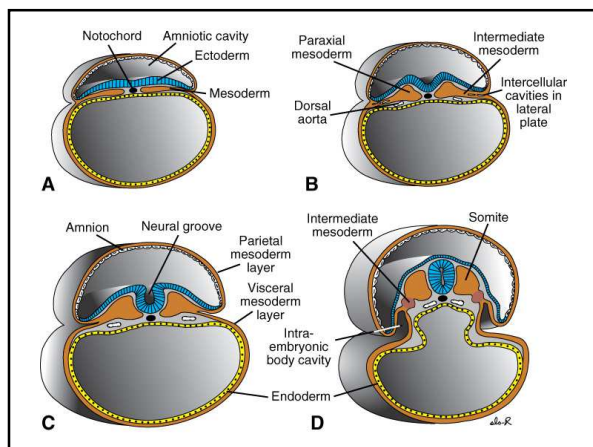
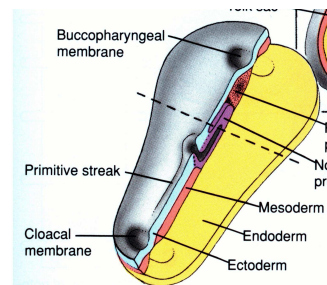


Desenvolvimento Gastrointestinal

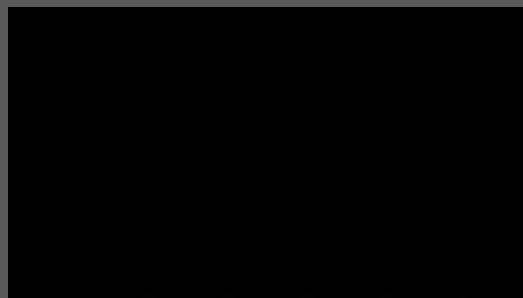


Intestino de humanos; 6-7X tamanho do corpo
 Instinto de ruminantes: 20x tamanho do corpo

As duas regiões onde o Ectoderma se funde com o Endoderma, excluindo o mesoderma, forma a *membrana bucofaringea* e a *cloaca*.
 Respectivamente, o começo e fim do tubo digestivo



Os dobramentos formam o tubo endodérmico

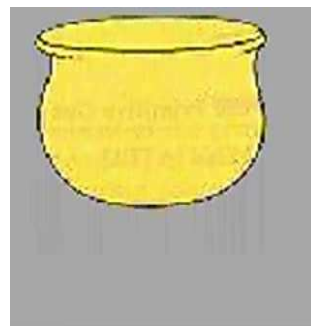
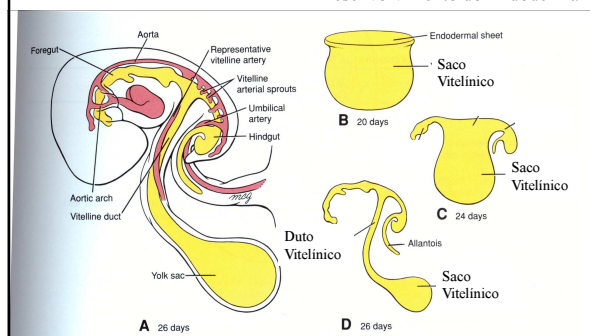


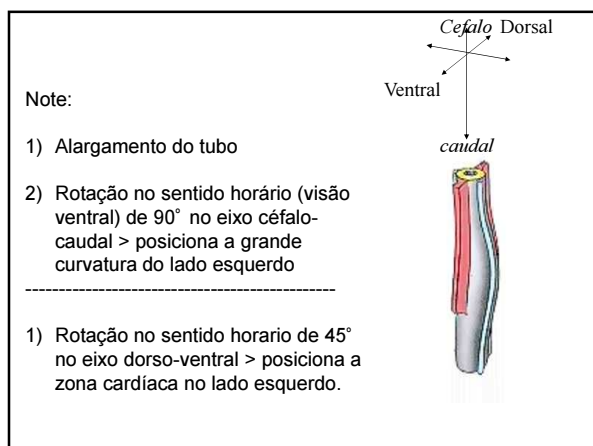
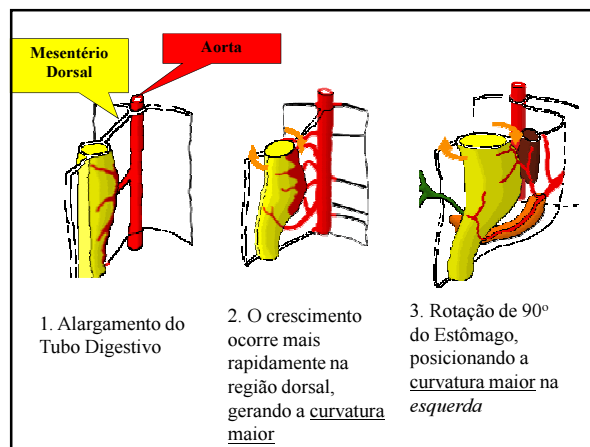
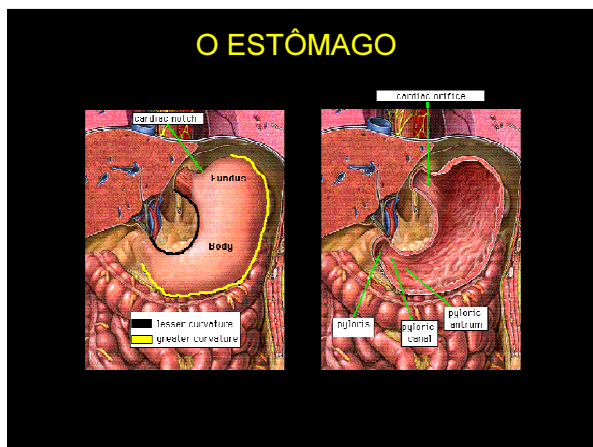
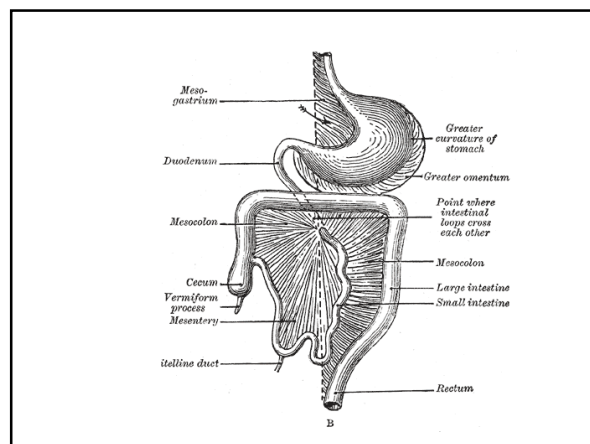
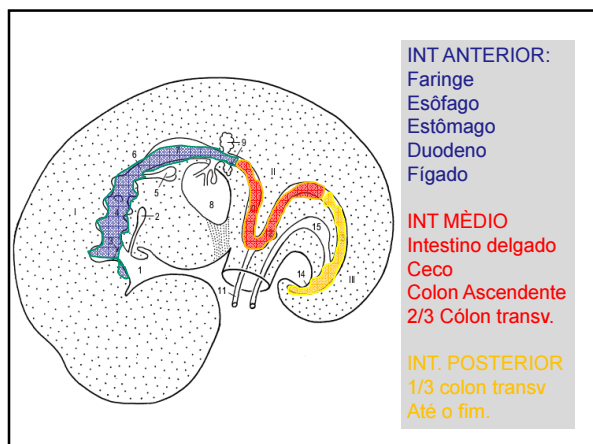
filme

