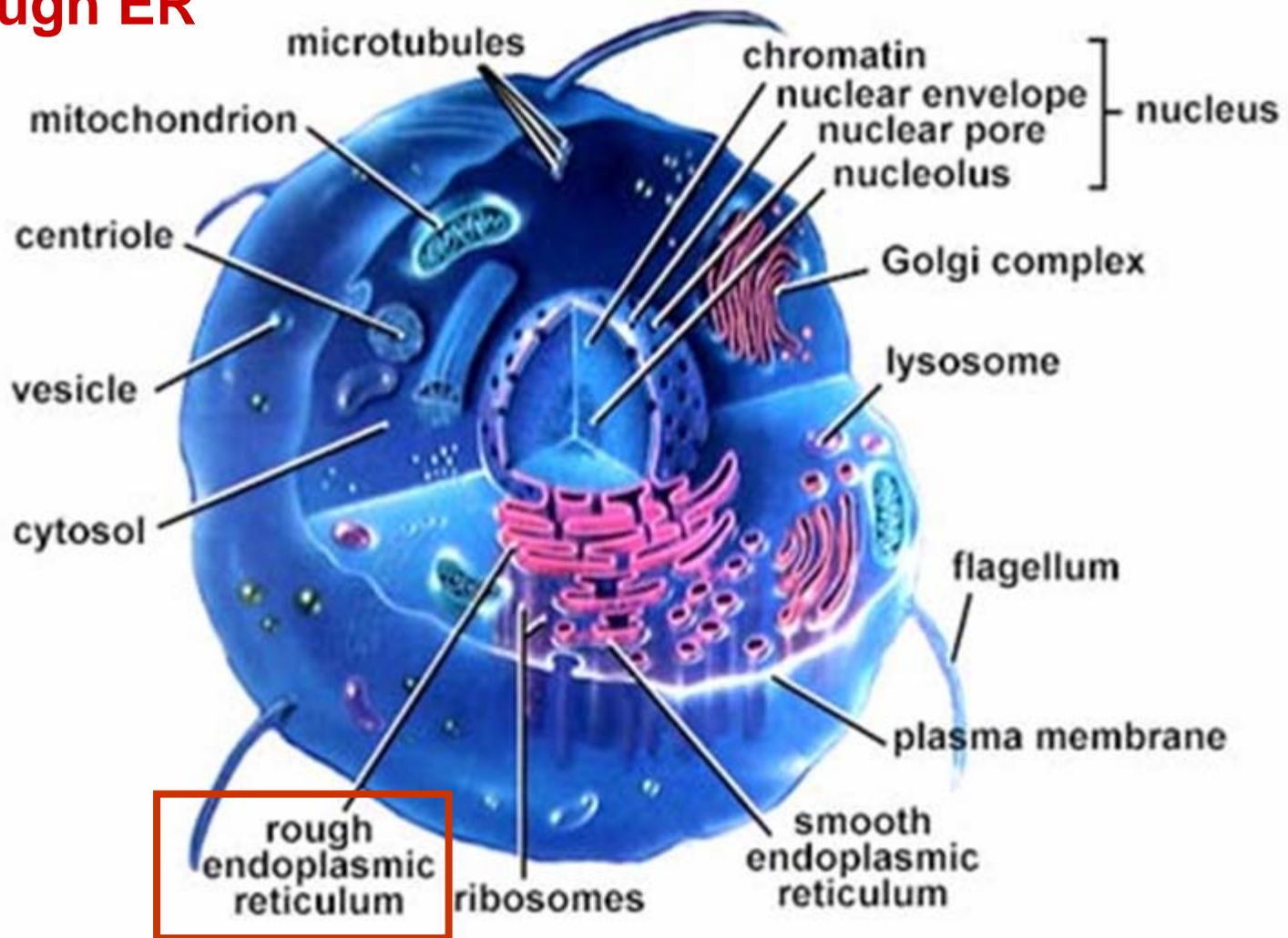
- **Two membranes**
 - **with TCA cycle in inner matrix**

What structure is contiguous with the outer membrane of the nucleus?

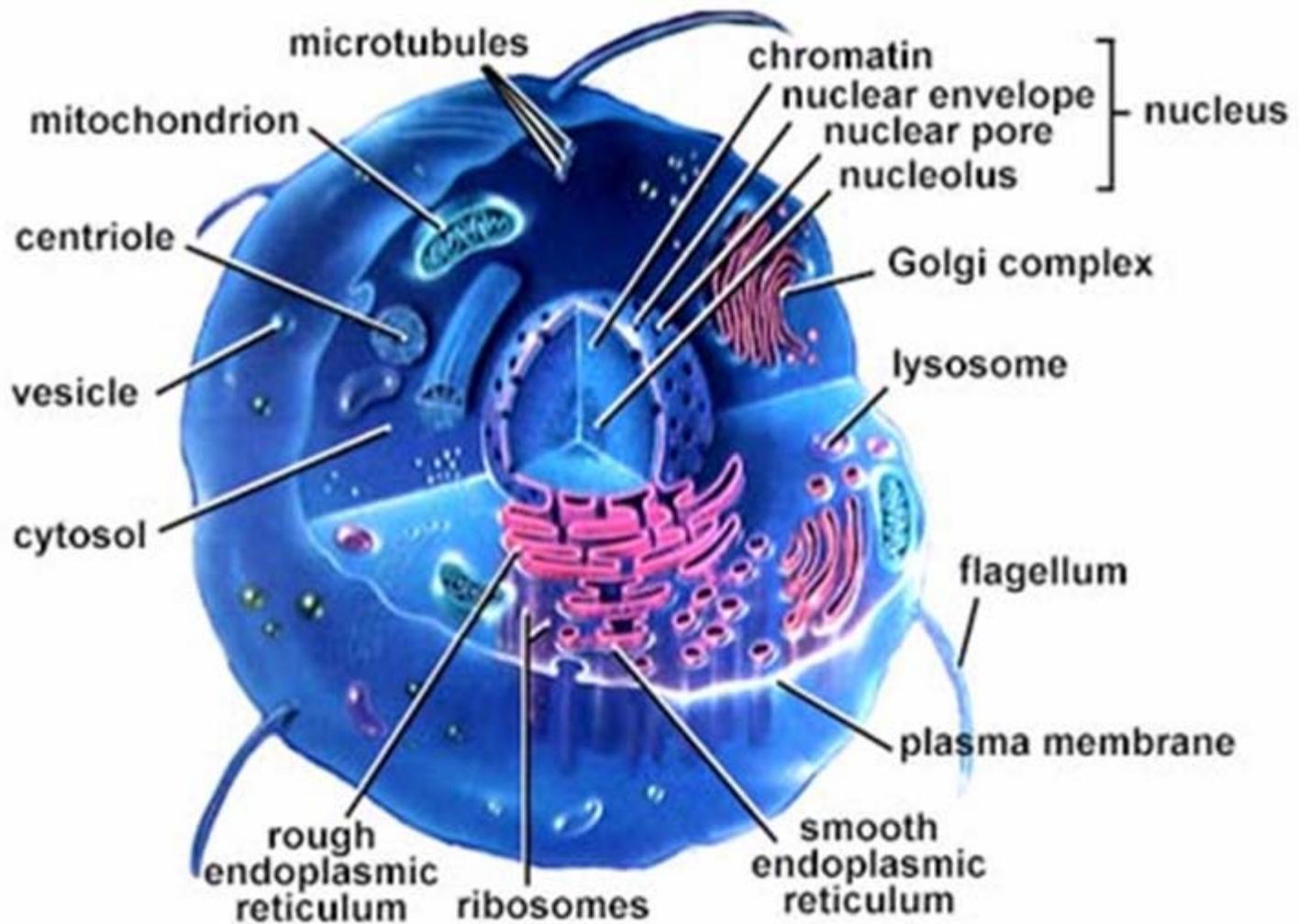


What structure is contiguous with the outer membrane of the nucleus?

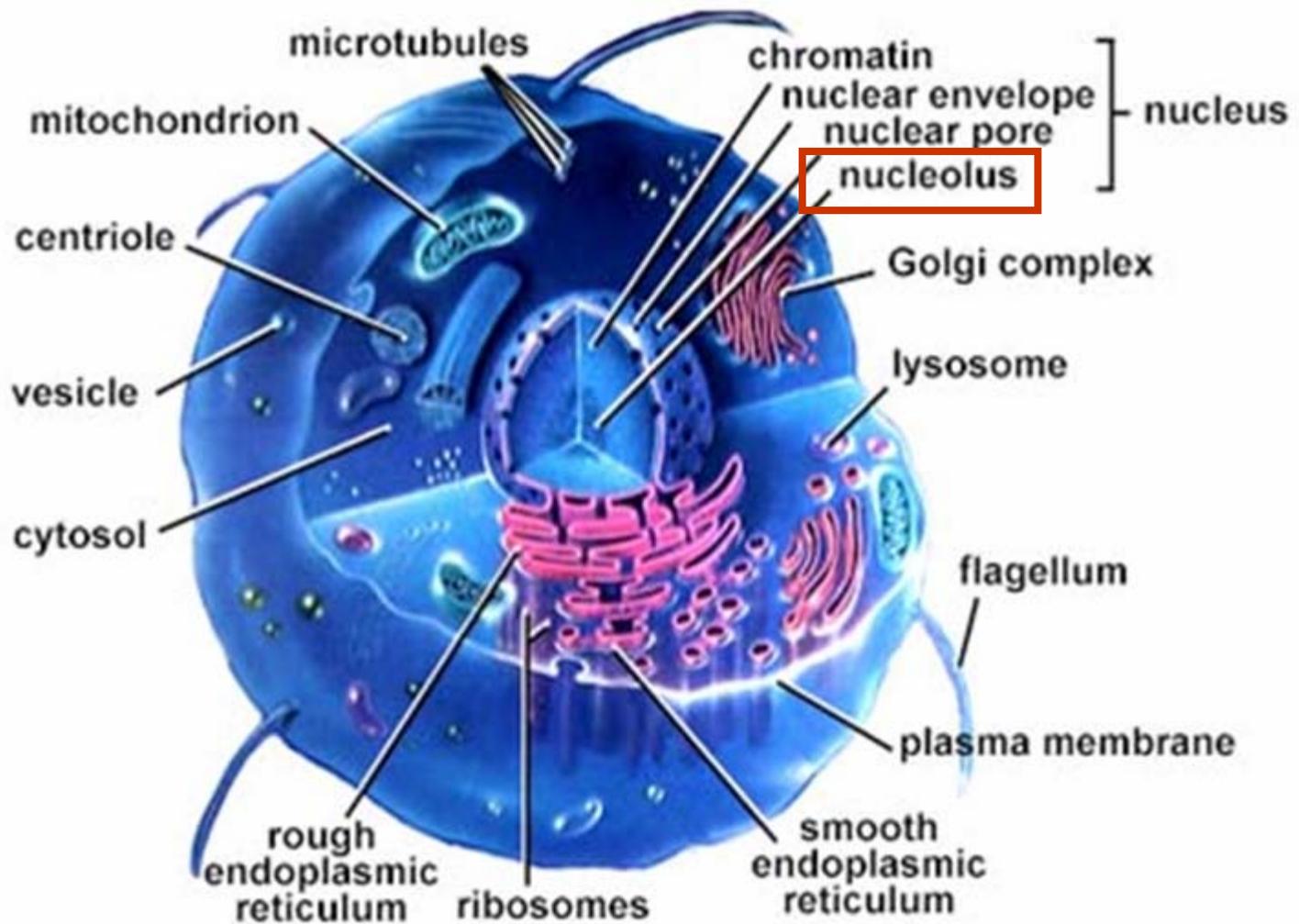
- **Rough ER**



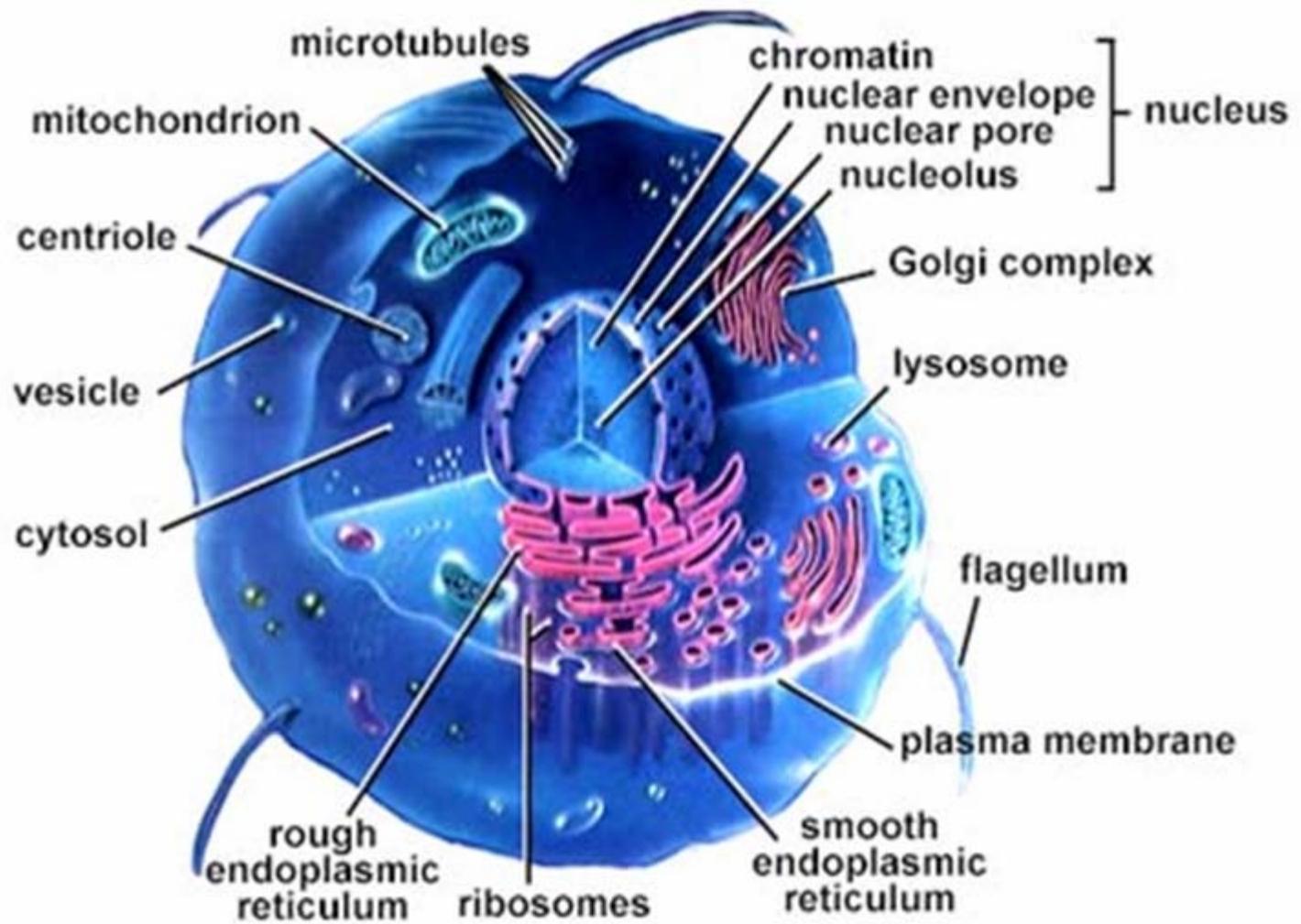
Where are ribosomes made?



Where are ribosomes made?

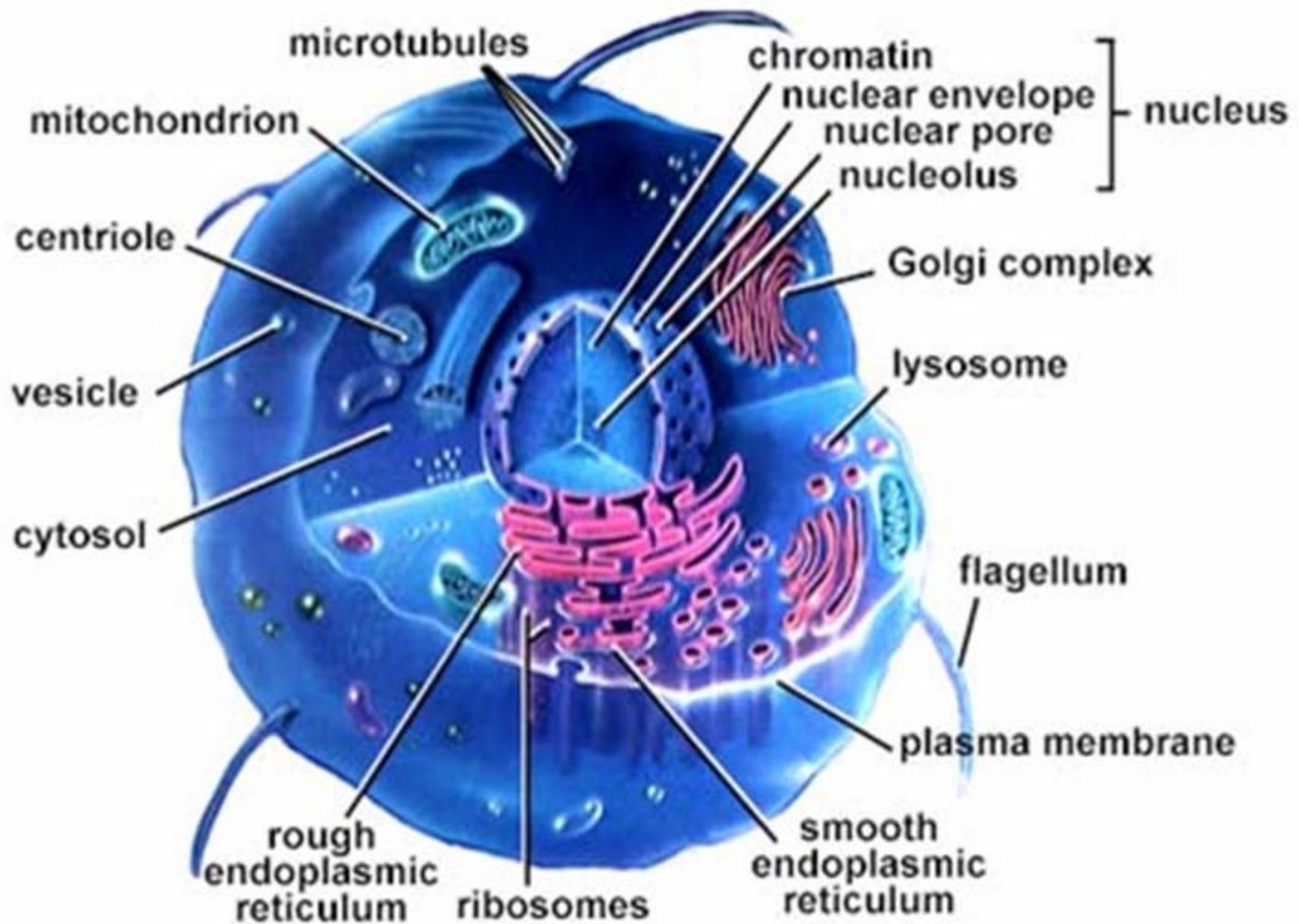


Does the nucleolus have a membrane?

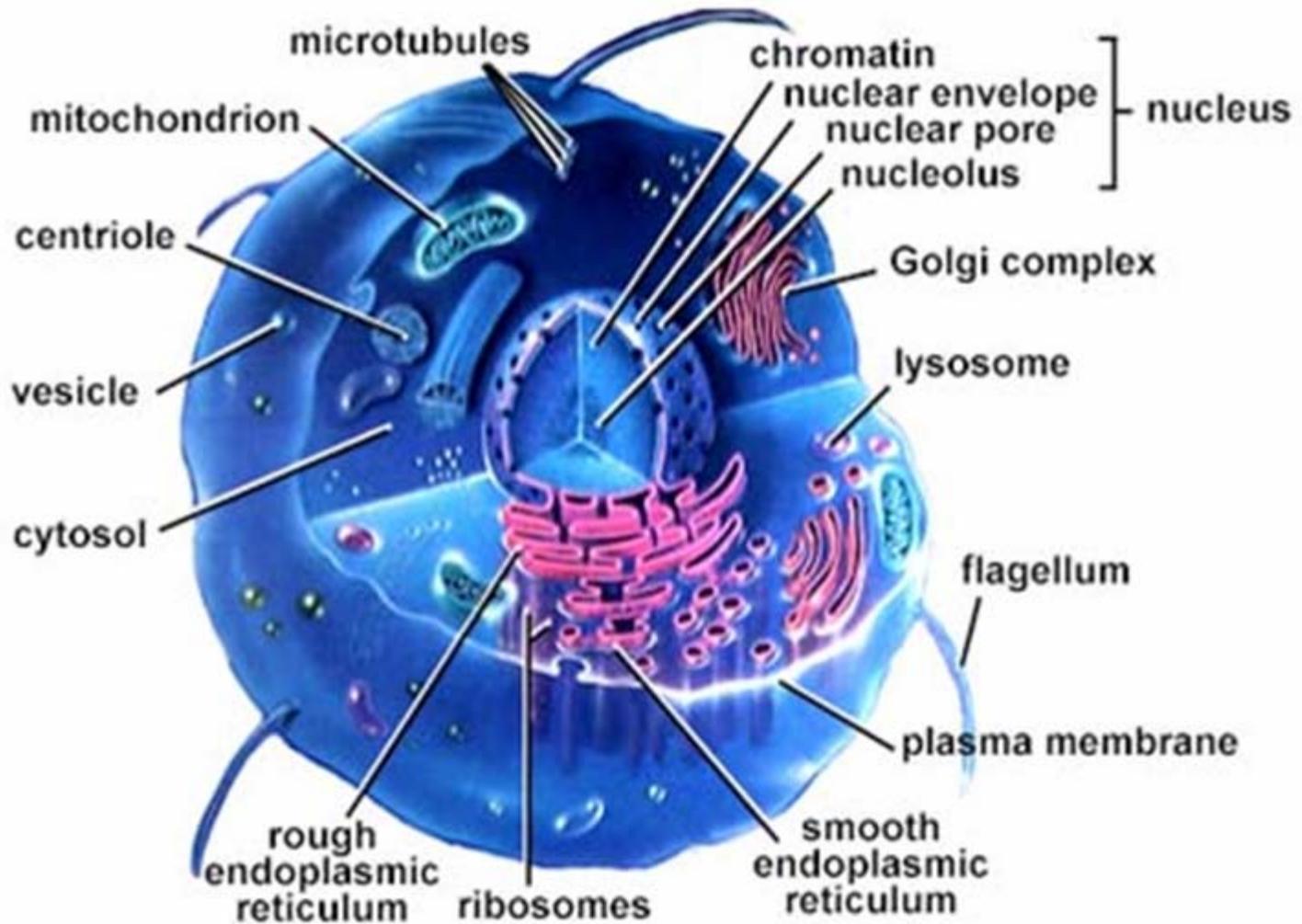


Does the nucleolus have a membrane?

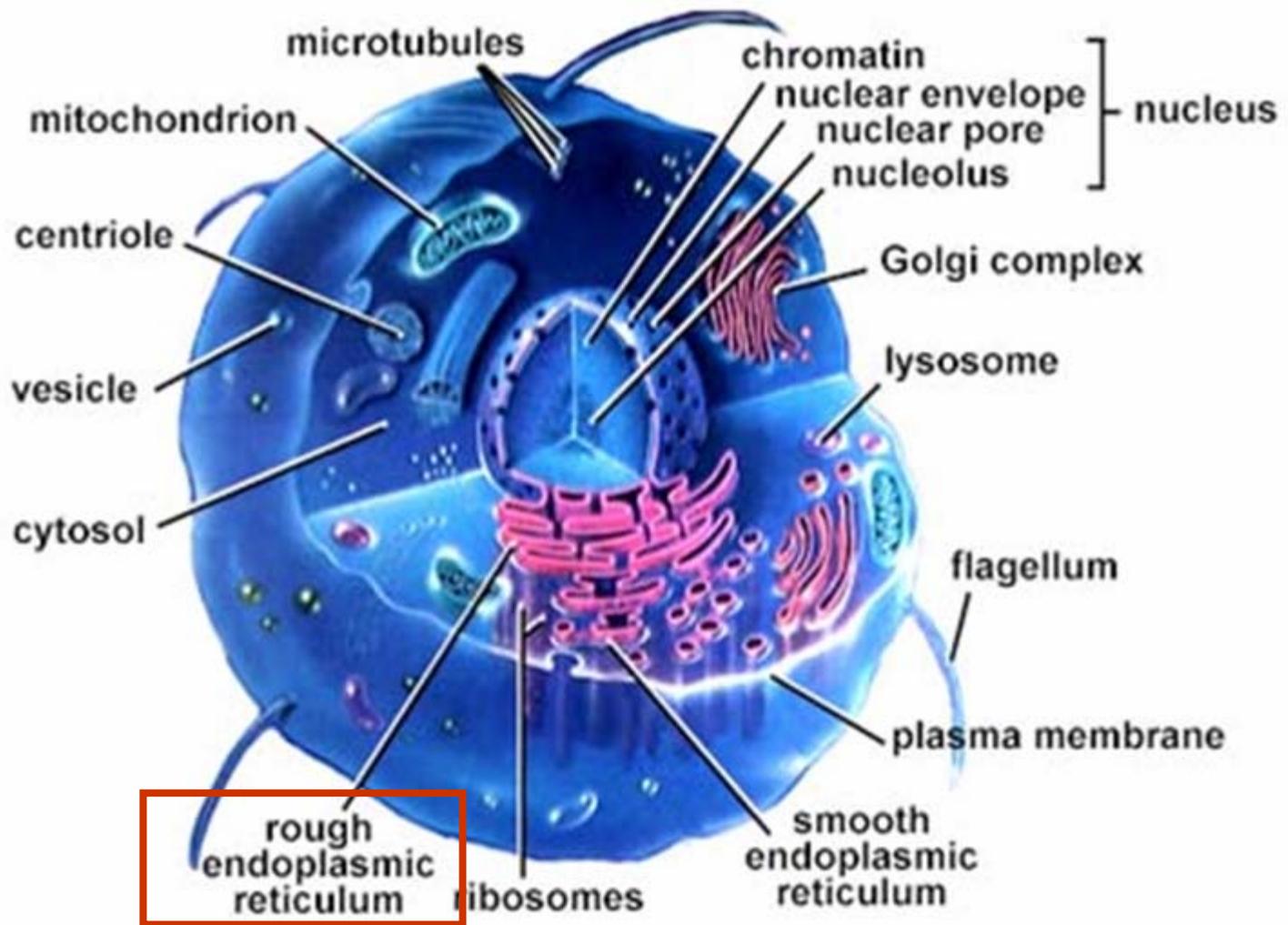
- No



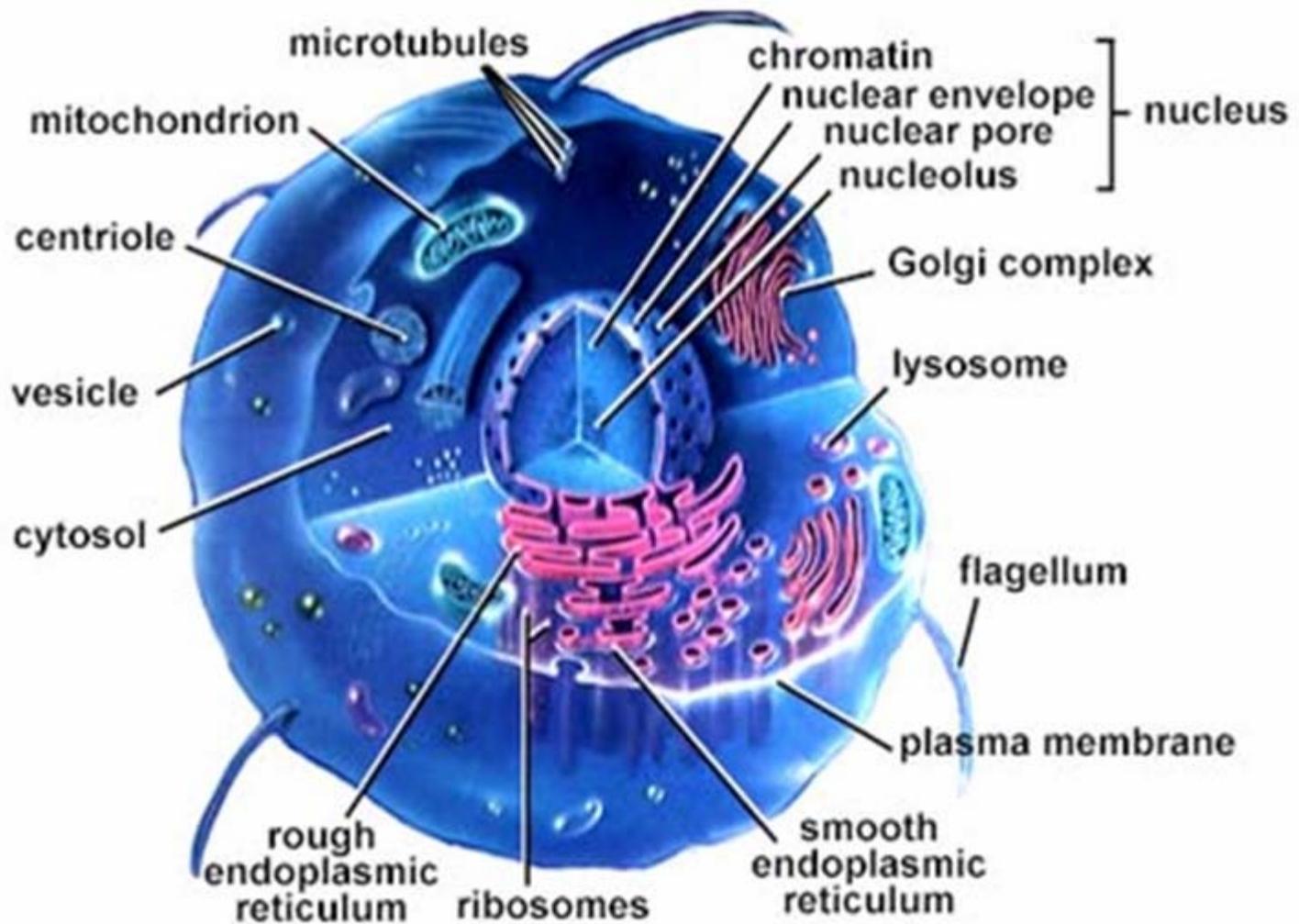
Where are proteins made for export?



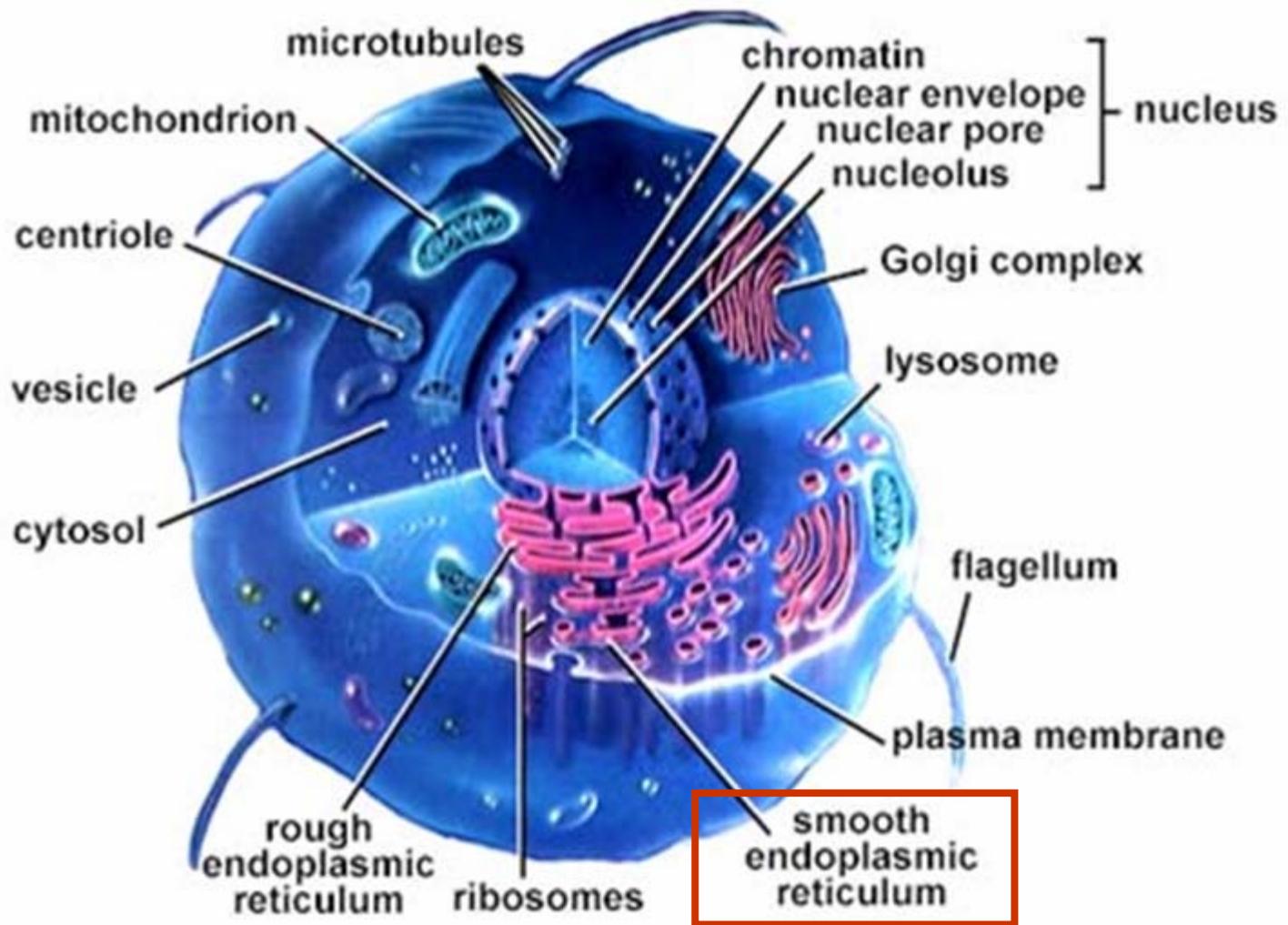
Where are proteins made for export?



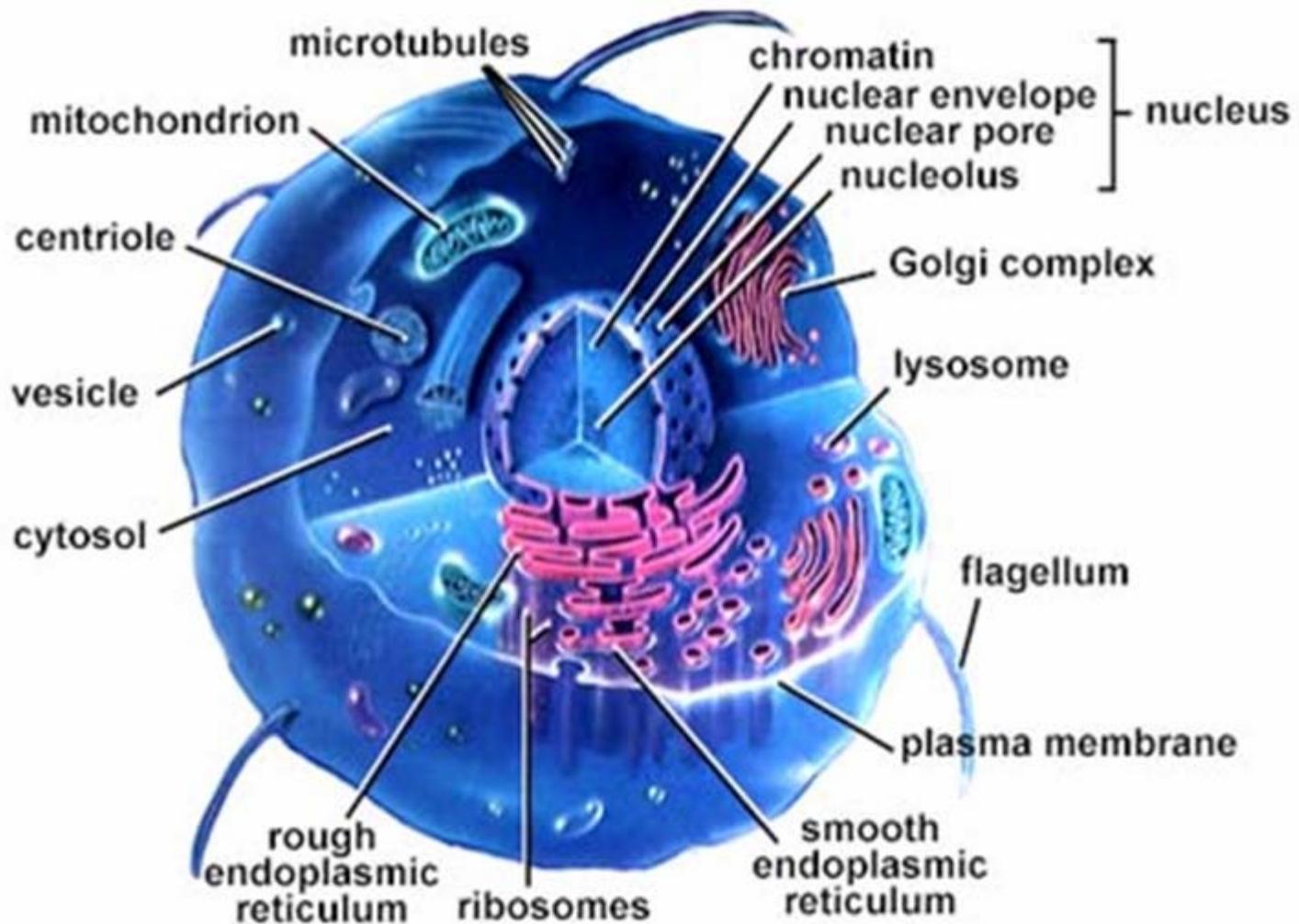
Where are cytoplasmic proteins made?



Where are cytoplasmic proteins made?

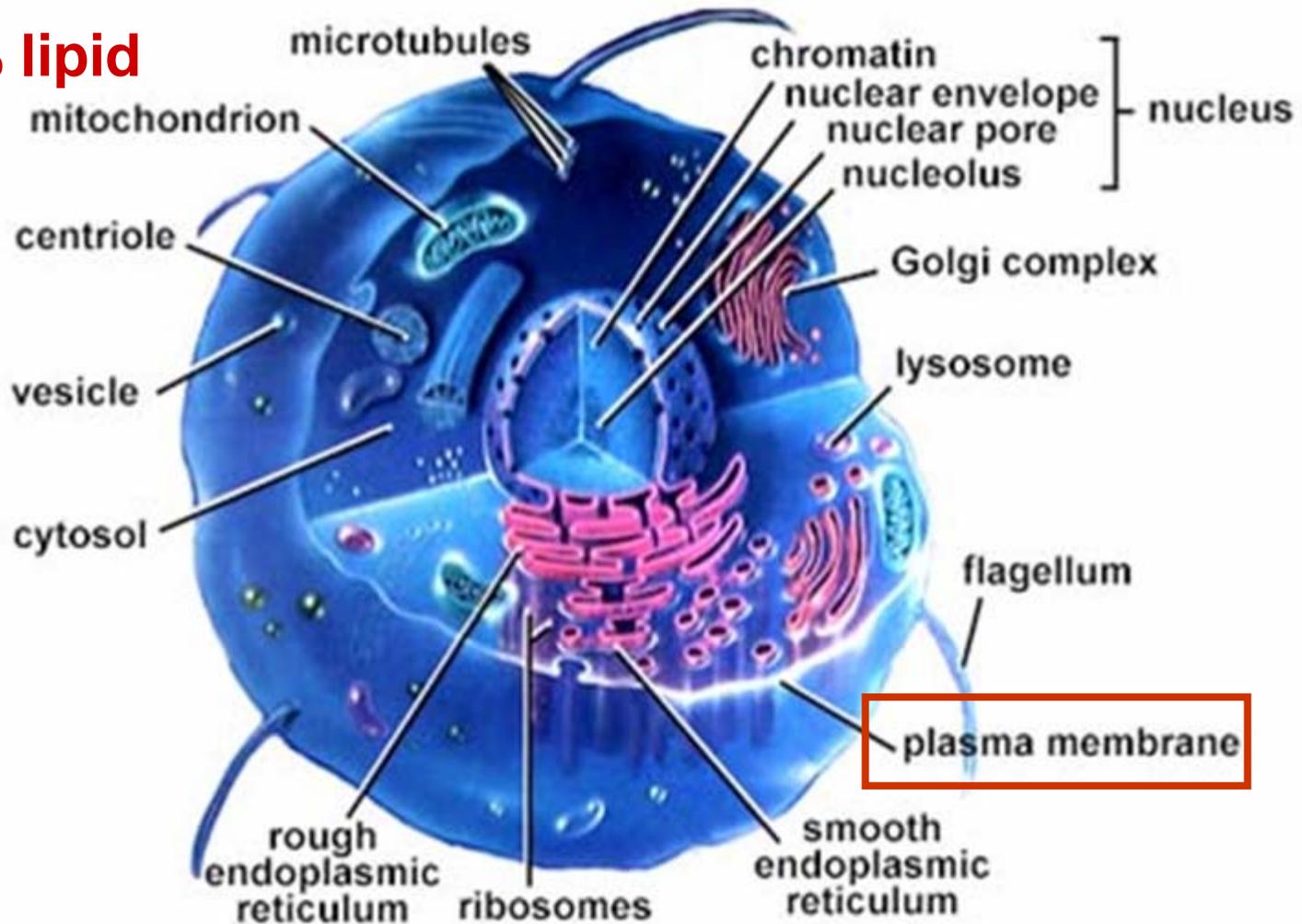


What is the composition of the plasma membrane?



What is the composition of the plasma membrane?

- 60% protein
- 40% lipid



What is the effect of increasing cholesterol in the plasma membrane?

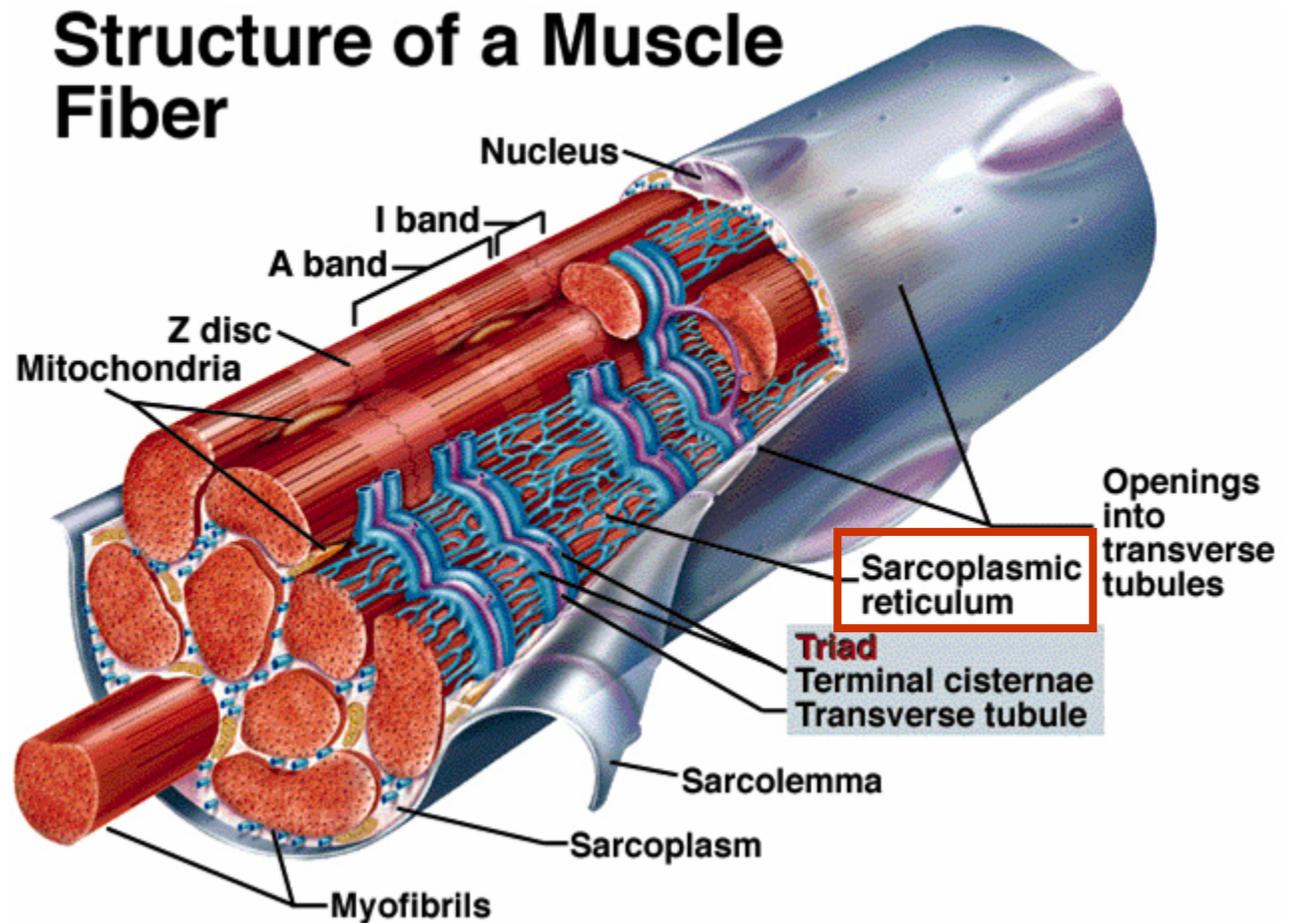
What is the effect of increasing cholesterol in the plasma membrane?

- **Increases mobility of membrane proteins**

What causes malignant hyperthermia?

What causes malignant hyperthermia?

- Due to Ca release from the sarcoplasmic reticulum



What are the symptoms of malignant hyperthermia?

What are the symptoms of malignant hyperthermia?

1. **F**ever
2. **A**cidosis
3. **R**igid
4. **T**achycardia

“FART”

What is the first sign of malignant hyperthermia?

What is the first sign of malignant hyperthermia?

- Increased end tidal CO₂

“FART CO₂”

Does a patient usually develop malignant hypertension on their first exposure to anesthesia?

Does a patient usually develop malignant hypertension on their first exposure to anesthesia?

- **No**

What are three treatments for malignant hyperthermia?

What are three treatments for malignant hyperthermia?

- 1. Stop operation / anesthetic**
- 2. Supportive therapy**
- 3. Dantrolene**

What is the first muscle to recover from paralytics?

What is the first muscle to recover from paralytics?

- **Diaphragm**

What is the last must to recover from paralytics?

What is the last must to recover from paralytics?

- **Neck and face**

What are two unique factors of the lymphatics?

What are two unique factors of the lymphatics?

- 1. No basement membrane**
- 2. Loose cell to cell junction**

Where are lymphatics not located?

Where are lymphatics not located?

1. **Bone**
2. **Brain**
3. **Muscle**
4. **Tendon**

What is the rate limiting step in cholesterol formation?

What is the rate limiting step in cholesterol formation?

- **HMG co-A Reductase**

Where does cholesterol formation take place?

Where does cholesterol formation take place?

- **Liver with steroid precursors**

What is the target of steroid hormones?

What is the target of steroid hormones?

- **In nucleus after binding in cytoplasm of target cell**

How much ATP is made from 1 glucose in the Krebs cycle?

How much ATP is made from 1 glucose in the Krebs cycle?

- **38**

How much ATP is made from 1 glucose in anaerobic glycolysis?

How much ATP is made from 1 glucose in anaerobic glycolysis?

- **2 ATP and lactate**

What increases the activity of Cyt p450?

“ACTivate Cyt p450”

What increases the activity of Cyt p450?

1. **Anticonvulsants**
2. **Coumadin**
3. **Theophylline**

“ACTivate Cyt p450”

What DECREASES the activity of Cyt p450?

What DECREASES the activity of Cyt p450?

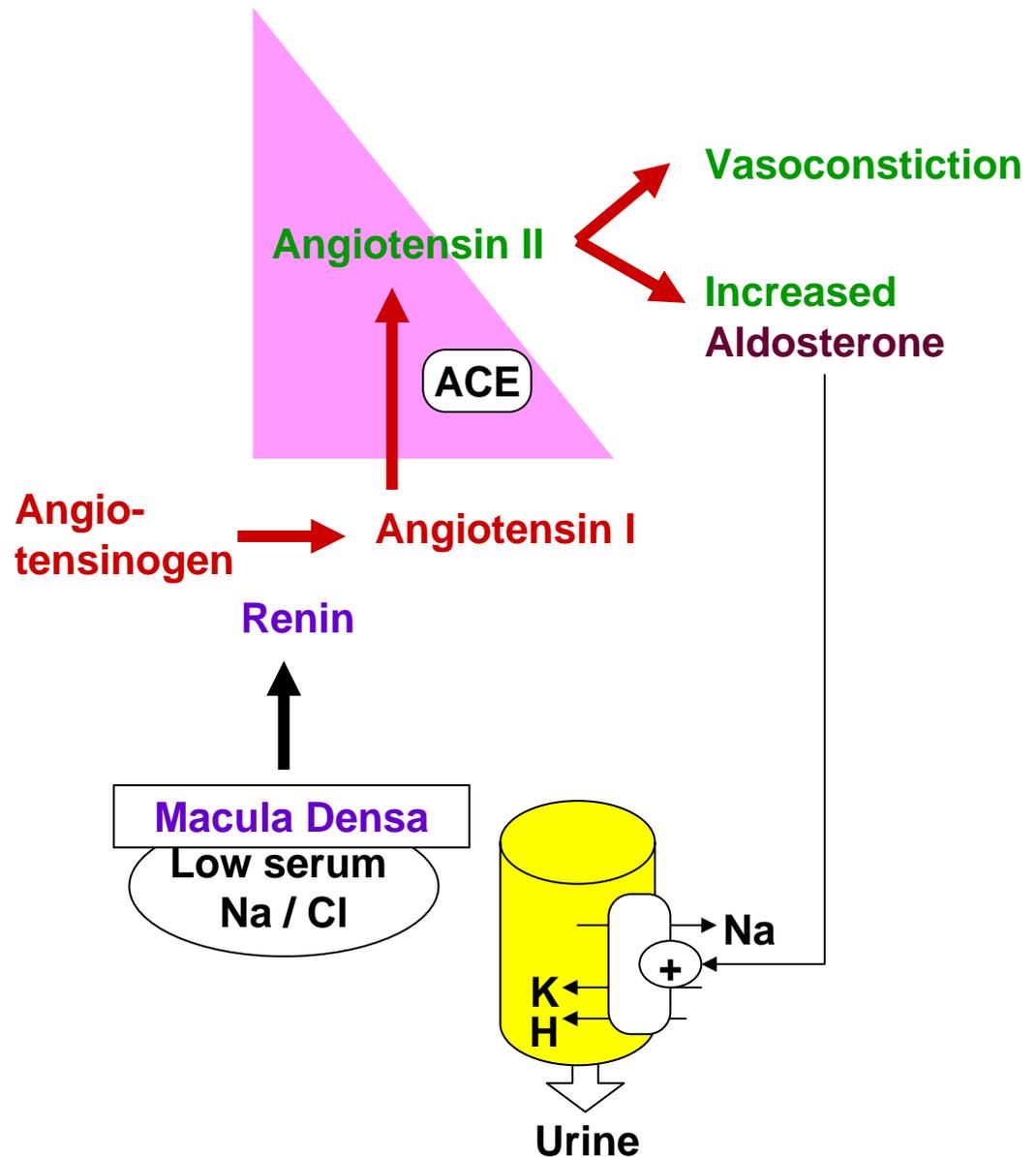
1. **MOA inhibitors**
2. **INH**
3. **Cimetidine**
4. **Disulfiram**

“McDonald’s(MICD) hamburger decrease Cytp450 activity”

How does the macula densa regulate serum Na / Cl?

How does the macula densa regulate serum Na / Cl?

1. Senses low Na / Cl
2. Produces renin
3. Renin converts angiotensinogen to angiotensin I
4. Angiotensin I converted to Angiotensin II in lung by ACE
5. Angiotensin II causes:
 - vasoconstriction
 - Increases aldosterone with keeps Na, loses K/H in urine



How does renal osteodystrophy lead to secondary PTH?

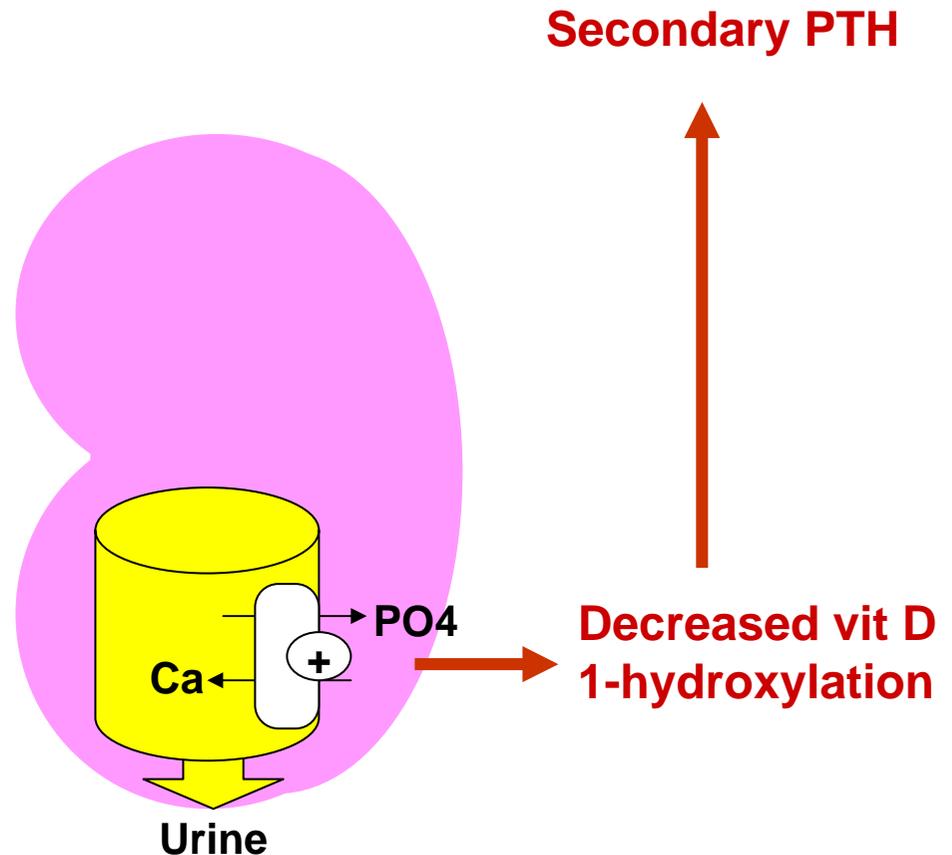
How does renal osteodystrophy lead to secondary PTH?

1. Kidney

1. looses Ca
2. keep PO4

2. Leads to decreased vit D 1-hydroxylation

3. Leads to secondary hyper PTH



Flashcard Instructions

MOUSE

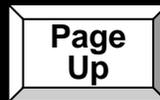
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

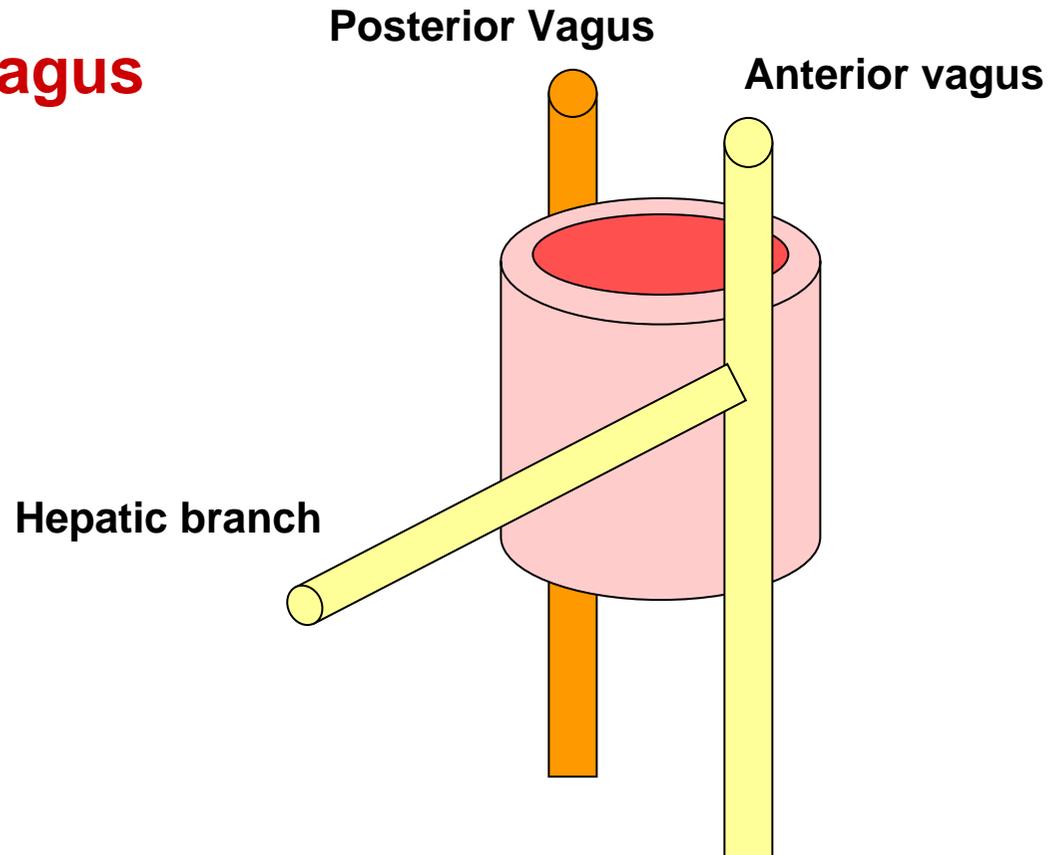
WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



Does the hepatic branch come off the left (anterior) or right (posterior) vagus.

Does the hepatic branch come off the left (anterior) or right (posterior) vagus.

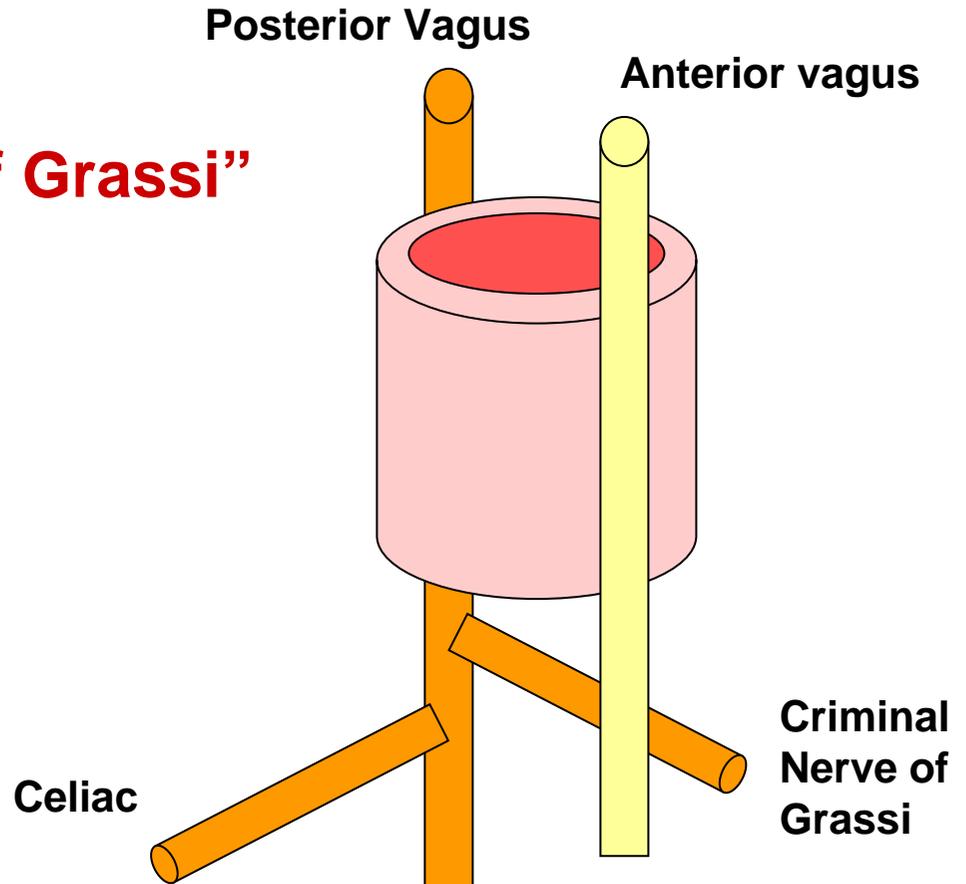
- **Left (anterior) vagus**



What two important branch comes off the right (posterior) vagus?

What two important branch comes off the right (posterior) vagus?

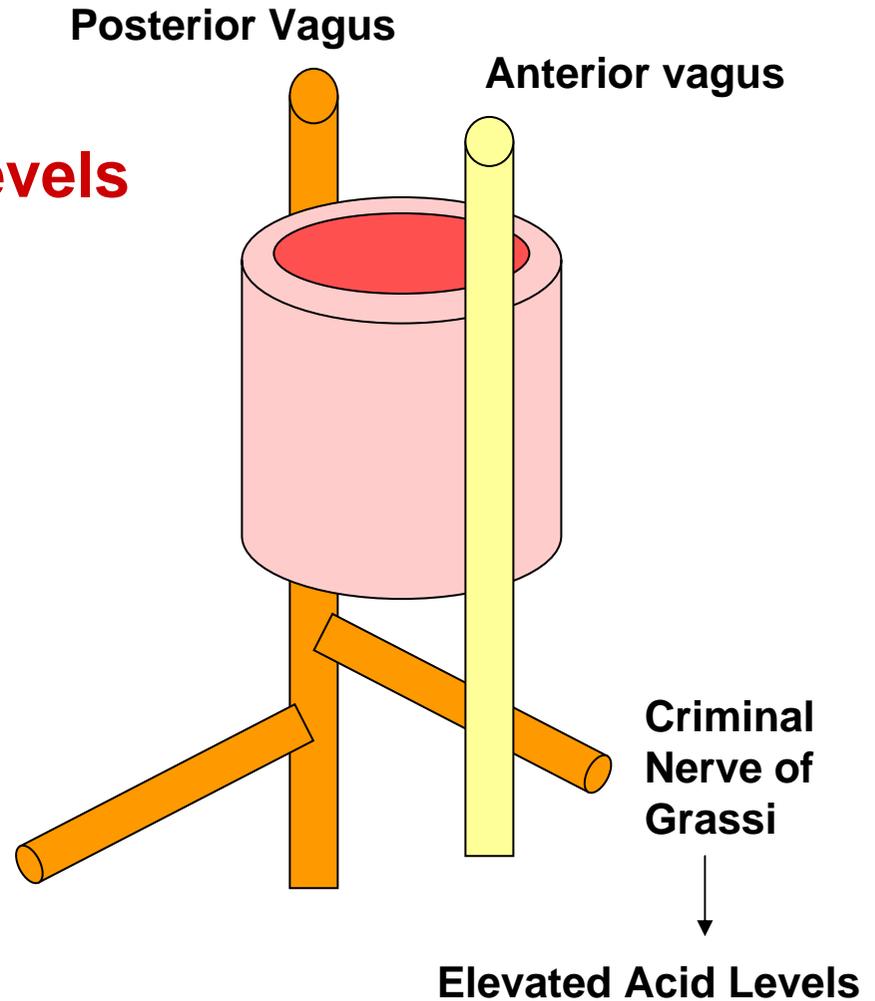
1. **Celiac branch**
2. **“Criminal nerve of Grassi”**



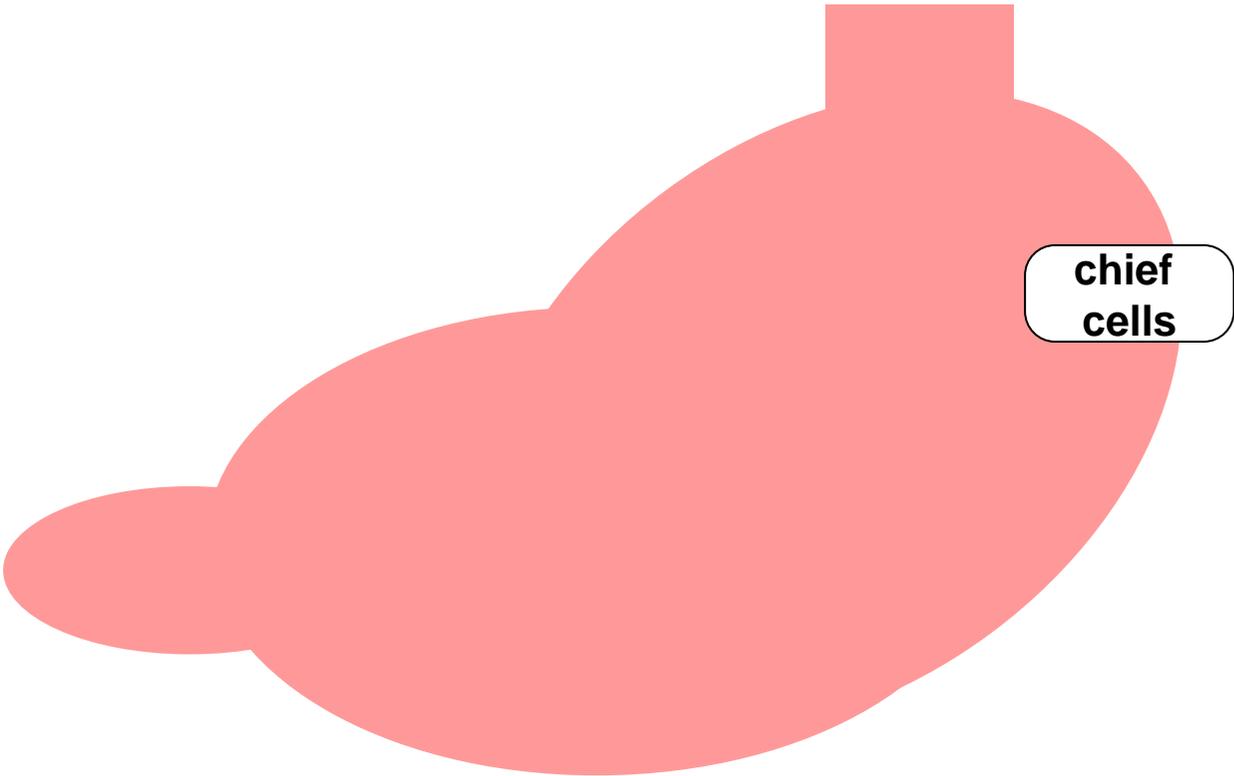
What is the surgical significance of the “criminal nerve of grassi”?

What is the surgical significance of the “criminal nerve of Grassi”?

- **If left undivided**
 - **can keep acid levels elevated post vagotomy**

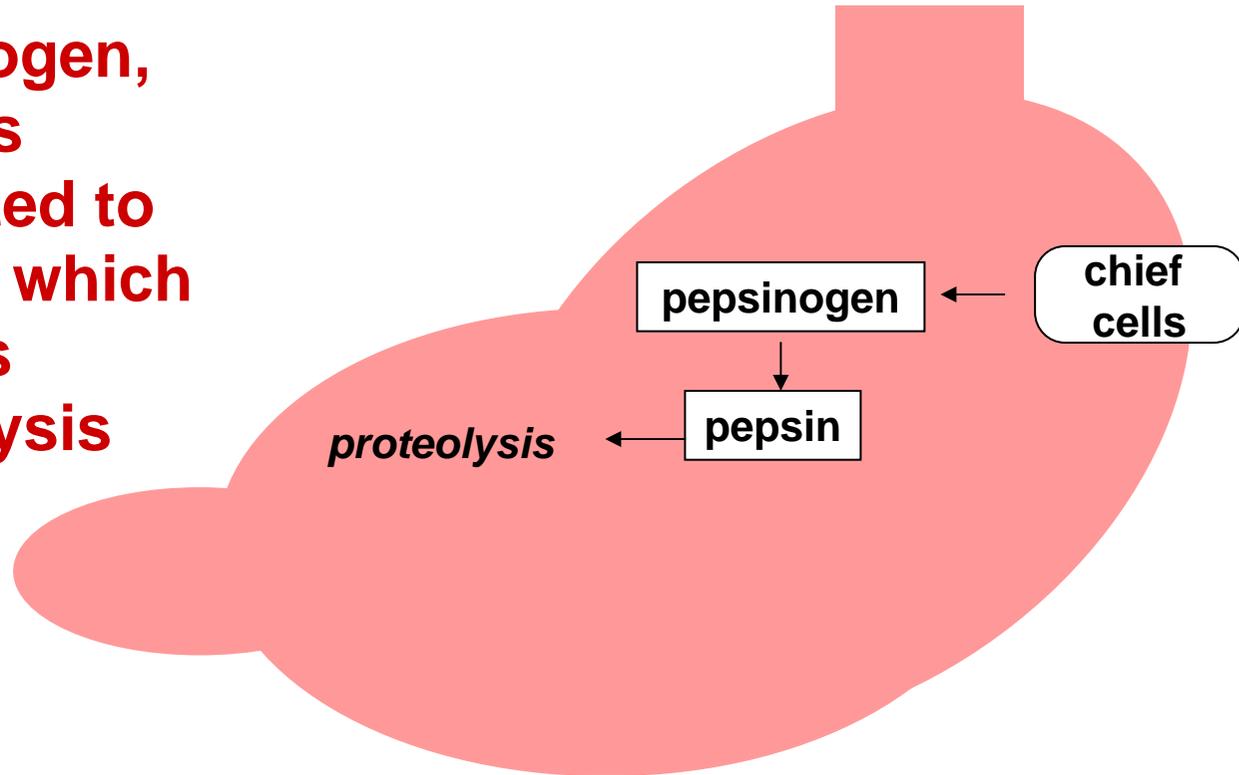


What do chief cells secrete?

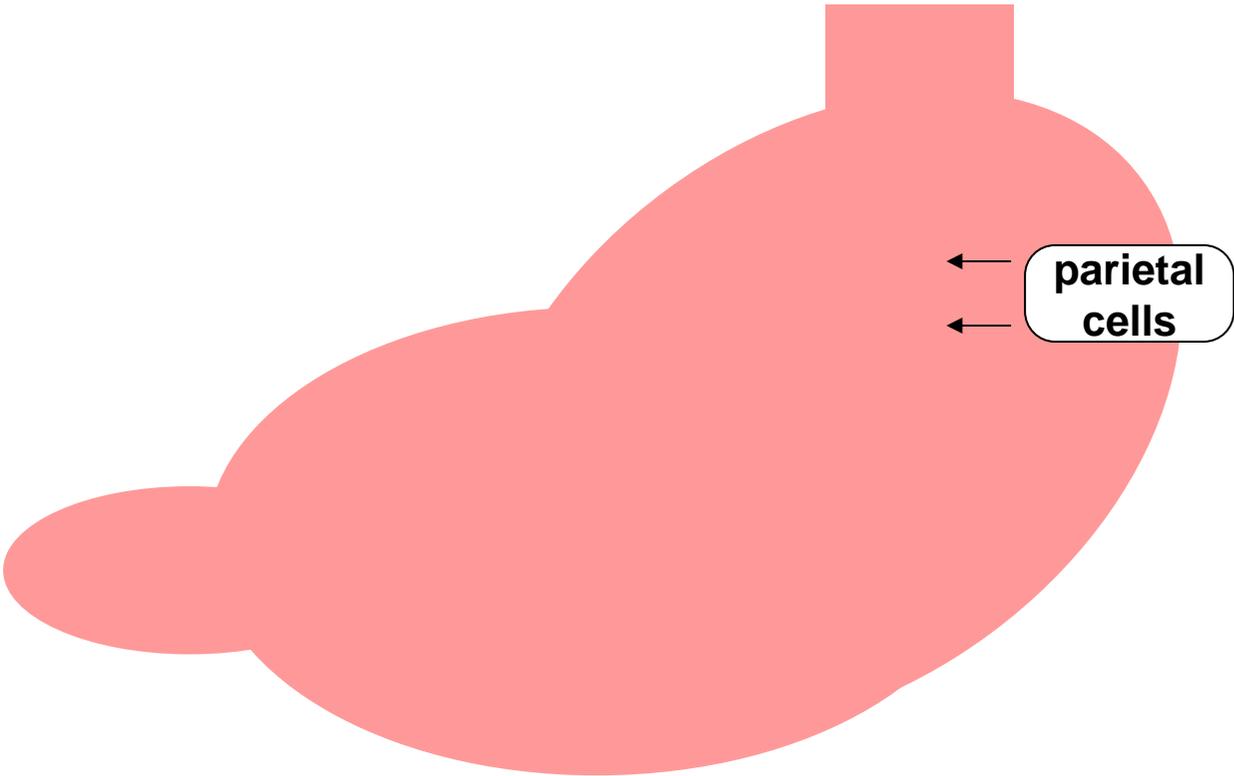


What do chief cells secrete?

- **Pepsinogen, which is converted to pepsin, which initiates proteolysis**

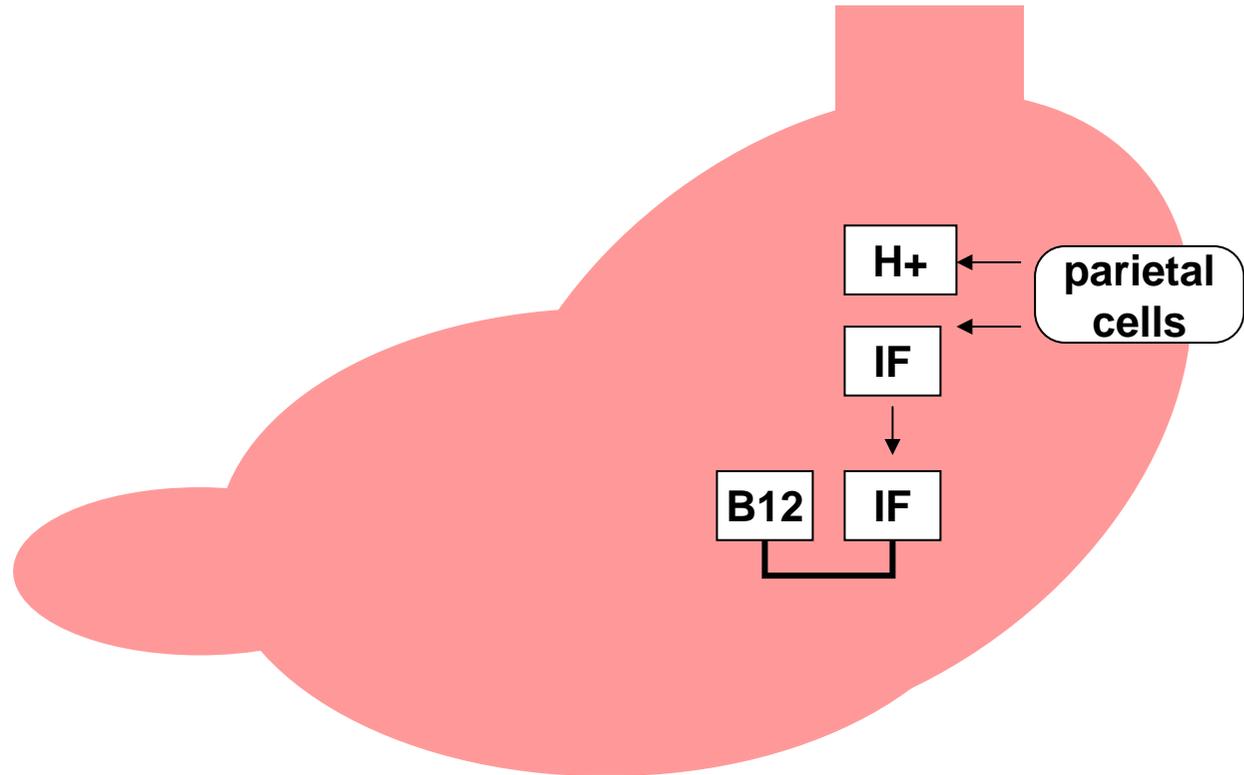


What do parietal cells secrete

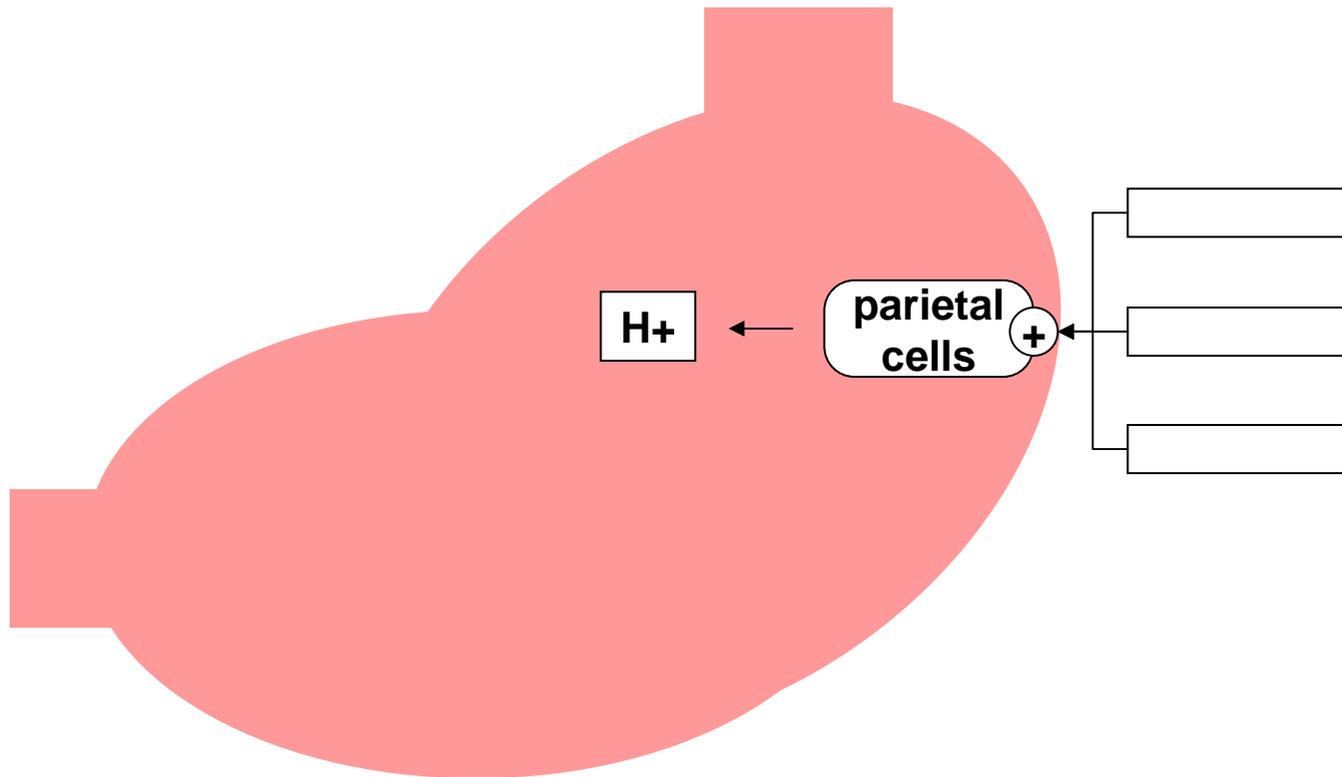


What do parietal cells secrete

- H^+
- IF

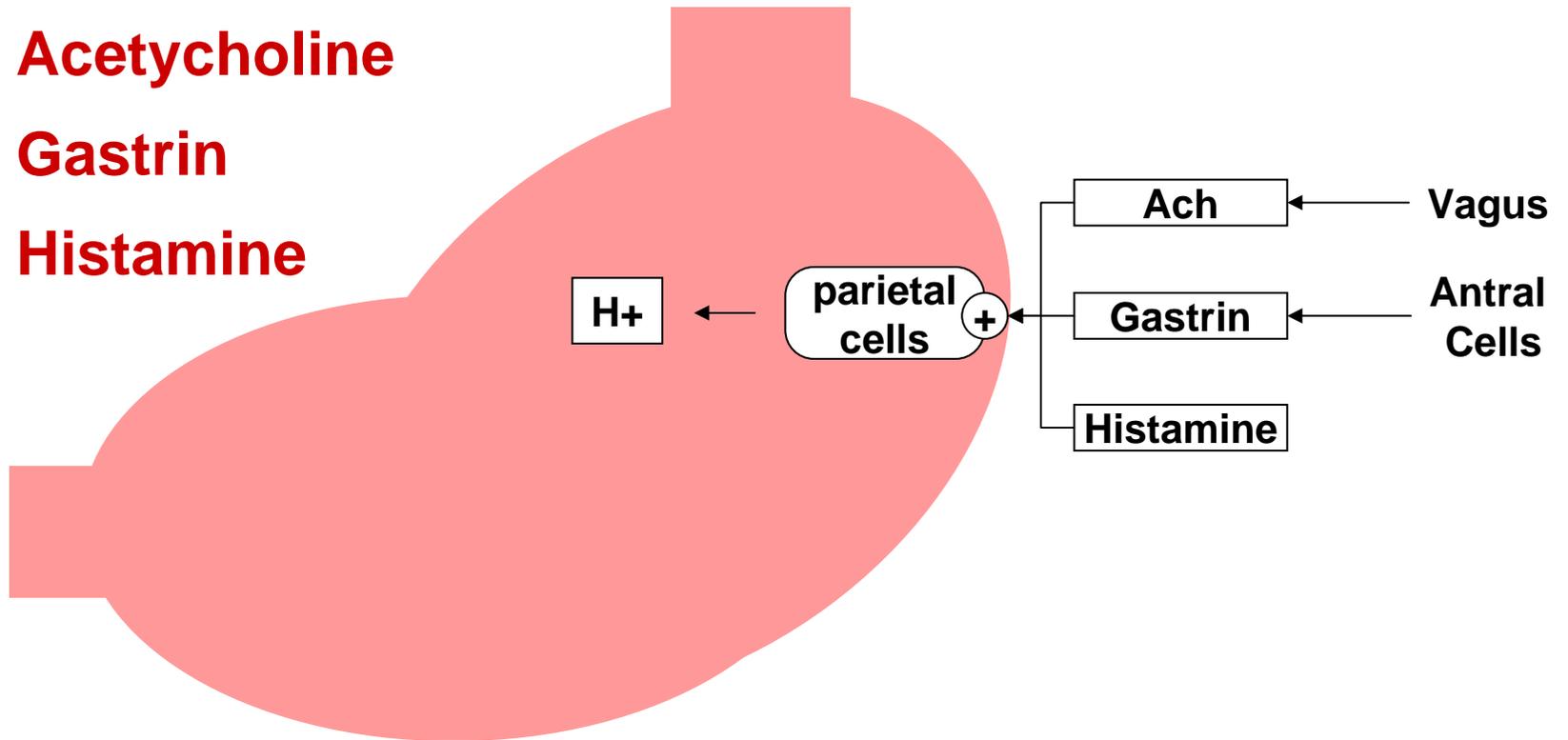


What stimulates the secretion of H+

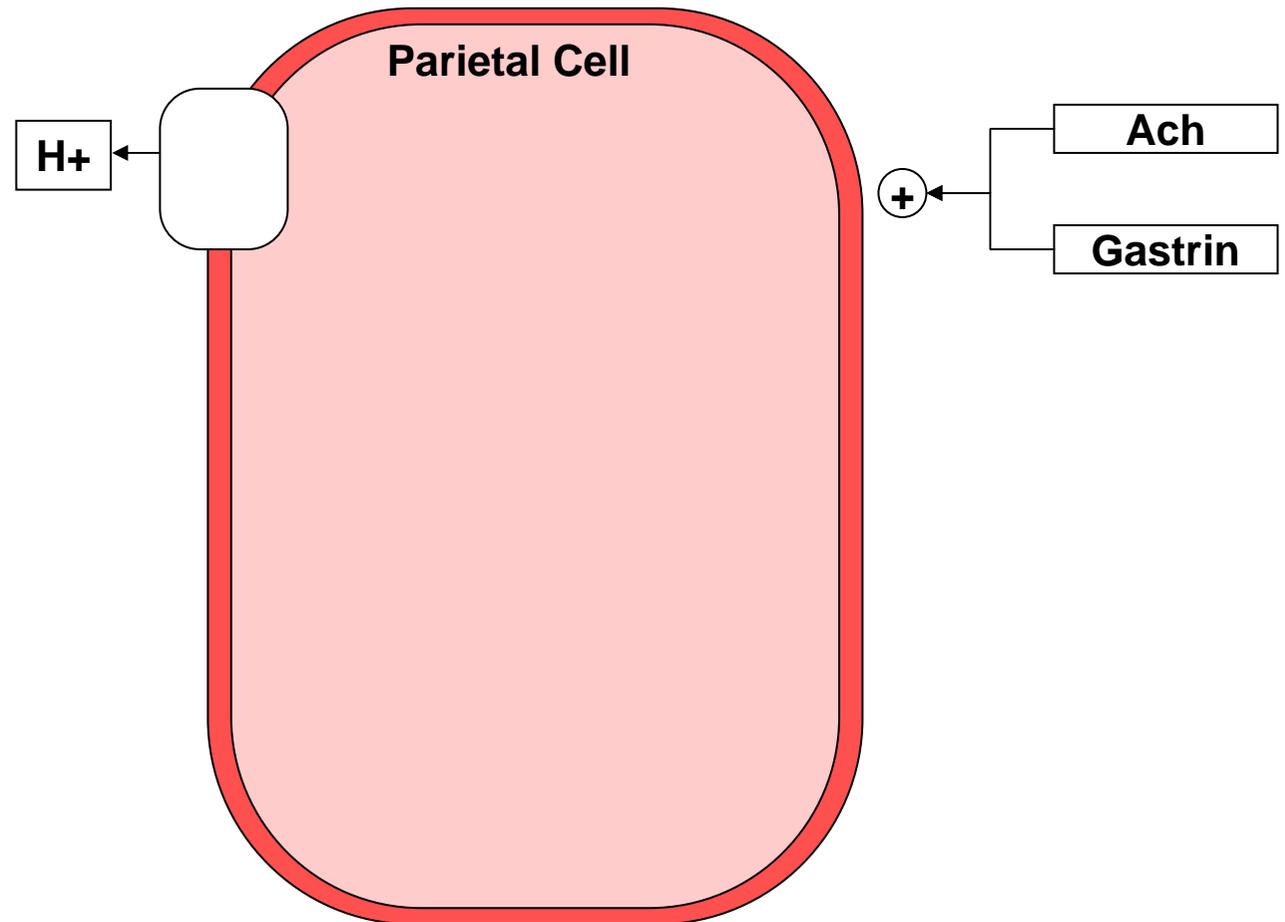


What stimulates the secretion of H⁺

- Acetylcholine
- Gastrin
- Histamine

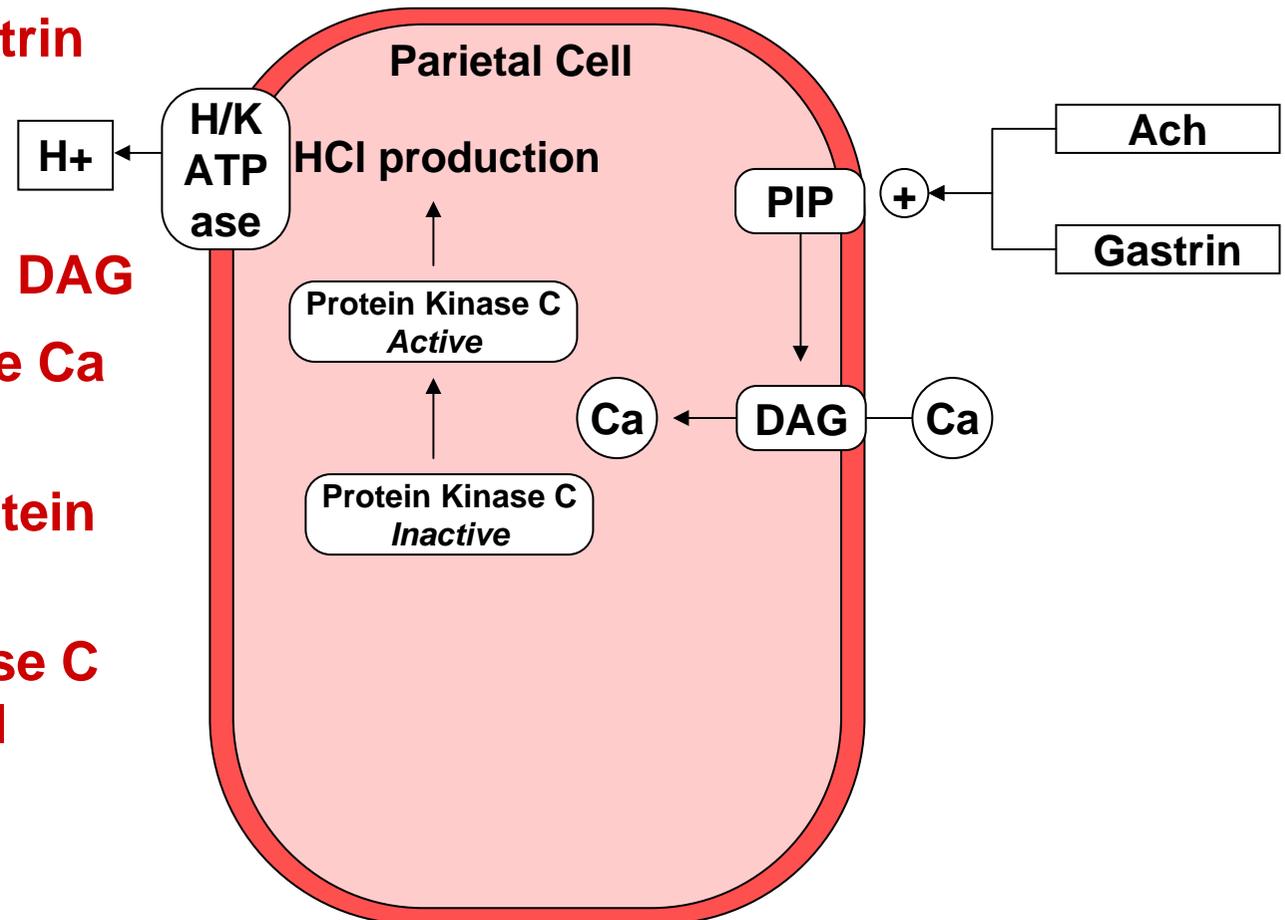


What is the cellular mechanism by which Ach and Gastrin activate H⁺ secretion?

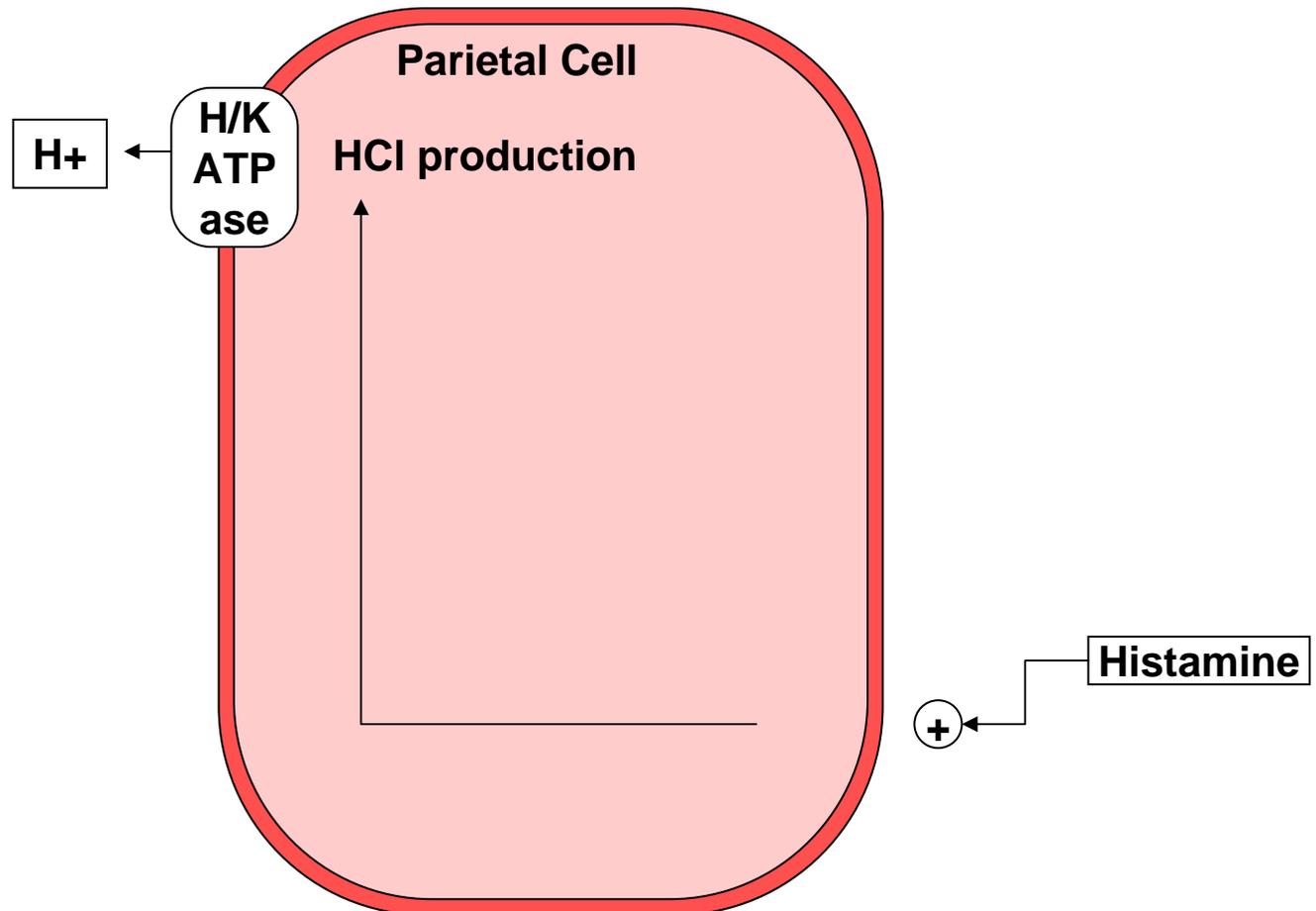


What is the cellular mechanism by which Ach and Gastrin activate H⁺ secretion?

- Ach and Gastrin activate PIP
- PIP activates DAG
- DAG increase Ca
- Increase Ca activates protein kinase C
- Protein Kinase C activates HCl production

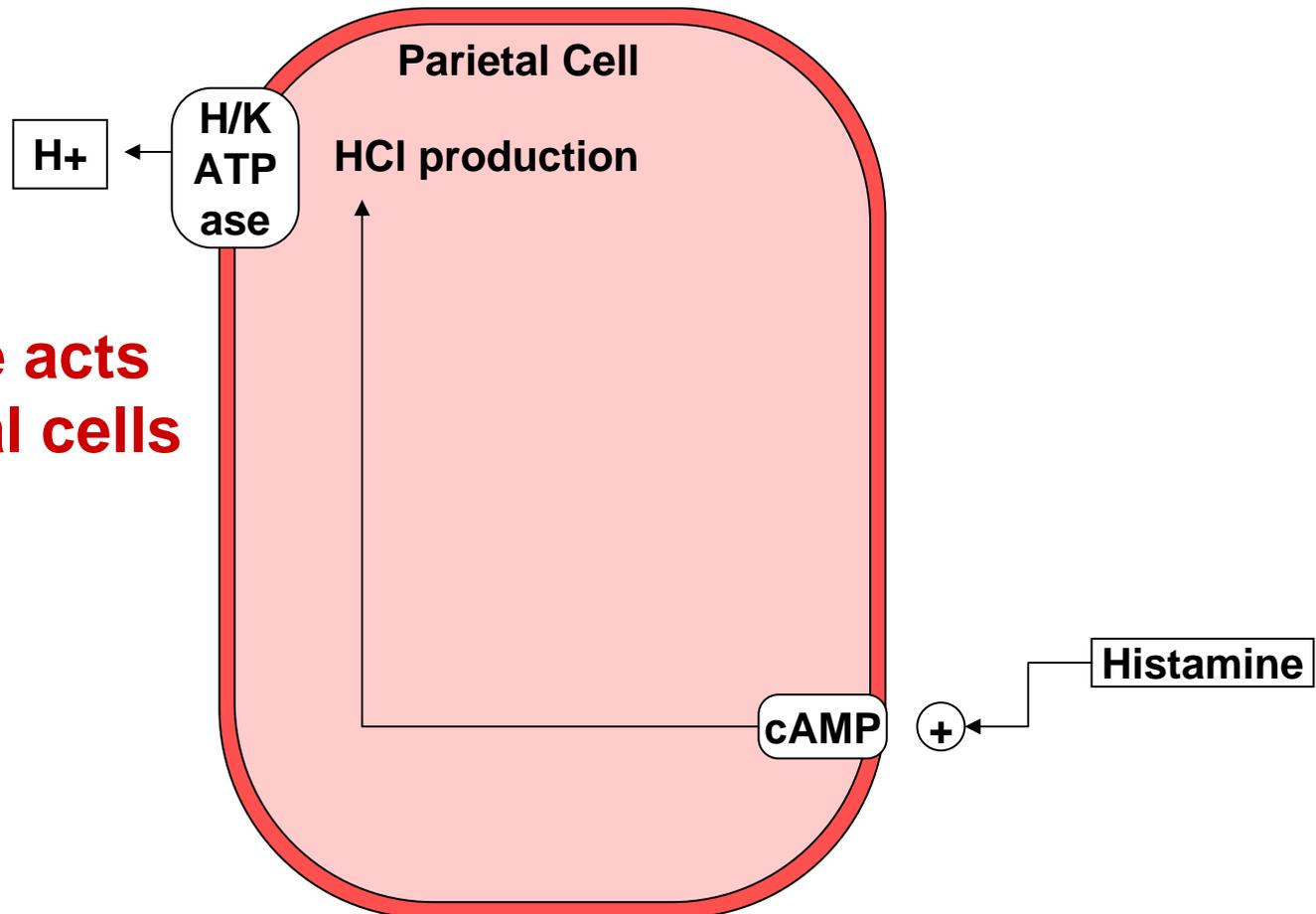


What is the cellular mechanism by which Histamine activates H⁺ secretion?



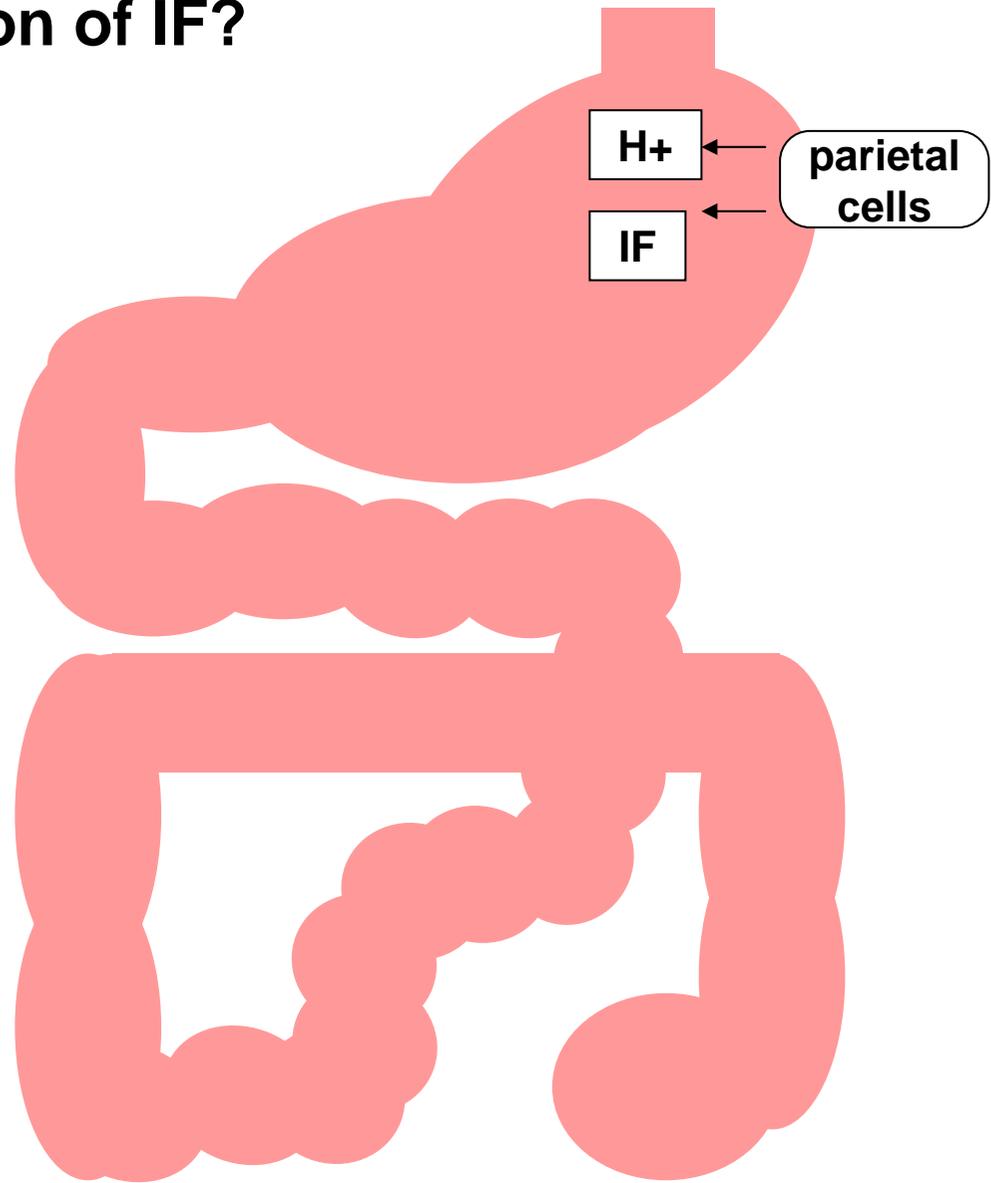
What is the cellular mechanism by which Histamine activates H⁺ secretion?

