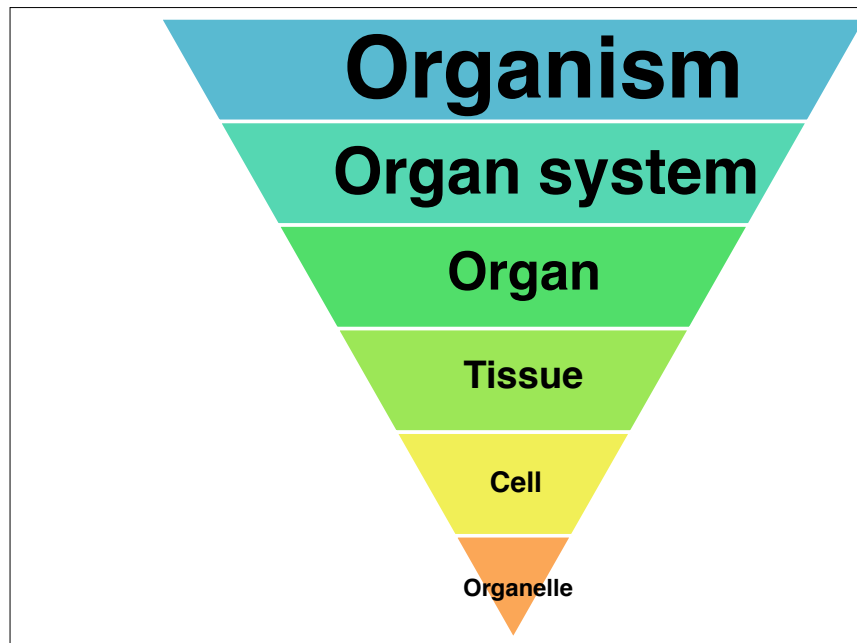


## Plano....

- Níveis de organização
- Planos corporais dos animais
- Cavidades corporais
- Protostómios vs Deuterostómios



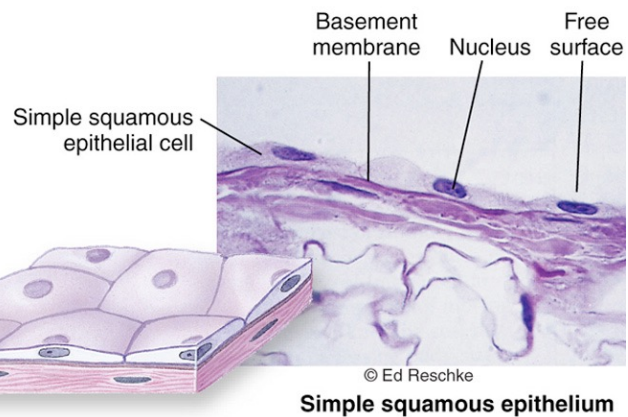
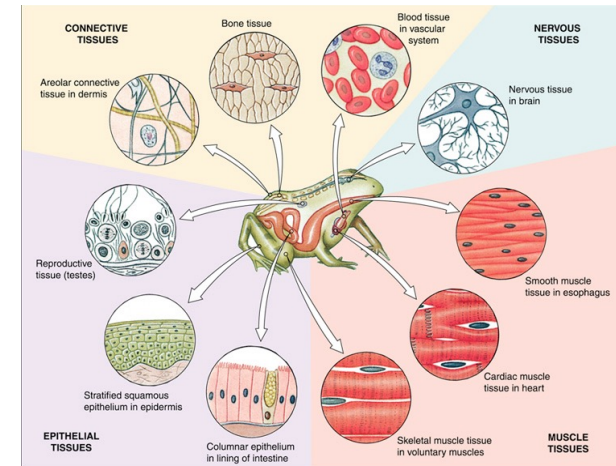
## Níveis de organização

<b>Protoplásmico</b>	todas as funções estão confinadas a uma única célula e é dentro da célula que os organelos são especializados em funções.
<b>Celular</b>	agregações de células funcionalmente diferenciadas, com divisão de trabalho evidente (reprodução, nutrição etc), mas sem organização tecidual.
<b>Tecidos</b>	padrões de camadas celulares, constituem grupos de células com funções definidas
<b>Orgãos</b>	agregação de tecidos em órgãos que contém mais do que um tipo de tecidos e têm uma função altamente especializada.
<b>Sistema</b>	agregação de órgãos para uma mesma função: circulação, respiração, digestão...