O tubo digestivo embrionário é contínuo com o saco vitelínico, e é ENDODÉRMICO

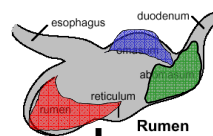
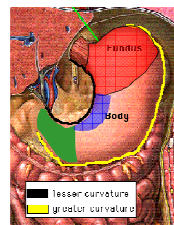
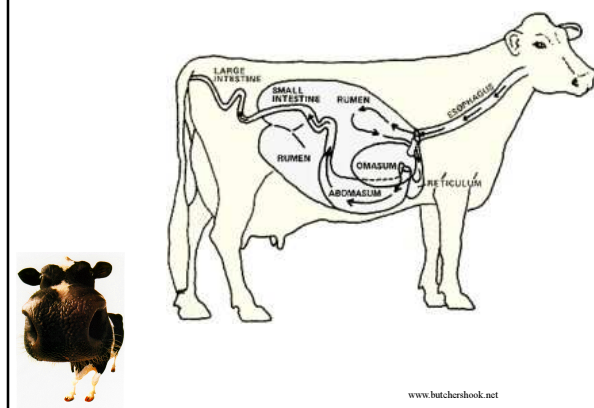
O embrião como um todo

Desenvolvimento do Endoderma

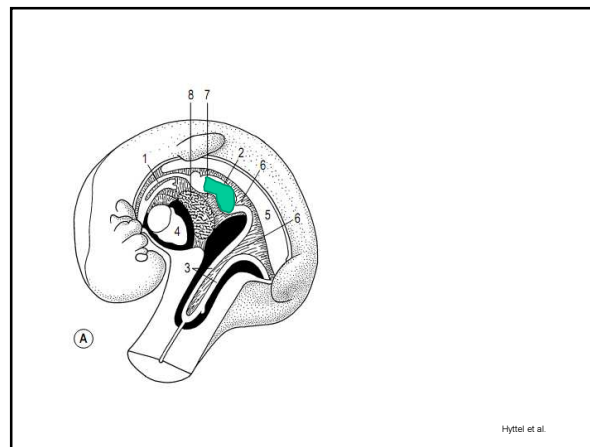
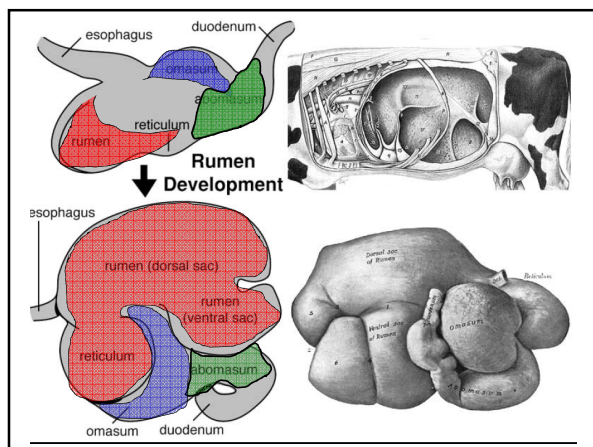




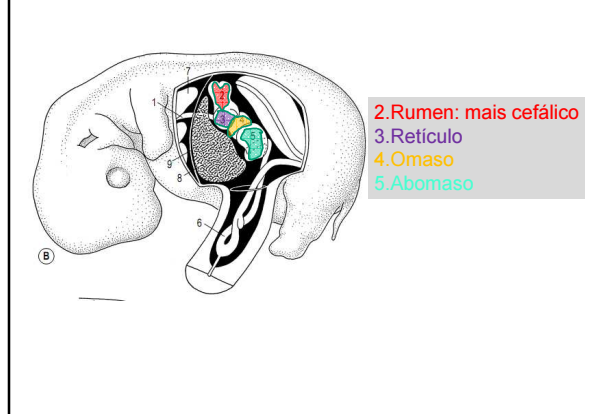
Em ruminantes é 4 vezes mais complicado (pelo menos)...



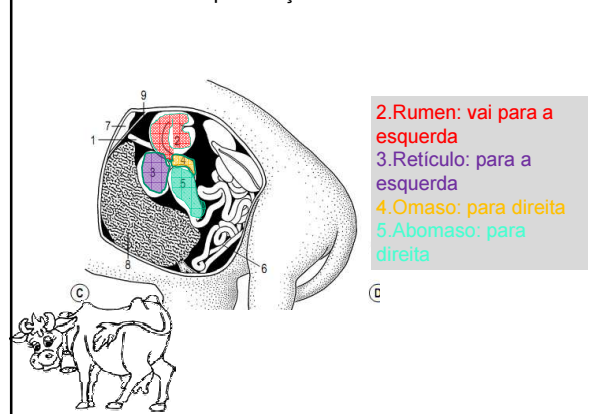
1. O **RUMEN** se desenvolve do **FUNDUS** (subdesenvolvido no recém-nato)
2. O **RETÍCULO** se forma da região **caudoventral** do rumen
3. O **OMASO** se desenvolve da **CURVATURA MENOR**
4. O **ABOMASO** vem da porção mais caudal do estômago (porção majoritária do recém-nato)