- Histamine acts on parietal cells via cAMP



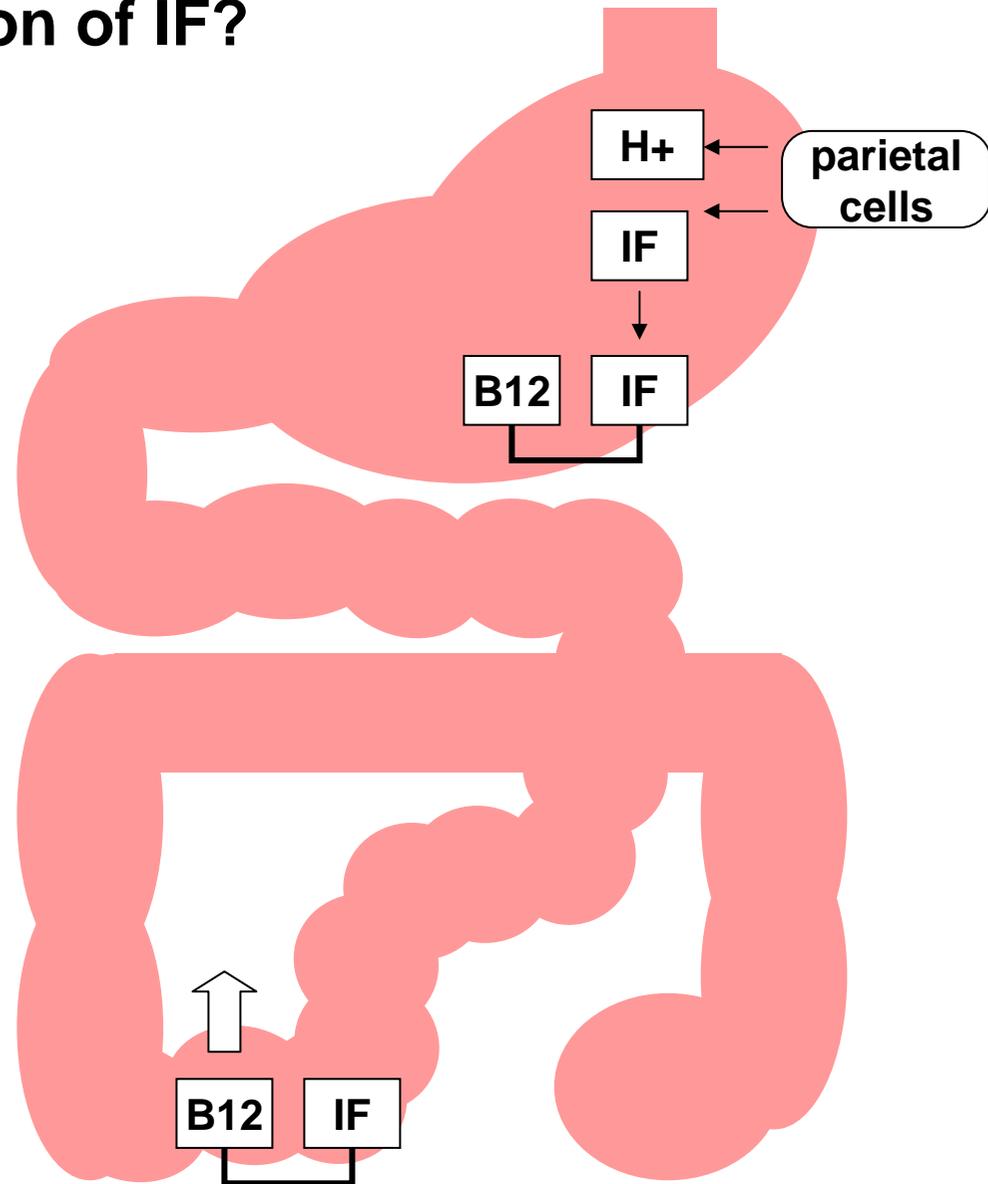
“think H for Happy cAMPer”

What is the function of IF?

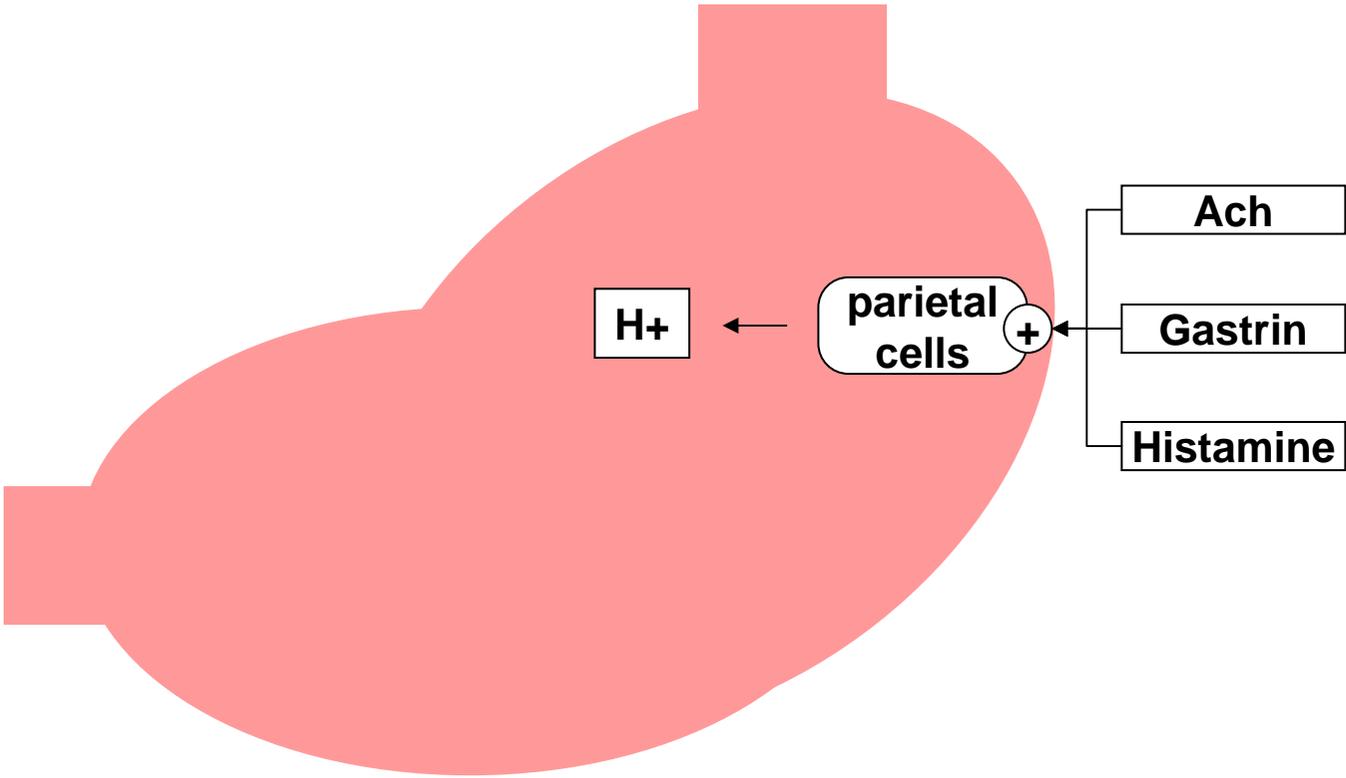


What is the function of IF?

- IF binds to B12, which is then absorbed in the terminal ileum.

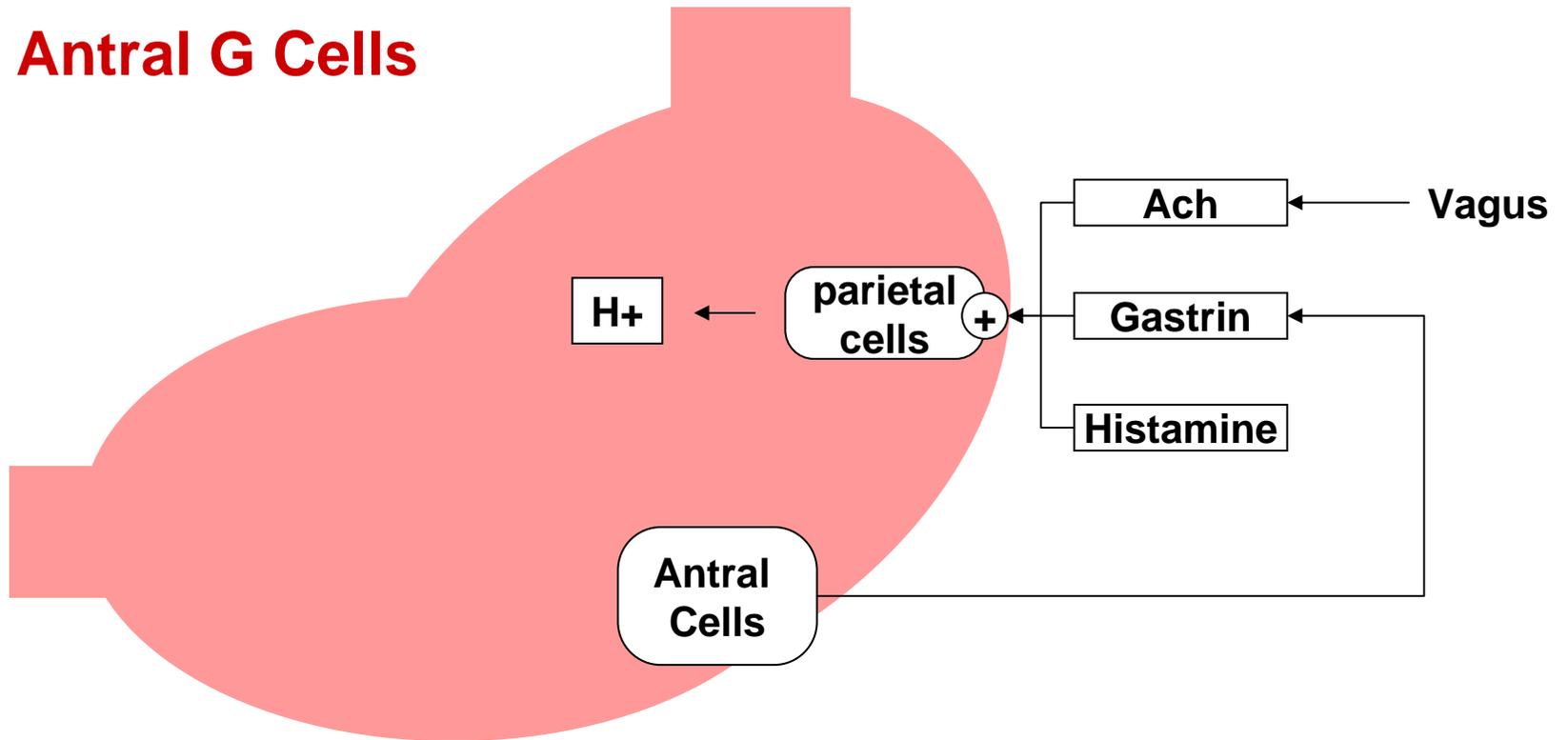


Where is Gastrin produced?

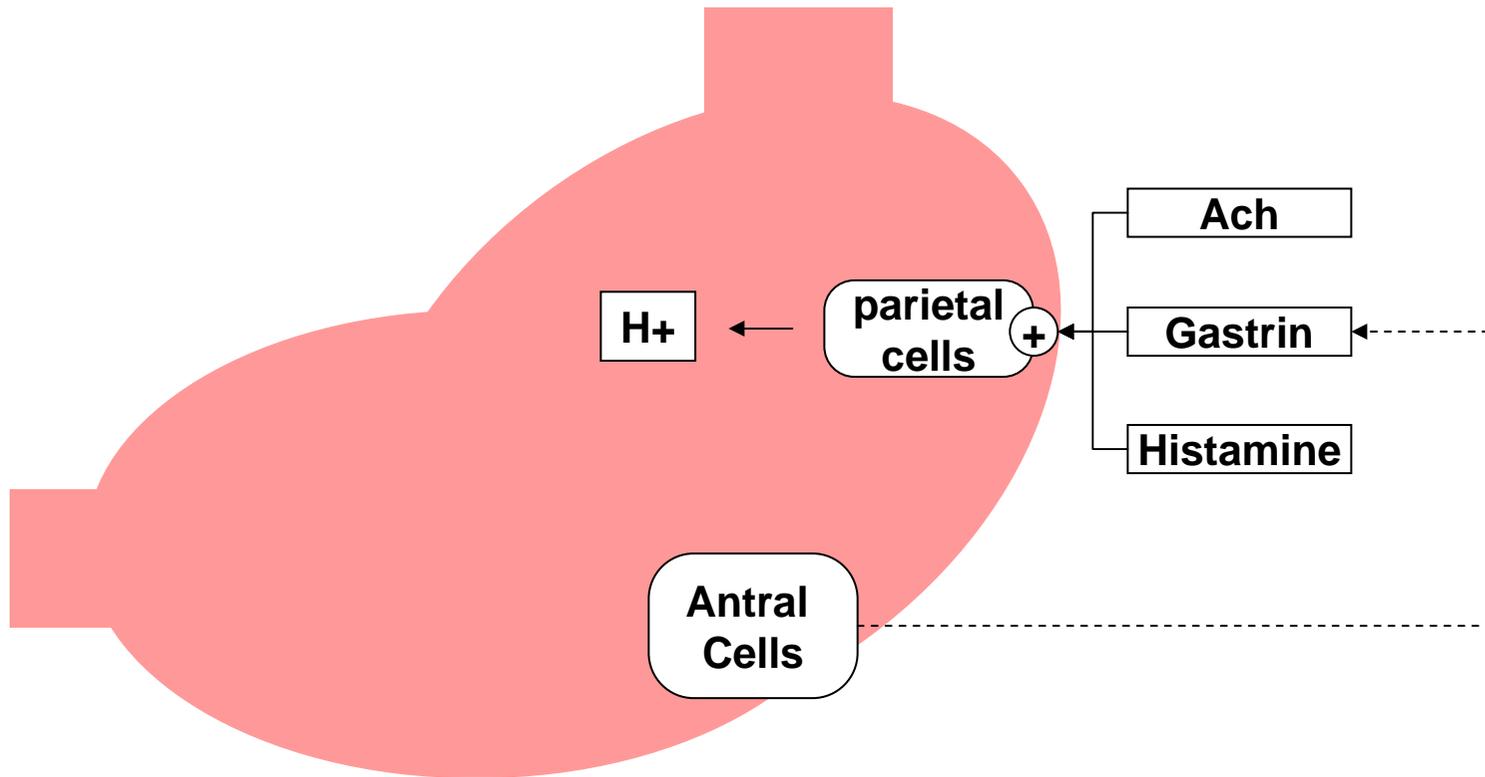


Where is Gastrin produced?

- Antral G Cells**

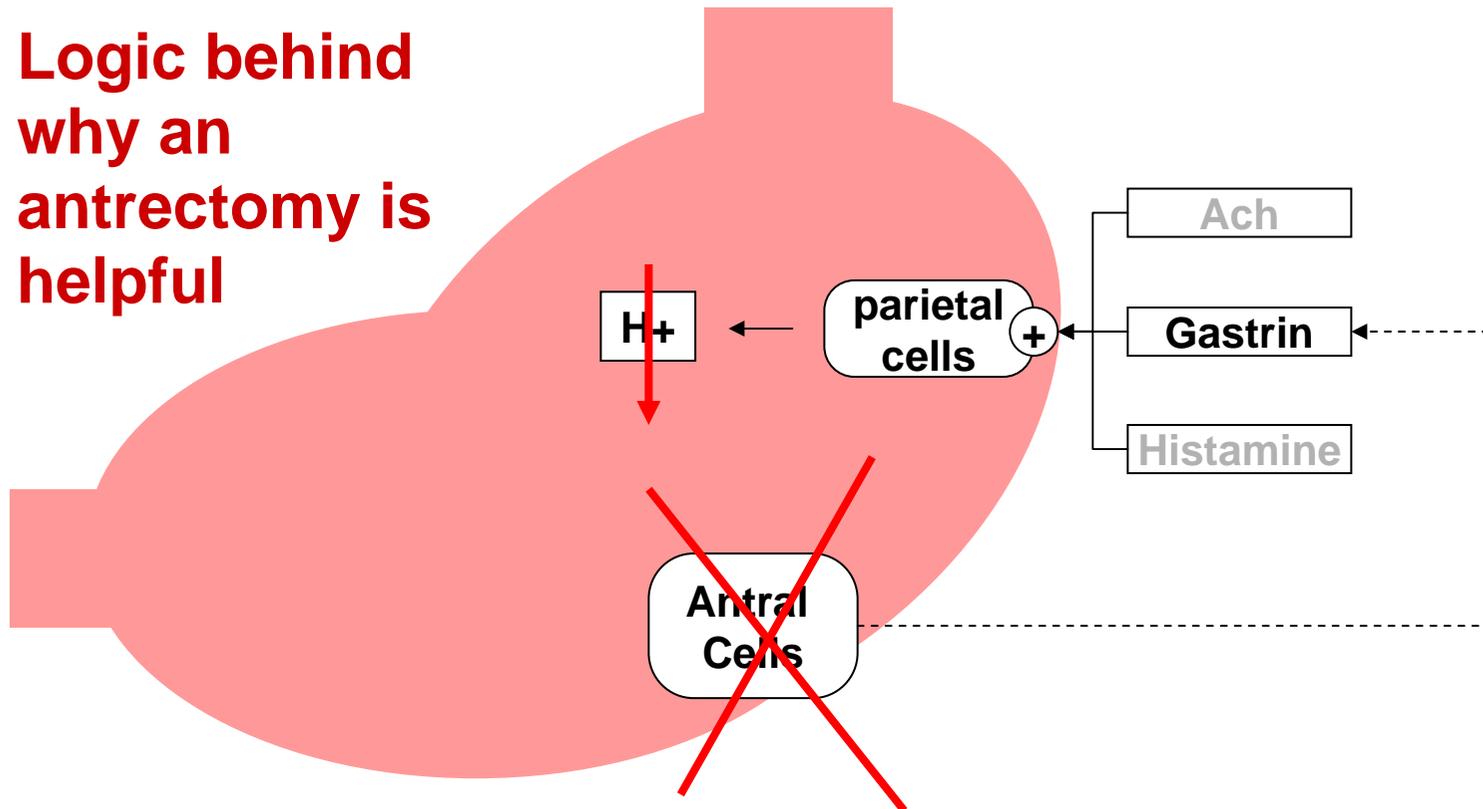


What is the surgical significance of where Gastrin is produced?

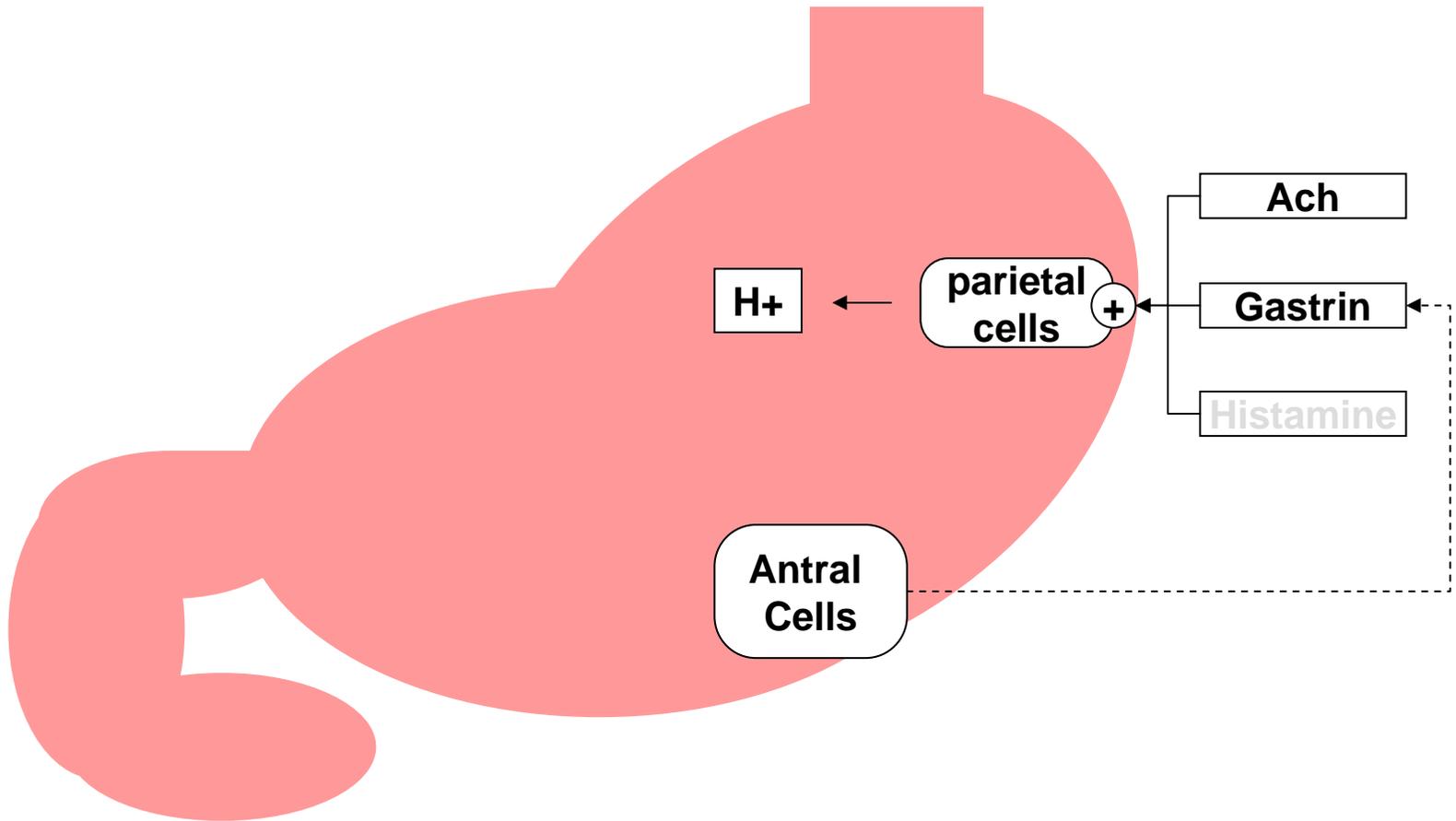


What is the surgical significance of where Gastrin is produced?

- **Logic behind why an antrectomy is helpful**

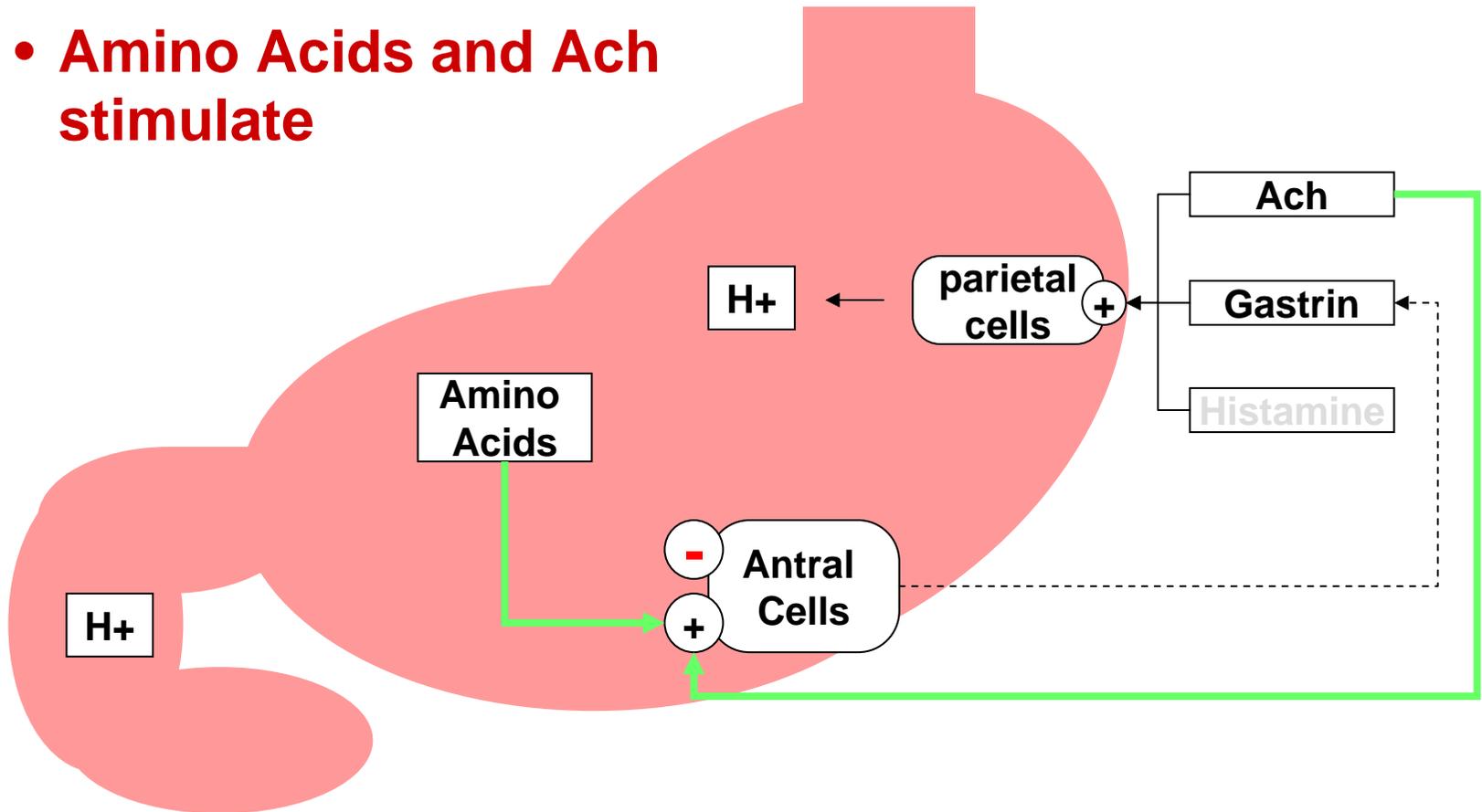


What stimulates the secretion of gastrin?

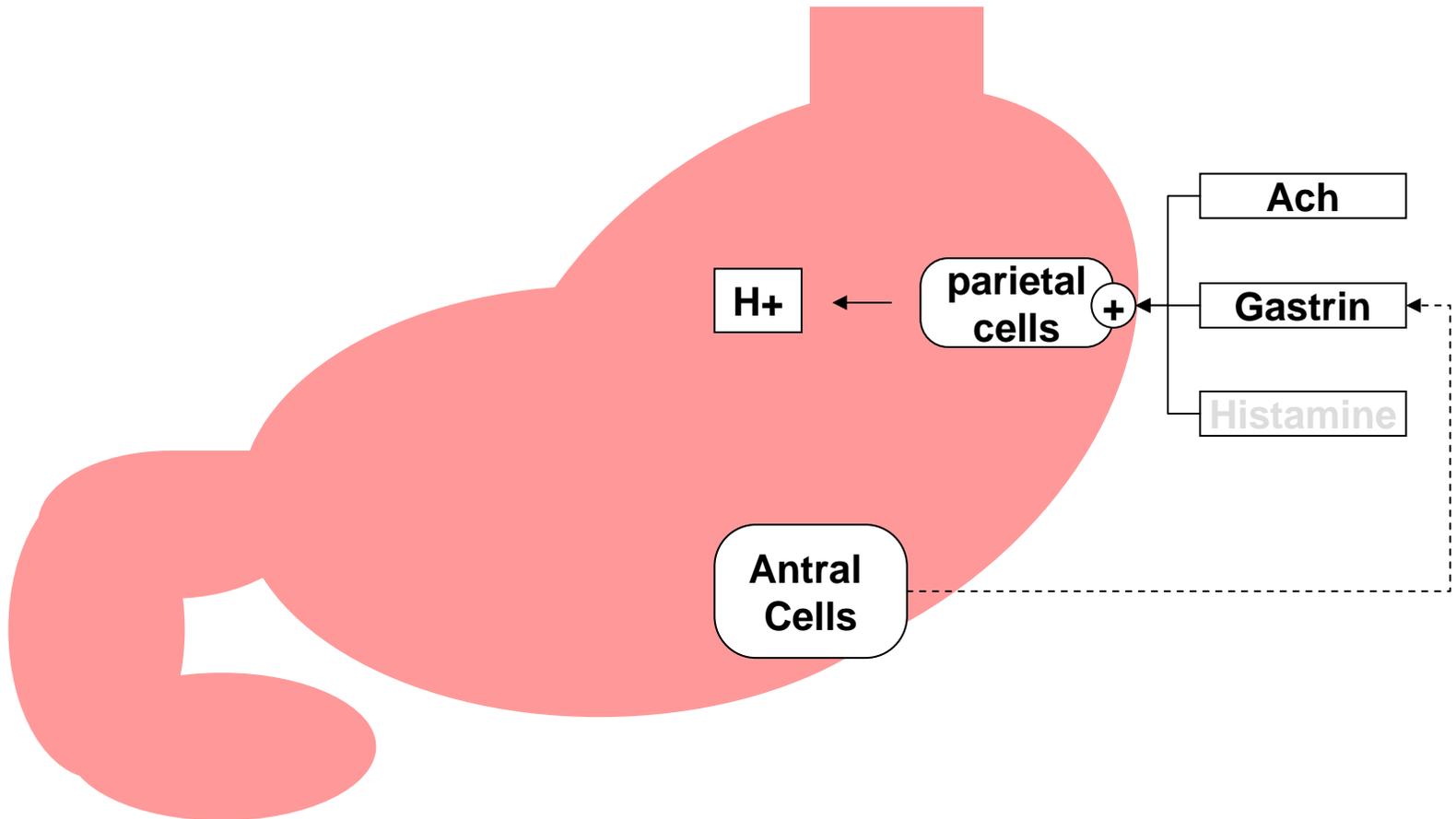


What stimulates the secretion of gastrin?

- **Amino Acids and Ach stimulate**

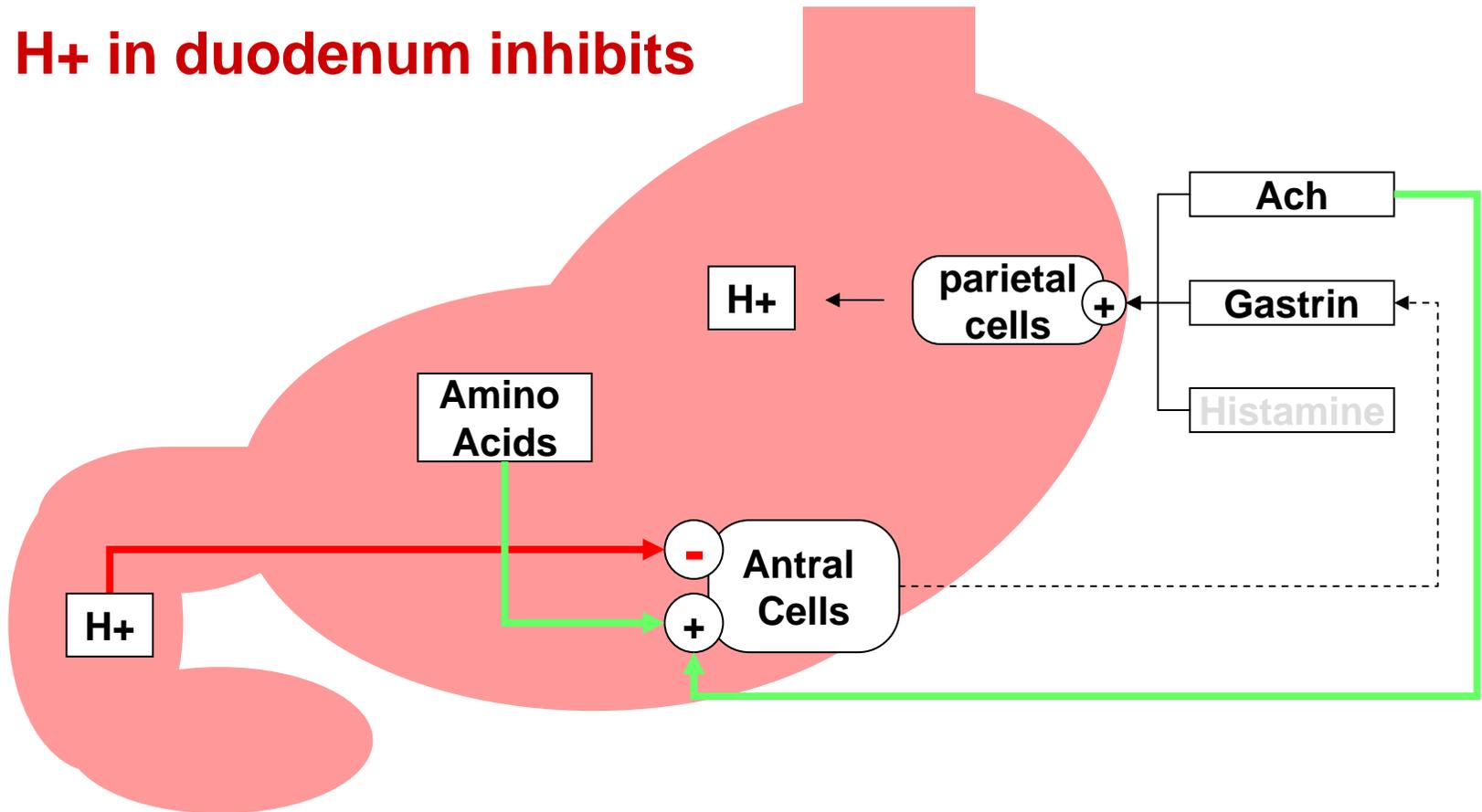


What inhibits the secretion of gastrin?



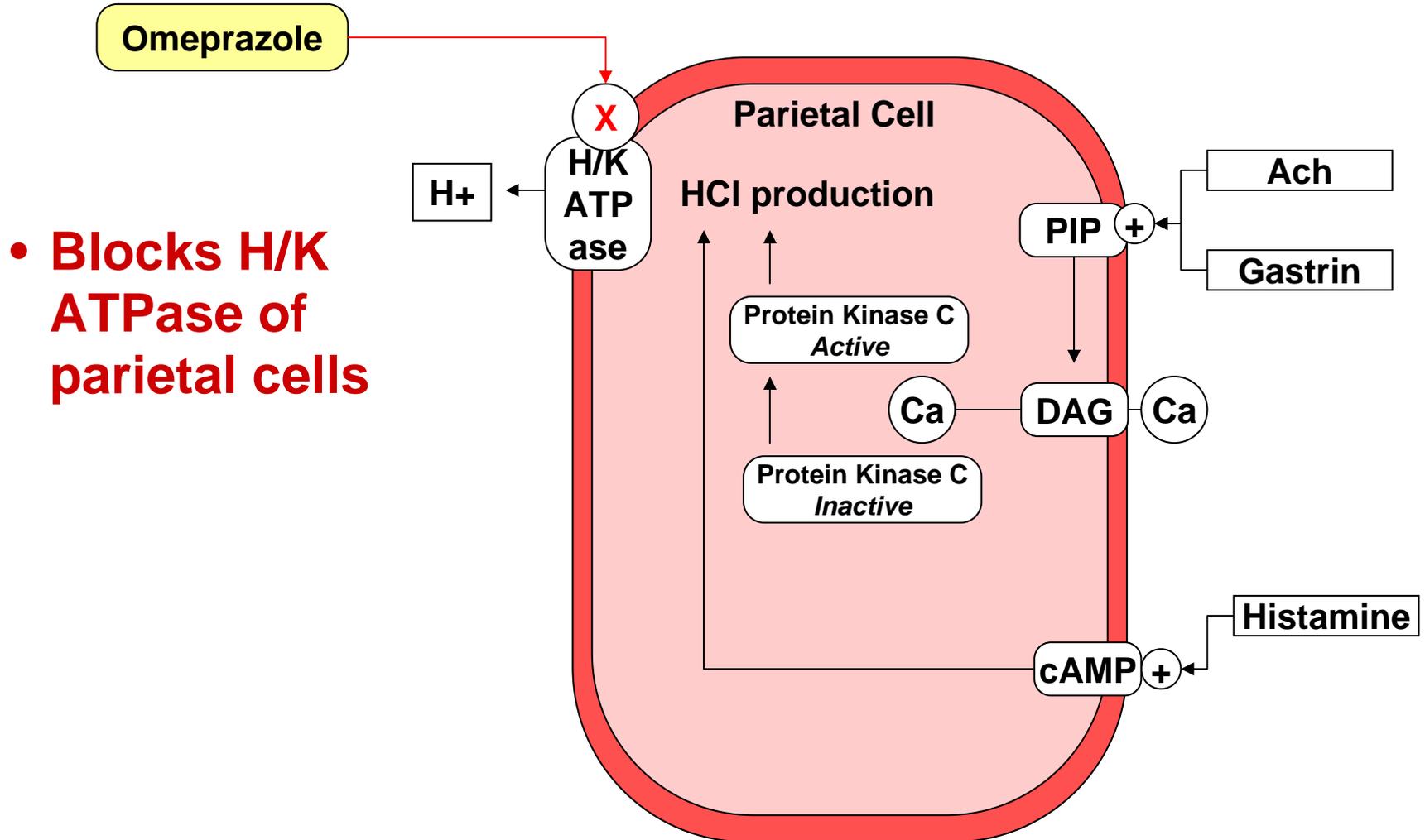
What inhibits the secretion of gastrin?

H⁺ in duodenum inhibits



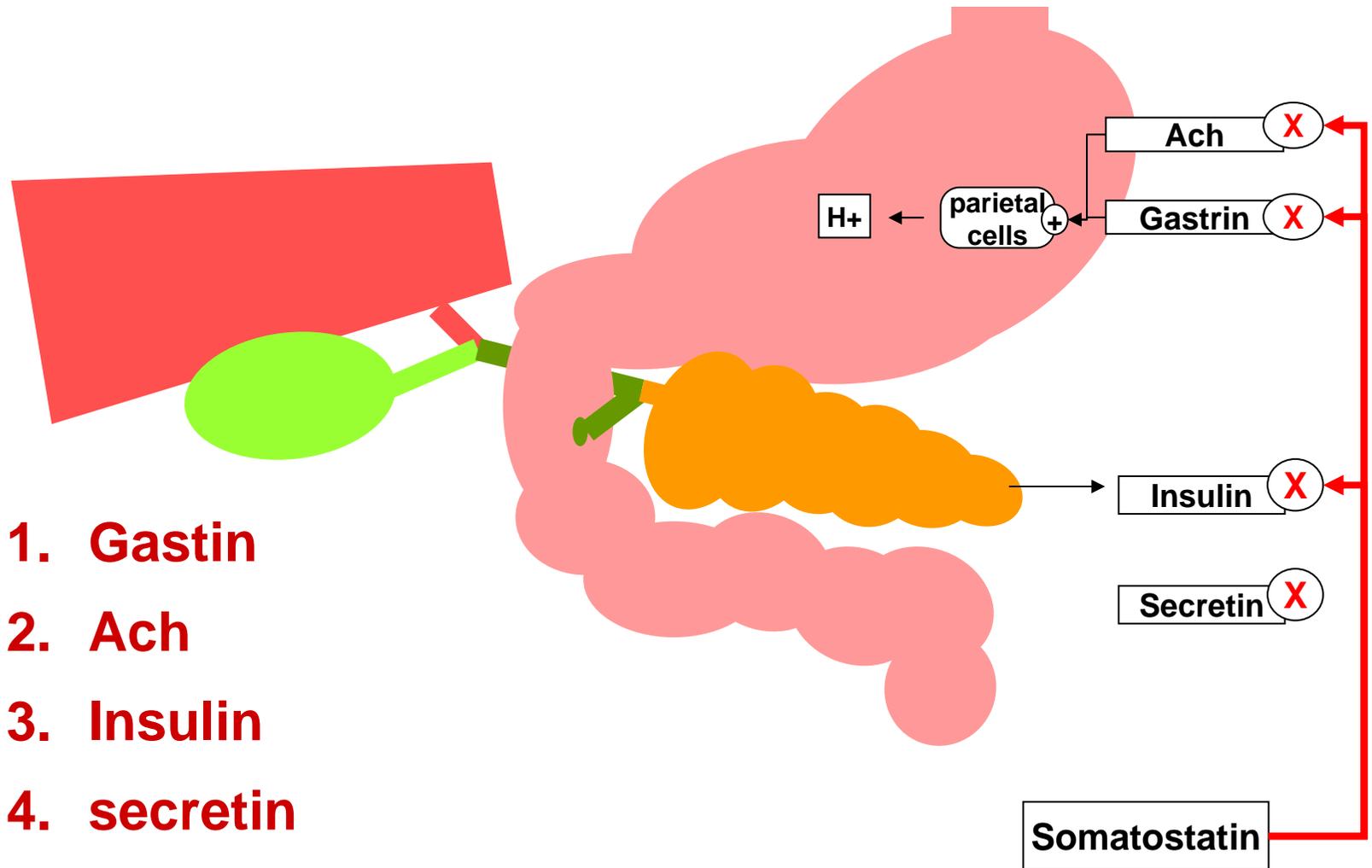
What is the mechanism of Omeprazole?

What is the mechanism of Omeprazole?



What does somatostatin inhibit?

What does somatostatin inhibit?

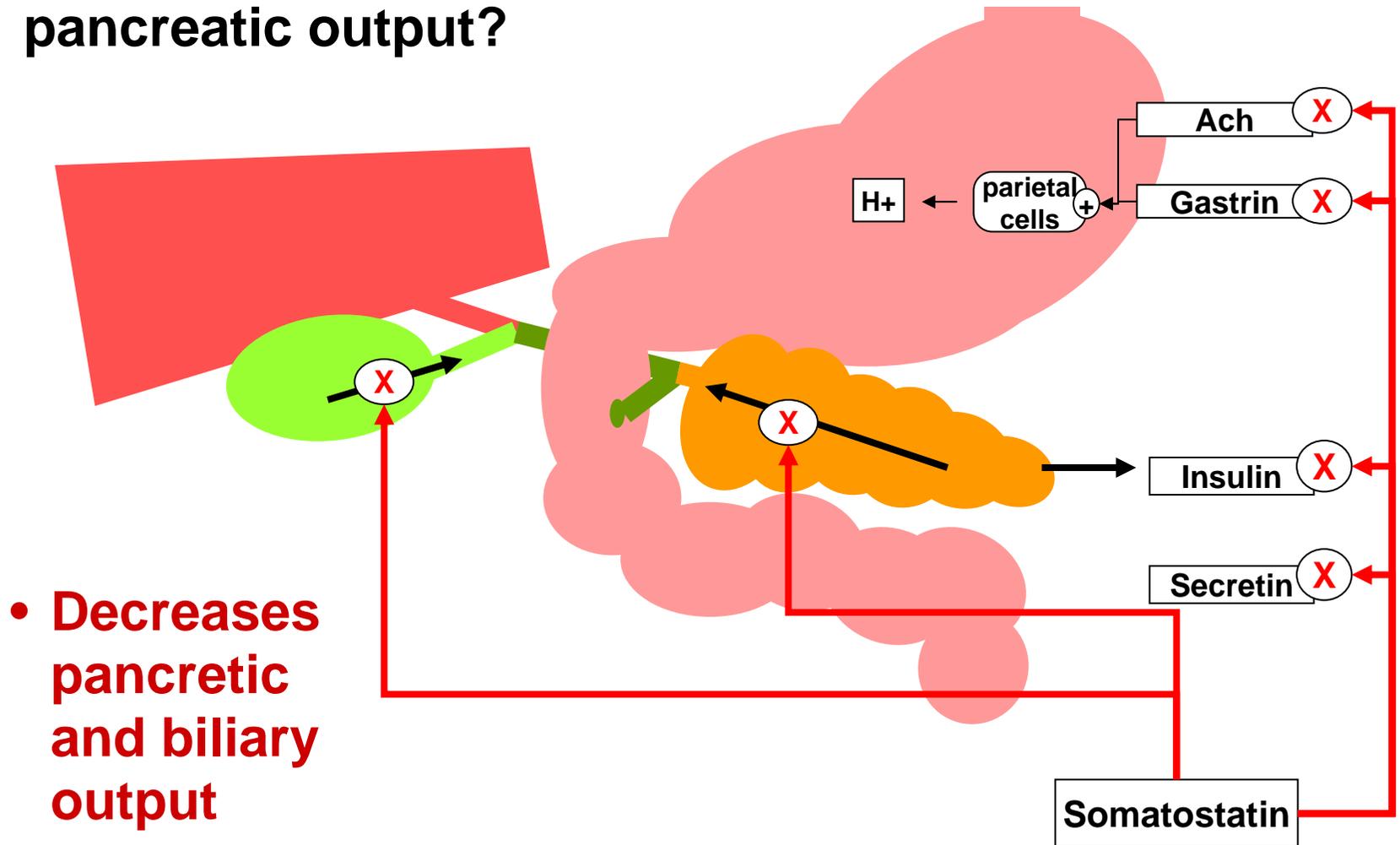


1. **Gastin**
2. **Ach**
3. **Insulin**
4. **secretin**

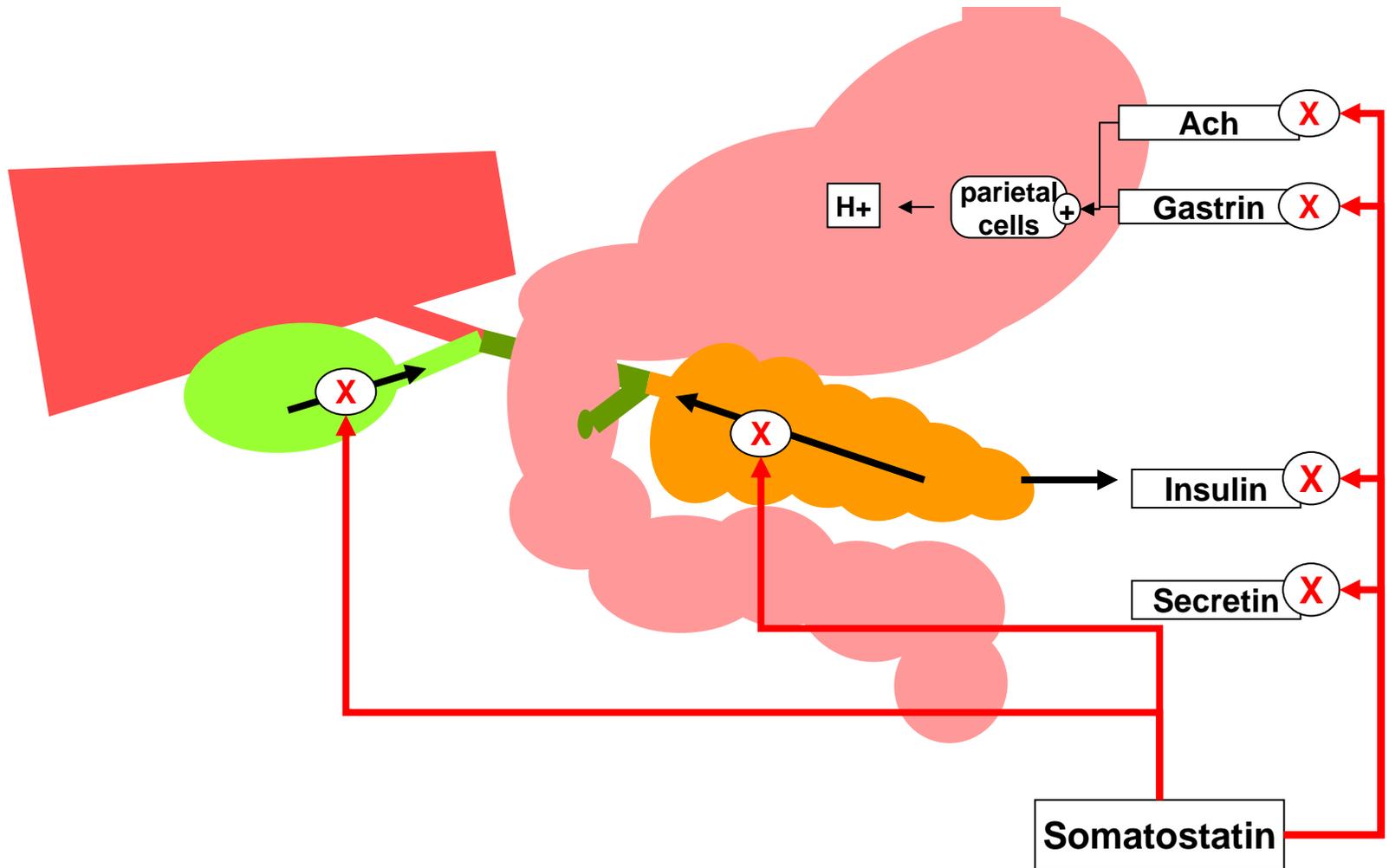
Somato STOPS digestion

What is the effect of somatostatin on biliary and pancreatic output?

What is the effect of somatostatin on biliary and pancreatic output?



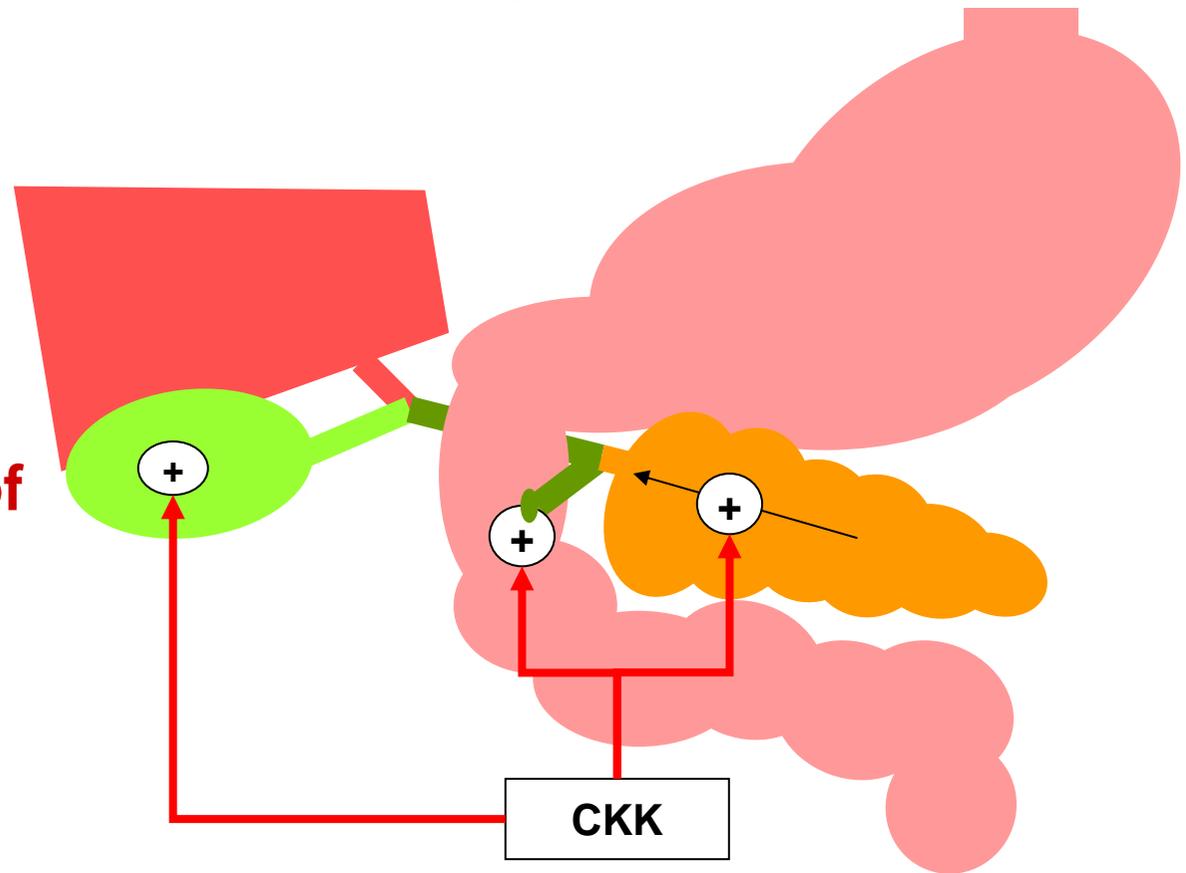
What stimulates secretion of somatostatin?



What are the three functions of CCK?

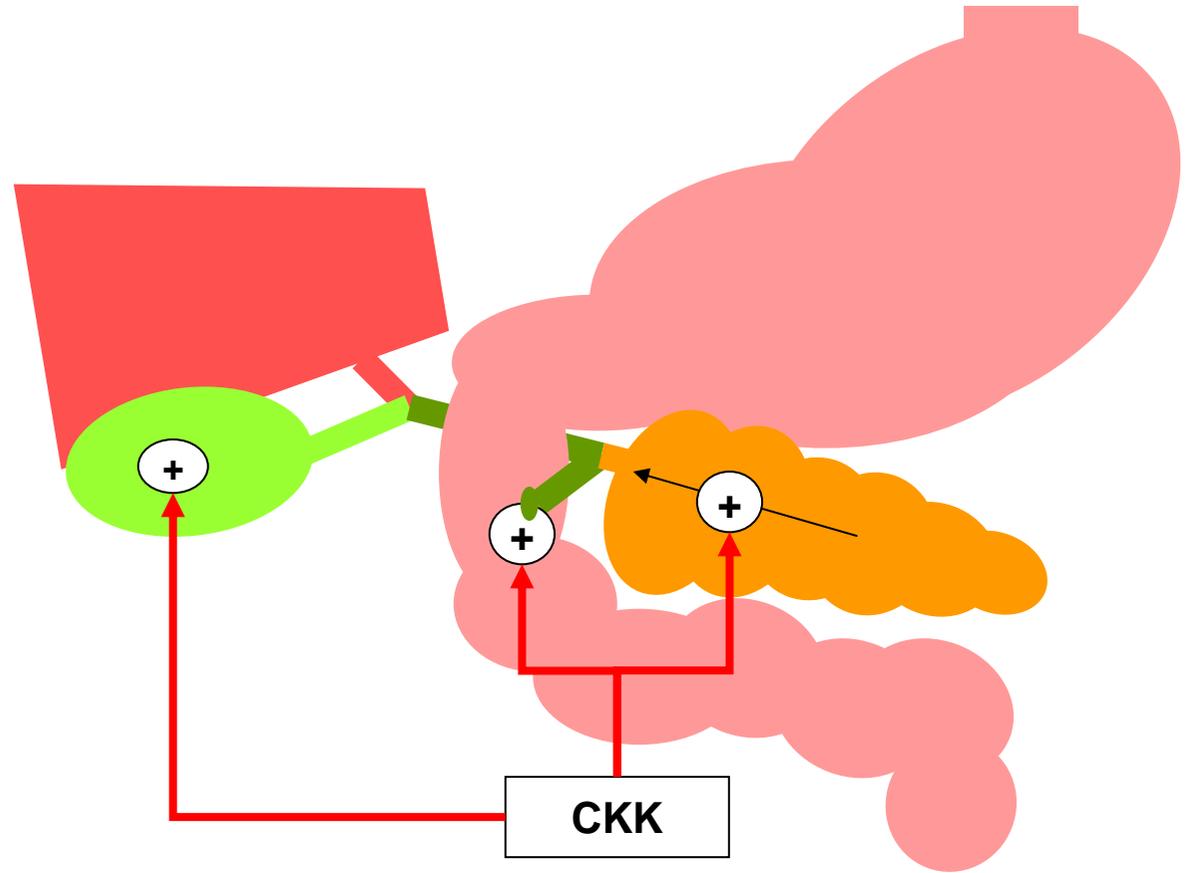
What are the three functions of CCK?

1. **contacts gallbladder**
2. **Relaxes sphincter of Oddi**
3. **Increases pancreatic enzyme secretion**



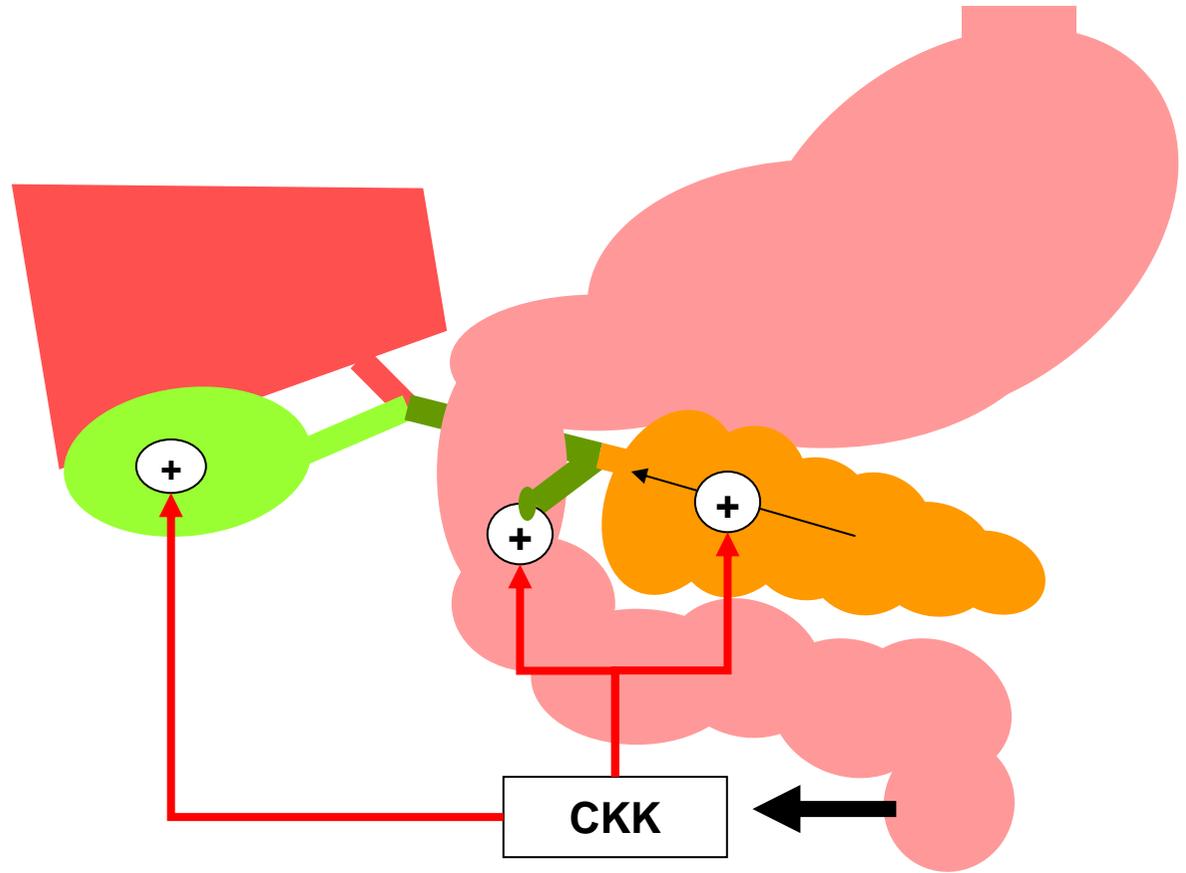
Net effect is dumping digestive juices into tract

Where is CCK released from?

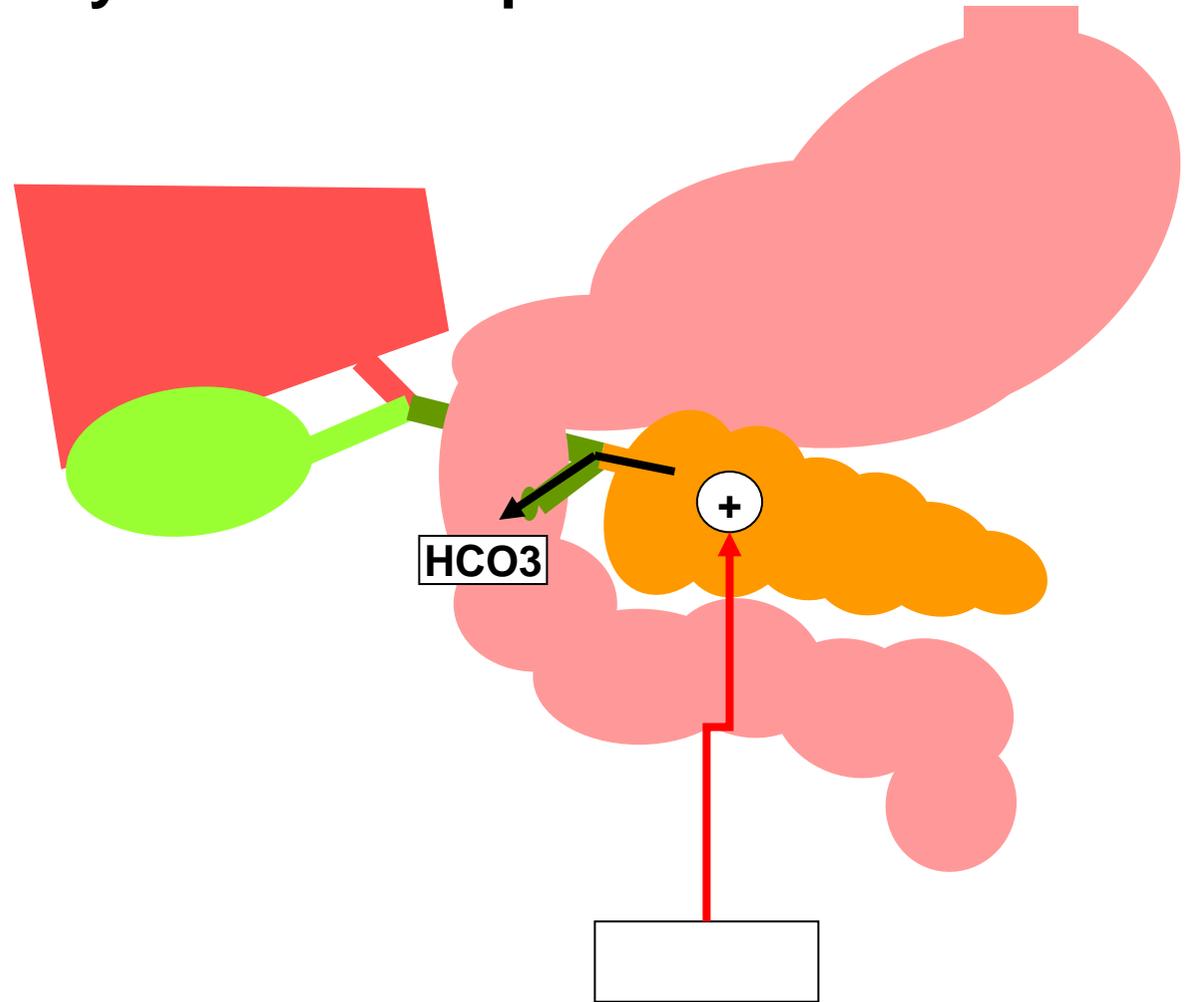


Where is CCK released from?

- **Intestinal mucosa**

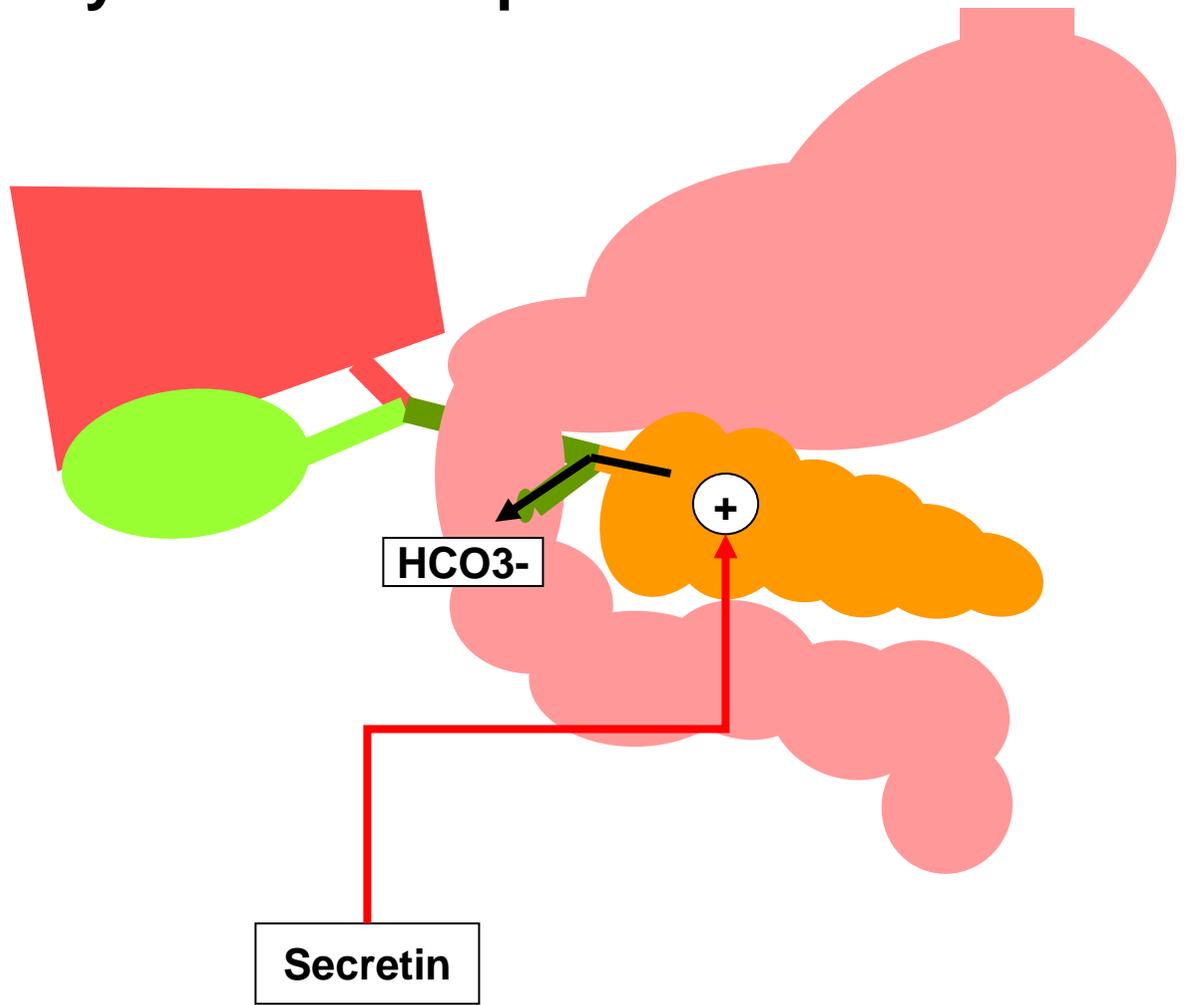


What is the primary stimulus of pancreatic bicarb secretion?



What is the primary stimulus of pancreatic bicarb secretion?

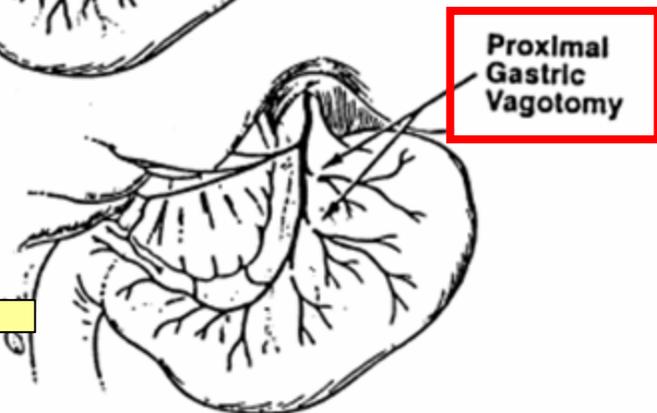
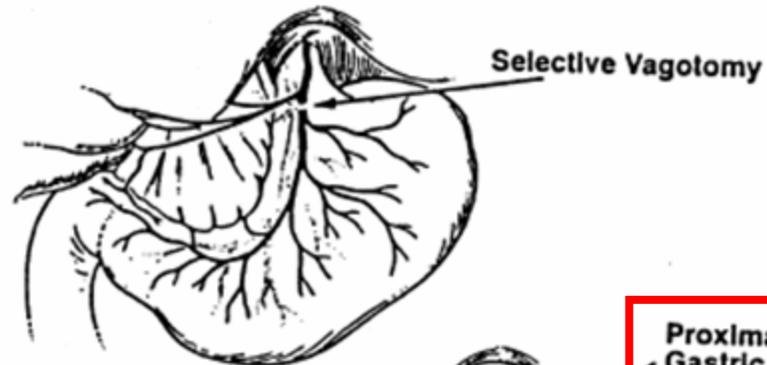
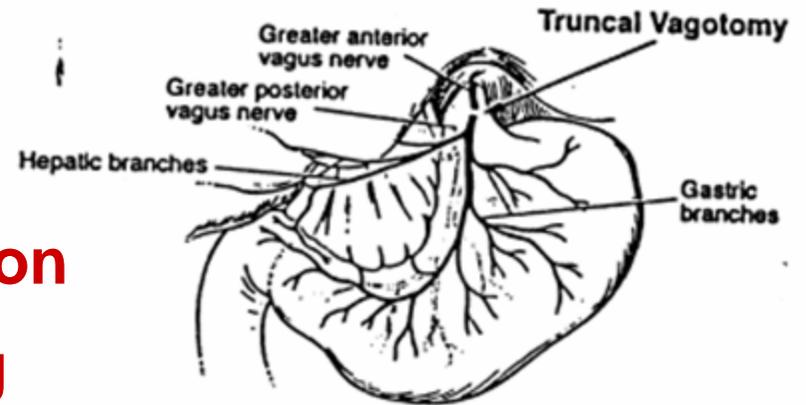
- Secretin



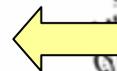
What is the effect of a proximal vagotomy on liquid and solid emptying?

What is the effect of a proximal vagotomy on liquid and solid emptying?

- **Abolishes receptive relaxation**
- **INCREASES** liquid emptying
- **No change for solids**



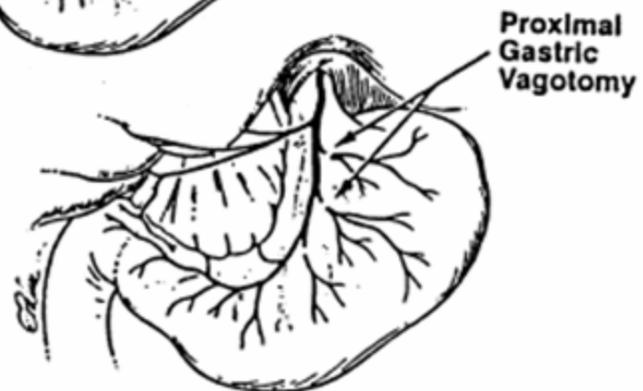
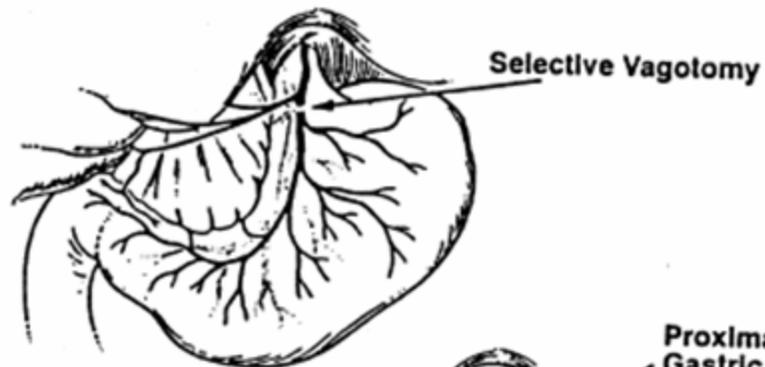
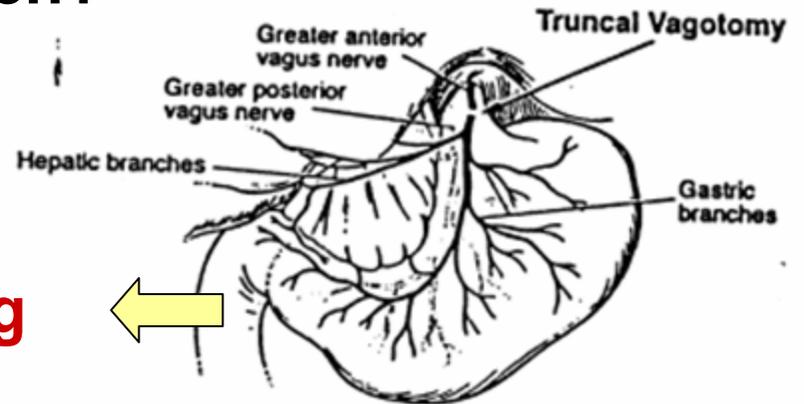
liquid emptying



Truncal vagotomy with pyloroplasty has what effect on solids in the stomach?

Truncal Vagotomy plus Pyloroplasty has what effect on solids in the stomach?

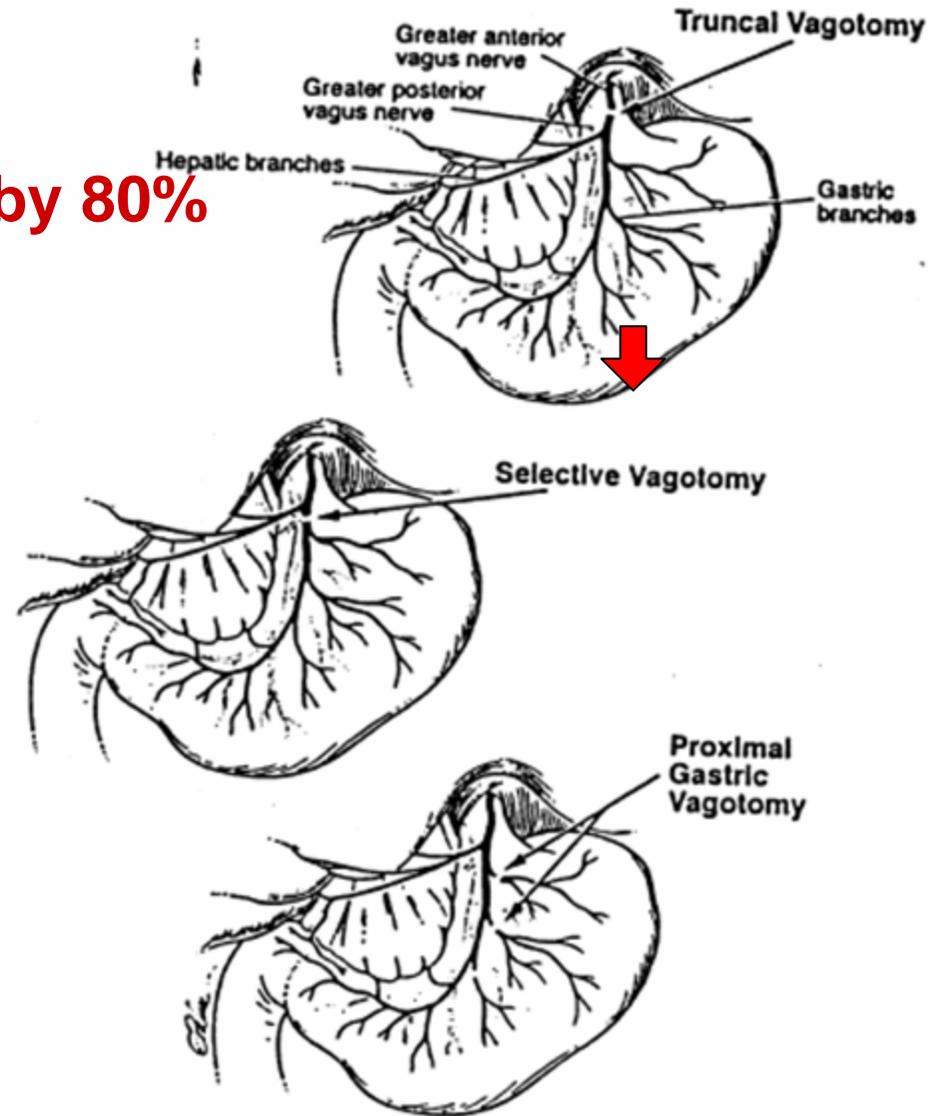
- **INCREASES** solid emptying



What is the effect of Truncal Vagotomy on stomach acid?

What is the effect of Truncal vagotomy on stomach acid?

- **Decreases basal acid by 80%**



What are the two most common symptom post vagotomy?

What are the two most common symptom post vagotomy?

- **Diarrhea (35%)**
- **Dumping syndrome (10%)**

What is the cause of “EARLY” dumping syndrome?

What is the cause of “EARLY” dumping syndrome?

- **Hyperosmotic load and fluid shift**

What is the cause of “LATE” dumping syndrome?

What is the cause of “LATE” dumping syndrome?

- **Increased insulin**
- **Decreased glucose**

What % of the time does dumping syndrome not respond to dietary measures?

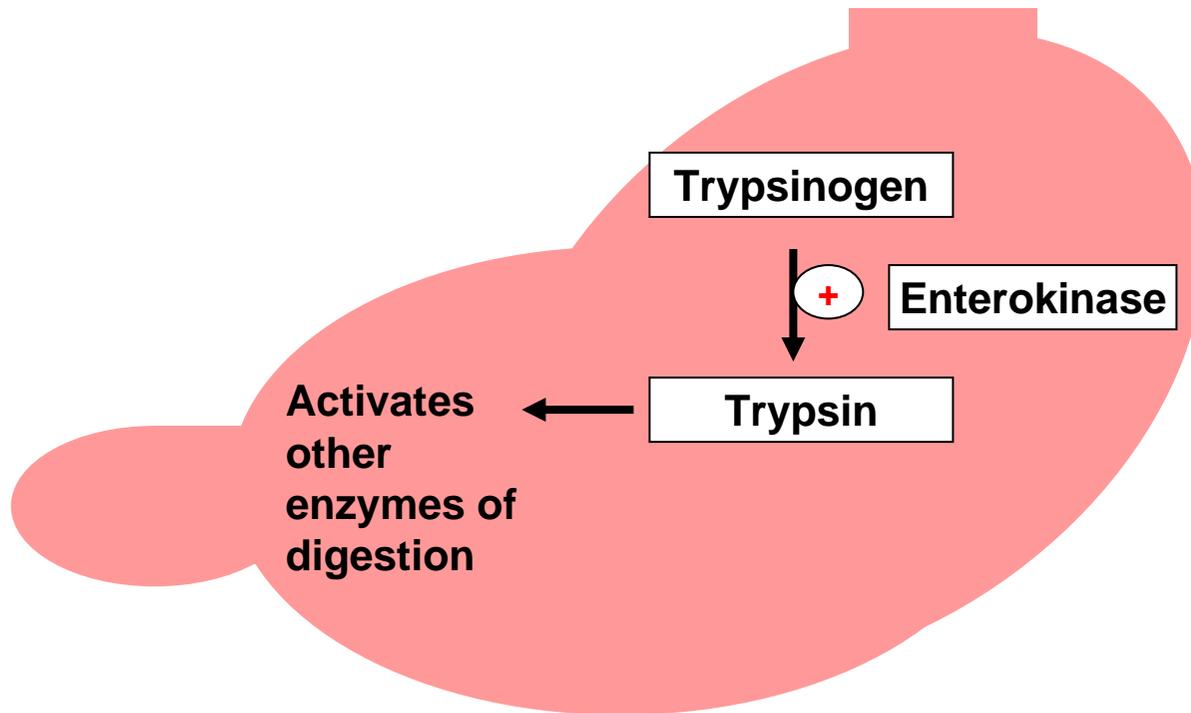
What % of the time does dumping syndrome not respond to dietary measures?

- **Very rare (1%)**

What is the function of enterokinase?

What is the function of enterokinase?

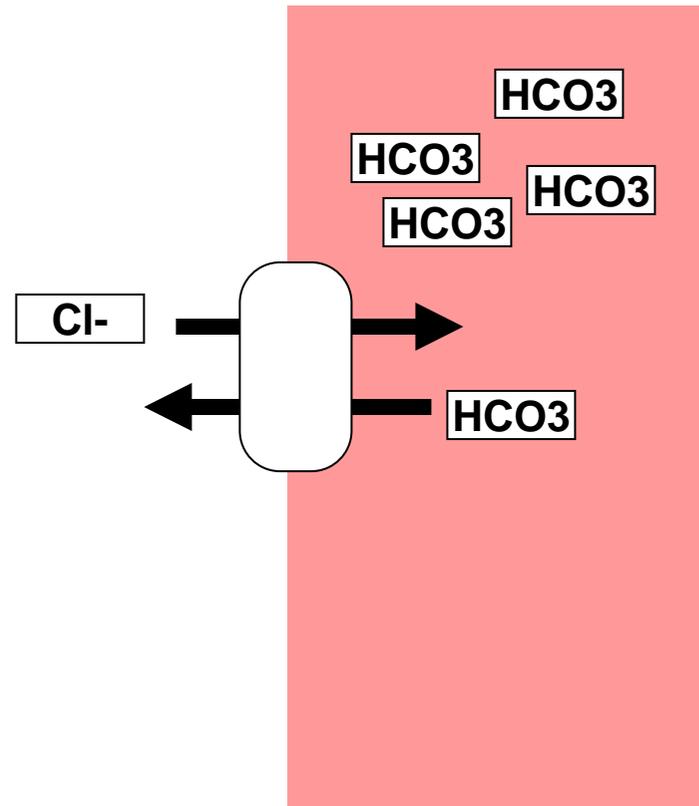
- **Activates trypsinogen to trypsin, which then activates other enzymes of digestion.**



What is the impact of flow rate on Cl⁻ levels?

What is the impact of flow rate on Cl⁻ levels?

- High flow rate = High HCO₃/Low Cl⁻ (no time for exchange) $H = L$
- Low flow rate = Low HCO₃/High Cl⁻ (time for exchange) $L = H$



What is the function of enteroglucagon?

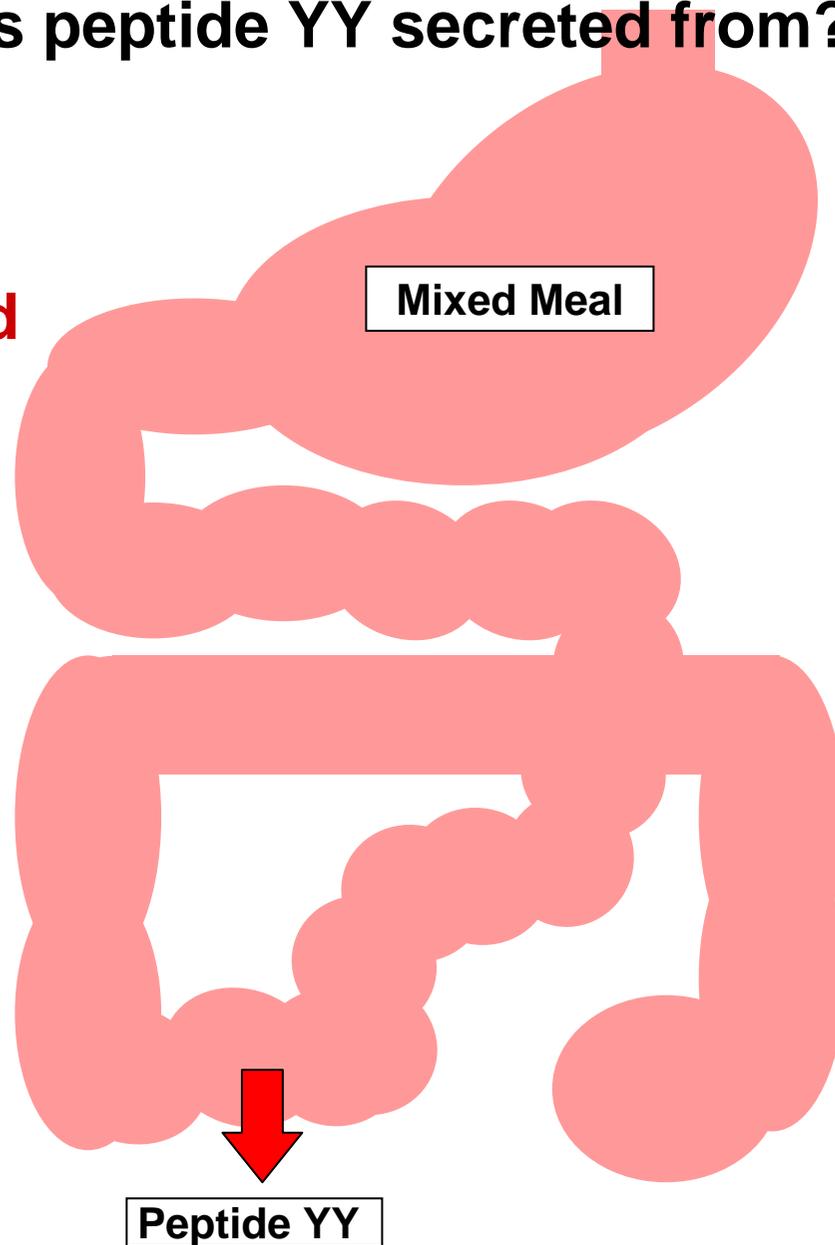
What is the function of enteroglucagon?

- **Increase small bowel mucosal hypertrophy**
 - **adaption after small bowel resection**

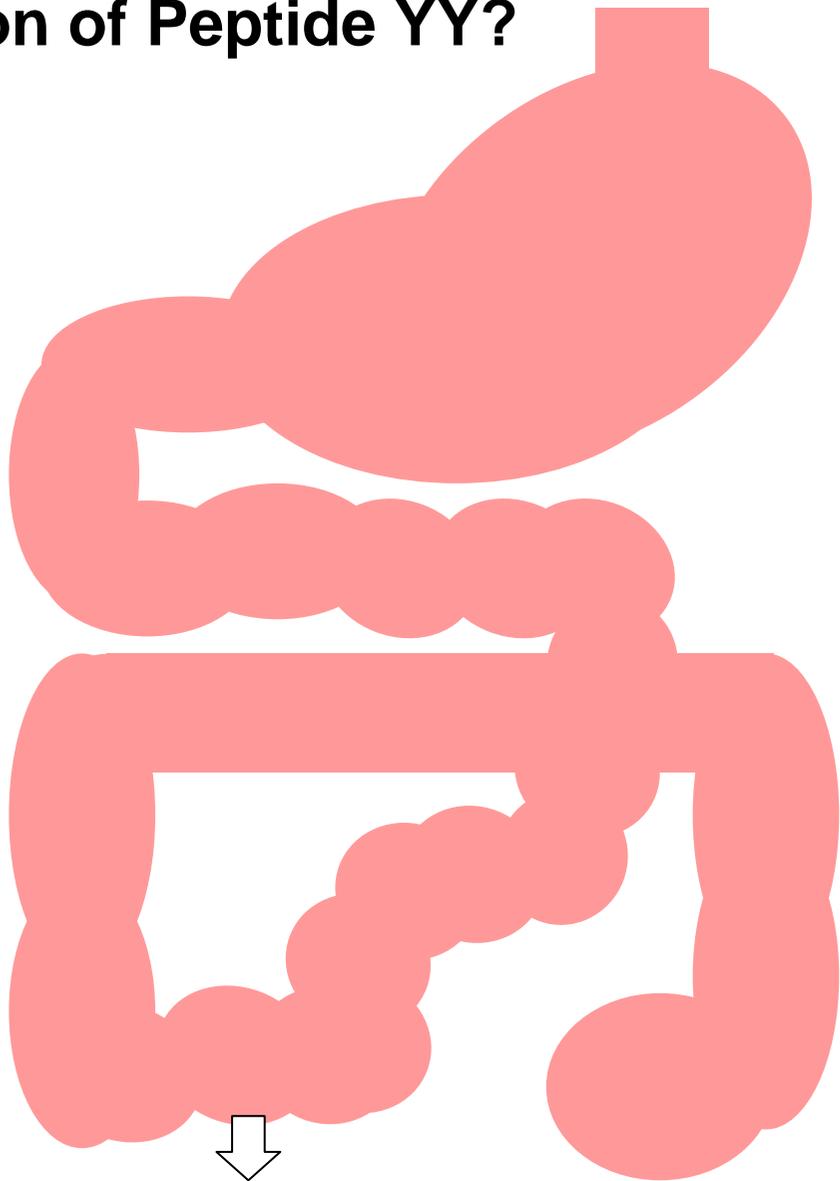
Where and when is peptide YY secreted from?

Where and when is peptide YY secreted from?

- Terminal ileum
 - with mixed meal



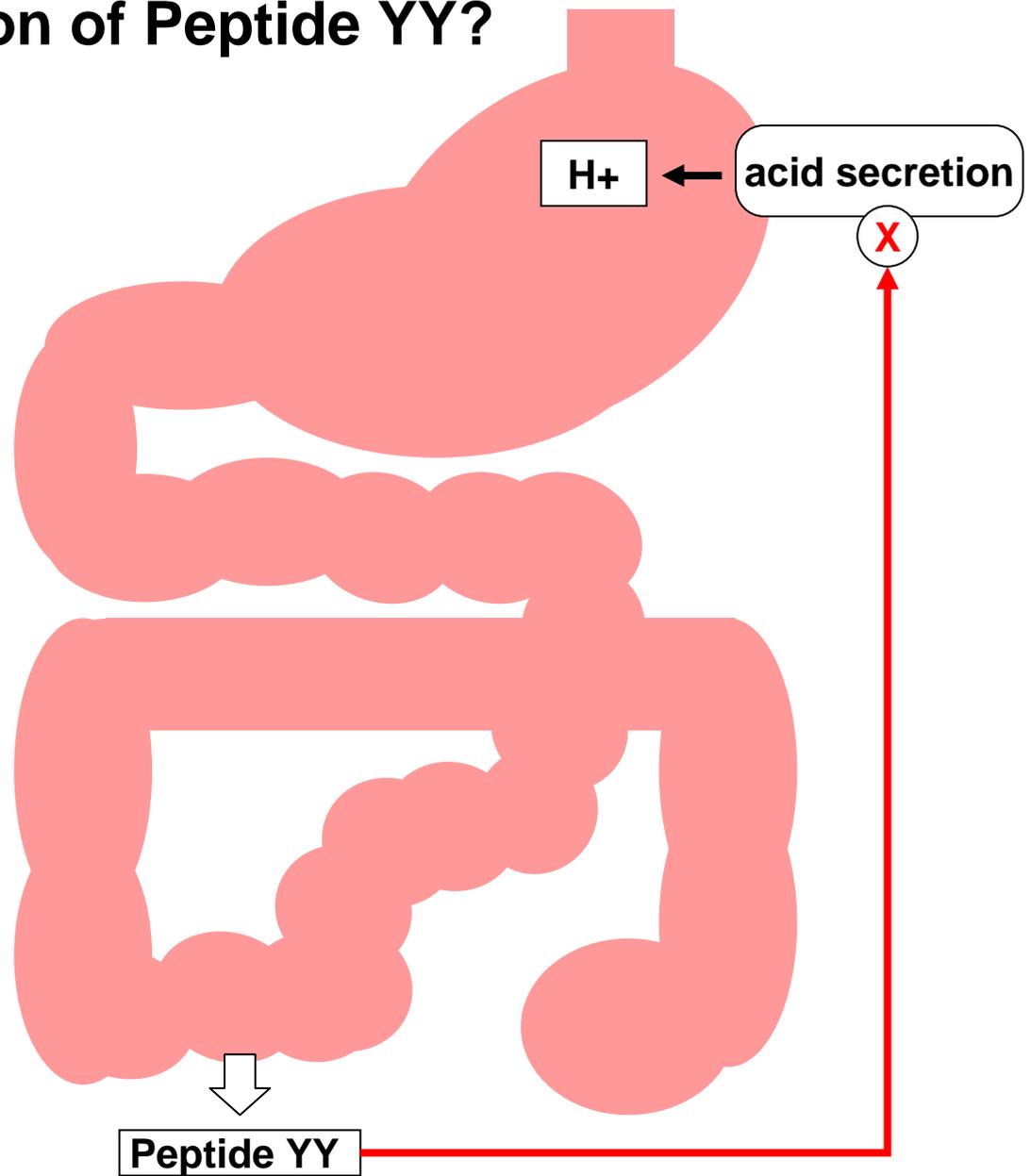
What is the function of Peptide YY?



Peptide YY

What is the function of Peptide YY?

- **Inhibits acid secretion (“ileal brake”)**



What is the composition of bile?

What is the composition of bile?

- **80% bile salts**
- **15% lecithin**
- **5% cholesterol**

What three changes in bile lead to the formation of stones?

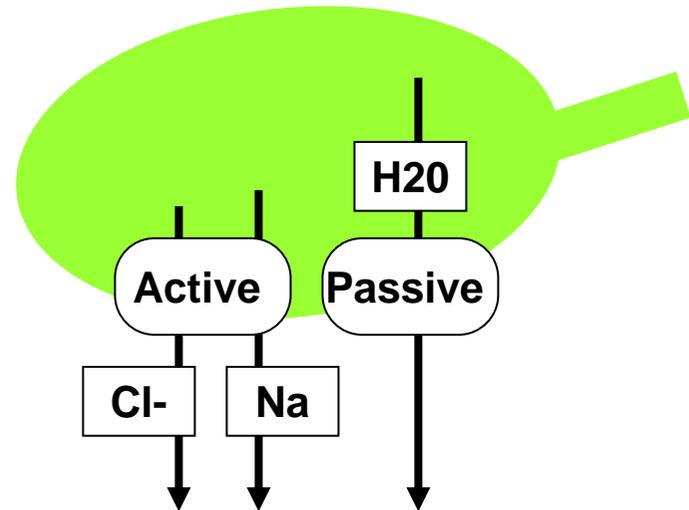
What three changes in bile lead to the formation of stones?

1.  salts
2.  lecithin
3.  cholesterol

How does the gallbladder concentrate bile?

How does the gallbladder concentrate bile?

- **Active** reabsorption of Na, Cl, then H₂O follows



How many grams is the bile pool?

How many grams is the bile pool?

- 5 grams

How often is the bile pool recycled?

How often is the bile pool recirculated?

- **Every 4 hours**

What % of the bile pool do we lose every day?

What % of the bile pool do we loose every day?

- **10% (.5 grams)**

What are the two primary bile acids?

What are the two primary bile acids?

Primary

1. **Cholic acid**
2. **Chenodeoxycholic acid**

Secondary

1. **Deoxycholic acid**
2. **Lithocholic acid**

What are the two secondary bile acids?

What are the two secondary bile acids?

Primary

1. **Cholic acid**
2. **Chenodeoxycholic acid**

Secondary

1. **Deoxycholic acid**
2. **Lithocholic acid**

Where do secondary bile acids come from?

Where do secondary bile acids come from?

- **Formed by intestinal bacteria**

What is the length of the life cycle of interdigestive motility?

What is the length of the life cycle of interdigestive motility?

- **90 minutes cycles**
 - **from stomach to terminal ileum**

What are the four steps of interdigestive motility?

What are the four steps of interdigestive motility?

- **Phase I: quiescence**
- **Phase II: gallbladder contraction**
- **Phase III: peristalsis**
- **Phase IV: subsiding electric activity**

What is the key stimulatory hormone for interdigestive motility?

What is the key stimulatory hormone for interdigestive motility?

- **Motilin**

What is the prokinetic mechanism of erythromycin?

What is the prokinetic mechanism of erythromycin?

- **Stimulates motilin receptors**

Where is the majority of Na and H₂O absorbed in the bowel?

Where is the majority of Na and H₂O absorbed in the bowel?

- **Jejunum absorbs most Na and H₂O**
 - **(paracellular) because it is more permeable than the ileum**

Flashcard Instructions

MOUSE

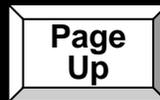
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



What is the anterior to posterior relationship the four items?

Subclavian vein

Phrenic nerve

Anterior scalene

Subclavian artery

What is the anterior to posterior relationship the four items?

Anterior

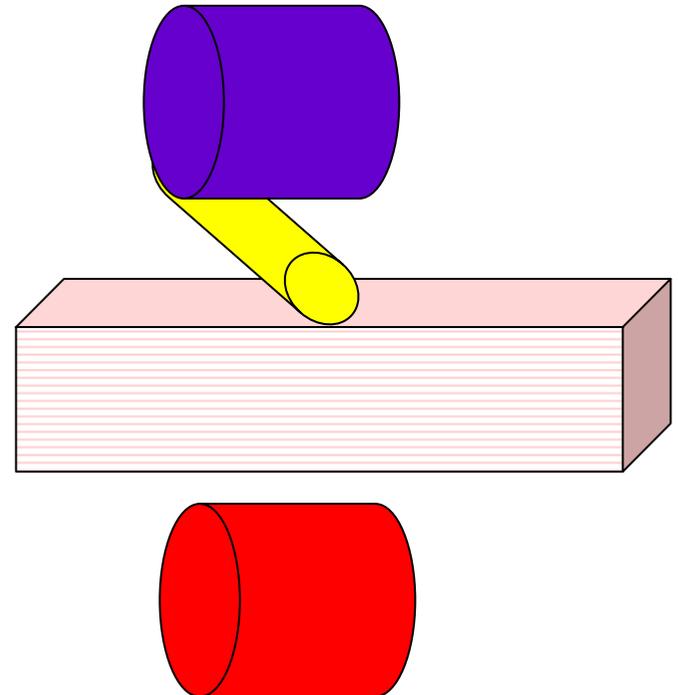
Subclavian vein

Phrenic nerve

Anterior scalene

Subclavian artery

Posterior



What bug causes parotitis?



What bug causes parotitis?

- *Staph*

Who often gets parotitis?

Who often gets parotitis?

- Dehydrated
- Elderly
- Mumps



What is the treatment for parotitis?

What is the treatment for parotitis?

- **Antibiotics**
- **Drainage if abscess not improving**

What is a Torus?



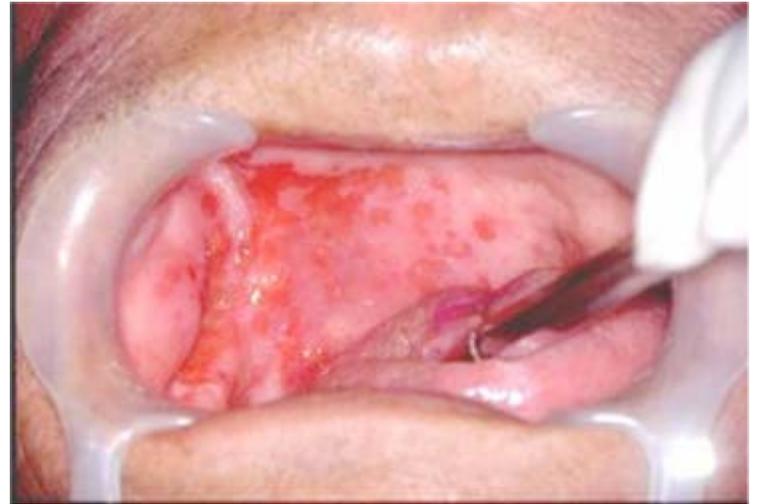
What is a Torus?

- **Painless mass on roof of the mouth**
 - **Bony exostosis**
 - **midline of palate**

What is worse, erythroplakia or leukoplakia?

What is worse, erythroplakia or leukoplakia?

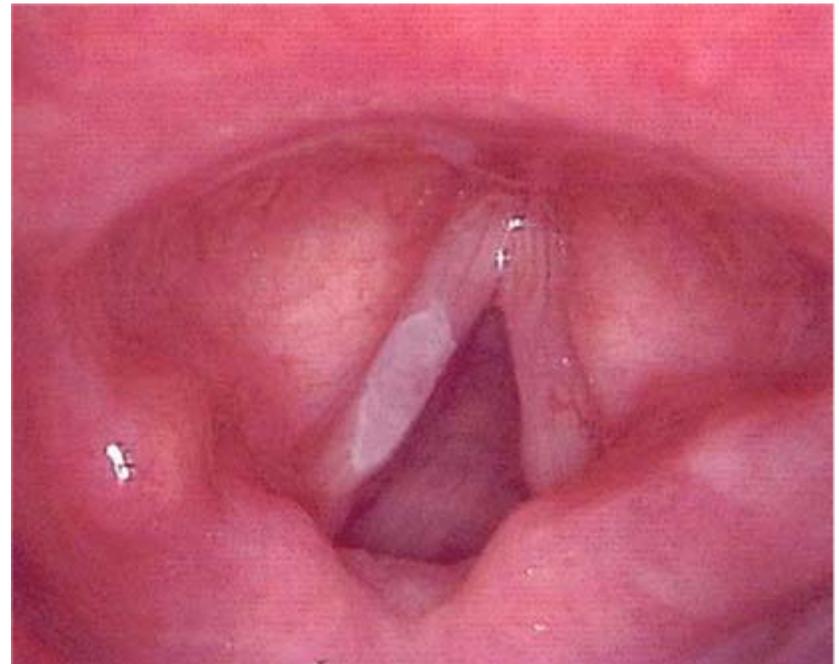
- **Erythroplakia**
 - **premalignant**



What is the treatment for leukoplakia?

What is the treatment for leukoplakia?

- **Retinoids**
 - **Can reverse leukoplakia and reduce chance of a 2nd head or neck malignancy**



What is Stage I and II H&N SCCa?

What is Stage I and II H&N SCCa?

- **< 4 cm**
- **No nodes**



What is the treatment for Stage I and II H&N SCCa?



What is the treatment for Stage I and II H&N SCCa?

- **Single modality**
 - **either surgery or RT**



**What is the treatment for Stage III and IV H&N
SCCa?**

What is the treatment for Stage III and IV H&N SCCa?

- **Combined modality**
 - **surgery and RT**



What Head and Neck CA is associated with EBV?

What Head and Neck CA is associated with EBV?

- **Nasopharyngeal SCCa**

How does nasopharyngeal SCCa present?



How does nasopharyngeal SCCa present?

- **50% present late as a neck mass**



Where do nasopharyngeal SCCa drain?

Where do nasopharyngeal SCCa drain?

- **Posterior neck nodes**

How do you treat Glottic Ca if the cords are NOT fixed?



How do you treat Glottic Ca if the cords are NOT fixed?

- **RT**

How do you treat Glottic Ca if the cords are fixed?

How do you treat Glottic Ca if the cords are fixed?

- **Surgery and RT**

What is the most common type of lip cancer?

What is the most common type of lip cancer?

- **99% epidermoid carcinoma**



What lip is most commonly affected?

What lip is most commonly affected?

- **Lower**
 - **due to sun exposure**



How do you treat lip cancer if it is node negative?



How do you treat lip cancer if it is node negative?

- **Resect**
 - **Primary closure if $< \frac{1}{2}$ of lip**
 - **If $> \frac{1}{2}$ then flaps**



How do you treat lip cancer if it is node positive?



How do you treat lip cancer if it is node positive?

- **Radical neck dissection**

How do you treat tongue CA?



How do you treat tongue CA?

- Usually surgery and RT



What syndrome increases the risk of tongue CA?



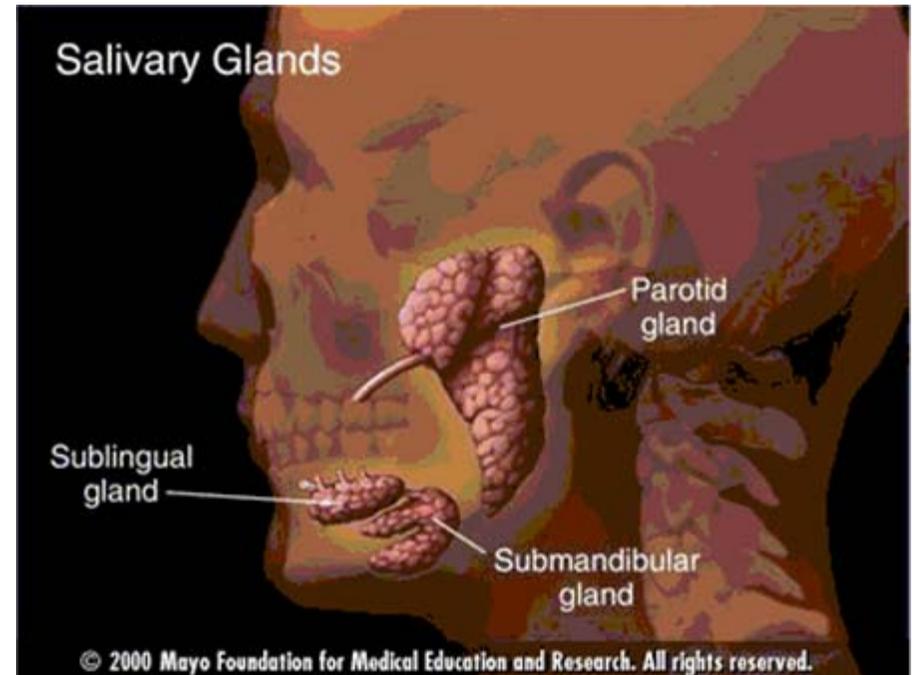
What syndrome increases the risk of tongue CA?

- **Plummer Vinson**
 - **dysphagia**
 - **spoon fingers**
 - **anemia**

Tumor in larger salivary glands is more likely to be benign or malignant?

Tumor in larger salivary glands is more likely to be benign or malignant?