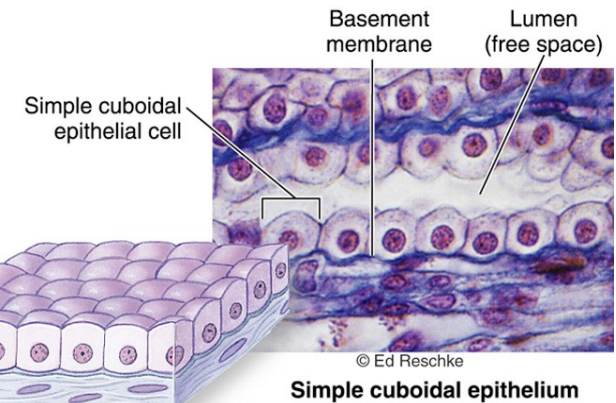
# Níveis de organização

<b>Protoplásmico</b>	Protozoários
<b>Celular</b>	formas coloniais de protozoários e esponjas
<b>Tecidos</b>	Esponjas e cnidários. Um bom exemplo é a rede nervosa dos cnidários em que as células nervosas e os seus processos formam uma estrutura tecidual com função e coordenação
<b>Orgãos</b>	Nível organizacional dos Platyhelminths, nos quais um número definido de órgãos (ocelos e trato digestivo)
<b>Sistema</b>	O sistema reprodutor dos Platyhelminths e o sistema digestivo dos Nematelminths são exemplos de sistemas dos animais mais simples

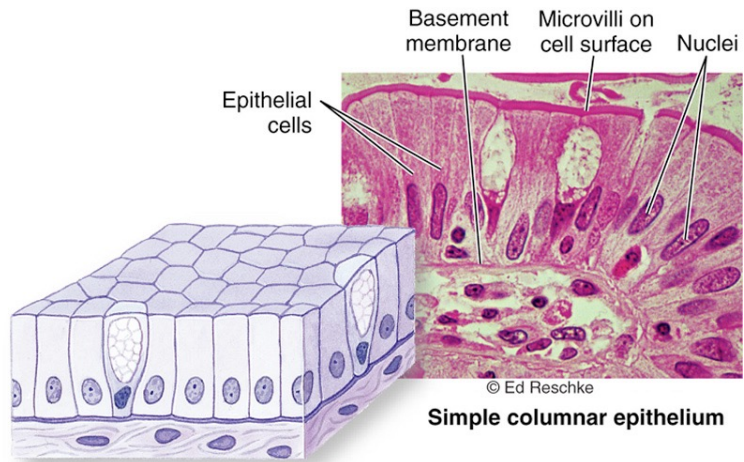
# Tipos de tecidos



A



B



C

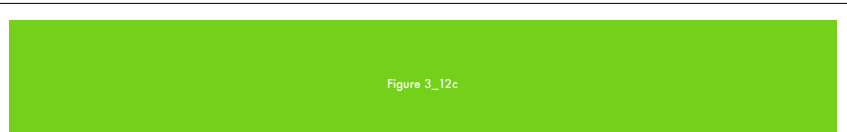
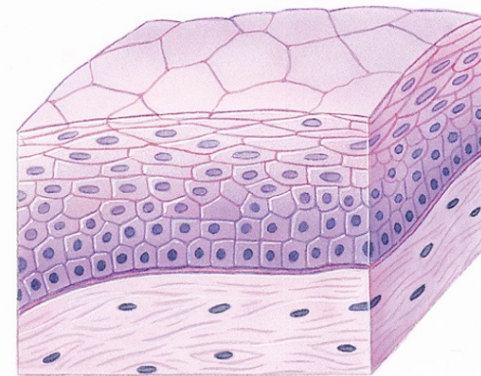
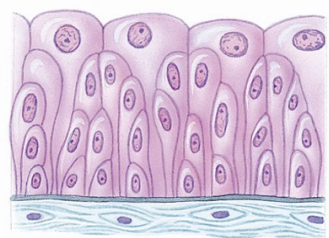