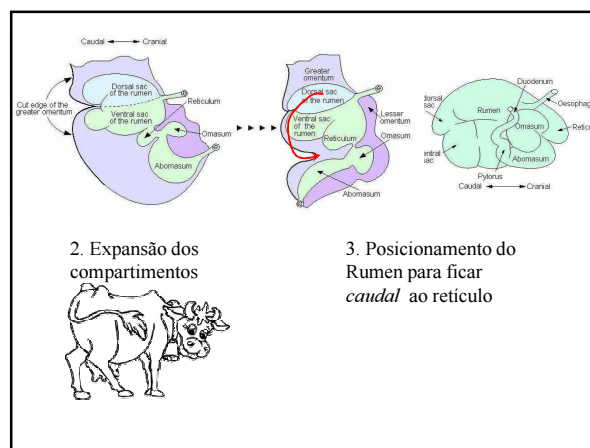
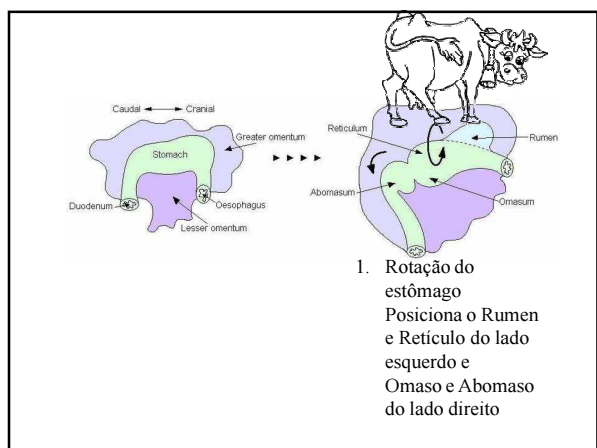
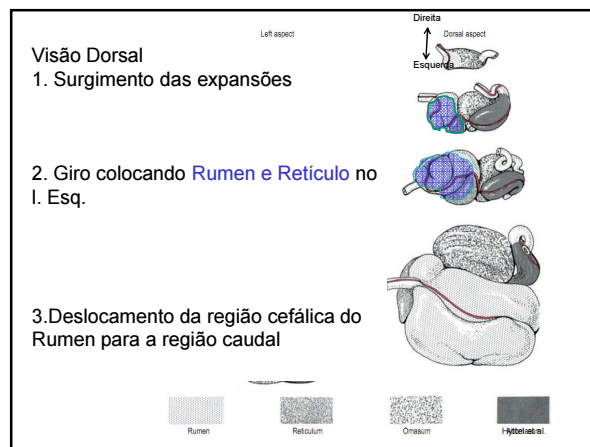
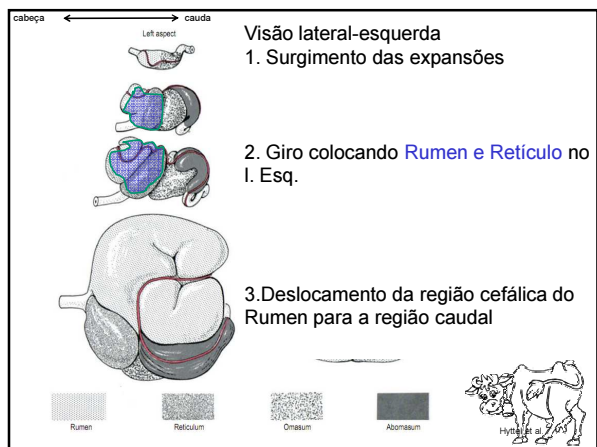
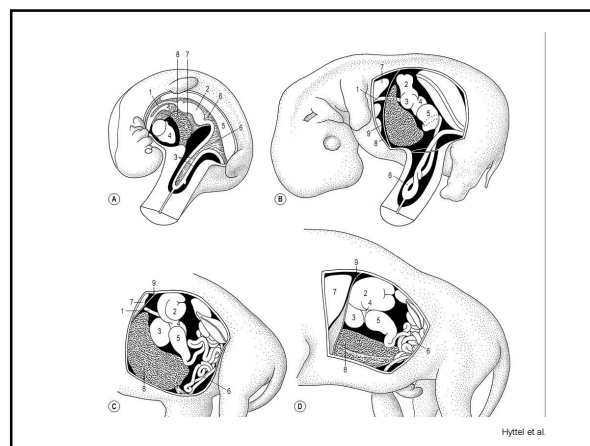
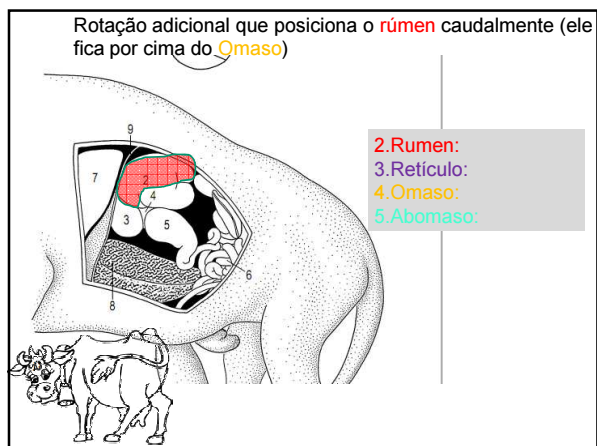


Embrião de 40 dias

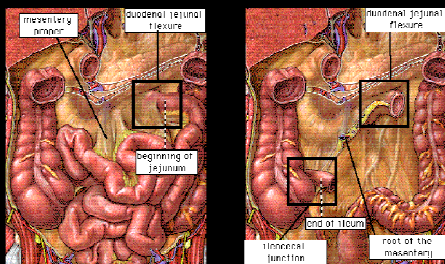


Após rotação de 90°

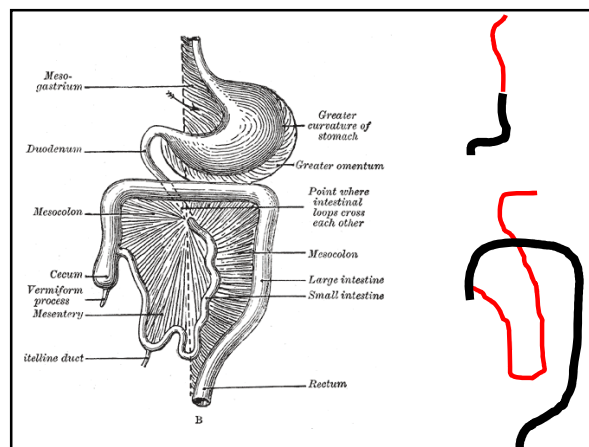
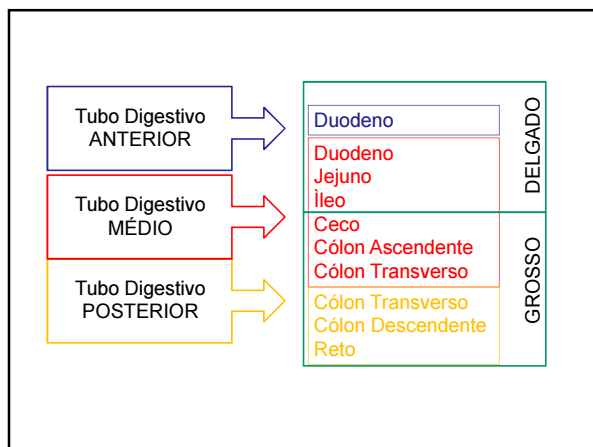
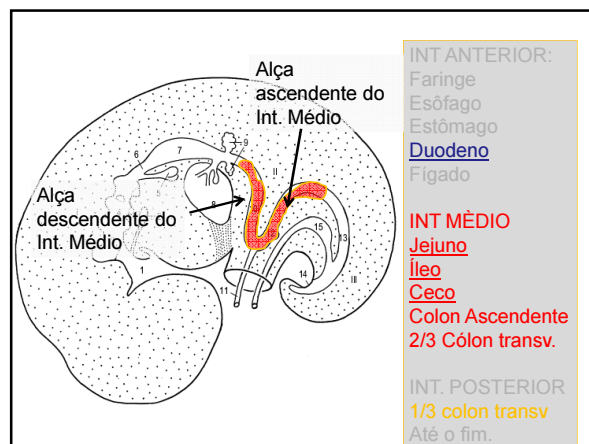




O INTESTINO



No homem: 6-7X tamanho do corpo
Em ruminantes: 20x tamanho do corpo



Existem 4 etapas básicas na formação do Intestino de **humanos**

1. Crescimento da ALÇA INTESTINAL
2. Herniação (=saída da cavidade abdominal) do laço intestinal para o cordão umbilical
3. Rotação em 90° anti-horário (visão ventral) do laço intestinal
4. Retração da alça intestinal concomitante com uma rotação em 180° anti-horário