- **Benign**
 - **think parotid**
 - 1. Pleomorphic adenoma**
 - 2. Warthin's tumor**

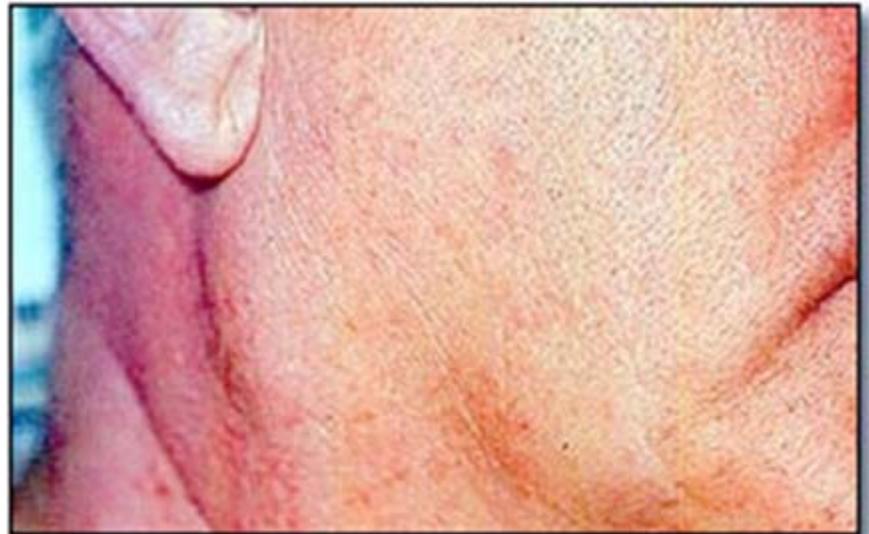


What is the most common malignant salivary tumor overall?

What is the most common malignant salivary tumor overall?

- **Mucoepidermoid Carcinoma**

Mucoepidermoid carcinoma



What is the most common malignant salivary tumor of the submandibular / minor glands?



What is the most common malignant salivary tumor of the submandibular / minor glands?

- **Adenoid cystic carcinoma**

What is the #1 benign tumor?

What is the #1 benign tumor?

- **Pleomorphic adenoma**
 - **mixed parotid tumor**

How do you treat a benign pleomorphic adenoma?



How do you treat a benign pleomorphic adenoma?

- **Superficial parotidectomy (to spare CN 7)**
 - **do not enucleate**

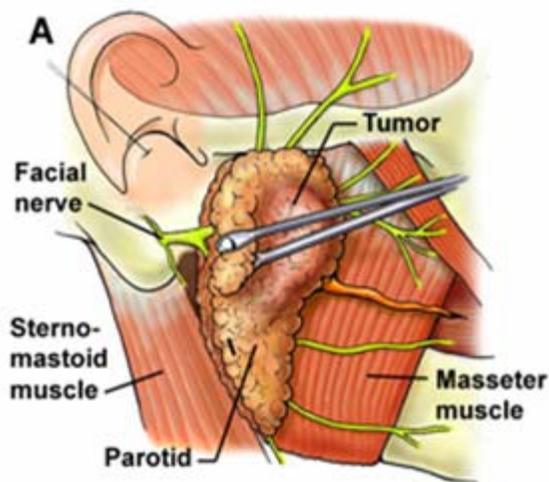


Figure A - The posterior border of the gland is exposed first to uncover the trunk of the facial nerve

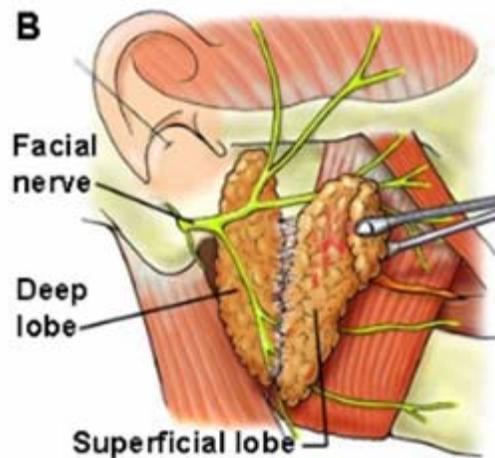


Figure 3b - The superficial lobe containing the tumor is dissected off of the facial nerve.

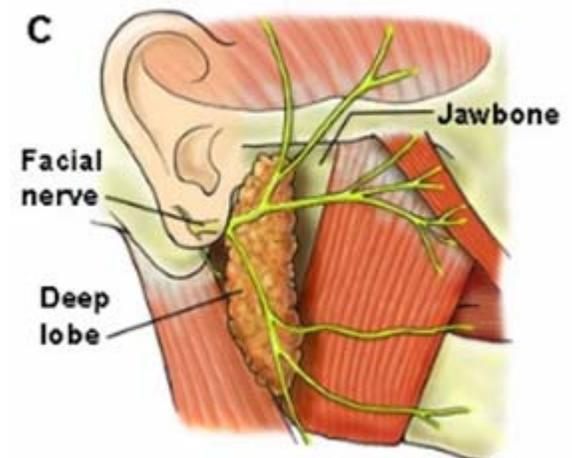
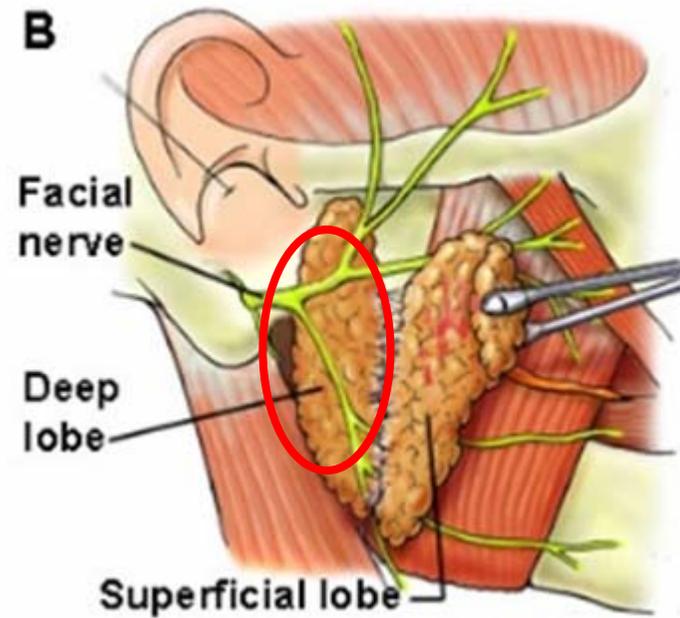


Figure 3C - The superficial lobe is removed. The deep lobe is seen along the posterior border of the jawbone

How do you treat a malignant-low grade pleomorphic adenoma?

How do you treat a malignant-low grade pleomorphic adenoma?

- **Total parotidectomy**
 - **With CN 7**



How do you treat a anaplastic (high grade) pleopmorhic adenoma?

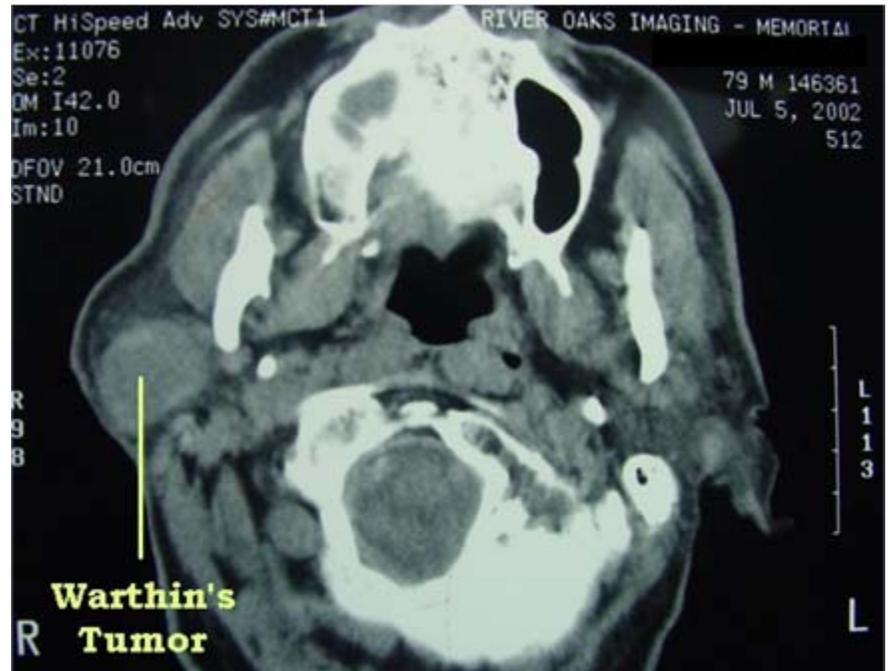
How do you treat a anaplastic (high grade) pleopmorhic adenoma?

- **Radical neck dissection**

What is the #2 benign salivary tumor?

What is the #2 benign salivary tumor?

- **Warthin's tumor
(adenolymphoma)**



What % of Warthin's tumors are bilateral?

What % of Warthin's tumors are bilateral?

- **10% bilateral**



What % of bilateral parotid tumors are Warthin's tumor?

What % of bilateral parotid tumors are Warthin's tumor?

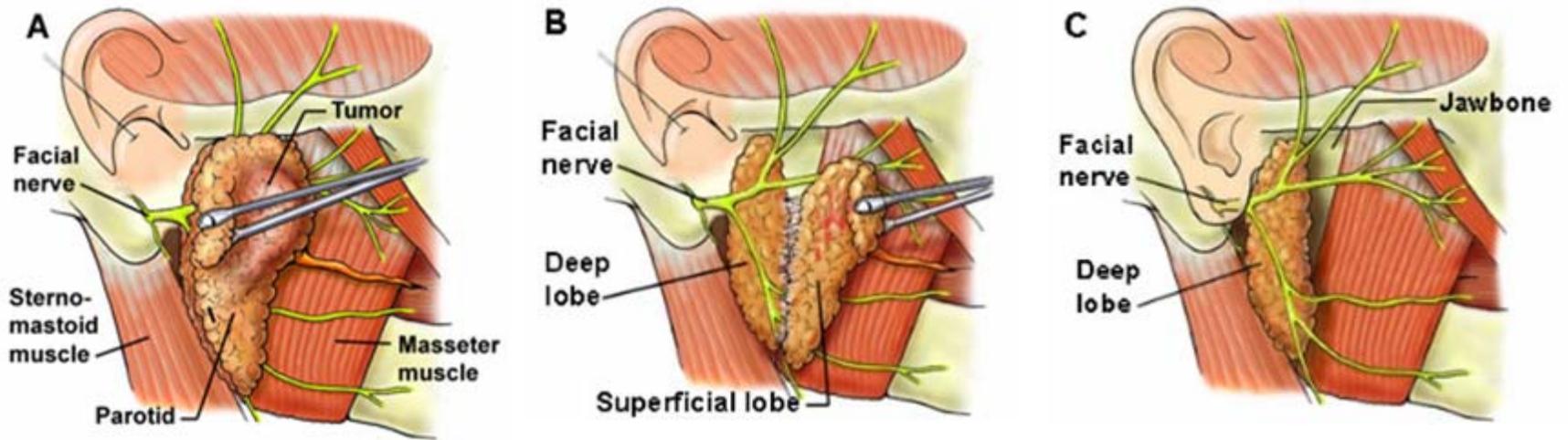
- **70%**

What is the treatment for a Warthin's tumor?



What is the treatment for a Warthin's tumor?

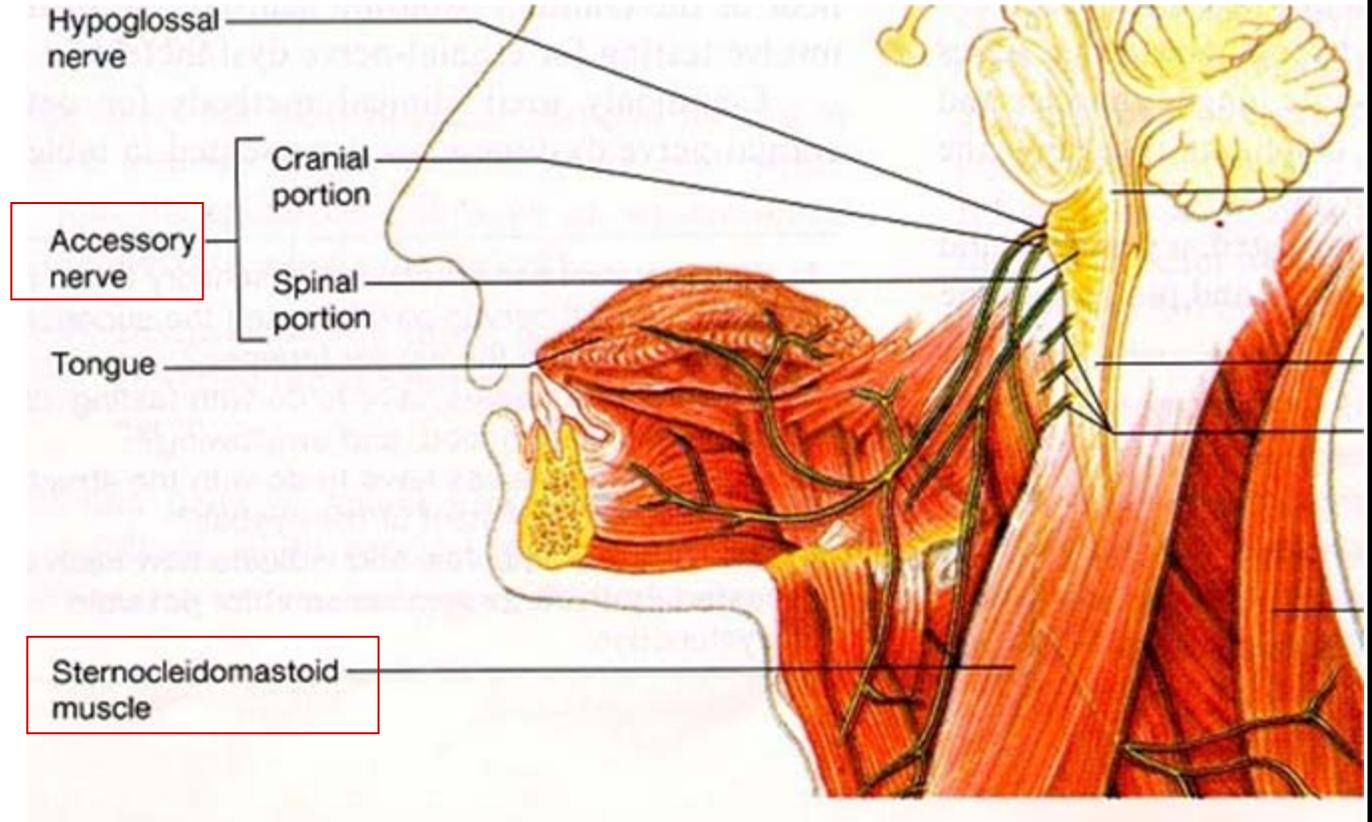
- **Superficial parotidectomy**



What Nerves, vessels, muscles, and glands does a radical neck dissection take?

What Nerves, vessels, muscles, and glands does a radical neck dissection take?

1. **Submandibular gland**
2. **CN XI**
3. **IJ**
4. **SCM**



What cause the greatest morbidity with a radical neck dissection?

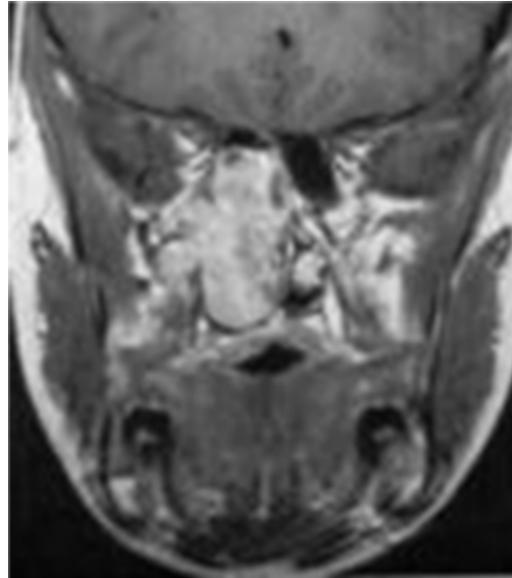
What cause the greatest morbidity with a radical neck dissection?

- **CN XI (Accessory)**

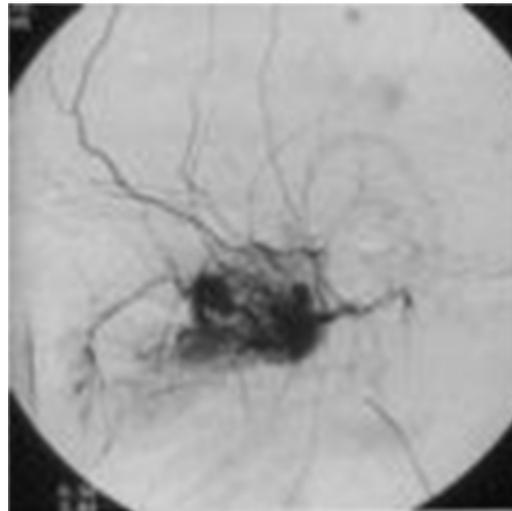
How does a Juvenile Nasopharyngeal Angifibroma present?

How does a Juvenile Nasopharyngeal Angiofibroma present?

- **A benign tumor that presents in teen males with:**
 - **obstruction**
 - **epistaxis**



(fig. 2) demonstrates inhomogeneous enhancement of the tumor, extending into the right sphenoid sinus and right sphenopalatine foramen.

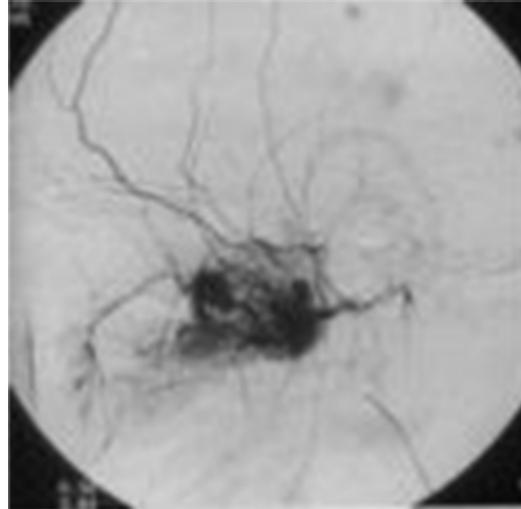


(fig. 3) displays the reticular configuration of the small tumor vessels and intense, homogeneous blush.

What is the treatment for Juvenile Nasopharyngeal Angiofibroma?

What is the treatment for Juvenile Nasopharyngeal Angiofibroma?

- **Embolize**
 - **internal maxillary artery**
- **Then extirpate**

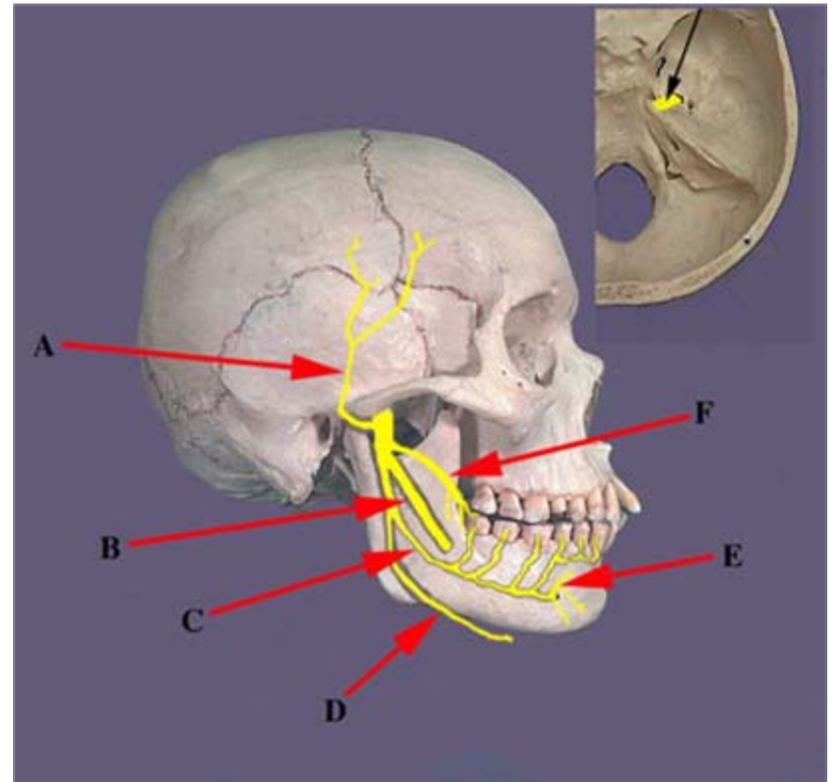


(fig. 3) displays the reticular configuration of the small tumor vessels and intense, homogeneous blush.

What is Frey's syndrome?

What is Frey's syndrome?

- Injury to auriculotemporal nerve
- Leads to gustatory sweating
 - crossed sweat/salivary glands



A. Auriculotemporal
B. Lingual
C. Inferior Alveolar
D. N. to the Mylohyoid
E. Mental
F. Buccal

What is the most common cause of massive bleeding from trach?



What is the most common cause of massive bleeding from trach?

- **Innominate artery**
 - **tracheo-innominate fistula**

How does a tracheo-innominate fistula usually present?

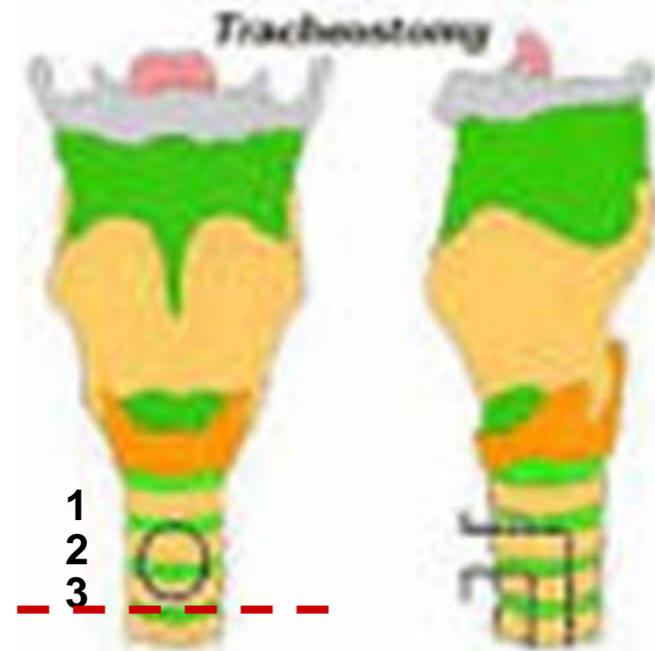
How does a tracheo-innominate fistula usually present?

- **small “heraldic” bleed**

How can you avoid making a tracheo-innominate fistula?

How can you avoid making a tracheo-innominate fistula?

- **Make tracheostomy no lower than 3rd tracheal ring**



Flashcard Instructions

MOUSE

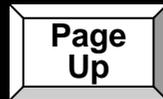
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



First
Slide



Previous
Slide



*Answer
or Next
Question*



Last
Slide

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.

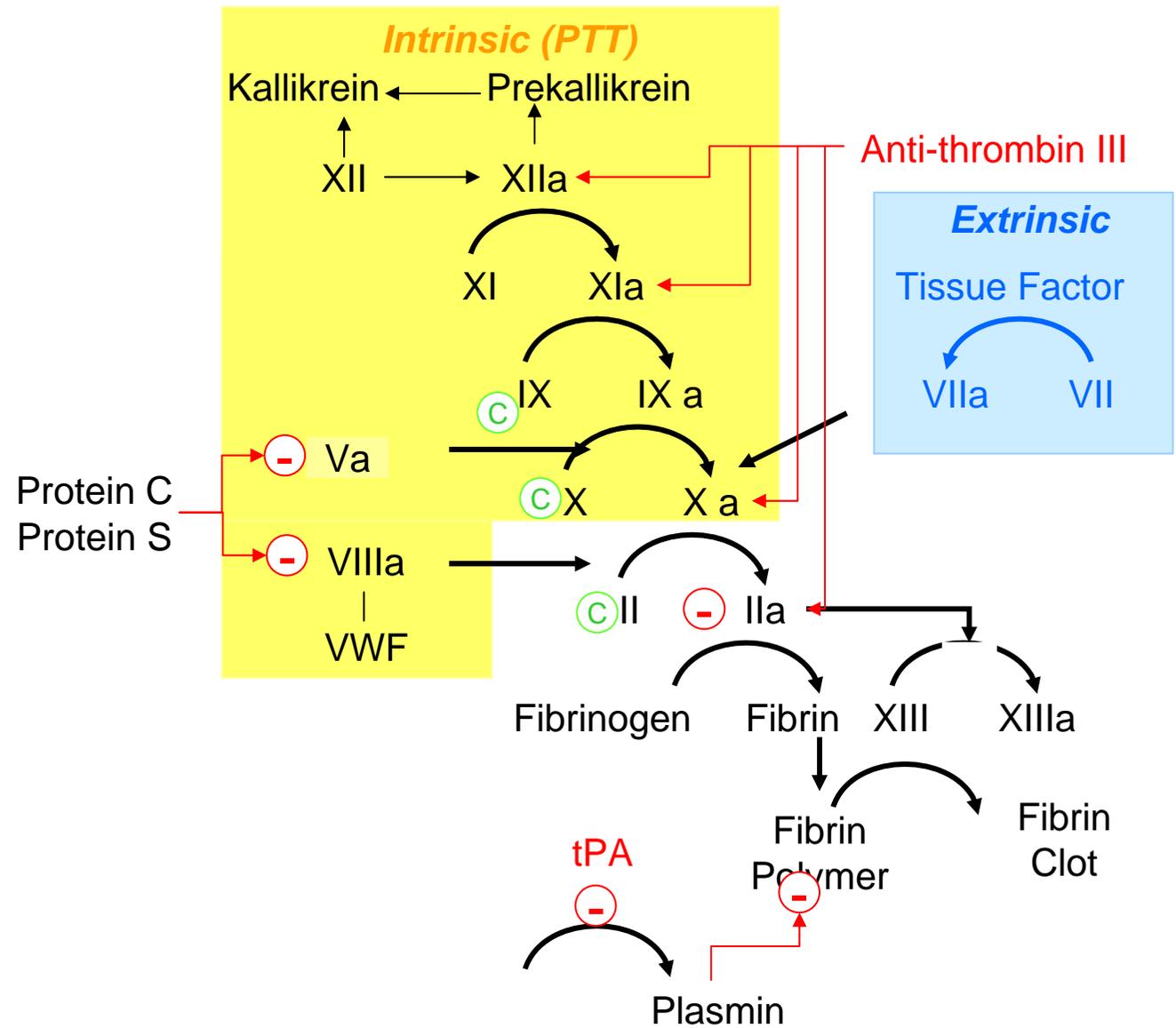


What lab value corresponds to the intrinsic pathway?



What lab value corresponds to the intrinsic pathway?

• **PTT**

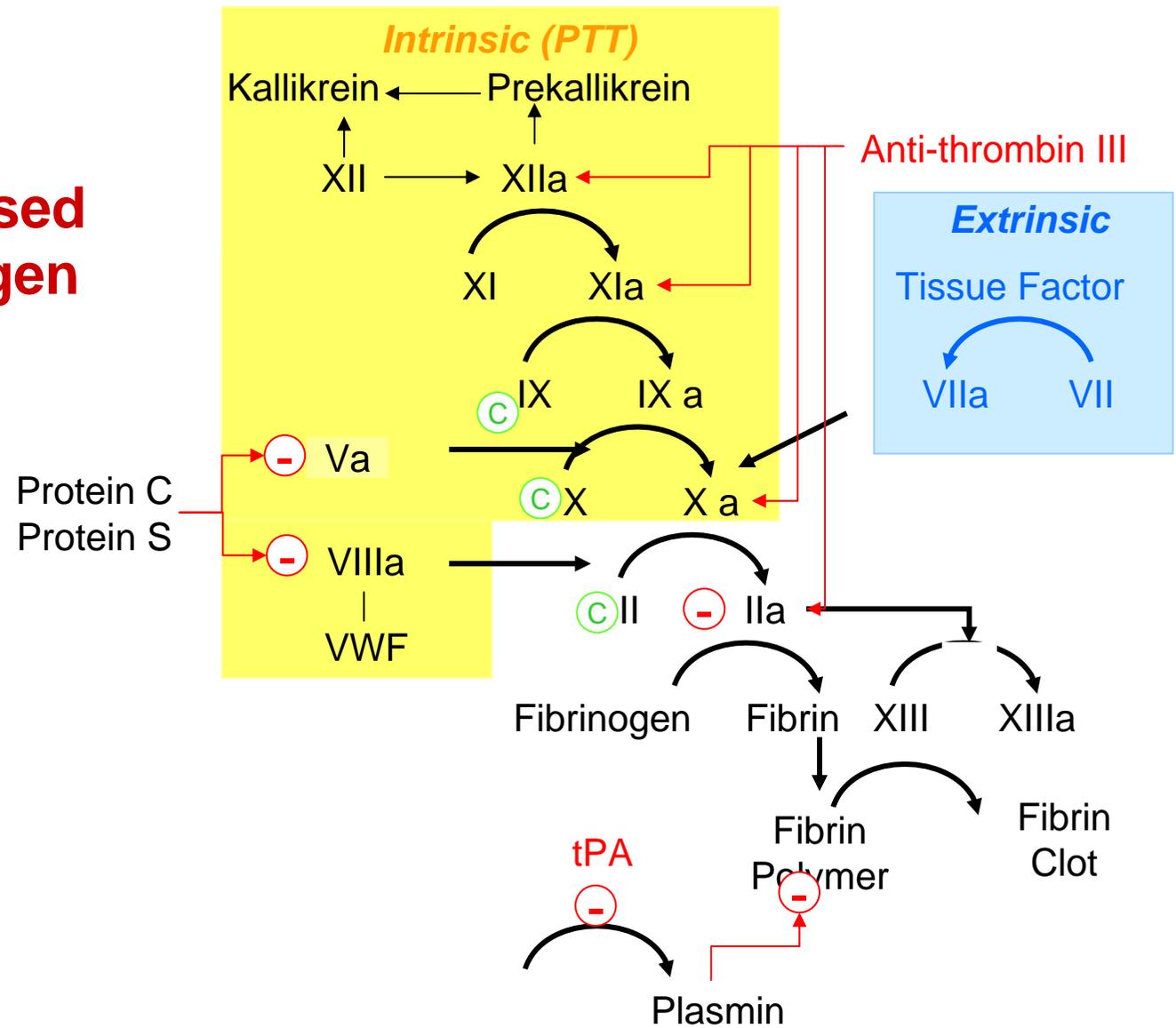


What two factors catalyze the intrinsic pathway?



What two factors catalyze the intrinsic pathway?

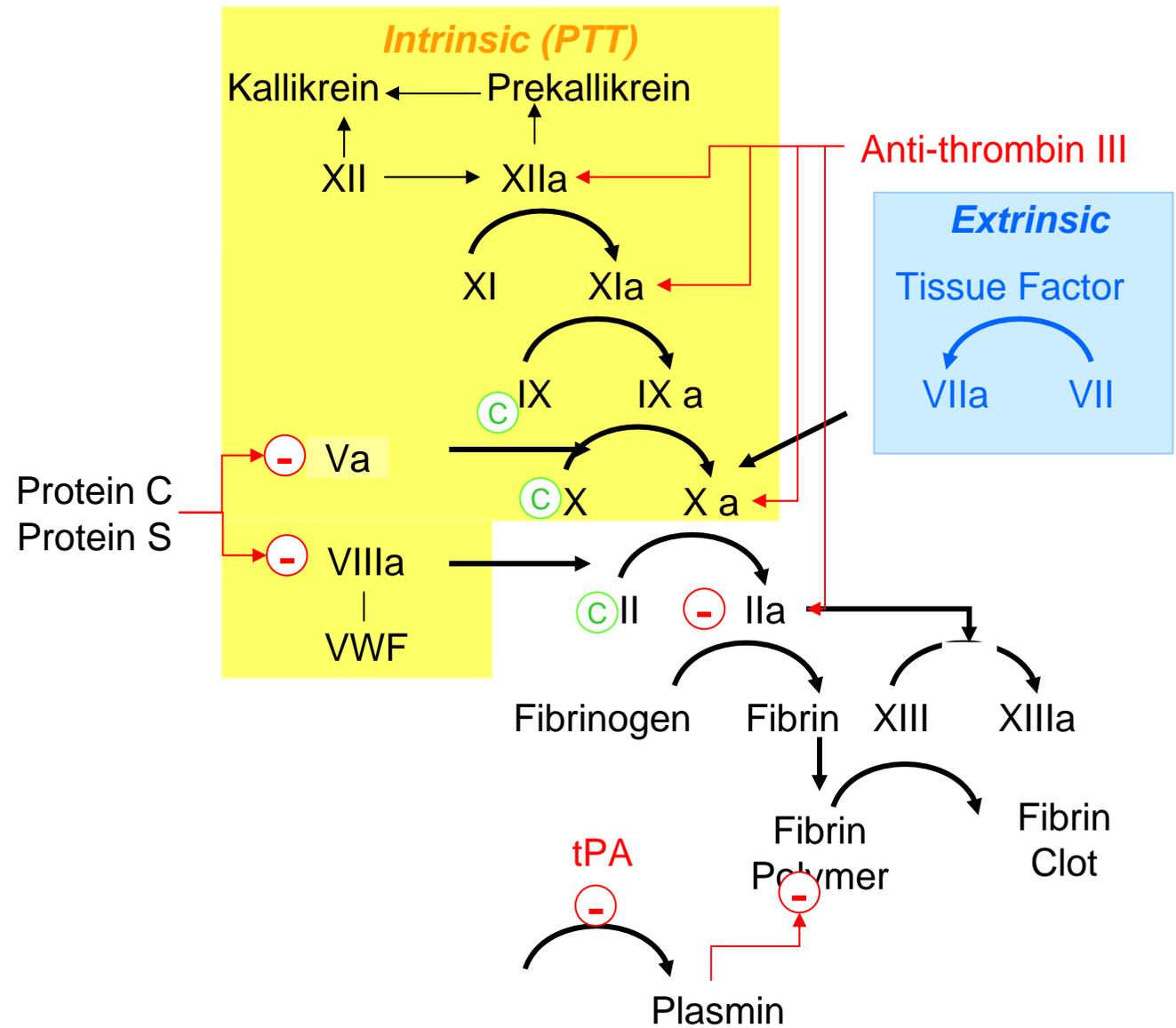
1. Exposed collagen
2. XII



What factor activates thrombin(II) in the intrinsic pathways?

What factor activates thrombin(II) in the intrinsic pathways?

• X

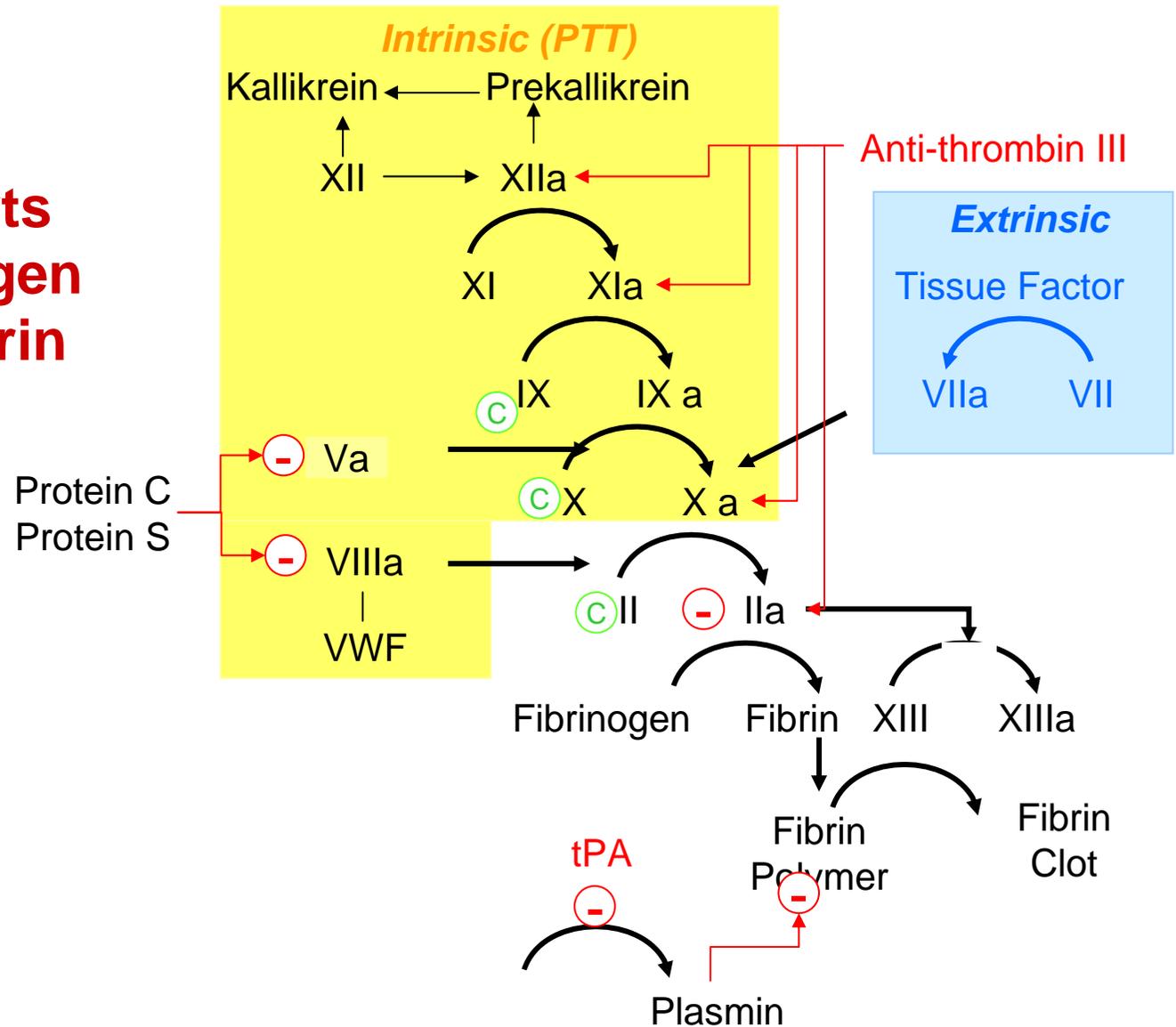


What is the function of active thrombin?



What is the function of active thrombin?

- **Converts fibrinogen into fibrin**

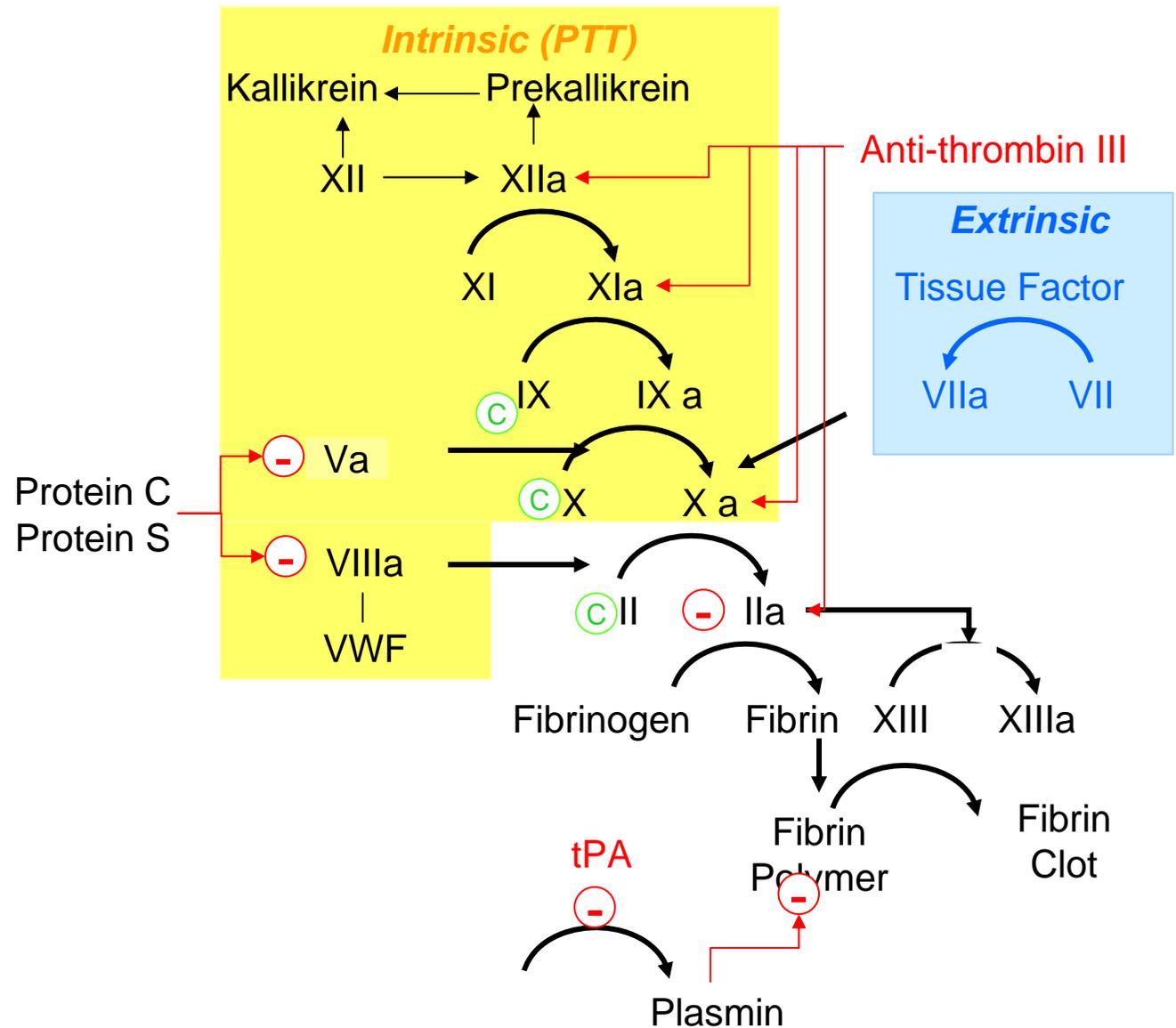


What lab value corresponds to the extrinsic pathway?



What lab value corresponds to the extrinsic pathway?

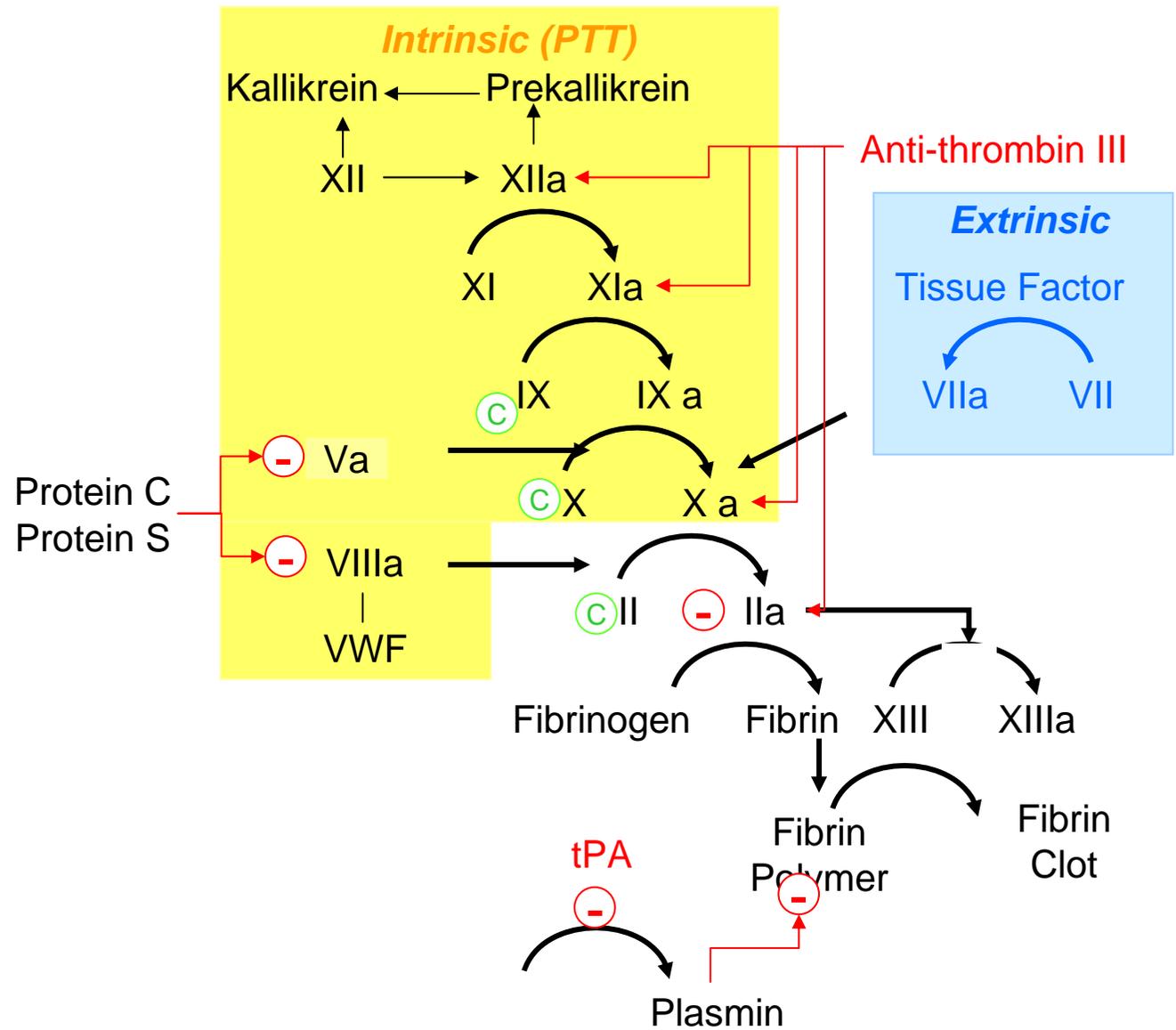
• **PT**



What factor is common to both pathways?

What factor is common to both pathways?

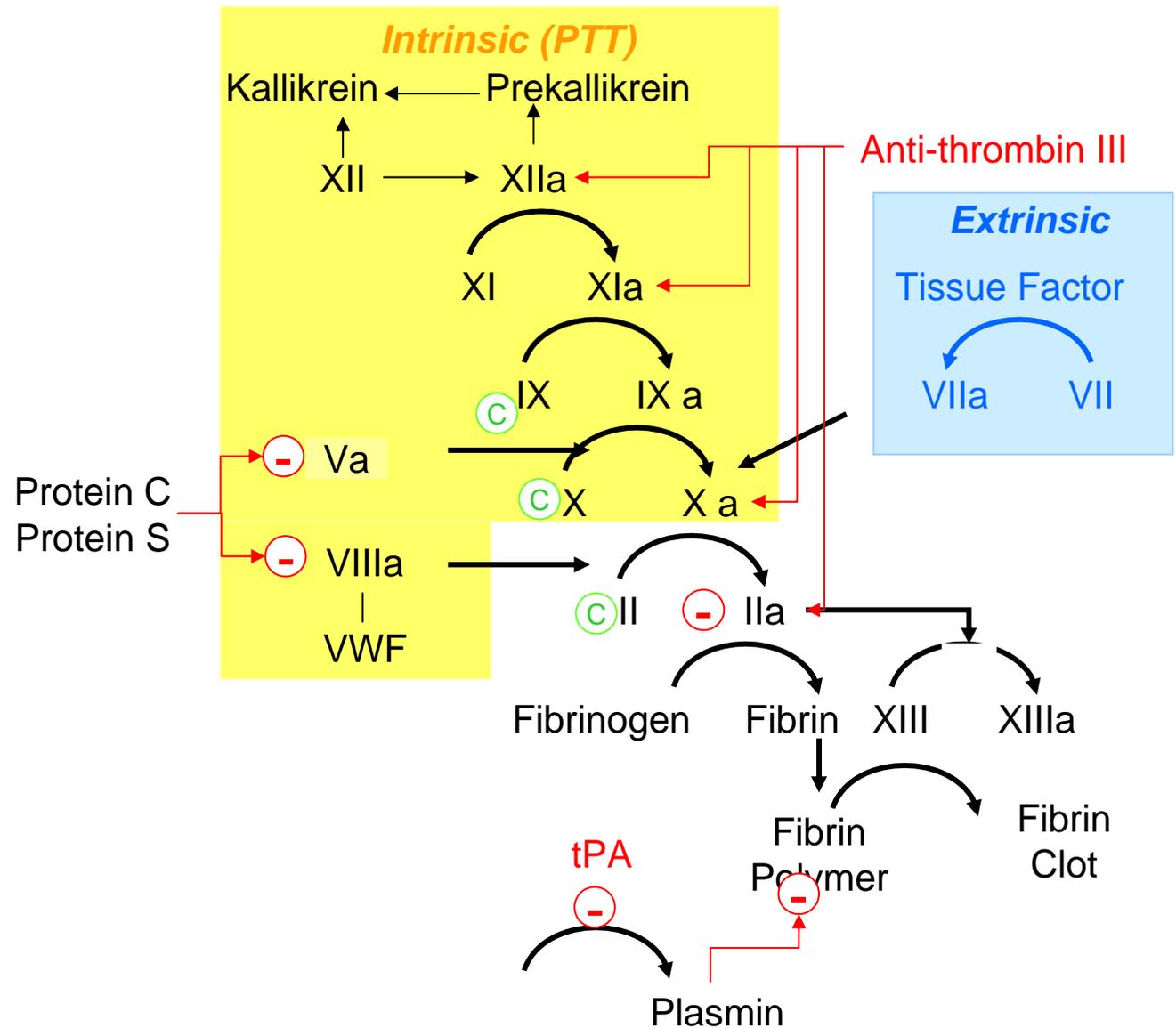
• X



What factor cross-links fibrin to form a plug?

What factor crosslinks fibrin to form a plug?

• XIII



What is the best lab to evaluate function of the liver?

What is the best lab to evaluate function of the liver?

- **PT**

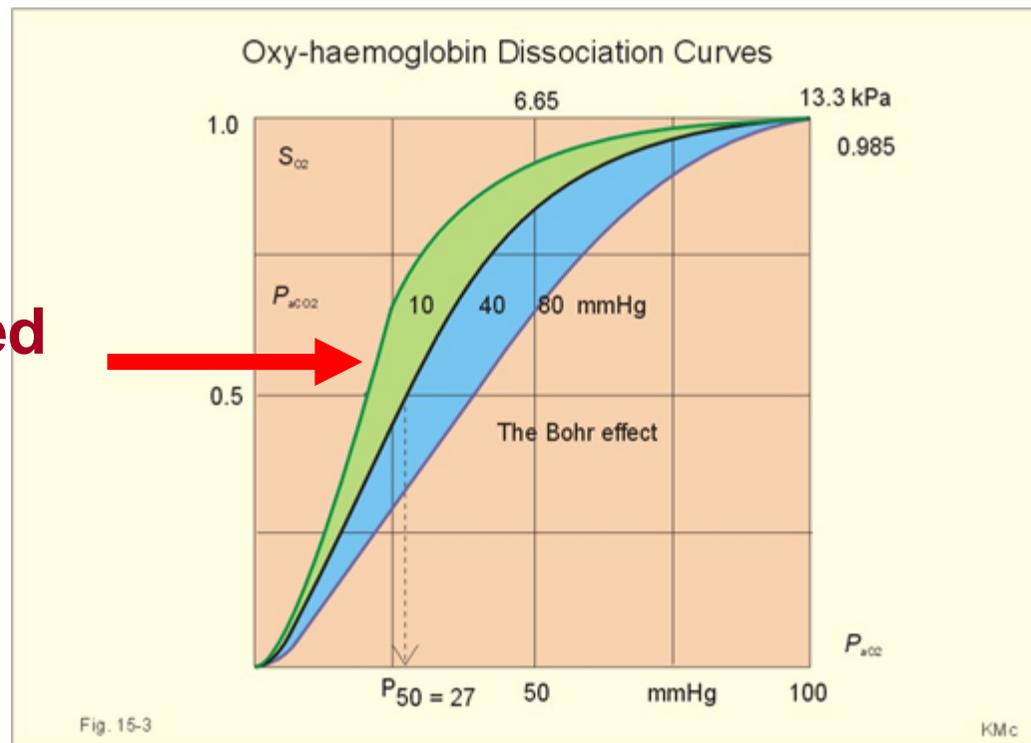
How is 2,3 DPG different in banked blood?



How is 2,3 DPG different in banked blood?

- It is low
 - leads to left shift (increased O₂ affinity)

banked
blood



What are the active ingredients of cryoprecipitate?

What are the active ingredients of cryoprecipitate?

1. **Fibrinogen**
2. **vwf**
3. **VIII**

What diseases is cryoprecipitate used?

What diseases is cryoprecipitate used?

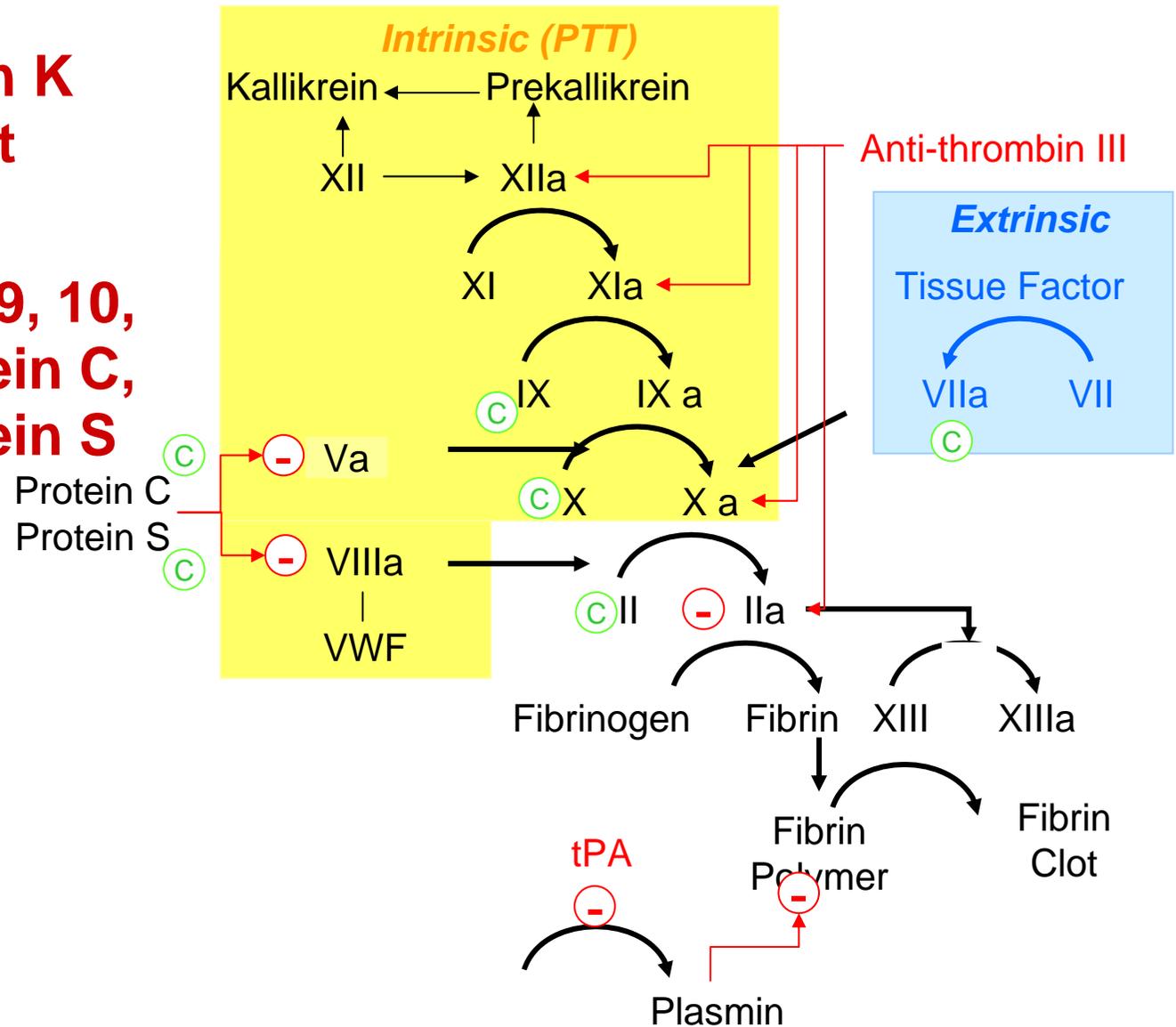
1. **VWD**
2. **Hemophilia A**
3. **DIC (if fibrinogen is low)**

What factors does coumadin inhibits?

What factors does coumadin inhibits?

- All vitamin K dependent factors**

- **2, 7, 9, 10, Protein C, Protein S**



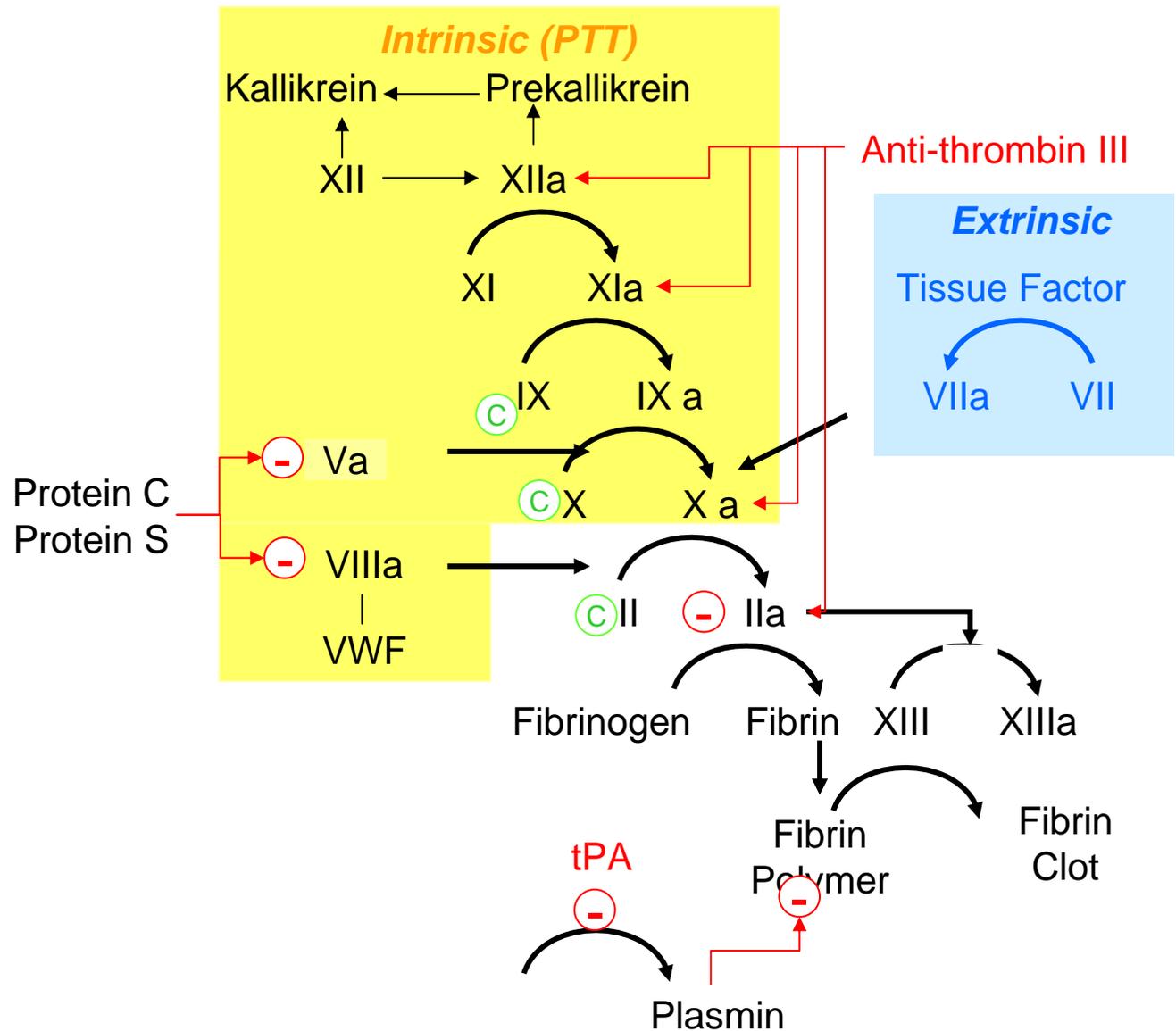
What is the function of Protein C?



What is the function of Protein C?

Anti-clot

- Degrades active V
- Degrades active VIII



What is the function of Protein S



What is the function of Protein S

- **Helps Protein C**
 - **anti-clot**



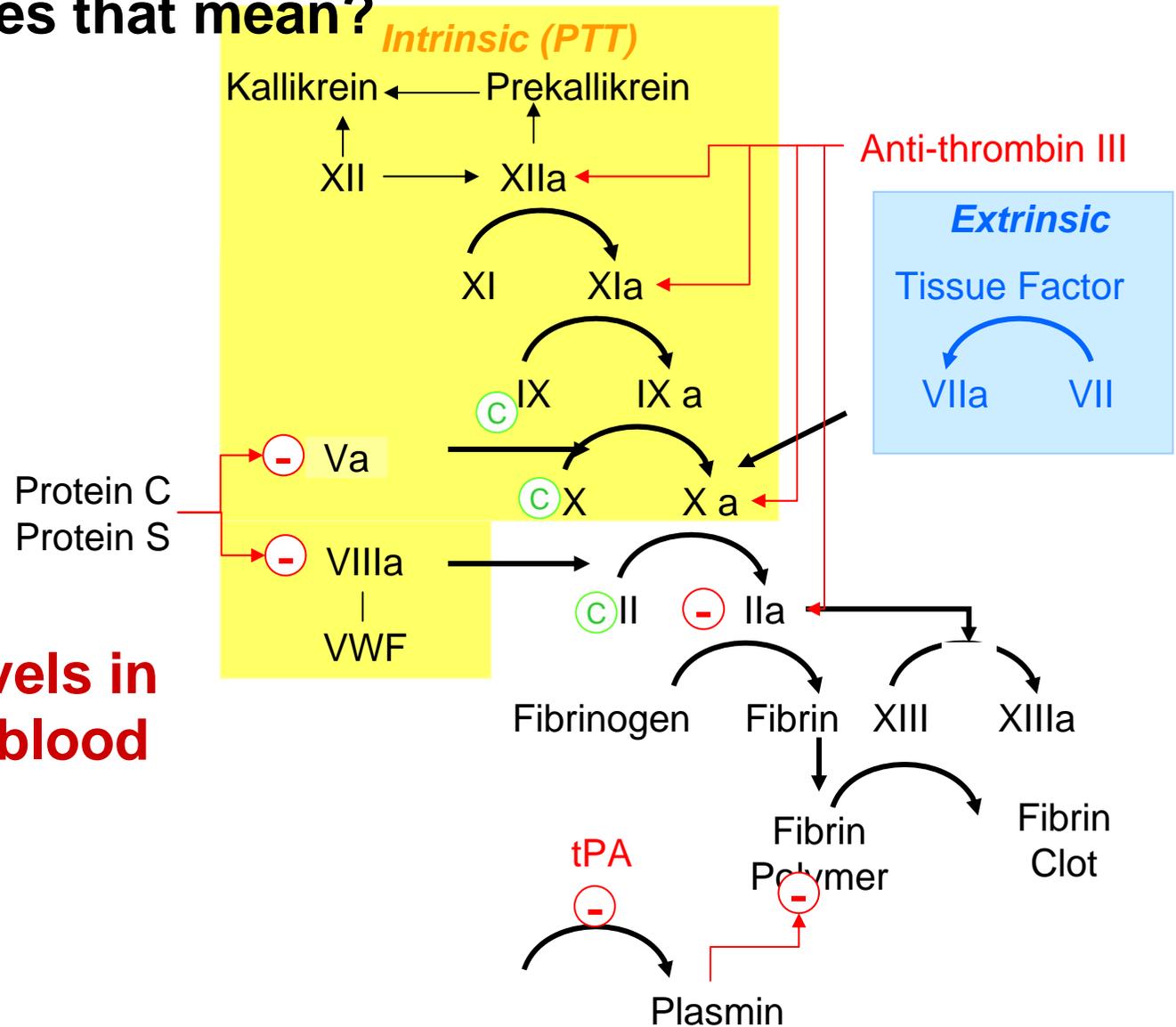
**Which factors are labile factors?
- What does that mean?**

Which factors are labile factors?

- What does that mean?

- V
- VIII

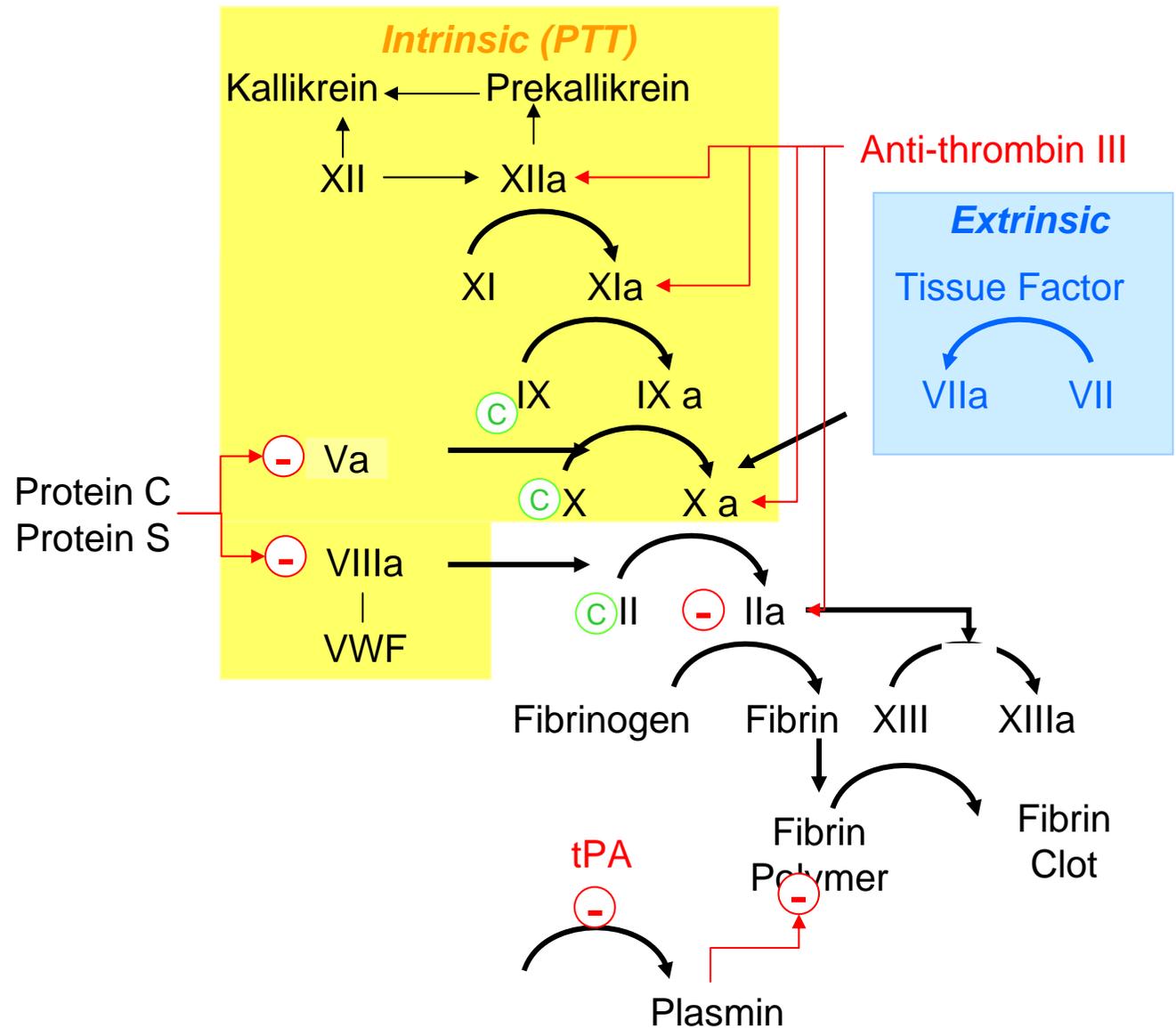
- Low levels in stored blood



What is the only clotting factor not made in the liver?

What is the only clotting factor not made in the liver?

• VIII



Where is factor VIII made?



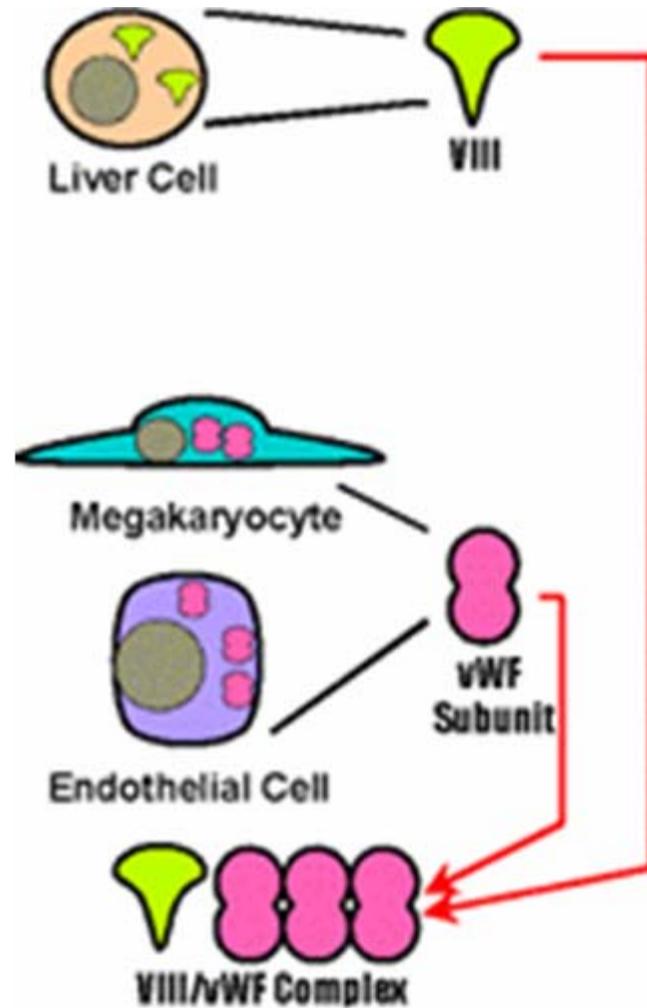
Where is factor VIII made?

- **Reticuloendothelial system**

What is the mechanism of VWF?

What is the mechanism of VWF?

- **Binds to Factor VIII and stabilizes**



What are three positive lab tests for Von Willebrands Disease?

What are three positive lab tests for Von Willebrands Disease?

- **Long PTT**
- **Long bleeding time**
- **positive ristocetin test**

What is the difference between Type I, Type III, and Type II Von Willebrand's disease?

What is the difference between Type I, Type II, and Type III Von Willebrand's disease?

- Type I and III have low amount of vwf
- Type II has poor quality vwf

Which VWD types respond to DDAVP?

Which VWD types respond to DDAVP?

- **Type I and III**

What is the mechanism of DDAVP?



What is the mechanism of DDAVP?

- **Causes release of wwf**
 - **increases function in Type I and III**
 - **increase non-functional in Type II**

What are the three indications of DDAVP?



What are the three indications of DDAVP?

- **VWD Type I, Type III**
- **Patients on ASA**
- **Patients with low platelets due to uremia**

What is the genetic transmission of VWD?

What is the genetic transmission of VWD?

- **All autosomal dominant**
 - **except Rosenthals's XI deficiency**



What is the only inherited coagulopathy with long bleeding time?

What is the only inherited coagulopathy with long bleeding time?

- **VWD**

What are treatments for VWF?

What are treatments for VWF?

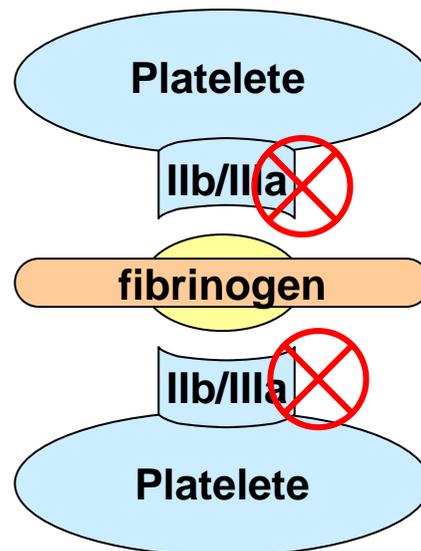
1. **Factor VIII**
2. **vwf**
3. **cryoprecipitate**



What is the molecular biology behind Glanzman's thrombasthenia?

What is the molecular biology behind Glanzman's thrombasthenia?

- Platelets have IIb/IIIa receptor deficiency
 - leads to decreased aggregation (anti-clot)



**Describe the molecular biology behind Bernard
Soulier Disease?**

Describe the molecular biology behind Bernard Soulier Disease?

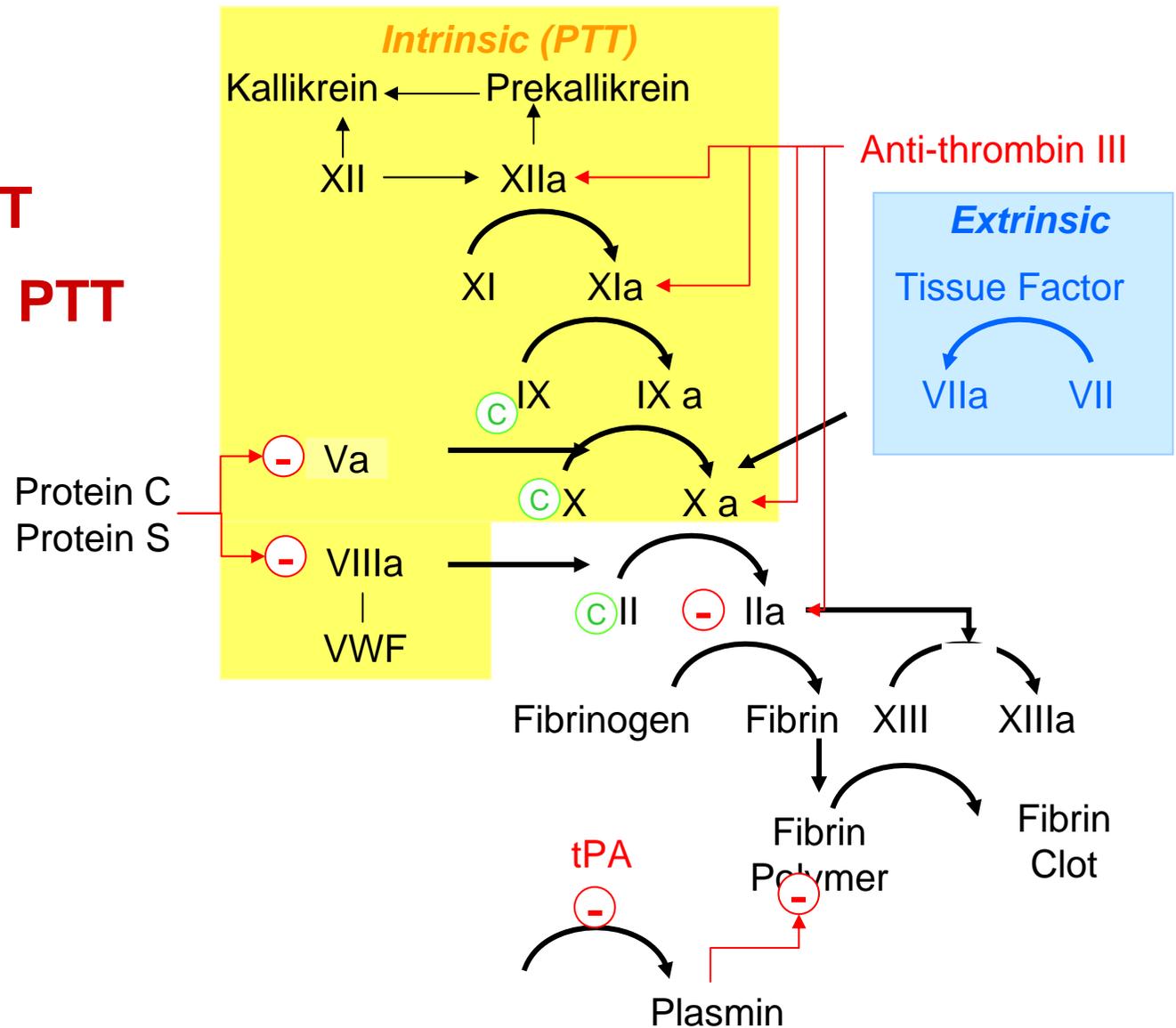
- **Ib deficiency, leading to decreased exposure to exposed collagen**
 - **anti-clot**

What is the impact of Factor VII deficiency on PTT and PT?



What is the impact of Factor VII deficiency on PTT and PT?

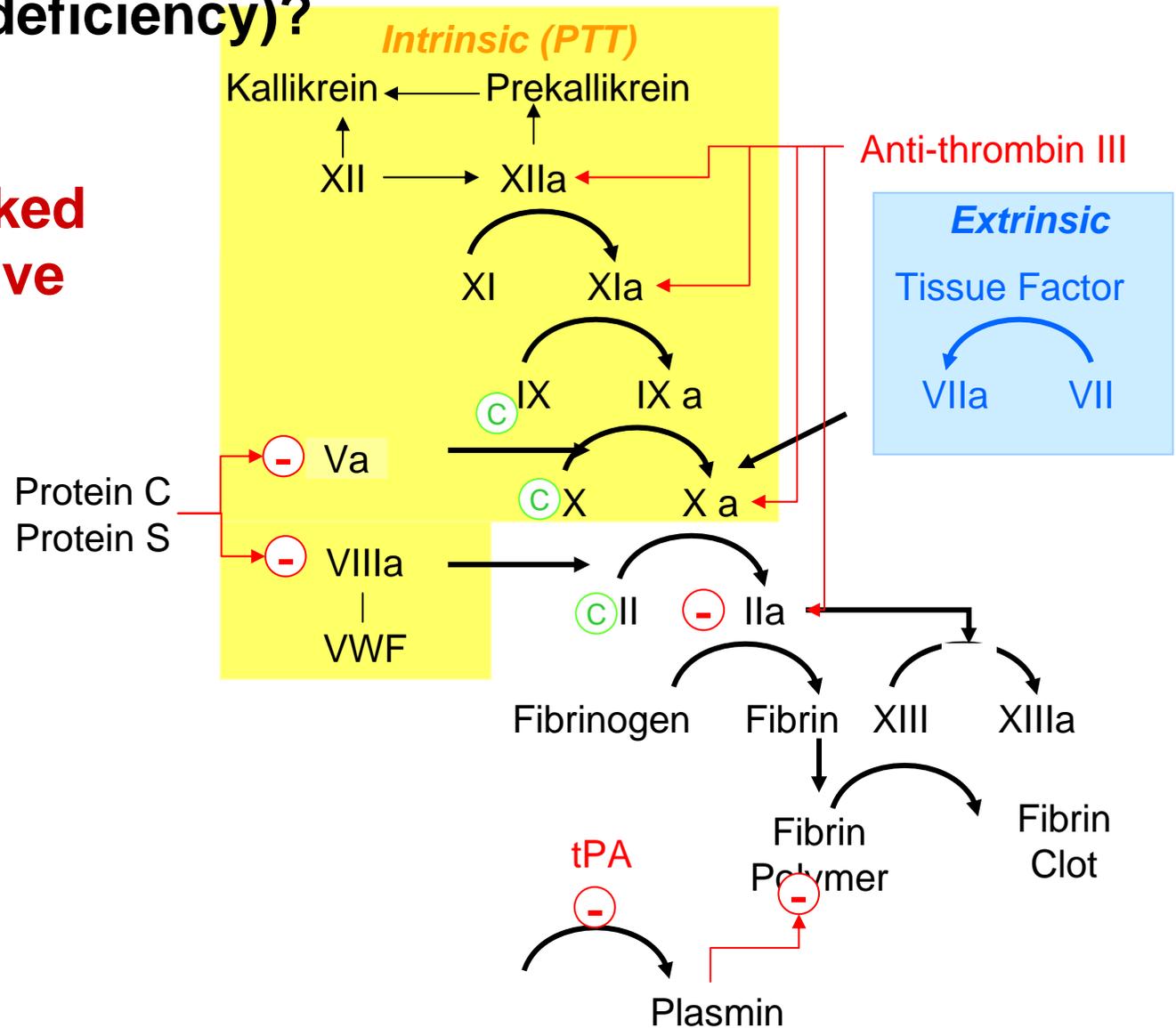
- Long PT
- Normal PTT



What is the genetic transmission of hemophilia A (Factor VIII deficiency)?

What is the genetic transmission of hemophilia A (Factor VIII deficiency)?

- **Sex linked recessive**



**What should be done preoperatively in hemophilia
A patients?**

What should be done preoperatively in hemophilia A patients?

- **Replace to 100% levels of Factor VIII**

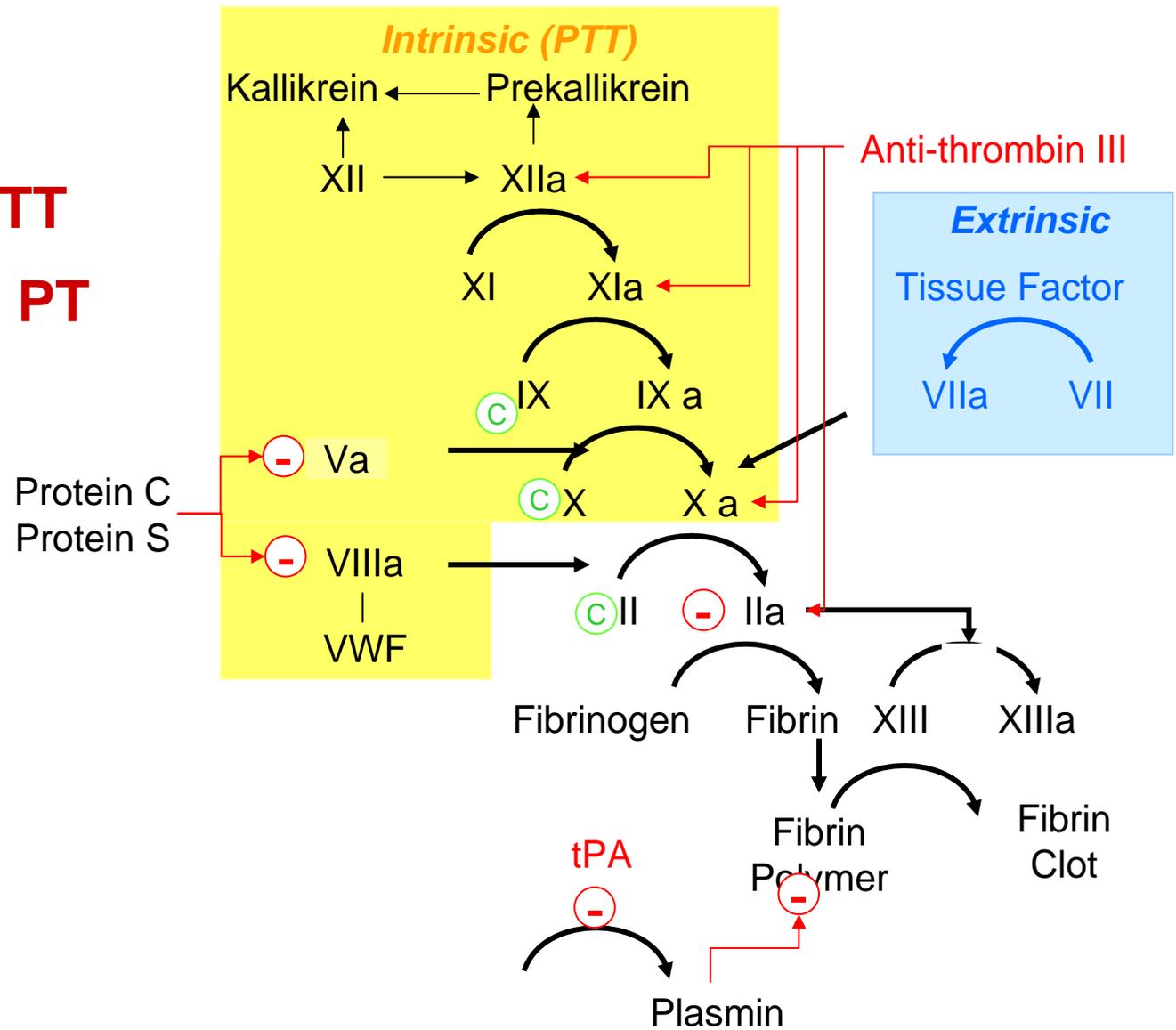


What is the impact of Factor VIII deficiency on PTT and PT?



What is the impact of Factor VIII deficiency on PTT and PT?

- Long PTT
- Normal PT



What doesn't a newborn with Hemophilia A bleed at circumcision?



What doesn't a newborn with Hemophilia A bleed at circumcision?

- **They have Factor VIII from mom**



How do you treat a hemophiliac joint?



How do you treat a hemophiliac joint?

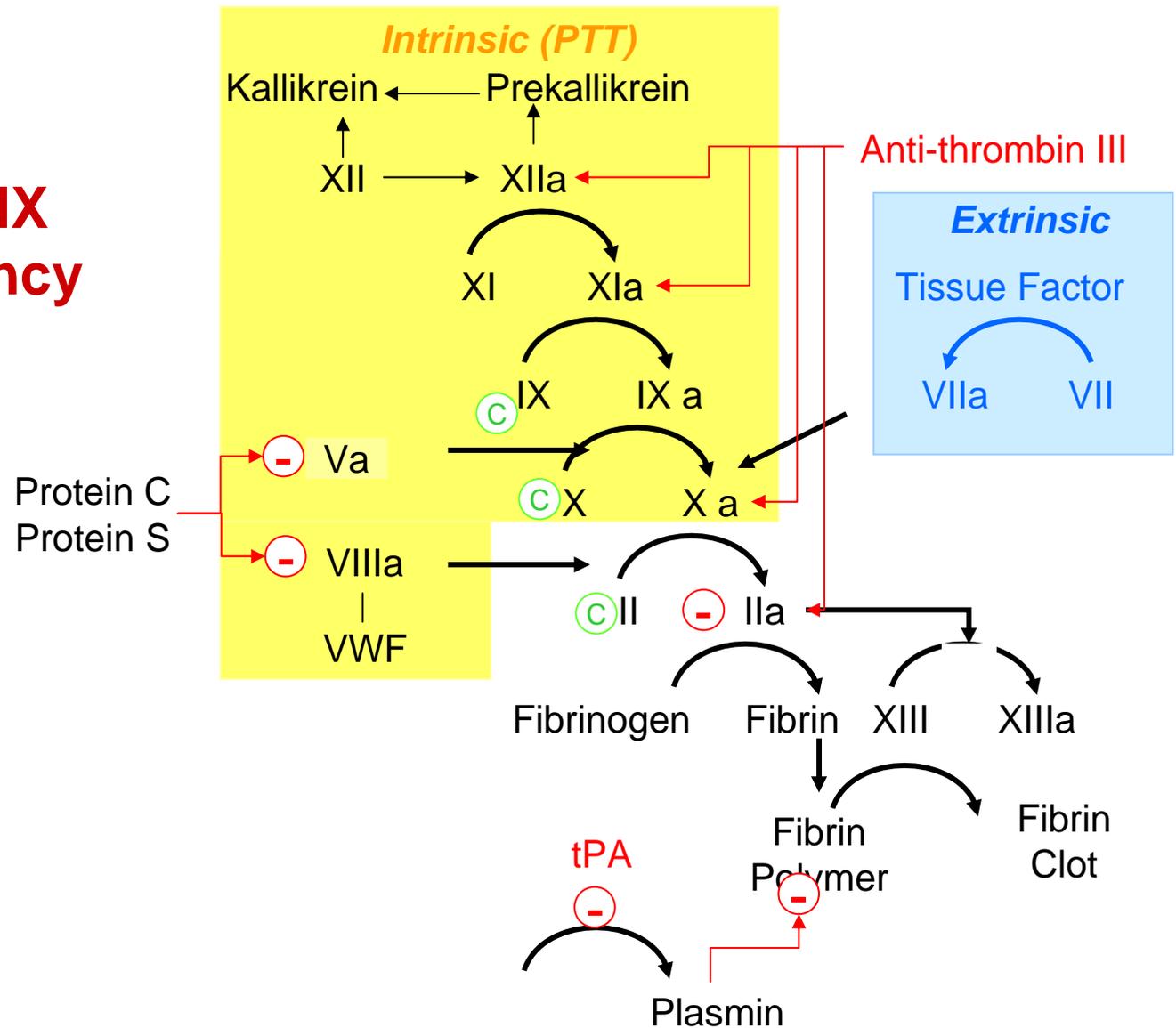
- 1. Give factor VIII**
- 2. Ice**
- 3. Range of motion exercise**

Do not aspirate!!

What is Hemophilia B (Christmas disease)?

What is Hemophilia B (Christmas disease)?

- **Factor IX deficiency**



What should be done preoperatively for Hemophilia B patients?

What should be done preoperatively for Hemophilia B patients?

- **Replace factor IX to 50% levels**

What are Lupus anticoagulants?

What are Lupus anticoagulants?

- **Antiphospholipid antibodies**



**What are two contradicting characteristics of
“Lupus anticoagulant”**

What are two contradicting characteristics of “Lupus anticoagulant”

- **Not always with lupus**
- **Generally procoagulant**

What are two diagnostic tests for Lupus anticoagulant?

What are two diagnostic tests for Lupus anticoagulant?

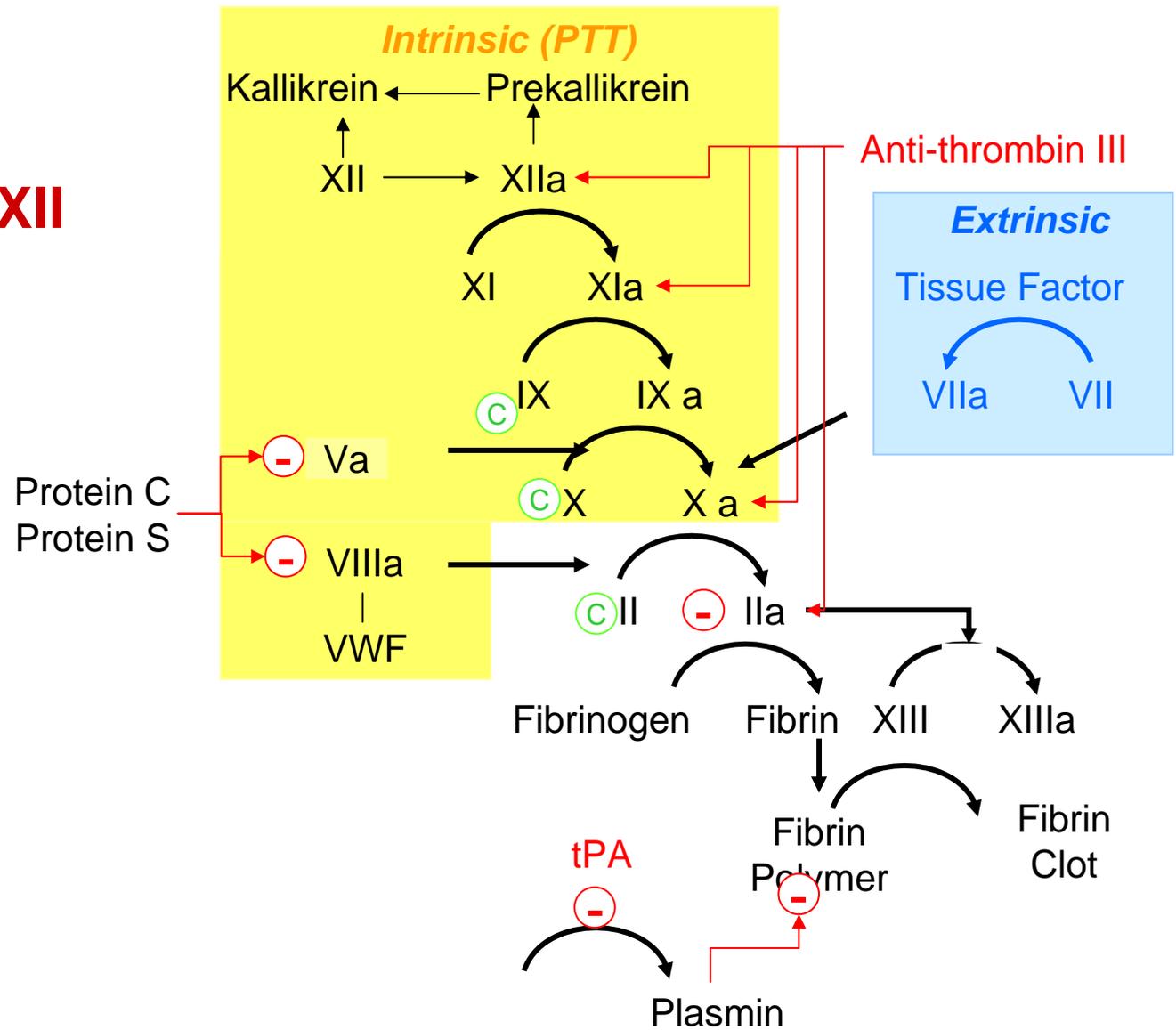
- **Long Russel viper venom time**
- **Long PTT which does not correct with plasma.**

What is Hagemann factor?



What is Hagemann factor?

- Factor XII



Why do you have to give heparin on cardiopulmonary bypass?

Why do you have to give heparin on cardiopulmonary bypass?

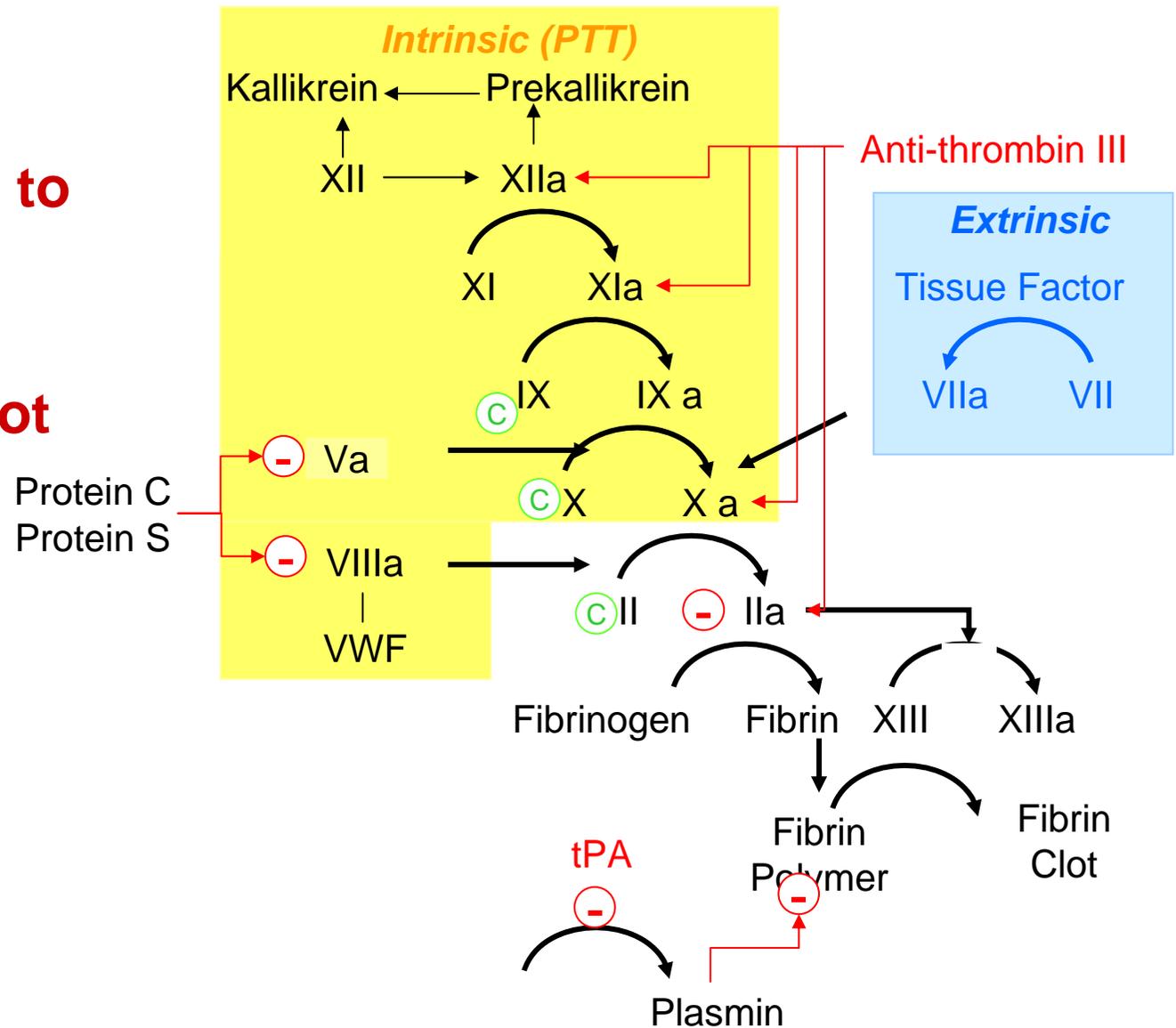
- **Because Hagemann factor (XII) is activated on bypass**

What is the mechanism of Factor V Leyden?



What is the mechanism of Factor V Leyden?

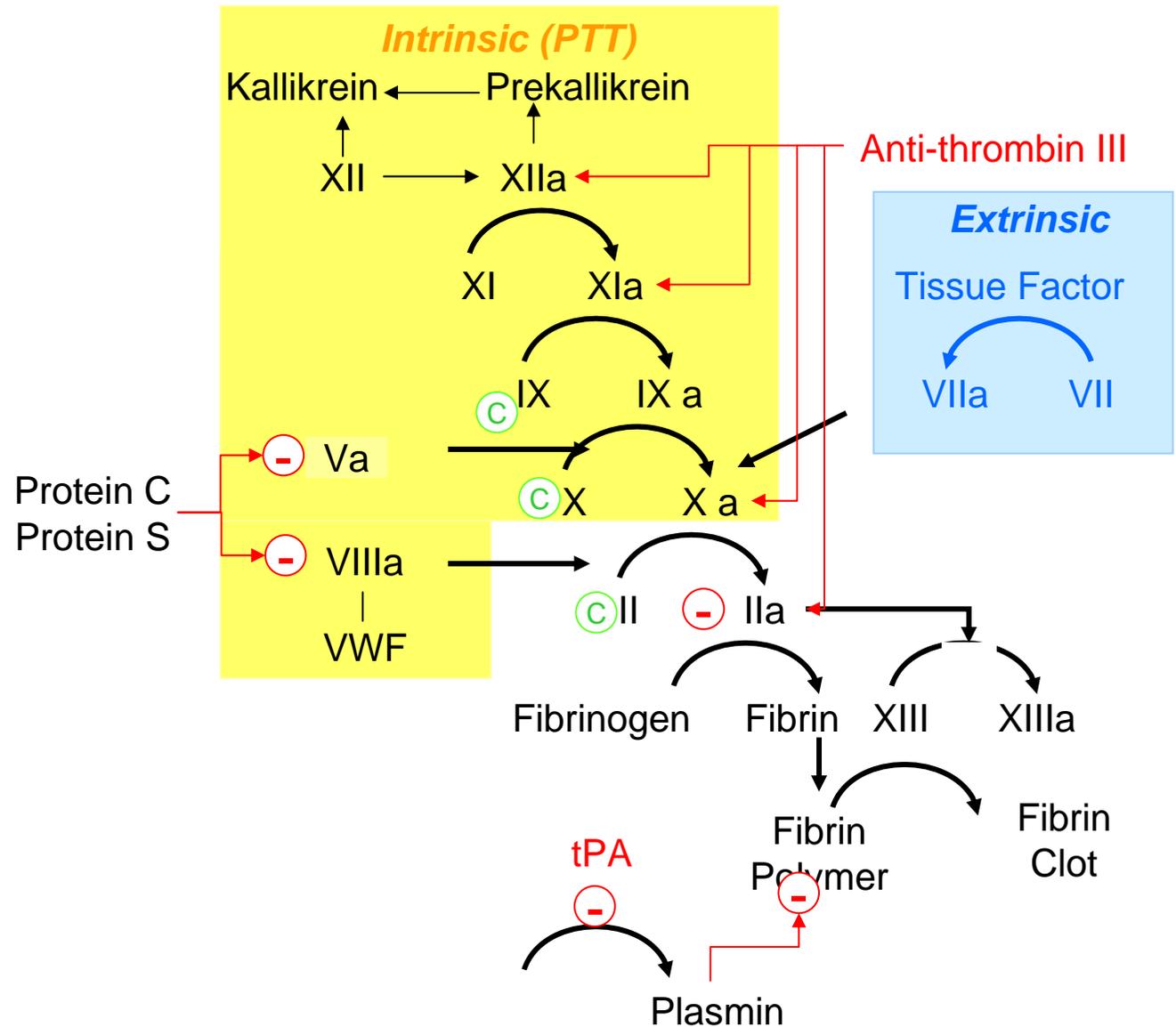
- **Resistance to activated Protein C**
- **pro-clot**



What is the mechanism of heparin?

What is the mechanism of heparin?

- **Activates ATIII, leading to inactivation of 9-12, prolonging PTT**



What clotting disease often causes DVTs?



What clotting disease often causes DVTs?