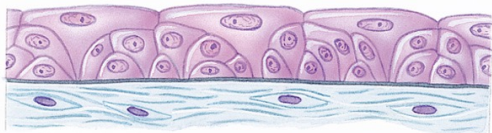
Figure 3\_12c



**Stratified squamous epithelium**



**Transitional epithelium—unstretched**



**Transitional epithelium—stretched**

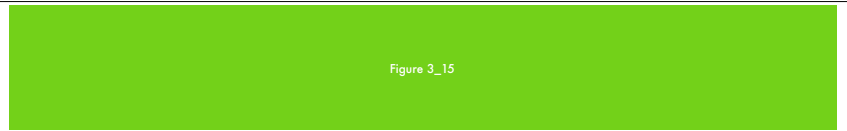
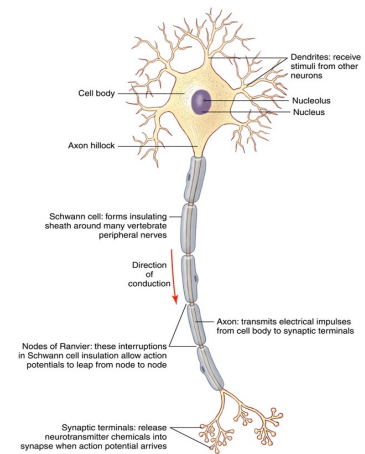
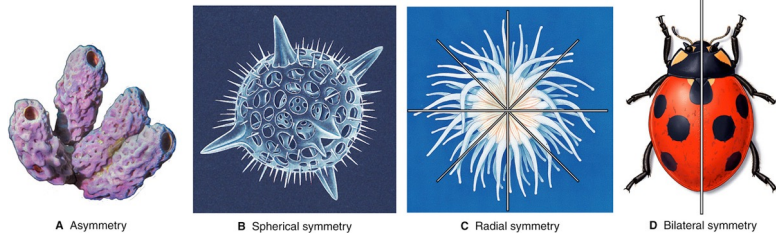


Figure 3\_15

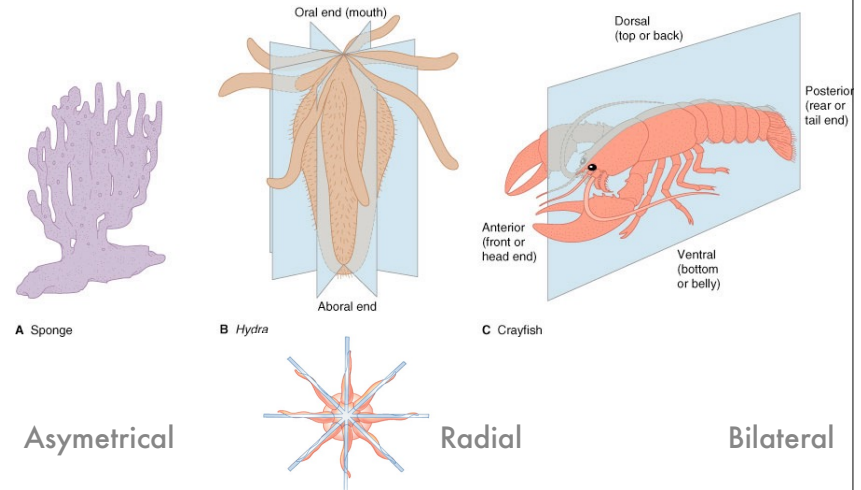


# Simetria



A Asymmetry      B Spherical symmetry      C Radial symmetry      D Bilateral symmetry