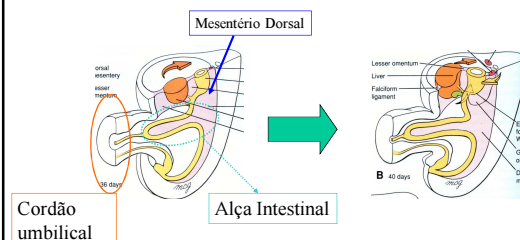


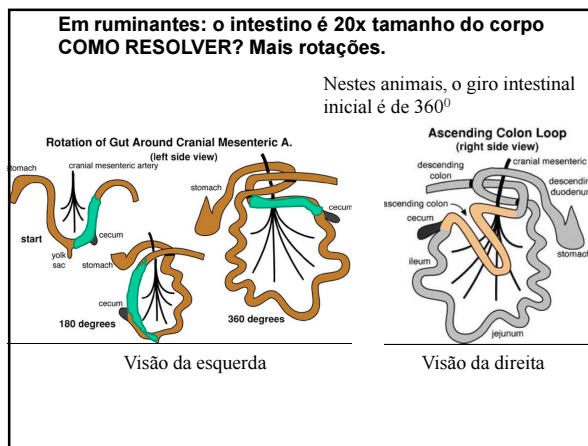
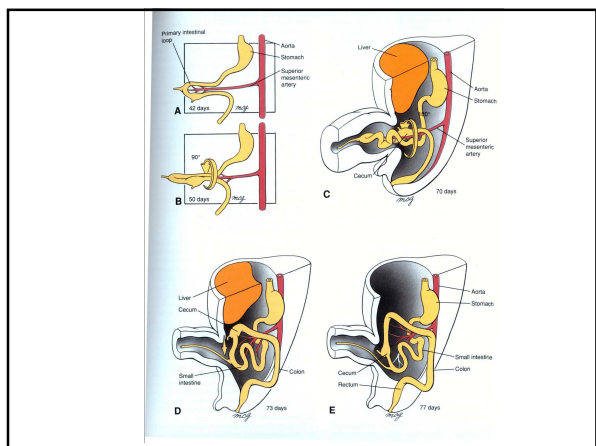
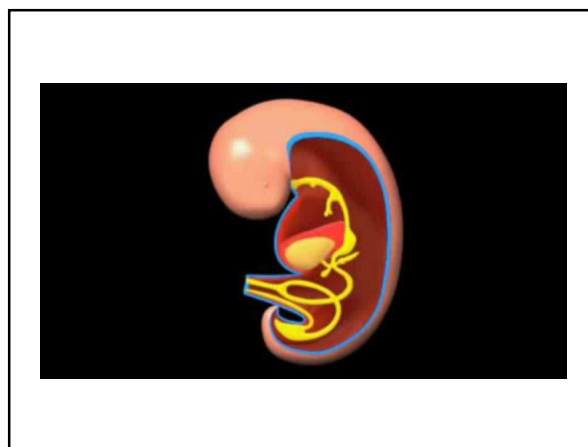
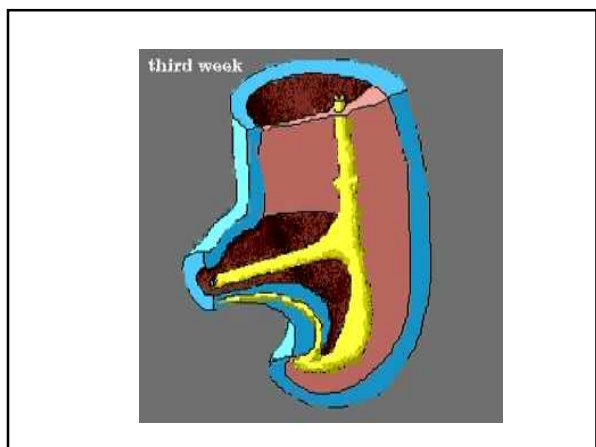
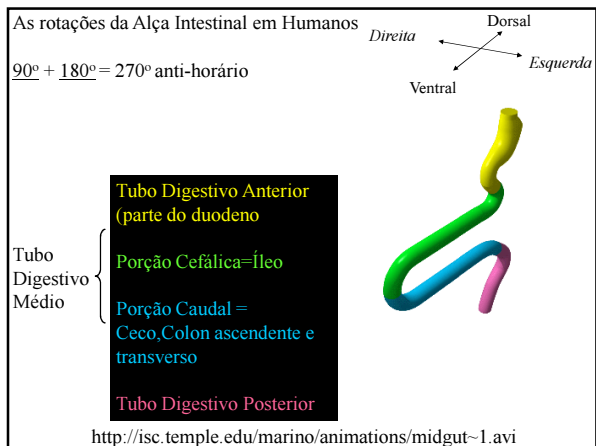
Dica 1:
Rotação total de 270° anti-horário