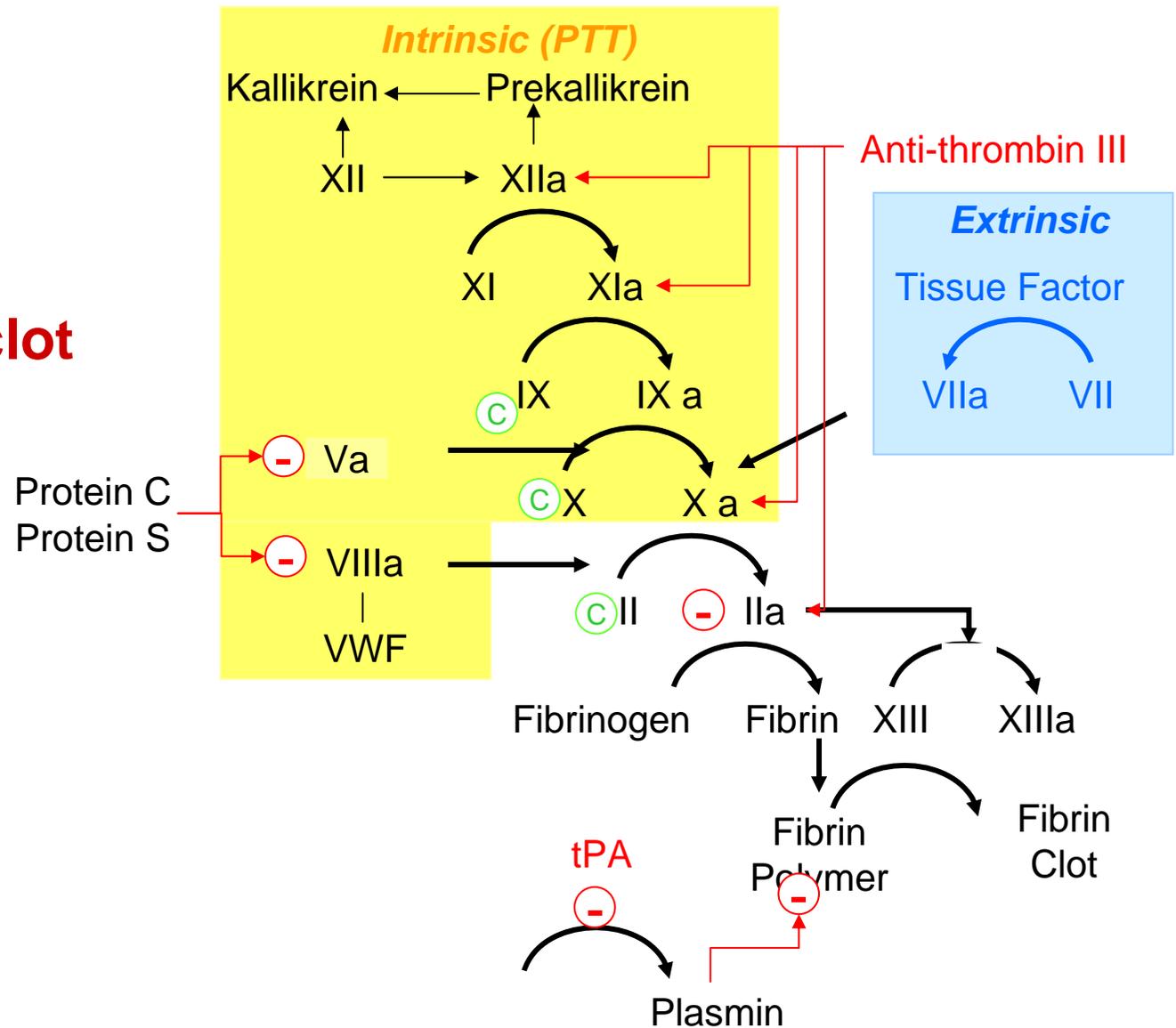
- **Factor V Leyden**

What is the function of plasmin?



What is the function of plasmin?

- **Degrades fibrinogen**
- **anti-clot**



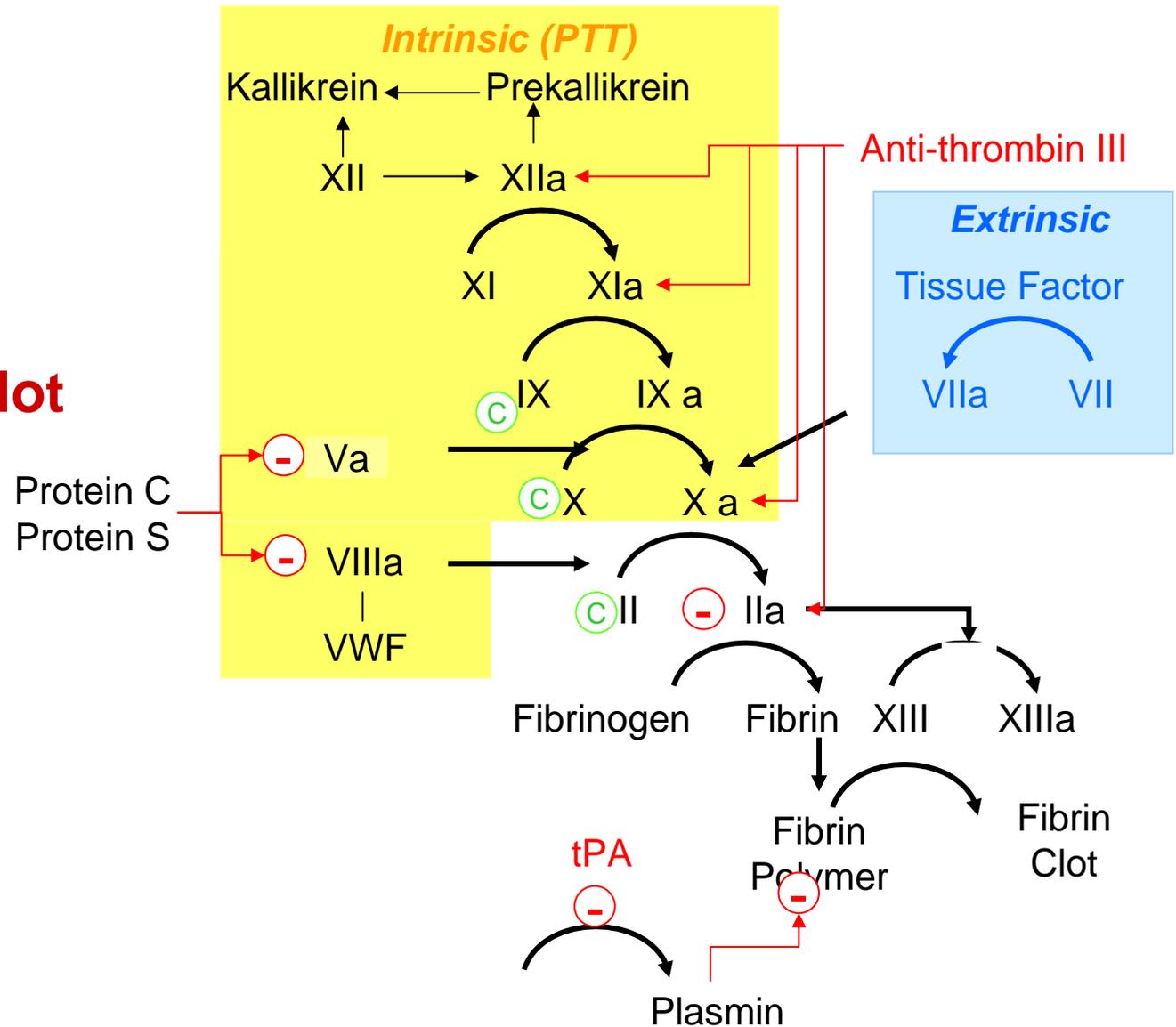
What inhibits plasmin?



What inhibits plasmin?

- **alpha 2 plasmin inhibitor**

- **pro-clot**



How can you counteract heparin?



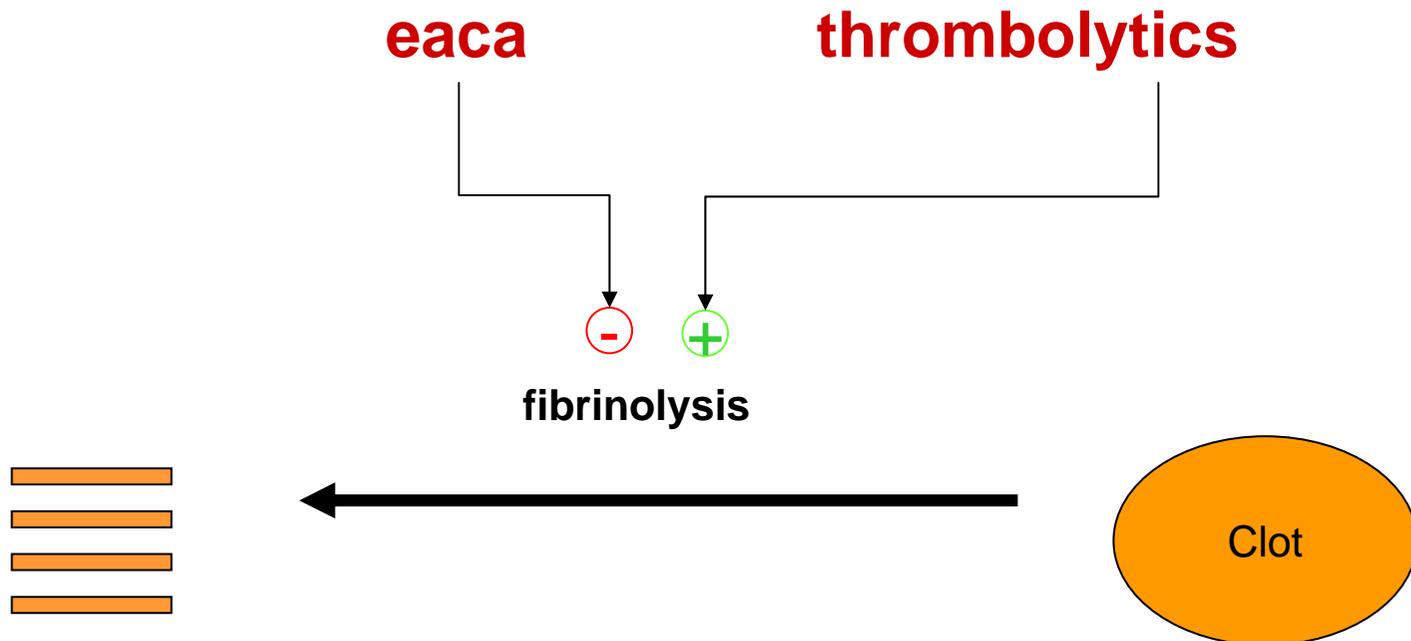
How can you counteract heparin?

- **Protamine**

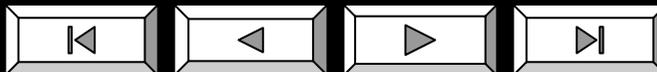
What is the mechanism of epsilon amino caproic acid?

What is the mechanism of epsilon amino caproic acid?

- **Inhibits fibrinolysis**
 - **pro-clot**



What is epsilon amino caproic acid used to treat?



What is epsilon amino caproic acid (EACA) used to treat?

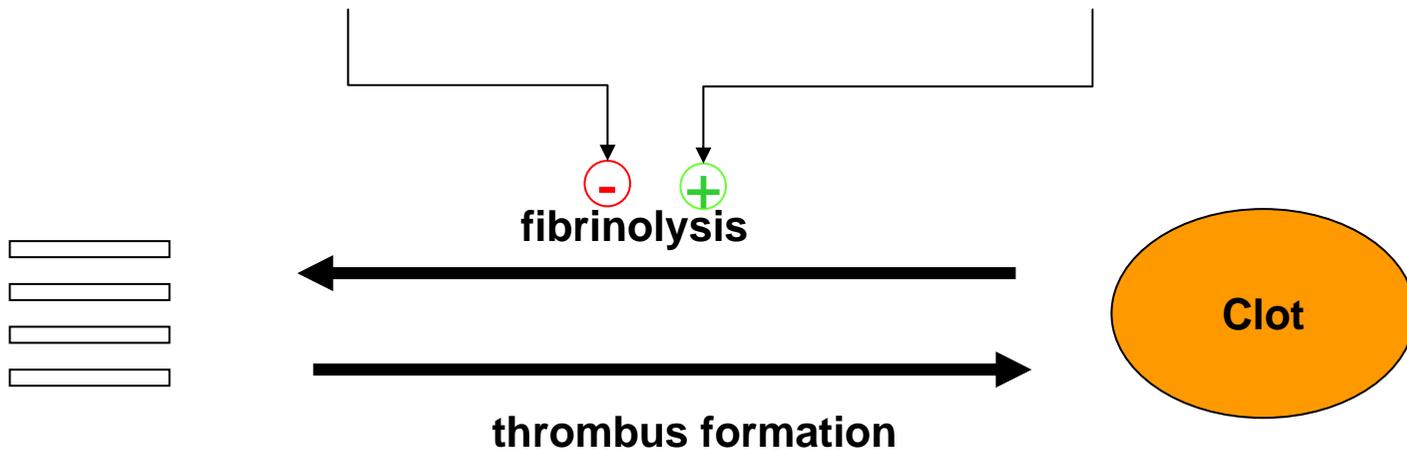
- **Overdose for thrombolytics**

- **EACA**

- **thrombolytics**

- **pro-clot**

- **anti-clot**



What is the best test to monitor thrombolysis?

What is the best test to monitor thrombolysis?

- **Thrombin time**

What are four lab values found with DIC?

What are four lab values found with DIC?

1. Low platelets
2. Prolonged PT/PTT
3. Low fibrinogen
4. High fibrin split products

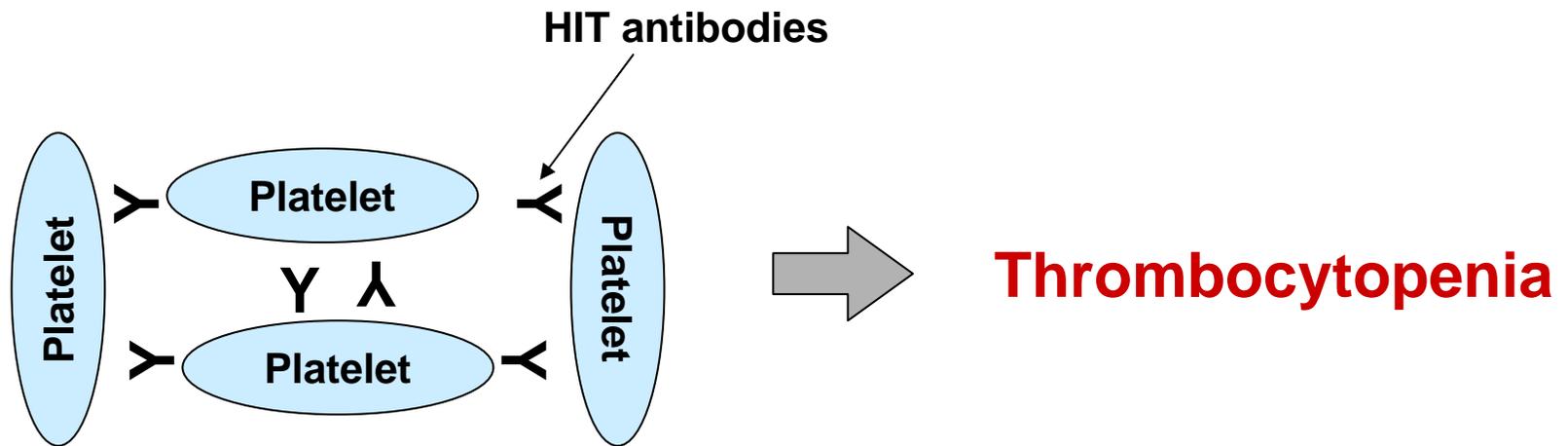


What causes HIT (white clot syndrome)?

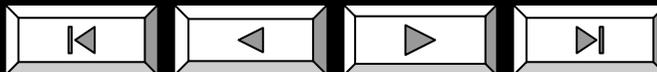


What causes HIT (white clot syndrome)?

- **Thrombocytopenia due to**
 - **anti-platelet antibody**
 - **causing platelet aggregation (used up)**



What is the treatment for HIT?



What is the treatment for HIT?

- **Dextran to anticoagulate**



When do you see HIT?



When do you see HIT?

- **After five days of heparin?**

Can you see HIT with LMWH?



Can you see HIT with LMWH?

- **Yes, but less frequently**

What is PGI₂?



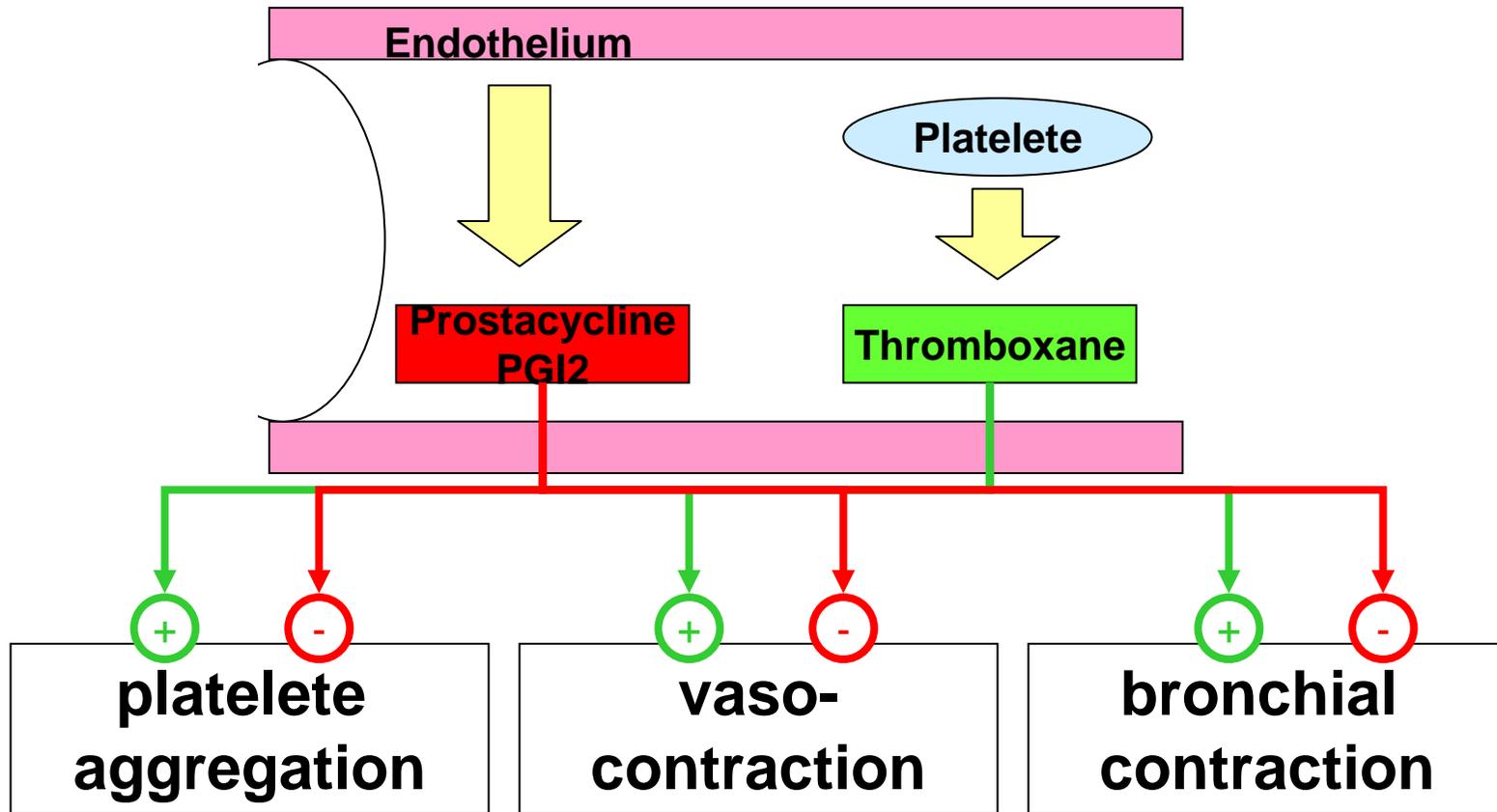
What is PGI₂?

- Prostacyclin



What is the mechanism of prostacyclin?

What is the mechanism of prostacyclin?

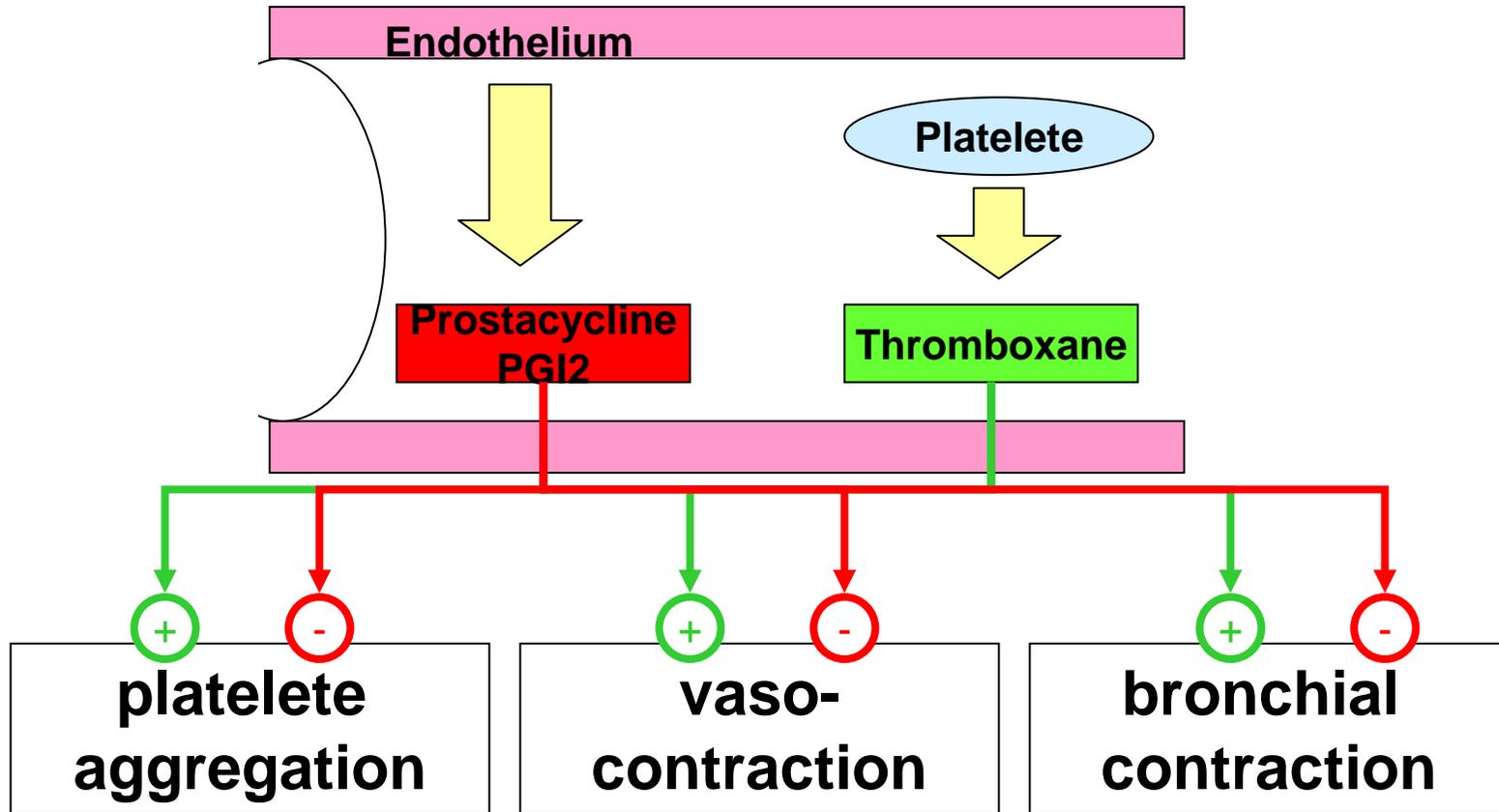


“PGI₂ loosens everything up”

What is Thromboxane?



What is Thromboxane?



“thromboxane tightens everything up”

What is the best pre-op test for patients on NSAIDS/ASA?

What is the best pre-op test for patients on NSAIDS/ASA?

- **Bleeding time**



Flashcard Instructions

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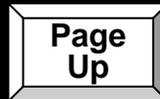
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Slide**



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Question**



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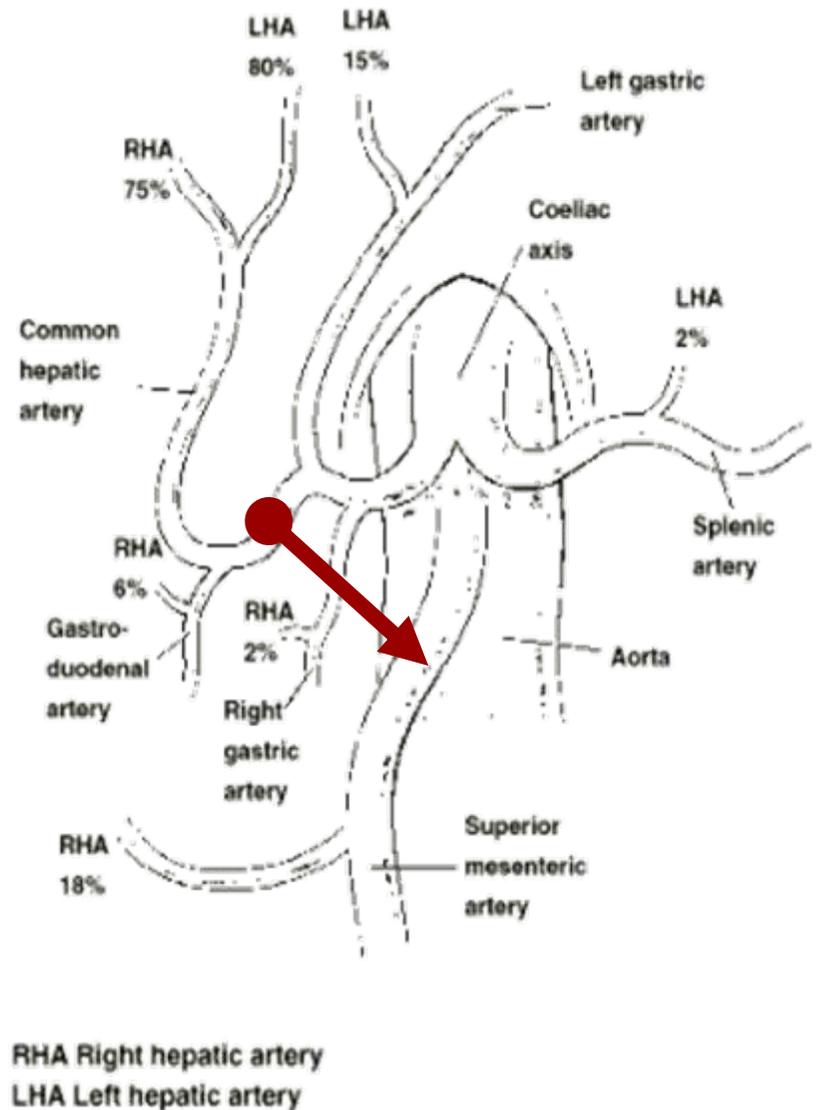
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What are common anatomic variations in the origin of the hepatic artery?

What is the most common anatomic variation of the Hepatic artery?

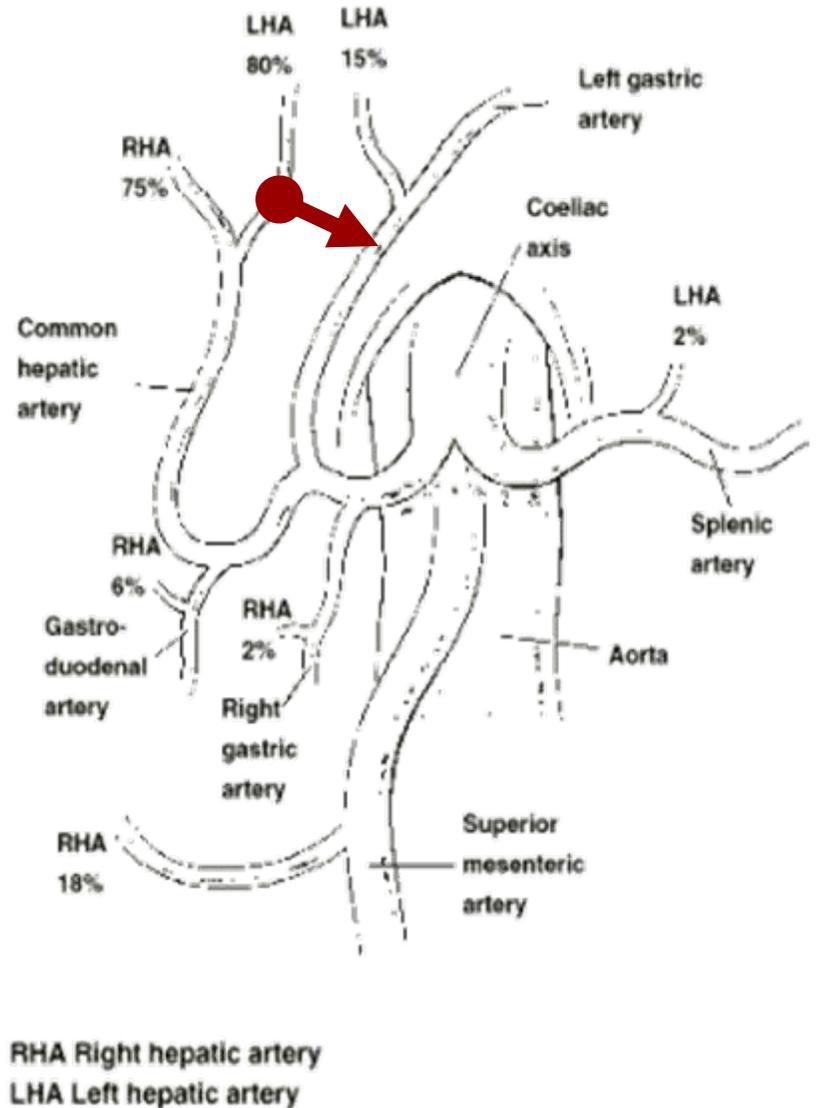
- R hepatic artery off SMA (17%)



What is the most common anatomic variation of the Left hepatic artery?

What are common anatomic variations in the origin of the hepatic artery?

- **Left hepatic off left gastric in 10%**



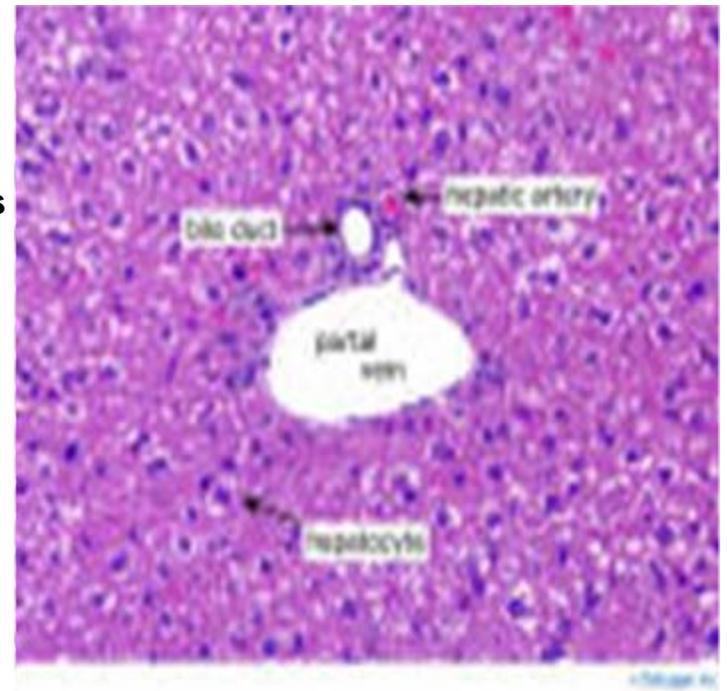
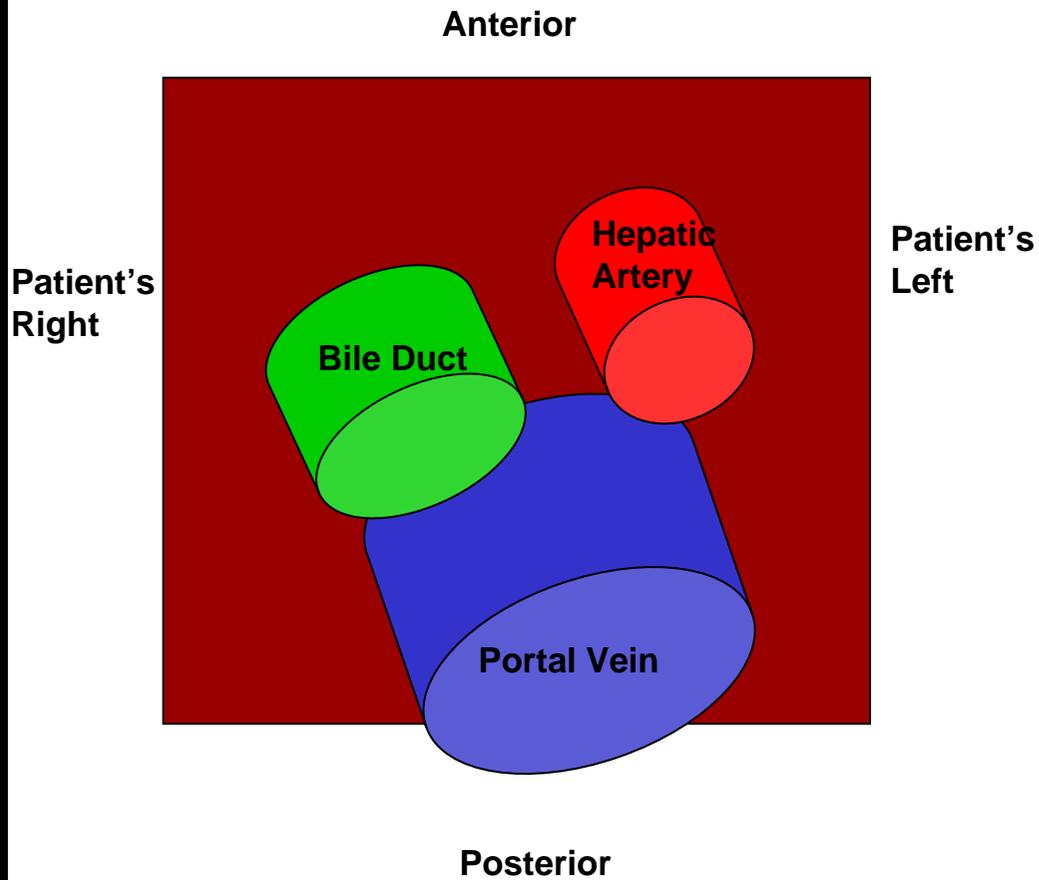
What is the function of Kupffer cells?

What is the function of Kupffer cells?

1. **Clear portal blood**
2. **Immunosurveillance**

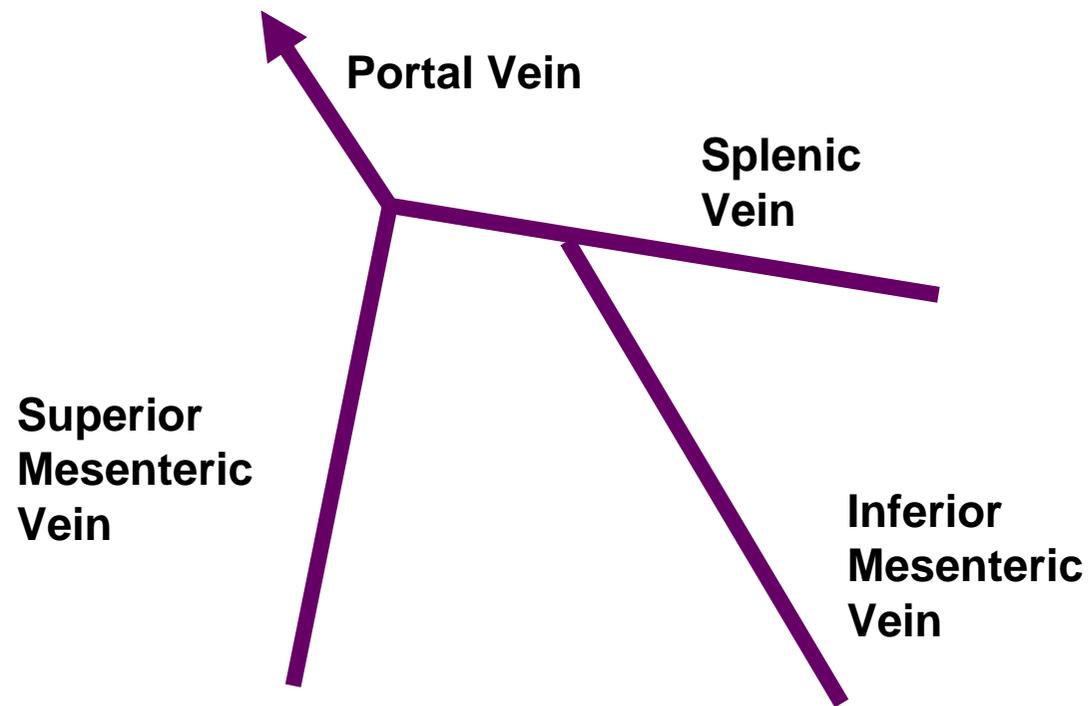
What is the anatomy of the portal triad?

What is the anatomy of the portal triad?



What forms the portal veins?

What forms the portal veins?



What makes the portal system unique from other veins?

What makes the portal system unique from other veins?

- **No valves**

What is the hepatorenal syndrome?

What is the hepatorenal syndrome?

- **An acute and progressive reduction in renal blood flow and GFR**
 - **Secondary to intense renal cortical vasoconstriction**
- **In setting of decompensated cirrhosis.**

How does hepatorenal syndrome present?

How does hepatorenal syndrome present?

1. Oliguria in the setting of cirrhosis

- Jaundice, ascites, encephalopathy
- GI bleeding
- Splenomegaly
- Spider angioma

How is hepatorenal syndrome diagnosed?

How is hepatorenal syndrome diagnosed?

- **Low urinary Na**

How does cholangitis present?

How does cholangitis present?

1. **Jaundice**
2. **RUQ tenderness**
3. **Fever**
4. **Hypotension**
5. **Mental status changes**

What is the first line treatment for cholangitis?

What is the first line treatment for cholangitis?

- 1. Immediate IV antibiotics**
- 2. Fluid resuscitation**
- 3. Emergent drainage of CBD**

What is the best management for stone identified on T-Tube cholangiogram 6 wks post op?

What is the best management for stone identified on T-Tube cholangiogram 6 wks post op?

- **Radiologic stone retrieval**

What is the most common cause of benign biliary strictures?

What is the most common cause of benign biliary strictures?

- **Iatrogenic (lap chole)**

What is the surgical treatment for gallbladder adenocarcinoma?

What is the surgical treatment for gallbladder adenocarcinoma?

- **Cholecystectomy**
 - if adequately confined to the mucosa.
- **If tumor is grossly visible**
 - do regional lymphadenopathy
 - wedge segment V
 - skeletonize portal triad.

What % of Gallbladder adenocarcinoma have stones?

What % of Gallbladder adenocarcinoma have stones?

- **90% have stones.**

What is the significance of a porcelain gallbladder?

What is the significance of a porcelain gallbladder?

- **30-60% risk of cancer**
 - **Cholecystectomy indicated**

What is the hematology triad?

What is the hemato-bilia triad?

1. **GI bleed**
2. **Jaundice**
3. **RUQ pain**

How do you diagnose the hematology triad?

How do you diagnose the hemato-bilia triad?

- **With arteriogram**

What is the normal biliary ejection fraction?

What is the normal biliary ejection fraction?

- **>35%**
- **< 35% is biliary dyskinesia**
 - **indication for a lap chole.**

What is the significance of a hepatic adenoma?

What is the significance of a hepatic adenoma?

- **10% rupture or bleed**
- **Malignant potential**



What is the characteristic of a hepatic adenoma on a liver scan?

What is the characteristic of a hepatic adenoma on a liver scan?

- **It is cold**

What is the treatment of a hepatic adenoma?

What is the treatment of a hepatic adenoma?

- **Surgical Resection**

What is the treatment for a hepatic hemangioma?

What is the treatment for a hepatic hemangioma?

- **Do nothing unless**
 - **Giant**
 - **Symptomatic**
 - **Consumptive**



What is Kasabach Meritt syndrome?

What is Kasabach Meritt syndrome?

- **Consumptive coagulopathy or CHF due to hemangioma**

How do you treat a hepatic amebic abscess?

How do you treat a hepatic amebic abscess?

- **Metronidazole**
- **Not surgical**

What is a hepatic Hydatid?

What is a hepatic Hydatid?

- **An echinococcal cyst**

How do you diagnose a hepatic Hydatid?

How do you diagnose a hepatic Hydatid?

1. + **Casoni skin test**
2. + **indirect hemagglutination**

How do you treat a hepatic Hydatid?

How do you treat a hepatic Hydatid?

- **Resection (pericystectomy)**

What is the most common cancer worldwide?

What is the most common cancer worldwide?

- **Hepatocellular CA**

What is the most common cause of hepatocellular carcinoma?

What is the most common cause of hepatocellular carcinoma?

- **Hep B and C**

What are other risk factors/cause for hepatocellular CA?

What are risk factors for hepatocellular CA?

1. Cirrhosis

- ETOH
- Hemochromatosis
- Primary biliary cirrhosis
- alpha-1 antitrypsin def.

2. Clonorchis sinensis (flukes)

3. Aflatoxins.

What variant of hepatocellular CA has the best prognosis?

What variant of hepatocellular CA has the best prognosis?

- **Fibrolamellar variant**

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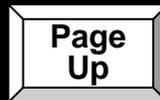
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What cytokine stimulates B cells to become plasma cells (antibody secreting)?

What cytokine stimulates B cells to become plasma cells (antibody secreting)?

- **IL 4**

What do IgG and IgM have in common?

What do IgG and IgM have in common?

- They are opsonins and are able to fix complement
 - 2 IgG,s or 5 IgMs

What antibody is made first?

What antibody is made first?

- **IgM**

What antibody decreases after a splenectomy?

What antibody decreases after a splenectomy?

- **IgM**

What antibody is found in secretions?

What antibody is found in secretions?

- IgA

What is the function of IgD?

What is the function of IgD?

- **A helper**
 - **function largely unknown**

What antibody can cross the placenta?

What antibody can cross the placenta?

- IgG

What antibody is #1 in serum?

What antibody is #1 in serum?

- IgG

What four actions are IgE responsible for?

What four actions are IgE responsible for?

1. **Histamine release from Mast cells and basophils**
2. **Allergic reactions**
3. **Anti-parasite activity**
4. **Type I hypersensitivity reactions**

What part of the antibody is responsible for antigen recognition?

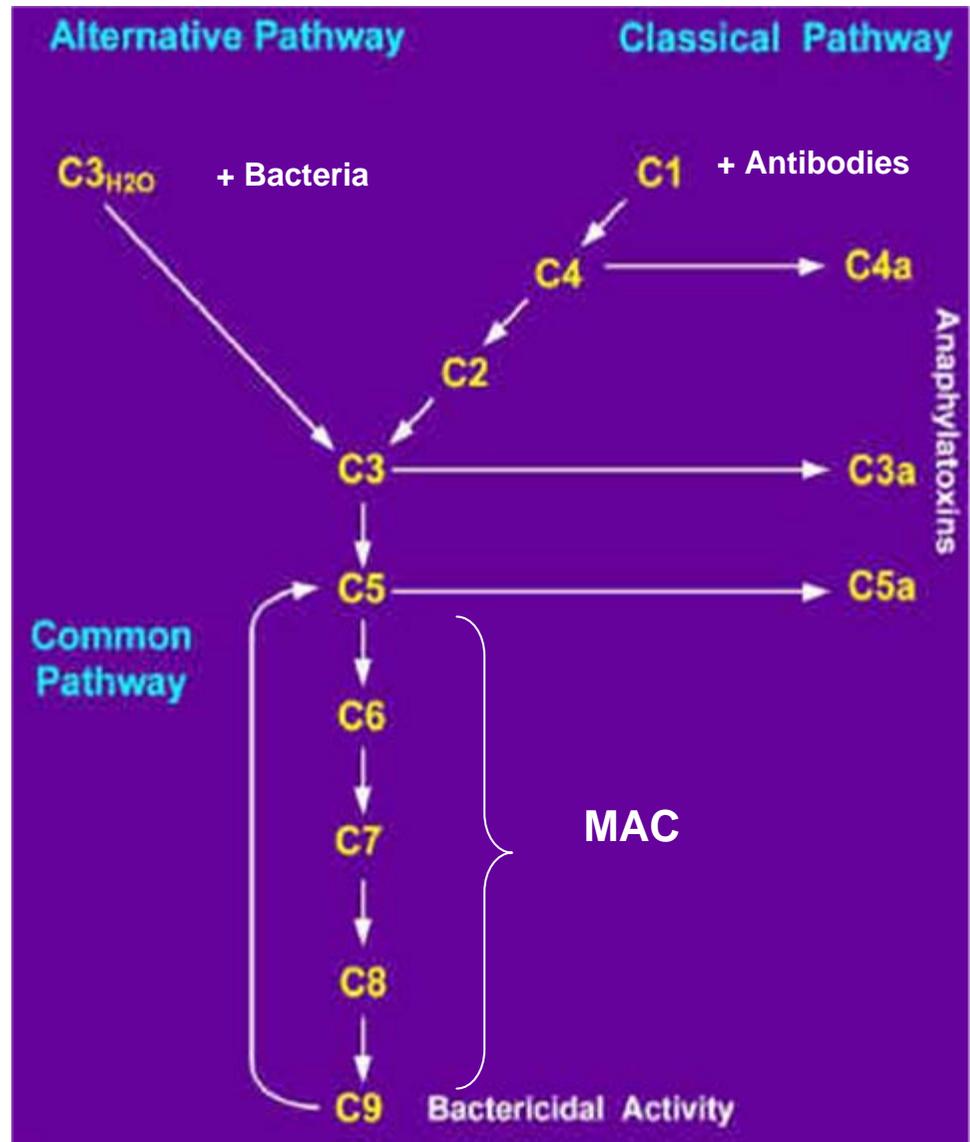
What part of the antibody is responsible for antigen recognition?

- **The variable part**

What factors in the complement cascade are anaphylatoxins?

What factors in the complement cascade are anaphylatoxins?

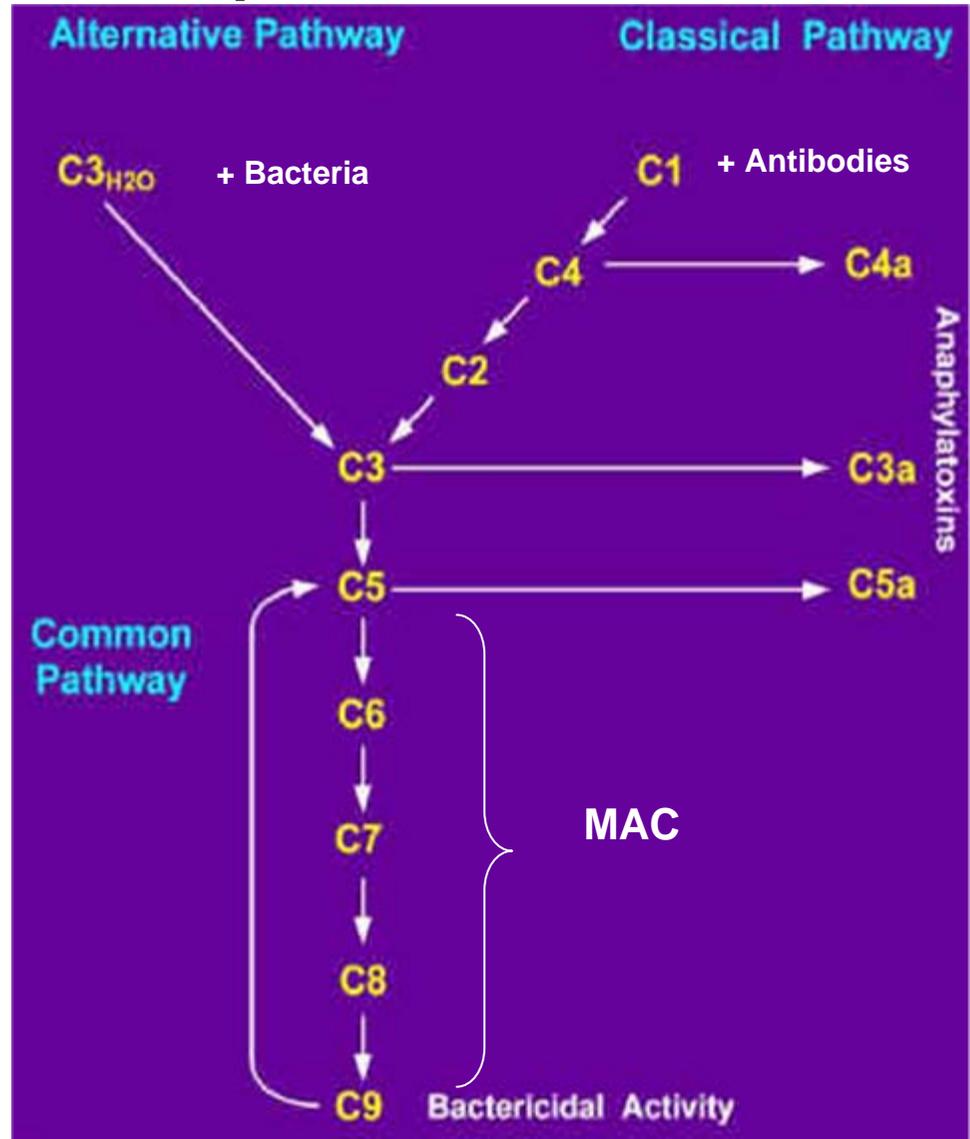
- C3a, C5a



What factors in the complement cascade are part of the Membrane Attack Complex

What factors in the complement cascade are part of the Membrane Attack Complex

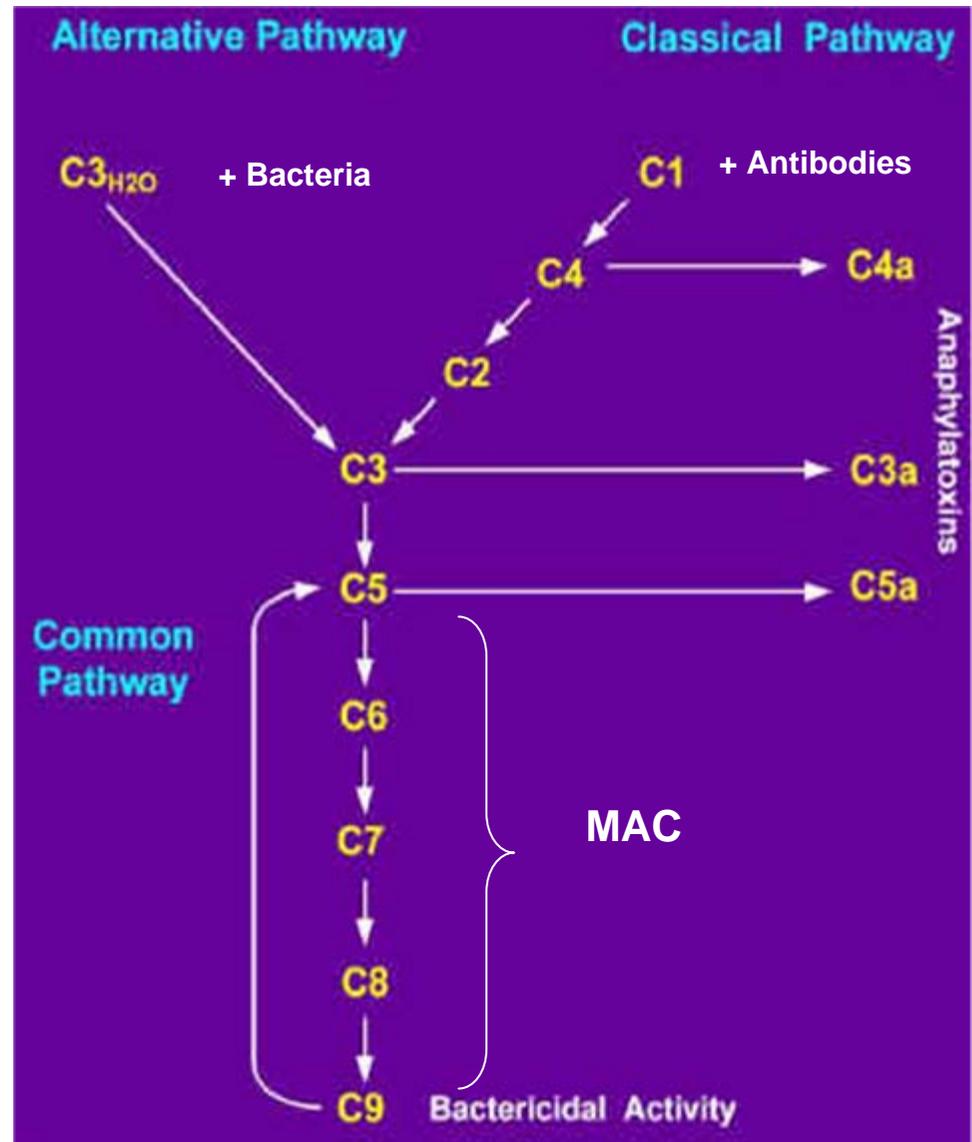
- C5-C9



What initiates the Classic complement cascade?

What initiates the Classic complement cascade?

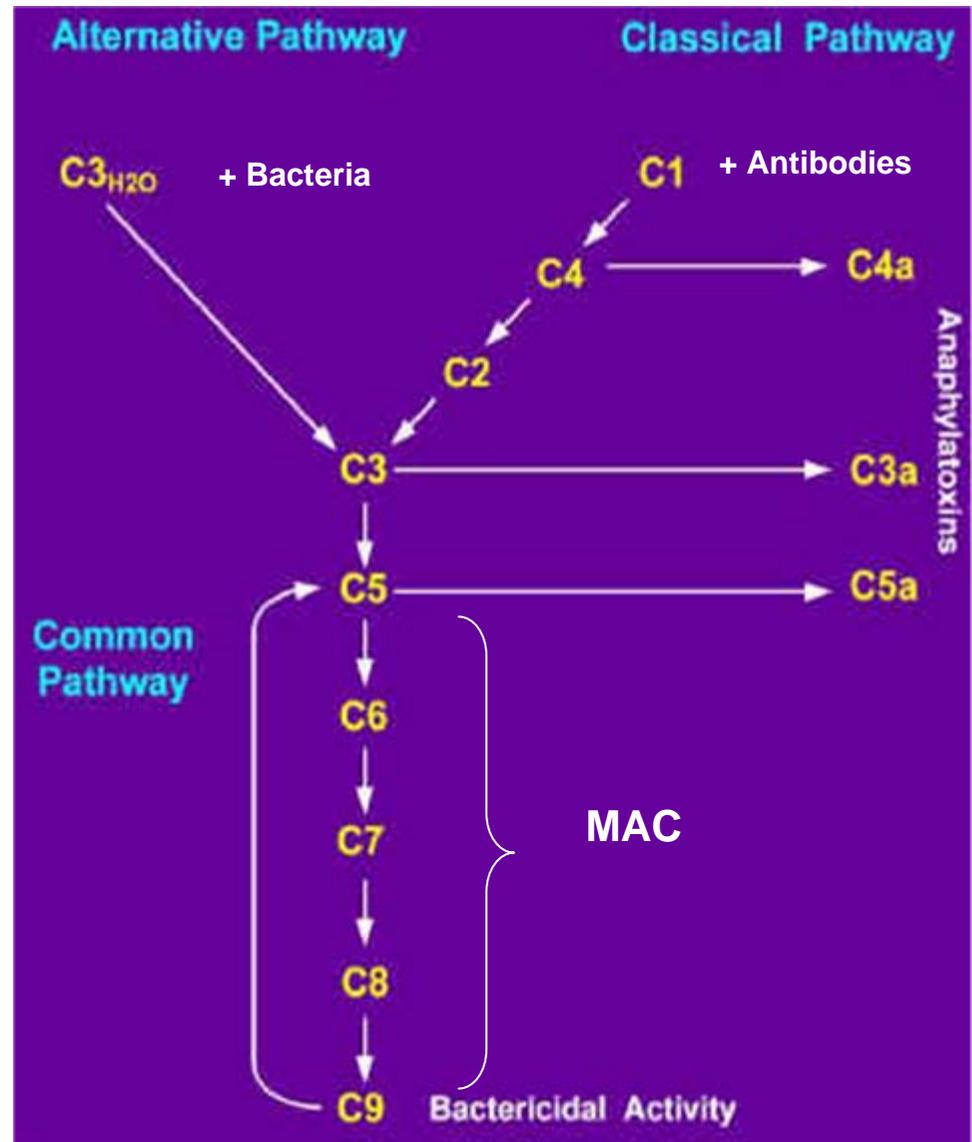
- **Antibodies**



What initiates the Alternate complement cascade?

What initiates the Alternate complement cascade?

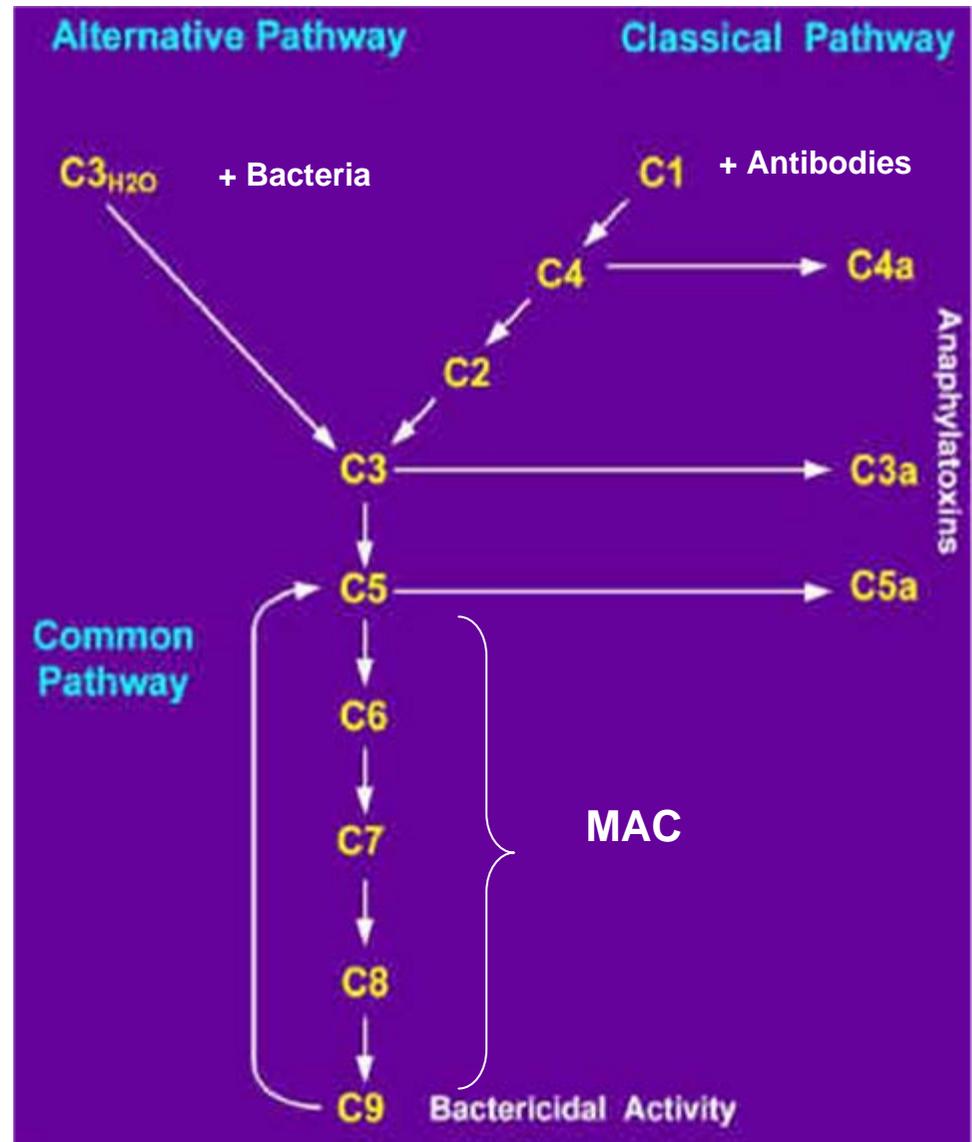
- **Bacteria**



What factor do the Classic and Alternate Cascade merge?

What factor do the Classic and Alternate Cascade merge?

- **C3**



What activates MHC I?

What activates MHC I?

- **CD8**

Where is MHC I found?

Where is MHC I found?

- **All nucleated cells**

Is MHC I a single or double chain?

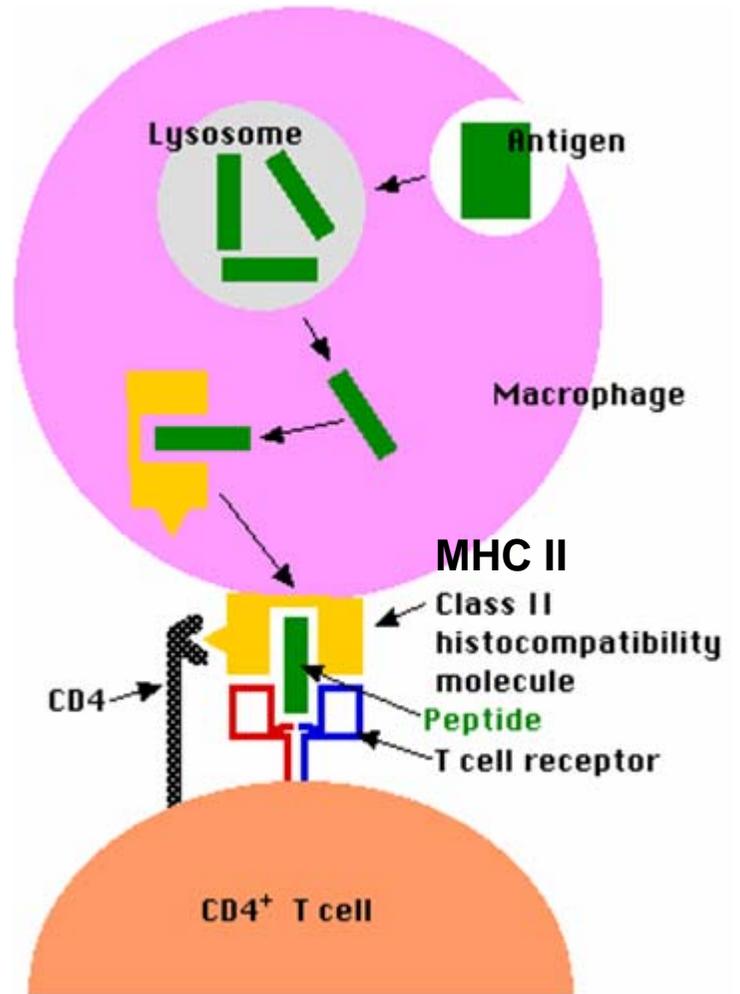
Is MHC I a single or double chain?

- **Single**

What activates MHC II?

What activates MHC II?

- **CD4**



Where is MHC II found?

Where is MHC II found?

1. B cells
2. Dendrites
3. Monocytes

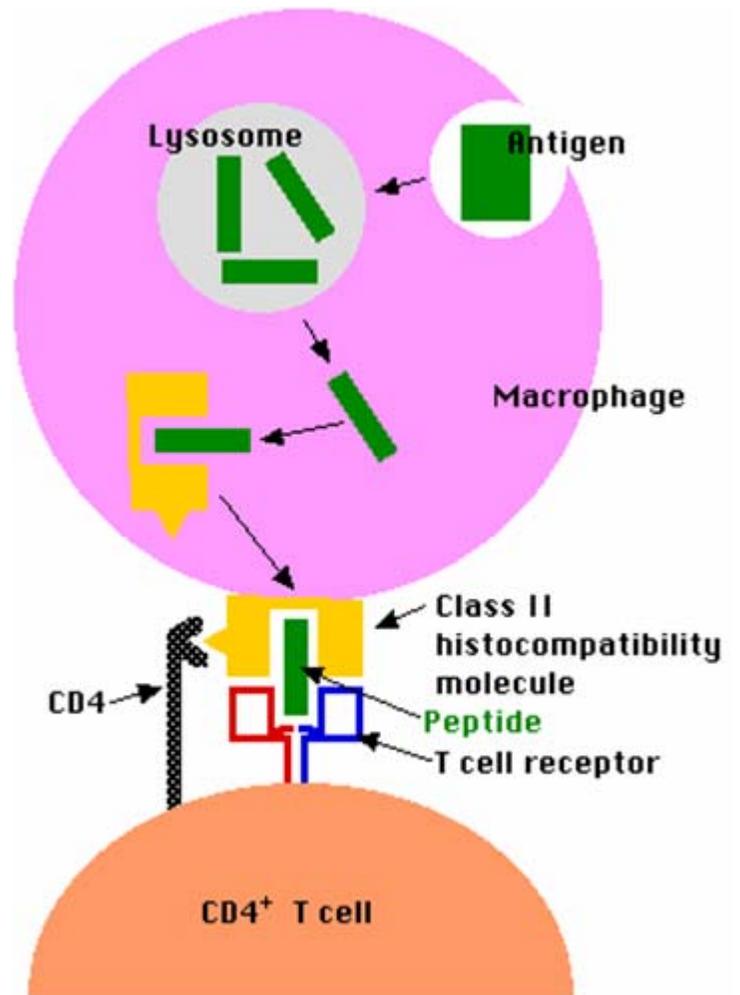


**Antigen
presenting
cells**

How many chains is MHC II?

How many chains is MHC II?

- **Two chains**



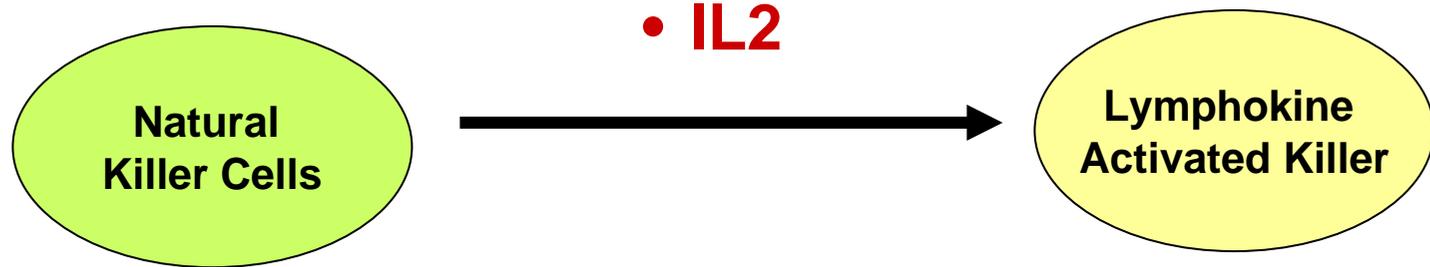
What is unique about natural killer cells?

What is unique about natural killer cells?

- 1. Neither T or B cells**
- 2. No antigen presentation is needed.**
- 3. Recognize cells without self MHC**
- 4. Responsible for immuno-surveillance against cancer**

What factor converts Natural Killer Cells to Lymphokine Activated Killer?

What factor converts Natural Killer Cells to Lymphokine Activated Killer?



What is the best test to evaluate cell mediated immunity?

What is the best test to evaluate cell mediated immunity?

- **Intradermal skin test**

What cell is responsible for the source of histamine in the blood?

What cell is responsible for the source of histamine in the blood?

- **Basophils**

What cell is the source of histamine in the tissue?

What cell is the source of histamine in the tissue?

- **Mast cells**

What is *Endotoxin*?

What is *Endotoxin*?

- **Lipopolysacharide A (LPA)**
 - **from gram negative bacteria**

How many hours does hyperglycemia come before overt sepsis?

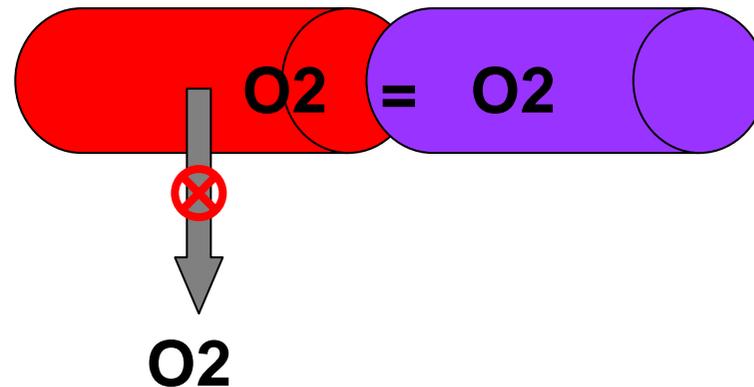
How many hours does hyperglycemia come before overt sepsis?

- **24 hours**

What are some cardiovascular findings in late sepsis?

What are some cardiovascular findings in late sepsis?

- **Decreased O₂ extraction**
- **Increased SV O₂**
- **Decreased arterial-venous O₂ difference**



What is the normal range of SVO₂?

What is the normal range of SVO₂?

- 66-77%

If SVO₂ is > 77%, what does that mean?

If SVO₂ is > 77%, what does that mean?

O₂ is not being extracted

- **Sepsis**

- **or**

- **Cyanide poisoning**

If SVO₂ is less than 66%, what does that mean?

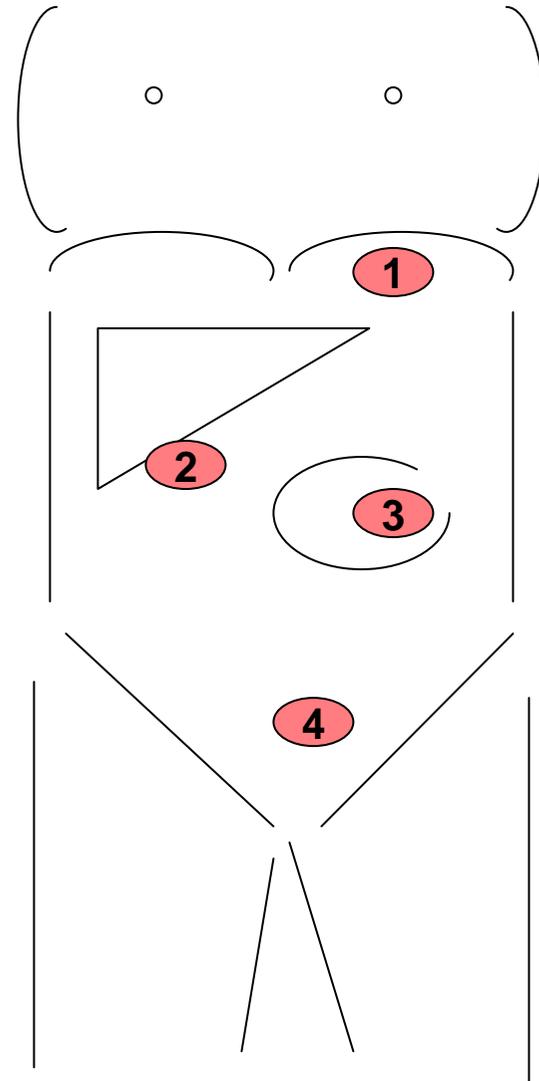
If SVO₂ is less than 66%, what does that mean?

- **Decreased CO or**
- **Decreased SAO₂**

What are the four most common locations for intra-abdominal abscesses?

What are the four most common locations for intrabdominal abscesses?

1. Sub-diaphragmatic
2. Sub-hepatic
3. Inter-loop
4. Pelvic



What is the medical treatment for C diff colitis?

What is the medical treatment for C diff colitis?

- PO Flagyl or
- PO Vancomycin

What two types of infection can present hours after surgery?

What two types of infection can present hours after surgery?

- ***B strep***
- ***Clostridial infections***

“Acute BC”

What bacteria is coagulase +?

What bacteria is coagulase +?

- *Staph aureus*

What bacteria can produce clear “slime” with chronic infection(vascular)?

What bacteria can produce clear “slime” with chronic infection(vascular)?

- ***Staph aureus***

What is the bactericidal mechanism of aminoglycosides?

What is the bactericidal mechanism of aminoglycosides (kanamycin, gentamycin, tobramycin, Streptomycin)?

- **IRREVERSIBLE binding to ribosomes**

**How does resistance develop to aminoglycosides
(kanamycin, gentamycin, tobramycin,
Streptomycin)**

How does resistance develop to aminoglycosides (kanamycin, gentamycin, tobramycin, Streptomycin)?

- **Decreased active transport**

What is the bacteriostatic mechanism of Clindamycin, tetracycline, erythromycin (macrolid)?

What is the bacteriostatic mechanism of Clindamycin,tetracycline, erythromycin?

- **REVERSIBLE binding to ribosomes**

What is the mechanism of Vancomycin?

What is the mechanism of Vancomycin?

- **Binds the plasma membrane**

What is the mechanism of resistance to Vancomycin?

What is the mechanism of resistance to Vancomycin?

- **Due to an altered cell wall**

What is the mechanism of resistance for MRSA?

What is the mechanism of resistance for MRSA?

- **Bacteria Binding Protein changes**
 - **not B-lactamase**

How do Sulbactam and clavulanate work?

How do Sulbactam and clavulanate work?

- **Inhibit beta-lactamase**

What is the mechanism of amphotericin?

What is the mechanism of amphotericin?

- **Binds sterol to alter fungal cell wall?**

What is the risk of amphotericin treatment?

What is the risk of amphotericin treatment?

- **80% get renal impairment**
 - **see anemia and fever**

What is the mechanism of quinolones?

What is the mechanism of quinolones?

- ***DNA Gyrase inhibition***

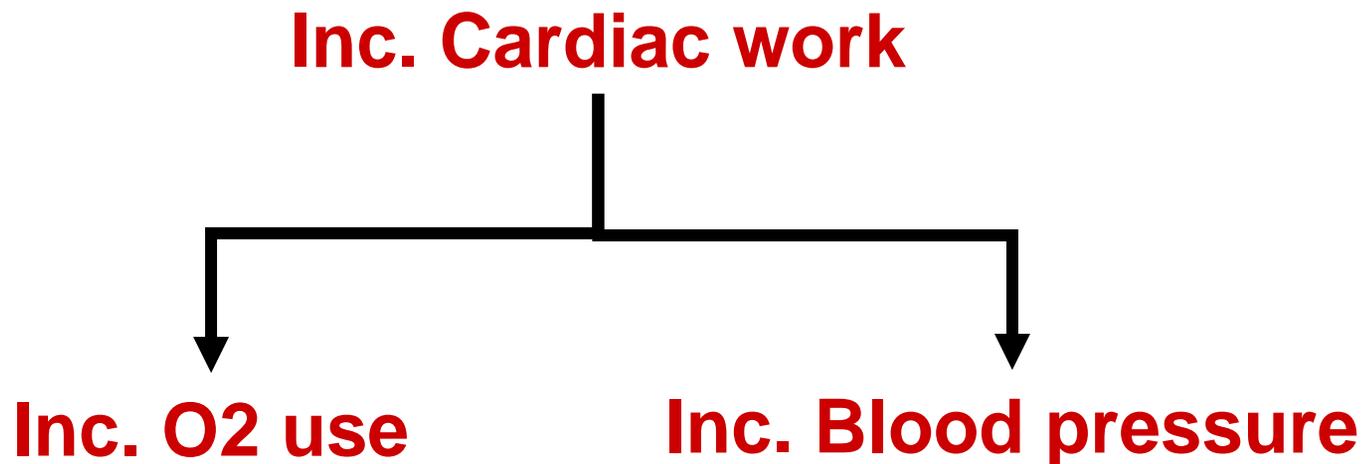
What works better, PO or IV quinolones?

What works better, PO or IV quinolones?

- **PO and IV routes equivalent**

What is the cardiovascular impact of Ketamine

What is the cardiovascular impact of Ketamine



**What is the respiratory effect of Ketamine?
-How can it be treated?**

What is the respiratory effect of Ketamine?

-How can it be treated?

- **Increased secretions**
 - **give concurrent Atropine to decrease**

Does Ketamine cause respiratory depression?

Does Ketamine cause respiratory depression?

- **No**

Does Ketamine cause hallucinations?

Does Ketamine cause hallucinations?

- Yes

What is the main toxicity of Methoxyfluorane?

What is the main toxicity of Methoxyfluorane?

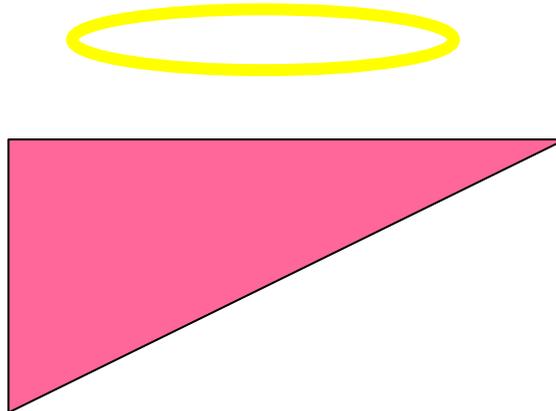
- **Renal toxicity**

Methoxy**FLOW**rane

What is the main toxicity of Halothane?

What is the main toxicity of Halothane?

- **Hepatotoxicity**



What is the only depolarizing agent used?

What is the only depolarizing agent used?

- **Succinylcholine**

What is the neuromuscular impact of Succinylcholine?

What is the neuromuscular impact of Succinylcholine?

- **Generalized contractions**

What is the impact of Succinylcholine in burn patients?

What is the impact of SuccinylcholinE in burn patients?

- Hyperkalemia

How quickly does succinylcholine take effect?

How quickly does succinylcholine take effect?

- **Fast on / Fast off**

What is one of the risks of succinylcholine?

What is one of the risks of succinylcholine?

- **Aspiration**

“Succ into lungs”

What is the impact of clindamycin on the neuromuscular blockade?

What is the impact of clindamycin on the neuromuscular blockade?

- **Prolongs neuromuscular blockade**

What patients should not receive Demerol?

What patients should not receive demerol?

- **Patients on MAOI's**

What is the mechanism of Octreotide?

What is the mechanism of Octreotide?

- **Somatostatin analog**
 - long acting

**What is the mechanism of metoclopramide
(Reglan)?**

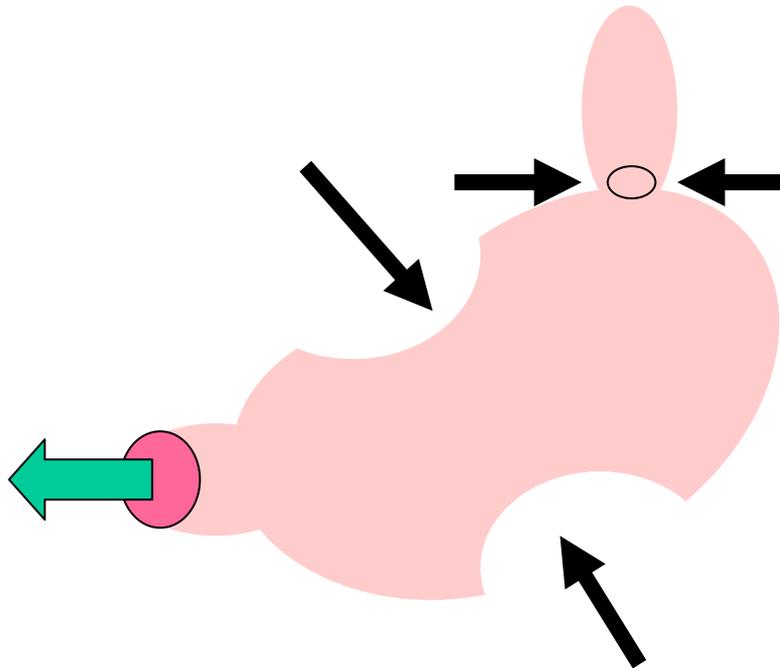
What is the mechanism of metoclopramide (Reglan)?

- **DA blocker**

What are two effects of metoclopramide on the GI system?

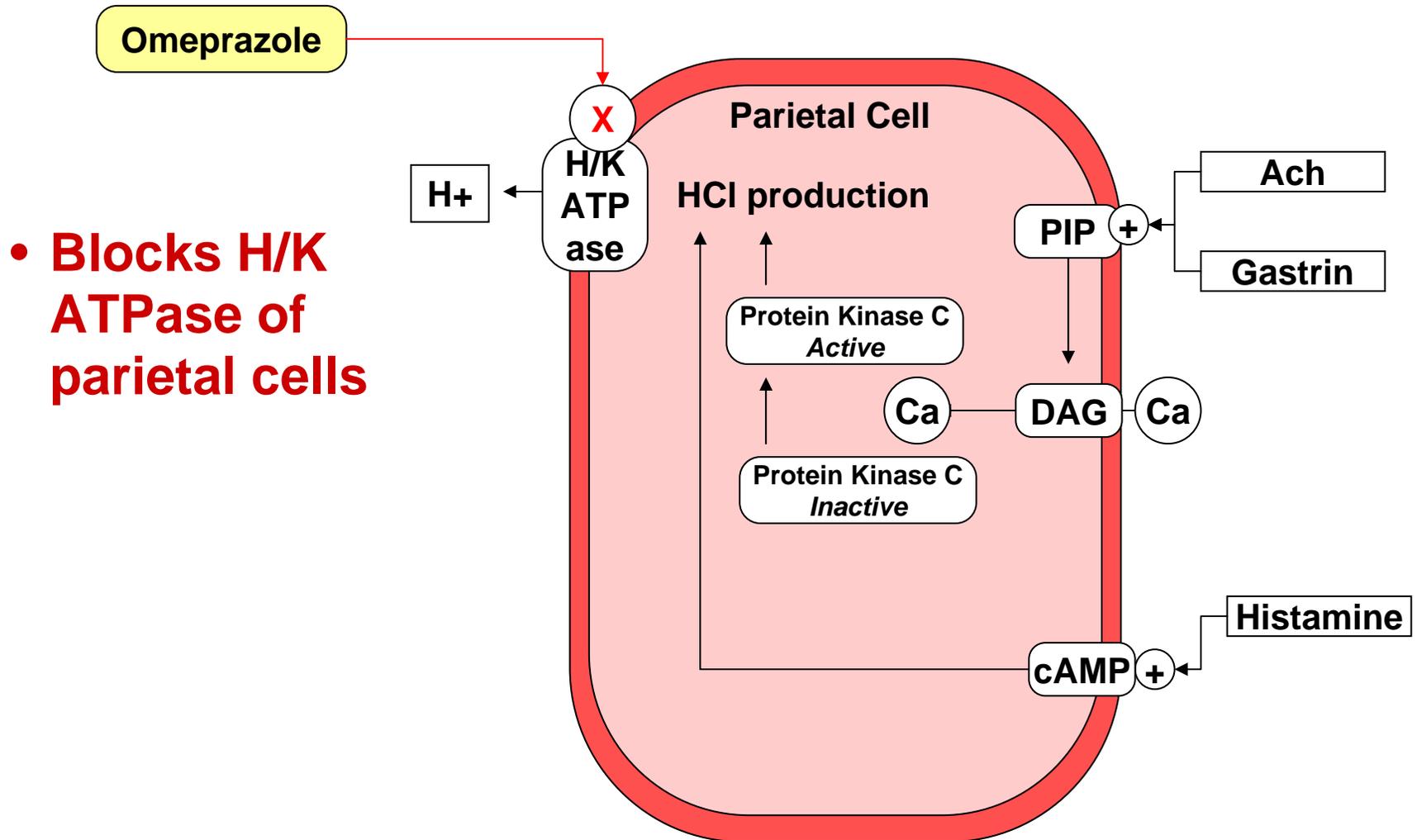
What are two effect of metoclopramide on the GI system?

- **Increase LES tone**
- **Increase gastric motility**



What is the mechanism of Omeprazole?

What is the mechanism of Omeprazole?



Has omeprazole been found to have any negative effects in animal models?

Has omeprazole been found to have any negative effects in animal models?

- **Causes enterochromaffin hyperplasia in rats**

Has Omeprazole been found to be carcinogenic in humans?

Has Omeprazole been found to be carcinogenic in humans?

- **No**

What is the mechanism of Digoxin?

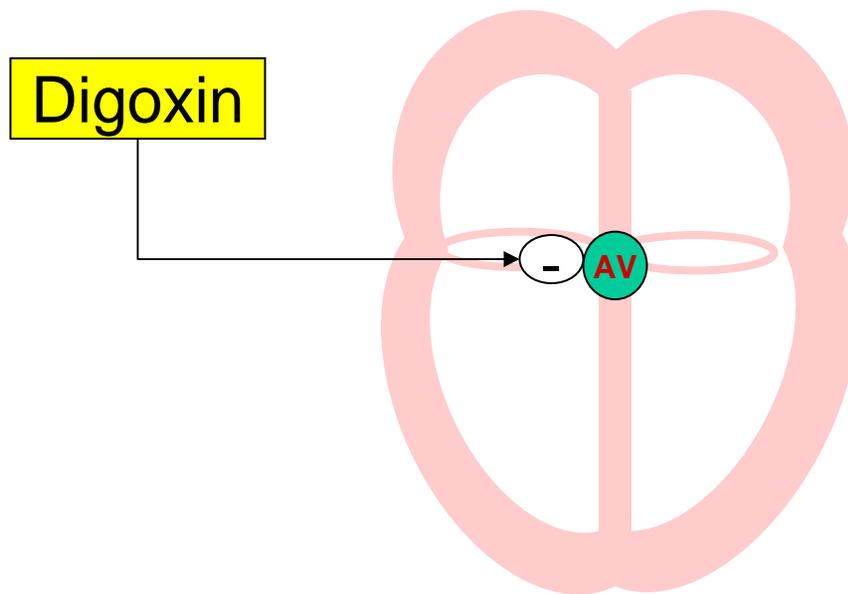
What is the mechanism of Digoxin?

- **A glycoside that inhibits Na-K ATPase**
- **Leads to increase Ca in heart**

What is the effect of Digoxin on AV conduction?

What is the effect of Digoxin on AV conduction?

- **Slows AV conduction**



Is Digoxin an inotrope?

Is Digoxin an inotrope?

- **Yes**

Does Digoxin increase O₂ consumption?

Does Digoxin increase O₂ consumption?

- **No**

What is one toxicity of Digoxin?

What is one toxicity of Digoxin?

- **Associated with ischemic bowel**
 - **Decrease splanchnic flow**

**What electrolyte abnormality is a
contraindication for Digoxin?**

What electrolyte abnormality is a contraindication for Digoxin?

- Hypokalemia

What is the mechanism of Amrinone?

What is the mechanism of Amrinone?

- **A phosphodiesterase (PDE) inhibitor**

Is Amrinone an inotrope?

Is Amrinone an inotrope?

- **Yes**

What is the impact of Amrinone on cardiac output?

What is the impact of Amrinone on cardiac output?

- **Increases CO**

What is the impact of Amrinone on SVR?

What is the impact of Amrinone on SVR?

- **Decreases SVR**

What is the effect of Metyrapone and Aminoglutethimide?

What is the effect of Metyrapone and Aminoglutethimide?

- **Medical adrenalectomy**

What is the effect of Leuprolide?

What is the effect of Leuprolide?

- **Medical orchiectomy**

What is the effect of Vasopressin on splanchnic and portal flow?

- What is the clinical application

What is the effect of Vasopressin on splanchnic and portal flow?

- What is the clinical application

- **Reduces splanchnic and portal flow**
 - to about 40%
- **Useful in GI bleeds**

What is an extra precaution when using Vasopressin in GI bleeds?

What is an extra precaution when using Vasopressin in GI bleeds?

- **Give beta blockers to avoid angina.**

What is the difference between Sodium Nitroprusside and Nitroglycerine?

What is the difference between Sodium Nitroprusside and Nitroglycerine?

- **Nitroprusside relaxes arteries and veins**
- **Nitroglycerine relaxes primarily veins**

Arteries

NitroPLUSide

Veins

What is one toxicity of Sodium Nitroprusside

What is one toxicity of Sodium Nitroprusside

- **Cyanide toxicity**

What is the mechanism of aspirin?

What is the mechanism of aspirin?

- **Irreversibly binds cyclooxygenase**

What is the effect duration of aspirin?

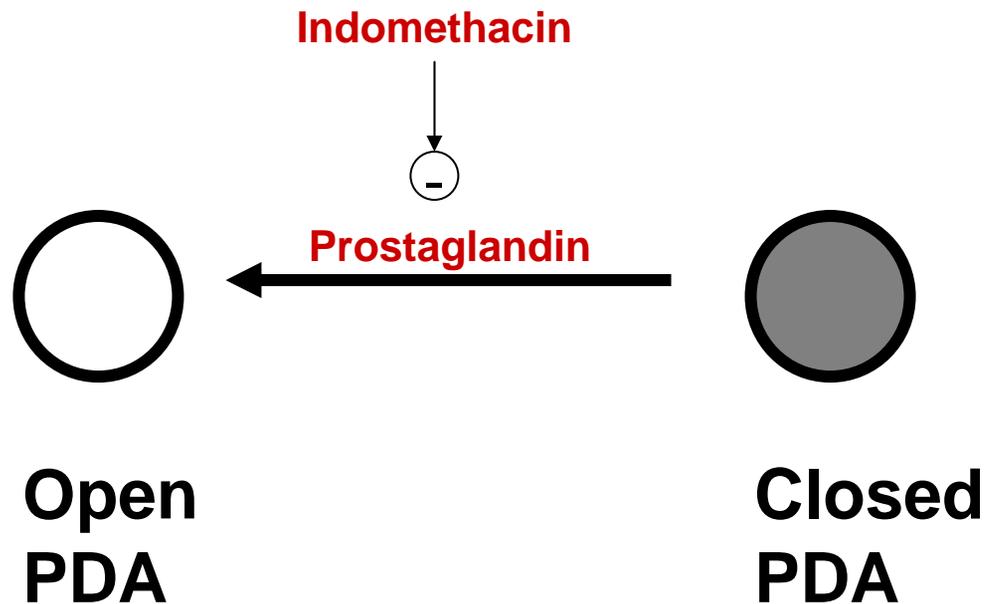
What is the effect duration of aspirin?

- **Effective for the life of the platelet (~ 7 days)**

What is the mechanism of Indomethacin?

What is the mechanism of Indomethacin?

- **Blocks Prostaglandin production**



What is the primary clinical use of Indomethacin?

- How often is it effective

What is the primary clinical use of Indomethacin?

- How often is it effective

- **PDA closure**
 - **70%**

What is one negative effect of Indomethacin?

What is one negative effect of Indomethacin?

- **Decreases renal blood flow**

What is the indication of Misoprostil?

What is the indication of Misoprostil?

- **Reduce PUD in patients on NSAIDS**
 - **Used to replace PGE2 (cytoprotective)**

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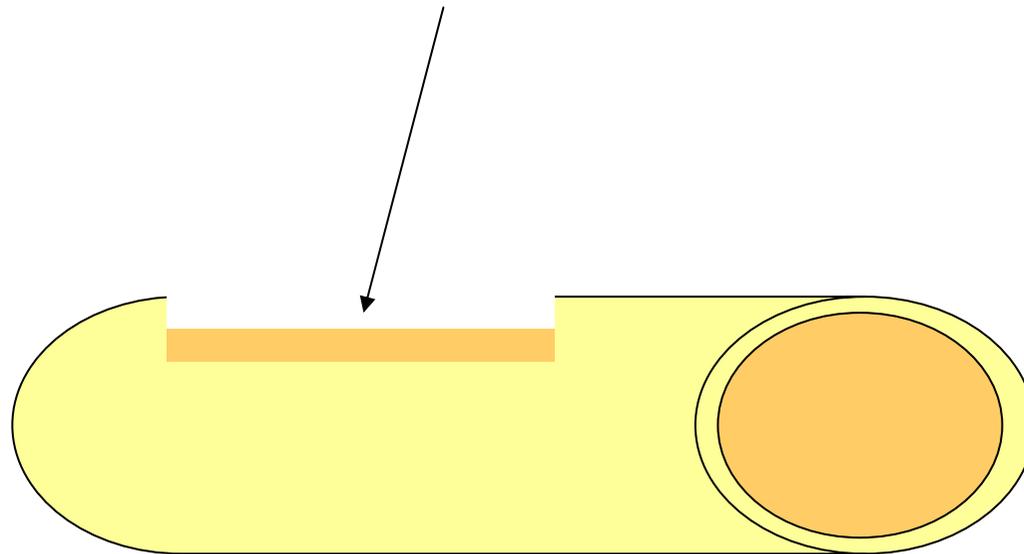
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What is Neuropraxia?

What is NeuroPraxia?

- focal demyelination
 - improves

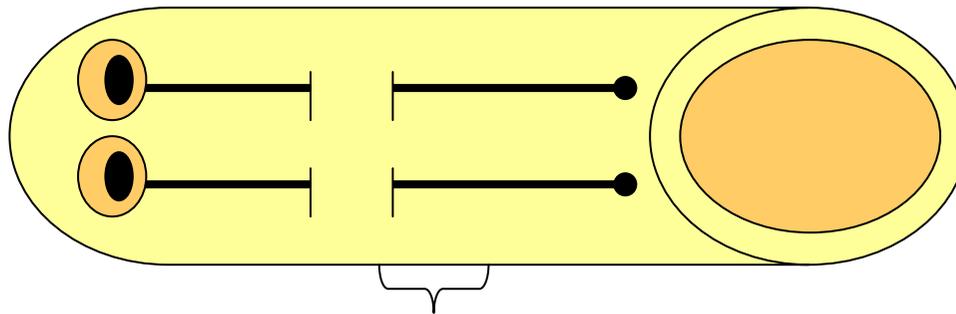


“Peel the myelin off”

What is Axonotmesis?

What is Axonotmesis?

- **loss of AXON continuity**
 - (nerve and sheath intact)
 - **Regeneration 1 mm / day**

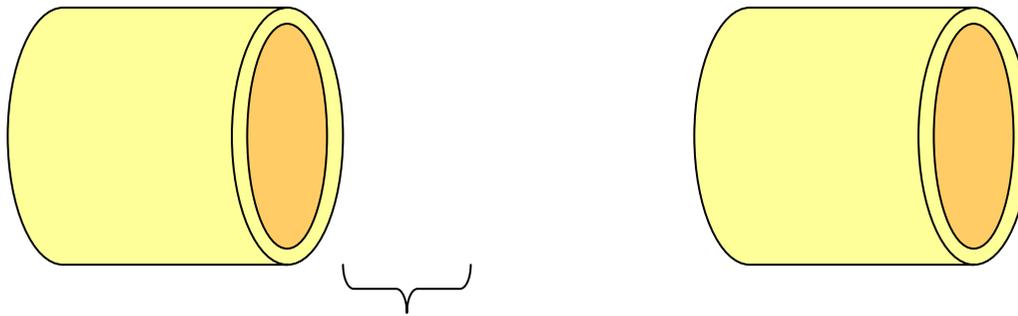


1 mm/day

What is Neurotmesis?

What is Neurotmesis?

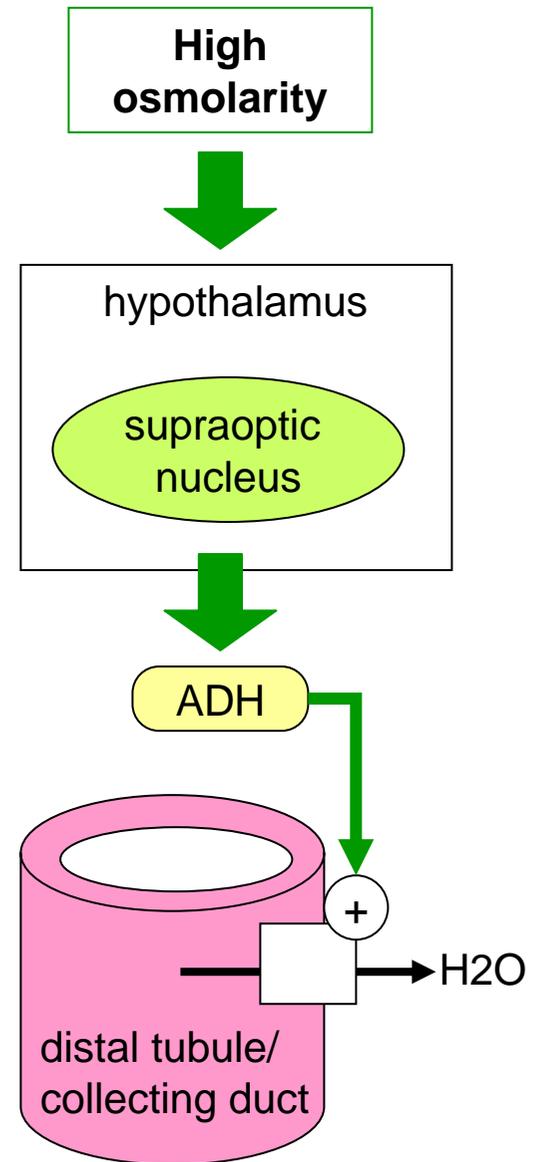
- **Loss of NERVE continuity**
 - **Surgery required for nerve recovery**



1 mm/day

How does ADH increase H₂O absorption?

How does ADH increase H₂O absorption?

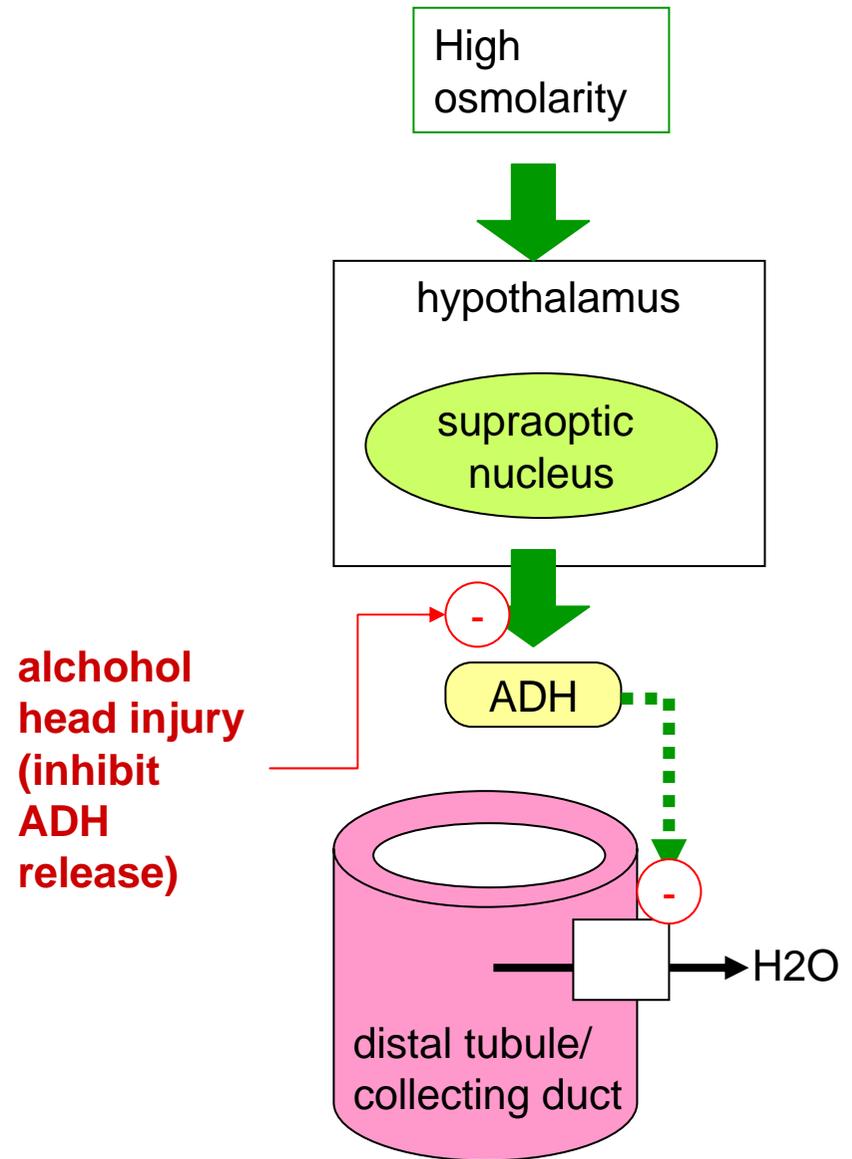


What is the effect of alcohol and head injury on ADH?

What is the effect of alcohol and head injury on ADH?

- **Inhibits ADH release**

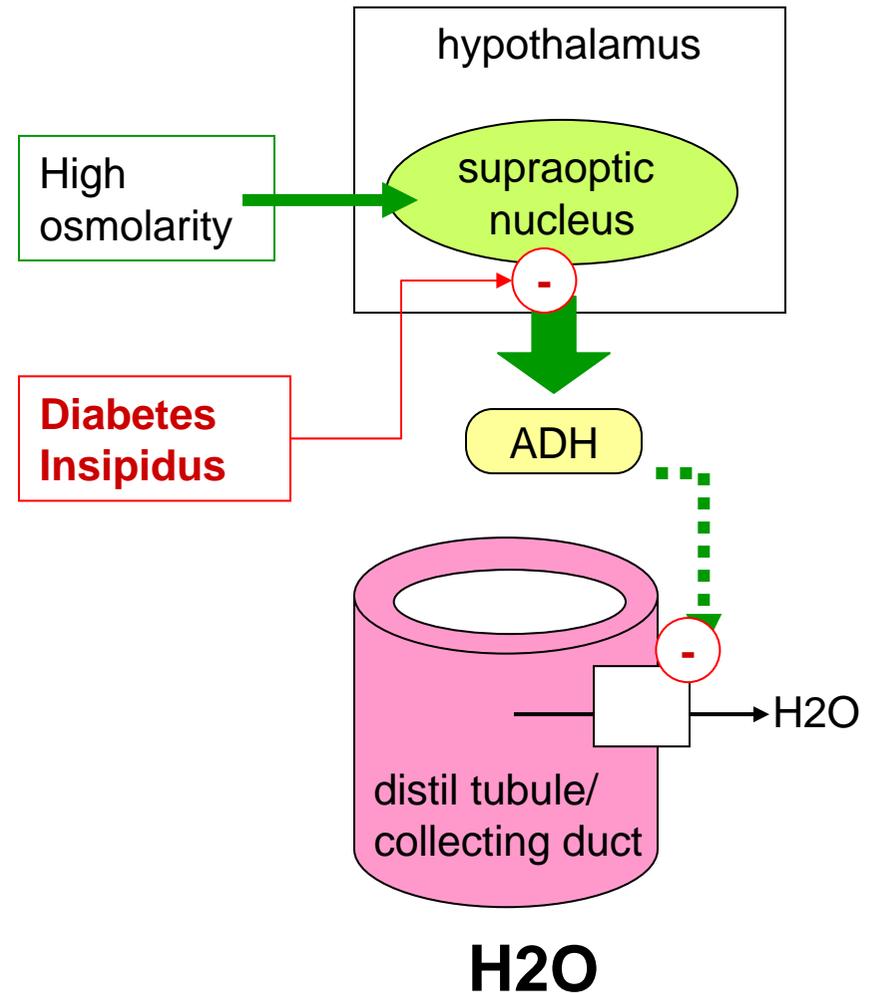
“That’s why you get dehydrated when you drink”



What is the cause of diabetes insipidus?

What is the cause of diabetes insipidus?

- **Decreased ADH release**
 - **inability to concentrate urine**

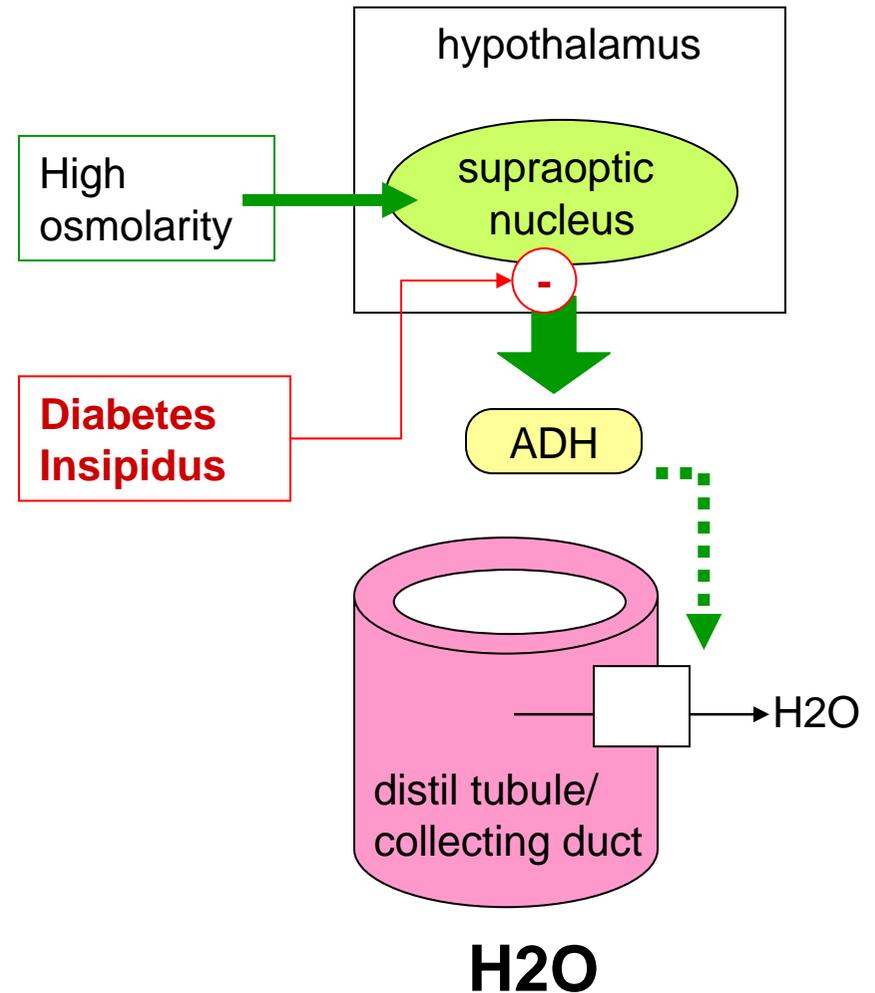


How do you diagnose diabetes insipidus?