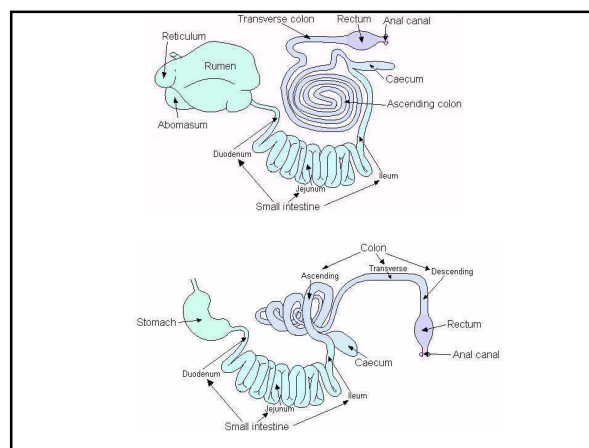
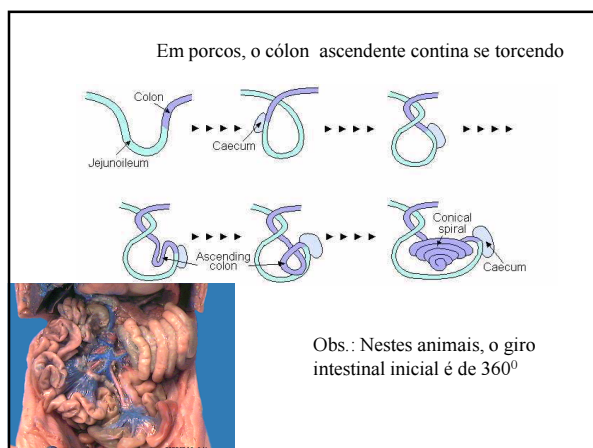
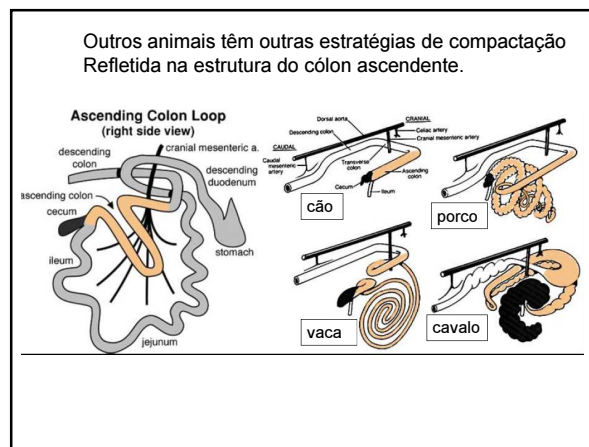
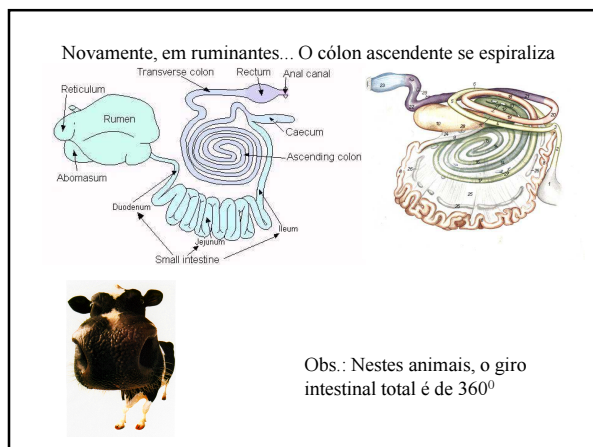
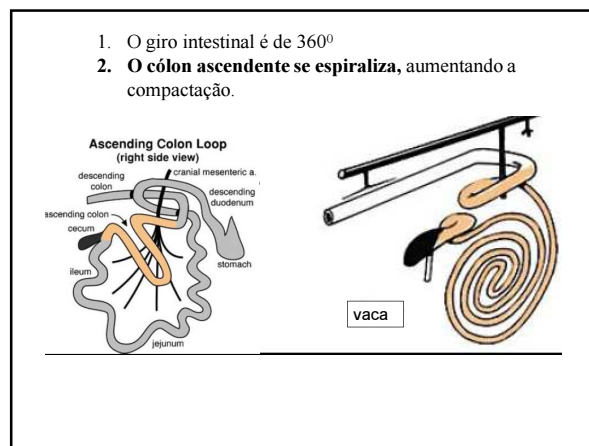
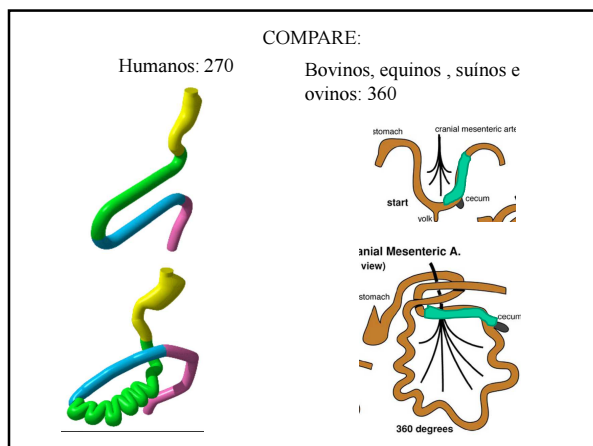
Dica 2: a direção do rotação pela visão ventral

HERNIAÇÃO DA ALÇA INTESTINAL

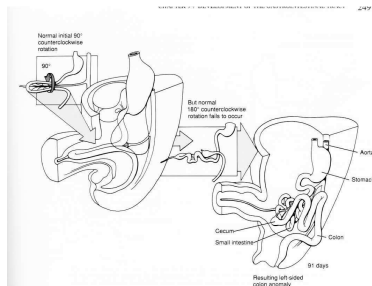
É a invasão do cordão umbilical pela alça intestinal em formação.







1. Crescimento da ALÇA INTESTINAL
2. Herniação (=saída da cavidade abdominal) do laço intestinal para o cordão umbilical
3. Rotação em 90° anti-horário do laço intestinal
4. Retração da alça intestinal concomitante com uma rotação em 180° anti-horário



1. Crescimento da ALÇA INTESTINAL
2. Herniação (=saída da cavidade abdominal) do laço intestinal para o cordão umbilical
3. Rotação em 90° anti-horário do laço intestinal
4. Retração da alça intestinal concomitante com uma rotação em 180° anti-horário

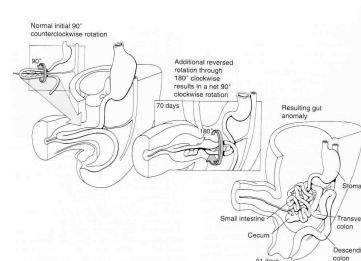
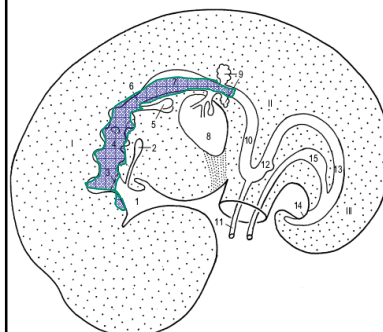
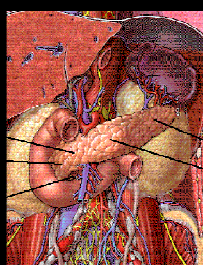


Fig. 9.18. Reversed rotation of the gut. The net rotation is 90 degrees clockwise, so the midgut viscera are brought to their normal locations in the abdominal cavity but the duodenum has rotated in the opposite sense to normal.

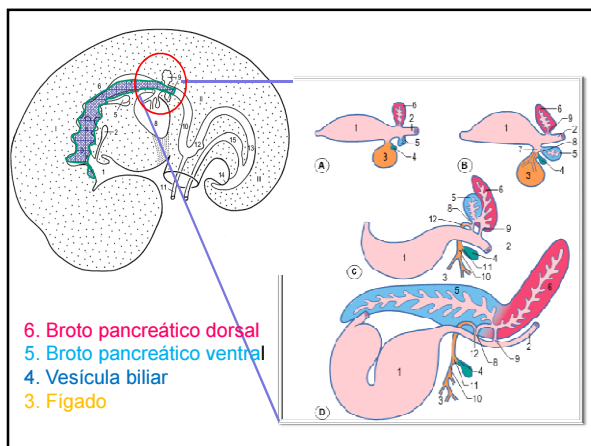
O PÂNCREAS



INT ANTERIOR:
Faringe
Esôfago
Estômago
Duodeno
Fígado e Pâncreas

INT MÉDIO
Intestino delgado
Ceco
Colon Ascendente
2/3 Colon transv.

INT. POSTERIOR
1/3 colon transv
Até o fim.

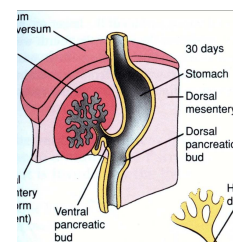


6. Broto pancreático dorsal
5. Broto pancreático ventral
4. Vesícula biliar
3. Fígado

O Fígado é formado pelo endoderma + mesênquima (origem mesodérmica)

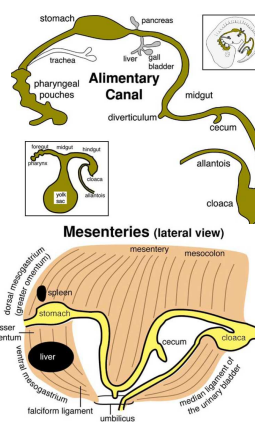
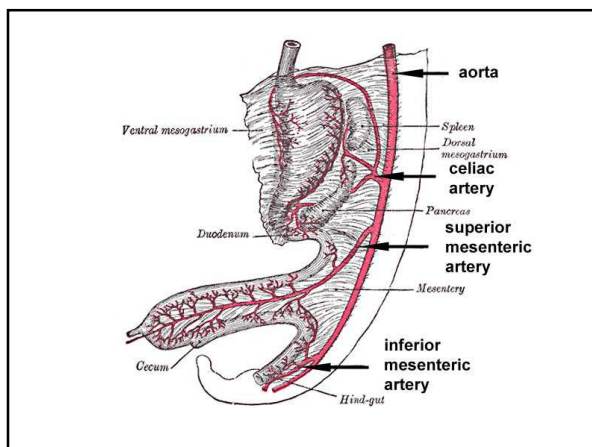
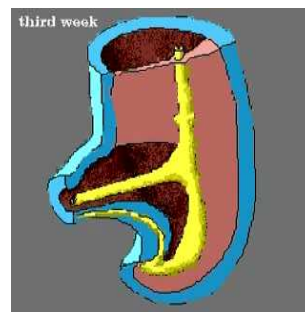
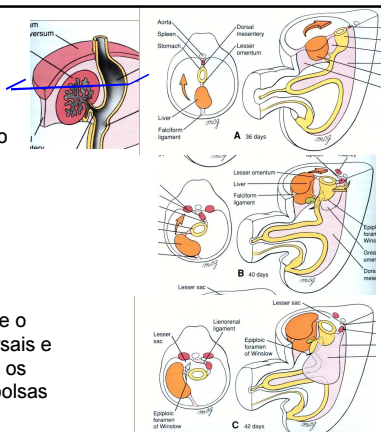
O *endoderma* forma o parênquima hepático (hepatócitos), os dutos hepáticos.

O *mesênquima* forma o estroma hepático e células hematopoiéticas.

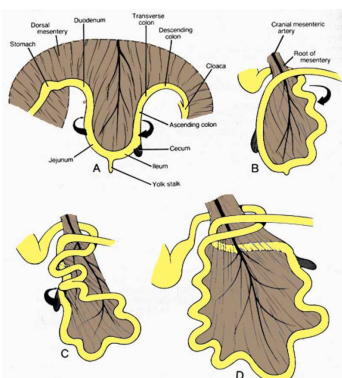


O sistema digestivo todo sofre uma rotação no sentido horário, posicionando o fígado no lado direito e o estômago no lado esquerdo

DICA: É este processo em que o mesentérios dorsais e ventrais formam os OMENTOS ou bolsas omentais.

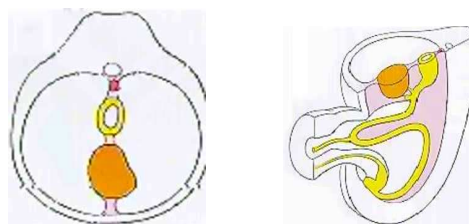


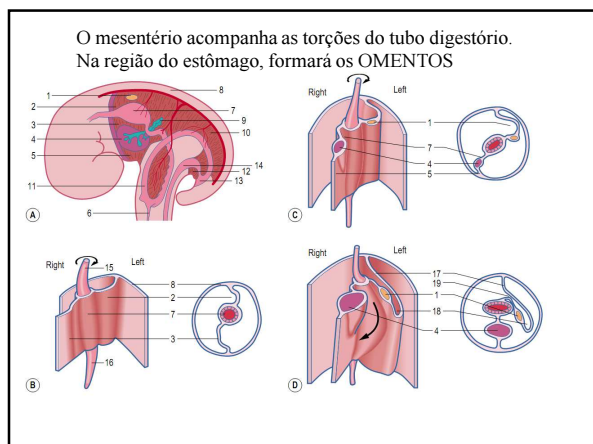
O mesentério acompanha as torções.



O mesentério acompanha as torções do tubo digestório.

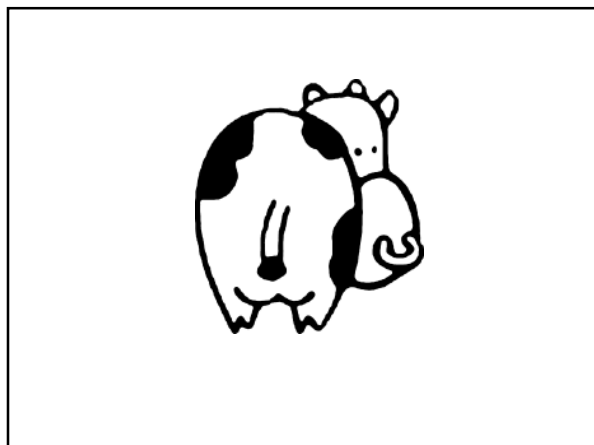
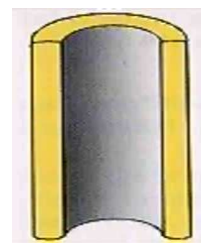
Na região do estômago, formará os OMENTOS



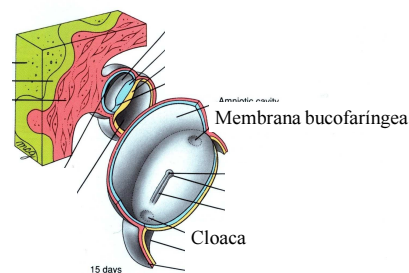


O lúmen do tubo digestivo passa por várias fases:

1. Oco, inicialmente
2. Proliferação celular obliterando o lúmen
3. Recanalização
4. Formação do Lúmen Definitivo

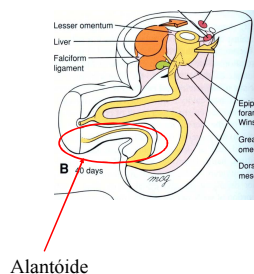


As duas regiões onde o Ectoderma se funde com o Endoderma, excluindo o mesoderma, forma a *membrana bucofaringea* e a *cloaca*. Respectivamente, o começo e fim do tubo digestivo

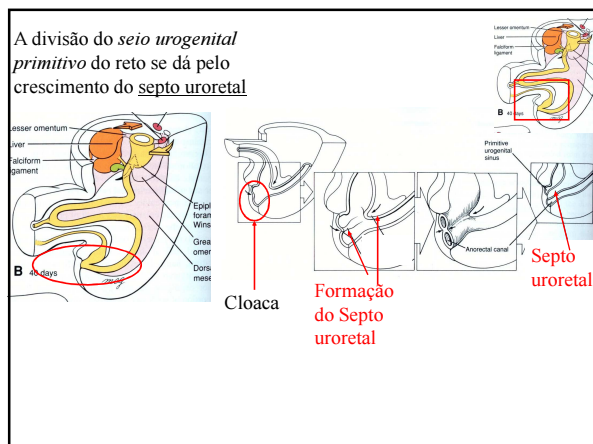


Na cloaca, o alantóide vestigial se estende para o cordão umbilical.