How do you diagnose diabetes insipidus?

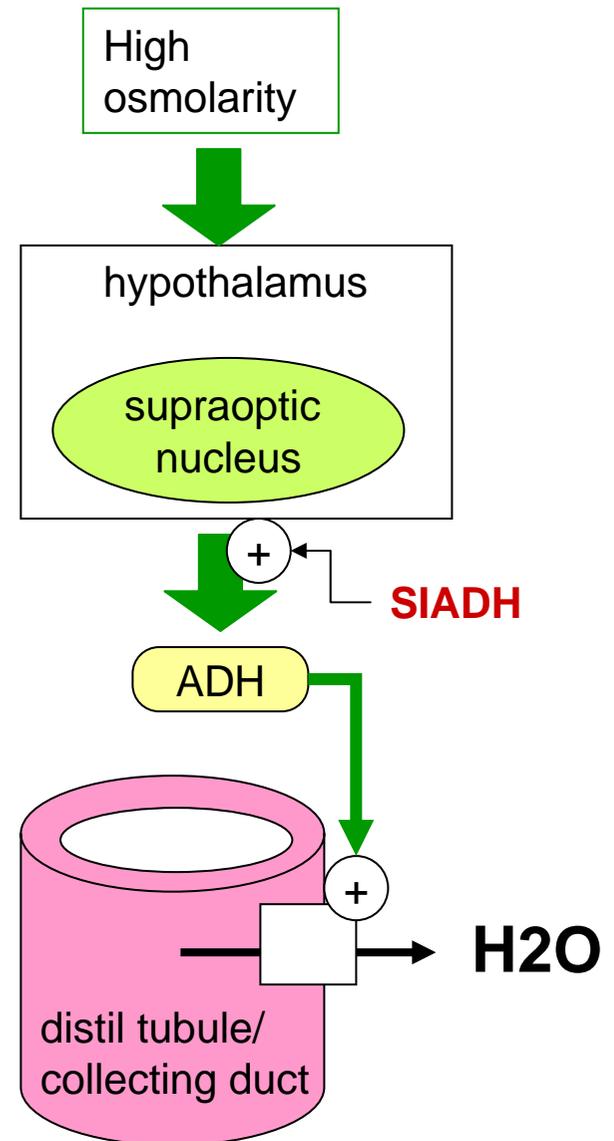
- High urine output
- Dilute urine
 - Low specific gravity
- High serum osmolarity, Na (concentrated blood)



How does SIADH present?

How does SIADH present?

- **High ADH levels**
 - **oliguric (no urine)**
 - **high urine osmolarity**
 - **low serum osmolarity (Na)**



Are AVMs congenital?

Are AVMs congenital?

- Yes

What age do AVMs cause bleeding?

What age do AVMs cause bleeding?

- **Bleed age 20-50**

What age do AVMs cause aneurysms?

What age do AVMs cause aneurysms?

- **Age 40-60**

What other cardiovascular disease are AVMs associated with?

What other cardiovascular disease are AVMs associated with?

- HTN

Are most adult brain tumors malignant?

Are most adult brain tumors malignant?

- **Yes**

Are most adult spinal cord tumors malignant?

Are most adult spinal cord tumors malignant?

- **No**
 - **60% are benign**
- **If extradural**
 - **likely to be malignant/metastatic**

Where are acoustic neuroma usually located?

Where are acoustic neuroma usually located?

- **CN8**
 - **at Cerebello-pontine angle**



What % of patients with head injury have spinal injury?

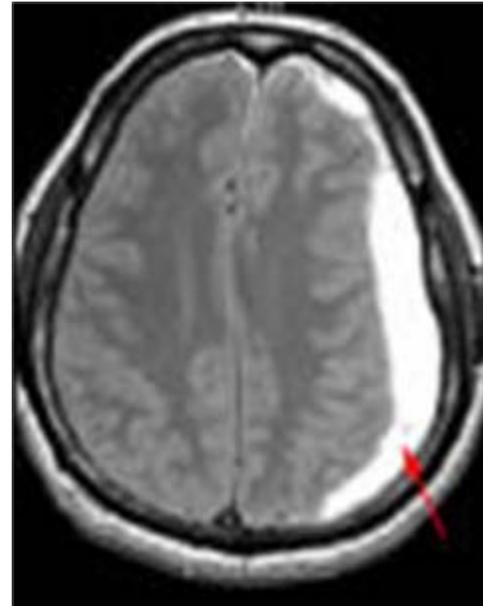
What % of patients with head injury have spinal injury?

- **13%**

What is the mortality of subdurals?

What is the mortality of subdurals?

- 50%



What is the mortality of epidural hematomas?

What is the mortality of epidural hematomas?

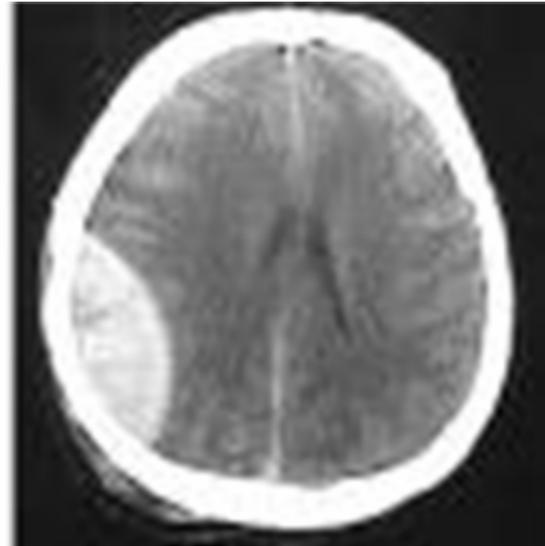
- 15%



What artery leads to an epidural hematoma?

What artery leads to an epidural hematoma?

- **Middle meningeal artery**



What is the classic presentation of a epidural hematoma?

What is the classic presentation of a epidural hematoma?

- **Lucid interval**

**How do you measure cerebral perfusion pressure?
What is an ideal level?**

How do you measure cerebral perfusion pressure?

- **CPP = MAP – ICP**
- **Normal = 70**

What is Cushing's triad?

What is Cushing's triad?

1. **Bradycardia**
2. **Kussmaul respirations (slow, irregular)**
3. **Hypertension**

*“Cushing Loved **Burger King Hamburgers**”*

What causes Cushing's Triad?

What causes Cushing's Triad?

- **Increase ICP**

GCS

- **Motor**

-	6	F
-	5	L
-	4	W
-	3	F
-	2	E
-	1	N

- **Verbal**

-	5	O
-	4	C
-	3	I
-	2	I
-	2	N

- **Eye**

-	4	S
-	3	C
-	2	P
-	1	N

GCS

- **Motor**

- 6 Follows commands
- 5 Localizes to pain
- 4 Withdraws to pain
- 3 Flexes to pain (decorticate)
- 2 Extends to pain
- 1 no motor

- **Verbal**

- 5 Oriented
- 4 Confused
- 3 Inappropriate
- 2 Incomprehensible
- 2 None

- **Eye**

- 4 Spontaneous
- 3 Command
- 2 Pain
- 1 None

Fat
Laura
Withdraws
From
Extasy
Nightly

Orin
Can
Intercept
Incoming
Nuggets

Still
Carl
Paid
Nothing

GCS

- **Motor**

- 6
- 5
- 4
- 3
- 2
- 1

- **Verbal**

- 5
- 4
- 3
- 2
- 2

- **Eye**

- 4
- 3
- 2
- 1

GCS

- **Motor**

- 6 **Follows commands**
- 5 **Localizes to pain**
- 4 **Withdraws to pain**
- 3 **Flexes to pain (decorticate)**
- 2 **Extends to pain**
- 1 **no motor**

- **Verbal**

- 5 **Oriented**
- 4 **Confused**
- 3 **Inappropriate**
- 2 **Incomprehensible**
- 2 **None**

- **Eye**

- 4 **Spontaneous**
- 3 **Command**
- 2 **Pain**
- 1 **None**

Fat
Laura
Withdrew
From
Extcasy
Nightly

Orin
Can
Intercept
Incoming
Nuggets

Still
Carlos
Paid
Nothing

What is required if GSC is 8 or less?

What is required if GSC is 8 or less?

- **ICP monitor**

What is required if GCS is 10 or less?

What is required if GCS is 10 or less?

- **Intubation**

What is the mortality of a GSC of 5?

What is the mortality of a GSC of 5?

- **50%**

What causes spinal shock?

What causes spinal shock?

- **Cord injury**
 - **above T5**

How does spinal shock present?

How does spinal shock present?

1. Hypotension
2. Bradycardia
3. warm perfused extremities
 - vasodilated

How do you treat spinal shock?

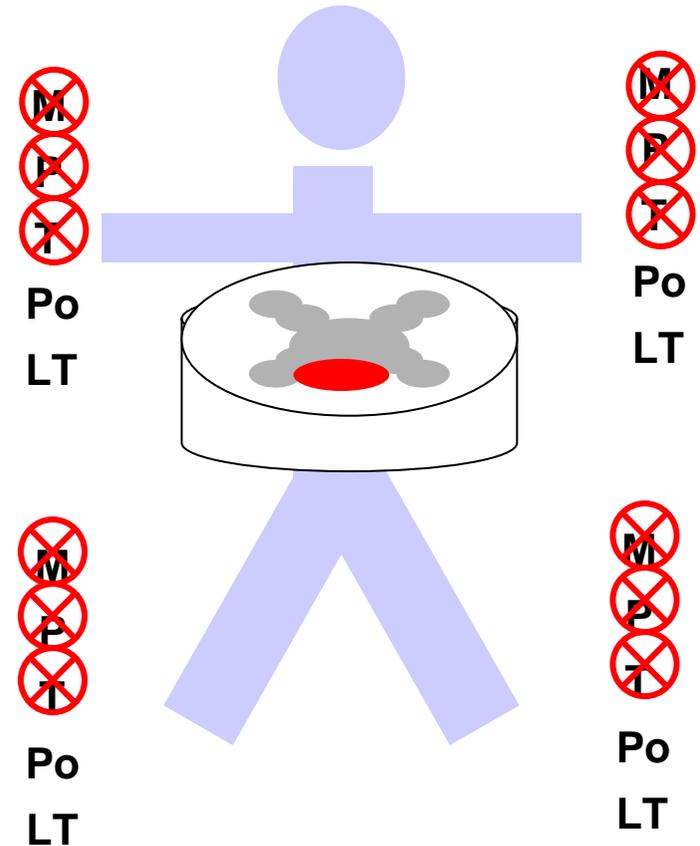
How do you treat spinal shock?

1. **Fluids**
2. **alpha agonist**
 - **may need**

What are the findings of Anterior spinal artery syndrome?

What are the findings of Anterior spinal artery syndrome?

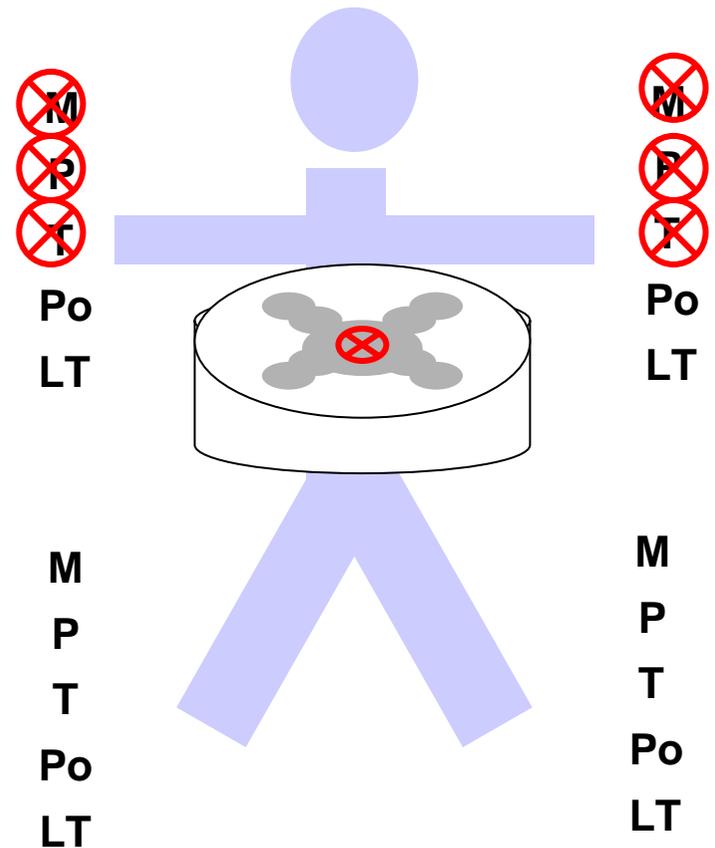
- **Lose**
 - **bilateral**
 - **motor**
 - **pain**
 - **temp**
- **Keep**
 - **bilateral**
 - **position sense**
 - **light touch**



What are the findings of Central Cord Syndrome?

What are the findings of Central Cord Syndrome?

- **Lose**
 - **bilateral upper extremity:**
 - **motor**
 - **pain**
 - **temp**
- **Legs relatively spared**



“Same as ASAS except lower ext spared”

What usually causes Central Cord Syndrome?

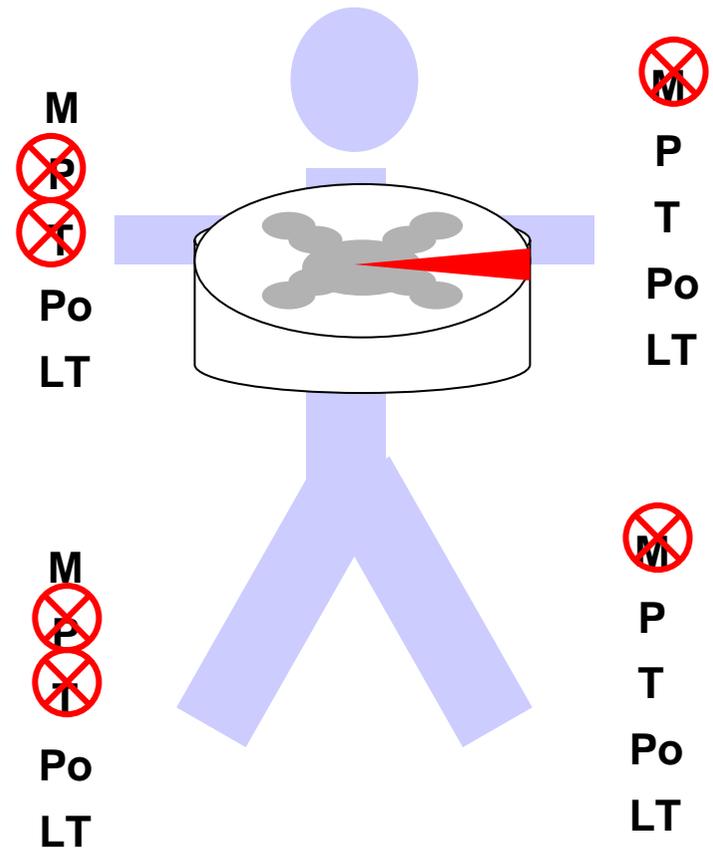
What usually causes Central Cord Syndrome?

- **Hyperextended C-spine injury**

What are the findings of Brown Sequard?

What are the findings of Brown Sequard?

- **Lose**
 - **ipsilateral**
 - **motor**
 - **contralateral**
 - **pain**
 - **temp**



“Motor on the same side as swing”

What causes Brown Sequard?

What causes Brown Sequard?

- **Spinal cord transected 1/2 way**

When do you take a skull fracture to the OR?

When do you take a skull fracture to the OR?

1. Open fx
2. Skull depressed to thickness of skull or more

Flashcard Instructions

MOUSE

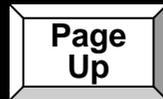
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



First
Slide



Previous
Slide



*Answer
or Next
Question*



Last
Slide

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



What is the FENA in a low volume “pre-renal” patient?

What is the FENA in a low volume “pre-renal” patient?

- **FeNa > 1.0**

What is the Urine Na in a low volume “pre-renal” patient?

What is the Urine Na in a low volume “pre-renal” patient?

- **Urine Na < 20**

What is the BUN/Cr in a low volume “pre-renal” patient?

What is the BUN/Cr in a low volume “pre-renal” patient?

- **BUN/Cr > 30**

List the anatomy (saliva, stomach, duodenum) by highest K concentration?

List the anatomy (saliva, stomach, duodenum) by highest K concentration?

- 1. Saliva (20meq) >**
- 2. Gastric (10Meq) >**
- 3. Pancreatic/Duodenal (5Meq)**

Where are the branched chain amino acids (leucine, isoleucine, and valine) metabolized?

Where are the branched chain amino acids (leucine, isoleucine, and valine) metabolized?

- **Muscle**

What is characteristic of leucine, isoleucine, and valine

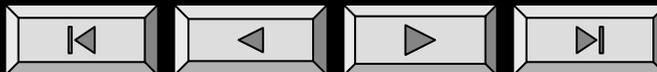


What is characteristic of leucine, isoleucine, and valine

- All are essential amino acids

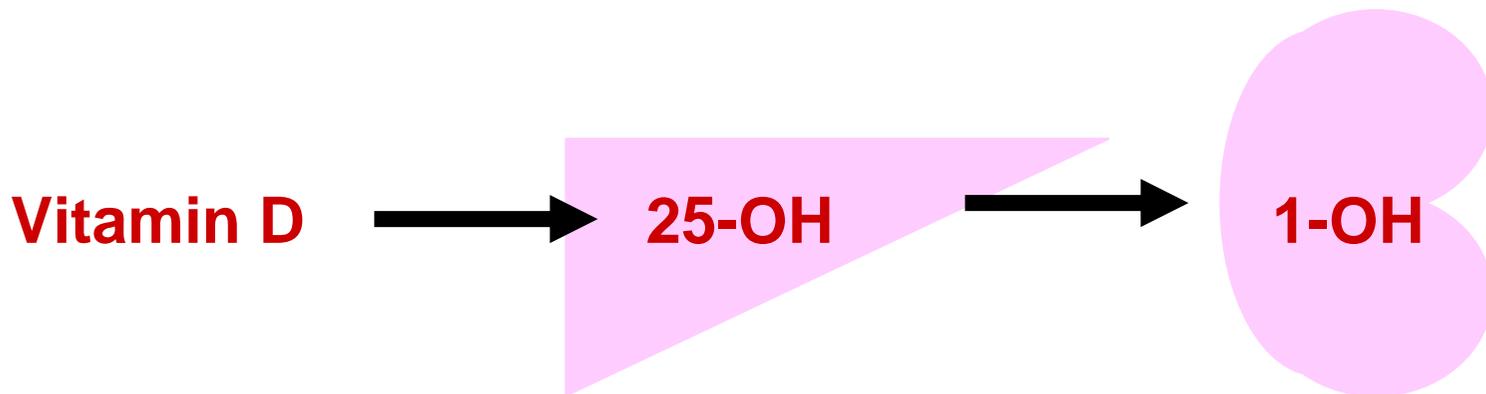


What are the three steps to activate vitamin D?



What are the three steps to activate vitamin D?

1. Vitamin D made in the skin
2. Forms 25-OH in the liver
3. Forms active 1-OH in the kidney

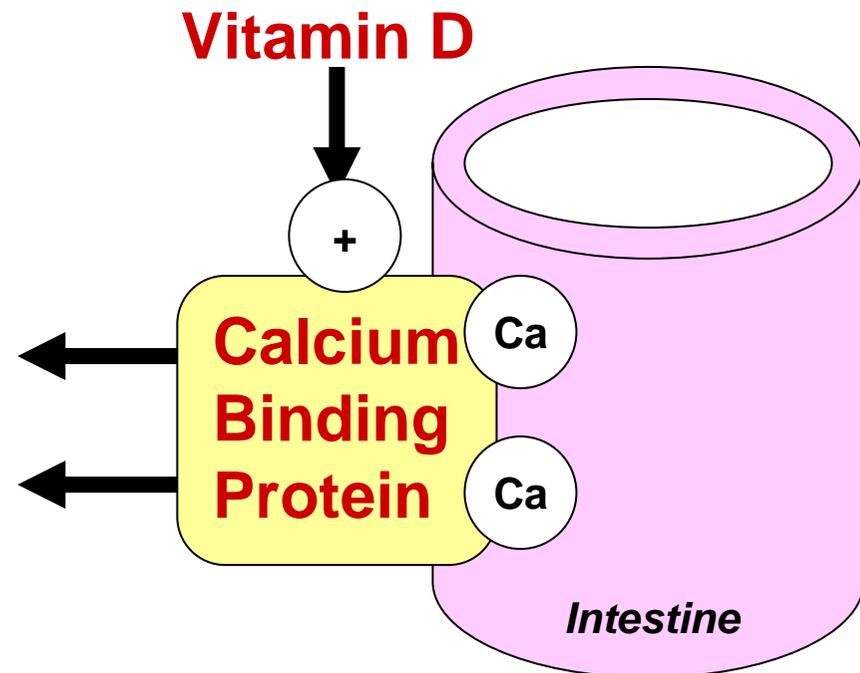


What is the effect of Vit D on calcium?



What is the effect of Vit D on calcium?

- **Increase Calcium binding protein to increase intestinal Ca absorption**



What is the clinical application of Vitamin A on wound healing?

What is the clinical application of Vitamin A on wound healing?

- **It reverse the negative effect of steroids on wound healing**

What is the total body water (TBW) in infants, men, women, obese people?

What is the total body water (TBW) in infants, men, women, obese people?

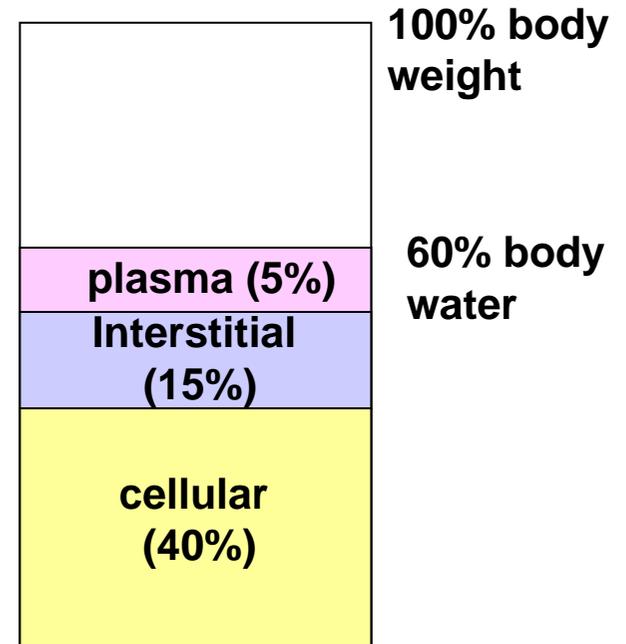
- **Infants 80%**
- **Men 60%**
- **Women 50% (more fat)**
- **10% less if obese (less H₂O in fat)**



What is the distribution of total body water (TBW)?

What is the distribution of total body water (TBW)?

- **If total is 60% (men), then**
 - **40% is cellular**
 - **15% is interstitial**
 - **5% in plasma**



What is the Kcal/g of Carbs?



What is the Kcal/g of Carbs?

- 3.4



What is the Kcal/g of protein?



What is the Kcal/g of protein?

- 4



What is the Kcal/g of Fats?



What is the Kcal/g of Fats?

- 9



What is the Basal caloric expenditure?



What is the Basal caloric expenditure?

- **25 kcal/kg/day**

How much protein is needed to meet Basal caloric expenditure?

How much protein is needed to meet Basal caloric expenditure?

- **1 g protein/kg/day needed**

What is the respiratory quotient ?



What is the respiratory quotient ?

- **CO₂ produced per O₂ consumed**



What is the respiratory quotient of
-fat used?
-carb used?

What is the respiratory quotient of
-fat used?
-carb used?

- **0.7**
- **1.0 (produces more CO₂ / O₂ used)**



How much Nitrogen is in 6.25 grams of protein?

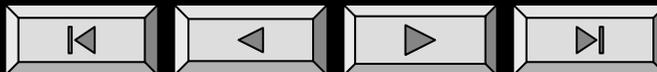


How much Nitrogen is in 6.25 grams of protein?

- **1 gram of Nitrogen**



What formula reflects the Nitrogen balance?



What formula reflects the Nitrogen balance?

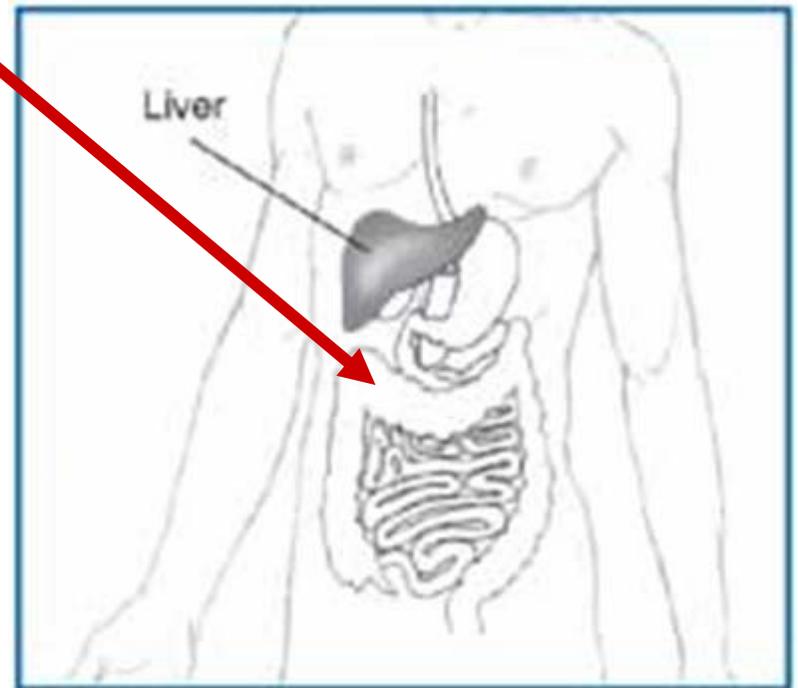
- **N balance = N in (grams) - N out**
Protein / 6.25 - 24 hr urine N + 4 g

What is the preferred fuel for the colon?



What is the preferred fuel for the colon?

- **Short chain fatty acids**

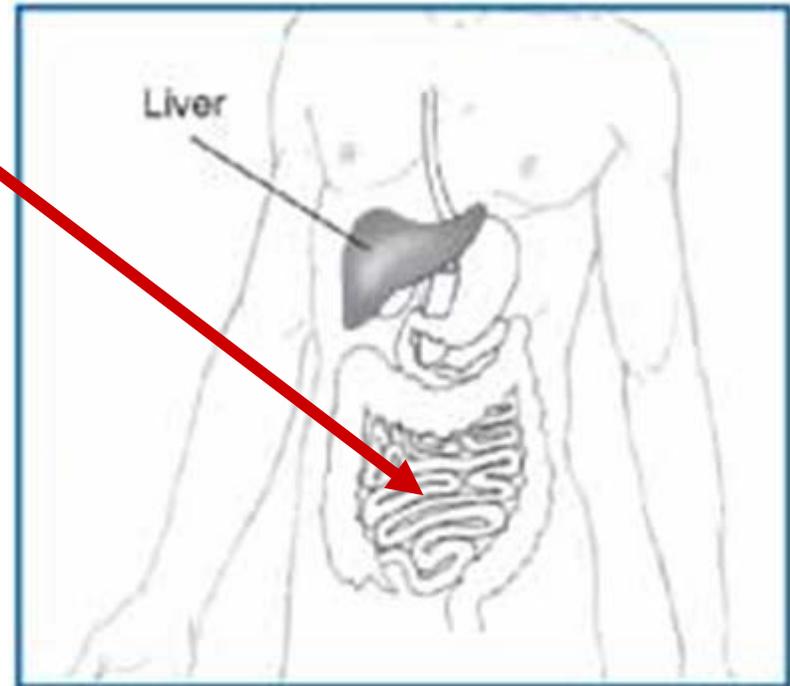


What is the preferred fuel of the small bowel?



What is the preferred fuel of the small bowel?

- **Glutamine**



What is the #1 amino acid in the bloodstream?

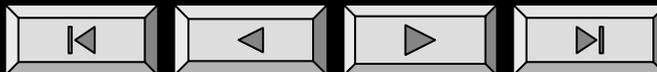


What si the #1 amino acid in the bloodstream?

- **Glutamine**



What is the impact of Glutamine blood levels with stress?



What is the impact of Glutamine blood levels with stress?

- **Decreases**
 - **as glutamine goes to the kidney to form ammonium to help acidosis**



What is the impact of Glutamine on the bowel during chemo or XRT to bowel?

What is the impact of Glutamine on the bowel during chemo or XRT to bowel?

- **Decreased translocation**
- **Increased mucosal health**

Energy to heal

What are the steps of fat digestion?



What are the steps of fat digestion?

Micelles



Enterocytes



Chylomicrons



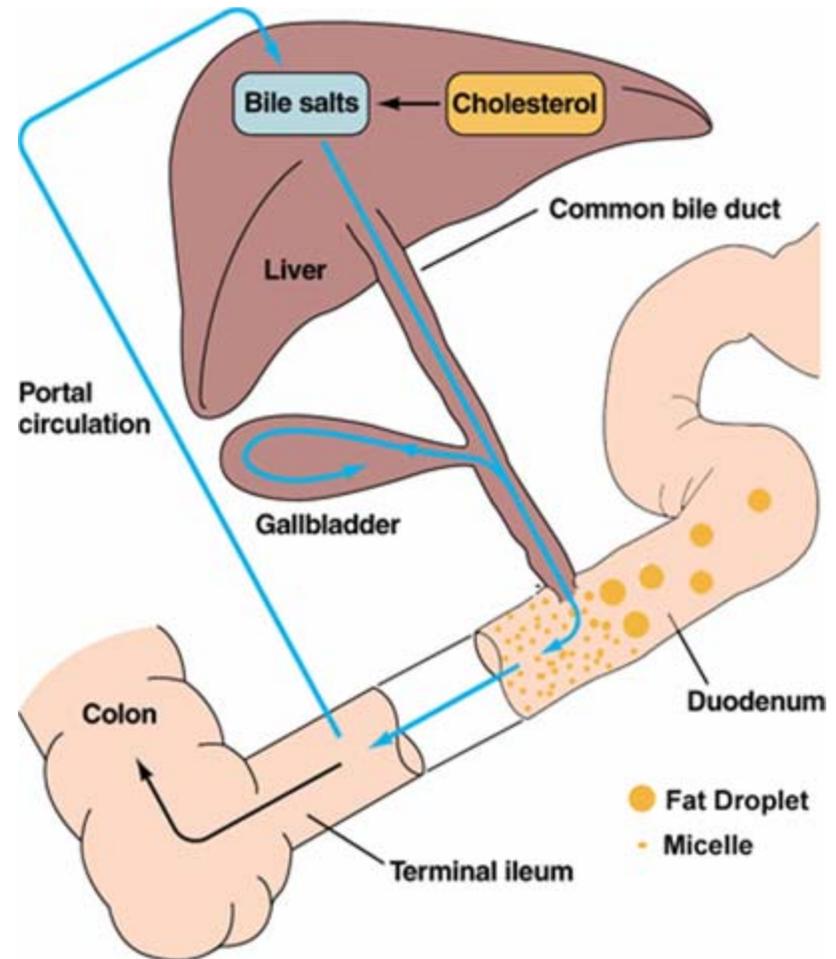
Lymphatics (jxn LIJ/subclavian)

What type of fats go to the portal system with AAs and Carbs?



What type of fats go to the portal system with AAAs and Carbs?

- **Only**
 - **medium**
 - **short chain triglycerides** go to the portal system



Describe a Chromium deficiency symptoms?



Describe a Chromium deficiency symptoms?

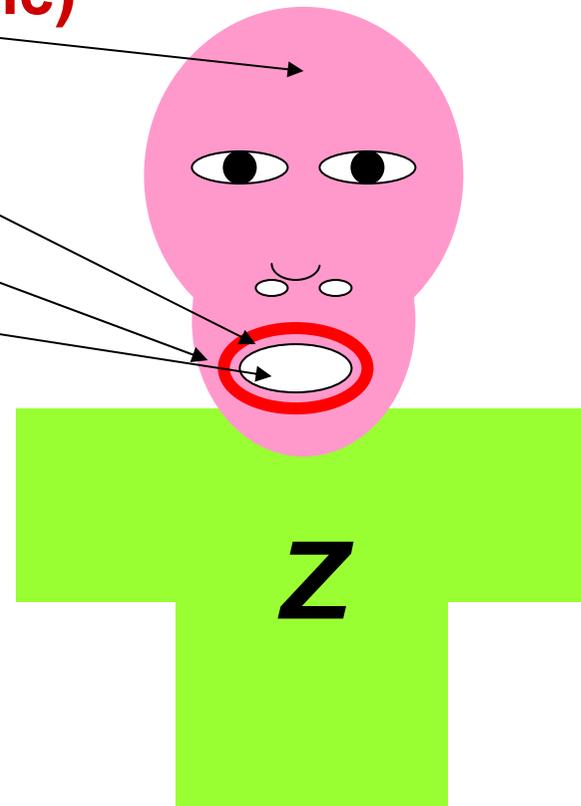
1. **Hyperglycemia (relative diabetes)**
2. **Neuropathy**

cHromiuN

Describe a Zinc deficiency symptoms?

Describe a Zinc deficiency symptoms?

1. **H**air loss (also **L**inoleic)
2. **P**erioral rash
3. **P**oor healing
4. **C**hange in taste



Describe a Phosphate deficiency symptoms?



Describe a Phosphate deficiency symptoms?

1. **Encephalopathy (needed for ATP)**
2. **Respiratory weakness**

*“They always fail to dx Phos def in the **ER**”*

Describe a Copper deficiency symptoms?

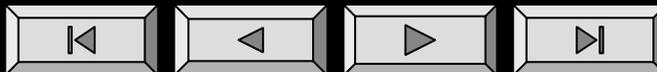
Describe a Copper deficiency symptoms?

1. Anemia
2. Neutropenia

“Anemic, Neutropenic blood is Cooper colored”

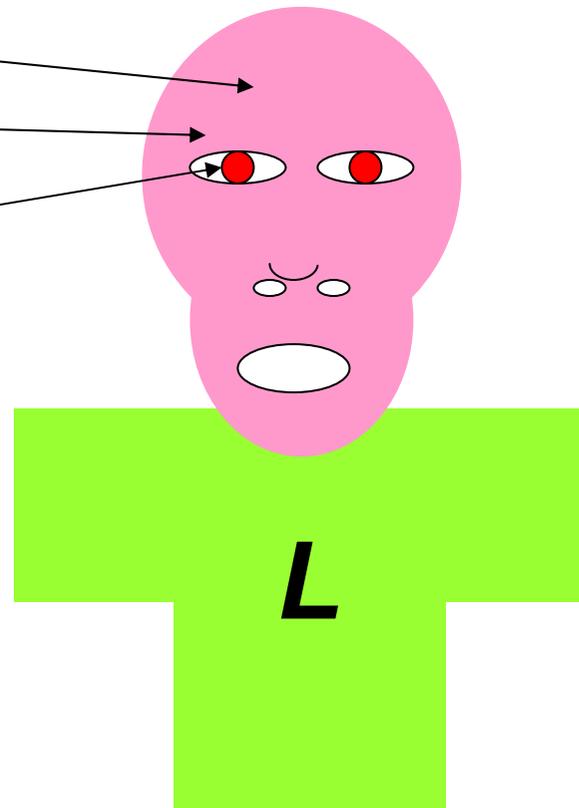


Describe a Linoleic acid deficiency symptoms?



Describe a Linoleic acid deficiency symptoms?

- **Hair loss**
- **Dermatitis**
- **Change in vision**



Describe Vit A deficiency symptoms?



Describe Vit A deficiency symptoms?

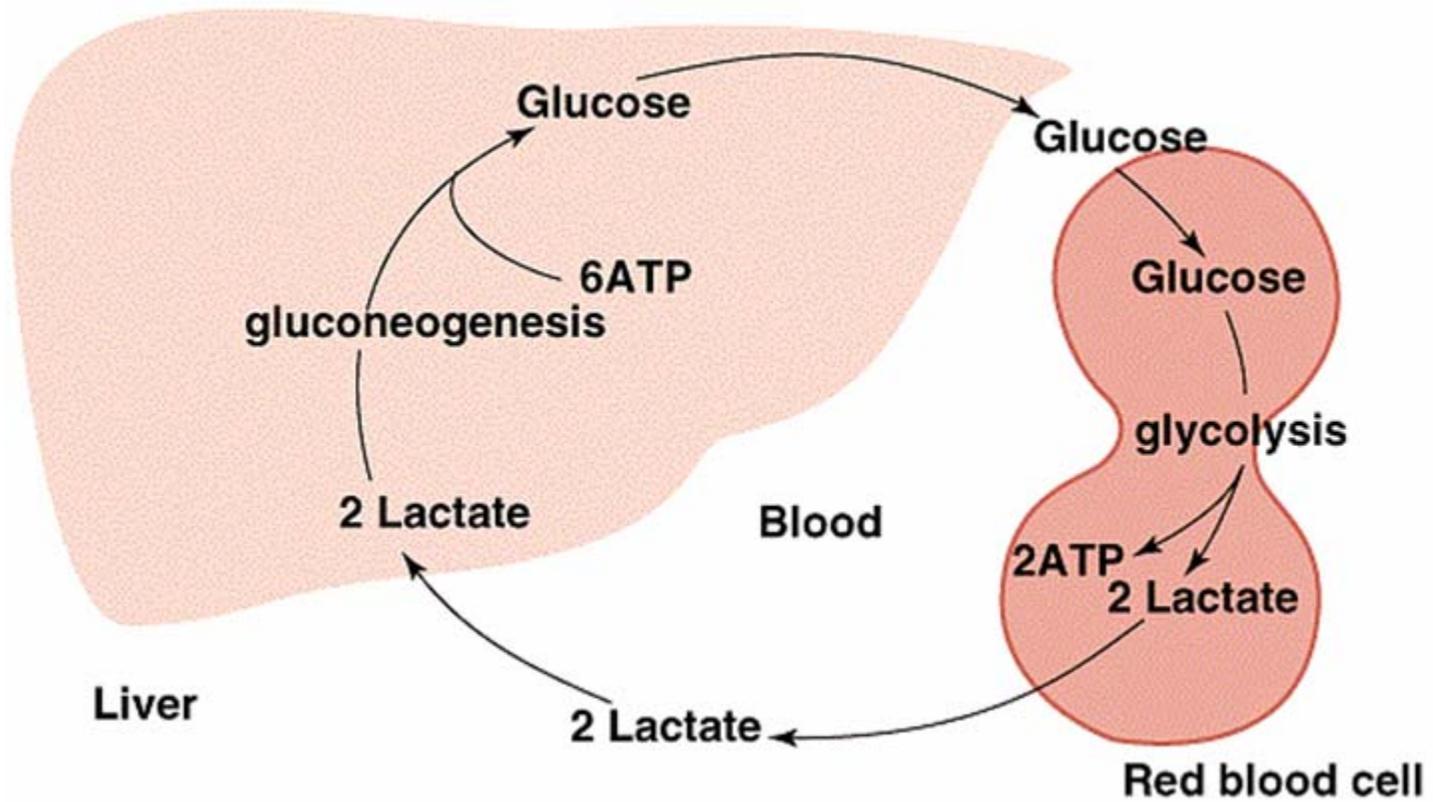
1. Can decrease Vitamin C stores



Describe the Cori cycle?



Describe the Cori cycle?



What is the energy source for the brain during starvation?



What is the energy source for the brain during starvation?

- **Ketones from fatty acids**
 - **(instead of glucose)**



Where does gluconeogenesis occur during late starvation?



Where does gluconeogenesis occur during late starvation?

- **Shifts from the liver to the KIDNEY**
 - **as sources of alanine in the liver are depleted**



What is the components of Normal saline?



What is the components of Normal saline?

- **154 meq Na and Cl**



What are the five components (meq) of Lactate Ringers?



What are the five components (meq) of Lactate Ringers?

1. 130 Na
2. 4 K
3. 2.7 Calcium
4. 109 Chloride
5. 28 Bicarb

How does alkalosis cause hypokalemia?



How does alkalosis cause hypokalemia?

- Drives K into cells and urine in exchange for H⁺ which neutralizes the alkalosis

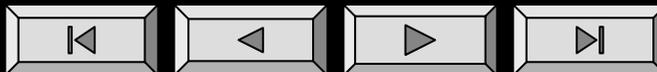
What are the EKG finding of hyperkalemia?

What are the EKG finding of hyperkalemia?

- **PeaKed t waves**
- **Wide QRS**



What should be done if a patient is hyperkalemic?



What should be done if a patient is hyperkalemic?

1. **Ca to protect the heart**
2. **Bicarb (pulls H out, shifts K in)**
3. **Insulin / Glucose to shift K back into cells**
4. **Give Kayexalate**

What should be done if hyperkalemia is severe?

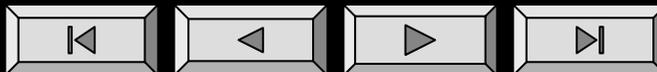


What should be done if hyperkalemia is severe?

- **Dialysis**



What is the definition of a Na deficit?



What is the definition of a Na deficit?

$$\text{Na deficit} = .6 (\text{weight in Kg}) (140 - \text{Na})$$

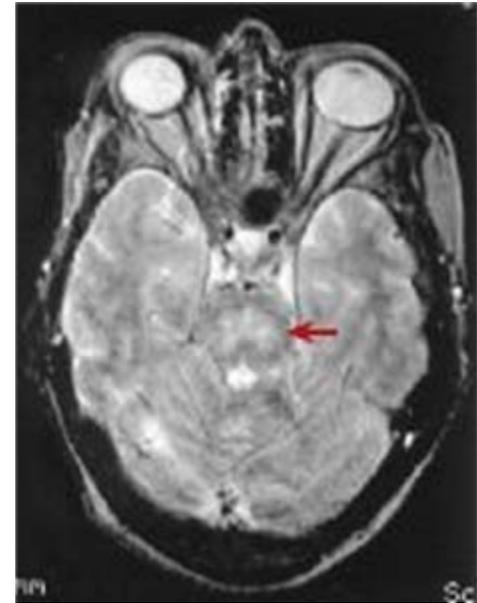


Why do you replace Na no faster than 1 Meq/hr?



Why do you replace Na no faster than 1 Meq/hr?

- To avoid CPM



What is the most common presentation of CPM?



What is the most common presentation of CPM?

1. **Severe hyponatremia is diagnosed in a person who presents to the emergency department with delirium. (Electrolyte disturbances frequently cause encephalopathy.)**
2. **IV fluid therapy is administered, and serum sodium is normal by the next day.**
3. **The patient's mental status improves, and he or she is more alert, but this is followed by neurologic deterioration 48-72 hours later.**
4. **Key features of the neurologic exam include confusion, horizontal gaze paralysis, and spastic quadriplegia.**
5. **Brain MRI reveals intense symmetric demyelination in the brain stem pons.**



What is the impact of hyperglycemia on Na levels?



What is the impact of hyperglycemia on Na levels?

- **Lowers Na**
 - **for every 100 glucose over 100, (add 2 to Na)?**



What does hypocalcemia cause?



What does hypocalcemia cause?

- **hyperexcitability**
 - **increase reflexes (Chvostek's)**
 - **tetany**



What does hypomagnesemia cause?



What does hypomagnesemia cause?

- **hyperexcitability**
 - **increase reflexes (Chvostek's)**
 - **tetany**



What is the formula for anion gap?



What is the formula for anion gap?

- **Anion Gap = pos ions – total neg ions**
= Na – (HCO₃⁻ + Cl⁻)
- **Normal is < 12**

What are the causes of anion gap acidosis?



What are the causes of anion gap acidosis?

- **Methanol**
- **Uremia**
- **DKA**
- **Paraldehyde**
- **Lactic acidosis**
- **Ethylene glycol**
- **Salicylates**

How is replacing Magnesium related to correcting low CA?



How is replacing Magnesium related to correcting low CA?

- **Low Mag inhibits PTH**
 - **If difficult replacing a patients low CA, then give Mag**



Flashcard Instructions

MOUSE

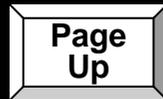
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



First
Slide



Previous
Slide



Answer
or Next
Question



Last
Slide

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.

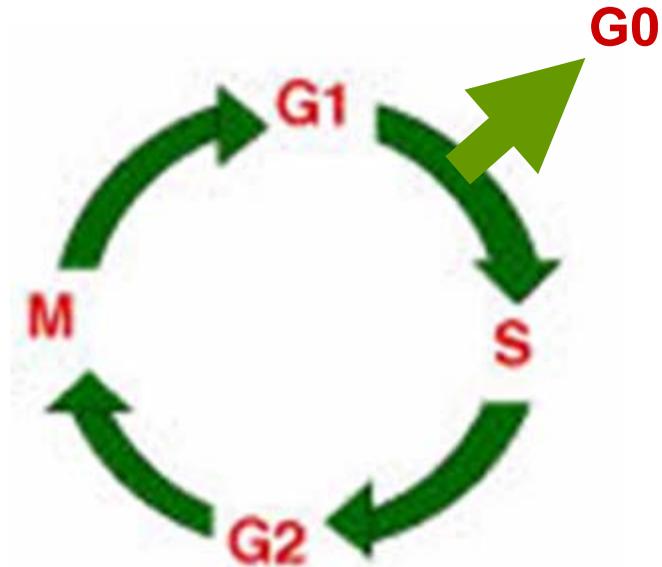


What is the most variable period of the cell cycle?



What is the most variable period of the cell cycle?

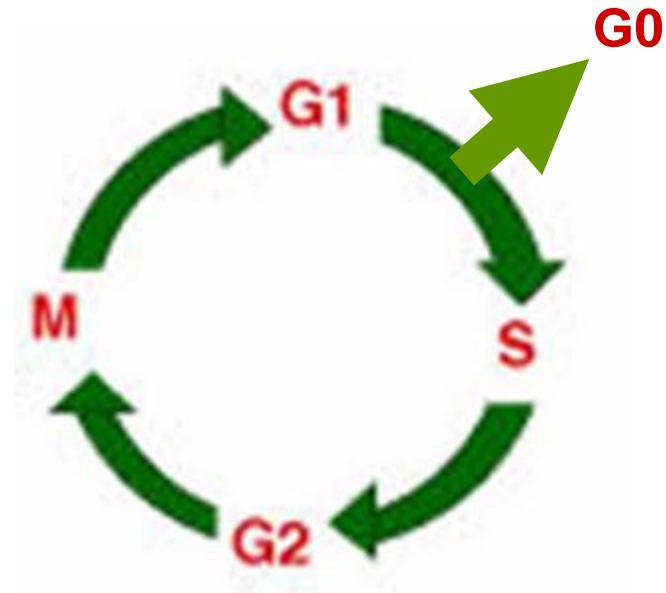
- G1



What period of the cell cycle do most growth factors act on?

What period of the cell cycle do most growth factors act on?

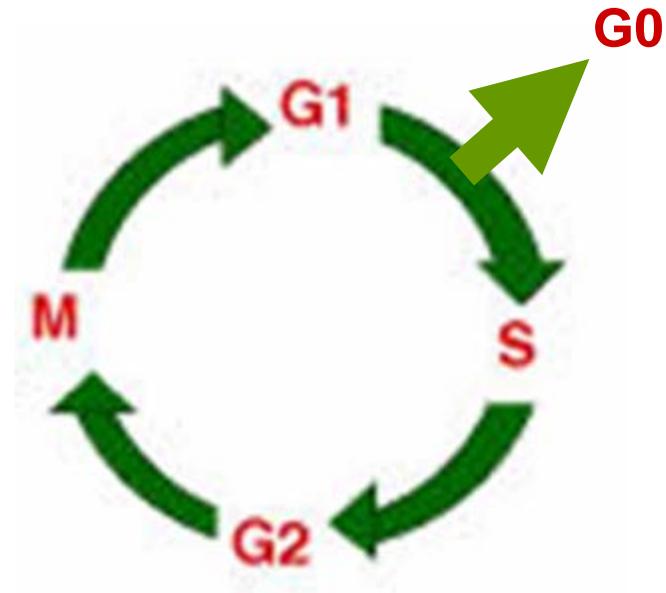
- G1



What phase of the cell cycle is most sensitive to radiation therapy?

What phase of the cell cycle is most sensitive to radiation therapy?

- M phase



What is the effect of O₂ levels on radiation therapy?

What is the effect of O₂ levels on radiation therapy?

- **Most effective with high O₂ levels**

Does higher energy levels cause more or less damage to the skin?



Does higher energy levels cause more or less damage to the skin?

- **Less**

What can be found on the pathology after radiation therapy?

What can be found on pathology after radiation therapy?

- **obliterative endarteritis**
 - **decrease healing due to impaired fibroblasts**

How do you biopsy an extremity sarcoma if it is less than 4cm?

How do you biopsy an extremity sarcoma if it is less than 4cm?

- **Excisional biopsy**

How do you biopsy an extremity sarcoma if it is > 4 cm?

How do you biopsy an extremity sarcoma if it is > 4 cm?

- **longitudinal incision with an incisional biopsy**

Why do you use a longitudinal incision with an incisional biopsy for a extremity sarcoma > 4cm?



Why do you use a longitudinal incision with an incisional biopsy for a extremity sarcoma > 4cm?

- 1. Less lymphatic disruption**
- 2. Easier to excise scar if biopsy is positive**

When do you use post operative RT after an extremity sarcoma biopsy?

When do you use post operative RT after an extremity sarcoma biopsy?

1. If high grade sarcoma
2. If close margins
3. If tumor > 5 cm

What are the most common cancers found with Li Fraumeni syndrome?



What are the most common cancers found with Li Fraumeni syndrome?

1. **Leukemia**
2. **Sarcomas**
3. **Breast CA**
4. **Brain Tumors**

*“Li Fraumeni **L**oved to **S**uck **B**ird **B**rain**s**”*

What gene mutation is associated with Li Fraumeni syndrome?

What gene mutation is associated with Li Fraumeni syndrome?

- **p53**



How do sarcomas spread?



How do sarcomas spread?

- **Hematogenously**
 - **not through lymphatics**

How is sarcoma staging based?



How is sarcoma staging based?

- **On grade**
 - **not size or nodes**

What four gene mutations are associated with colon CA?

What four gene mutations are associated with colon CA?

1. k-ras
2. DCC (deleted colon ca)
3. p53
4. APC

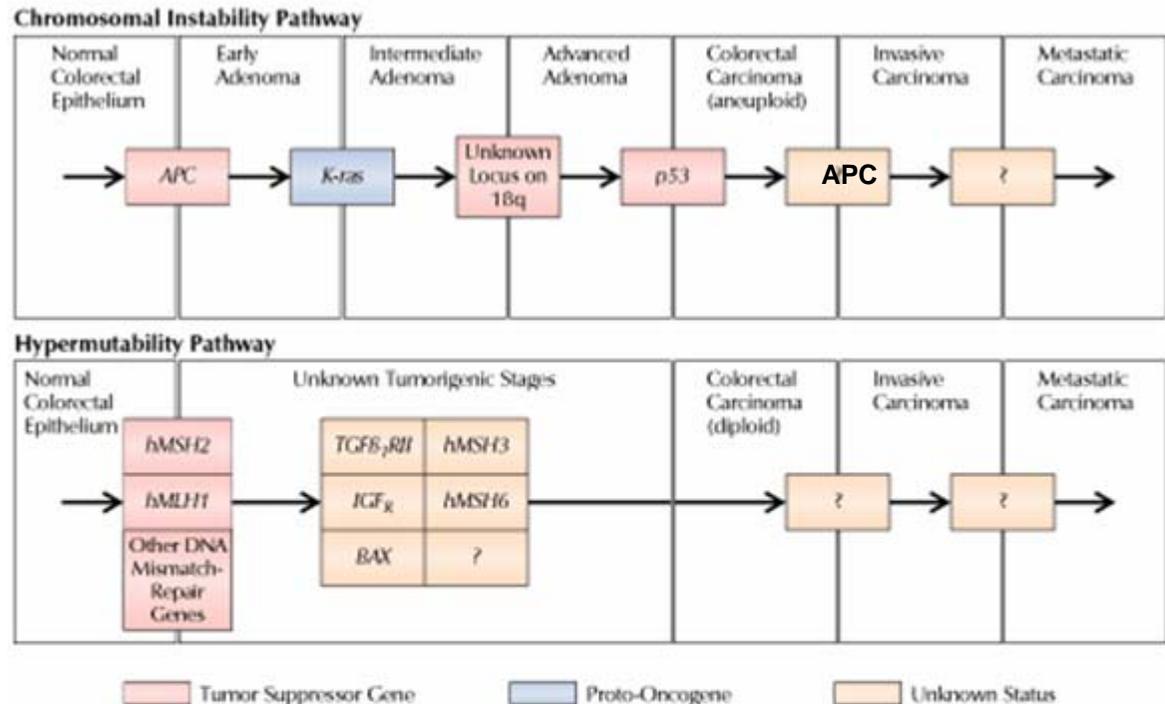


Figure 1. Genetic pathways identified in hereditary colorectal cancer also shed light on sporadic cancer. In a pathway characteristic of familial adenomatous polyposis (FAP) and also some 85% of sporadic colorectal cancers (top), loss of the gatekeeper gene APC is followed, over a period typically spanning more than two decades, by losses often involving deletions of chromosomal segments on which crucial genes are situated. In a pathway characteristic of hereditary nonpolyposis colorectal cancer (HNPCC) and also some 15% of sporadic cases (bottom), loss of any of several DNA repair genes creates a propensity for mutation throughout the genome; although the precise sequence of subsequent events is unclear, mutations in five genes have been identified, including two coding for growth-factor receptors, an apoptosis gene, and ironically, two of the DNA repair genes. Additional uncharacterized mutations give cancers their individualities. Tumor suppressor genes require loss of both alleles to promote tumorigenesis. By contrast, protooncogenes require only one hit, but of a type that causes gain of function.

What six gene mutations are associated with breast CA?

What six gene mutations are associated with breast CA?

1. p53
2. bcl-2
3. cmyc
4. cmyb
5. her 2
6. neu

What four cancers is c-myc associated with?

What four cancers is c-myc associated with?

- 1. Breast CA**
- 2. Burkitt's lymphoma**
- 3. Small cell lung CA**
- 4. Neuroblastoma**

What three genes are linked to apoptosis?

What three genes are linked to apoptosis?

- 1. p53**
- 2. Bcl-2**
- 3. c-myc**

What is sis oncogene homologous for?

What is sis oncogene homologous for?

- PDGF



What does erb B stand for?



What does erb*B* stand for?

- **epidermal growth factor receptor**

What is the clinical significance of erb*B*?



What is the clinical significance of erbB?

- **Associated with decreased survival in breast CA**

What type of gene does K-ras encode?

What type of gene does K-ras encode?

- **GTP protein**

What three cancers is the K-ras gene associated with?

What three cancers is the K-ras gene associated with?

- 1. Colon CA**
- 2. Pancreatic CA**
- 3. Lung CA**

**What proto oncogene is diagnostic of Medullary
Thyroid CA?**

What proto oncogene is diagnostic of Medullary Thyroid CA?

- Ret

If a patient has a family history of MEN and has the Ret proto-oncogene, what is the proper action?

If a patient has a family history of MEN and has the Ret proto-oncogene, what is the proper action?

- **Total thyroidectomy**

What is the mechanism of Tamoxifen?

What is the mechanism of Tamoxifen?

- **Binds estrogen receptor**

What is the clinical value of Tamoxifen?

What is the clinical value of Tamoxifen?

- **Decreased breast cancer in high risk patients**

What are the risks of Tamoxifen?

What are the risks of Tamoxifen?

- DVT
- Endometrial CA

What 2 chemotherapies have pulmonary fibrosis as a complication?

What 2 chemotherapies have pulmonary fibrosis as a complication?

- 1. Bleomycin**
- 2. Busulfan**

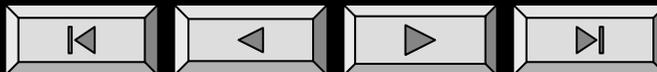
*No **Big Blow***

What two chemotherapies have neurotoxicity as a toxicity?

What two chemotherapies have neurotoxicity as a toxicity?

- 1. Vincristine**
- 2. Cisplatin (Platins)**

What is the mechanism of Levamisole?



What is the mechanism of Levamisole?

1. **An immunostimulant**
2. **Also a antihelminthic agent**

Fill out the following table linking mutations to CA?

				apoptosis							
	APC	DCC	K-ras	p53	bcl-2	c-myc	cmyb	her 2	neu	ret	N-myc
Colon CA											
Breast CA											
Small cell lung CA											
Neuro-blastoma											
Burkitts lymphoma											
Medullary thyroid CA											
Li Fraumeni Syndrome											
Pancreatic CA											
Lung CA											

Fill out the following table linking mutations to CA?

				apoptosis							
	APC	DCC	K-ras	p53	bcl-2	c-myc	cmyb	her 2	neu	ret	N-myc
Colon CA			50%								
Breast CA											
Small cell lung CA											
Neuro-blastoma											
Burkitts lymphoma											
Medullary thyroid CA										100%	
Li Fraumeni Syndrome											
Pancreatic CA			90%								
Lung CA											

Flashcard Instructions

MOUSE

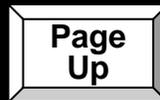
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



What cell builds bone?

What cell builds bone?

- **Osteoblast**

“B for build”

What cells destroys bone?

What cells destroys bone?

- **Osteoclast**

“C for clear”

What discs are involved in a L4 root compression?

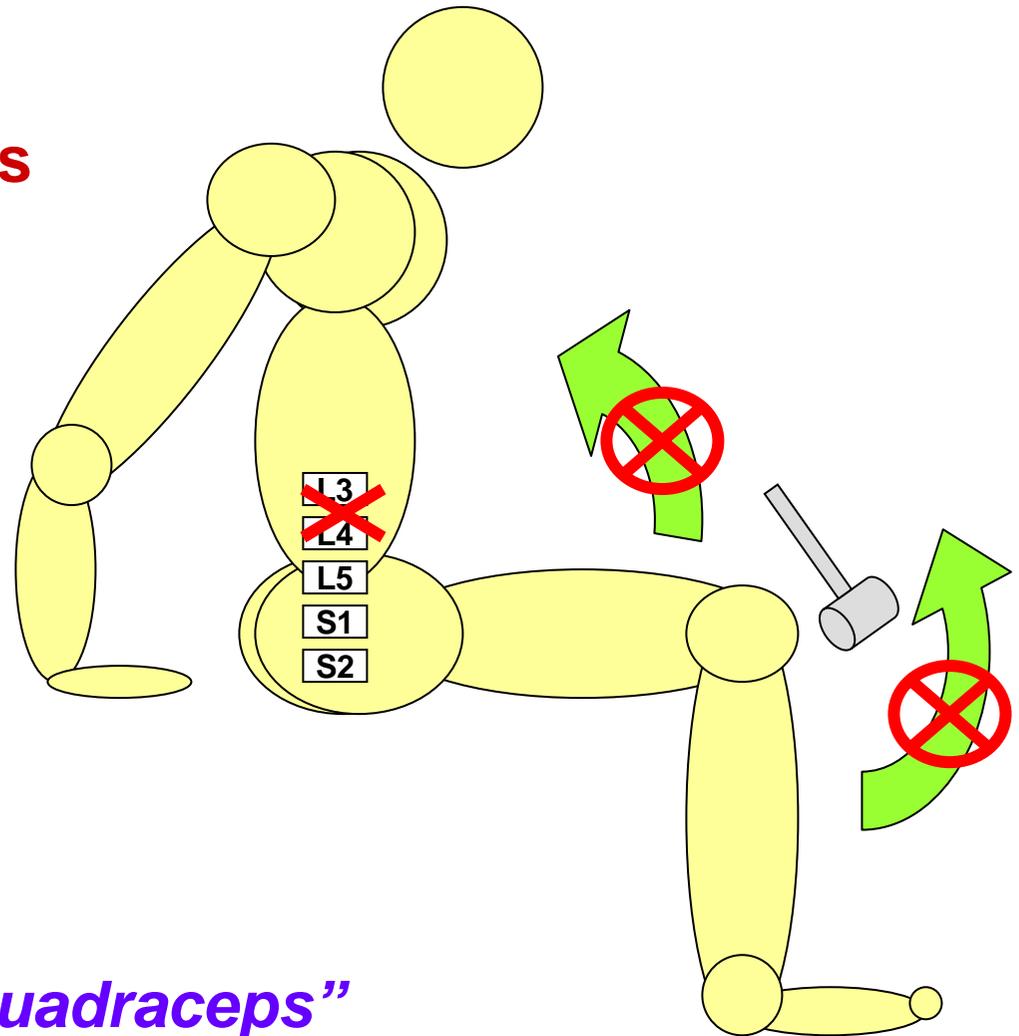
What discs are involved in a L4 root compression?

- L3 L4 disc

What are the symptoms of a L4 root compression?

What are the symptoms of a L4 root compression?

1. Weak quadriceps
2. Weak knee jerk



"4 quadriceps"

What discs are involved in a L5 root compression?

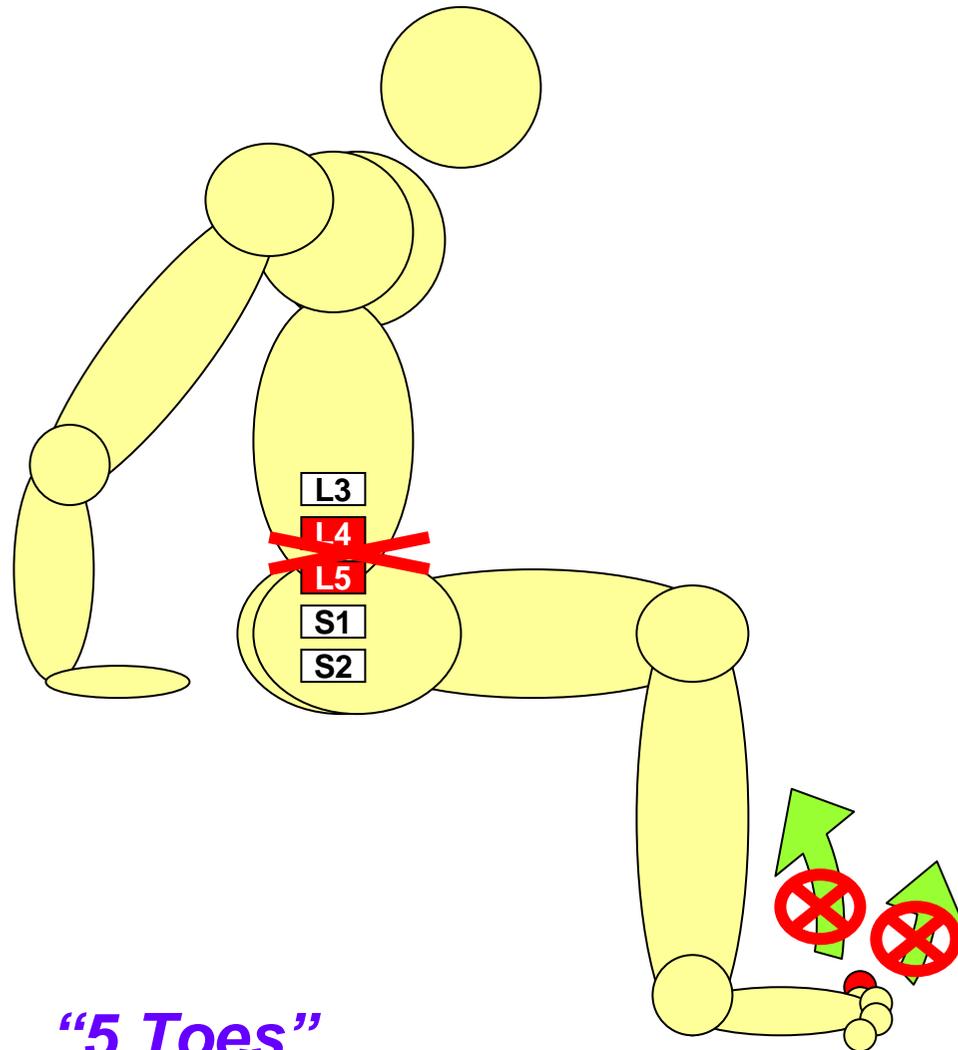
What discs are involved in a L5 root compression?

- L4 L5 disc

What are the symptoms of a L5 root compression?

What are the symptoms of a L5 root compression?

1. Impaired toe lift
2. Dorsiflexion
3. Big toe hypesthesia



"5 Toes"

What discs are involved in a S1 root compression?

What discs are involved in a S1 root compression?

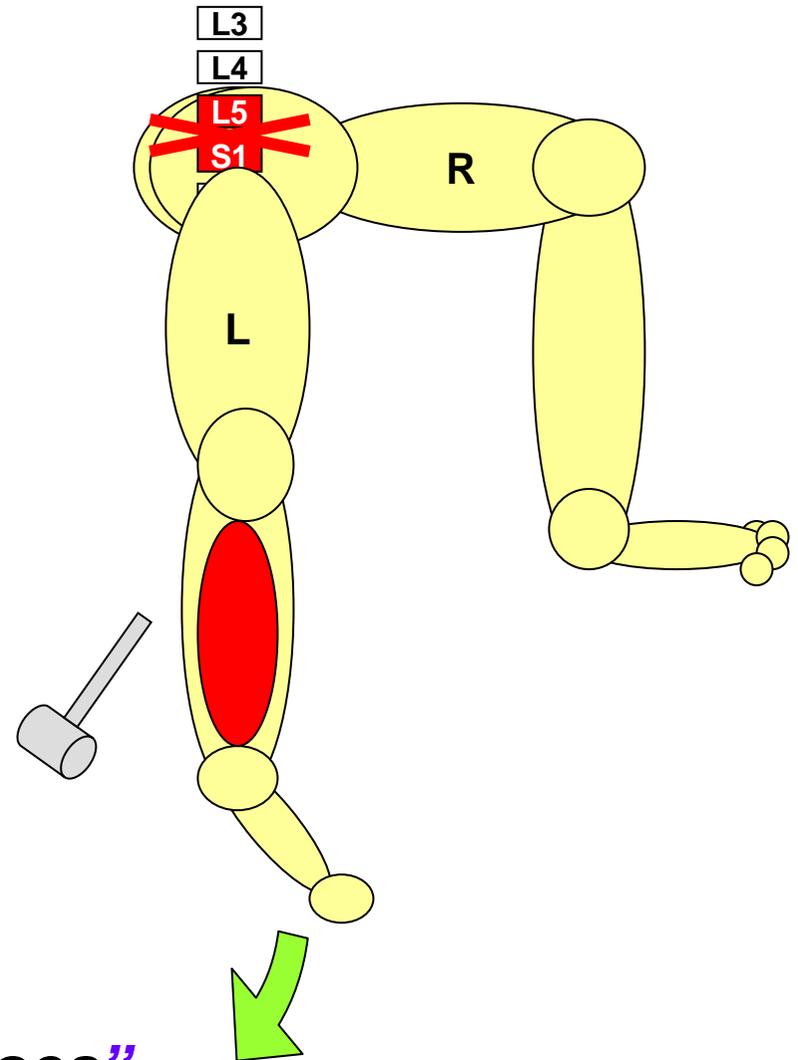
- L5S1 disc

What are the symptoms of a S1 root compression?

What are the symptoms of a **S1** root compression?

Stand on tiptoes

- 1. Plantar flexion**
- 2. Weak ankle jerk**
- 3. Change sensation to lateral calf / foot**



“Stand on Toes”

What level is responsible for an anal wink?

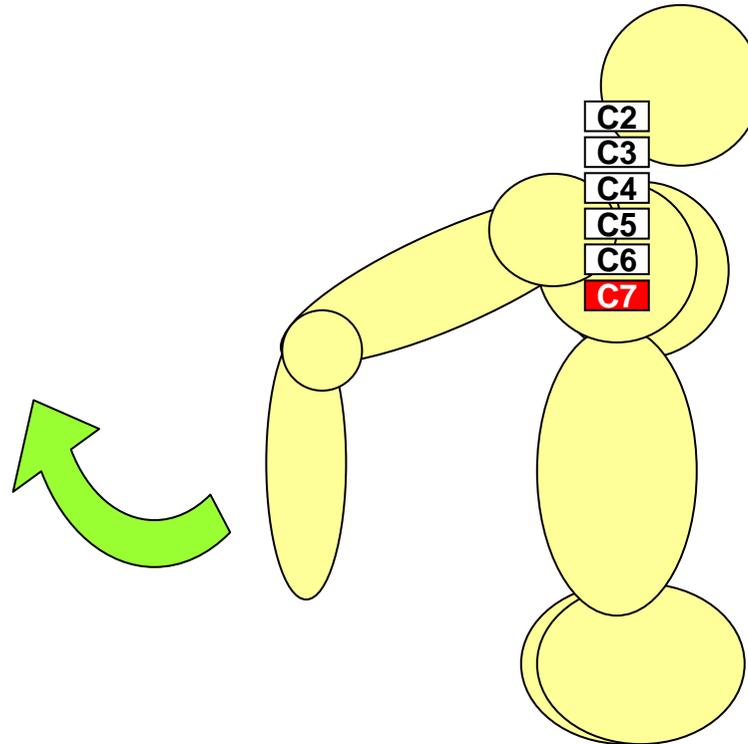
What level is responsible for an anal wink?

- S2-S4

What nerve root is responsible triceps?

What nerve root is responsible triceps?

- **C7**

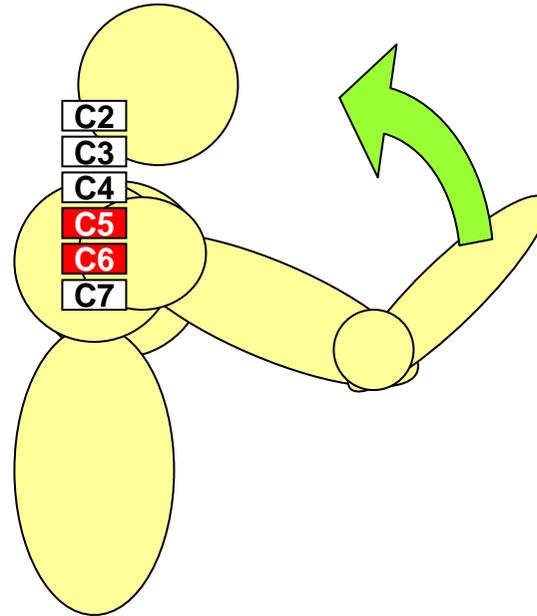


“Undo arm 7 (straighten arm)”

What nerve root is responsible for Biceps reflex?

What nerve root is responsible for Biceps reflex?

- C5, C6



“bicepSix”

What are the functions of the ulnar nerve?

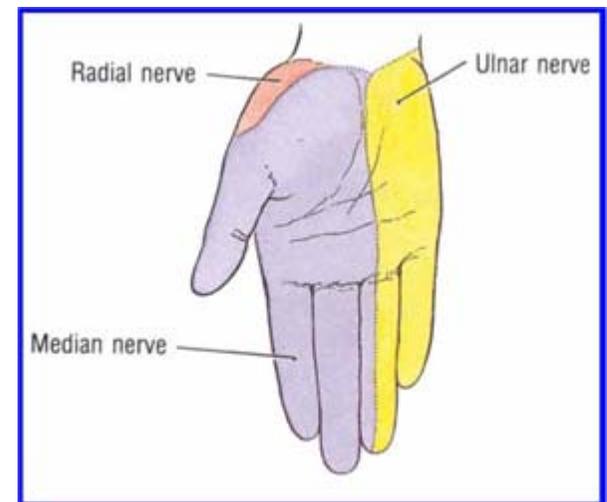
What are the functions of the ulnar nerve?

Motor

- Intrinsic musculature of hand
- Finger abduction (form U shape)
- Wrist flexion

Sensation to:

1. pinky
2. ring
3. back of hand

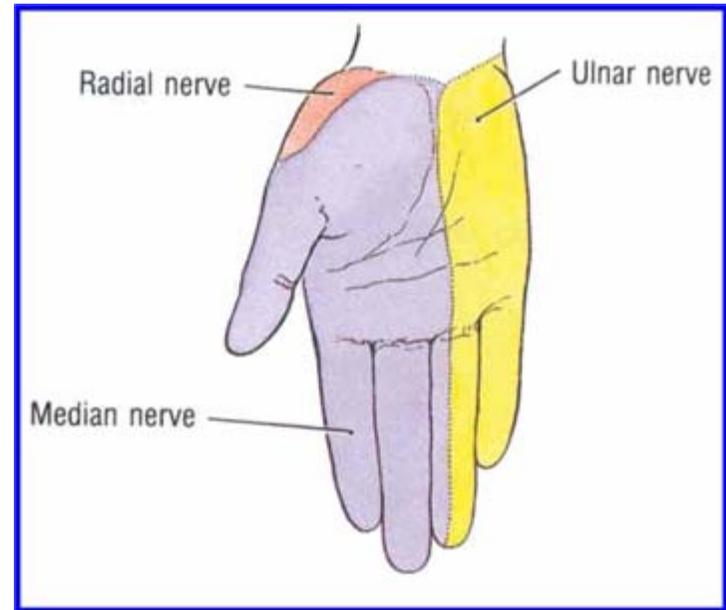


“Form U with Ulnar”

What is the function of the median nerve?

What is the function of the median nerve?

- **Motor**
 - **Thumb apposition**
- **Sensation**
 - **palm**
 - **2 ½ fingers**
 - **carpal tunnel**



“Most palm sensation by Median”

What is the function of the Radial nerve?

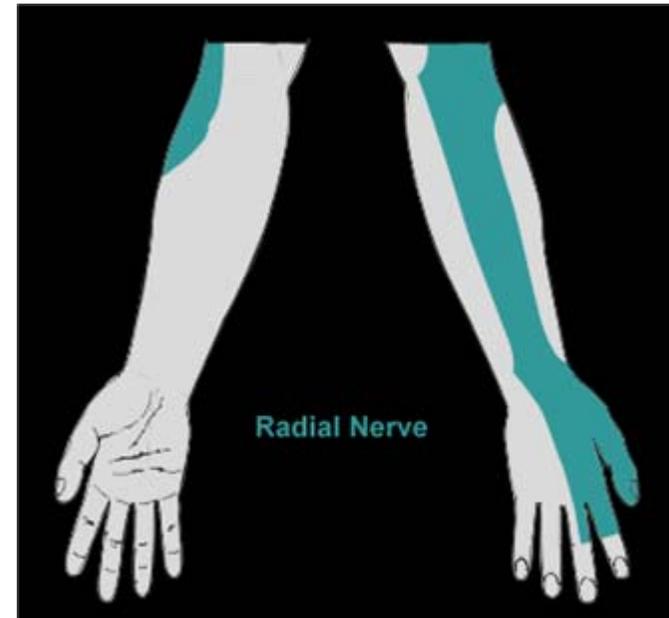
What is the function of the Radial nerve?

Motor

1. Nothing in hand
2. Wrist extension
3. Finger extension

Sensory

1. Back of lateral hand



“Radial Radiates Hand so the back of hand can sense the sun”

How do you treat an adult femur fracture?



How do you treat an adult femur fracture?

- **Bring to OR early**
 - **Allow early mobilization**
 - **Decreases fat emboli**
 - **Decreases complications**



“Femur Fracture Fat Emboli...OR”

How do you treat a pediatric femur fracture?



How do you treat a pediatric femur fracture?

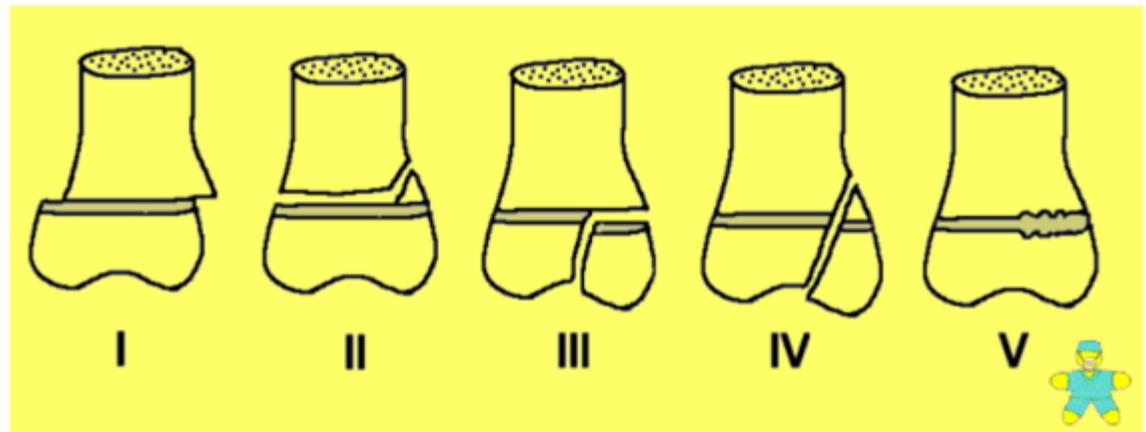
- **Closed reduction**
- **No ORIF**
 - **avoid interference with epiphyseal growth plate**



What is Salter Harris fx III, IV, V fractures?

What is **S**alter Harris fx III, IV, V fractures?

- **Involves epiphyseal plate**
- **Require open procedure**



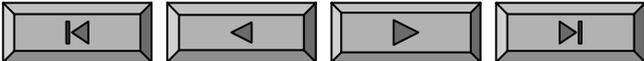
“epiphySeal”

What is the most common hip dislocation?

What is the most common hip dislocation?

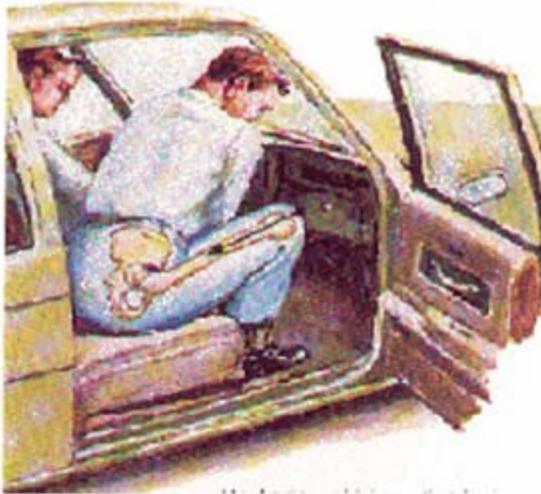
- **90% posterior**

How does a posterior hip dislocation present?



How does a posterior hip dislocation present?

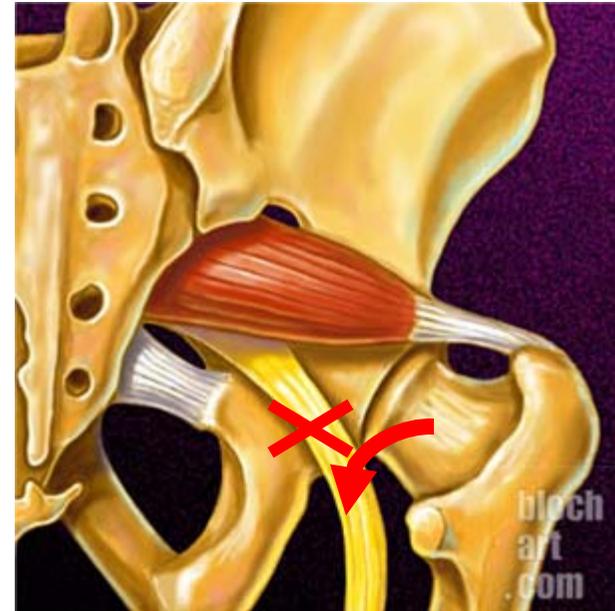
- **Internal rotation**
- **Flexed**
- **Adducted thigh**
- **Dashboard injury**



What are the risks of a posterior hip dislocation?

What are the risks of a posterior hip dislocation?

1. **Sciatic nerve injury**
2. **AVN of femoral head**



How does an anterior hip dislocation present?

How does an anterior hip dislocation present?

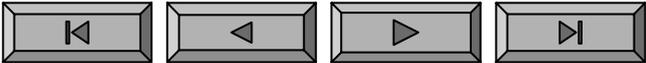
- **Frog leg**
 1. **External rotation**
 2. **abduction**



Anterior Dislocation

Posterior Dislocation

How does a femoral neck fracture present?

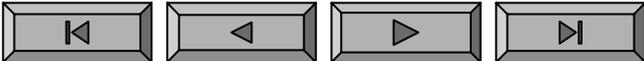


How does a femoral neck fracture present?

1. Shortened limb
2. External rotation



What are the risks of a femoral neck fracture?



What are the risks of a femoral neck fracture?

1. **Non union**
2. **AVN**

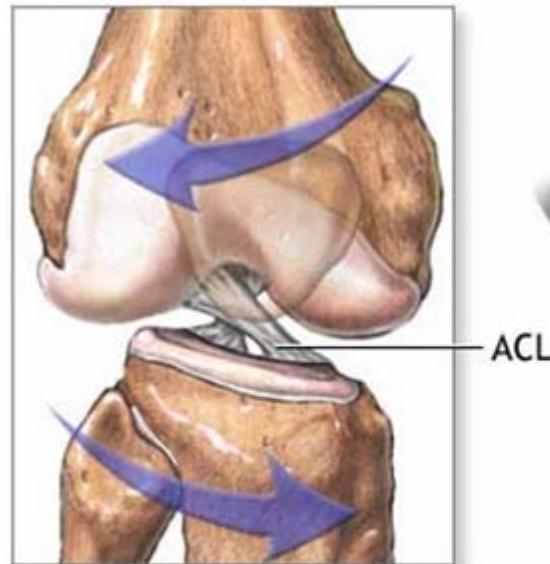


What is the “Terrible triad of O’Donaghue”

What is the “Terrible triad of O’Donaghue”

- Injury to
 1. ACL
 2. MCL
 3. Medial meniscus

- Caused by lateral blow



ACL injuries occur when bones of the leg twist in opposite directions under full body weight

ADAM.

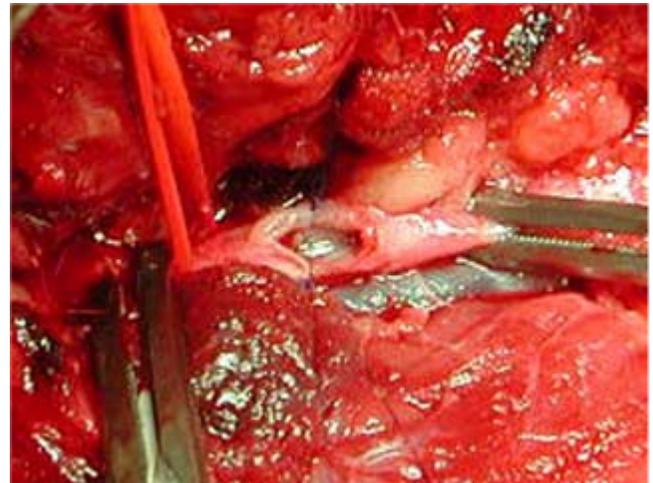
What is the danger of a posterior knee dislocation?

What is the danger of a posterior knee dislocation?

- **Popliteal injury**
- **get arteriogram**



X-ray shows a relocated knee but with posterior fragments in the region of the popliteal canal. The patient was transferred directly to the operating room for exploration of the right popliteal artery.



“Posterior Popliteal”

What is the risk of a calcaneus fracture?

What is the risk of a calcaneus fracture?

- **Prone to compartment syndrome**



What other two fractures prone to compartment syndrome?

What other two fractures prone to compartment syndrome?

- 1. Tibial fracture**
- 2. Supracondylar humerus fractures**



What is the most common shoulder dislocation?

What is the most common shoulder dislocation?

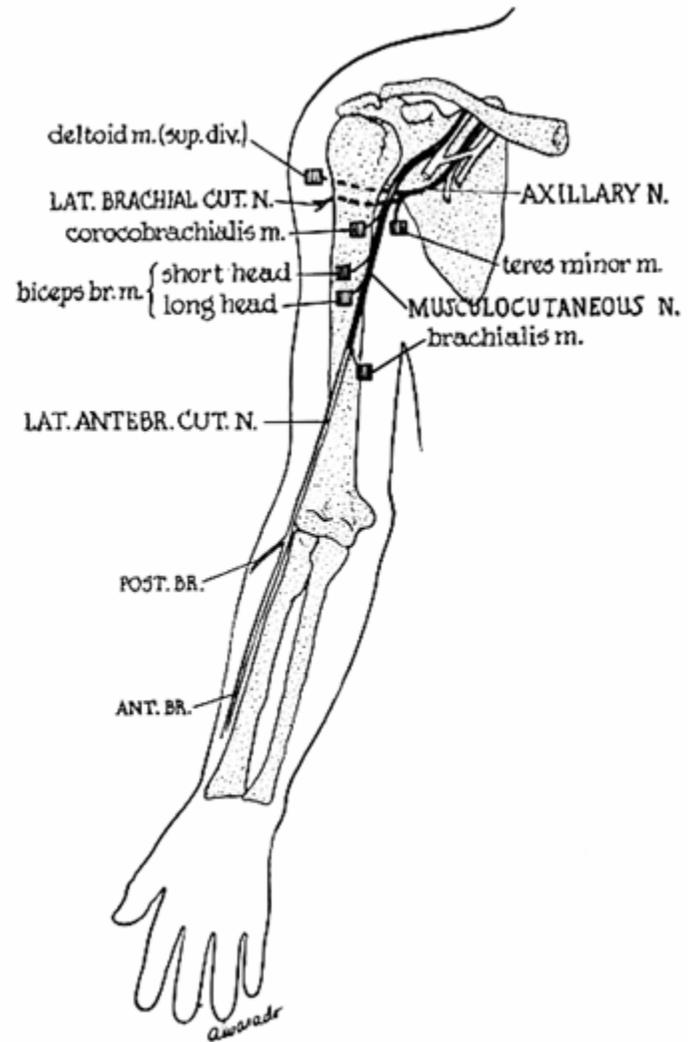
- **90% anterior**



What are the risks of a anterior shoulder dislocation?

What are the risks of a anterior shoulder dislocation?

- **Axillary nerve injury**
 - **injury causes loss of shoulder abduction & external rotation**



When do you see posterior shoulder dislocations?



When do you see posterior shoulder dislocations?

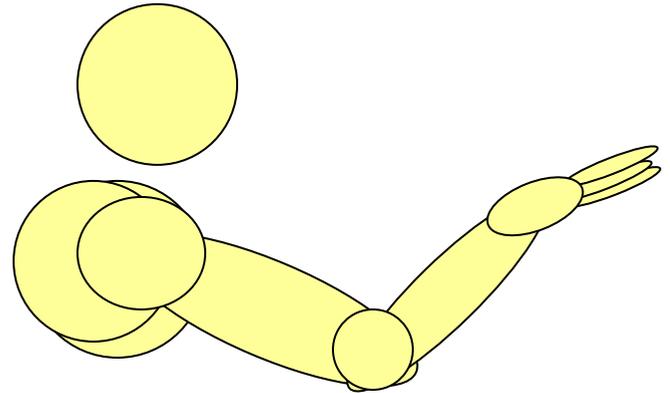
- Seizures
- Electrocution



What is the neurologic risk in a humerus fracture?

What is the neurologic risk in a humerus fracture?

- **Radial nerve injury**
 - **weak wrist extension**
 - **sensation to lateral dorsal hand**
- **Will improve with time**



“Radial Radiates Hand so the back of hand can sense the sun”

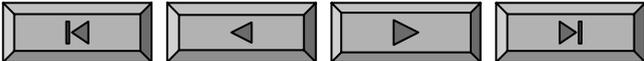
What is a Volkmann's contracture?

What is a Volkmann's contracture?

- 1. Supracondylar humerus fracture**
 - **compromised anterior interosseous artery**
- 2. Deep forearm flexor compartment syndrome**
 - **Pain in forearm with extension**
 - **need fasciotomy**
- 3. Median nerve damage**

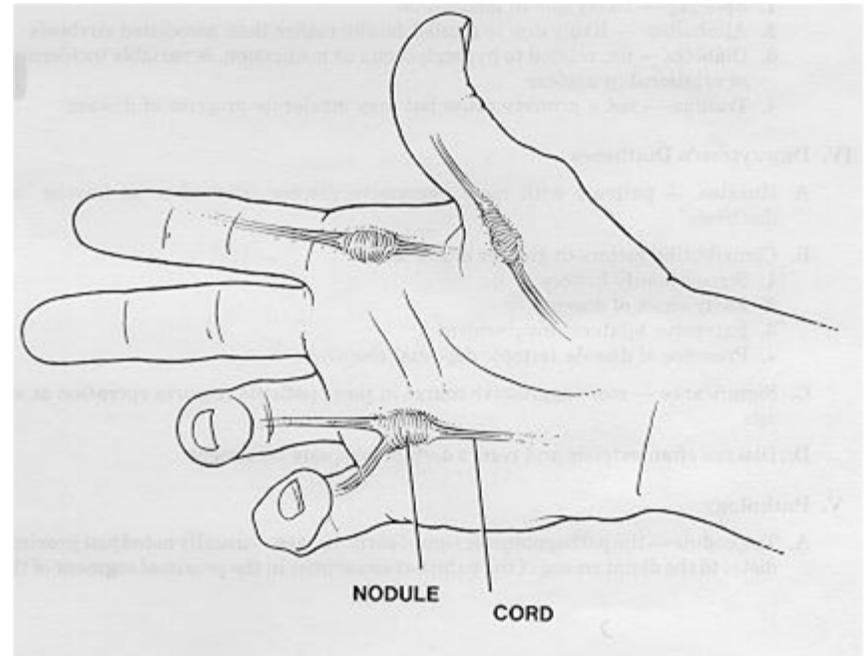


What is Dupuytren's contracture?

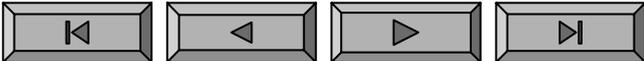


What is Dupuytren's contracture?

- **A contracture of the fingers**
- **Most frequently in men after age 40**

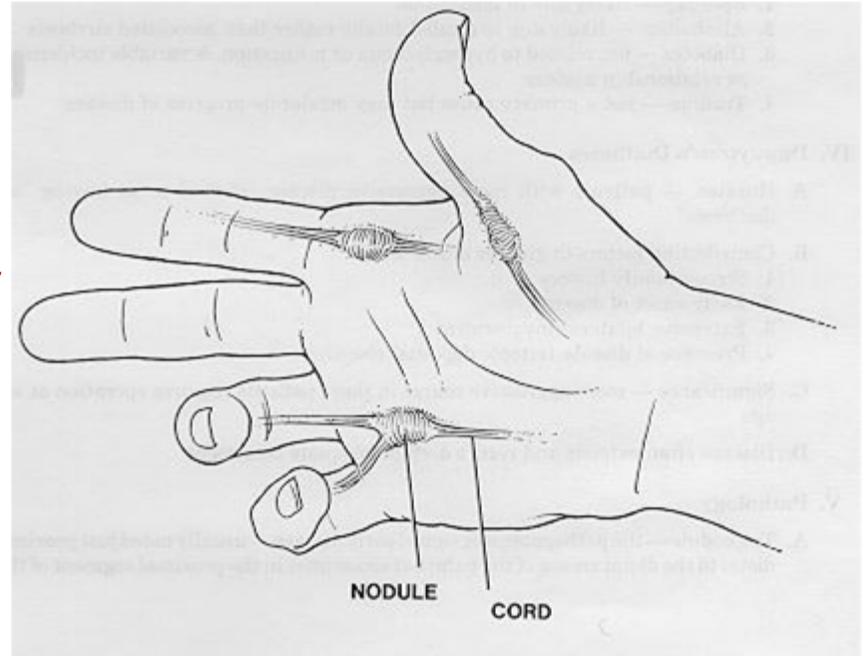


How do you treat Dupuytren's contracture?

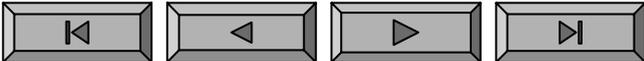


How do you treat Dupuytren's contracture?

1. Steroids
2. Physical therapy
3. May need fasciotomy

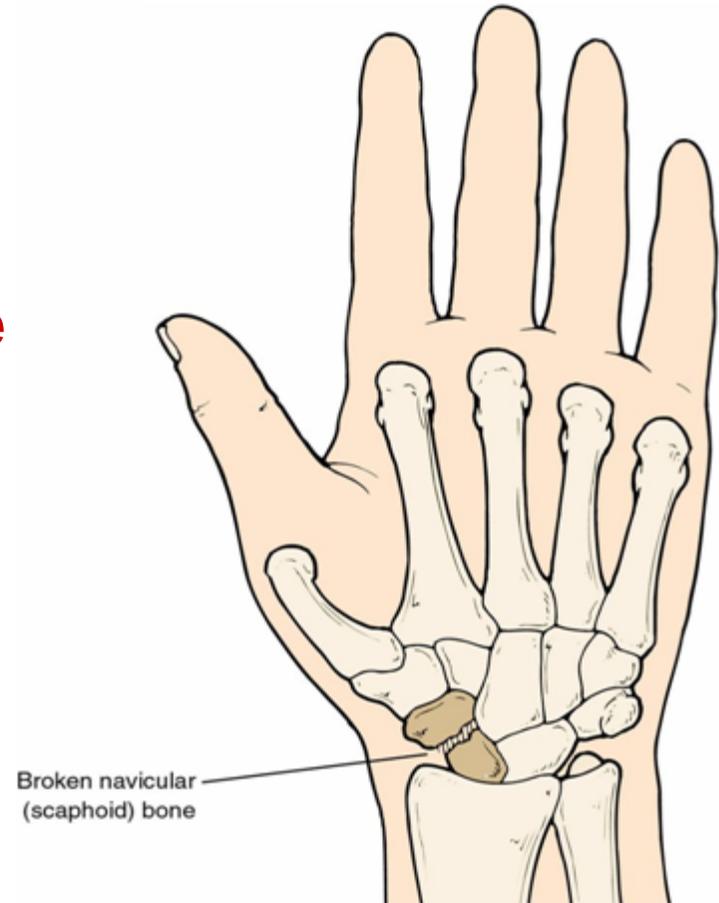


How do you diagnose a navicular fracture?

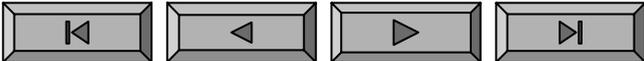


How do you diagnose a navicular fracture?

- **Clinical tender snuffbox**
 - **even in Xray negative**



How do you treat a navicular fracture?



How do you treat a navicular fracture?

- **Cast up to elbow**

What is a Monteggia fracture?

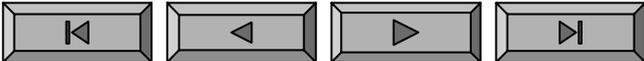
What is a Monteggia fracture?

- **Proximal Ulnar fracture with Radial head Dislocation**



*“Monteggia was from **PURD**ue”*

How do you treat a Moteggia fracture?



How do you treat a Moteggia fracture?

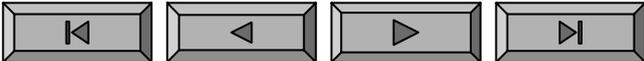
- **ORIF**

What % of bone mets are symptomatic?

What % of bone mets are symptomatic?

- 65%

How do you treat bone mets?



How do you treat bone mets?

- RT for pain relief

What is Ewing sarcoma?

What is Ewing sarcoma?

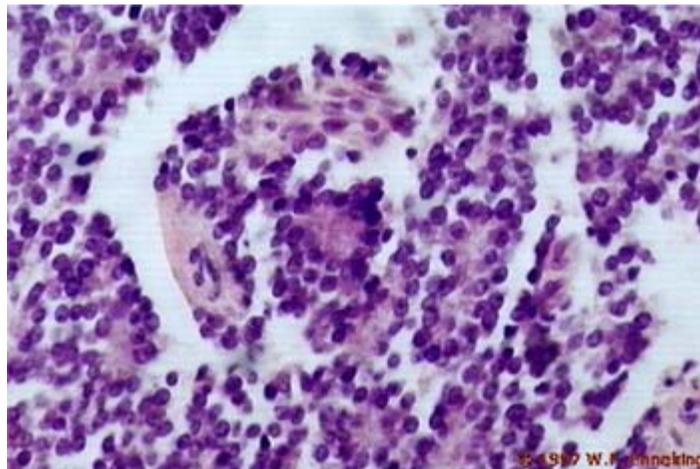
- **A malignant neoplasm**



What are characteristic radiologic and pathologic findings for Ewing's Sarcoma?

What are characteristic radiologic and pathologic findings for Ewing's Sarcoma?

- **Onion layering on Xray**
- **Pseudorosettes on pathology**



What is the treatment of Ewing's sarcoma?

What is the treatment of Ewing's sarcoma?

- RT

What is the average survival of Ewing's sarcoma?

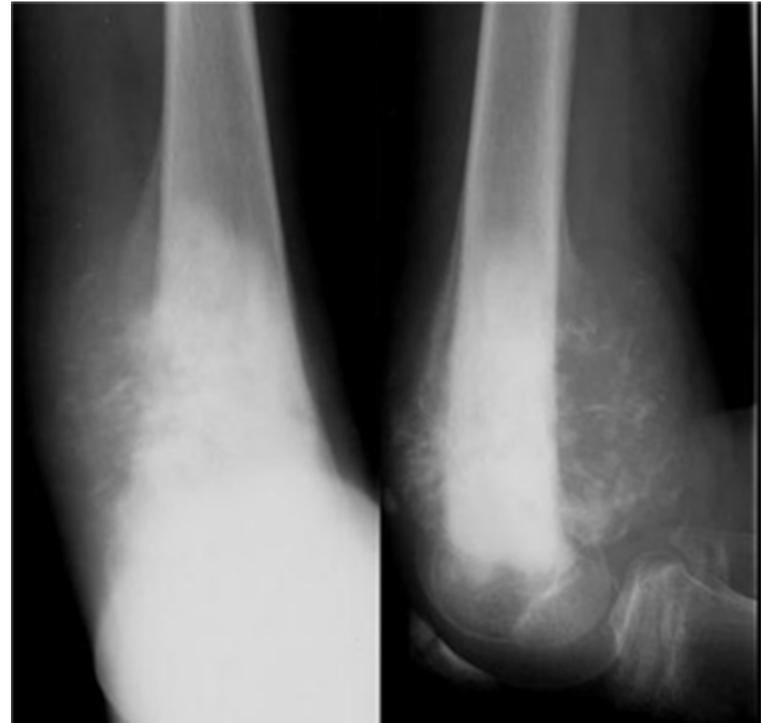
What is the average survival of Ewing's sarcoma?

- **Two years**

What is the xray finding for osteogenic sarcoma?

What is the xray finding for osteogenic sarcoma?

- **Sunburst pattern**



Flashcard Instructions

MOUSE

Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



First
Slide



Previous
Slide



*Answer
or Next
Question*



Last
Slide

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



What is the long term implications of an episode of PID?

What is the long term implications of an episode of PID?

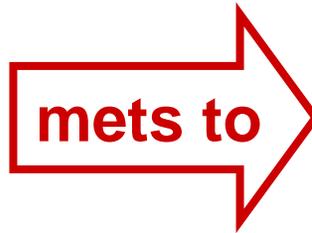
- **Increase**
 - **Infertility (by 10%)**
 - **Ectopic pregnancy**

What is a Krukenberg tumor?



What is a Krukenberg tumor?

- **Metastatic Colon**
- **Gastric CA**



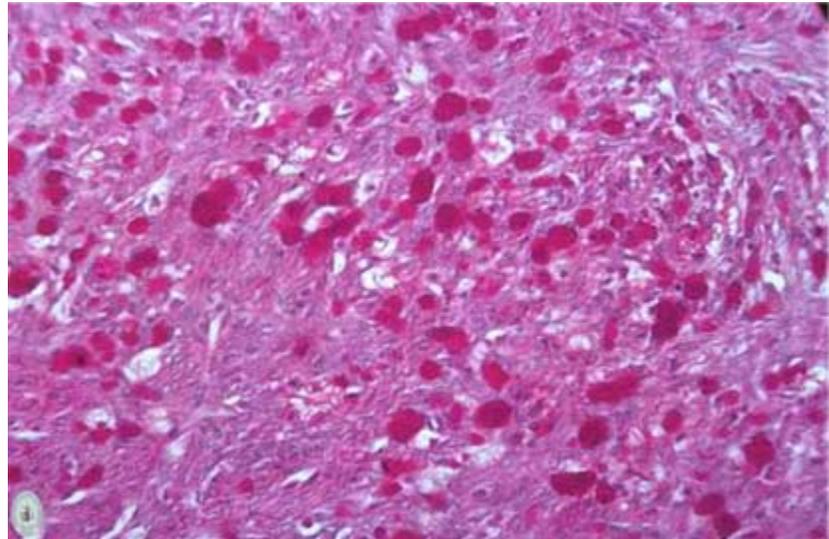
Ovary



What is the pathologic finding of a Krukenberg tumor?

What is the pathologic finding of a Krukenberg tumor?

- **Signet cells**



What is Meig's syndrome?



What is Meig's syndrome?

- **When a tumor in the pelvis causes ascites and hydrothorax**

What is the impact of appendicitis during pregnancy?

What is the impact of appendicitis during pregnancy?

- **Prematurity (50%)**
- **Fetal mortality (2-8%)**
- **Maternal mortality (1%)**

Can Endometriosis involve the rectum?

Can Endometriosis involve the rectum?

- Yes

What are four presenting findings of Endometriosis of the rectum?

What are four presenting findings of Endometriosis of the rectum?

1. **Rectal bleeds**
2. **Irregular menses**
3. **Pelvic Pain**
4. **Bluish mass on proctoscopy**

RIP with Blue Mass

What is the treatment for Endometriosis of the rectum?

What is the treatment for Endometriosis of the rectum?

- **Hormonal therapy**

**What is the definition of Stage I Ovarian CA?
What is the 5 year survival?**

**What is the definition of Stage I Ovarian CA?
What is the 5 year survival?**

- **Limited to the ovary**
- **66% five year survival**

What is the definition of Stage II Ovarian CA?

What is the definition of Stage II Ovarian CA?

- Spread to the pelvis

What is the definition of Stage III Ovarian CA?

What is the definition of Stage III Ovarian CA?

- **Throughout abdomen**

What is the definition of Stage IV Ovarian CA?

What is the definition of Stage IV Ovarian CA?