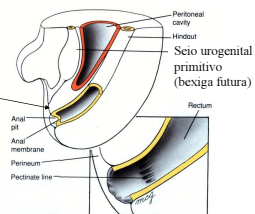
O alantóide irá formar o *seio urogenital primitivo*



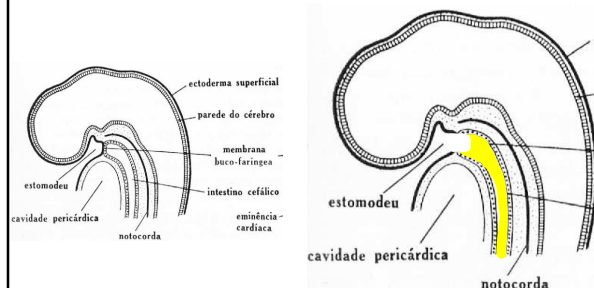
A divisão do *seio urogenital primitivo* do reto se dá pelo crescimento do *septo uroretal*



A fusão do septo uroretal com a membrana cloacal forma o Períneo

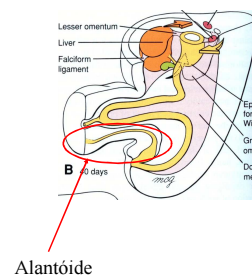


Durante o desenvolvimento da boca, a membrana bucofaringea some, dando origem a cavidade oral primitiva (ou ESTOMODEU).

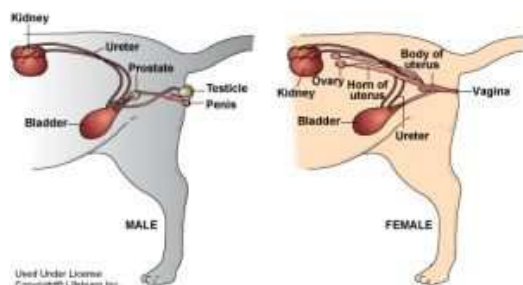


Na cloaca, o alantóide vestigial se estende para o cordão umbilical.

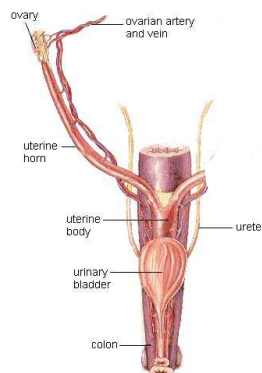
O alantóide irá formar o *seio urogenital primitivo*



Sistema Urogenital

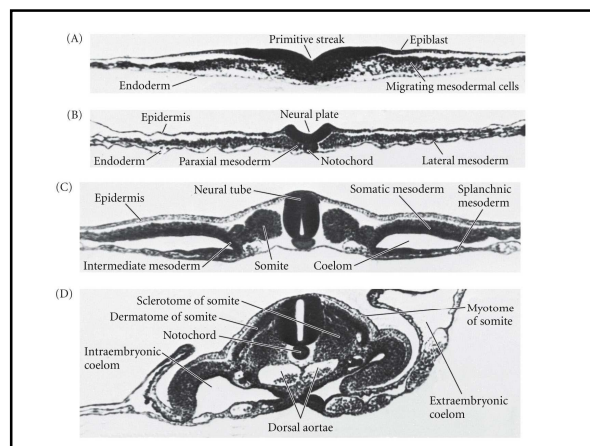
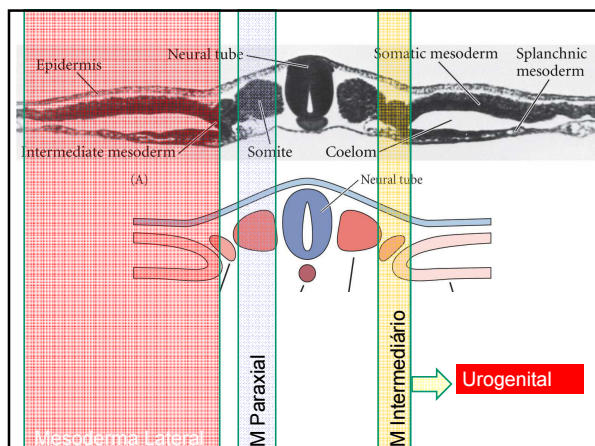


O Sistema Urogenital é um sistema de **DUTOS!**



Sistema Urinário:

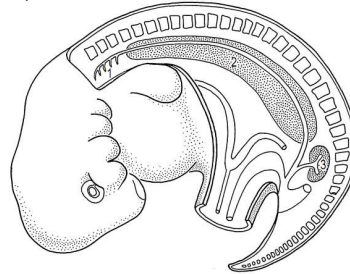
Rins
Ureter
Bexiga
Uretra



Durante a embriogênese são formados 3 sistemas urinários.

Na ordem antero-posterior:

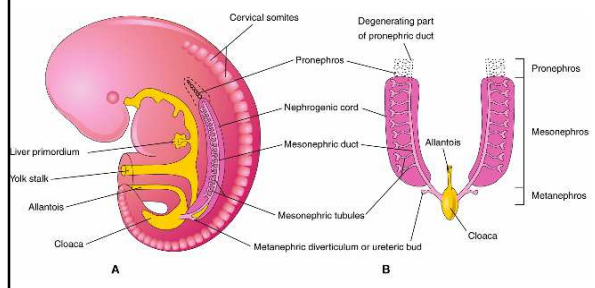
- Pronéfrs (degenera)
- Mesonéfrs (rim embrionário)
- Metanéfrs (rim definitivo em vertebrados terrestres)



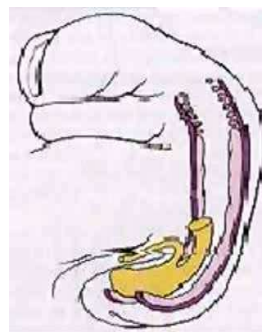
Durante a embriogênese são formados 3 sistemas urinários.

Na ordem antero-posterior:

- Pronéfrs (degenera)
- Mesonéfrs (rim embrionário)
- Metanéfrs (rim definitivo)



O sistema Urinário se forma antero-posteriormente.



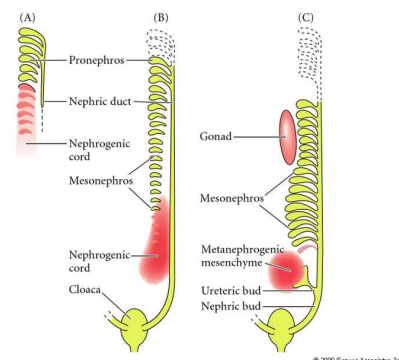
pronefro mesonefro metanefro

	Rim
Peixes	Mesonéfrico
Anfíbios	Mesonéfrico
Reptéis	Metanéfrico
Aves	Metanéfrico
Mamíferos	Metanéfrico

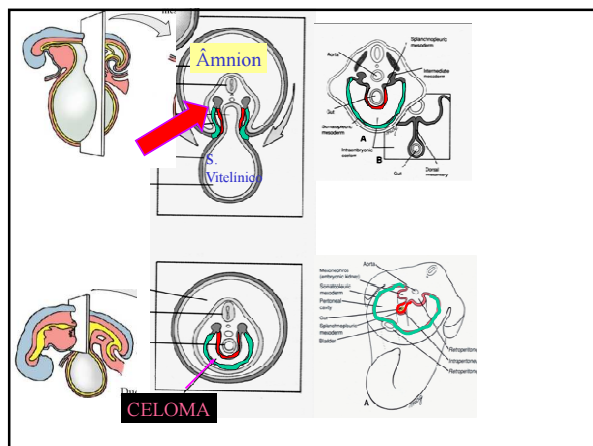
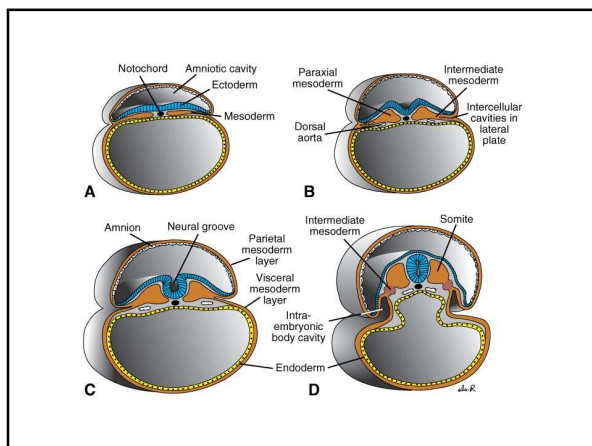
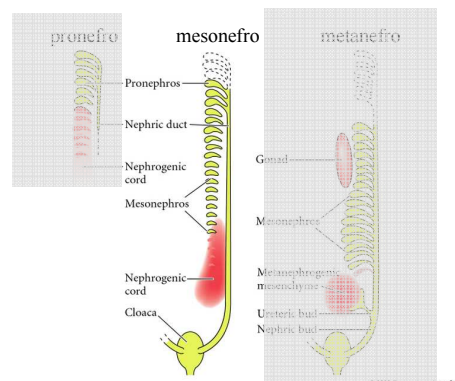
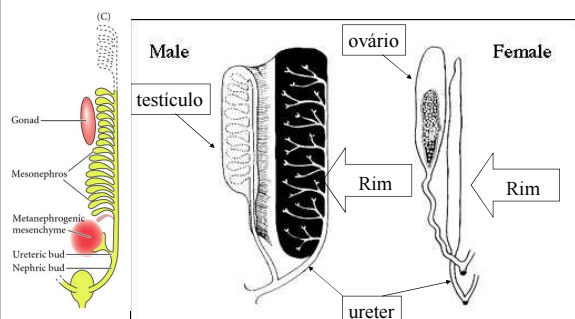
EM mamíferos:

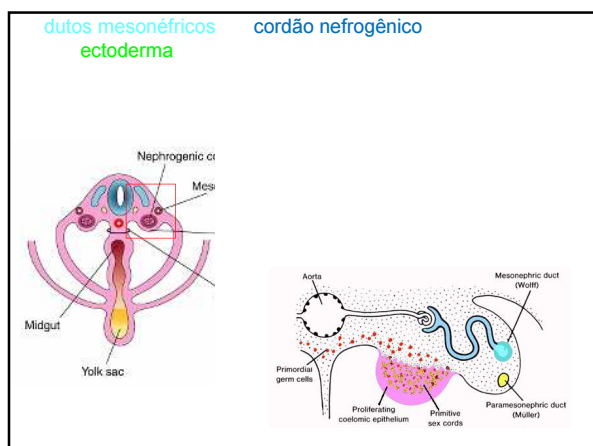
• Os PRONÉFROS são transitórios e degeneram.

• Os MESONÉFROS são os rins embrionários e contribuem com as gônadas masculinas como os dutos Wollfianos (dutos deferentes)



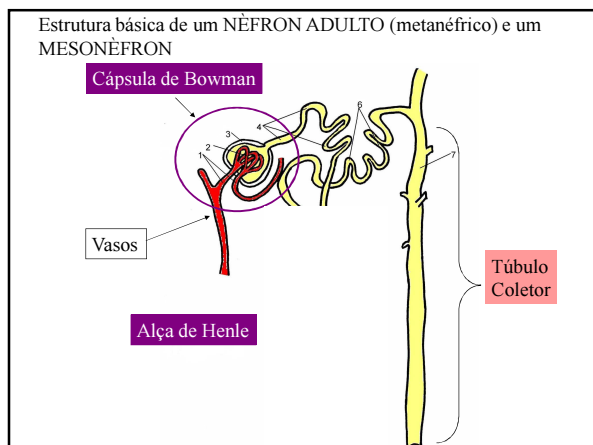
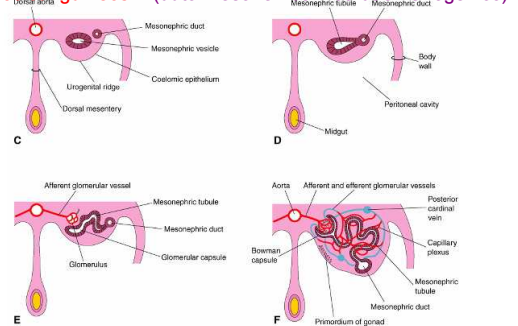
O urogenital primitivo de mamíferos se assemelha ao Sistema urogenital de peixes



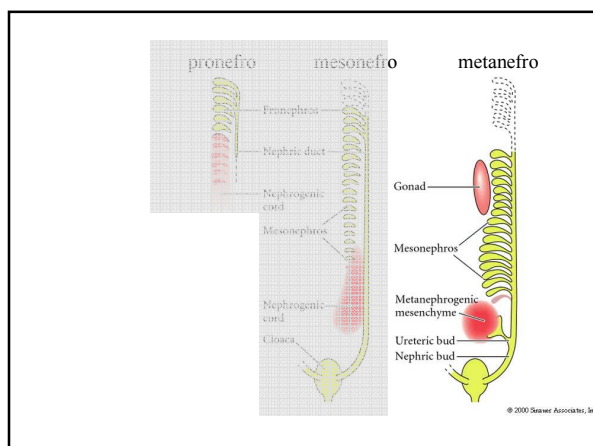
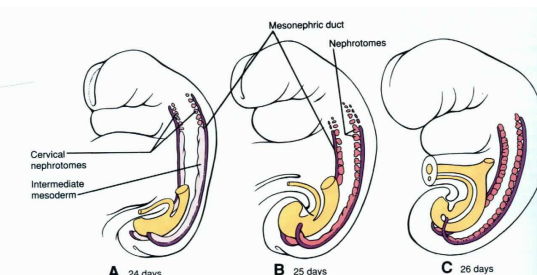


O estabelecimento do mesonefro envolve aproximação de 3 elementos:

Vasos sanguíneos + (duto mesonéfrico + cordão nefrogênico)



O rim embrionário é formado por nefrótomos que surgem do DUTO MESONÉFRICO. Mas a contribuição embrionária definitiva deste é de formar os DUTOS DEFERENTES em machos.



Nos mamíferos, os METANÉFROS se formam na porção mais caudal dos mesonéfricos e formarão os RINS DEFINITIVOS