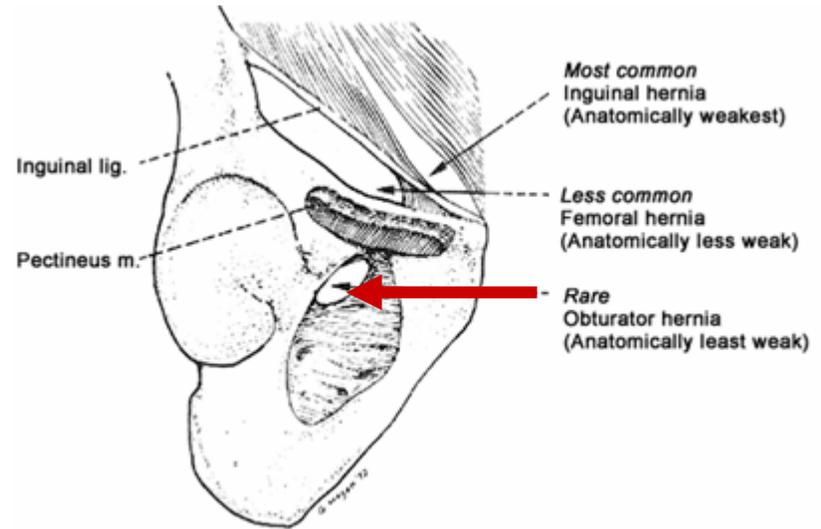
- **Distant metastasis**

What test indicates a obturator hernia?

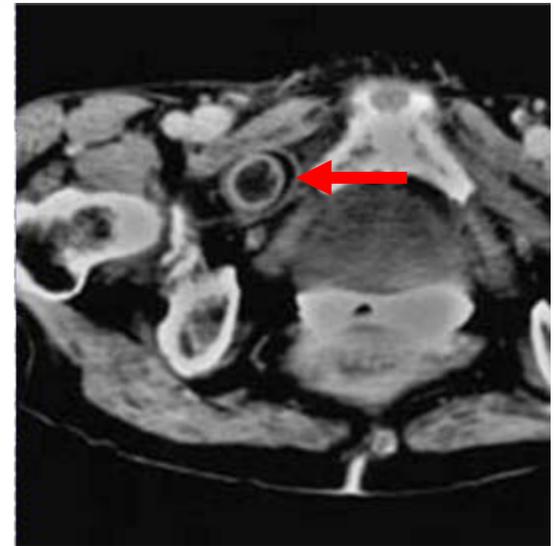
What test indicates a obturator hernia?

- **Howship Romberg Sign**

- **Inner thigh pain with internal rotation**



Fluid-filled mass on the outside of the right obturator foramen



Is the obturator hernia more common in men or women?



Is the obturator hernia more common in men or women?

- **More common in women (5:1)**

What nerve traverses the inguinal canal?



What nerve traverses the inguinal canal?

- **Ileinguinal nerve**

What does the ileoinguinal nerve innervate?

What does the ileoinguinal nerve innervate?

- **Sensation to**
 - **superomedial thigh**
 - **scrotum**

What nerve runs on the spermatic cord to cremaster and scrotum?

What nerve runs on the spermatic cord to cremaster and scrotum?

- **Genitofemoral nerve**

**Is genitofemoral nerve innervation of the cremaster
sensory or motor?**

Is genitofemoral nerve innervation of the cremaster sensory or motor?

- **Motor**

Where is a femoral hernia located relative to the nerve, artery, and vein?

“NAVEL”, E = empty space for hernia

Where is a femoral hernia located relative to the nerve, artery, and vein?

- **Medial to nerve, artery, and vein**

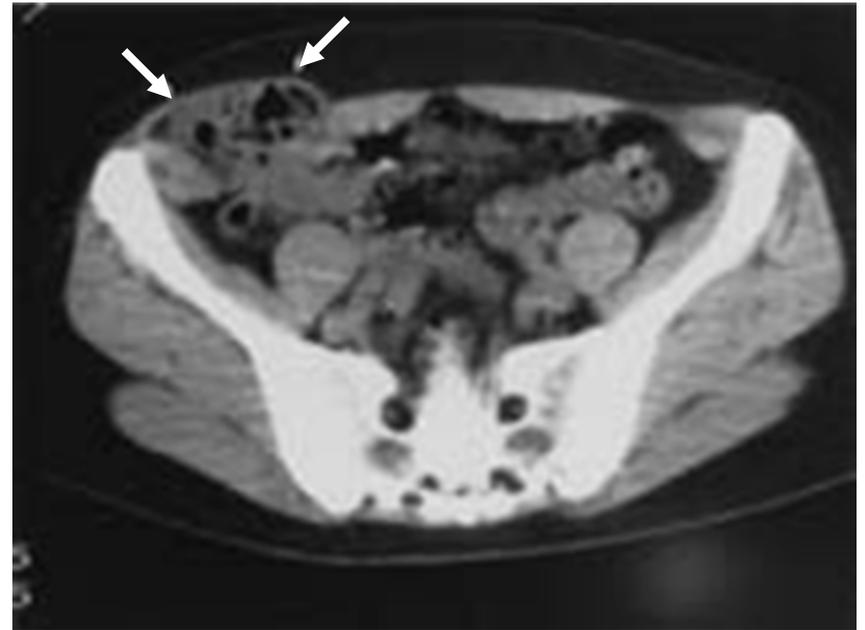
“NAVEL”, E = empty space for hernia

What is a Spigelian hernia?



What is a Spigelian hernia?

- **Inferior to linea semicircularis**
- **Through linea semilunaris**
- **Deep to external oblique (therefore hard to diagnose)**



S = semicircularis, semilunaris

What is the clinical significance of a Spigelian hernia?

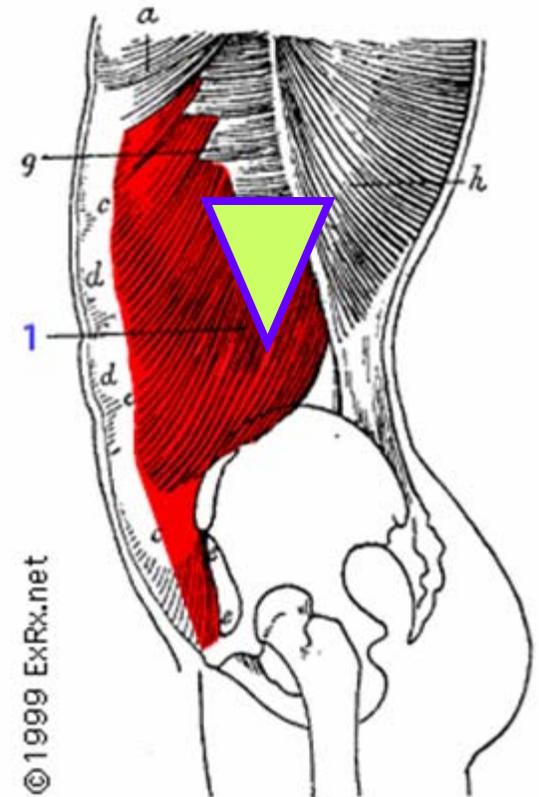
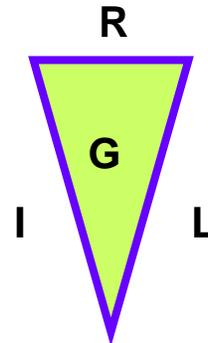
What is the clinical significance of a Spigelian hernia?

- **Often incarcerates bowel**
 - **therefore fix all**

Describe the anatomy of a Grynfelt's hernia?

Describe the anatomy of a Grynfelt's hernia?

- **Hernia protruding through Superior lumbar triangle**
 1. **Internal oblique**
 2. **12th Rib**
 3. **Lumbosacral aponeurosis**
- **Diagnosis made difficult because hernia hides under latissimus dorsi muscle**



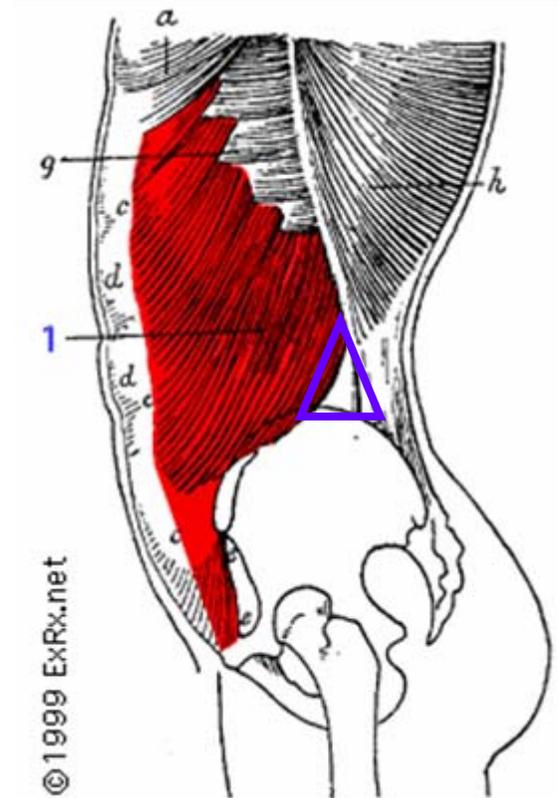
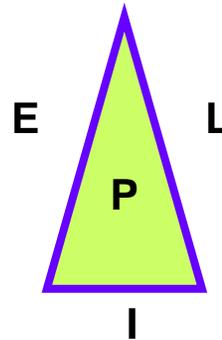
*Grynfelt was a **GIRL***

Describe the anatomy of a Petit's hernia?



Describe the anatomy of a Petit's hernia?

- **Inferior lumbar triangle**
 1. **Lat dorsi**
 2. **Iliac crest**
 3. **External oblique**



Petit's **LIE**

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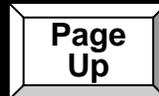
Left Click anywhere on the screen to advance slide (Answer, Next Question)

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To advance slide (Answer, Next Question)



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Slide**



**Previous
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or Next
Question**



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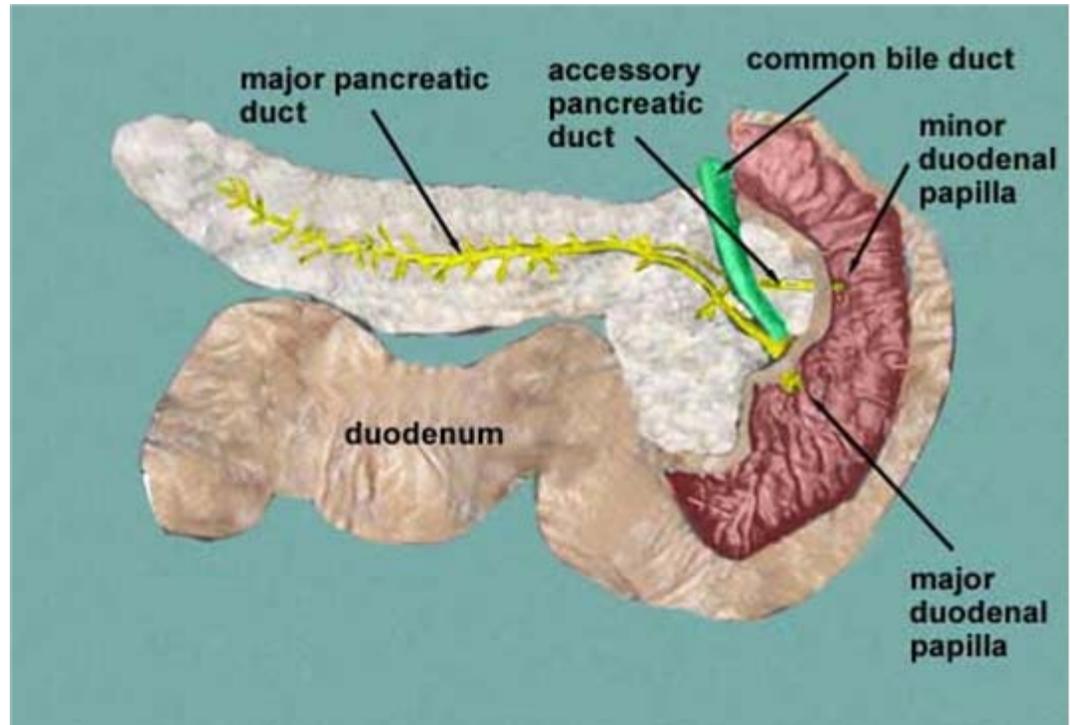


What is the major duct of the pancreas?



What is the major duct of the pancreas?

- **Wirsung duct**

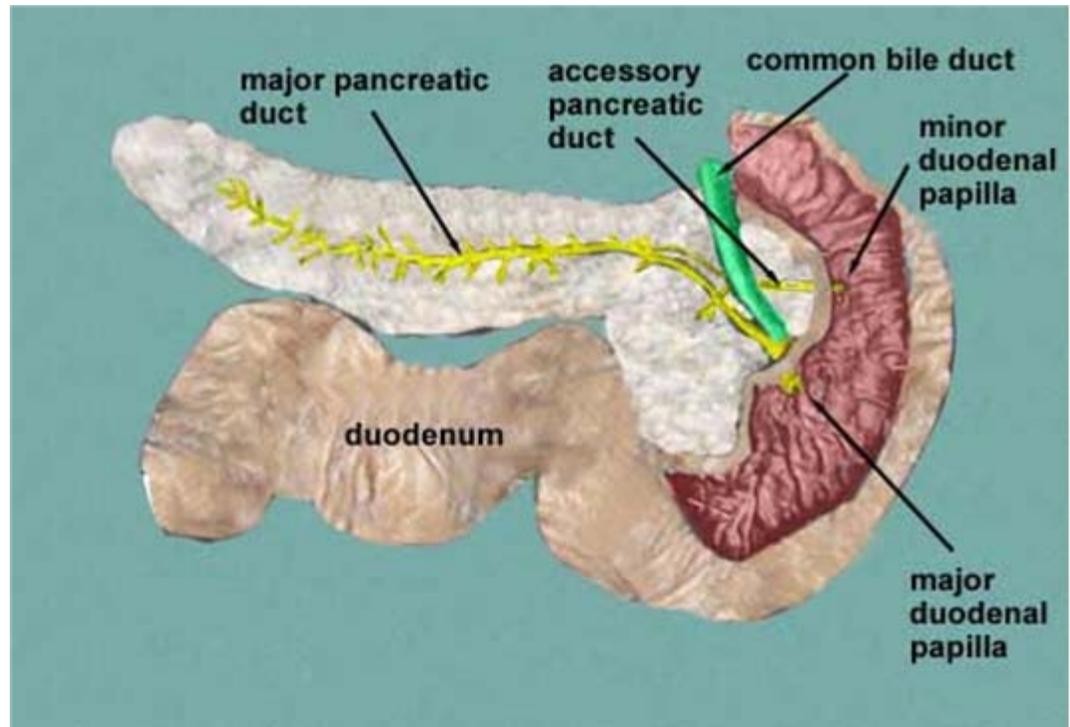


“Wide”

What is the minor duct of the pancreas?

What is the minor duct of the pancreas?

- Santori



“Small”

What is Pancreas divisum?

What is Pancreas divisum?

- Failure of fusion

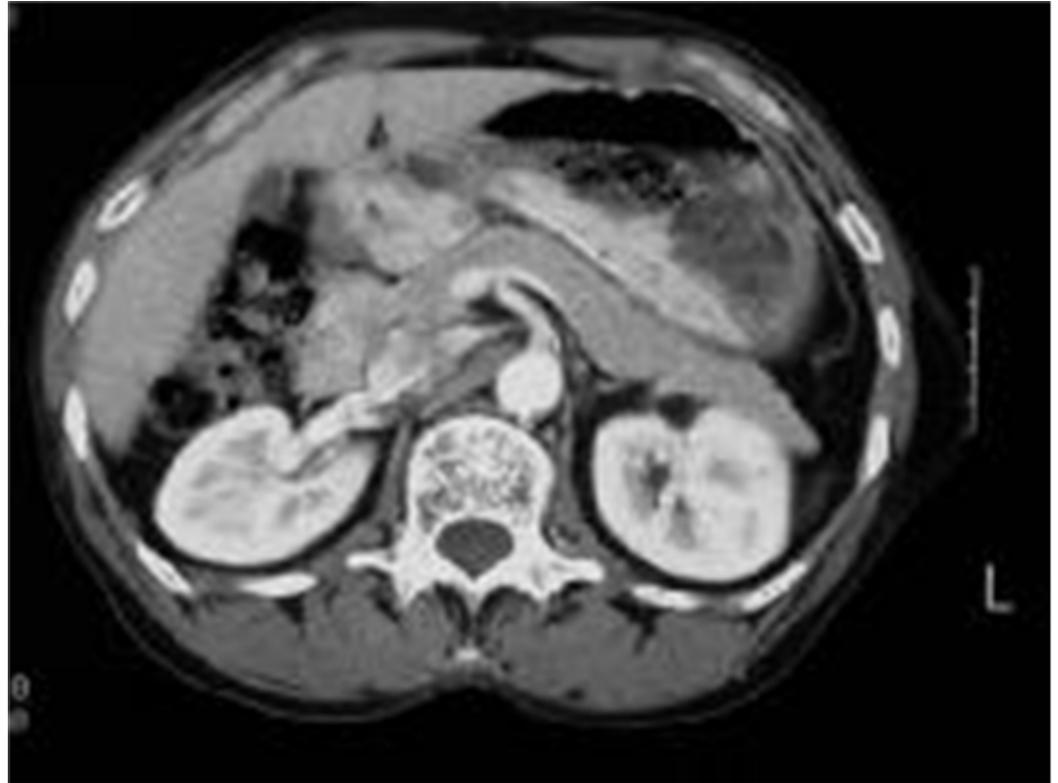


Fig. CT of pancreas divisum. Sequential axial CT images demonstrate separate pancreatic ducts of Santorini and Wirsung to the region of the minor and major ampulla, respectively

What is the major duct in Pancreas divisum?

What is the major duct in Pancreas divisum?

- Santorini

“Switch to Santorini”

What % of the population has Pancreas divisum?

What % of the population has Pancreas divisum?

- 5%

“divi5um”

What is the significance of having Pancreas divisum?

What is the significance of having Pancreas divisum?

- **Increase risk of pancreatitis**

How is a annular Pancreas identified?

How is a annular Pancreas identified?

- **Double bubble on Xray**

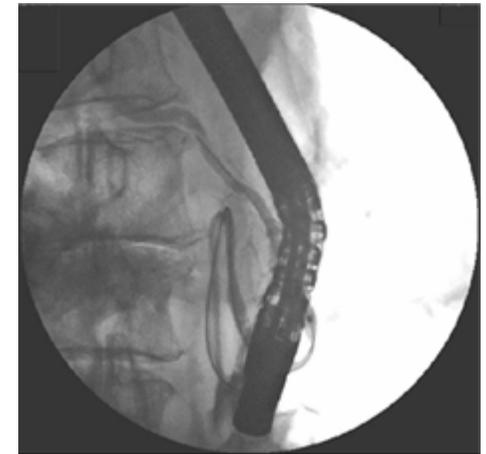
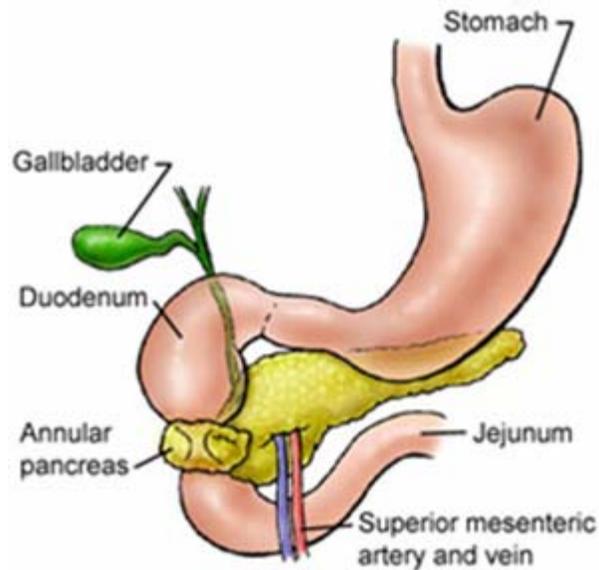


Fig. The pancreatogram revealed an annular pancreas. The main pancreatic duct runs anteriorly then turns posteriorly behind the endoscope, before running across the spine to the left.

How is Annular Pancreas obstruction treated?



How is Annular Pancreas obstruction treated?

- **Treat obstruction with duodenojejunostomy**
- **Do not resect pancreas**

What is the overall survival rate of pancreatic cancer?

What is the overall survival rate of pancreatic cancer?

- **Overall 90% dead at one year?**

What serum marker is generally high in pancreatic CA?

What serum marker is generally high in pancreatic CA?

- **CA 19-9**

What gene mutation is associated with pancreatic CA?

What gene mutation is associated with pancreatic CA?

- **K-ras (90%)**

“pan**K-ras**”

What is a form of pain relief for non-resectable pancreatic CA?

What is a form of pain relief for non-resectable pancreatic CA?

- **Celiac plexus block**
 - **50% ETOH on both sides of aorta near celiac**

How do you manage a pancreatic pseudocyst?

How do you manage a pancreatic pseudocyst?

- **Expectant management if**
 - **asymptomatic**
 - **not enlarging for 12 weeks after episode of acute pancreatitis**
- **Otherwise operate**

What % of pseudocysts resolve on their own?

What % of pseudocysts resolve on their own?

- 85%

What are three methods to internally drain a pancreatic pseudocyst?

What are three methods to internally drain a pancreatic pseudocyst?

- 1. cyst-gastrostomy**
- 2. cyst-duodenostomy**
- 3. cyst-jejunostomy**

What are the complications of an untreated pancreatic pseudocyst?

What are the complications of an untreated pancreatic pseudocyst?

1. **Bleed**
2. **Rupture**
3. **Obstruction**
 1. **CBD**
 2. **Duodenal**

What % of pancreatic pseudocysts recur?

What % of pancreatic pseudocysts recur?

- 10%

“pseu10cysts recur”

Is pancreatic pseudocyst recurrence higher with internal or external drainage?

Is pancreatic pseudocyst recurrence higher with internal or external drainage?

- **External**
 - **much higher**

Overall, what is the #1 islet cell tumor?

Overall, what is the #1 islet cell tumor?

- **Insulinoma**

What is the insulin to glucose ratio with an insulinoma?

What is the insulin to glucose ratio with an insulinoma?

- **Insulin:glucose > 0.4**

What is the insulinoma impact on C peptide?

What is the insulinoma impact on C peptide?

- Increase in C peptide?

What is the active terminal of hormone C Peptide?

What is the active terminal of hormone C Peptide?

- **N terminal active**
- **C terminal inactive**

What % of insulinomas are benign?

What % of insulinomas are benign?

- **90%**

How do you treat insulinoma?

How do you treat insulinoma?

- **Enucleate**

What is the #1 islet cell tumor in MEN I?

What is the #1 islet cell tumor in MEN I?

- **Gastrinoma**

*“MEN have **gas**”*

What % of gastrinomas are malignant?

What % of gastrinomas are malignant?

- 60%

“gaSIXTY”

What % of gasticomas are multiple?

What % of gasticomas are multiple?

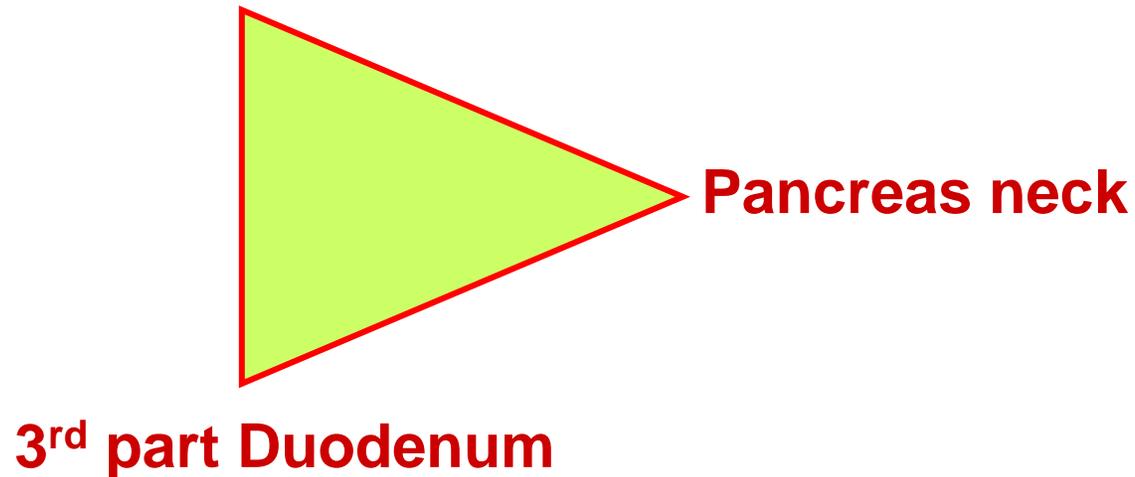
- **50%**

What is the most common location of a gastrinoma?

What is the most common location of a gastrinoma?

- **Gastrinoma triangle (90%)**

Cystic duct / CBD junction



What is a diagnostic lab for a gastrinoma?

What is a diagnostic lab for a gastrinoma?

- **Gastrin level > 1000**

What is a diagnostic test for gastrinoma?

What is a diagnostic test for gastrinoma?

- **Secretin stimulation test**
 - **gastrin fails to decrease as it does in normal patients**

What are some of the complications of a gasterinoma?

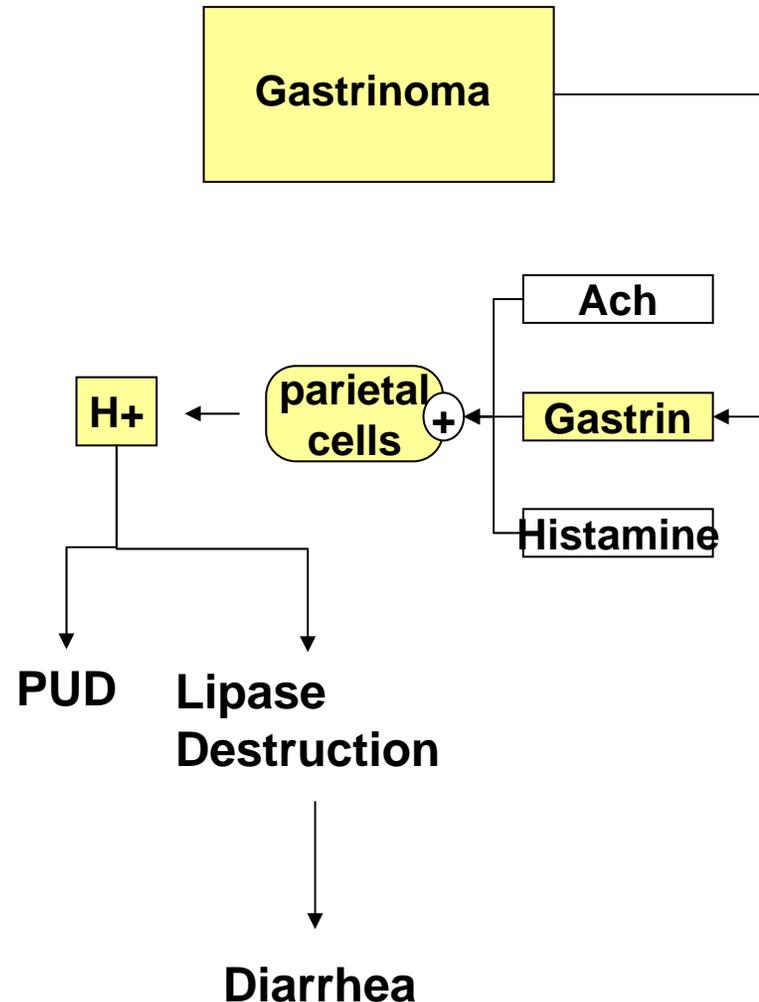
What are some of the complications of a gastrinoma?

1. Severe ulcer disease

- caused by increased gastric acid

2. Diarrhea

- due to lipase destruction by gastric acid leading to malabsorption and increase secretions



**How can you treat the diarrhea caused by
gastinomas?**

How can you treat the diarrhea caused by gasterinomas?

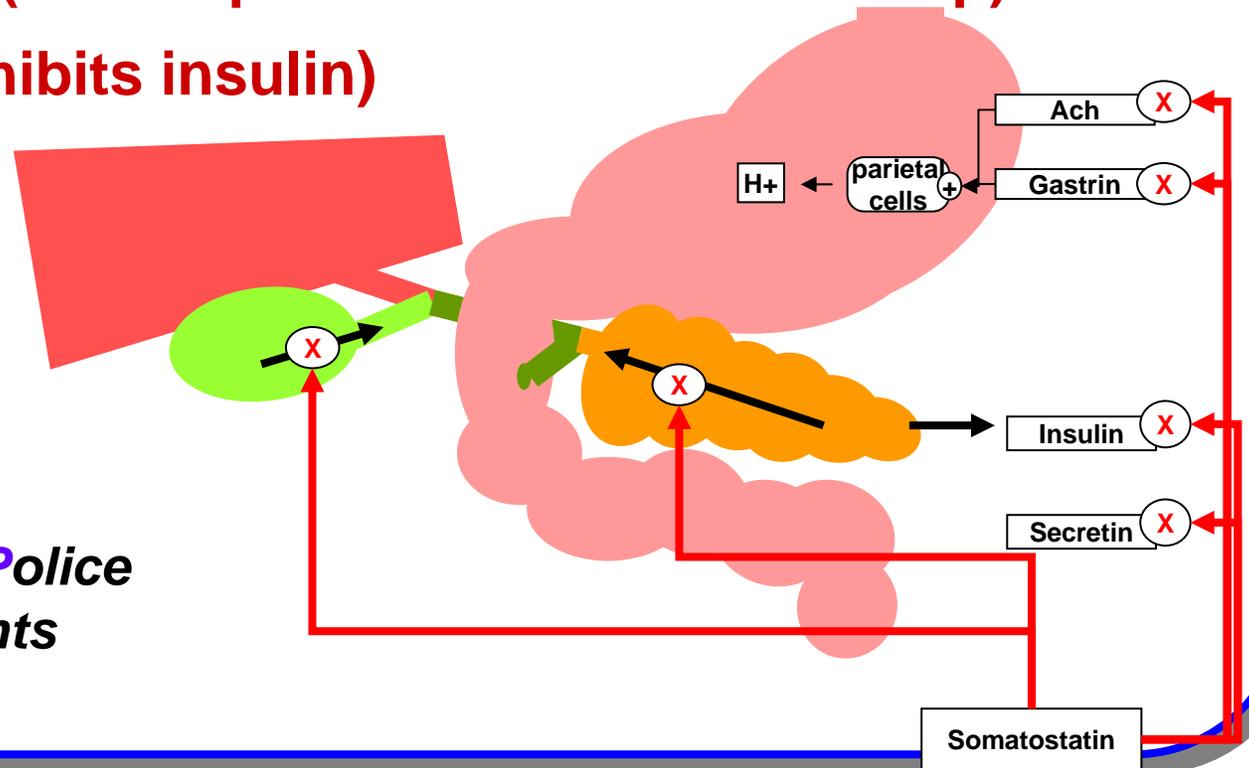
Eliminate acidity of stomach

- 1. NGT**
- 2. H2 blockers**

What are the complications of a somatostatinoma?

What are the complications of a somatostatinoma?

- **Steatorrhea (blocks release of digestive enzymes)**
- **Gallstones (blocks gallstone release)**
- **Pancreatitis (blocks pancrease release-backup)**
- **Diabetes (inhibits insulin)**



“Saint George Police Department fights satinomas”

What are the effects of glucagon?

What are the effects of glucagon?

- **Increases**

- **glycogenolysis**
 - **gluconeogenesis**
 - **lipolysis**
 - **keto-acid production**
- ↑ glucose**
- ↑ fatty acid**
- ↑ ketoacid**

What stimulates the release of glucagon?

What stimulates the release of glucagon?

1. **Low blood glucose**
2. **High amino acids**
3. **CCK**
4. **Norepinephrine/Epinephrine**
5. **Ach**

What are the complications of a Glucagonoma?

What are the complications of a Glucagonoma?

- **Glossitis**
- **Stomatitis**
- **Migratory Necrolytic Erythema**
- **Diabetes**



Glucogonomas Stimulate MDs

What are two medical treatments for a Glucagonoma?

What are two medical treatments for a Glucagonoma?

- 1. Octreotide**
- 2. Streptozocin**

What are the complications of a VIP-oma?

What are the complications of a VIP-oma?

- **WDHA syndrome**
 - **Watery Diarrhea**
 - **Hypokalemia**
 - **Achlorhydria**

*“VIP-oma causes **WHAD**”*

Do NGT and H2 blockers work for the treatment of WDHA in VIP-oma?

Do NGT and H2 blockers work for the treatment of WDHA in VIP-oma?

- **No**

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How do you treat a choledochal cyst? Why?

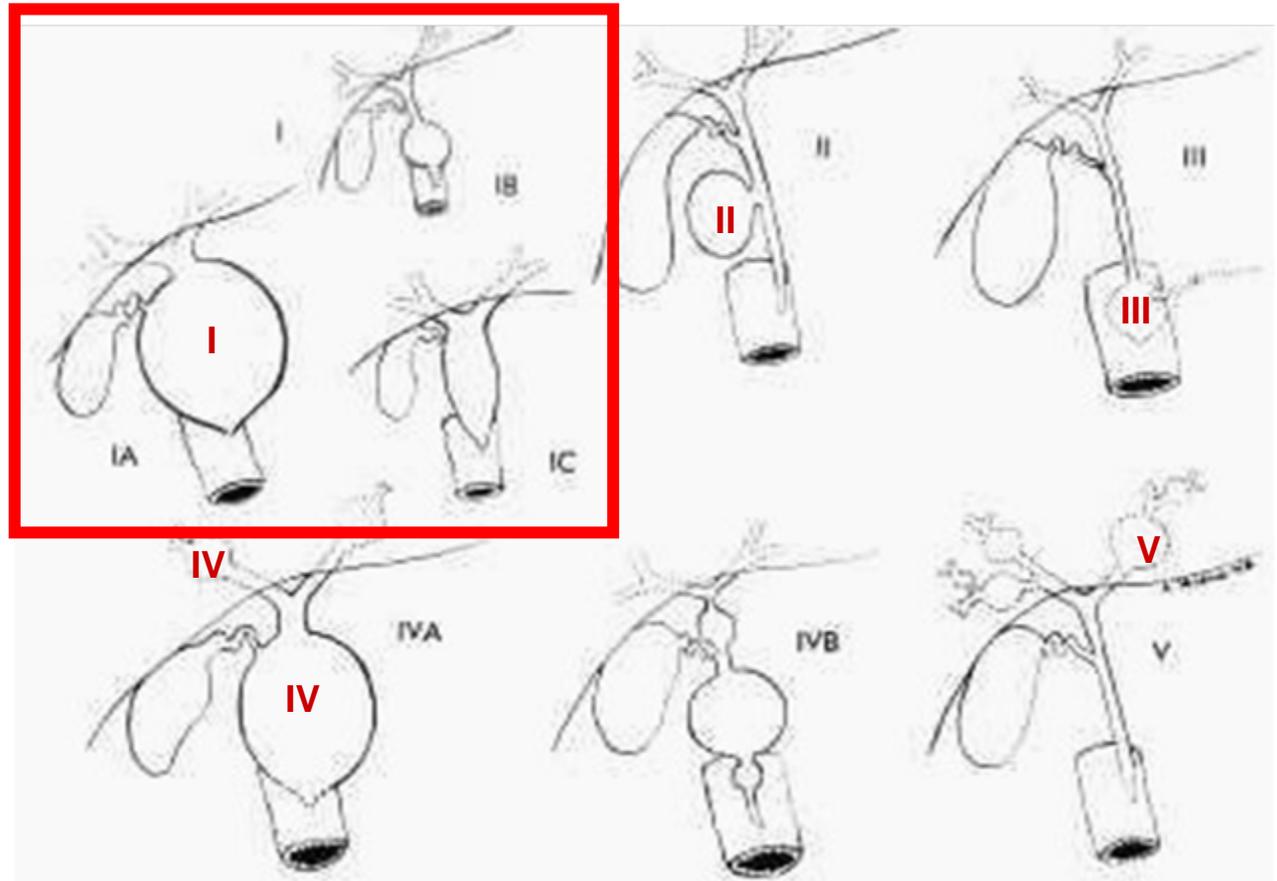
How do you treat a choledochal cyst? Why?

- **Excise**
 - **If leave**
 - **25% cancer**
 - **30% pancreatitis**

**What is a Type I choledochal cyst?
How do you treat?**

What is a Type I choledochal cyst? How do you treat?

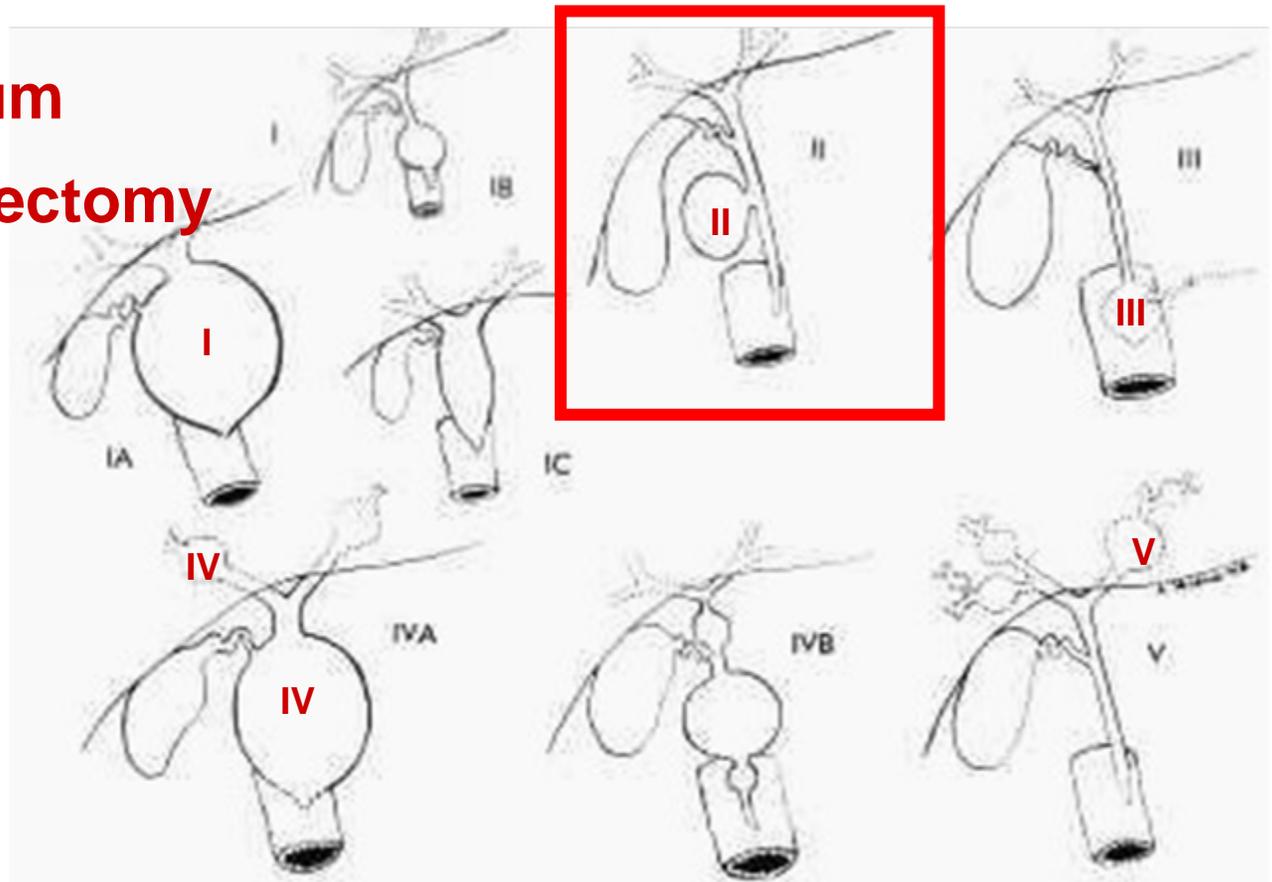
- **Whole (>90%) CBD involved**
- **Excise with hepatico-jejunostomy**



**What is a Type II choledochal cyst?
How do you treat?**

What is a Type II choledochal cyst? How do you treat?

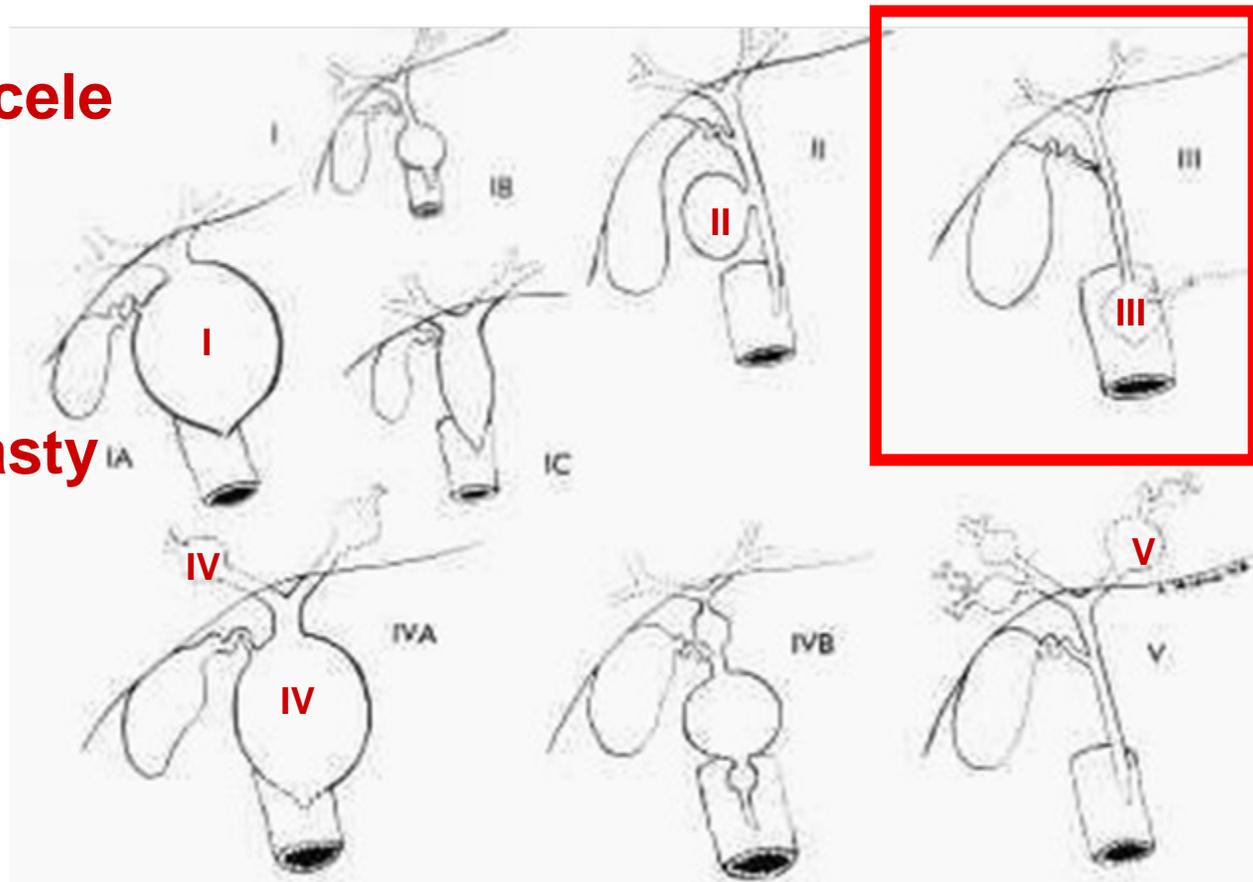
- Diverticulum
- Divertic-ulectomy



**What is a Type III choledochal cyst?
How do you treat?**

What is a Type III choledochal cyst? How do you treat?

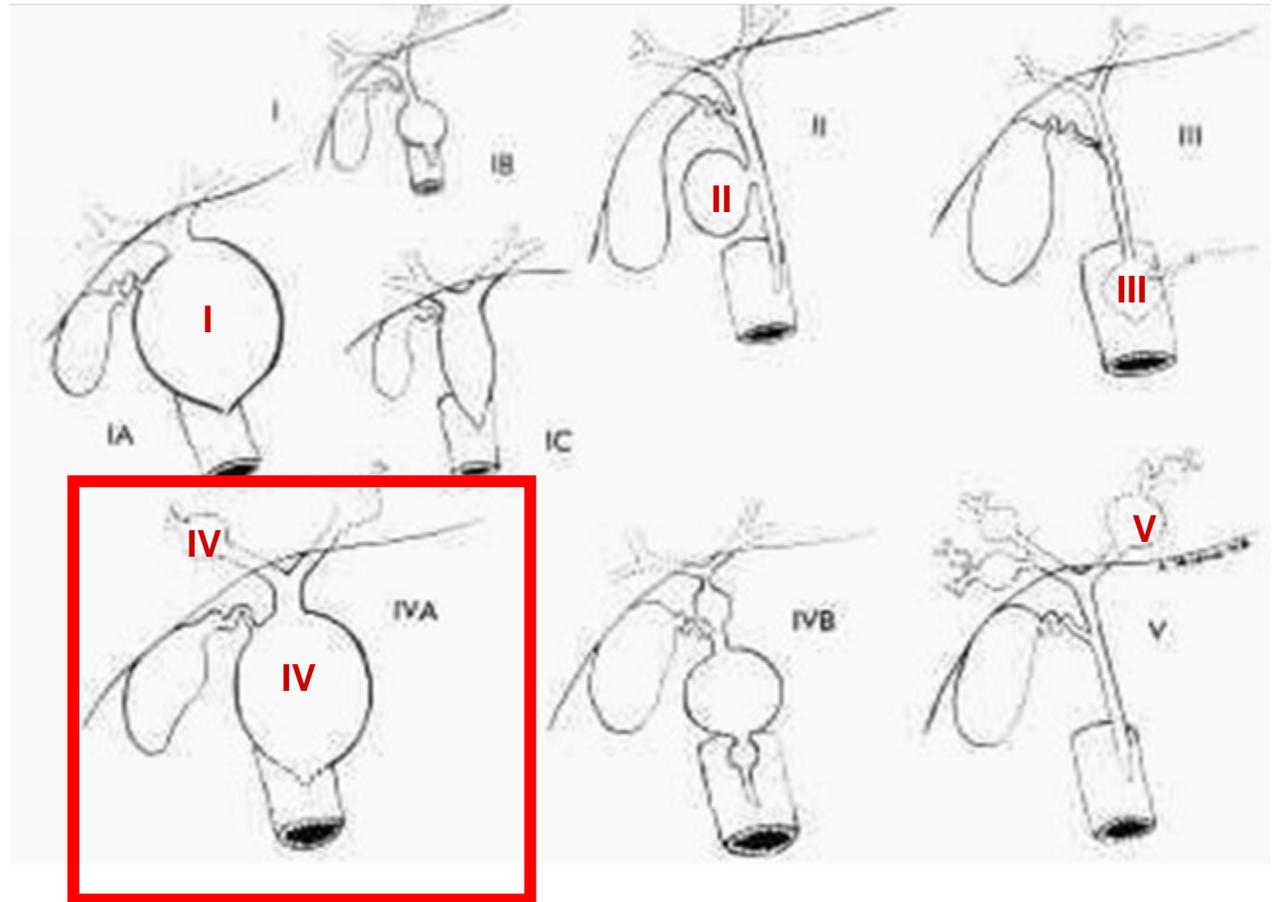
- **Choledochocele involving sphincter**
- **Excise**
- **Sphincteroplasty**



**What is a Type IV (Caroli's) choledochal cyst?
How do you treat?**

What is a Type IV (Caroli's) choledochal cyst? How do you treat?

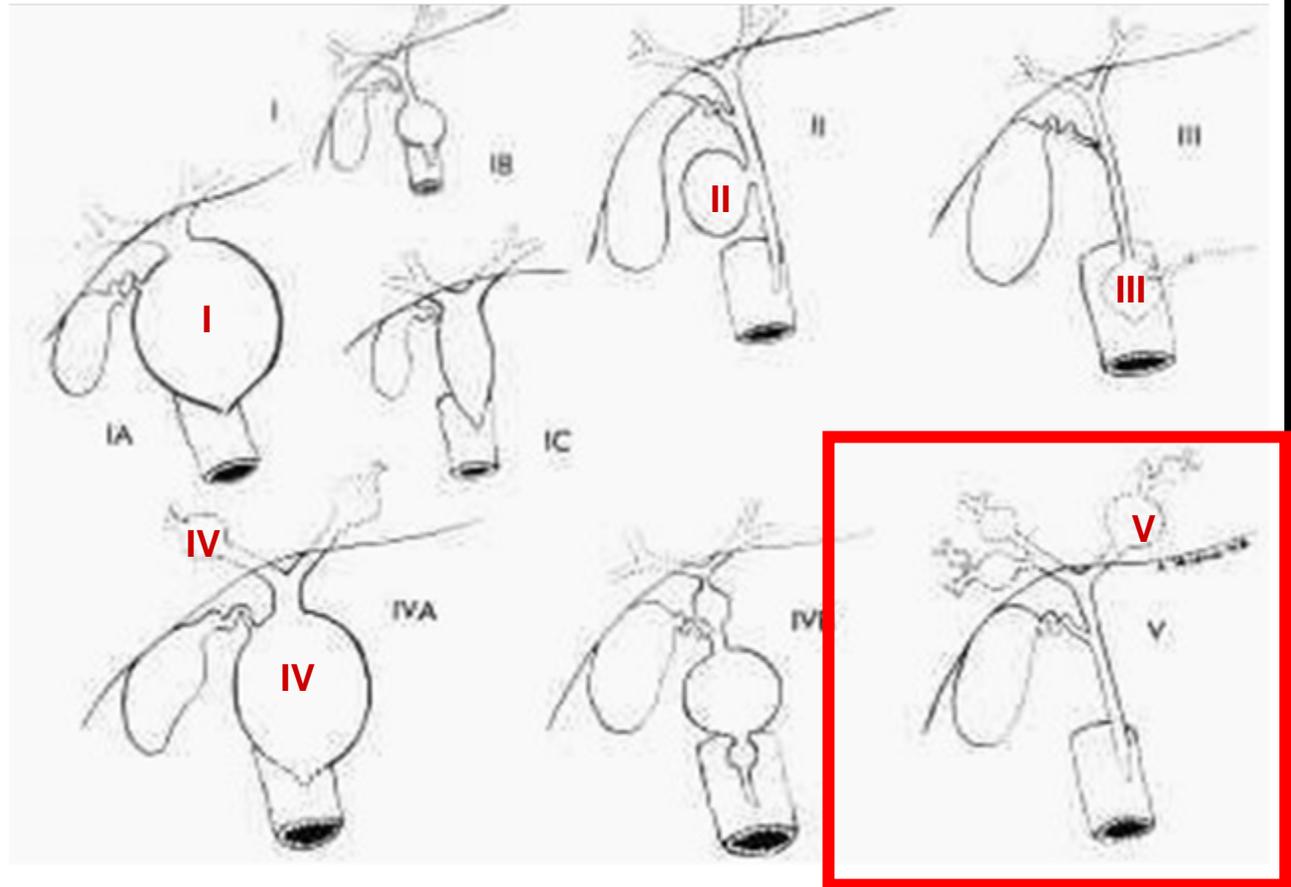
- Intra and extra hepatic cysts
- Transplant



**What is a Type V choledochal cyst?
How do you treat?**

What is a Type V choledochal cyst? How do you treat?

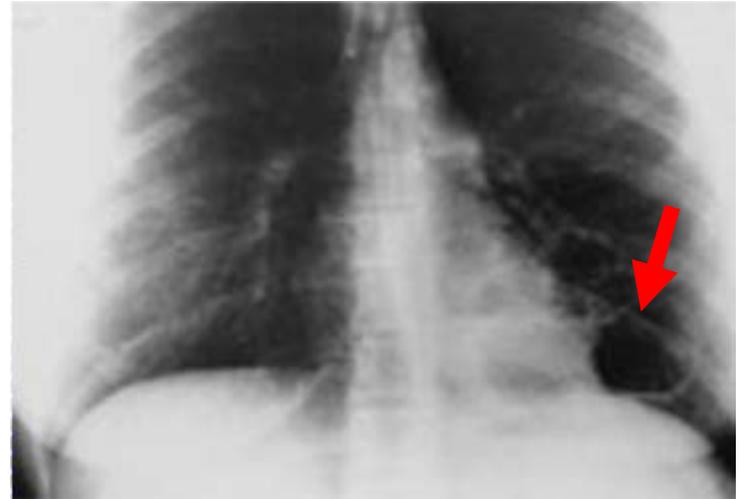
- Intrahepatic cysts only
- Transplant



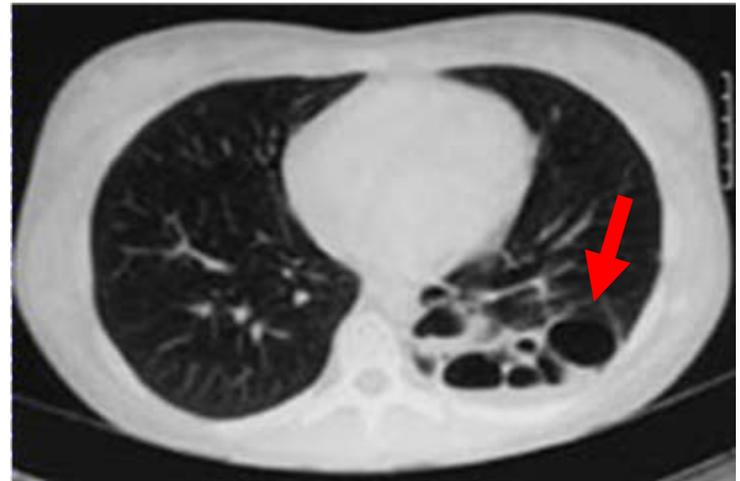
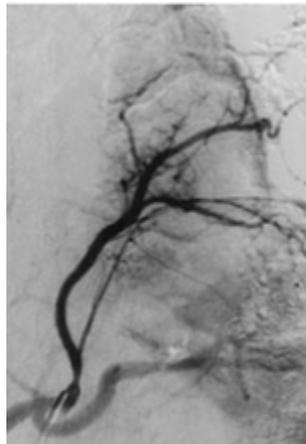
What is the vasculature of EXTRAlobar pulmonary sequestration?

What is the vasculature of EXTRAlobar pulmonary sequestration?

- **Systemic artery and veins**



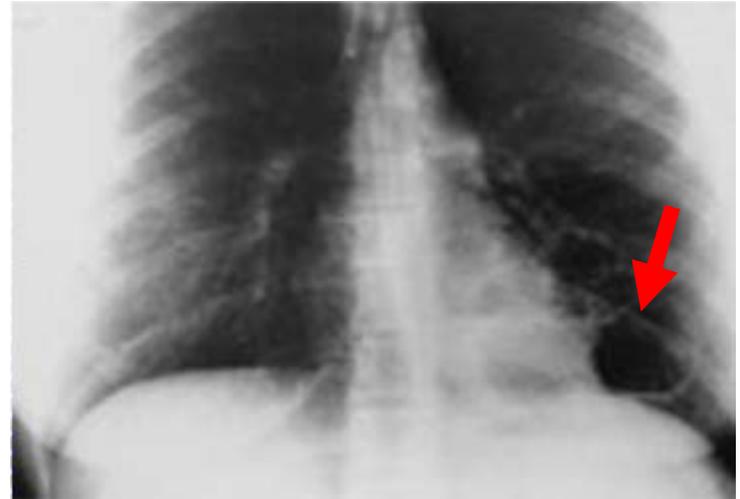
Selective injection of the aberrant arterial branch arising from the celiac trunk, penetrating the diaphragm, and supplying the left lower lobe.



What is the vasculature of INTRAlobar pulmonary sequestration?

What is the vasculature of INTRAlobar pulmonary sequestration?

- **Aorta in**
- **Pulmonary vein out**



**What is the most common presentation of
Pulmonary Sequestration?**

What is the most common presentation of Pulmonary Sequestration?

- **Infection**
 - **not as respiratory distress in the newborn**

**What is the treatment for intra and extra
Pulmonary sequestration?**

What is the treatment for intra and extra Pulmonary sequestration?

- **Resection**
 - **Wedge**

What is Congenital Lobar Emphysema?



What is Congenital Lobar Emphysema?

- **Massive hyperinflation of a single lobe**
 - usually upper/middle



What % of CLE have respiratory distress at birth?



What % of CLE have respiratory distress at birth?

- **33%**

What % of CLE presents after age 6 months?



What % of CLE presents after age 6 months?

- **5%**

What is the male to female ratio of CLE?



What is the male to female ratio of CLE?

- **M:F is 2:1**



What are the CXR findings of CLE?



What are the CXR findings of CLE?

- Radiolucency of affected lobe
- Compression of other lobe



What is the treatment of CLE is symptoms are severe?

What is the treatment of CLE is symptoms are severre?

- **Lobectomy**
 - **excellent prognosis**



What is a cystic hygroma?

What is a cystic hygroma?

- **Lymphangioma**



How do you treat a Cystic hygroma?



How do you treat a Cystic hygroma?

- **Resection**

What is the most common complication of a cystic hygroma?

What is the most common complication of a cystic hygroma?

- **Infection**

What is a Sistrunk procedure?

What is a Sistrunk procedure?

- **Thyroglossal duct cyst excision**
 - **(midline)**
 - **with hyoid bone**



What is the first sign of CHF in children?

What is the first sign of CHF in children?

- **Hepatomegaly**

**When does a strawberry hemangioma present?
How do you treat?**

When does a strawberry hemangioma present? How do you treat?

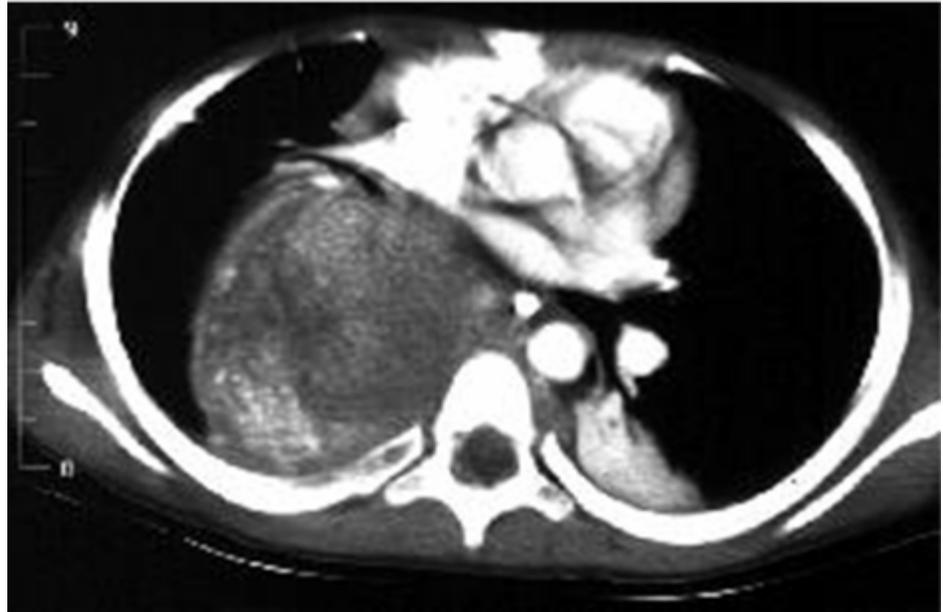
- **First few weeks of life**
- **Leave alone since most involute by Age 7**



What is the #1 solid malignancy in pediatrics?

What is the #1 solid malignancy in pediatrics?

- **Neuroblastoma**



What urine assay is elevated in most Neuroblastomas?

What urine assay is elevated in most Neuroblastomas?

- **Vanillylmandelic acid (VMA) in 90%**

**What is the significance of an elevated HVA
(homovanillic acid) in Neuroblastoma?**

What is the significance of an elevated HVA (homovanillic acid) in Neuroblastoma?

- **Worse prognosis**

Where do Neuroblastoma cells originate?



Where do Neuroblastoma cells originate?

- **Neural crest**

What % of Neuroblastomas can be cured?



What % of Neuroblastomas can be cured?

- **33%**



What gene are Neuroblastomas associated with?



What gene are Neuroblastomas associated with?

1. **N-myc**
2. **C-myc**

“**N**euroblastomas”

What is the overall #1 pediatric malignancy?

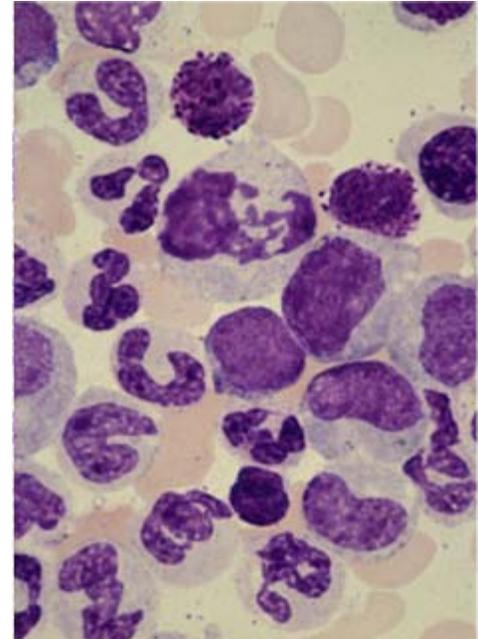
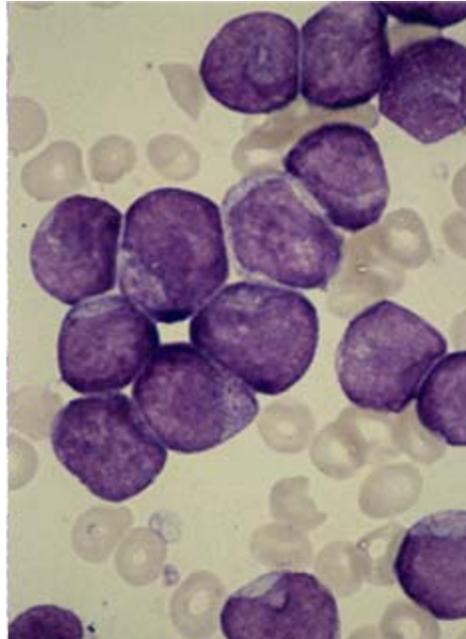
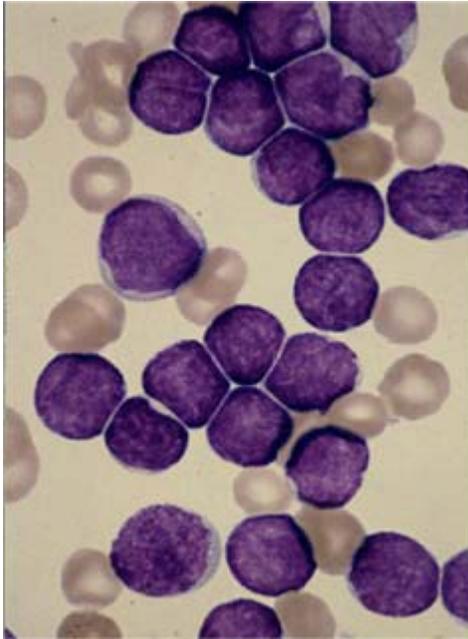


What is the overall #1 pediatric malignancy?

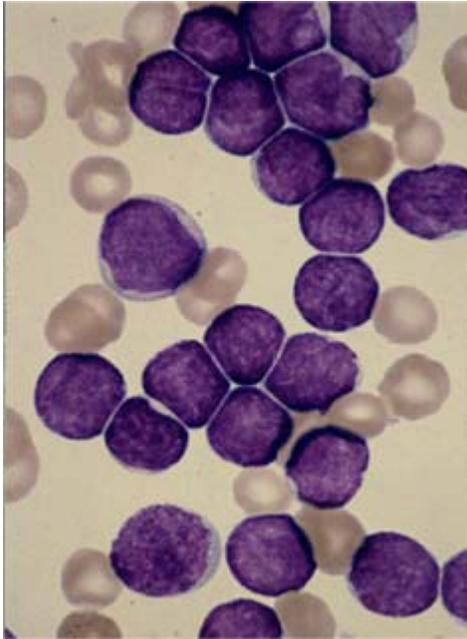
- **Leukemia**



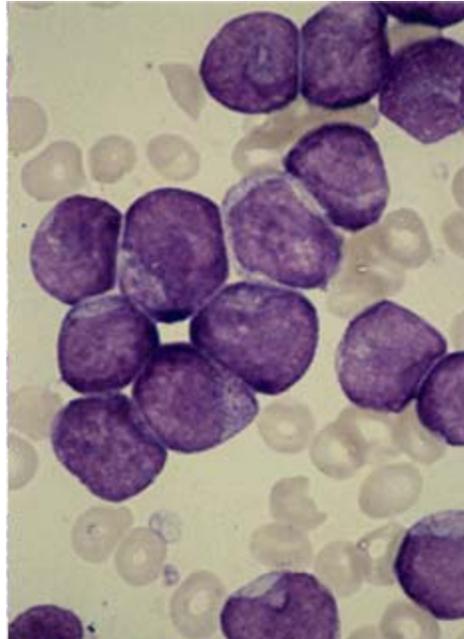
Name the type of Leukemia for the pathology?



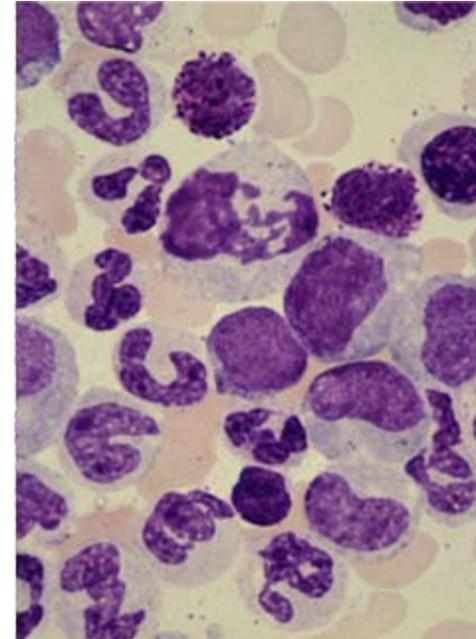
Name the type of Leukemia for the pathology?



Acute lymphoid leukemia
(ALL); There is a marked proliferation of small lymphoblasts.



Acute myeloid leukemia
(AML); There is a marked proliferation of large myeloblasts.



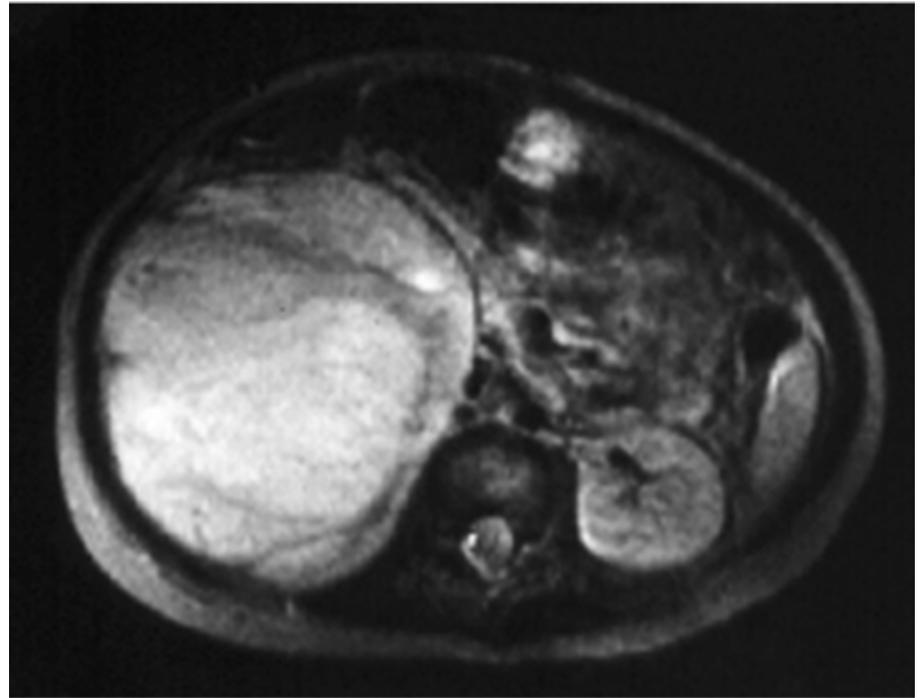
Chronic myeloid leukemia
(CML); There is a marked proliferation of granulocytes at various stages of maturation.

What is a Wilms tumor?



What is a Wilms tumor?

- **Nephroblastoma**



What % of Wilms tumors are cured with nephrectomy?

What % of Wilms tumors are cured with nephrectomy?

- **80%**

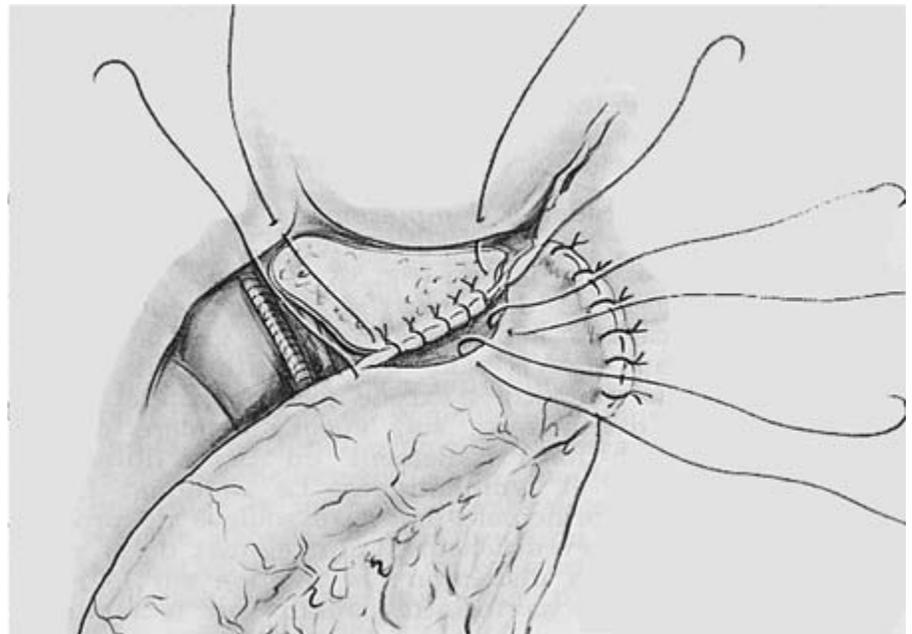


What is the treatment for biliary atresia?



What is the treatment for biliary atresia?

- **Kasai procedure (hepatoportoenterostomy)**
 - **before 3 mos**



What are the five 2s of Meckel's diverticulum?

What are the five 2s of Meckel's diverticulum?

1. **2 ft. from IC Valve (anti-mesenteric border)**
2. **2% of Population**
3. **2% are Symptomatic**
4. **2 types of tissue (Pancreatic, Gastric)**
5. **2 presentations (Diverticulitis, GI bleed)**

What is the # 1 GI bleed in children?

What is the # 1 GI bleed in children?

- **Meckel's diverticulum**

What is the embryology of a Meckel's diverticulum?

What is the embryology of a Meckel's diverticulum?

- **Persistent omphalomesenteric duct**



What is the age group of intussusception in pediatrics?

What is the age group of intussusception in pediatrics?

- **Less than 3 YEARS**



What is the first line of treatment for intussusception in pediatrics?

What is the first line of treatment for intussusception in pediatrics?

- 1. Reduce with air/contrast enema**
- 2. IV glucagon can help (relax smooth muscle)**

When do you bring pediatric intussusception to the OR?

When do you bring pediatric intussusception to the OR?

1. Peritonitis
2. Free air

How do you treat adult intussusception?

How do you treat adult intussusception?

- **OR**
 - **because of high likelihood of malignant lead point**

What causes intestinal atresias in pediatrics?

What causes intestinal atresias in pediatrics?

- **Secondary to intra-uterine events**
 - **mother may have polyhydraminos**



What % of atresias are multiple?



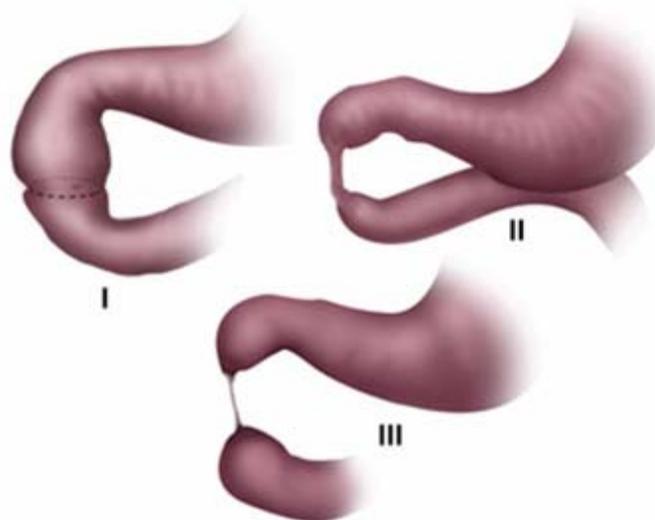
What % of atresias are multiple?

- **10%**

What is the #1 neonatal duodenal obstruction?

What is the #1 neonatal duodenal obstruction?

- **Duodenal atresia**



1. Type I - there is a mucosal web with normal muscular wall (most common)
2. Type II - characterized by a short fibrous cord connecting two atretic ends of duodenum
3. Type III - there is complete separation of the atretic ends

How do duodenal atresias present clinically?

How do duodenal atresias present clinically?

- **bilious vomiting**

What are the radiologic findings of duodenal atresia?

What are the radiologic findings of duodenal atresia?

- **Double bubble**



What genetic disease is duodenal atresia associated with?

What genetic disease is duodenal atresia associated with?

- **Trisomy 21 (Down's)**

What % of infants with duodenal atresia have cardiac defects?

What % of infants with duodenal atresia have cardiac defects?

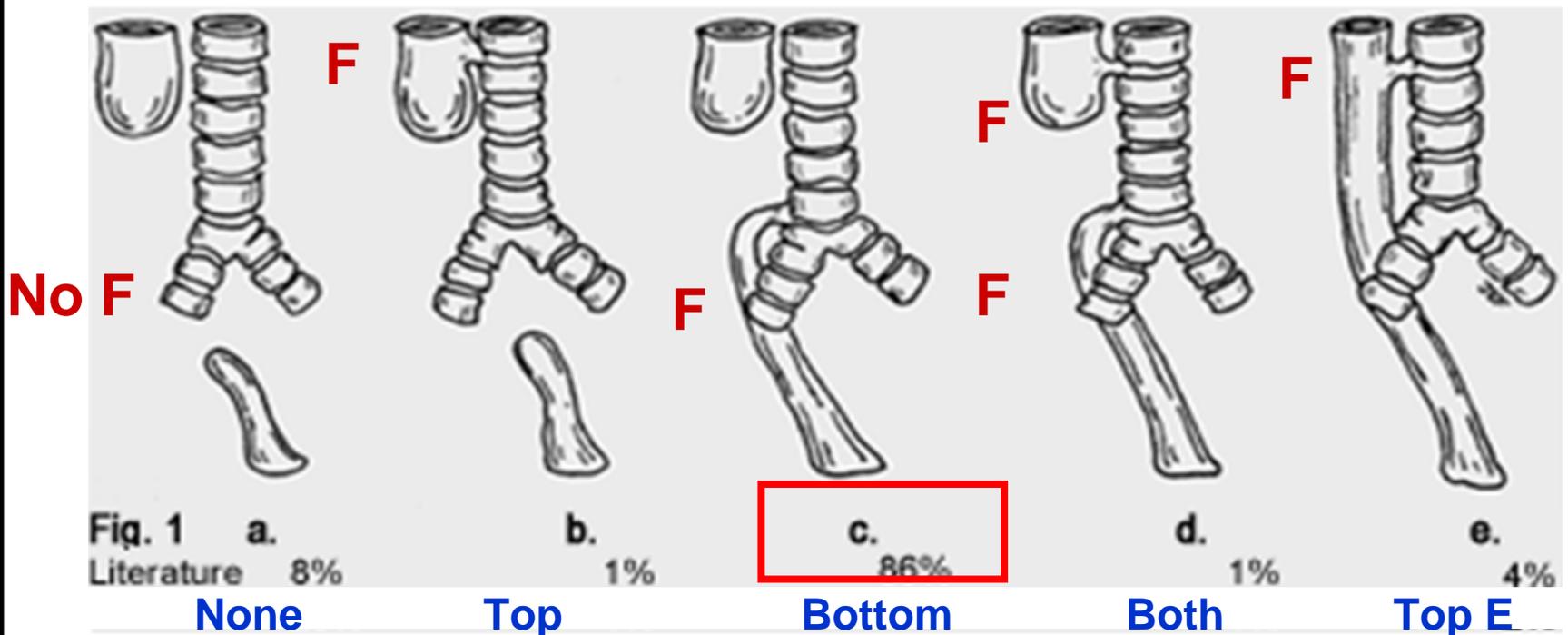
- **33%**



What is the most common type of TE fistula?

What is the most common type of TE fistula?

- **Type C (common)**
 - **blind esophagus**
 - **distal TEF**



How do TEF present?



How do TEF present?

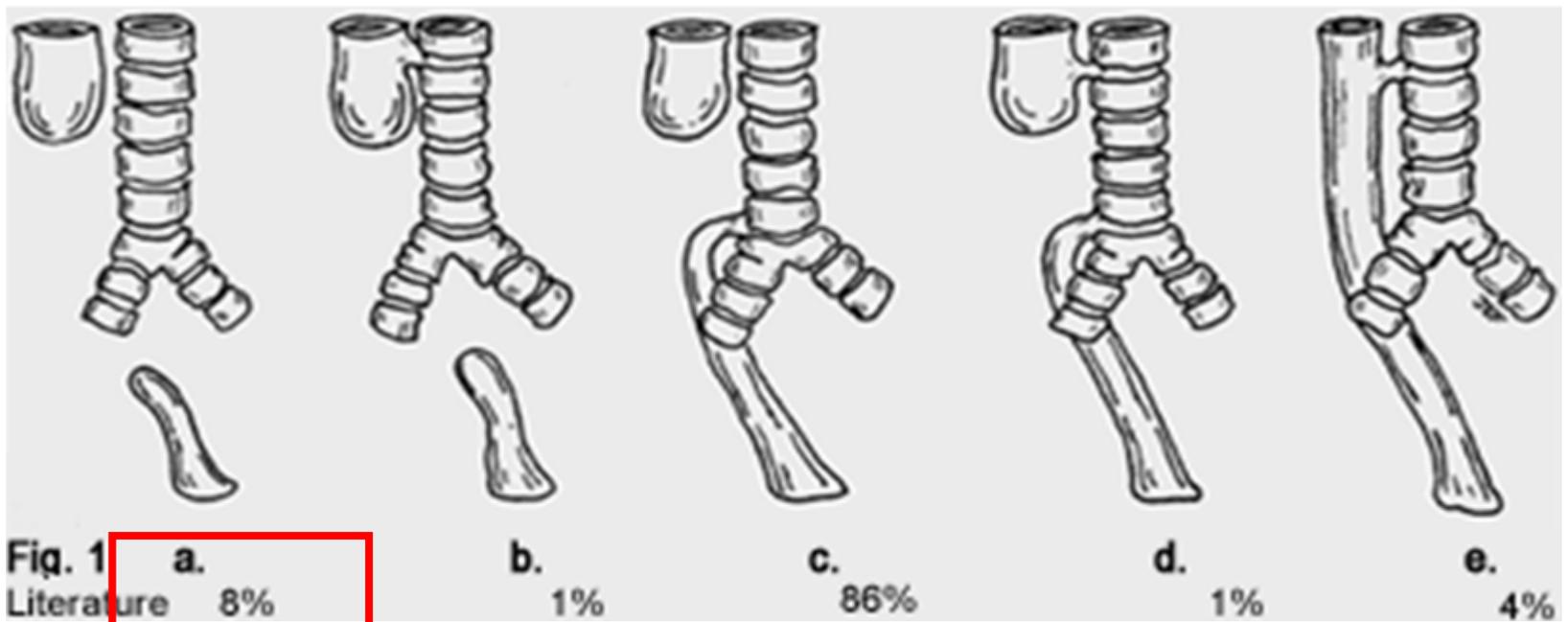
- **Spit up foods**
- **NGT cant pass**

How does Type A TEF present?



How does Type A TEF present?

- **No air in GI tract**
 - **Blind esophagus, no fistula (5%)**



What anomalies are associated with TEFs?

What anomalies are associated with TEFs?

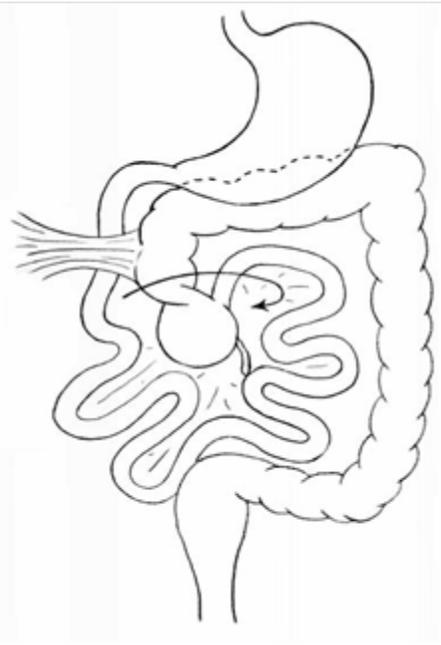
- **Vertebral**
- **Anorectal (imperforate anus 10%)**
- **TEF**
- **Radial**
- **Renal**

What is Ladd's protocol for malrotation?



What is Ladd's protocol for malrotation?

1. Appendectomy
2. Take down bands
3. Counterclockwise rotation

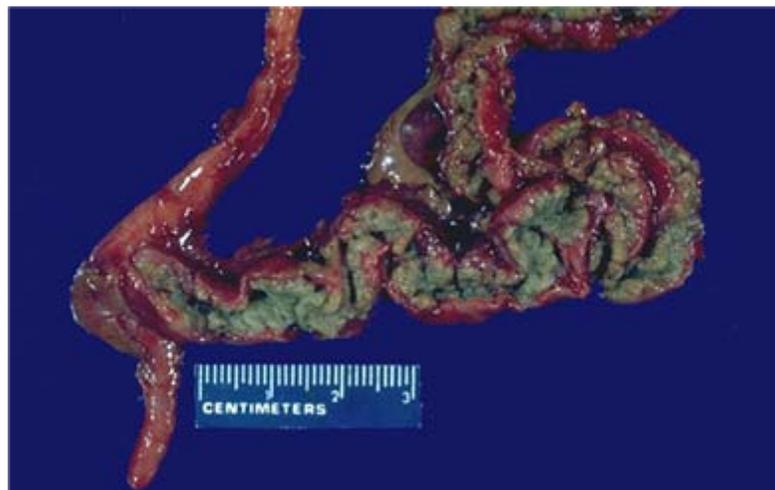


These 2 lower gastrointestinal series show the cecum (arrows) in the right upper quadrant, indicative of malrotation

What disease is associated with Meconium ileus?

What disease is associated with Meconium ileus?

- **Cystic fibrosis**



Meconium ileus is most often seen in the first few days of life in neonates with cystic fibrosis, but can rarely occur in infants with a normal pancreas. In cystic fibrosis, the abnormal pancreatic secretions lead to inspissated meconium that produces intestinal obstruction.

How do you diagnose and treat a Meconium ileus?

How do you diagnose and treat a Meconium ileus?

- **Gastrograffin enema**

What is the #1 cause of pediatric colon obstruction?

What is the #1 cause of pediatric colon obstruction?

- **Hirschsprung's**

How does Hirschsprung's present?



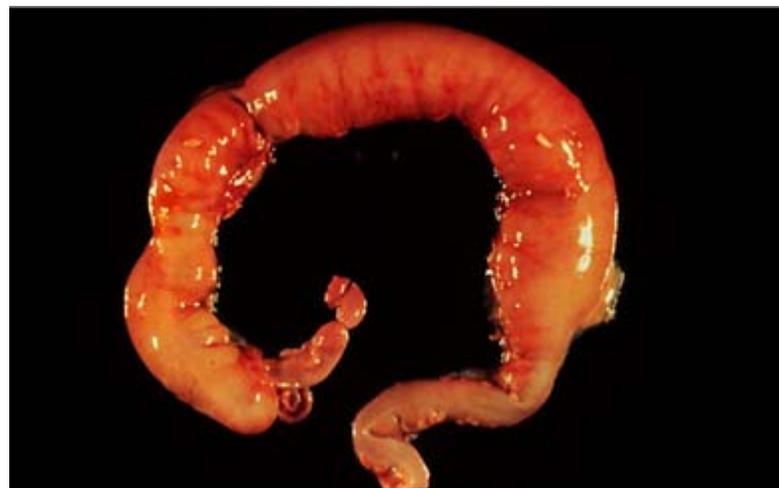
How does Hirschsprung's present?

- **No BM in first 24 hours of life?**

What causes Hirschsprung's

What causes Hirschsprung's

- **Congenital aganglionosis of distal bowel**



Hirschsprung's disease results from a failure of migration of neuroblasts that form the myenteric plexus. The result is intestinal obstruction in affected neonates. The incidence is 1 per 5000 live births. Shown here is dilation of bowel (megacolon) proximal to the affected region at the lower left center in sigmoid colon. Mucosal damage and secondary infection may follow.

How do you diagnose Hirschsprung's?

How do you diagnose Hirschsprung's?

- **Rectal biopsy**

How does NEC present?



How does NEC present?

- **Blood in the stool**
 - **Hours after initiating feeding in neonates**

When do you bring NEC to the OR?

When do you bring NEC to the OR?

OR for resection and ostomies if:

1. **Free air**
2. **Acidoisis**
3. **Thrombocytopenia**
4. **Peritonitis**
5. **Clinical deterioration**



*“NEC makes **FAT PCs** for the OR”*

What must be done before reconnecting bowel weeks out in NEC?

What must be done before reconnecting bowel weeks out in NEC?

- **Contrast evaluation**
 - **because 20% with have stenosis**

What is a clinical sign of a “high” imperforate anus?

What is a clinical sign of a “high” imperforate anus?

- **Meconium in urine**
 - **fistula to:**
 - **bladder**
 - **vagina**
 - **urethra**

What is the treatment for a “high” imperforate anus?

What is the treatment for a “high” imperforate anus?

- **Need colostomy**

What cause gastroschisis?



What cause gastroschisis?

- **Intrauterine rupture of umbilical cord**
 - **no associated defects**
 - **no sac**



Where is gastroschisis located?



Where is gastroschisis located?

- **Lateral defect**
 - **To right**

Does an Omphalocele have a peritoneal sac?



Does an Omphalocele have a peritoneal sac?

- Yes



Where is a Omphalocele located?



Where is a Omphalocele located?

- **Midline**



**What can be found in the peritoneal sac of a
Omphalocele?**

What can be found in the peritoneal sac of a Omphalocele?

- **Liver**
- **Other non-bowel associated defects**

What are frequent anomalies associated with an Omphalocele?



What are frequent anomalies associated with an Omphalocele?

- **Sternum**
- **Diaphragm**
- **Pericardium**
- **Cardiac**

Cantrell pentology

*“Mr. Cantrell founded **San Diego PC**”*

Flashcard Instructions

MOUSE

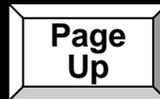
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

CLICK BAR



First
Slide



Previous
Slide



Answer
or Next
Question



Last
Slide

WARNING: Control Panel will not work on many computers. Use mouse and keyboard.



What is the function of PNMT?

What is the function of PNMT?

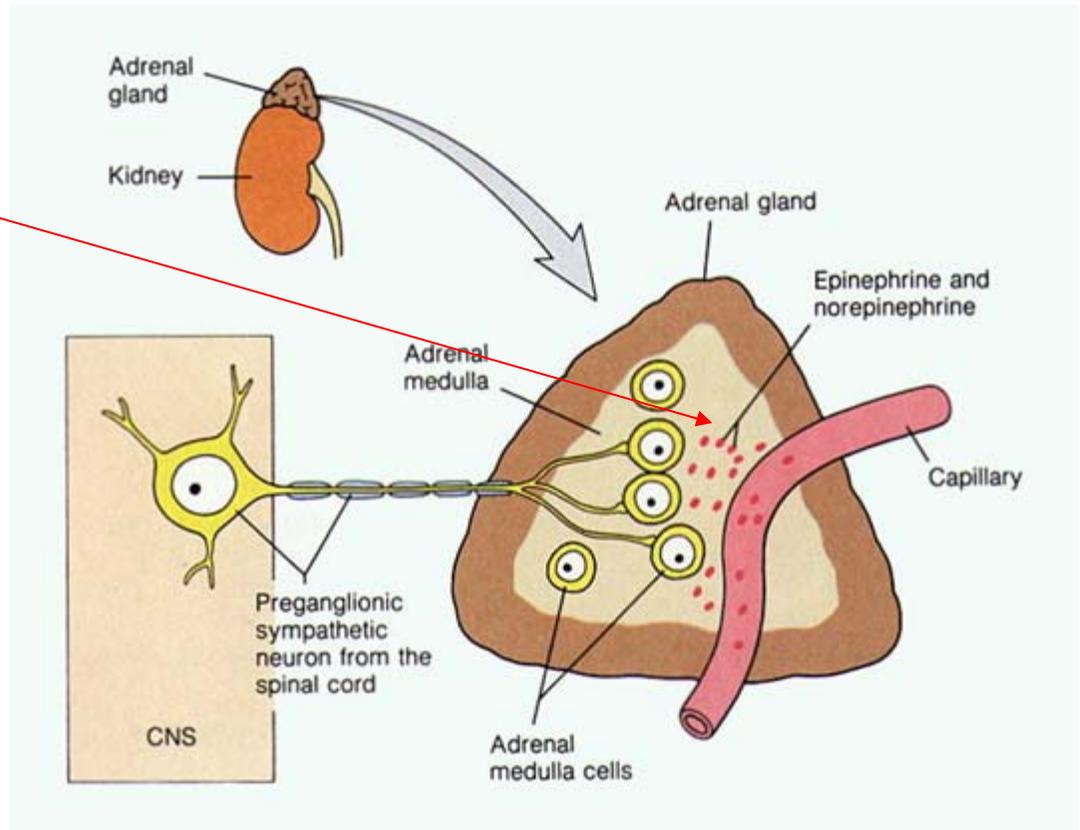
- **Converts norepinephrine to epinephrine**



Where is PMNT located?

Where is PMNT located?

- Adrenal medulla only

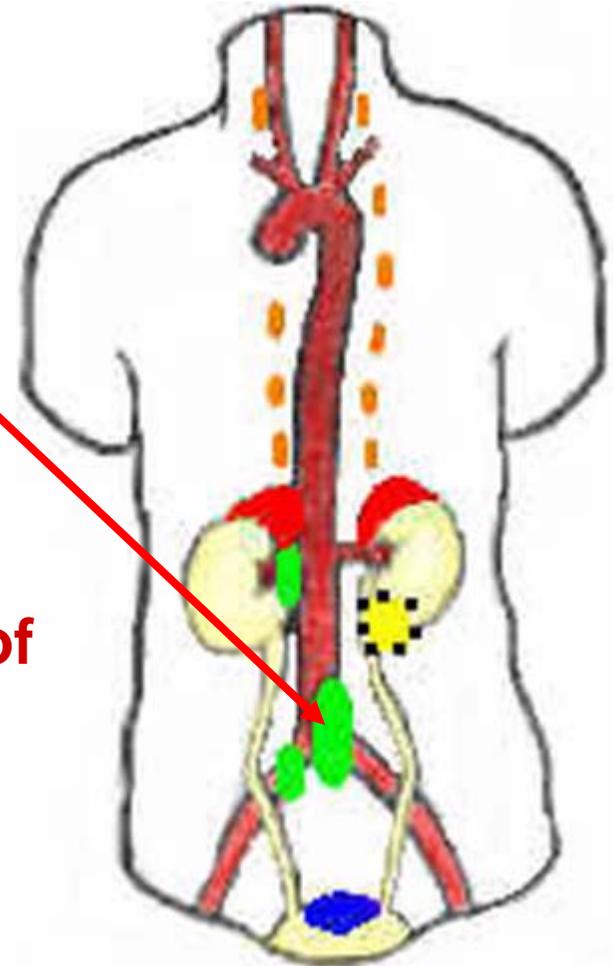


Pheochromocytoma: 10% are?

Where are extra-adrenal Pheochromocytomas located?

Where are extra-adrenal Pheochromocytomas located?

- **Organ of Zuckerkandl**
 - at aortic bifurcation
- **Other locations**
 - **S**ympathetic nerve chain along the spinal cord
 - **U**reter (collecting system of kidney)
 - **B**ladder



“Zucker was a **S.U.B**”

How do you pre-op a Pheochromocytoma?

How do you pre-op a Pheochromocytoma?

- **Pre-op alpha blocker first**
- **Then B block if tachycardia**

“A first”

How do you screen for Pheochromocytomas?

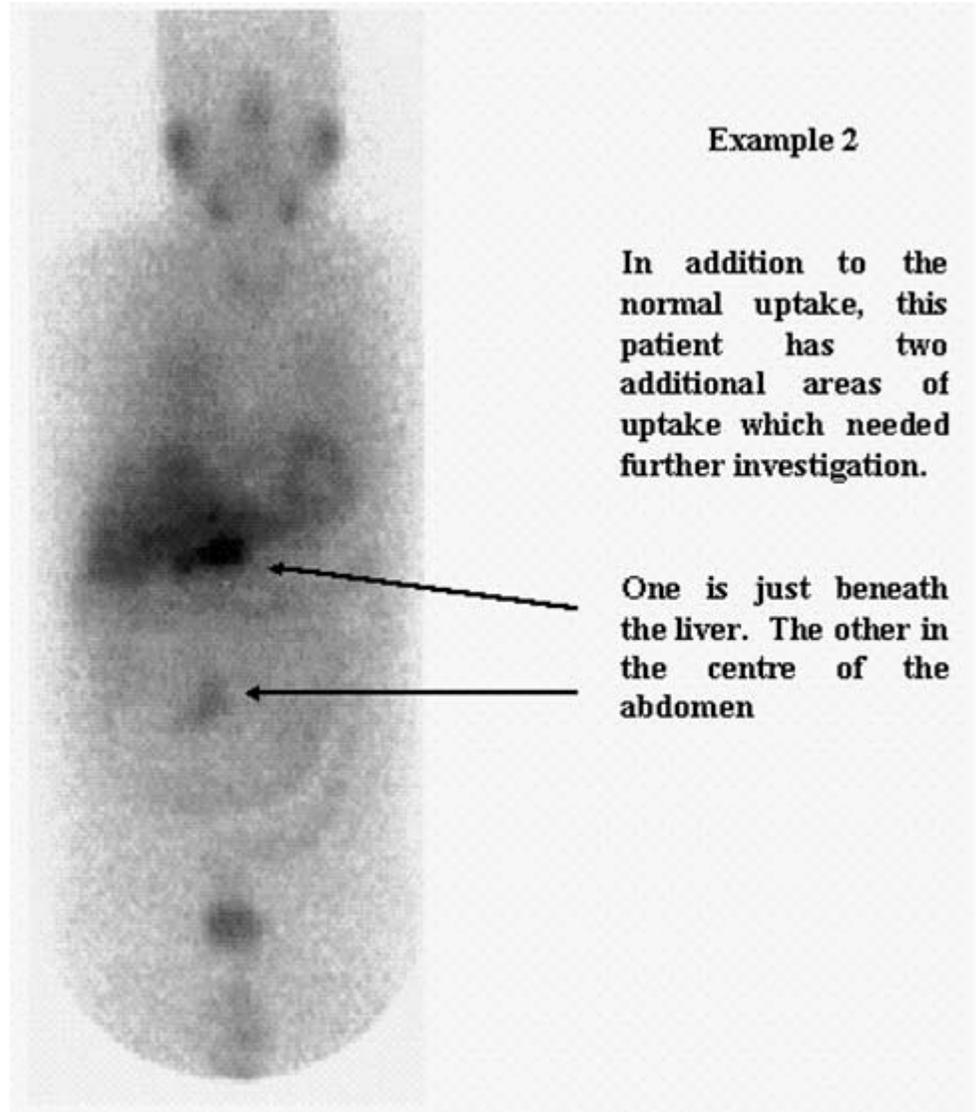
How do you screen for Pheochromocytomas?

- **Urine**
 1. **Metanephrine**
 2. **VMA**

What type of scan can localize a pheochromocytoma?

What type of scan can localize a pheochromocytoma?

- **MIBG**
 - (Meta-iodobenzylguanidine) scan



How do Pheochromocytomas present?

How do Pheochromocytomas present?

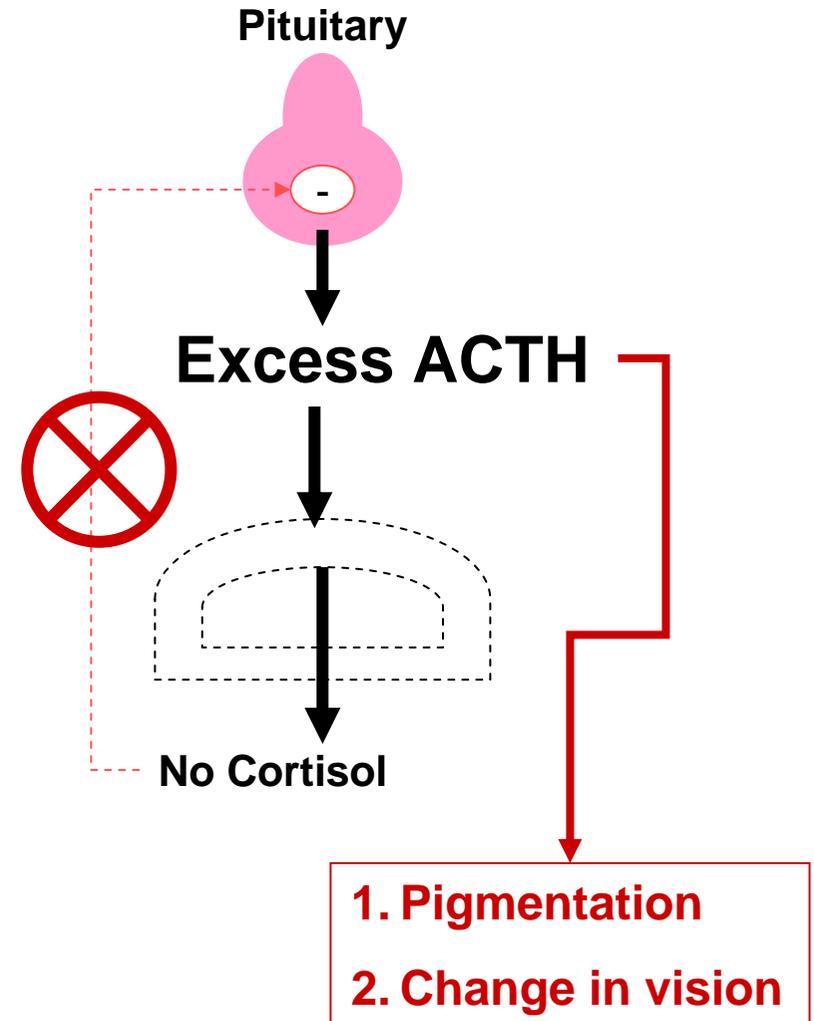
- **Presents with:**
 - **H**eadache
 - **E**pisodic HTN
 - **E**pisodic diaphoresis
 - **P**alpitations

*“Smoke **HEEPs** of Marijuana for Pheochromocytomas”*

What is the Nelson Syndrome?

What is the Nelson Syndrome?

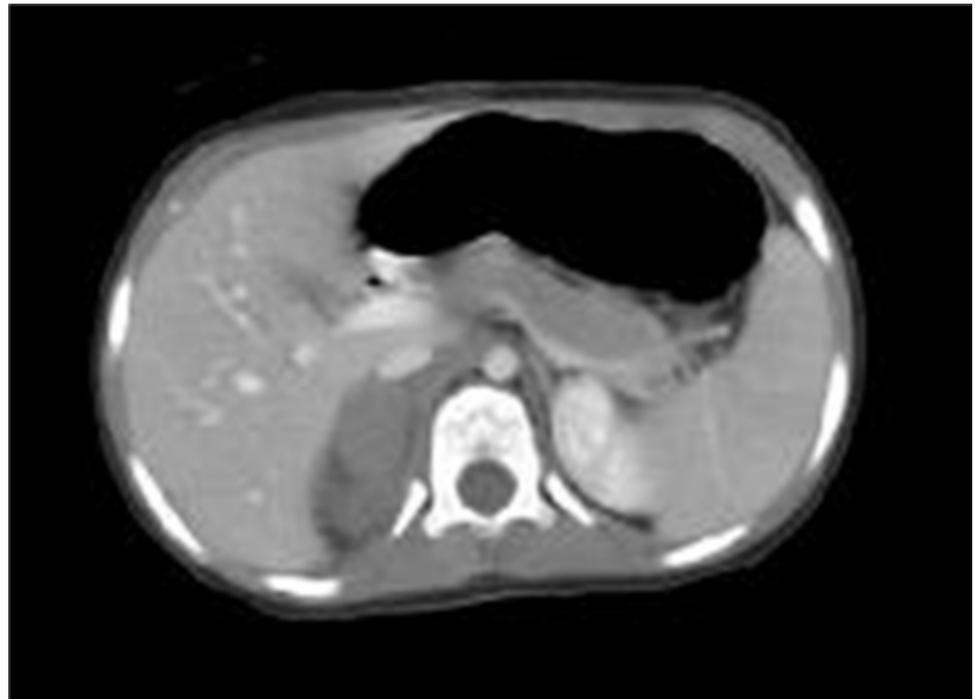
- 10% s/p adrenalectomy
- Decreased inhibition of pituitary leads to:
 - Increased ACTH
 - Pigmentation
 - Change in vision



What is Waterhouse Friedrichson Syndrome?

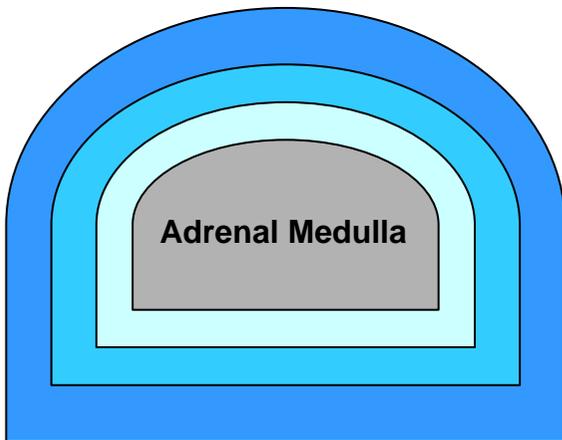
What is Waterhouse Friedrichson Syndrome?

- **Adrenal hemorrhage**
 - **with meningococcal sepsis**



List the products of the adrenal cortex and adrenal medulla?

List the products of the adrenal cortex and adrenal medulla?

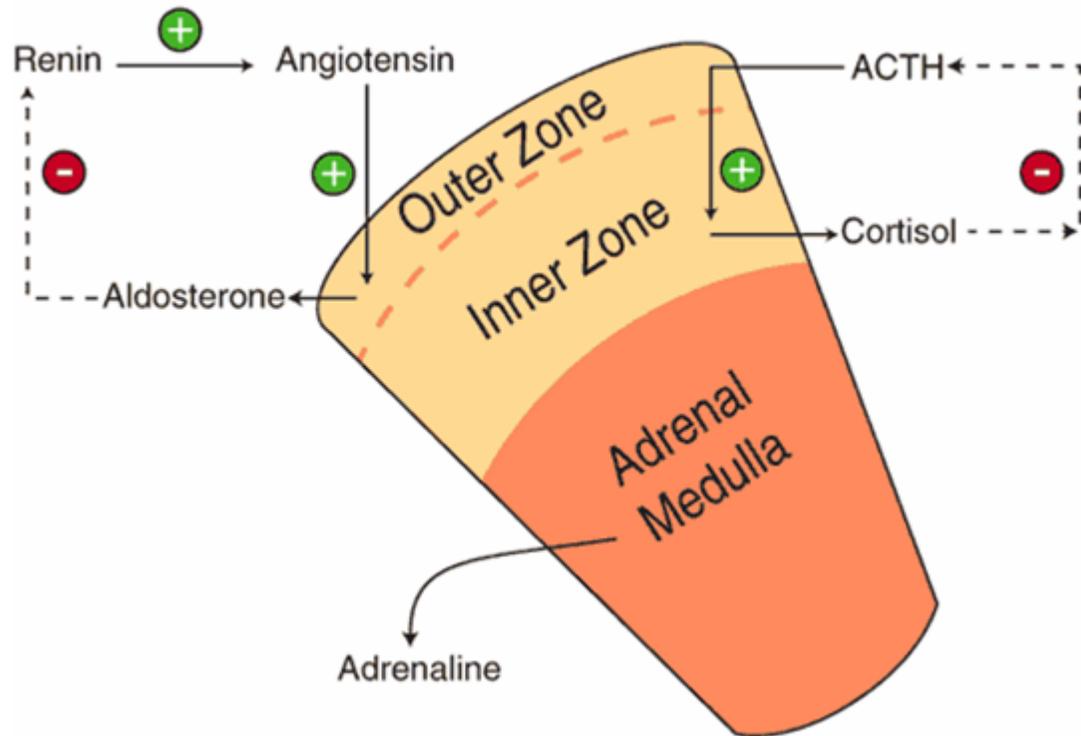


- 1. Glucocorticoids (cortisol)**
- 2. Mineralocorticoids (aldosterone)**
- 3. Sex hormones (testosterone)**
- 4. Catecholamines (epinephrine / Norepinephrine)**

What regulates Aldosterone and Cortisol?

What regulates Aldosterone and Cortisol?

- Renin
- ACTH

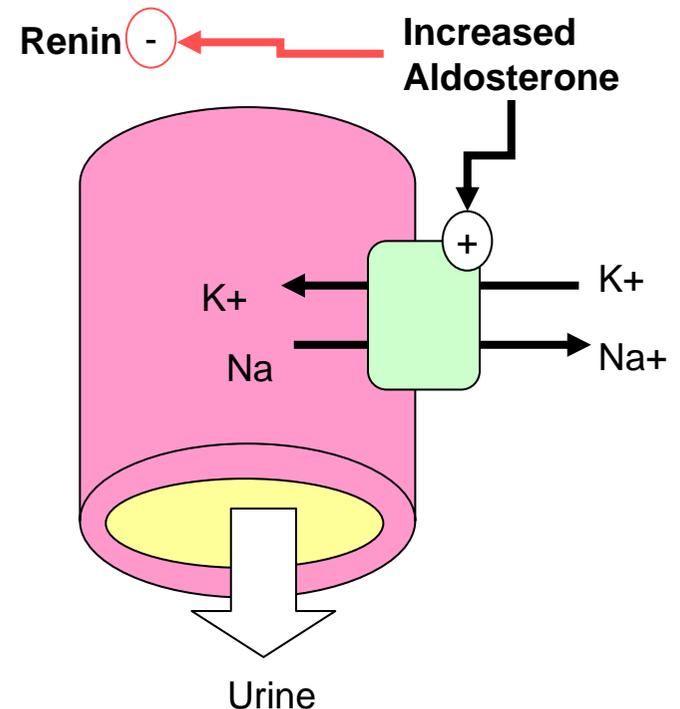
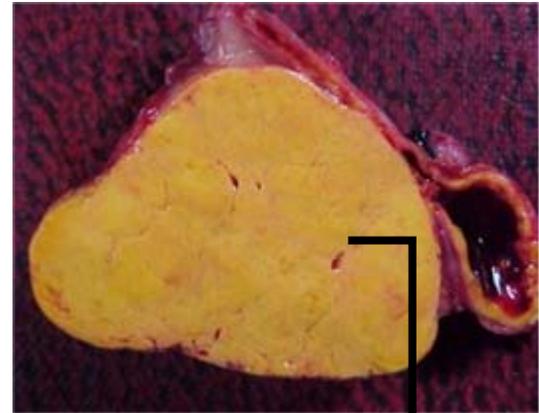


What causes Conn's Syndrome?

What causes Conn's Syndrome?

- hyperaldosterone
 - 80% adrenal adenoma
 - 20% bilateral hyperplasia

Adrenal adenoma/ hyperplasia



How does Conn's Syndrome present?

How does Conn's Syndrome present?

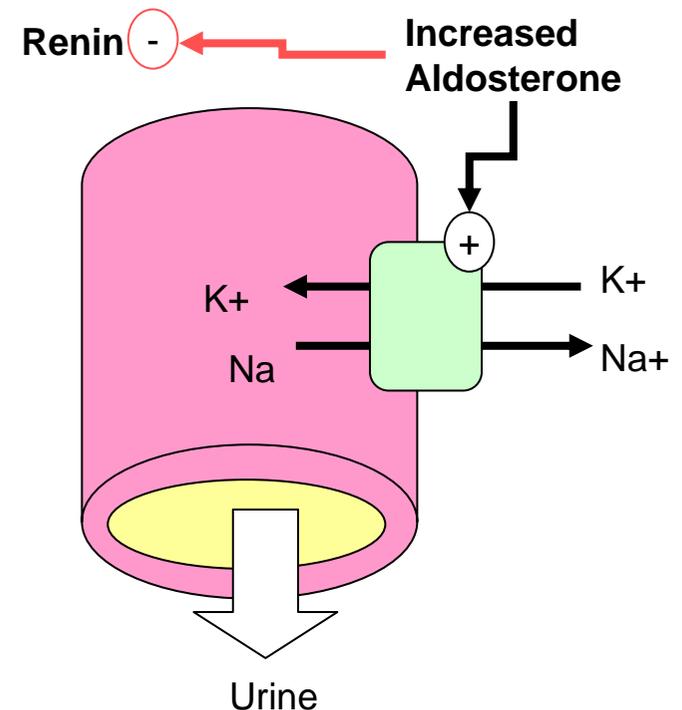
1. HTN

- increased plasma volume

2. Hypernatremia

3. Hypokalemia

4. See change in postural stimulation test



What causes Addison's Disease?

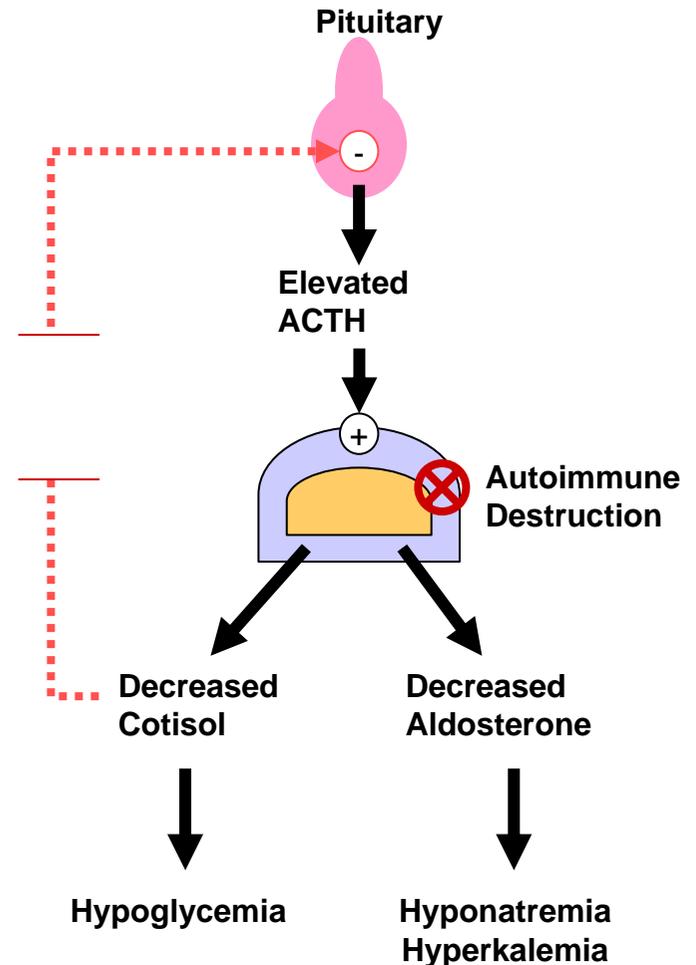
What causes Addison's Disease?

- **Autoimmune destruction of adrenal cortices accounts for 80% of the spontaneous cases.**

What lab findings are consistent with Addison's Disease?

What lab findings are consistent with Addison's Disease?

- **High ACTH**
- **Low aldosterone**
 - hyponatremia
 - hyperkalemia
- **Low glucocorticoids**
 - hypoglycemia



How does a Addison's crisis present?

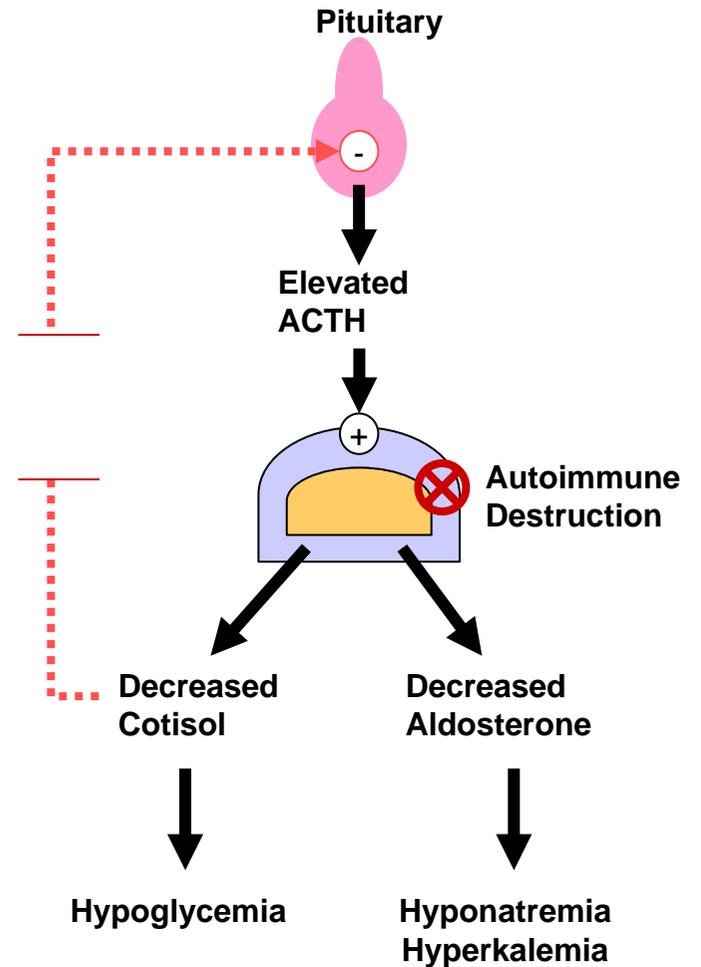
How does a Addison's crisis present?

- **Similar to sepsis**
 - **Hypotension**
 - **Fever**

How do you diagnose / treat a Addison's crisis?

How do you diagnose / treat a Addison's crisis?

- **Replacement Steroids**



What is the most common Congenital Adrenal Hyperplasia?

What is the most common Congenital Adrenal Hyperplasia?

- **21 – Hydroxylase deficiency**

Missing Enzyme	Deficiency	Excess	Phenotype
Cholesterol desmolase	All steroid hormones	Lipoid adrenal hyperplasia	Adrenal insufficiency
3 β -Hydroxysteroid dehydrogenase	Mineralocorticoids Glucocorticoids	Pregnenolone; 17-OH-pregnenolone; DHEA	Male undervirilization; female mild virilization
17 α -Hydroxylase	Sex steroids Glucocorticoids	DOC; corticosterone	Male undervirilization; hypokalemia; hypertension
21-Hydroxylase	Mineralocorticoids Glucocorticoids	Progesterone; 17-OH progesterone; androgens	Female virilization; adrenal insufficiency; salt-wasting
11 β -Hydroxylase	Glucocorticoids	DOC; androgens	Female virilization; hypertension
Corticosterone 18-methyl oxidase type II	Aldosterone	18-OH-corticosterone	Salt-wasting

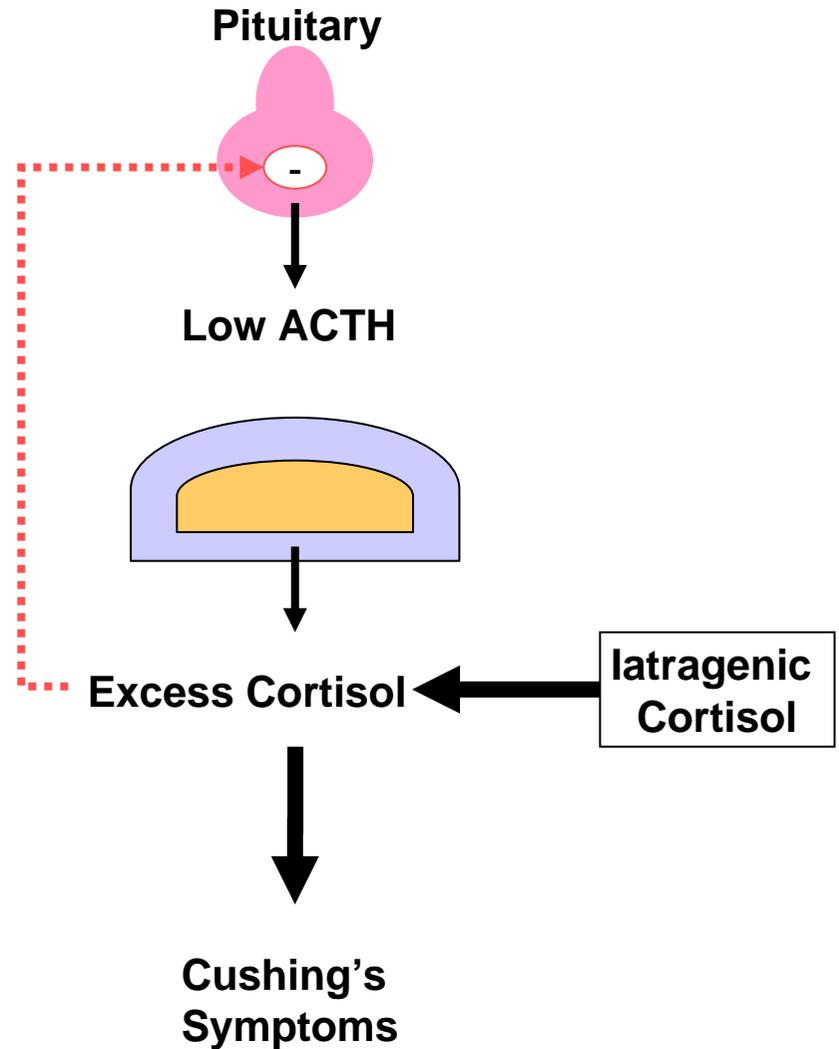
90%

OH = hydroxy; DHEA = dehydroepiandrosterone; DOC = deoxycorticosterone.
 Modified from *Metabolic Control and Disease*, ed. 8, edited by PK Bondy and LE Rosenberg. Philadelphia, WB Saunders Company, 1980; used with permission.

What is cause of Cushing's SYNDROME?

What is cause of Cushing's SYNDROME?

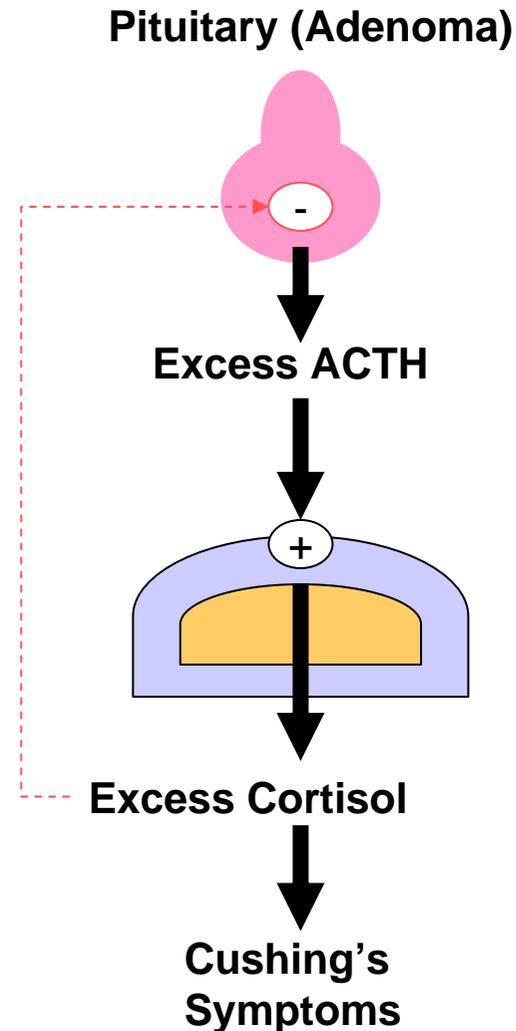
- **Excess Steroids (cortisol)**
 - **most commonly iatrogenic**
- **Diagnose**
 - **Low ACTH**
 - **High Cortisol**



What is cause of Cushing's DISEASE?

What is cause of Cushing's DISEASE?

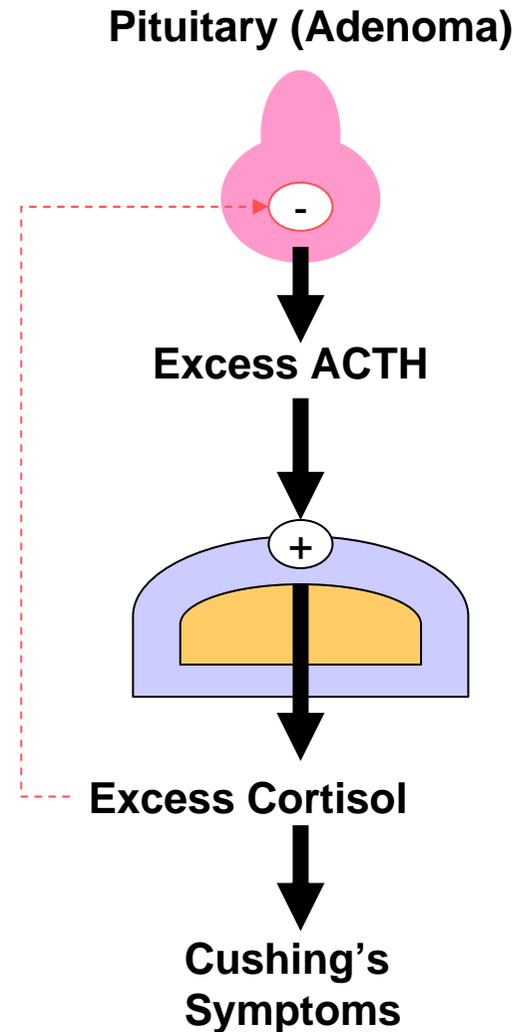
- **Excess ACTH**
 - **Pituitary Adenoma most common cause (70%)**
- **Diagnose**
 - **High ACTH**
 - **High Cortisol**



How do you diagnose / test Cushing's DISEASE?

How do you diagnose / test Cushing's DISEASE?

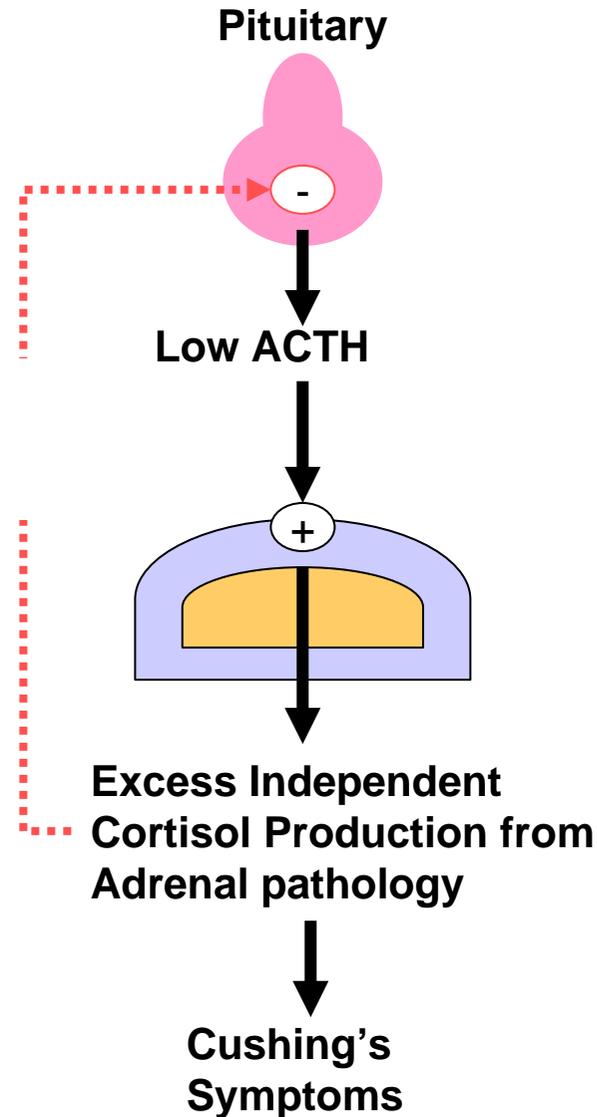
- **Diagnose with high dose steroid test**
 - **Cortisol suppressed with DST**
 - **Pituitary ACTH dependent**



What is Adrenal Cushing's SYNDROME?

What is Adrenal Cushing's SYNDROME?

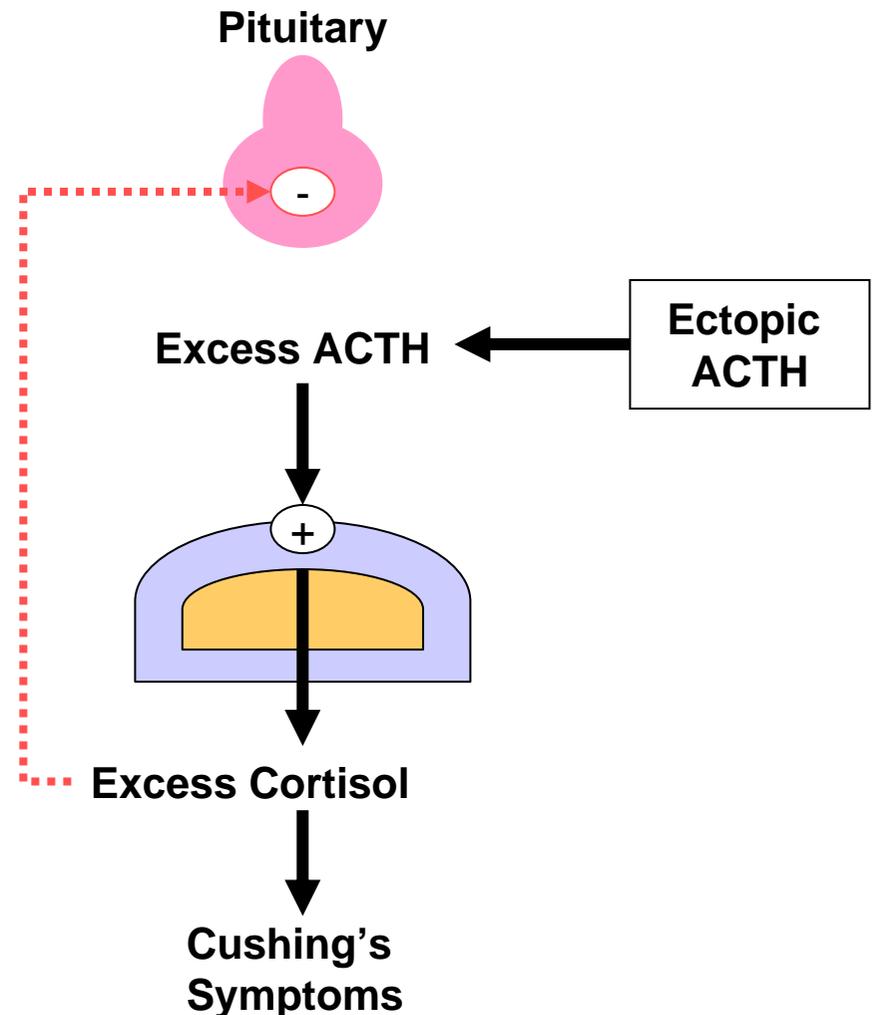
- Independent steroid production
- Caused by adrenal:
 - adenoma
 - hyperplasia
 - carcinoma
- Low ACTH (15%)
- Does not suppress with steroid dose



What is Ectopic Cushing's Syndrome

What is Ectopic Cushing's Syndrome?

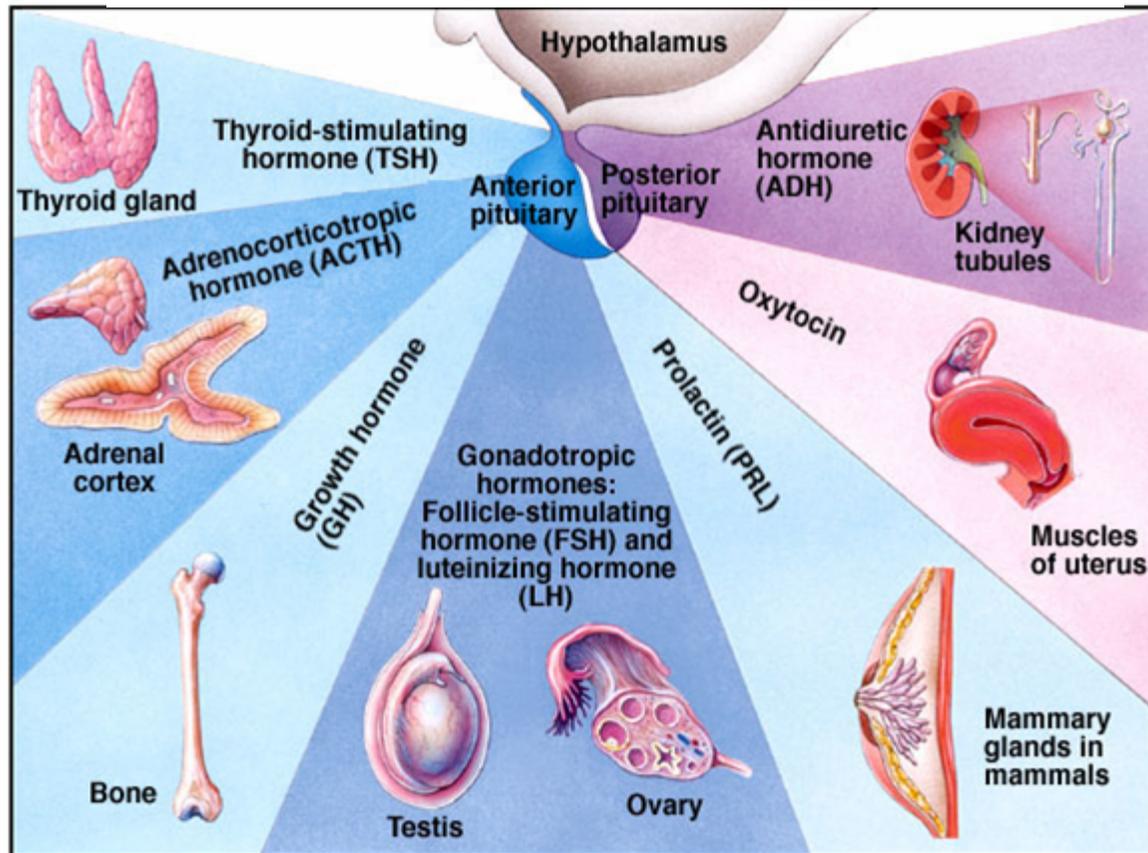
- **ACTH produced elsewhere**
 - **Usually small cell CA**
- **Does not suppress with high dose steroid test**



What does the posterior pituitary produce?

What does the posterior pituitary produce?

Neurohypophysis



ADH

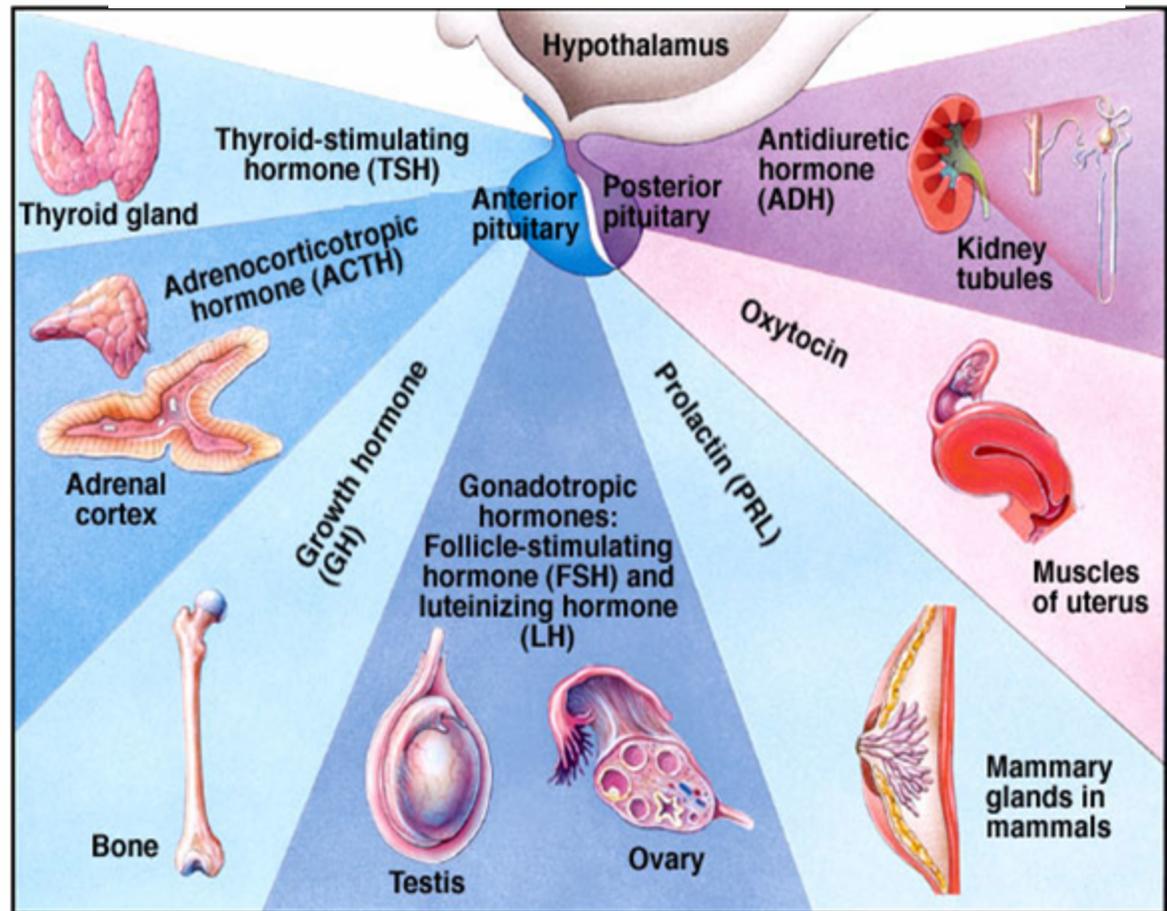
Oxytocin

What does the Anterior pituitary produce?

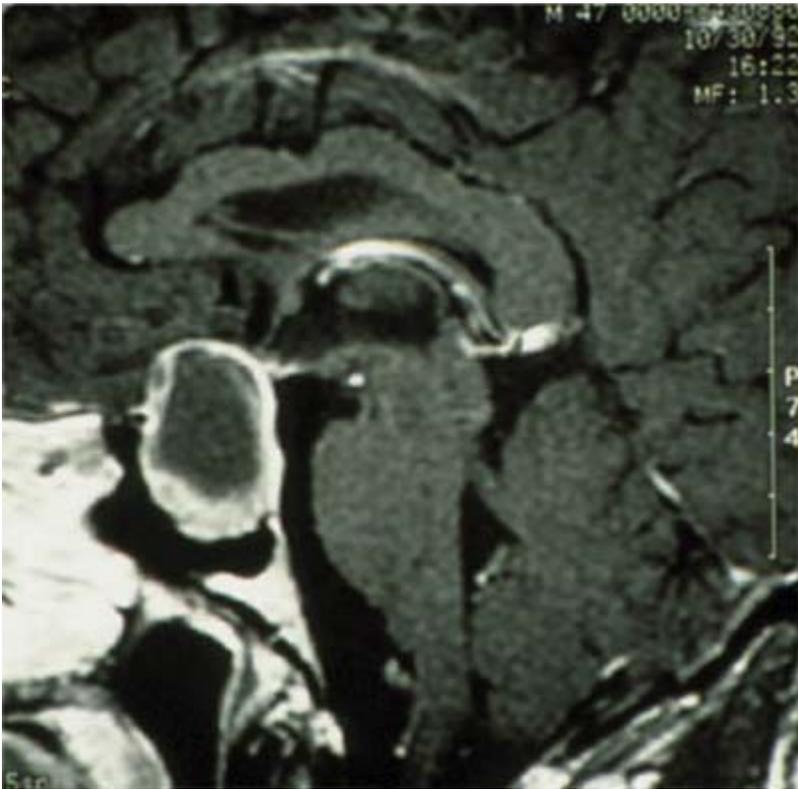
What does the Anterior pituitary produce?

Adenohypophysis

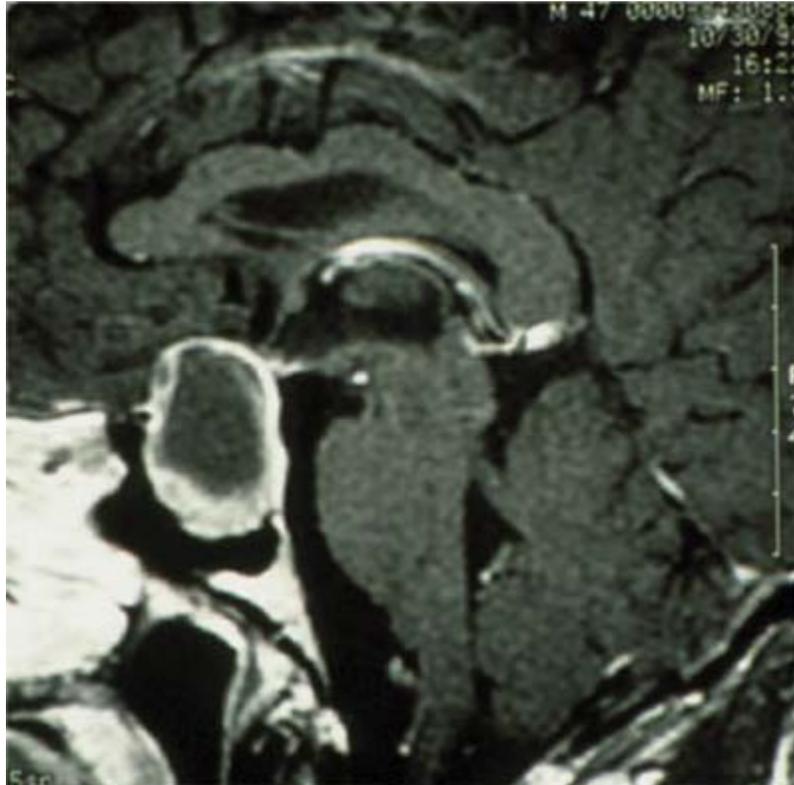
1. TSH
2. ACTH
3. GH
4. LH
5. FSH
6. Prolactin



What are the findings on the following CT?

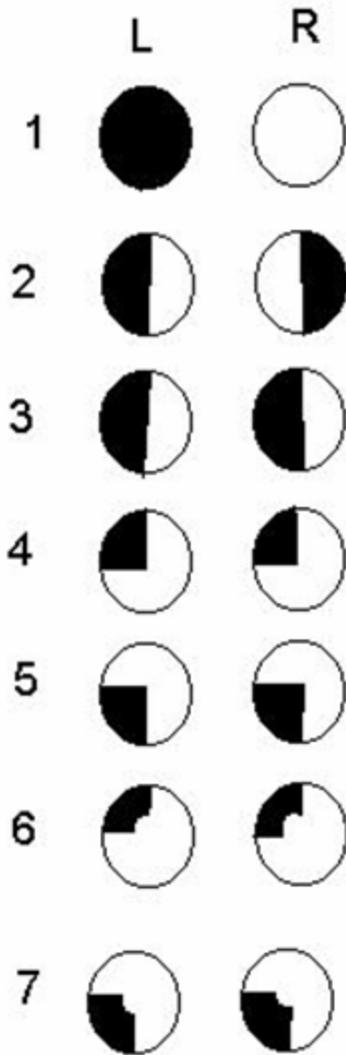


What are the findings on the following CT?

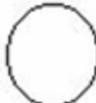


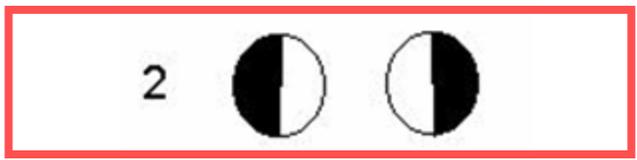
- Pituitary Mass

Which visual defect is most likely caused by a pituitary mass?

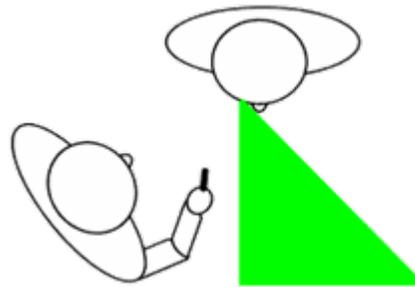
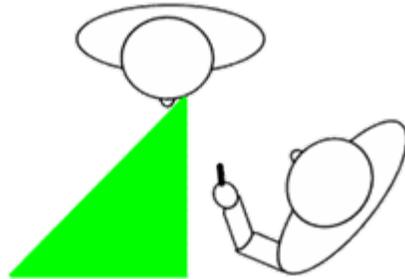


Which visual defect is most likely caused by a pituitary mass?

- | | L | R |
|---|---|---|
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |



bitemporal hemianopsia



What is a Chromophobe pituitary adenoma?

What is a Chromophobe pituitary adenoma?

- **Non functional adenoma**
- **Leads to DECREASE (mass effect) in:**
 1. **TSH**
 2. **ACTH**
 3. **GH**
 4. **LH**
 5. **FSG**

Not prolactin

What is the most common pituitary adenoma?

What is the most common pituitary adenoma?

- **Prolactinoma**

What are the symptoms of a Prolactinoma?

What are the symptoms of a Prolactinoma?

1. Galactorrhea
2. Irregular menses

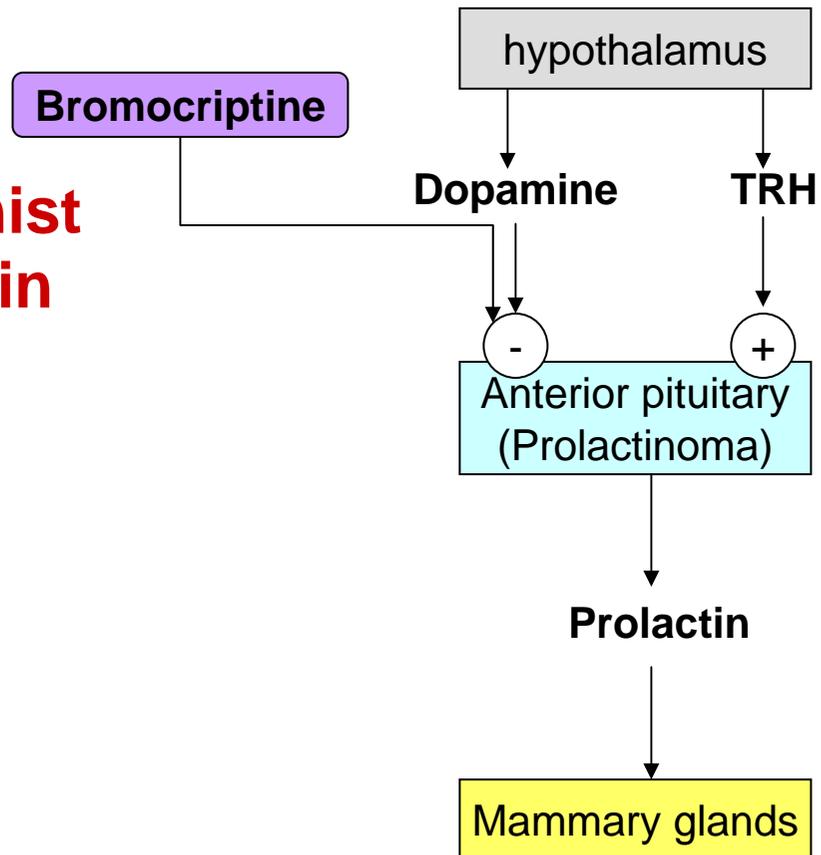
What is the treatment for a Prolactinoma?

What is the treatment for a Prolactinoma?

1. Bromocriptine

- dopamine agonist inhibits Prolactin release

2. Trans-phenoidal resection



Flashcard Instructions

MOUSE

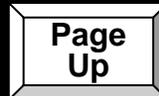
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

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What is the function of Langerhans cells?

What is the function of Langerhans cells?

1. Antigen recognition
2. Contact hypersensitivity

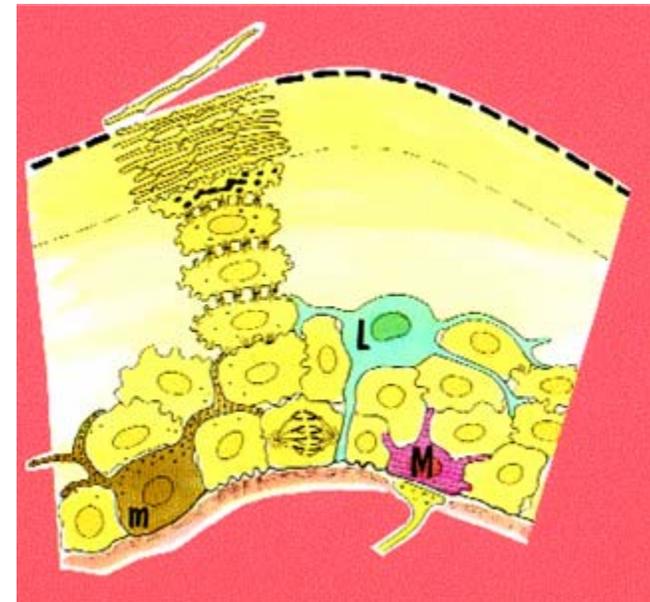
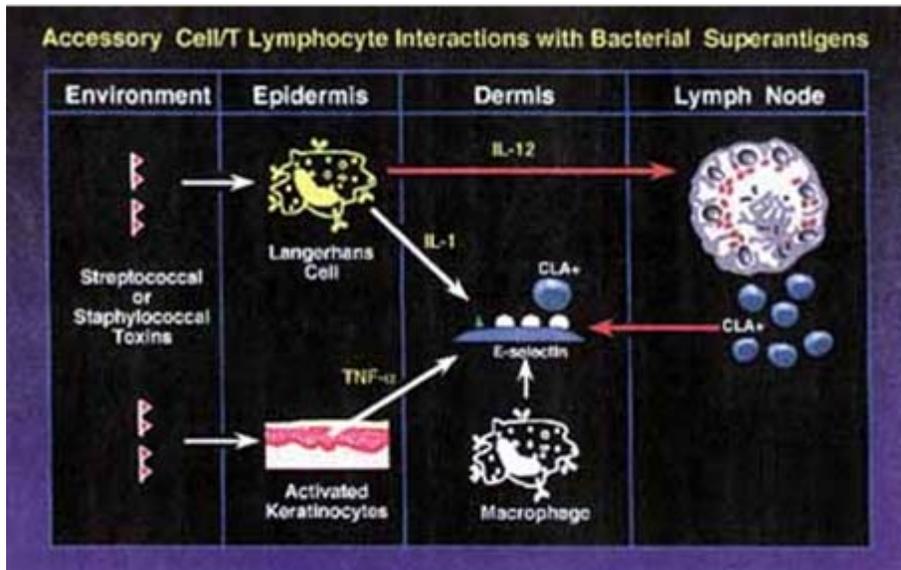


Diagram showing changes in epidermal cell shape during keratinisation and three specialised cells within the epidermis: m = melanocyte; L = Langerhans cell (of immune system); M = Merkel cell (associated with nerve ending).

What is the function of Merkel cells?

What is the function of Merkel cells?

- **Sensory mechanoreceptors**

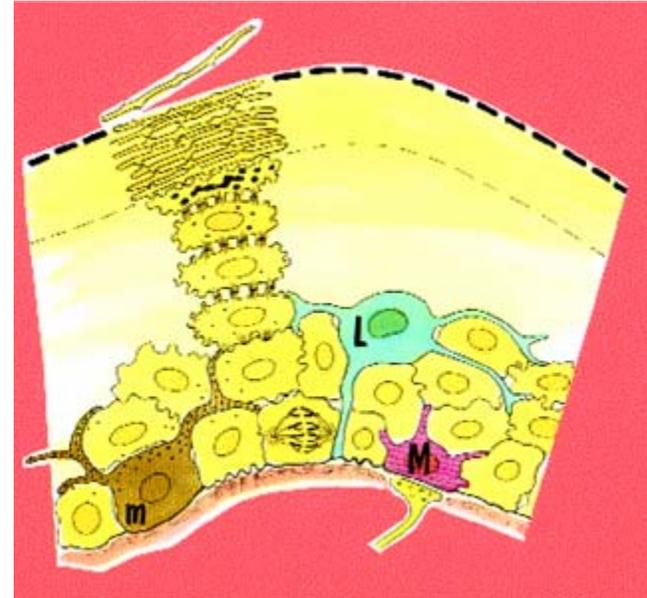


Diagram showing changes in epidermal cell shape during keratinisation and three specialised cells within the epidermis: m = melanocyte; L = Langerhans cell (of immune system); **M = Merkel cell (associated with nerve ending).**

How does Merkel cell carcinoma present?

How does Merkel cell carcinoma present?

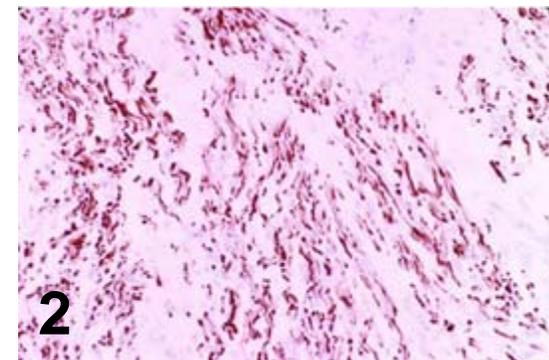
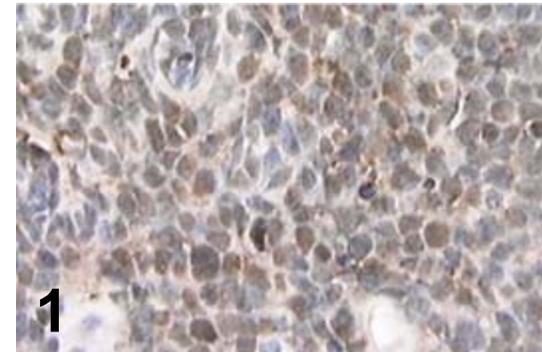
- **Red/Purple papulo nodules**



What is the pathology of a Merkel cell carcinoma?

What is the pathology of a Merkel cell carcinoma?

- **Neuroendocrine tumor**
 - **staining for**
 - **neuron specific enolase (1)**
 - **neurofilament protein (2)**



How does a Glomus cell tumor present?

How does a Glomus cell tumor present?

- **As painful subungual tumor**



**Is a Glomus cell tumor malignant?
Where does it derive?**

**Is a Glomus cell tumor malignant?
Where does it derive?**

- **Benign**
- **Glomic end organ**

What is the treatment for a Glomus Cell Tumor?

What is the treatment for a Glomus Cell Tumor?

- **Shell out**

What gland does Hidadrenitis involve?



What gland does Hidradrenitis involve?

- Apocrine gland

When does Hidradrenitis present?

When does Hidradrenitis present?

- **After puberty**
 - **in axilla and groin**

What is more common, Basal Cell Ca or Squamous Cell Ca?

What is more common, Basal Cell Ca or Squamous Cell Ca?

- Basal Cell 4:1



Basal Cell



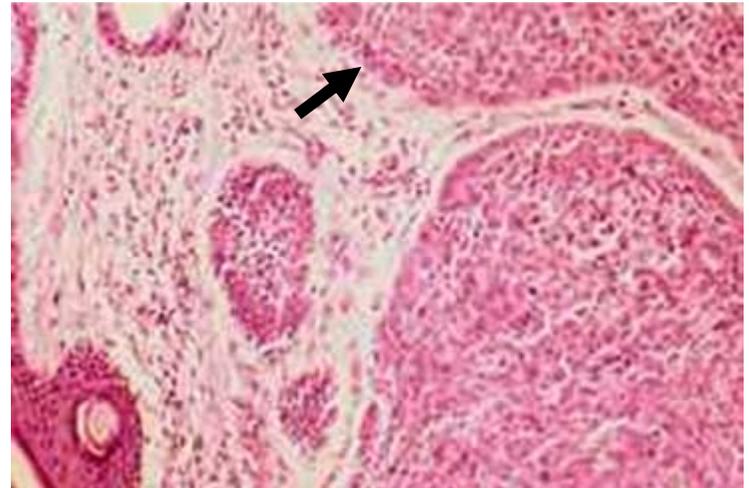
Squamous Cell

What distinguishes Basal Cell Ca on path?



What distinguishes Basal Cell Ca on path?

- **Peripheral palisading of nuclei**



What contracts more FTSG or STSG?



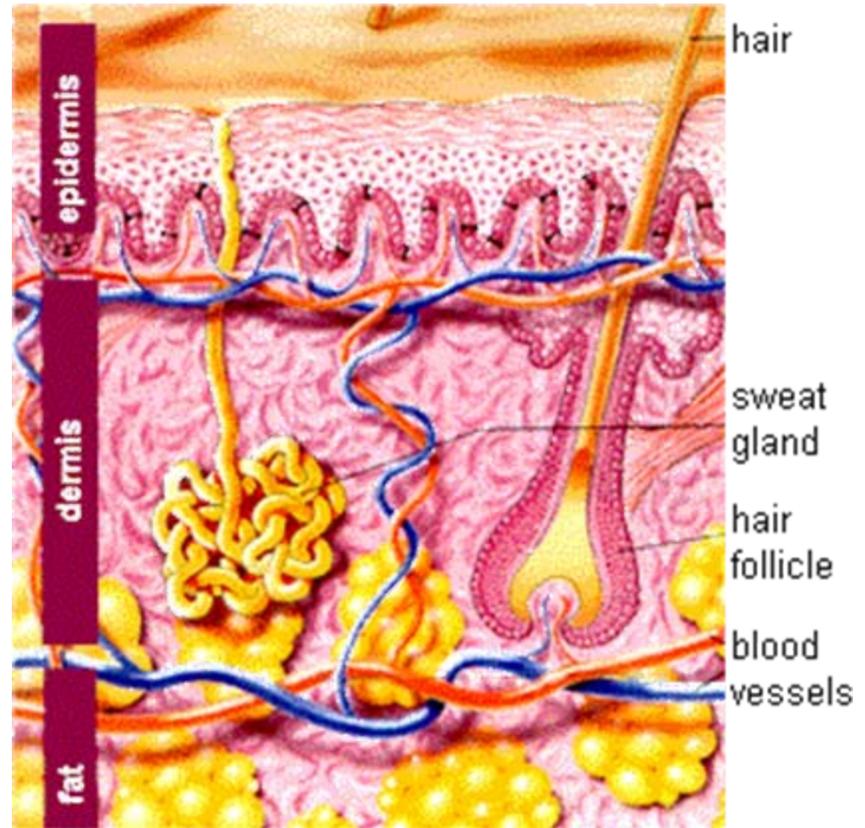
What contracts more FTSG or STSG?

- **FTSG contracts more**

Where does a STSG donor site regenerate from?

Where does a STSG donor site regenerate from?

- Hair follicles
- Skin appendages



What is the most common cause of Flap necrosis?

What is the most common cause of Flap necrosis?

- **Venous thrombosis**

What skin lesions are a risk for melanoma?

What skin lesions are a risk for melanoma?

1. **Dysplastic nevi**
2. **Congenital nevi**
3. **BK mole syndrome (100% risk)**



What margins are necessary for melanoma of the following depth:

< 1 m

1- 4 mm

> 4mm

What margins are necessary for melanoma of the following depth:

< 1 mm	1 cm margin
1- 4 mm	2 cm margin
> 4mm	3 cm margin

What are the most common organs affected by melanoma?

What are the most common organs affected by melanoma?

- **Skin > Eyes > Rectum**



What is the #1 melanoma site in men?

What is the #1 melanoma site in men?

- **Back**

What is the #1 melanoma site in women?

What is the #1 melanoma site in women?

- **Legs**

What locations leads to a worse prognosis of melanoma?

What locations leads to a worse prognosis of melanoma?

- 1. Back**
- 2. Arms**
- 3. Neck**
- 4. Scalp**

“BANS”

What is the significance of a melanoma having a depth of < 0.75 mm?

What is the significance of a melanoma having a depth of < 0.75 mm?

- **90 % chance of cure**
 - **according to the Breslow criteria**

What is the significance of a melanoma having a depth of > 4 mm?

What is the significance of a melanoma having a depth of > 4 mm?

- **80 % chance of metastasis**
 - **according to the Breslow criteria**

What are the four categories of the Breslow criteria?

What are the four categories of the Breslow criteria?

I: < .75 mm

90% cure

II: .75 – 1.65 mm

III: 1.65 – 4 mm

IV: > 4 mm

80% distant mets

What are the four types of melanoma?

What are the four types of melanoma?

1. **Nodular**
2. **Acral lentiginous**
3. **Superficial spreading**
4. **Lentigo maligna**

“NASL melanoma can be all four types”

What is the worst type of melanoma?

What is the worst type of melanoma?

- **Nodular**
 - **early mets**

What causes Keloid formation?



What causes Keloid formation?

- Failure of collagen breakdown
- Increased collagen production

Does Keloid extend beyond wound margins?

Does Keloid extend beyond wound margins?

- Yes

Does a Hypertrophic scar extend beyond margins?

Does a Hypertrophic scar extend beyond margins?

- No

Flashcard Instructions

MOUSE

Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



First
Slide



Previous
Slide



*Answer
or Next
Question*



Last
Slide

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What is MALT a precursor for?

What is MALT a precursor for?

- Precursor to gastric lymphoma.

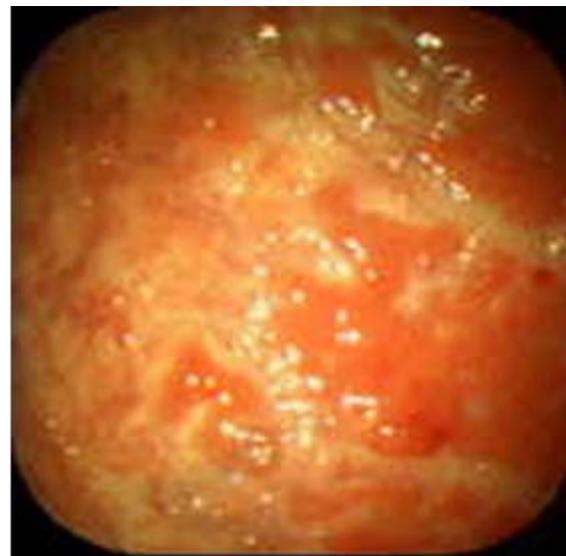


Fig. Endoscopic image of gastric MALT lymphoma.

Do you treat MALT?

Do you treat MALT?

- **H. pylori treatment.**

What is the Clo test?

What is the Clo test?

- Detects *urease* from *H. pylori*?

Is there an association between blood type and gastric ulcer type?

Is there an association between blood type and gastric ulcer type?

- Type I gastric ulcer is associated with type A blood

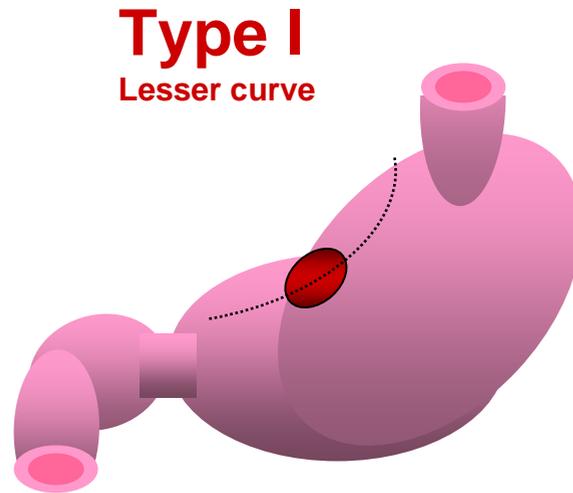


- Other ulcer types associated with type O

(O = other)

What is a type I gastric ulcer?

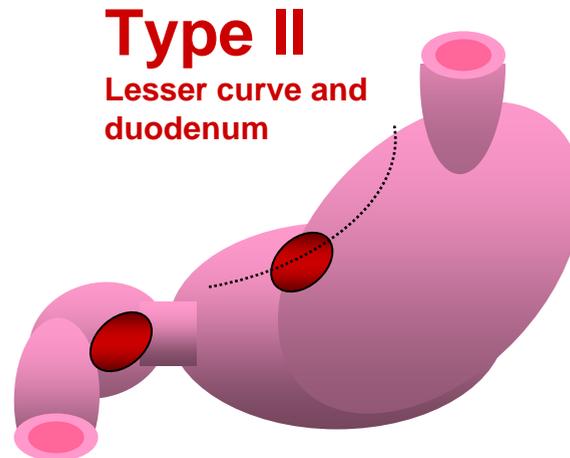
What is a type I gastric ulcer?



Type I
Lesser curve

What is a type II gastric ulcer?

What is a type II gastric ulcer?

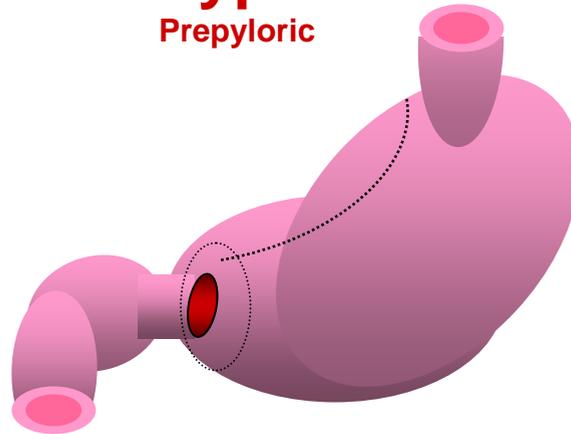


II ulcers
Type II *duodenum*
Lesser curve

What is a type III gastric ulcer?

What is a type III gastric ulcer?

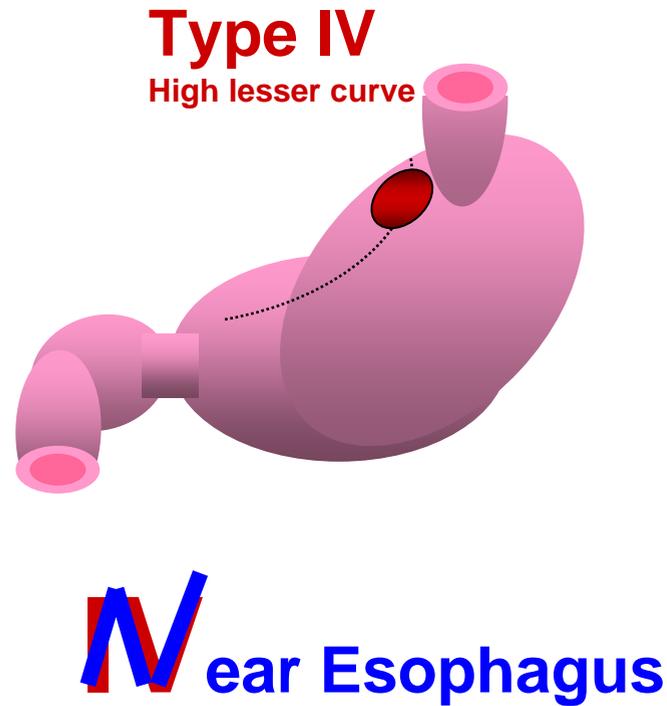
Type III
Prepyloric



Type III
repyloric

What is a type IV gastric ulcer?

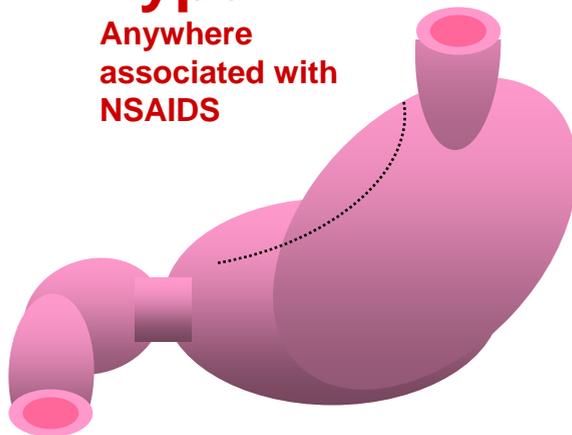
What is a type IV gastric ulcer?



What is a type V gastric ulcer?

What is a type V gastric ulcer?

Type V
Anywhere
associated with
NSAIDS



V *variable due to NSAIDS*

What are risk factors for gastric adenocarcinoma?

What are risk factors for gastric adenocarcinoma?

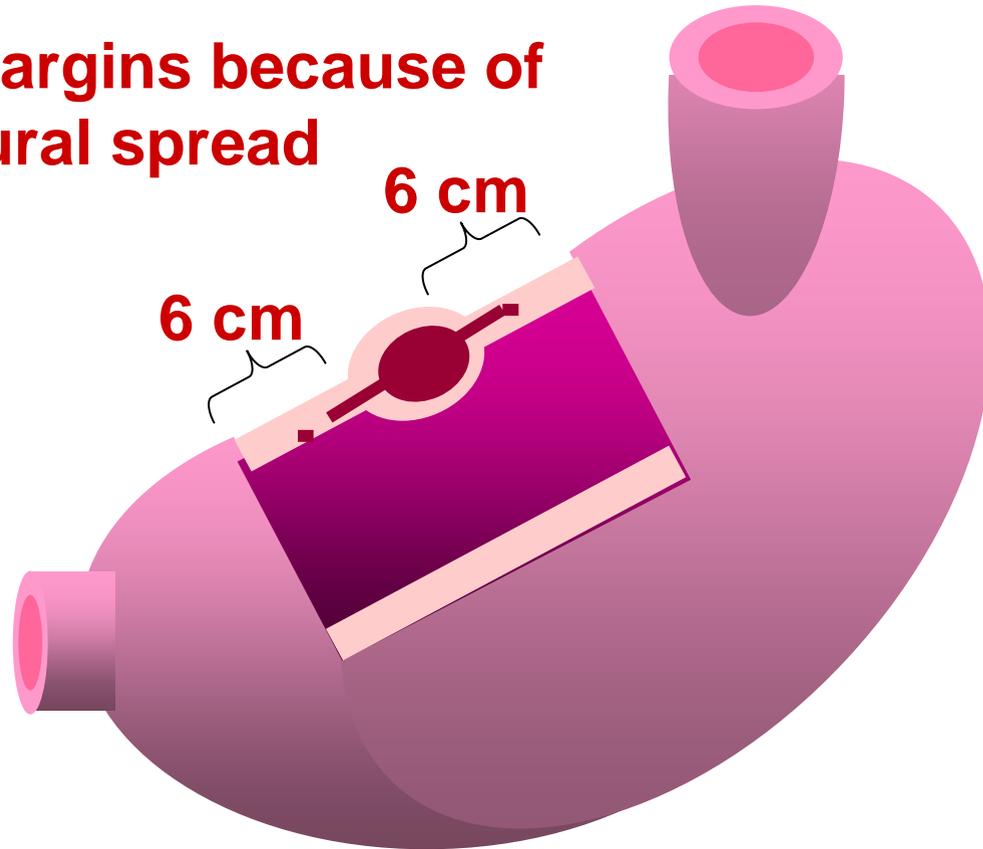
- **Nitrosamines**
- **Adenoma (greater than 2 cm)**
- **Atrophic gastritis**
- **Pernicious anemia**

“NAAP and miss the diagnosis”

What are the surgical margins of gastric adenocarcinoma resection?

What are the surgical margins of gastric adenocarcinoma resection?

6 cm margins because of intramural spread



What is the first line treatment for gastric lymphoma?

What is the first line treatment for gastric lymphoma?

- **Radiation and Chemo**
- **Surgery only for complications**

What % of partial and complete SBO can conservative management with rest and NGT cure?

What % of partial and complete SBO can conservative management with rest and NGT cure?

- **65% partial SBO**
- **20% complete SBO**

What are the complications of terminal ileum resection?

What are the complications of terminal ileum resection?

Decreased B12 absorption



1. B12 deficiency

Decreased binding of oxalate



Increased colonic oxalate absorption



2. Oxalate stone

Decreased bile salt absorption



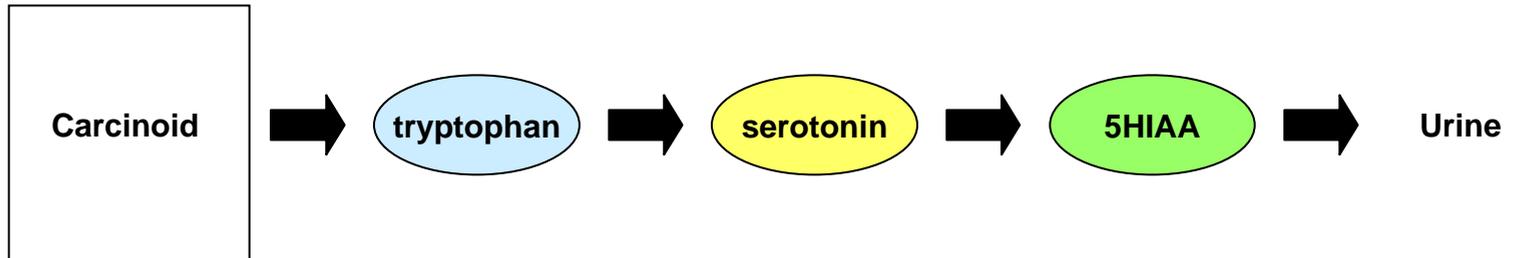
Less colonic H2O absorption



3. Diarrhea

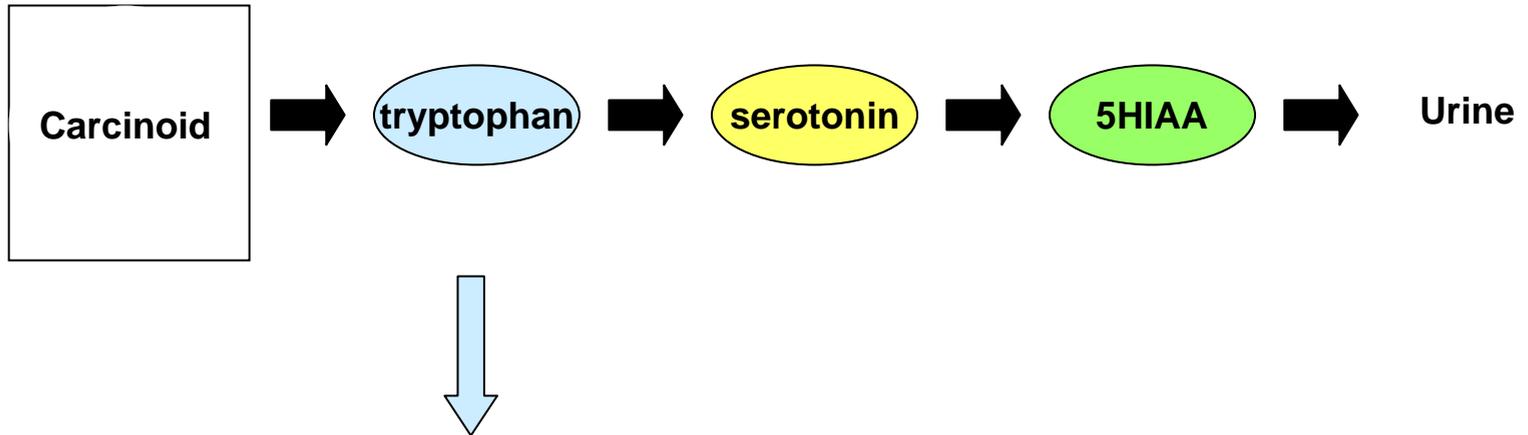
What are the three significant molecules in carcinoid syndrome?

What are the three significant molecules in carcinoid syndrome?



What are the effects of tryptophan in carcinoid tumors?

What are the effects of tryptophan in carcinoid tumors?

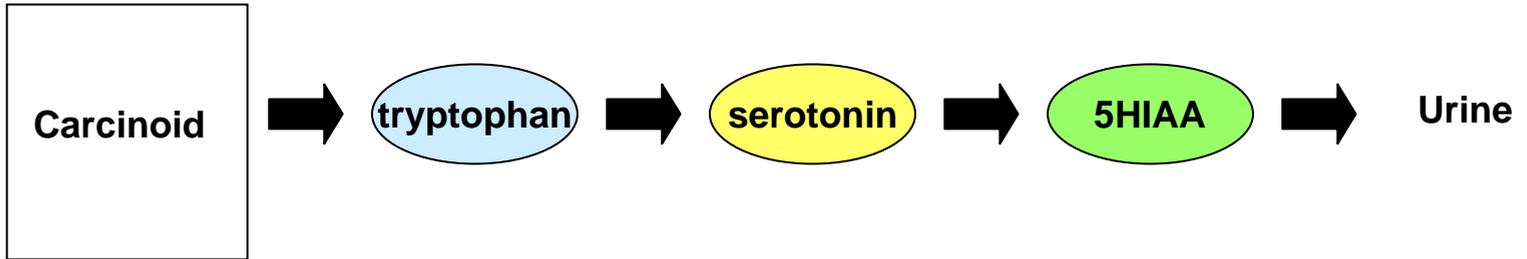


- Pellegra**
- **Dementia**
 - **Diarrhea**
 - **Dermatitis**

“TryP on Drugs”

Where is serotonin secreted from?

Where is serotonin secreted from?



Enterochromaffin cells

- **Argentaffin staining cells**

What are four findings of carcinoid syndrome?

What are four findings of carcinoid syndrome?

- **Diarrhea**
- **Asthma**
- **Right sided heart valve disease**
- **Flushing**

*“**DARF**vador had carcinoid”*

What % of patients with mets get carcinoid syndrome?

What % of patients with metastatic carcinoid get carcinoid syndrome?

• 9%

What are the most common sites of carcinoid?

What are the most common sites of carcinoid?

- Appendix
- Ileum
- Rectum

“DARFvador lives in the AIR”

**What % of patients with carcinoid have
Multiple primary sites?**

What % of patients with carcinoid have Multiple primary sites?

- 33%

**What % of patients with carcinoid have
Metachronous adenocarcinoma?**

• 25%

**What % of patients with carcinoid have
Metachronous adenocarcinoma?**

• 25%

What chemo is used in carcinoid?

What chemo is used in carcinoid?

- **Steptozocin**
- **5-FU**
- **Doxirubicin**

“**S**acramento **F**ire **D**eartment”

What prevents the healing of fistulas?



What prevents the healing of fistulas?

- **Foreign bodies**
- **Radiation**
- **IBD**
- **Epithelialization**
- **Neoplasm**
- **Distal obstruction**
- **Sepsis/Infection**

What is the impact of TPN on Fistulas?



What is the impact of TPN on Fistulas?

- **Shown to increase closure rates?**
- **Not shown to improve survival?**

Can a gallstone cause a SBO?



Can a gallstone cause a SBO?

- **Yes**
- **Forms cholecysto-enteric fistula**

What is a gallstone ileus?



What is a gallstone ileus?

- **SBO with air in the biliary tree**

What is the treatment for Gallstone ileus?

What is the treatment for Gallstone ileus?

1. Remove stone to relieve SBO

- Leave gallbladder
- Leave fistula to decrease mortality

Flashcard Instructions

MOUSE

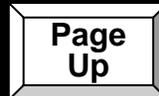
Left Click anywhere on the screen to advance slide (Answer, Next Question)

or

KEYBOARD



To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



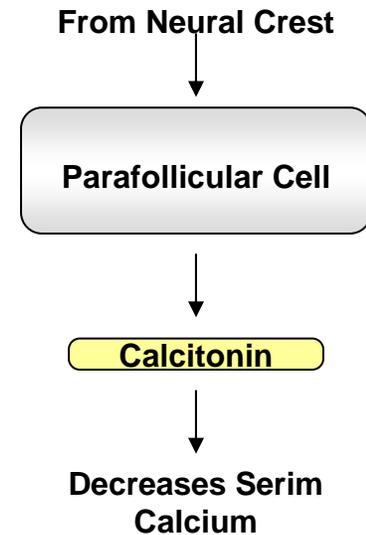
Where do parafollicular cells originate?

- What do they secrete?**
- What is the effect?**

Where do parafollicular cells originate?

- What do they secrete?
- What is the effect?

- **Neural crest**
- **Produce *calcitonin***
- ***Calcitonin* decreases serum calcium**



What is more active, T3 or T4?
-What is the half life of T3?

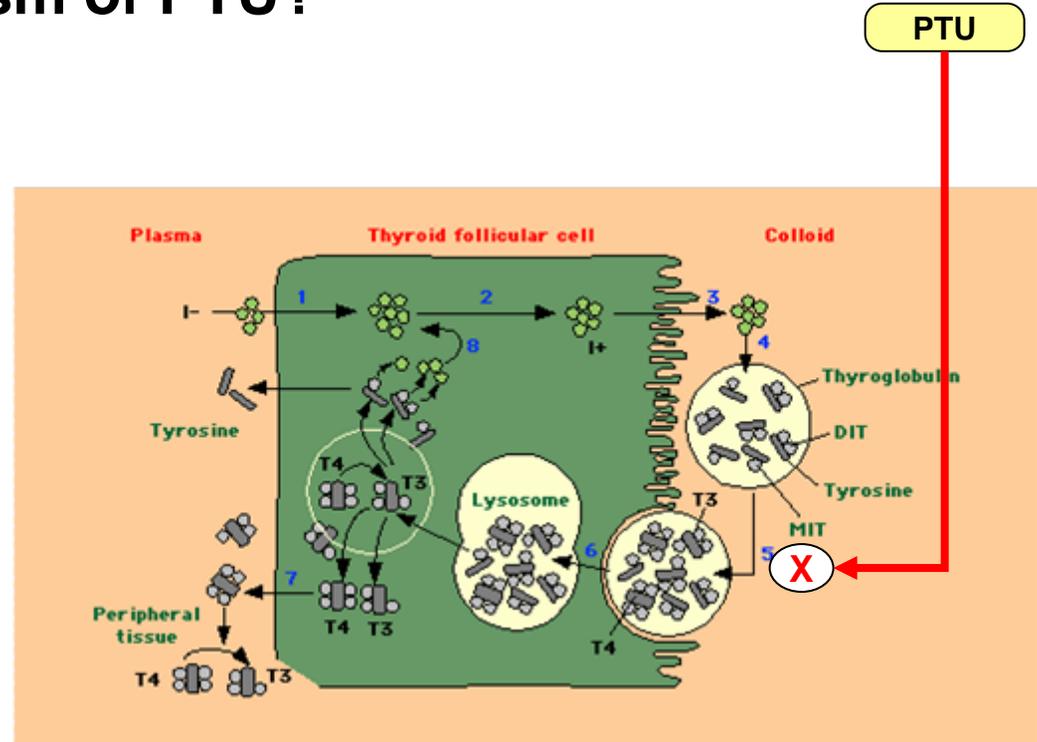
What is more active, T3 or T4?
-What is the half life of T3?

- **T3 is 3X more active than T4**
- **T3 half life is three days**

What is the mechanism of PTU?

What is the mechanism of PTU?

- Prevents DIT and MIT coupling



Thyroid hormone biosynthesis Thyroid hormone synthesis includes the following steps: (1) iodide (I⁻)trapping by the thyroid follicular cells; (2) diffusion of iodide to the apex of the cells; (3) transport of iodide into the colloid; (4) oxidation of inorganic iodide to iodine and incorporation of iodine into tyrosine residues within thyroglobulin molecules in the colloid; (5) combination of two diiodotyrosine (DIT) molecules to form tetraiodothyronine (thyroxine, T₄) or of monoiodotyrosine (MIT) with DIT to form triiodothyronine (T₃); (6) uptake of thyroglobulin from the colloid into the follicular cell by endocytosis, fusion of the thyroglobulin with a lysosome, and proteolysis and release of T₄, T₃, DIT, and MIT; (7) release of T₄ and T₃ into the circulation; and (8) deiodination of DIT and MIT to yield tyrosine. T₃ is also formed from monodeiodination of T₄ in the thyroid and in peripheral tissues. (Modified from Scientific American Medicine, Scientific American, New York, 1995.)

What two fetal disease can PTU cause?

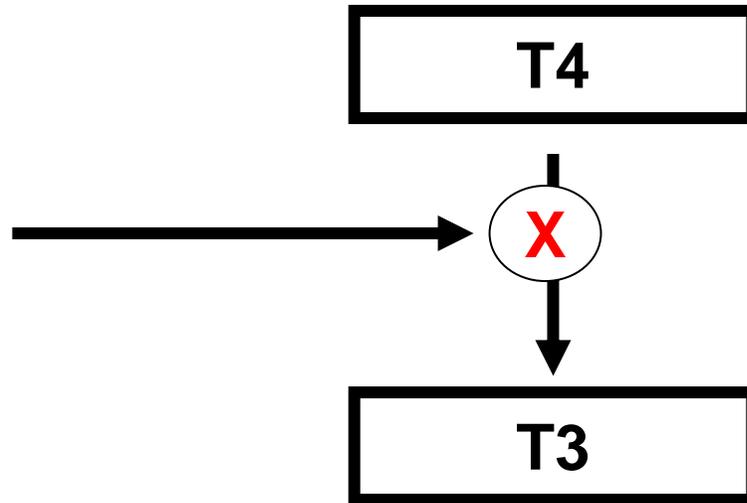
What two fetal disease can PTU cause?

- **Cross the placenta and causes:**
 1. **cretism**
 2. **aplastic anemia (rare)**

What three drugs block the peripheral conversion of T4 to T3?

What three drugs block the **P**eripheral conversion of T4 to T3?

1. **PTU**
2. **Propranolol**
3. **Prednisone**

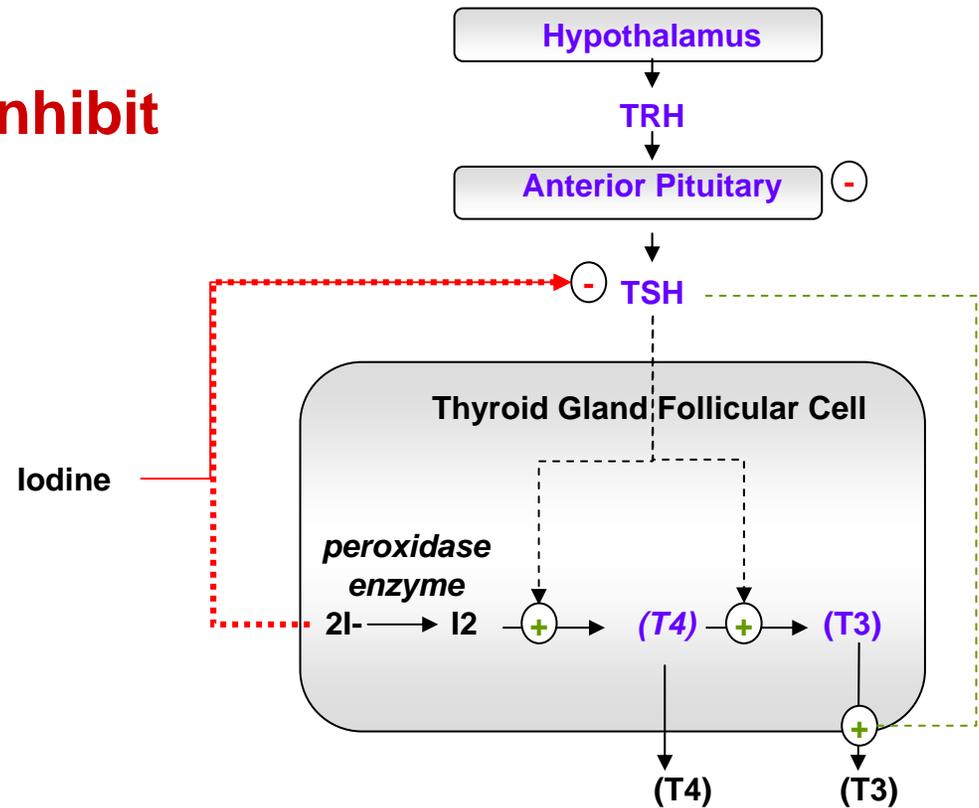


What is Wolff Chaikoff Effect?
-How is it used clinically?

What is Wolff Chaikoff Effect?

-How is it used clinically?

- High Iodine Doses inhibit TSH (KI, Iugol's)
- Give Iodine during thyroid storm

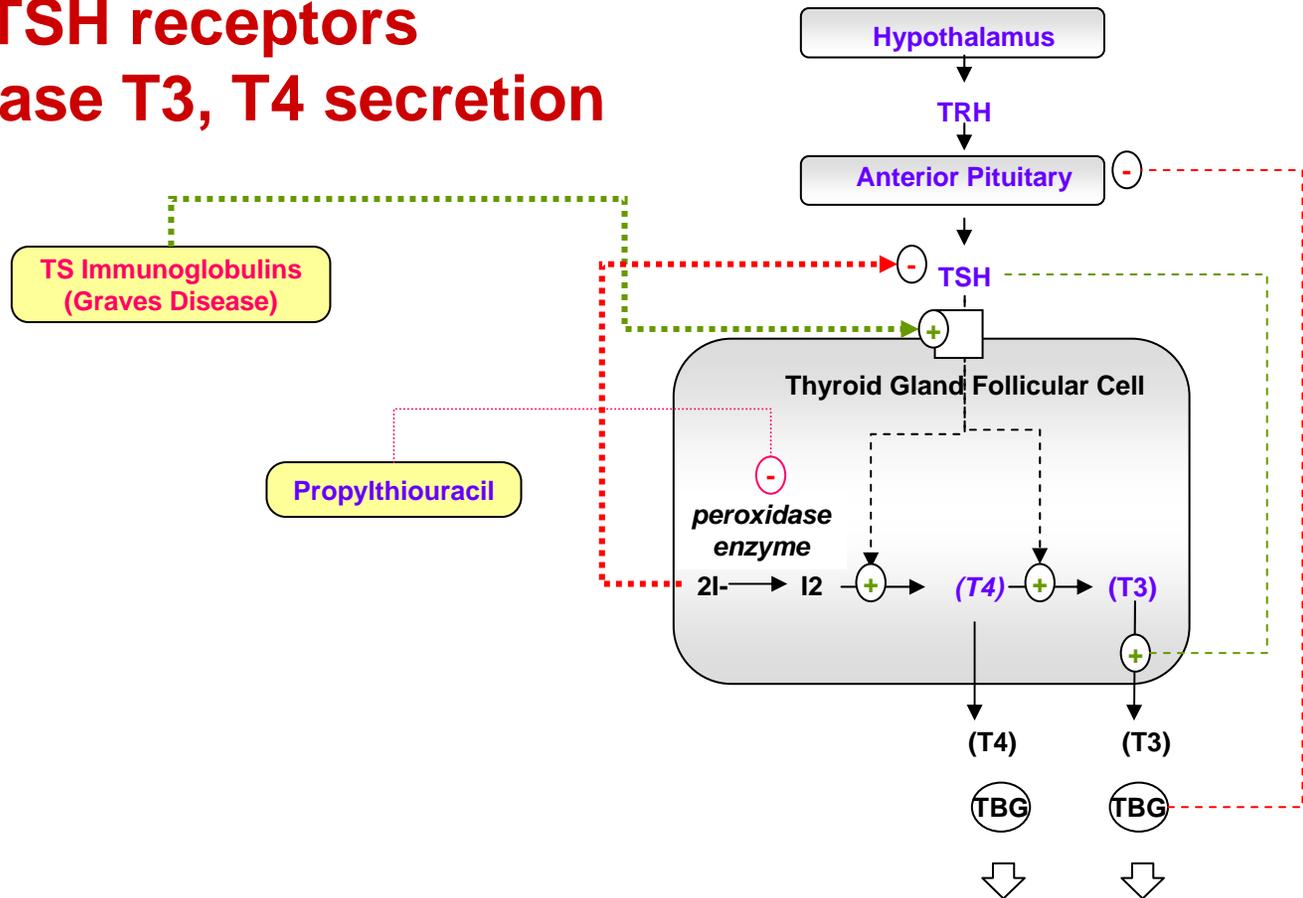


“TSH OFF with Iodine”

What is the mechanism of Graves Disease?

What is the mechanism of Graves Disease?

- Autoimmune antibodies activate TSH receptors
- increase T3, T4 secretion



**Can an FNA distinguish between malignant/benign
Follicular or Hurthle cell**

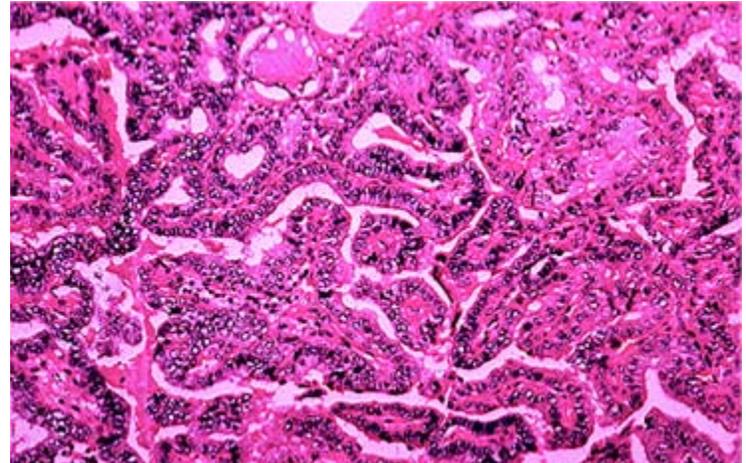
Can an FNA distinguish between malignant/benign Follicular or Hurthle cell

- **No**
 - **need tissue**

What is the most common thyroid cancer?

What is the most common thyroid cancer?

- **Papillary thyroid CA**



“P for Popular”

Papillary thyroid CA?

- What % in adults?**
- What % in children?**
- What % are multicentric?**
- What % present node positive?**
- What is the male/female ration?**
- What is the age of onset?**

Papillary thyroid CA?

- What % in adults?
- What % in children?
- What % are multicentric?
- What % present node positive?
- What is the male/female ration?
- What is the age of onset?

•20%

•80%

Pediatric

•80%

Poly

•Most

Positive Node

•F:M is 3:1

•50% present before age 40

What is diagnostic of Papillary CA on path?

What is diagnostic of Papillary CA on path?

- **Psammoma bodies (represent Ca deposit)**

P for Psammoma

What are the risk factors for Papillary CA?

What are the risk factors for Papillary CA?

- **Radiation**

What is the significance of n1 appearing thyroid in a neck node?

What is the significance of n1 appearing thyroid in a neck node?

- **Diagnostic of papillary thyroid CA**

What is the MACIS prognosis criteria for Papillary CA?

What is the MACIS prognosis criteria for Papillary CA?

- **Mets**
- **Age (M>50, F>40 is worse)**
- **Completeness of resection**
- **Invasiveness**
- **Size (>1.5 cm generally means total thyroidectomy needed)**

Papillary CA review

RAMPPant Papillary CA

Papillary CA review

- **Radiation exposure**
- **Aberrant Node**
- **MACIS**
- **Multicentric(Poly)**
- **Psammoma**
- **Positive Node**
- **Popular**

“RAMMPPant Papillary CA”

What is unique about Follicular thyroid CA?

What is unique about Follicular thyroid CA?

- **Hematogenous spread**
 - **Therefore 60% presents with METS**

How does the demographics of Follicular CA compare to Papillary CA?

How does the demographics of Follicular CA compare to Papillary CA?

- **Same 3:1 F:M ratio**
- **Presents slightly older (50's)**

Can a FNA diagnose Follicular CA?

Can a FNA diagnose Follicular CA?

- **Needle dx not adequate**

What is the treatment for Follicular CA?

What is the treatment for Follicular CA?

1. **Total thyroidectomy**
and
2. **Ablative RI post op**

Follicular CA Review



Follicular CA Review

- Hematogenously
- Metastasis at presentation (60%)
- Older presentation (50's)
- Ablative RI post op
- Total thyroidectomy

“the Huge MOAT was his only FOLLI(cular)”

What cell is the origin of Medullary Thyroid CA?

What cell is the origin of Medullary Thyroid CA?

- **Originates from parafollicular C cells**

What is the relationship between Medullary CA and MEN?

What is the relationship between Medullary CA and MEN?

- **20% have MEN2**
- **Tends to be bilateral, younger, and worse prognosis**

What is pathognomonic on pathology for Medullary CA?

What is pathognomonic on pathology for Medullary CA?

- **Amyloid**

What genetic marker is diagnostic for Medullary CA?

What genetic marker is diagnostic for Medullary CA?

- **Ret proto-oncogene**

**What can be used as a provocative test from
Medullary thyroid CA?
- How does it work?**

What can be used as a provocative test for Medullary thyroid CA?

- How does it work?

- **Gastrin**

- **Increases *calcitonin***

What is the treatment for Medullary CA?

What is the treatment for Medullary CA?

- **Total thyroidectomy**
- **Neck dissection if node +**

Five characteristics of Medullary CA

Five characteristics of Medullary CA

- **Gastrin**
- **Total thyroidectomy**
- **Ret proto-oncogene**
- **Amyloid**
- **MEN2**
- **Parafollicular C**

“Medusa was a **Gay TRAMP**”

Papillary CA

- R
- A
- M
- M
- P
- P
- P

RAMPPant Papillary
CA

Follicular CA Review

- H
- M
- O
- A
- T

the **Huge MOAT** was
his only **FOLLI** (cular)

Medullary CA

- G
- T
- R
- A
- M
- P

Medussa was a **Gay**
TRAMP

Papillary CA

- Radiation Exposure
- Aberrant Node
- MACIS
- Multicentric
- Psammoma
- Positive Node
- Popular
- Partial thyroidectomy

RAMPPant Papillary
CA

Follicular CA Review

- Hematogenously
- Metastasis at presentation (60%)
- Older presentation (50's)
- Ablative RI post op
- Total thyroidectomy

the Huge **MOAT** was
his only **FOLLI** (cular)

Medullary CA

- Gastrin
- Total thyroidectomy
- Ret proto-oncogene
- Amyloid
- MEN2
- Parafollicular C

Medusa was a **Gay**
TRAMP

What is more likely to be cancer, a hot or cold nodule?

What is more likely to be cancer, a hot or cold nodule?

- **Cold**

What is the first step to work up a thyroid nodule after an H&P?

What is the first step to work up a thyroid nodule after an H&P?

- **FNA**

How do you treat thyroid CA in a pregnant woman?

How do you treat thyroid CA in a pregnant woman?

- **No radioactive iodine**
- **Operate during second trimester**
 - **if possible**

What type of tumors is radioactive Iodine effective against?

What type of tumors is radioactive Iodine effective against?

- **Differentiated tumors**
 - **Papillary**
 - **Follicular**

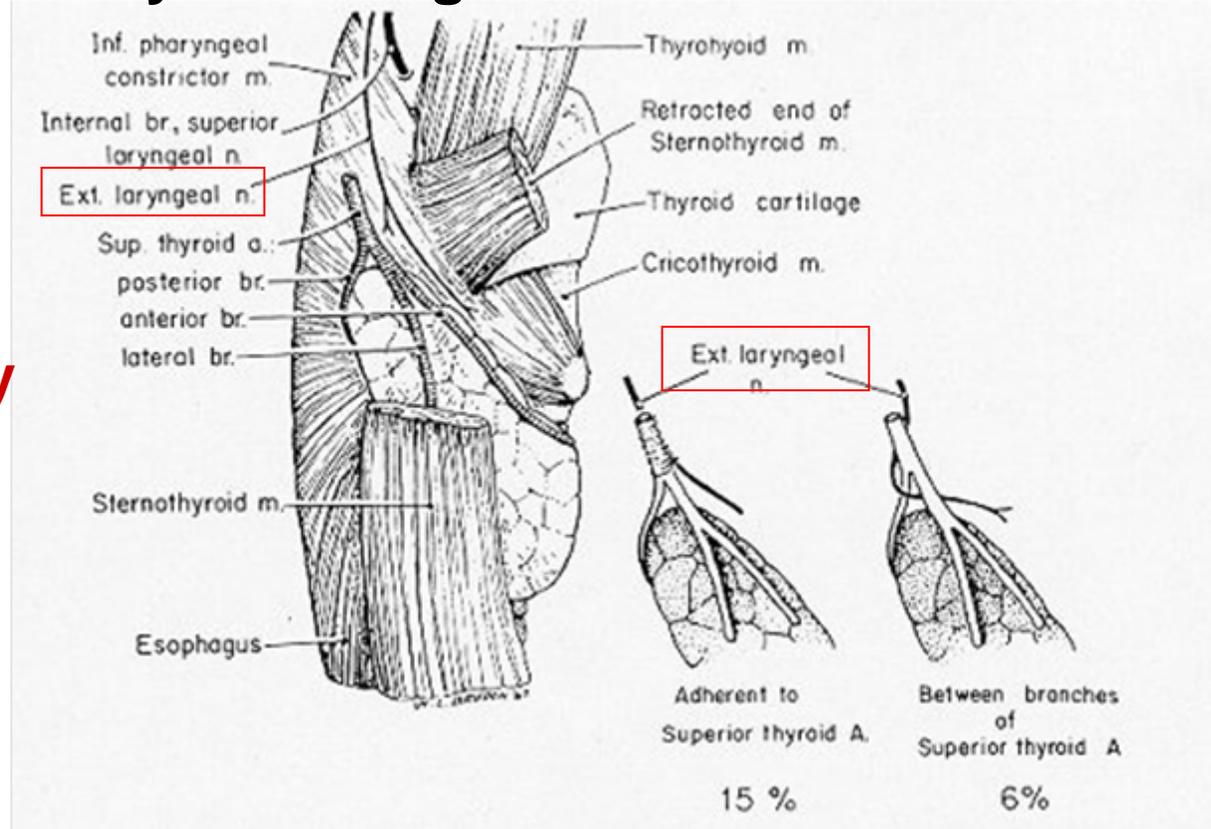
What is the function of external branch of the superior laryngeal nerve?

- What happens if you damage it?

What is the function of external branch of the Superior Laryngeal Nerve?

- What happens if you damage it?

- Provides motor to cricothyroid muscle
- Provides sensory to supraglottis
- Loose projection and high pitch speech



“S: sensory supraglottis, Superior for cricothyroid L (loose projection)”

What is the function of the recurrent laryngeal nerve?

-What happens if you damage one side? both sides?

What is the function of the recurrent **LaryN**geal nerve?

-What happens if you damage one side? both sides?

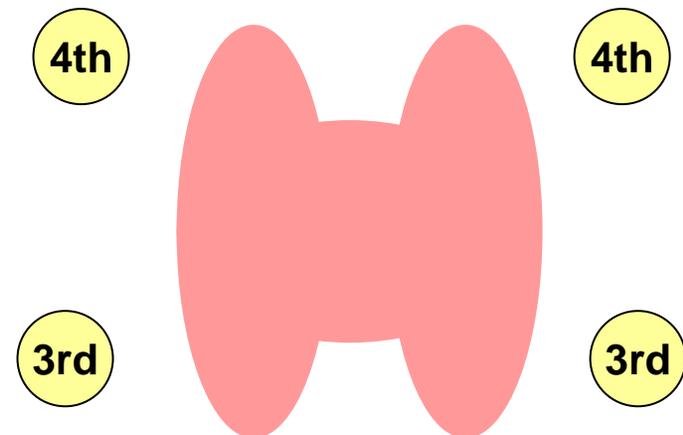
- **Innervates all of the larynx except for the cricothyroid**
- **Nothing**
- **Airway occludes**

Larynx, Not Cricothyroid

Do all the parathyroid glands originate from the same place?

Do all the parathyroid glands originate from the same place?

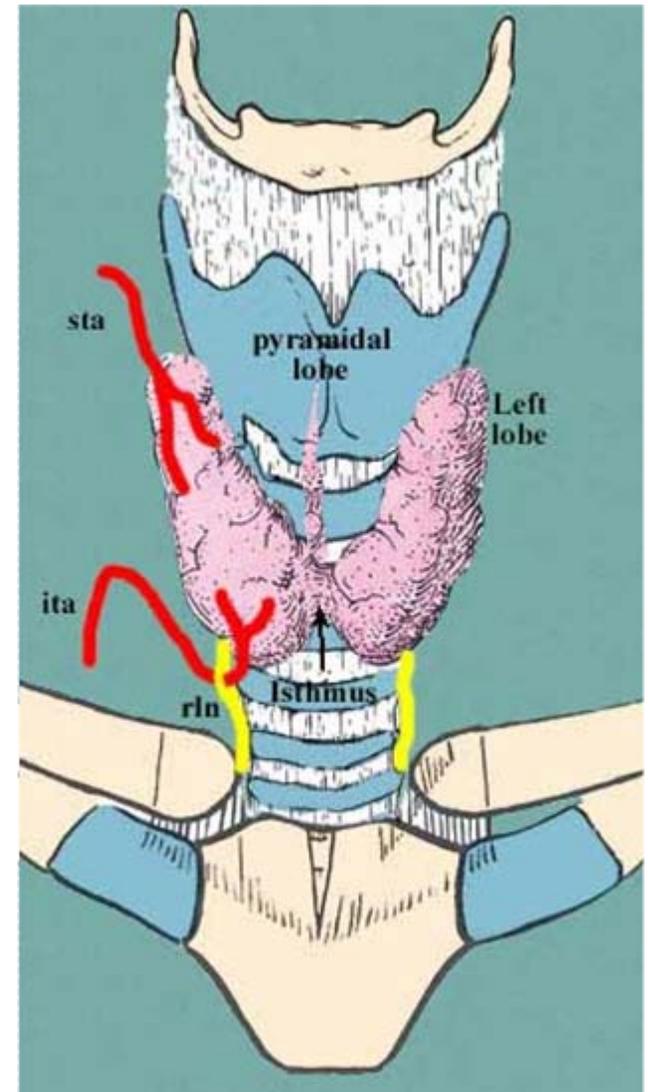
- **No, superior parathyroids originate from the fourth pouch.**
- **The inferior parathyroids (and thymus) come from the 3rd pouch.**



Where do the parathyroids receive their blood supply from?

Where do the parathyroids receive their blood supply from?

- **Inferior thyroid artery**



What is the active and inactive terminal of PTH?

What is the active and inactive terminal of PTH?

- **N terminal is active**
- **C terminal is inactive**

What are the four effects of PTH

What are the four effects of PTH

1. **Increases calcium binding protein**
2. **Increases gut absorption of calcium**
3. **Increase kidney Ca absorption**
4. **Increases PO₄ loss**

What are risk factors for hyperparathyroidism?

What are risk factors for hyperparathyroidism?

1. Prad oncogene
2. h/o Radiation exposure

“hyperPaRathyroidism”

What is the Ca/Phos ration in hyperparathyroidism

What is the Ca/Phos ration in hyperparathyroidism

- **Ca increase / Phos decreases**
- **Ratio > 33**

What condition is pathognomonic for hyperPTH?

What condition is pathognomonic for hyper PTH?

- **Osteitis fibrosa cystica**

OSTEITIS FIBROSA CYSTICA

- Occurs as a complication of primary or secondary hyperparathyroidism
- Increased levels of PTH result in demineralization and eventual resorption of bone by osteoclasts
- Resorption results in fibrosis, resorption cavities in the trabeculae of cancellous bone, microfractures, hemorrhage and cyst formation (hence the name)

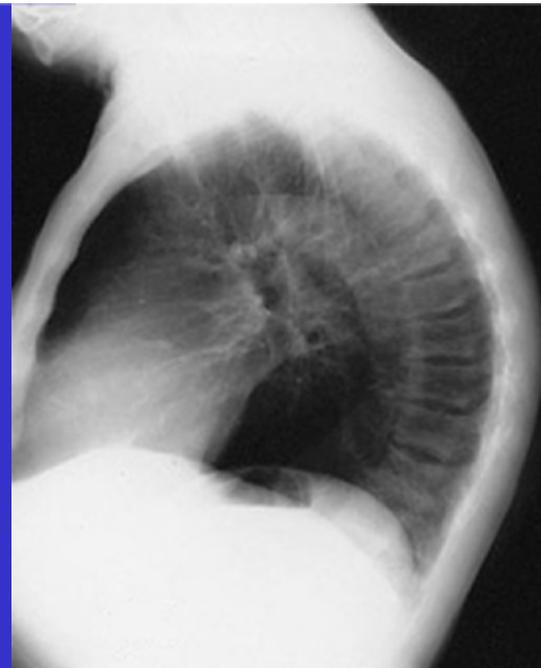


Fig. A rugger jersey spine is evident in this radiograph of a patient with primary hyperparathyroidism. There is marked osteopenia of the spine, with band-like sclerosis of the superior and inferior margins of the vertebral bodies, which suggests osteitis fibrosa cystica.

What must be ruled out in hyperparathyroidism?

What must be ruled out in hyperparathyroidism?

- **FHH: familial hypocalciuric hypercalcemia**

How do you rule out FHH?

How do you rule out FHH?

- **Check urine Ca, should be high**

How is hyperparathyroidism usually diagnosed?

How is hyperparathyroidism usually diagnosed?

- **Incidentally**
- **High Ca levels found on routine workup**

**What is the most common cause of hyperparathyroidism?
-What is the exception?**

What is the most common cause of hyperparathyroidism?

-What is the exception?

- **85% caused by single gland adenoma?**
- **Except in MEN when it is caused by four gland hyperplasia**

**How does parathyroid adenocarcinoma present?
-Is it common?**

How does parathyroid adenocarcinoma present?

-Is it common?

- **Palpable mass**
- **Rare**
- **Very high CA**

How do you treat parathyroid adenocarcinoma?

How do you treat parathyroid adenocarcinoma?

- **Resect widely**

Describe the conditions with each MEN syndrome?

MEN I

1.

2.

3.

MEN II A

1.

2.

3.

MEN II B

1.

2.

3.

Describe the conditions with each MEN syndrome?

MEN I

1. Pancreatic islet cell
2. Pituitary tumor
3. hyperParathyroidism

1st MEN PISS

MEN II A

1. Medullary thyroid CA
2. Pheochromocytoma
3. Hyperparathroidism

2nd MEN DRIVE (MPH)

MEN II B

1. Medullary thyroid CA
2. Pheochromocytoma
3. Mucosal Neuromas/Marfans Symptoms

3rd Meat Pretty Nuggets

Flashcard Instructions

MOUSE

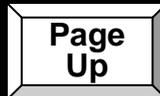
Left Click anywhere on the screen to advance slide (Answer, Next Question)

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To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

Control BAR



**First
Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

WARNING: Control Bar will not work on many computers. Use mouse and keyboard.



What cell mediates graft vs. host disease?



What cell mediates graft vs. host disease?

- T cells

What is the mechanism of a hyperacute rejection?

What is the mechanism of a hyperacute rejection?

- **Pre-formed antibodies**

How do you avoid hyperacute rejection?



How do you avoid hyperacute rejection?

- **Crossmatch Test**
 - **If positive, dont transplant**

What is the mechanism of a acute rejection?



What is the mechanism of a acute rejection?

- Foreign MHC on graft cells

What does biopsy show in acute rejection?



What does biopsy show in acute rejection?

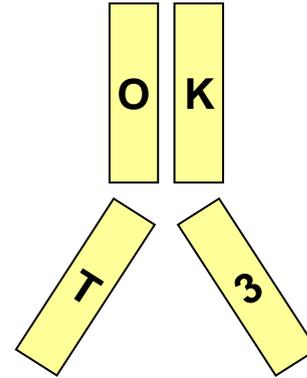
- **Lymphocytic infiltration**

What drug is used to prevent acute rejection?



What drug is used to prevent acute rejection?

- OKT3



What is the mechanism of a chronic rejection?

What is the mechanism of a chronic rejection?

- **Gradual loss of blood supply**
- **No treatment**

Does immunosuppression primarily target humoral or cellular defense?

- What are the implications?

Does immunosuppression primarily target humoral or cellular defense?

- What are the implications?

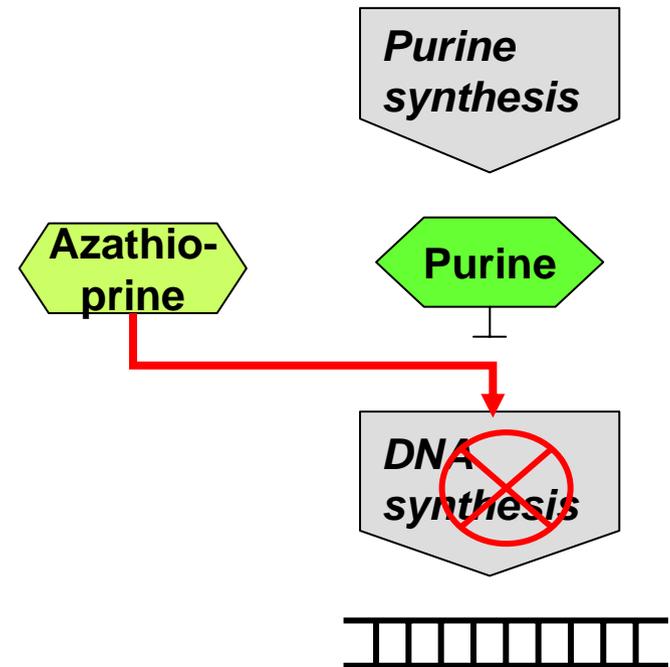
- **Primarily cellular**
 1. **Greater risk of viral infection than bacterial**
 - **CMV #1 virus post transplant**
 2. **Increase risk CA**
 - **skin**
 - **leukemia**
 - **lymphoma**
 - **cervical**

What is the mechanism Azathioprine?



What is the mechanism AzathioPrine?

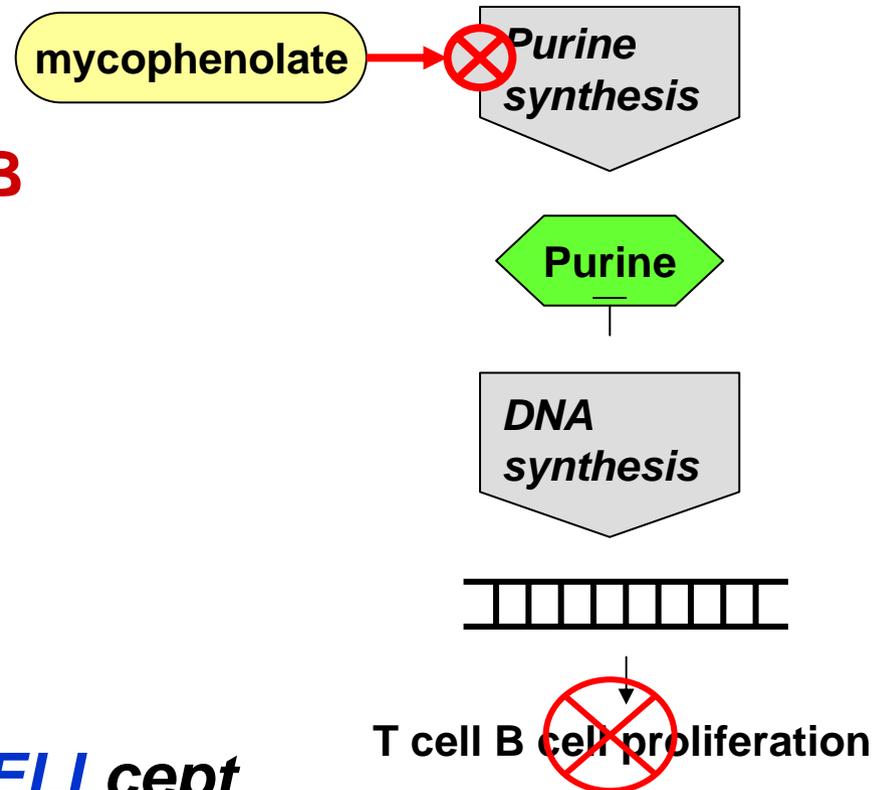
- 6 MP derivative
- Purine analog
- Acts as antimetabolite
- Blocks DNA synthesis



What is the mechanism of Mycophenolate (Cellcept)?

What is the mechanism of MycoPhenolate (Cellcept)?

- Blocks Purine synthesis
- Decreases T cell and B cell proliferation



B and T CELLcept

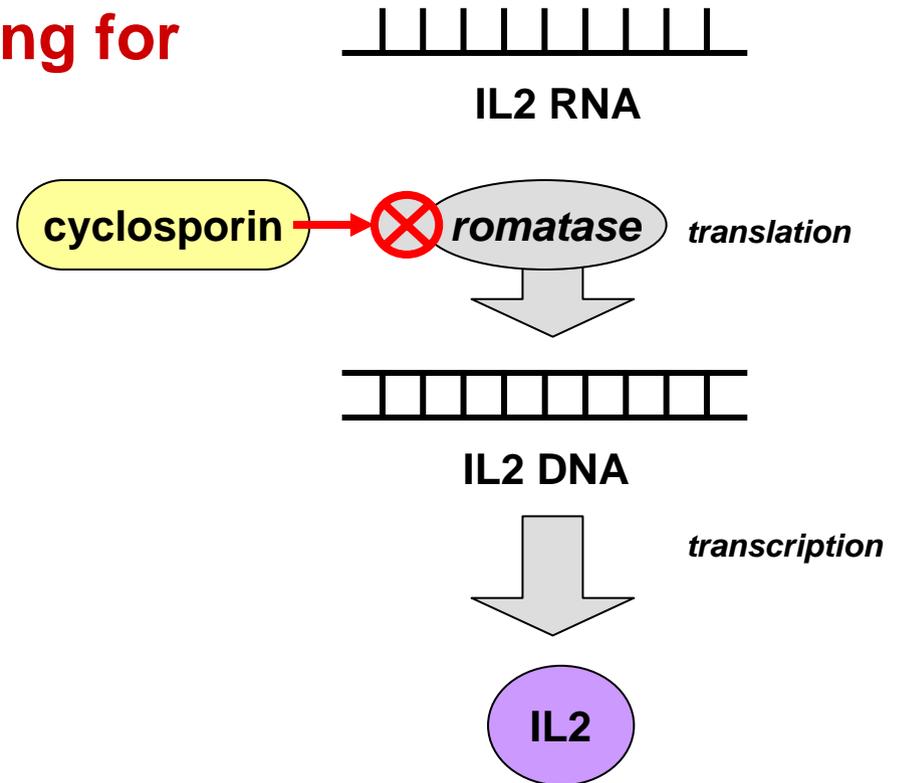
What is the mechanism of Cyclosporin?



What is the mechanism of Cyclosporin?

- Inhibits mRNA encoding for IL-2

- *Romatase inhibitor*



“Messengers ride ILlegal Cyclos in Rome”

What are the side effects of Cyclosporin?



What are the side effects of Cyclosporin?

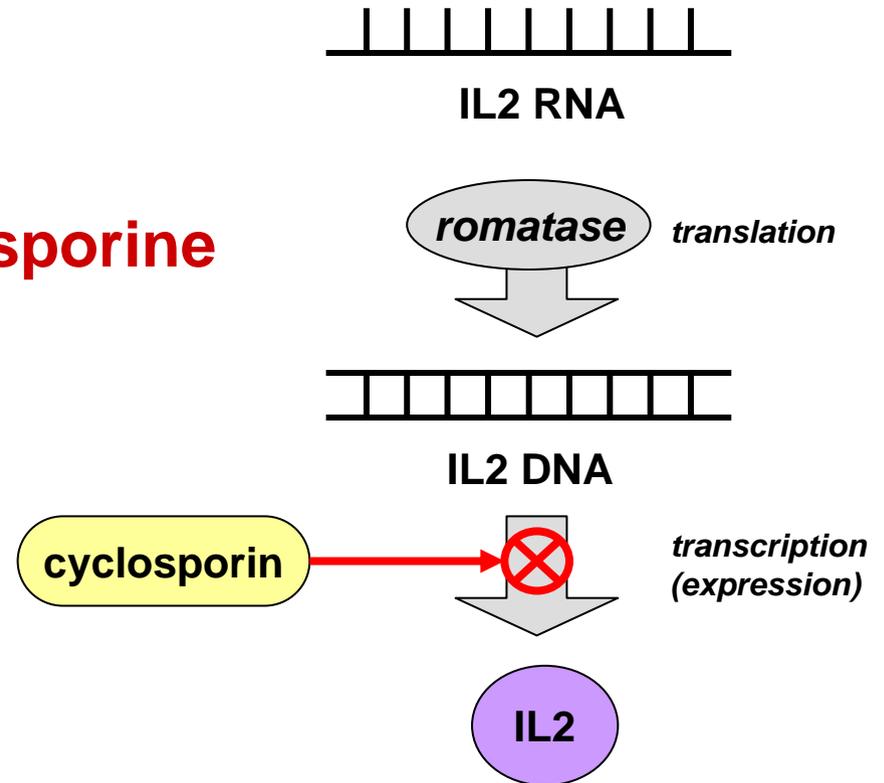
- **Nephrotoxicity**

“Cyclo ~ Nephro”

What is the mechanism of FK506?

What is the mechanism of FK506?

- **Blocks IL2 expression**
- **More potent than Cyclosporine**



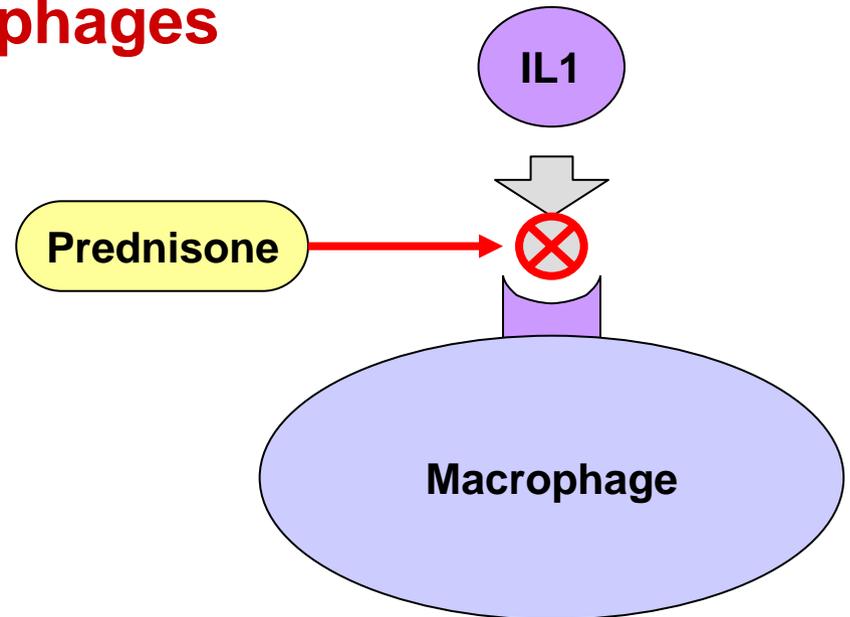
“Suzuki *FK506* is a *super-cyclo*”

What is the mechanism of Prednisone?



What is the mechanism of Prednisone?

- Blocks IL1 from macrophages



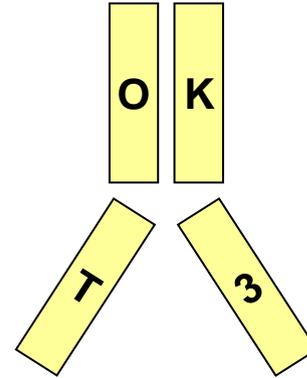
“Blocks #1(IL) PREDitor, the macrophage”

**What is the indication of OKT3?
-What is the mechanism**

What is the indication of OKT3?

-What is the mechanism

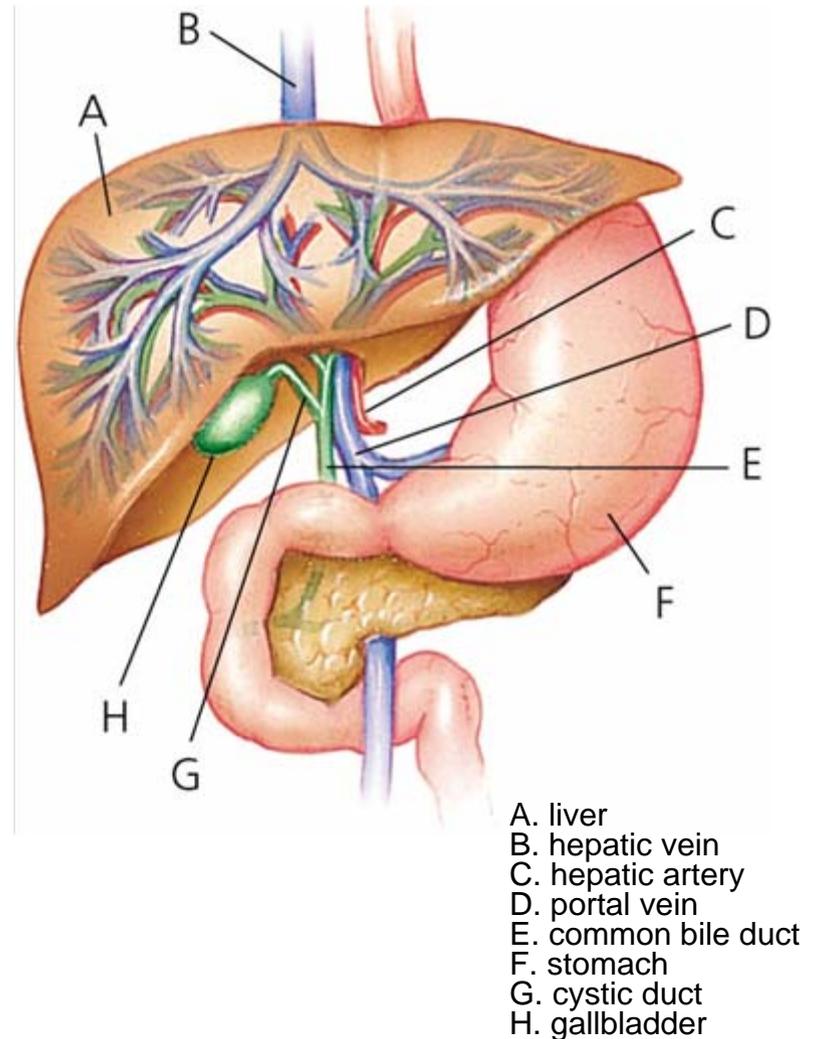
- Acute rejection
- Monoclonal antibody



What do you check when there is a biliary stricture post liver transplant?

What do you check when there is a biliary stricture post liver transplant?

- **Hepatic artery flow**
 - **may be caused by ischemia**



What is the most common cause of oliguria post renal transplant?



What is the most common cause of oliguria post renal transplant?

- **ATN**

What is the 1 year survival of a cardiac transplant?



What is the 1 year survival of a cardiac transplant?

- 85%

What is the 1 year graft survival of a liver transplant?



What is the 1 year graft survival of a liver transplant?

- **70%**



Flashcard Instructions

MOUSE

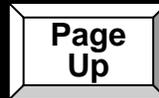
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To advance slide (Answer, Next Question)



To scroll backward (previous question)

or

CLICK BAR



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Slide**



**Previous
Slide**



**Answer
or Next
Question**



**Last
Slide**

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When does the catecholamine response to injury occur?

When does the catecholamine response to injury occur?

- **24-48 hours**

What other factors are elevated in a catecholamine response?

What other factors are elevated in a catecholamine response?

- **ADH**
- **ACTH (increases cortisol and aldosterone)**

Describe the three zones of the neck?

Describe the three zones of the neck?

III: Jaw to skull

II: Cricoid to angle of jaw

I: Below cricoid



Low to High – Like LeForte

What Neck Zone is most amenable to surgery?

What Neck Zone is most amenable to surgery?

- **Zone II**



What is the #1 cause of preventable blunt trauma death?

What is the #1 cause of preventable blunt trauma death?

- **Missed intra-abdominal surgery**

When and where do you perform a DPL?

When and where do you perform a DPL?

- **Supra umbilical**
- **If + pelvis fracture**

What is the DPL infusion rate for pediatrics?

What is the DPL infusion rate for pediatrics?

- 10 cc/kg

Where are five criteria for a positive DPL?

Where are five criteria for a positive DPL?

1. **WBC (>500 wbc/mm)**
2. **Food particles**
3. **Blood (Frank > 10cc)**
4. **Bile**
5. **Bacteria (>100,000 rbc/mm)**

What is the treatment for DPL?

What is the treatment for DPL?

- X lap

What are the indications for a thoracotomy for hemothorax?



What are the indications for a thoracotomy for hemothorax?

1. **Instability**
2. **>1500 cc out initially**
3. **> 200 cc/hr X 4hrs**
4. **Incompletely drained hemothorax despite two good tubes**



What cause hypotension in cardiac tamponade?



What cause hypotension in cardiac tamponade?

- **Decreased diastolic filling**



Does the blood you tap from cardiac tampanode clot?

Does the blood you tap from cardiac tampanode clot?

- **No**

How does a fat emboli present?

How does a fat emboli present?

- **Confusion / Agitation**
- **Hypoxia**
- **Petechia**

“CHP Police get Fat Emboli”

What lab test can be used for a fat emboli?

What lab test can be used for a fat emboli?

- **Sudan urine stain for fat**

What side is Diaphragm Rupture most common?

What side is Diaphragm Rupture most common?

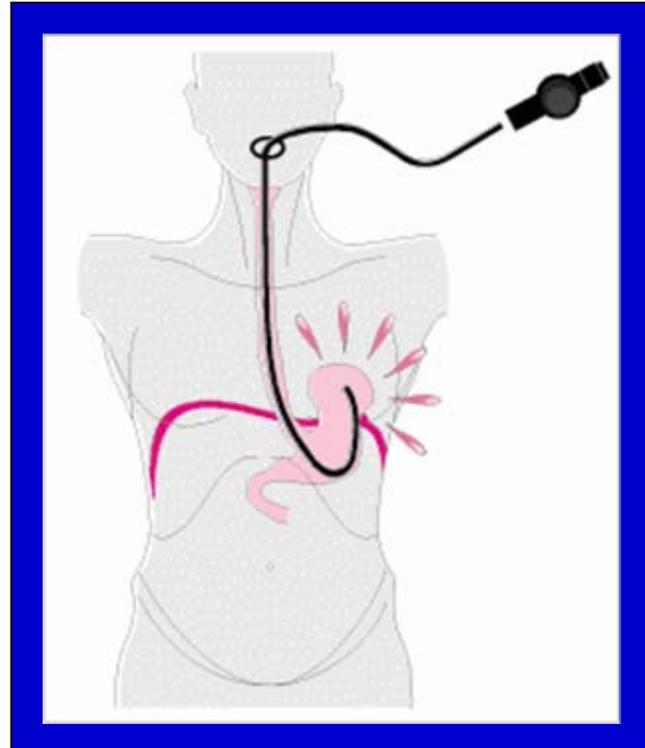
- **Left (8:1)**



How do you diagnose?

How do you diagnose?

- **NGT in chest on CXR**



How do you treat?

How do you treat?

- **OR for laparotomy**

If patient has a delayed presentation of a ruptured diaphragm, how do you treat it?

If patient has a delayed presentation of a ruptured diaphragm, how do you treat it?

- **Consider thoracotomy**
 - **to avoid adhesions in the abdomen**

What non specific opsonins are lost with a splenectomy?

What non specific opsonins are lost with a splenectomy?

- **Tufts**
- **Properdin**
- **Fibronectin**

“Tufts Proper Fiber Diet post splenectomy”

Are there any changes to antibody production with a splenectomy?

Are there any changes to antibody production with a splenectomy?

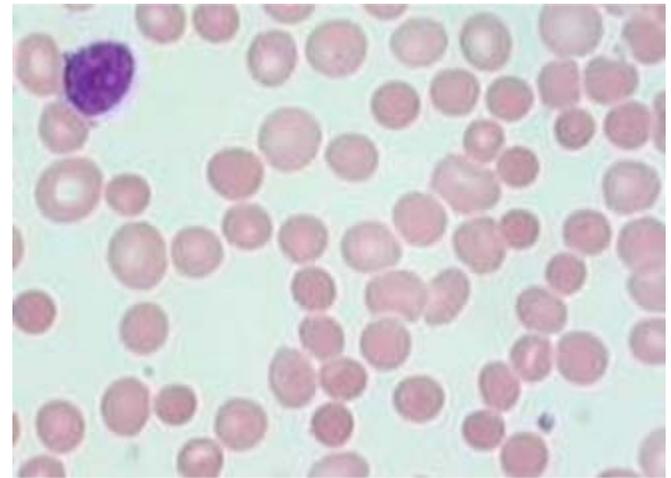
- **Decreased IgM production**

*“splenecto**My**”*

How does hereditary spherocytosis present?

How does hereditary spherocytosis present?

1. **Anemia (Normocytic hemolytic)**
2. **Jaundice**
3. **Splenomegaly**
4. **Spheroid erythrocytes on smear**



What % of patients with hereditary spherocytosis are helped by a splenectomy?

What % of patients with hereditary spherocytosis are helped by a splenectomy?

- **100%**
 - **Resolves**
 - **anemia**
 - **jaundice**

How does ITP (Idiopathic Thrombocytopenic Purpura) present?



How does ITP (Idiopathic Thrombocytopenic Purpura) present?

- **Mucosal bleeding (epistaxis, oral bleeding, menorrhagia)**
- **Easy bruising**
- **Purpura**

- **No fever (unlike TTP)**
- **No splenomegaly (unlike TTP)**
- **No schistocytes on path (unlike TTP)**



What % of patients with ITP are helped with a splenectomy?

What % of patients with ITP are helped with a splenectomy?

- **80%**

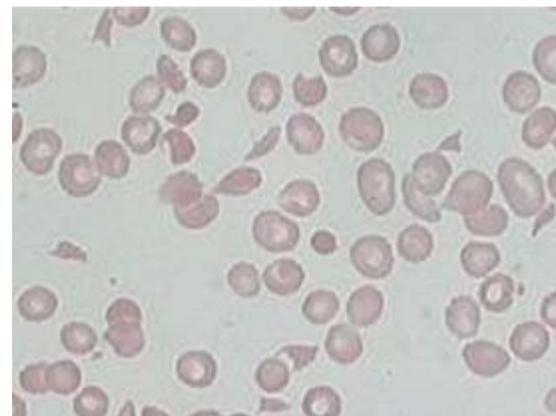


How does TTP (Thrombotic Thrombocytopenic Purpura) present?



How does TTP (Thrombotic Thrombocytopenic Purpura) present?

- **Pentad of symptoms:**
 - **fever (Unlike ITP)**
 - **hemolytic anemia**
 - **mental status changes**
 - **thrombocytopenia**
 - **renal failure.**
- **PE reveals**
 - **purpura/petechiae**
 - **splenomegaly (Unlike ITP)**
- **Path**
 - **Shistocytes on blood smear (Unlike ITP)**



What % of patients with TTP are helped by a splenectomy?

What % of patients with TTP are helped by a splenectomy?

- **None, never do splenectomy for TTP**
- **Treat with plasmapheresis**

Coagulation Disorder Review

hereditary
spherocytosis

1. Normocytic hemolytic anemia
2. Jaundice
3. splenomegaly
4. Spheroid erythrocytes

Treat

Splenectomy

ITP

1. Mucosal bleeding
2. Easy bruising
3. purpura/petechiae

Splenectomy

TTP

Pentad of symptoms:

1. fever
2. hemolytic anemia
3. mental status changes
4. thrombocytopenia
5. renal failure.
6. purpura/petechiae
7. splenomegaly
8. Shistocytes

Plasmaphoresis

What is the definition of pulmonary compliance?

What is the definition of pulmonary compliance?

- **Change in volume for change in pressure**

Is high or low compliance good?

Is high or low compliance good?

- High

What conditions decrease compliance?

What conditions decrease compliance?

1. ARDS
2. Pulmonary edema

What is the effect of aging on FEV1 and FVC?

What is the effect of aging on FEV1 and FVC?

- **Reduces it**

What is the formula for O2 delivery?

What is the formula for O2 delivery?

- **O2 delivery = CO x (O2 content)**
= CO X (Hgb X 1.3 X O2 sat)

What is the formula for O2 use?

What is the formula for O₂ use?

- $O_2 \text{ use} = CO \times (CaO_2 - CvO_2)$

What is the treatment for an air embolus?

What is the treatment for an air embolus?

- 1. Trendelenberg with left side down**
 - keep bubble from going to brain**
- 2. Air aspiration with central line to RA**

What are the advantages and risks of PEEP?

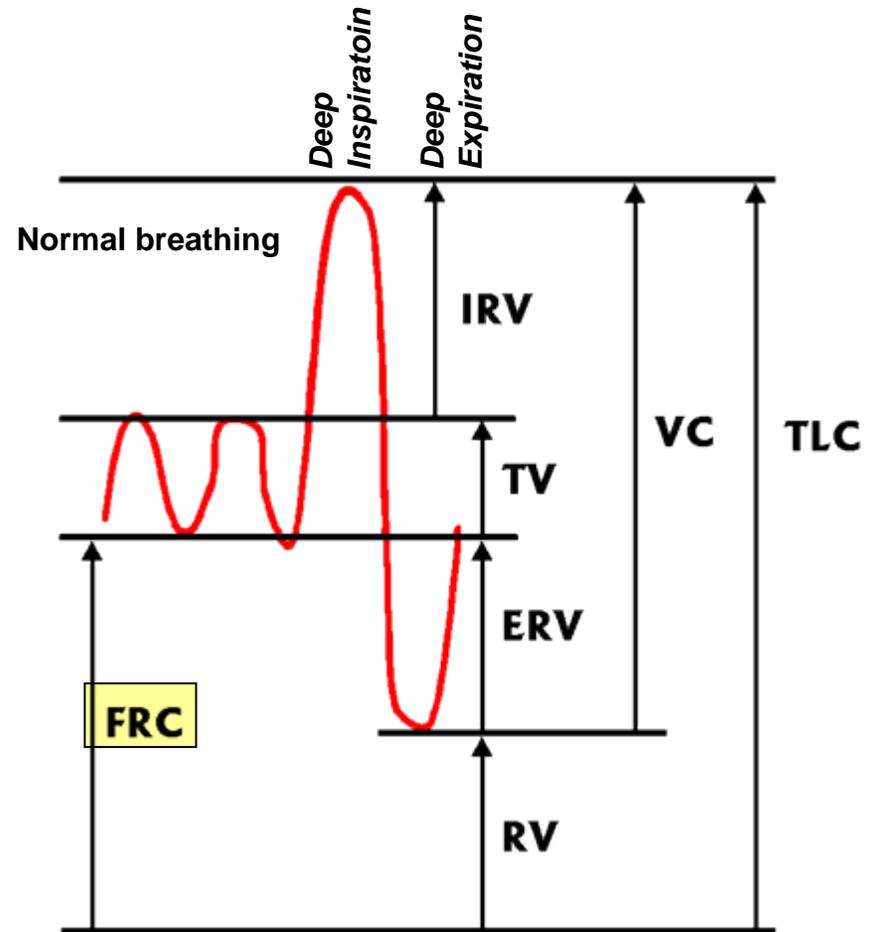
What are the advantages and risks of PEEP?

- **Advantage**
 1. **Increases FRC**
 2. **Increases compliance**
 3. **Keeps aveoli open**
- **Disadvantage**
 1. **pneumo very rare unless very high PEEP**

What is FRC?

What is FRC?

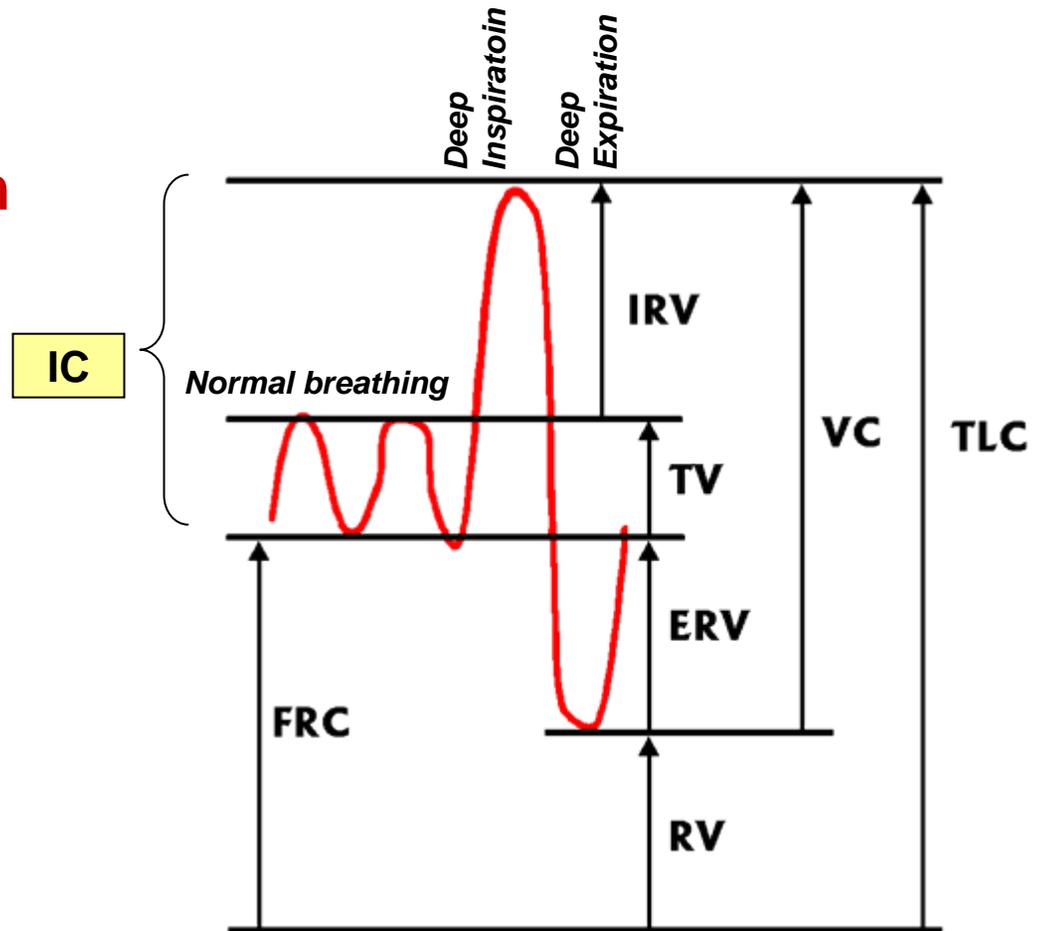
- Air in lungs after normal exhalation



What is the Inspiratory capacity?

What is the Inspiratory capacity?

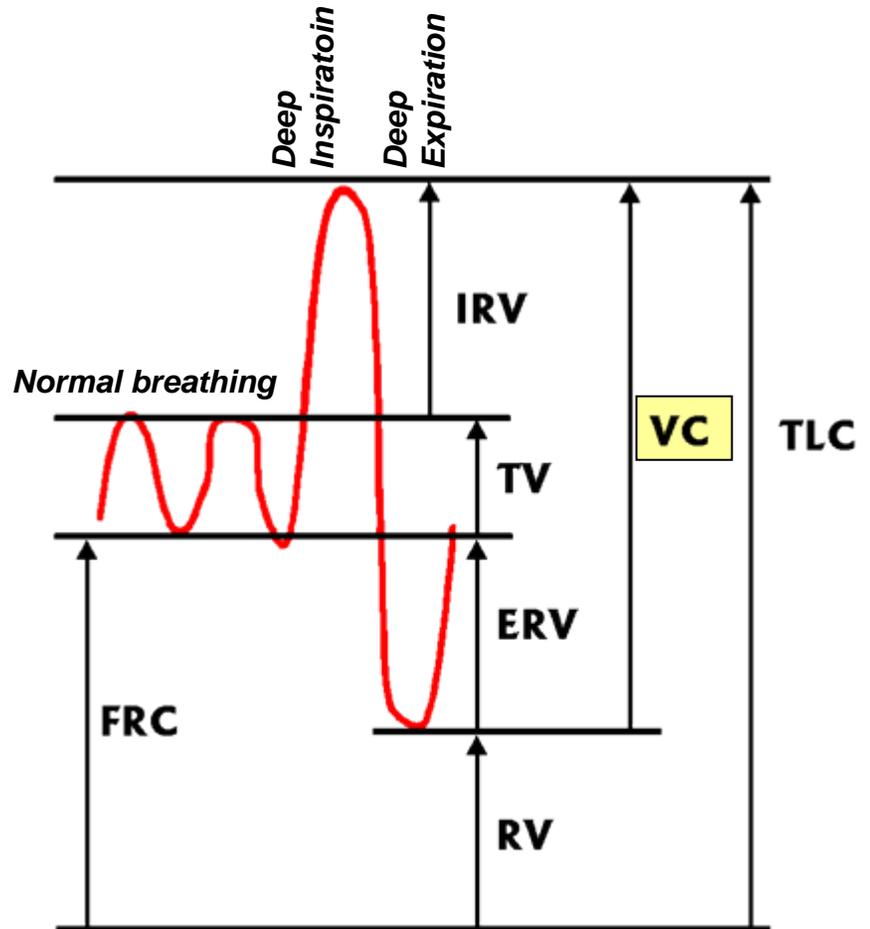
- Air breathed in from FRC



What is the vital capacity?

What is the vital capacity?

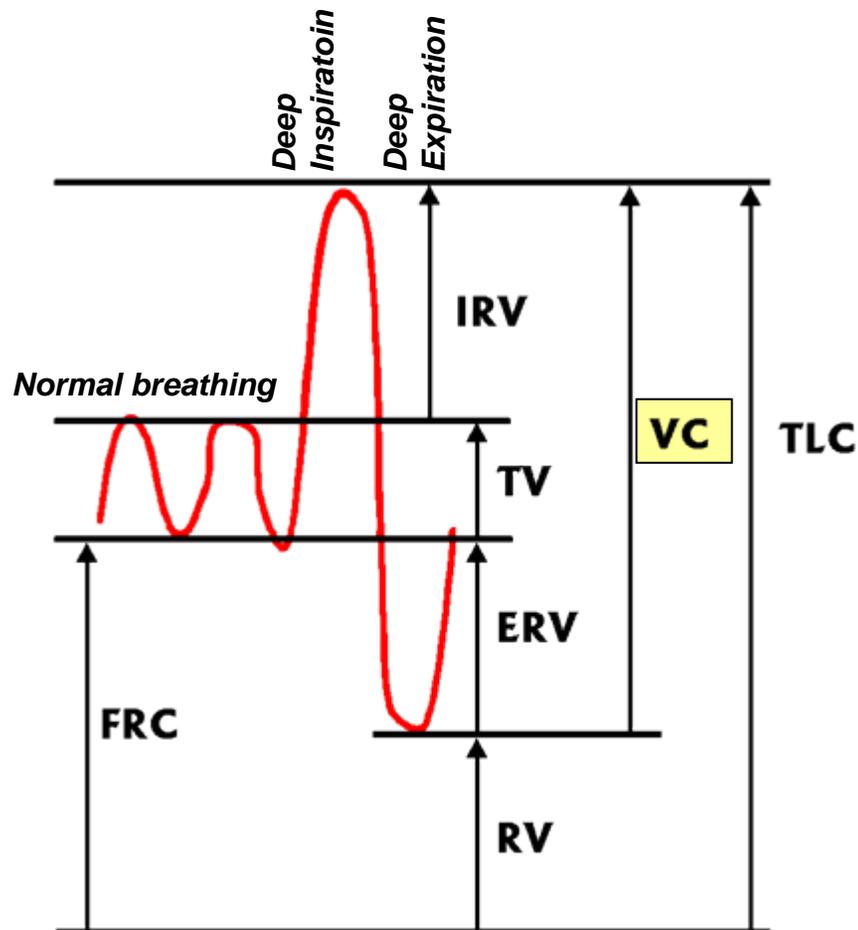
- **Greatest volume that can be exhaled**



What is FEV?

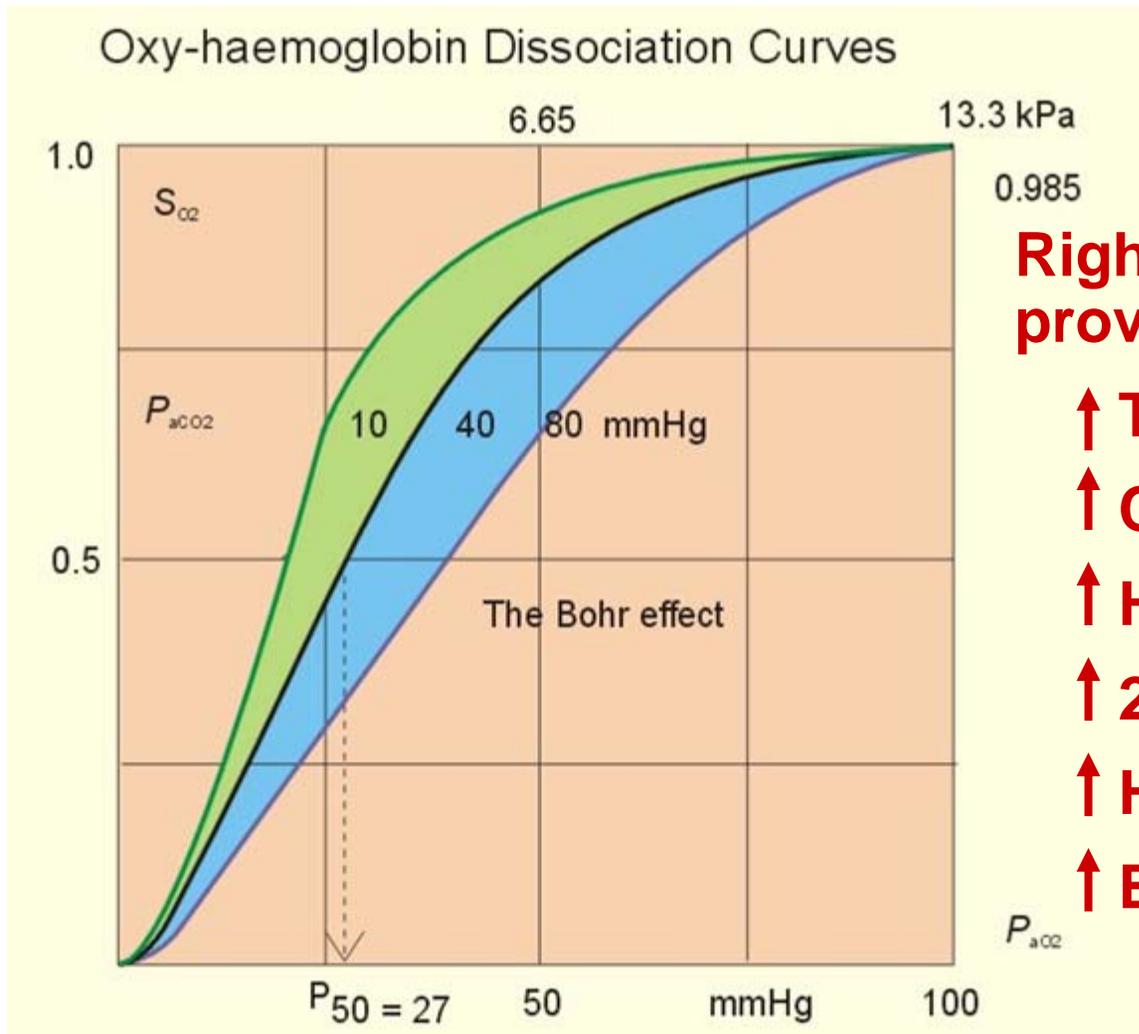
What is FEV?

- VC



What increase O2 dissociation?

What increase O2 dissociation?



Right Shift to provide more O₂

↑ Temp

↑ CO₂

↑ H⁺

↑ 2-3 DPG

↑ High Altitude

↑ Babies

What is EDRF?

What is EDRF?

- **Nitric Oxide**

Where is EDRF made?

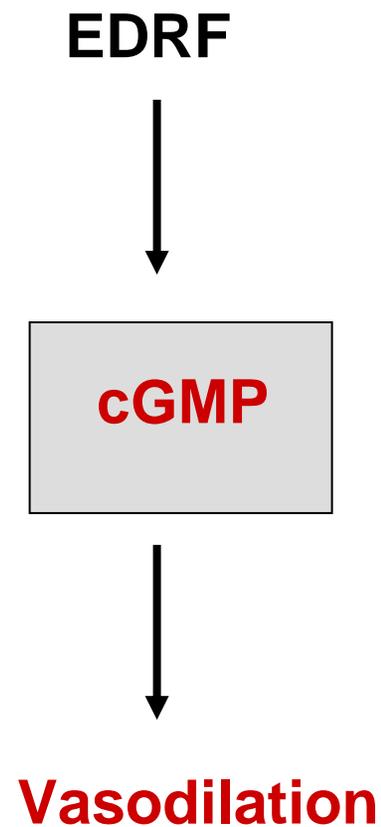
Where is EDRF made?

- **Made from Arginine in endothelial cells**

What is the mechanism of EDRF during sepsis?

What is the mechanism of EDRF during sepsis?

- **Vasodilation via cGMP?**



How do you treat Hydrofluoric acid burns?

How do you treat Hydrofluoric acid burns?

- **Topical calcium**

What is the impact of Carbon Monoxide on O2 sat reading?

What is the impact of Carbon Monoxide on O2 sat reading?

- **Falsely elevated**
 - **reduces available HgB**

What is the impact of 100% O₂ on CO?

What is the impact of 100% O₂ on Carbon Monoxide?

- **Decreases T $\frac{1}{2}$ from 5 hrs. to 1 hr.**

What are two advantages of Silvadene (Topical Antimicrobial)?

What are two advantages of Silvadene (Topical Antimicrobial)?

- **Good activity against Candida**

What are two disadvantages of Silvadene (Topical Antimicrobial)?

What are two disadvantages of Silvadene (Topical Antimicrobial)?

1. Risk of Neutropenia
2. Poor eschar penetration

What is the disadvantage of Sulfamylon (Topical Antimicrobial)?

What is the disadvantage of Sulfamylon (Topical Antimicrobial)?

- **Painful**

- **Acidosis due to carbonic anhydrase inhibition**



What is the disadvantage of Silver Nitrate?

What is the disadvantage of Silver Nitrate?

1. Hyponatremia
2. Hypochloremia
 - both due to leeching of NaCl

What is the #1 infection in burn patients?

What is the #1 infection in burn patients?

- pneumonia

What are the initial cardiovascular reactions of a burn patient?

What are the initial cardiovascular reactions of a burn patient?

- 1. Initial drop in cardiac output**
- 2. Then increase in CO (hyperdynamic)**



What is the cancer that can grow in a chronic wound?



What is the cancer that can grow in a chronic wound?

- Squamous cell carcinoma
 - Marjolin's Ulcer



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What are two markers for non-seminomatous testicular CA?

What are two markers for non-seminomatous testicular CA?

- 1. Alpha Feto Protein (AFP)**
- 2. B-HCG**

How do you biopsy a testicular mass?



How do you biopsy a testicular mass?

- **Orchiectomy via inguinal incision**
 - **never trans-scrotal incision**

How do you treat seminomas?

How do you treat seminomas?

- RT (very radio-sensitive)



How do you treat Stage I seminomas?

How do you treat Stage I seminomas?

- RT
 - 25% have occult mets



How do you treat a Node + Seminoma?



How do you treat a Node + Seminoma?

1. RT
2. Platinum Chemo



What is the most common age for Seminomas to present?

What is the most common age for Seminomas to present?

- **Age 20-35**

Are most Seminomas benign or malignant?

Are most Seminomas benign or malignant?

- **Malignant**

Are Seminomas common in African Americans?

Are Seminomas common in African Americans?

- **No**
 - **rare**

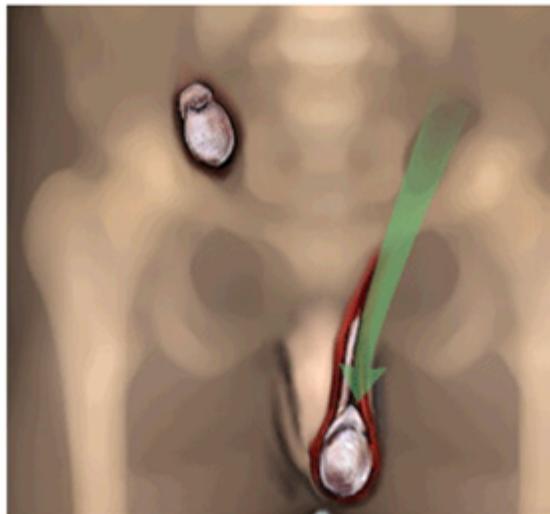
What is the risk of Cryptorchidism?

What is the risk of Cryptorchidism?

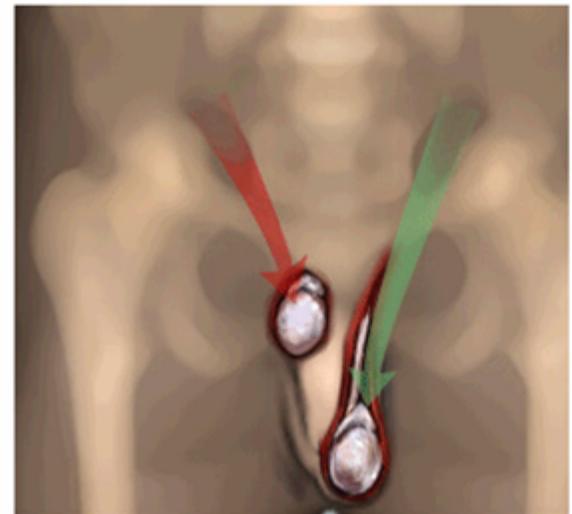
- Increase risk of CA X 3-14

Undescended Testicles (Cryptorchidism)

Abdominal Testicle



Pubo-Scrotal Testicle



normal path 
aberrant path 



Crump Institute for Biological Imaging

What is effect of a Ochioplexy on Cryptorchidism?

What is effect of a Ochioplexy on Cryptorchidism?

1. **Increases fertility**
2. **No effect on CA risk**

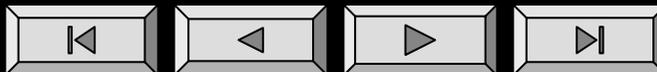
At what age should a Orchiopexy be performed?



At what age should a Orchiopexy be performed?

- **Approximately 2 years**

What is the treatment for Testicular Torsion?



What is the treatment for Testicular Torsion?

- **Bilateral orchiopexy**



What causes a Varicocele?



What causes a Varicocele?

- **Varicocele is a mass of enlarged veins**
 - **develops in the spermatic cord**

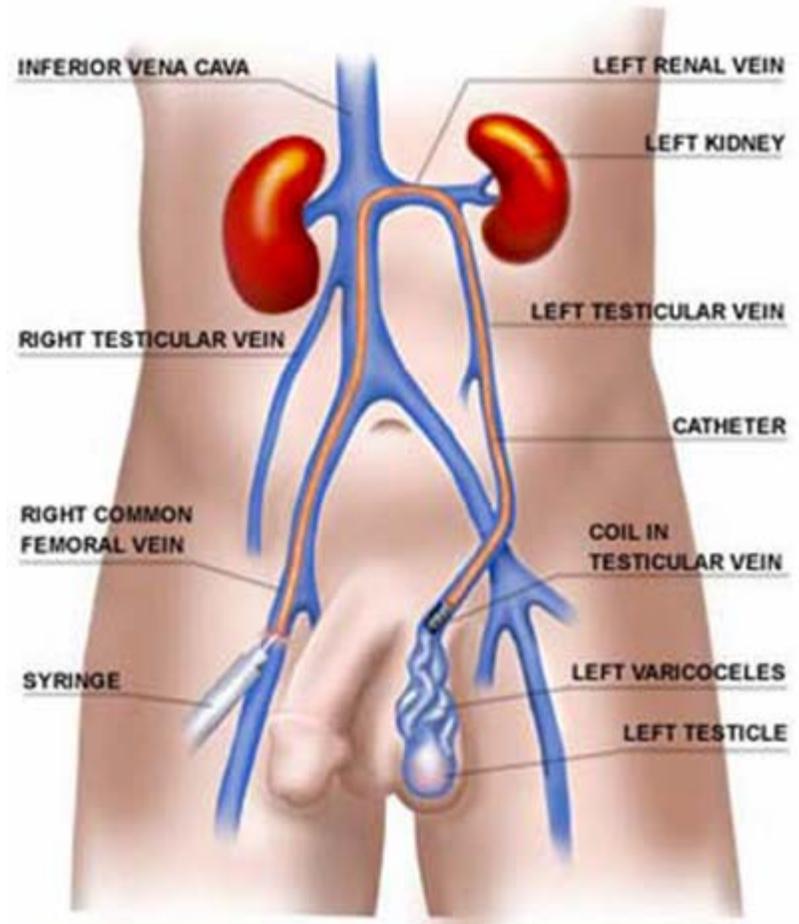


Where does the left gonadal artery drain?



Where does the left gonadal artery drain?

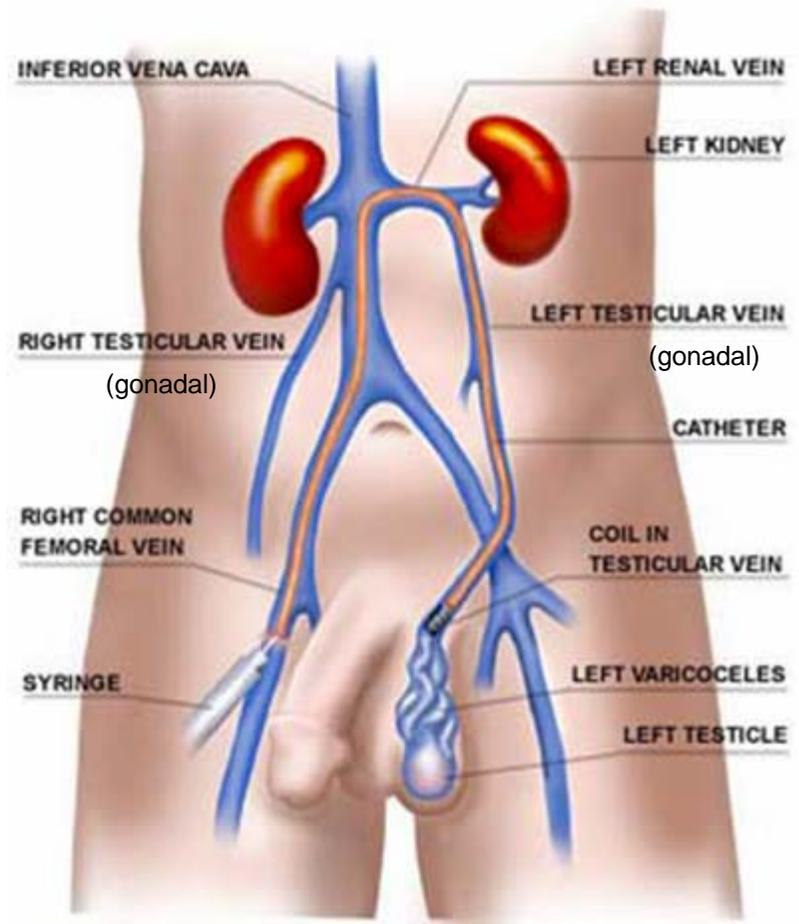
- Left renal vein



Where does the right gonadal vein drain?

Where does the right gonadal vein drain?

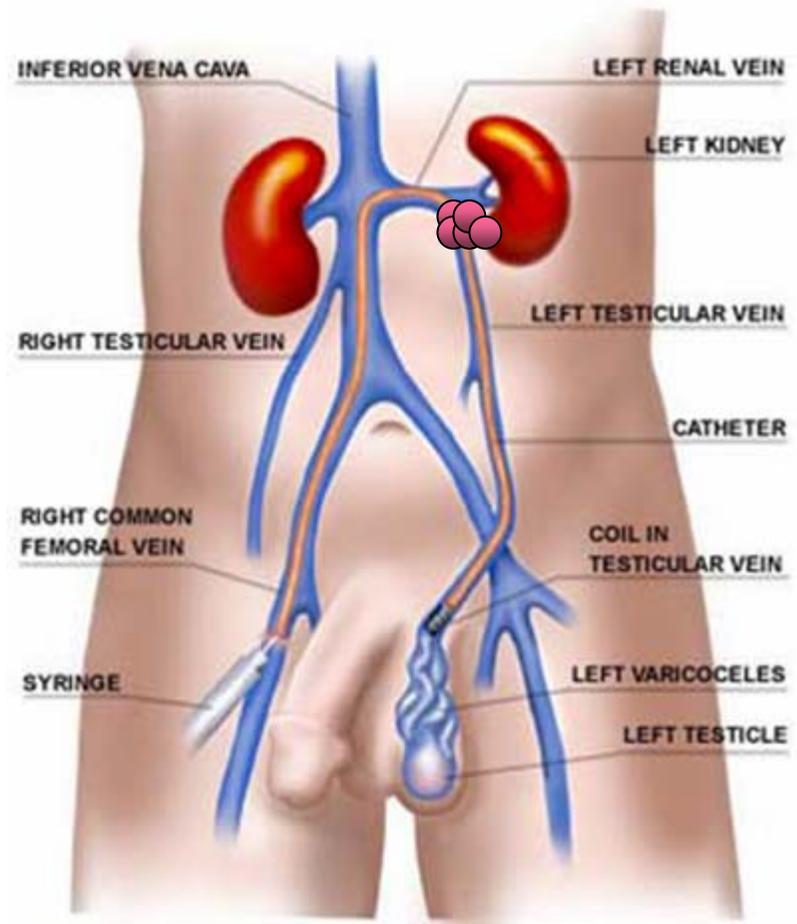
- **Directly into IVC**



What is the significance of the anatomy of the Left gonadal vein?

What is the significance of the anatomy of the Left gonadal vein?

- **May be obstructed by Renal cell carcinoma**



What is the most common cause of ureteral injury?



What is the most common cause of ureteral injury?

- **Iatrogenic**



How do you surgically repair a ureter injury?



How do you surgically repair a ureter injury?

1. **Avoid dissection**
 - **compromise blood supply**
2. **Stent**
3. **use Absorbable sutures**
 - **otherwise nidus for stones**
4. **Drain**

“Fix Ureter ASAD”

What clinical findings should make you suspect a urethral injury?



What clinical findings should make you suspect a urethral injury?

- 1. Scrotal/penile injury**
- 2. Blood at meatus**
- 3. High riding prostate**

“Son of a Bitch, that Hurts”

How do you diagnose urethral injury?



How do you diagnose urethral injury?

- **Retrograde urethrogram (RUG)**



If you are suspicious of a urethral injury, do you place a Foley?

If you are suspicious of a urethral injury, do you place a Foley?

- **No**
 - **need suprapubic catheter**



What type of bladder injury is associated with a pelvic fracture?

What type of bladder injury is associated with a pelvic fracture?

- **Extraperitoneal injury**

A CT cystogram is performed. 300mls of contrast medium is diluted to 500 mls and instilled into the bladder. The resulting CT scan shows a significant extra-peritoneal bladder rupture:



How do you treat a extraperitoneal bladder injury?



How do you treat a extraperitoneal bladder injury?

- **Foley drainage only**

If there is no pelvic fracture, where is most common site for a bladder injury?

How do you treat a bladder dome rupture?



How do you treat a bladder dome rupture?

- **OR**
 - **three layer closure**
 - **keep Foley**



What is the radiologic characteristics of Prostate CA mets to the bone?

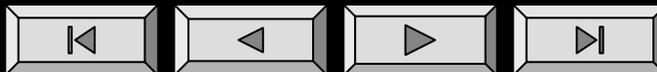


What is the radiologic characteristics of Prostate CA mets to the bone?

- **Osteoblastic**
 - **radio dense**



What is the most common kidney stone?



What is the most common kidney stone?

- 1. Oxalate stones (78%)**
 - especially after small bowel resection
- 2. Ammonium Phosphate Stones (15%)**
- 3. Urate Stones (8%)**

What type of stones are caused by a *Proteus* infection? Why?

What type of stones are caused by a *Proteus* infection? Why?

- **Struvite stones (Staghorn)**
- **Caused by urease secreted by the *Proteus***



**Fig. Bilateral
staghorn
stones**

What is the most common presentation of Renal Cell Carcinoma?



What is the most common presentation of Renal Cell Carcinoma?

1. Hematuria
2. Abdominal pain
 - capsule stretching
3. Mass

What causes erythrocytosis in Renal Cell CA?

What causes erythrocytosis in Renal Cell CA?

1. Increase erythropoietin
2. Fever
3. Hypertension

What is Stouffer Syndrome?

What is Stouffer Syndrome?

- **Decreased hepatic function**
 - **associated with Renal Cell CA**

Where is the majority of Erythropoietin made?

Where is the majority of Erythropoietin made?

- **Kidney (95%)**

What stimulates production of erythropoietin?

What stimulates production of erythropoietin?

- Hypoxia

What is the impact of ESRD on erythropoietin?

What is the impact of ESRD on erythropoietin?

- **Decrease**

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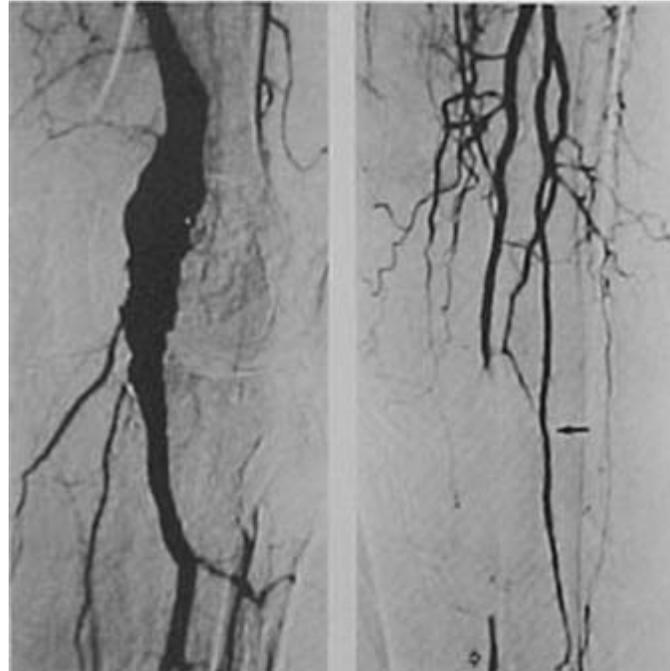
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What is the #1 peripheral aneurysm?

What is the #1 peripheral aneurysm?

- **Popliteal**



What % of popliteal aneurysms are bilateral?

What % of popliteal aneurysms are bilateral?

- **50%**

What % of popliteal aneurysms also have a AAA?

What % of popliteal aneurysms also have a AAA?

- 33%

What is the risk of a popliteal aneurysm?

What is the risk of a popliteal aneurysm?

- Risk of
 - emboli
 - thrombosis

What is proper management of a popliteal aneurysm?

What is proper management of a popliteal aneurysm?

- **Operate**
 - **Exclude and bypass**

What is the most common visceral aneurysm?

What is the most common visceral aneurysm?

- **Splenic (60% of all visceral)**

What is the indication for treatment of a splenic aneurysm?

What is the indication for treatment of a splenic aneurysm?

1. **> 2cm**
2. **Planning pregnancy**
3. **Child bearing age**
4. **Symptomatic**

“2 PCS wireless phones will causes splenic aneurysms”

What are the 5 yr risks of rupture for AAA aneurysms
< 5cm?
5-7cm?
> 7cm?



Risk

What are the 5 yr risks of rupture for AAA aneurysms
< 5cm?
5-7cm?
> 7cm?

	0-5 cm	5-7 cm	>7 cm
Risk	20%	33%	95%

How does HTN and COPD affect AAA aneurysm rupture risk rates?

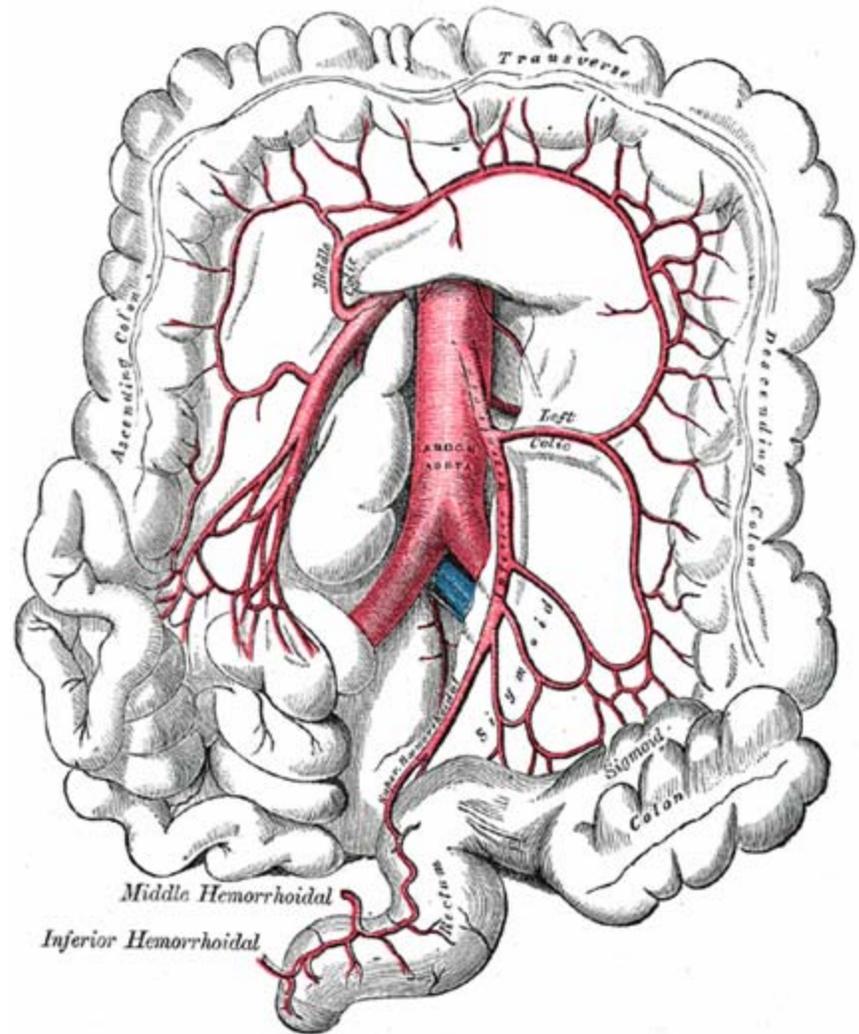
How does HTN and COPD affect aneurysm rupture risk rates?

- It increases it

What is the proper management of diarrhea for the first few days after a AAA repair.

What is the proper management of diarrhea for the first few days after a AAA repair.

- Sigmoidoscopy to evaluate for ischemic colon (loss of IMA)
 - If necrosis, go to OR



What is the first line of treatment for claudication?

What is the first line of treatment for claudication?

1. **Smoking cessation**
2. **Exercise**
3. **Trental (Pentoxifylline)**
 - **lowers viscosity of blood**

Not surgery

For ACAS, what were the patient criteria?

For ACAS, what were the patient criteria?

- 1. Asymptomatic**
- 2. >60% stenosis**

For ACAS study, was the impact of CEA on 5 yr stroke rate?

For ACAS, what is the impact of CEA on 5 yr stroke rate?

Decreased from:

11%  5%

$\Delta 6$

For NACAS, what were the patient criteria?

For NACAS, what were the patient criteria?

- 1. Symptomatic**
- 2. > 70% stenosis**

For NACAS, what is the impact of CEA on 5 yr stroke rate?

For NACAS, what is the impact of CEA on 5 yr stroke rate?

Decreased from:

26% → 9%

Δ 17

What is the #1 CN injury associated with CEA

What is the #1 CN injury associated with CEA

- **Vagus nerve damage**
 - **clamp application**
 - **leads to hoarseness**

“Loose the goose, sound like a horse”

If you see a young women with hypertension, what should you think?

If you see a young women with hypertension, what should you think?

- **Fibromuscular dysplasia (FMD)**

What is the etiology of their hypertension in women with fibromuscular dysplasia?

What is the etiology of their hypertension in women with fibromuscular dysplasia?

- **Right renal artery involvement**

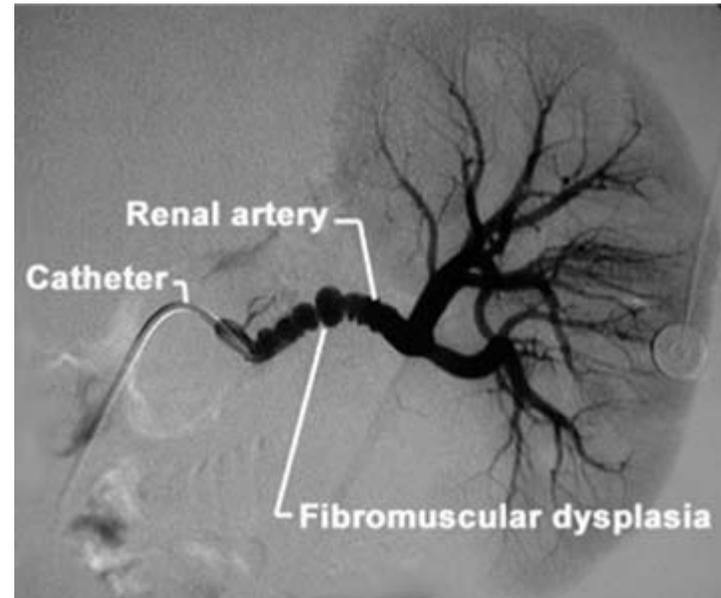


Fig. Angiography is the criterion standard for diagnosing FMD. The string of beads appearance is considered pathognomonic for medial fibroplasia on diagnostic angiography.

What is the treatment for R renal artery involvement for women with Fibromuscular dysplasia?

What is the treatment for R renal artery involvement for women with Fibromuscular dysplasia?

- **Angioplasty**

What is atherosclerosis Type I?

What is atherosclerosis Type I?

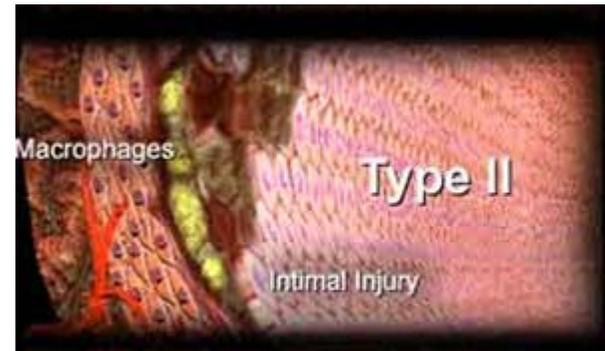
- **Foam cells**
 - **macrophages filled with lipids**



What is atherosclerosis Type II?

What is atherosclerosis pathology Type II?

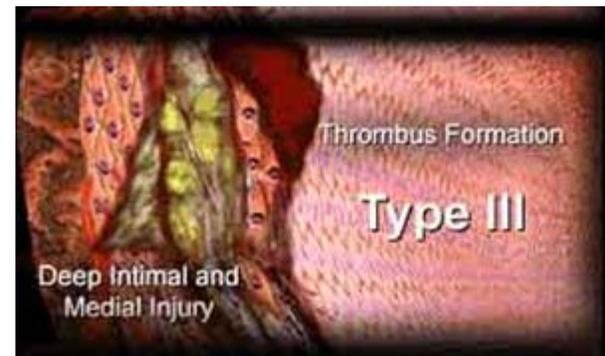
- **Fibro-intimal lesion**
 - **smooth muscle proliferation due to macrophages growth factors**



What is atherosclerosis Type III?

What is atherosclerosis Type III?

- **Thrombosis**
 - **Disruption exposes collagen**
 - **leads to thrombosis**



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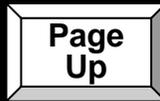
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**Answer
or Next
Question**



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What cells are responsible for secondary intention?



What cells are responsible for secondary intention?

- **Myofibroblasts**
 - (smooth muscle / fibroblasts)
- **provide wound contraction**
 - **cause contraction from the center of the wound**

What is the most abundant collagen throughout?



What is the most abundant collagen throughout?

- **Collagen Type I**

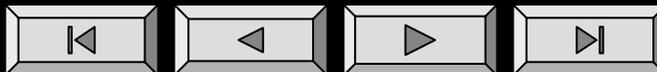
What is the principal collagen in scar?



What is the principal collagen in scar?

- **Type I**

What is the principal collagen type in a healing wound?



What is the principal collagen type in a healing wound?

- **Type III Collagen**
 - **Low in Ehler Danlos**

Wound

What type of collagen is found in the basement membrane?

What type of collagen is found in the basement membrane?

- **Type IV**

What type of collagen is found in cartilage?

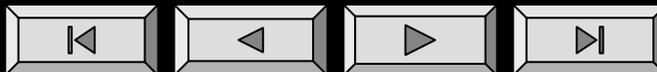


What type of collagen is found in cartilage?

- **Type XI and II**



What AA makes up Collagen?



What AA makes up Collagen?

- **Glycine q 3**

What four things are needed for prolyl hydroxylase crosslinking?

What four things are needed for prolyl hydroxylase crosslinking?

1. Alpha ketoglutarate
2. Vit C
3. O₂
4. Iron

During wound healing, what day does collagen production BEGIN?

During wound healing, what day does collagen production begin?

- **Day 3**

What day is there maximal collagen production?

What day is there maximal collagen production?

- Day 21

After day 21, does collagen increase?

After day 21, does collagen increase?

- **No amount is constant**
 - **but more crosslinking increases strength**



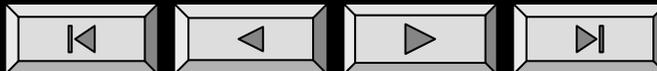
What happen to Type III collagen at maturation?

What happen to Type III collagen at maturation?

- **Becomes Type I**
 - **at maturation**
 - **around week 3**



Does the tensil strength ever equal pre-wound?



Does the tensil strength ever equal pre-wound?

- **Never**



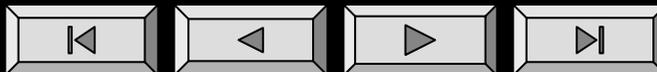
If you open a wound on day 5, does healing take the same amount of time?



If you open a wound on day 5, does healing take the same amount of time?

- **No**
 - **healing is faster the 2nd time because cells and products are already in place**

What is the impact of Vitamin A on wound healing?



What is the impact of Vitamin A on wound healing?

- **Vitamin A reduces the deleterious effects of steroids on wound healing**

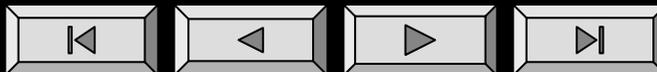
What is the order of cells to a wound?



What is the order of cells to a wound?

1. Platelets (not a cell)
2. PMN (neutrophils)
3. Macrophages (essential)
4. Fibroblasts (dominant by day 5)

What cell is essential for wound healing?



What cell is essential for wound healing?

- **Macrophage**

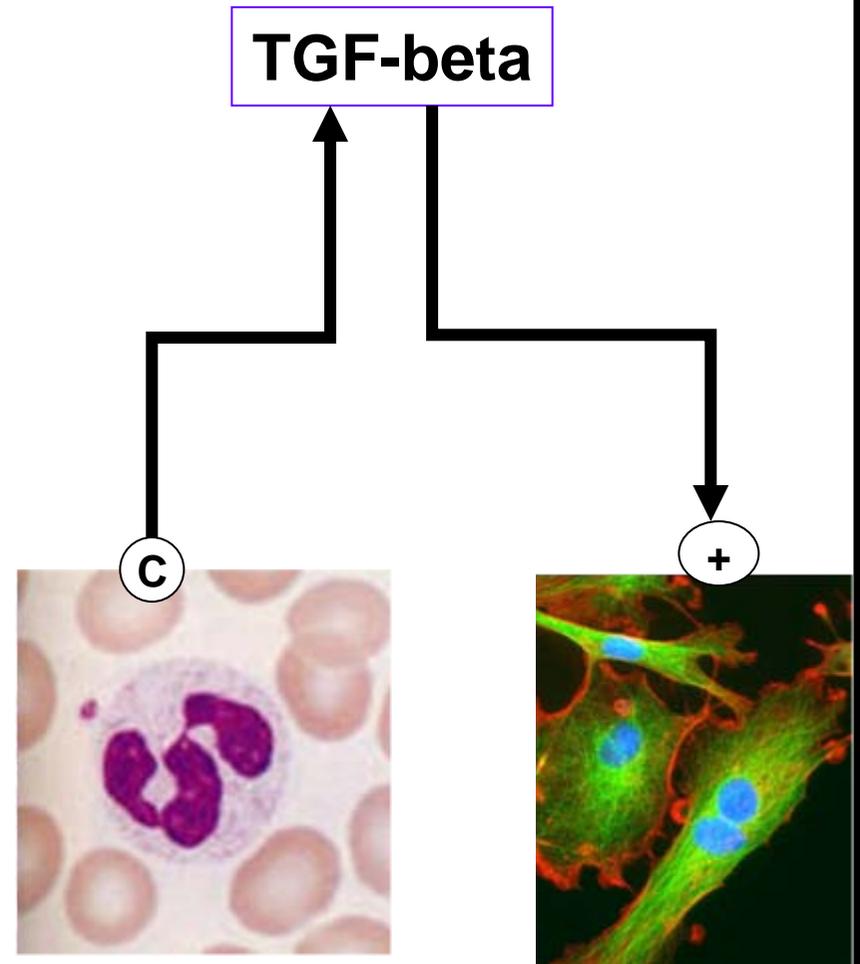
What are the functions of TGF-*B*?



What are the functions of TGF-beta?

Speeds healing by:

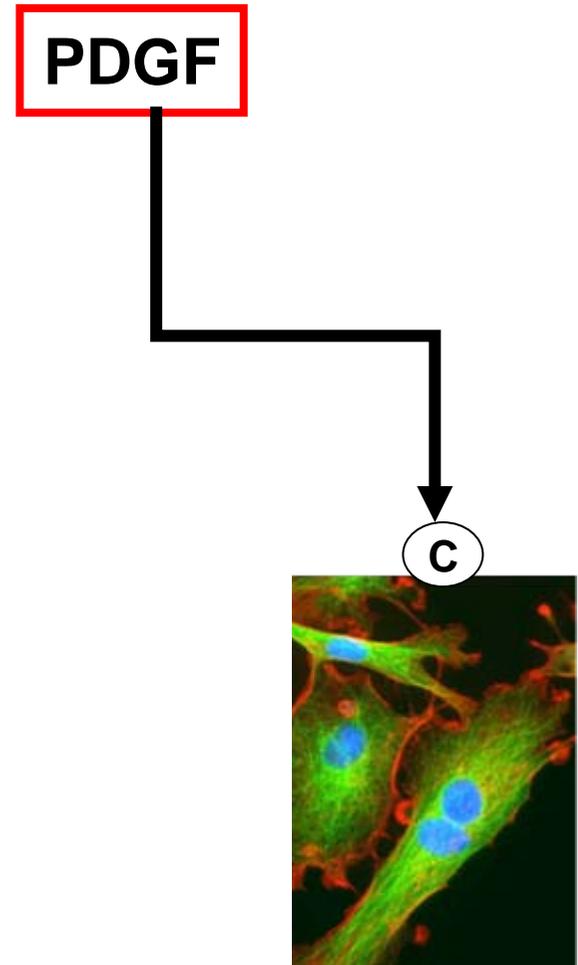
1. Chemotactic for neutrophils
2. Stimulates fibroblasts
 - Too much too long leads to fibrosis (cirrhosis, pulmonary fibrosis)



What are the three functions of PDGF in wound healing?

What are the three functions of PDGF in wound healing?

- **Attracts fibroblasts**
 - **increases smooth muscle to speed matrix deposition and collagen formation**
- **Active ingredient in Regranex**



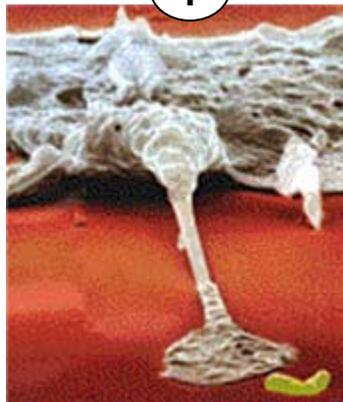
What is the clinical application of GmCSF?



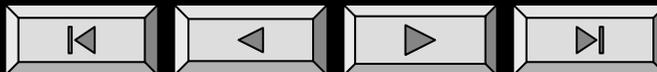
What is the clinical application of GmCSF?

- **Used in chemotherapy to:**
 - 1. Activate neutrophils**
 - 2. Activate macrophages**

GmCSF



Where is TxA2 come from and what does it do?

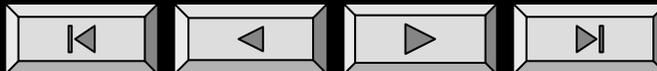


Where is TxA2 come from and what does it do?

- **Secreted from plateletes**
 1. **platelete aggregation**
 2. **vasonconstriction**
 3. **bronchconstriction**



What is the function of PGI₂ (prostacyclin)?



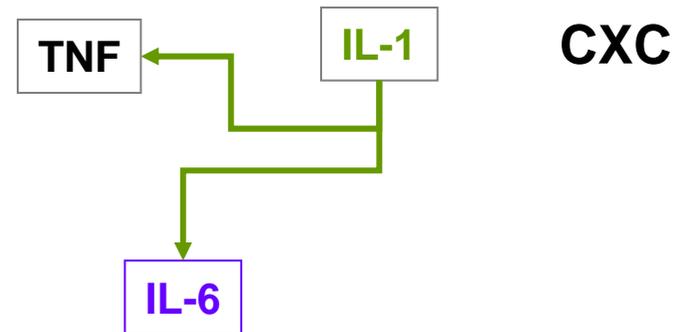
What is the function of PGI₂ (prostacyclin)?

1. Platelete aggregation inhibition
2. Vasodilation
3. Bronchodilation

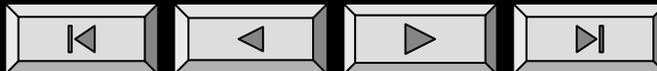
What factors are the initial cytokine response to injury/infection dependent?

What factors are the initial cytokine response to injury/infection dependent?

1. TNF
 2. IL1
 3. IL6
 4. CXC
- } Synergistic

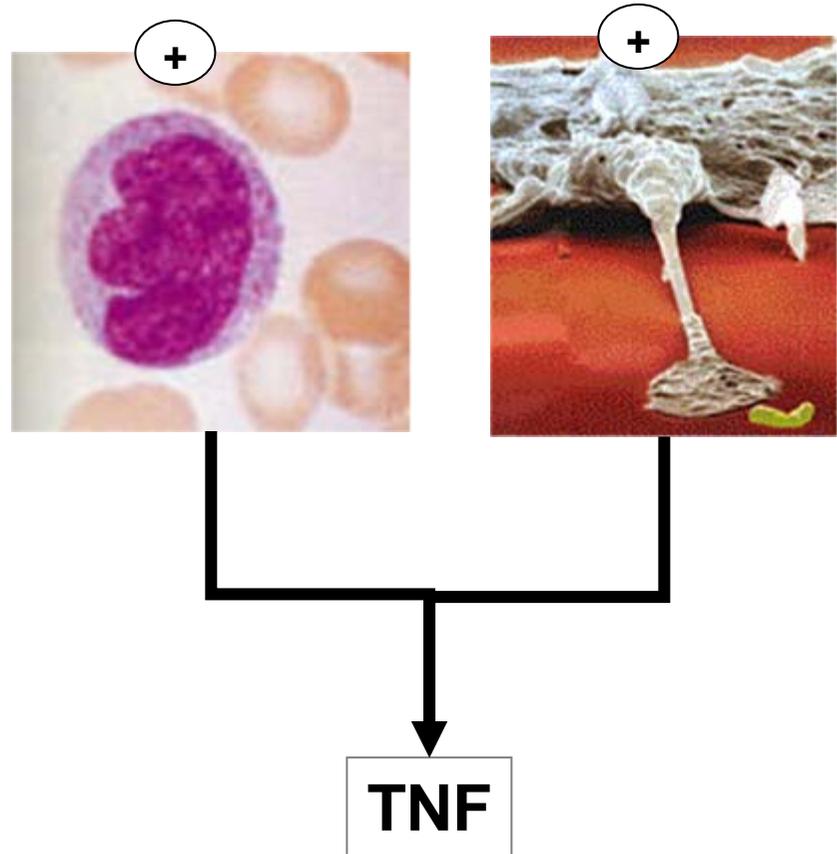


What is the main source of TNF



What is the main source of TNF

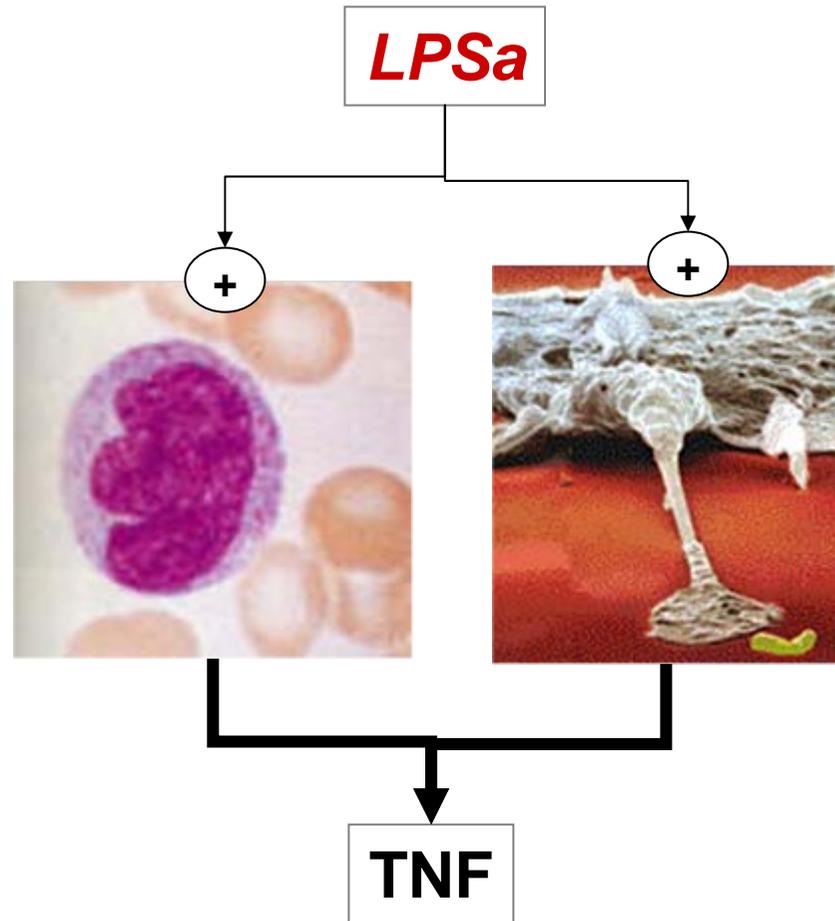
1. Macrophages
2. Monocytes



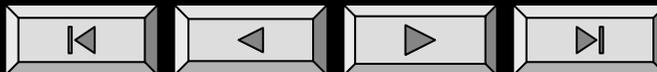
What is the most potent stimulus for TNF production?

What is the most potent stimulus for TNF production?

- Endotoxin (*LPSa*)

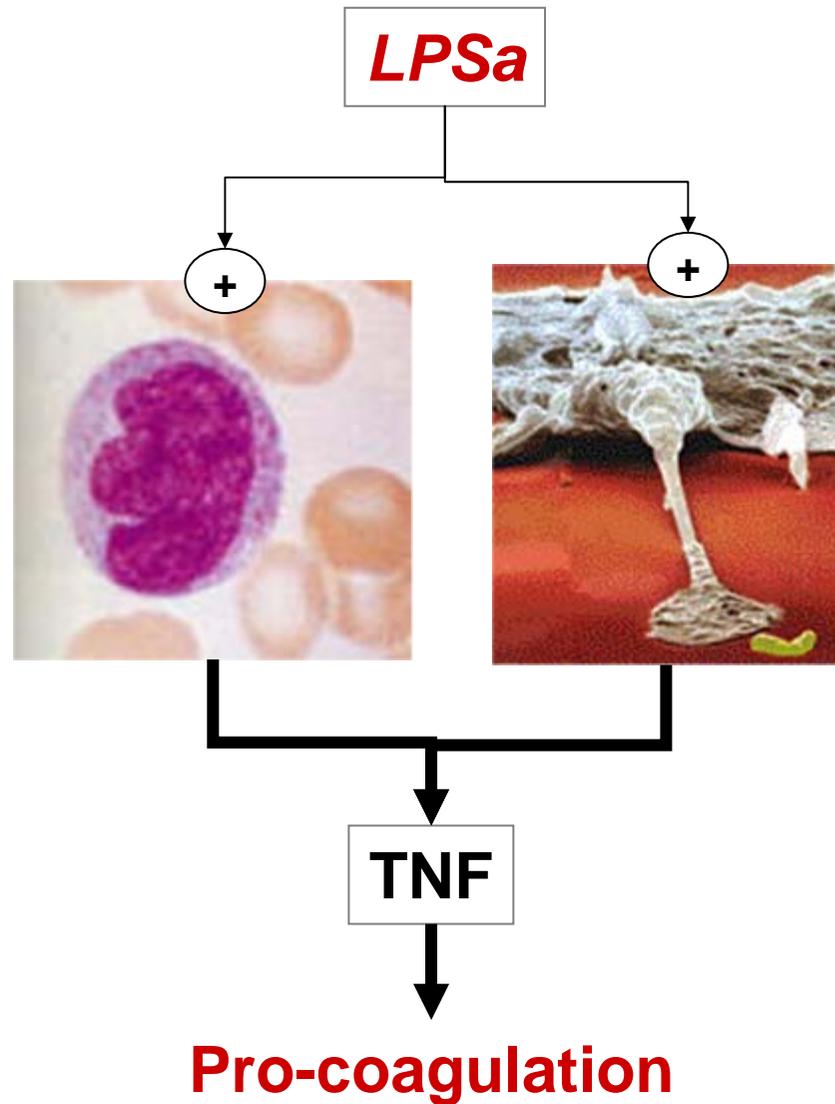


What is the overall effect of TNF?

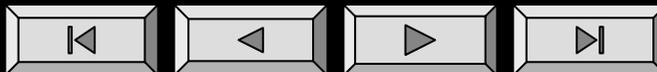


What is the overall effect of TNF?

- **Pro-coagulation**

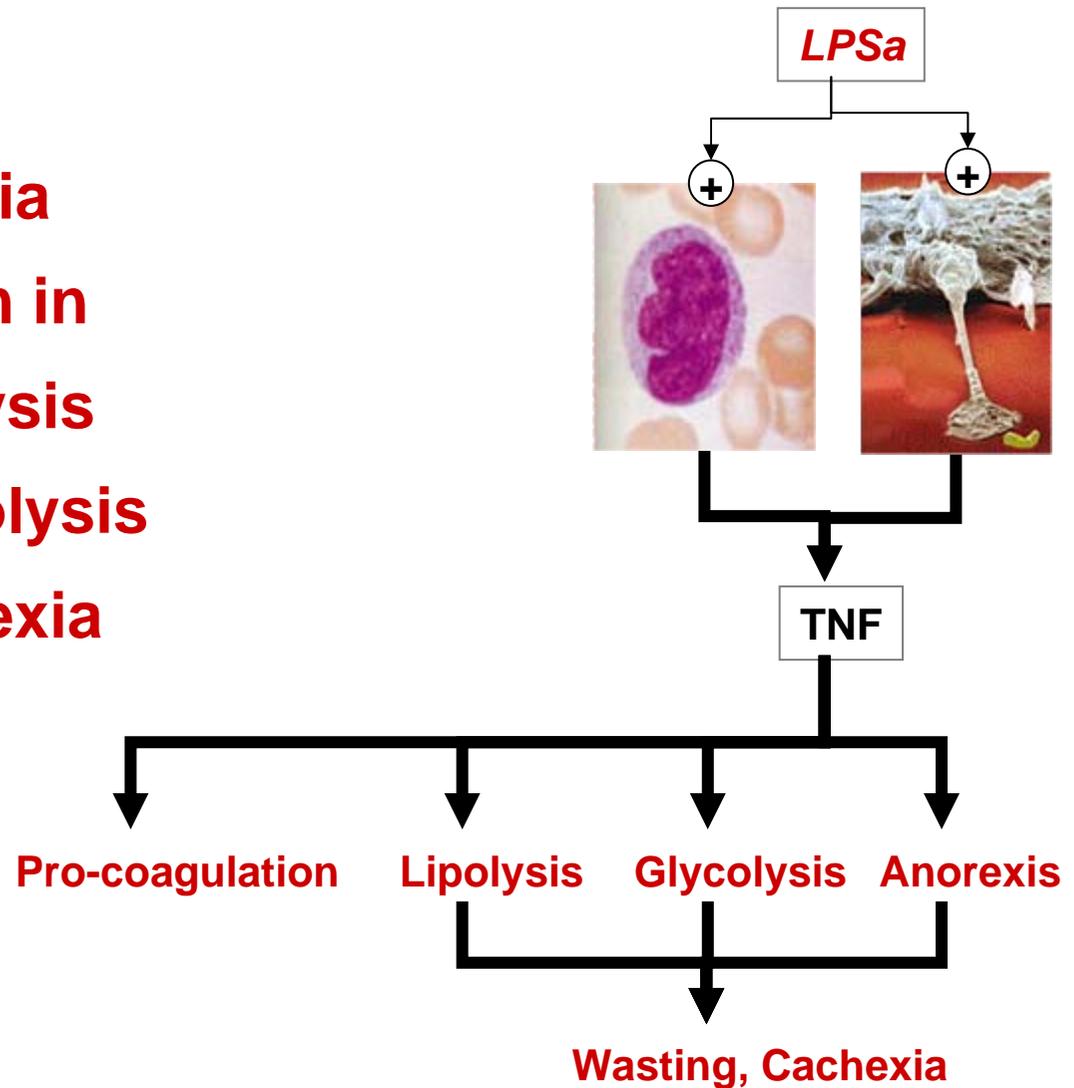


What is the role of TNF in cancer patients?



What is the role of TNF in cancer patients?

- **Responsible for wasting, cachexia**
 - **mechanism in**
 - lipolysis
 - glycolysis
 - anorexia

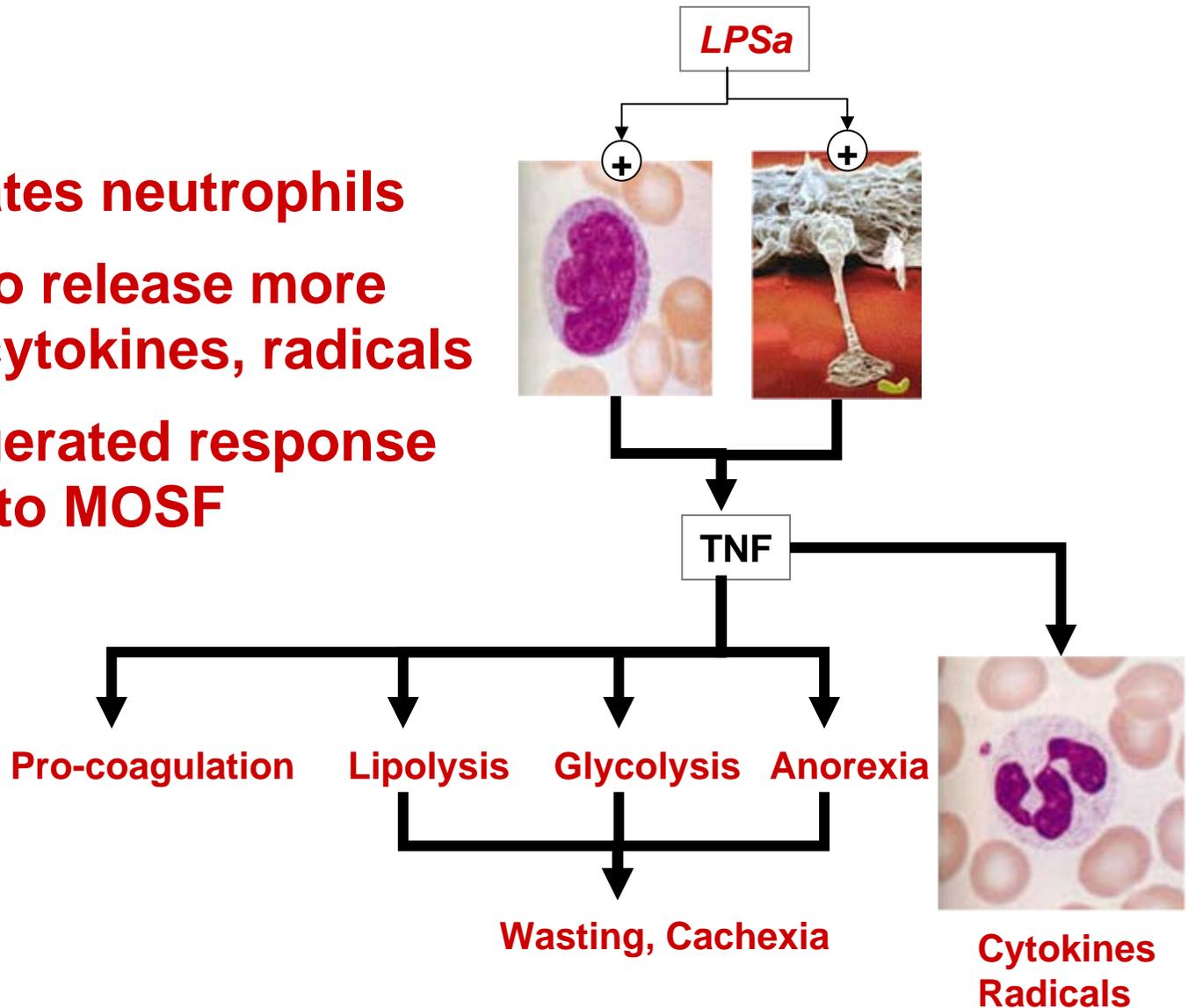


What role does TNF have on other cells?

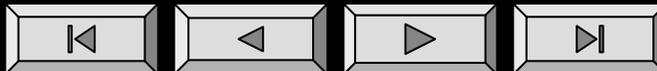


What role does TNF have on other cells?

- **Activates neutrophils**
 - to release more cytokines, radicals
- **Exaggerated response leads to MOSF**



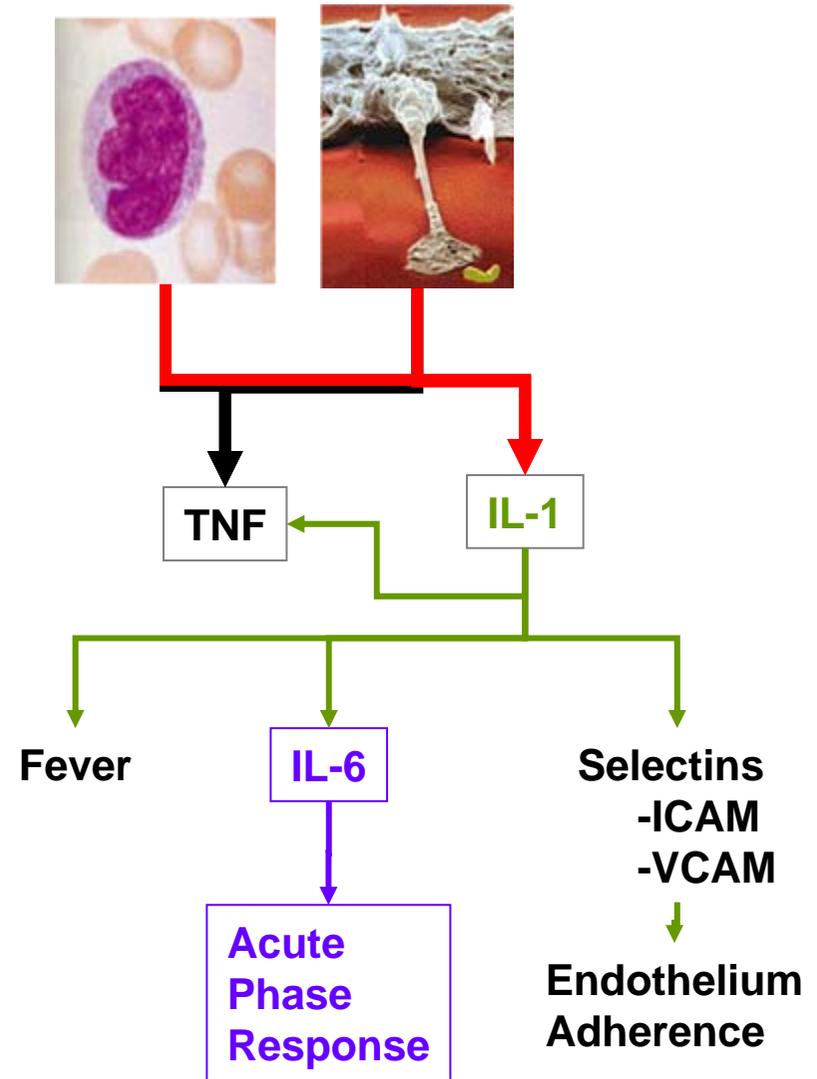
Where does IL-1 come from and what is the function?



Where does IL-1 come from and what is the function?

**Releases from
macrophages and
monocytes**

- 1. Potentiates TNF**
- 2. Fever**
- 3. Increase IL-6 (acute phase response)**
- 4. Increases endothelium adherence via selectins ICAM, VCAM**



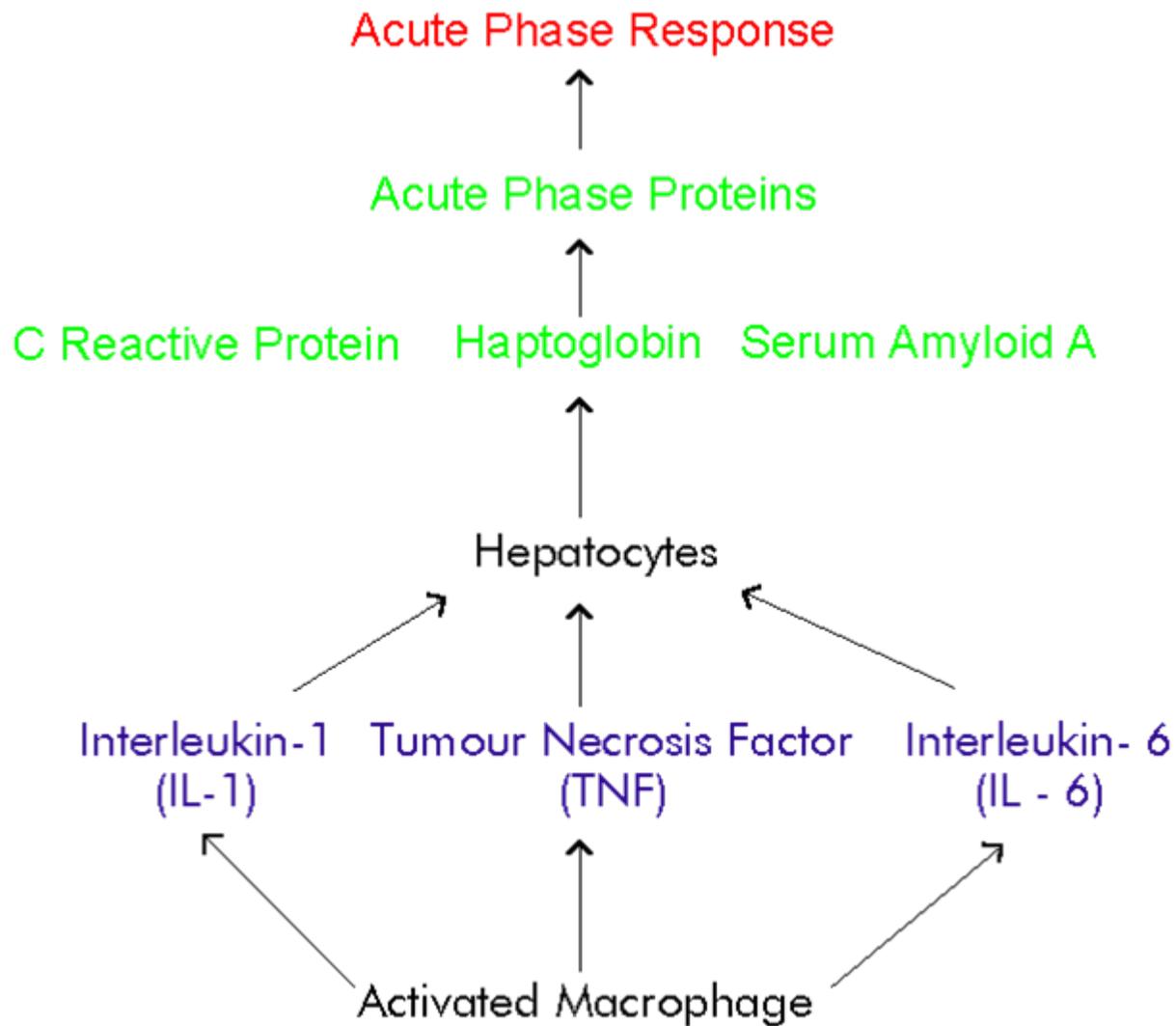
What is the acute phase response?



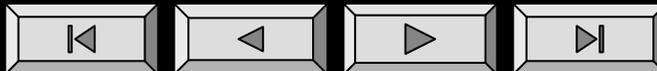
What is the acute phase response?

- Increase fever and catabolism by:
 - Increasing
 1. CRP (an opsonins)
 2. Amyloid
 3. Fibrinogen
 4. Ceruloplasmin
 5. Alpha-1 antitypsin
 6. Haptoglobin
 - Decreasing
 1. Albumin
 2. Fibronectin
 3. Transferrin

Acute Phase Illustration



What is the function of CXC chemokines (CXCP1, CXCR4, etc)?



What is the function of CXC chemokines (CXCP1, CXCR4, etc)?

- 1. Chemotactic**
 - 2. Angiogenesis**
 - 3. Wound healing**
- C stands for cysteine**