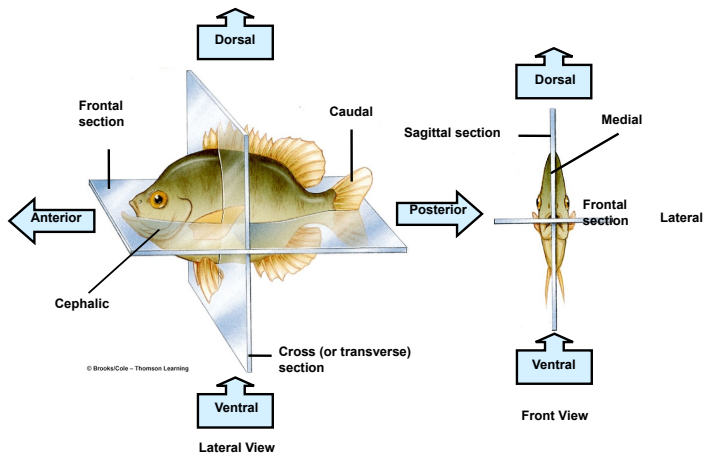
# Animal symmetry



A Sponge      B *Hydra*      C Crayfish

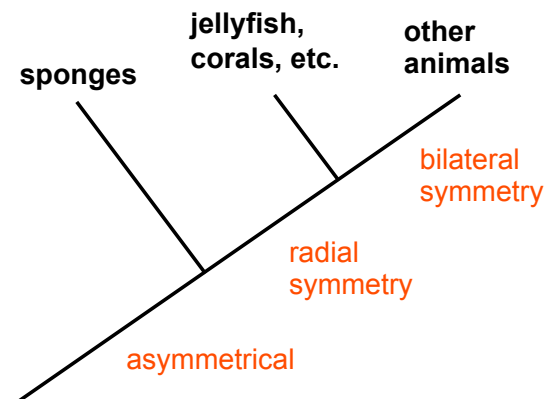
Asymmetrical      Radial      Bilateral

# Animal bilateral symmetry

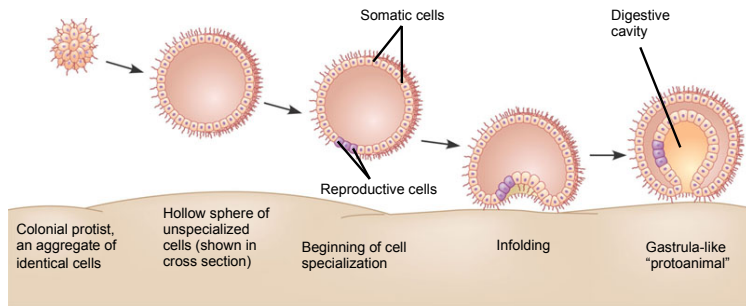


© Brooks/Cole - Thomson Learning

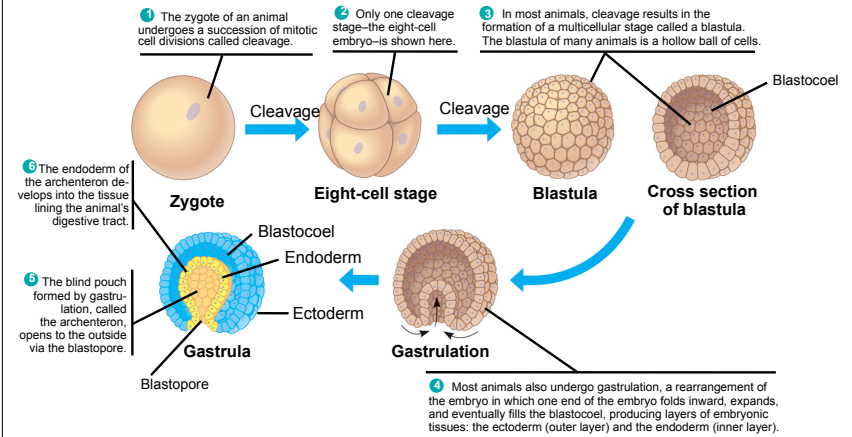
# Animal symmetry



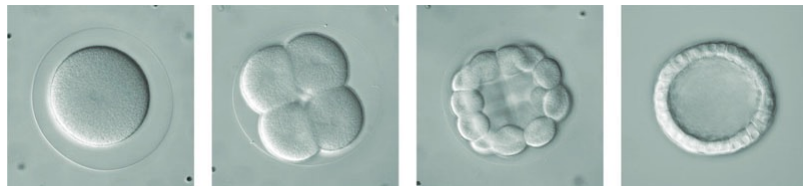
# Ancestral



# Desenvolvimento



# CLIVAGEM



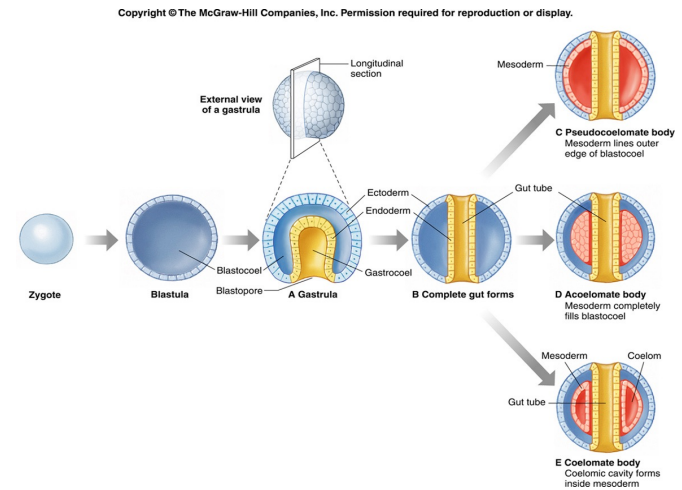
(a) **Fertilized egg.** Shown here is the zygote shortly before the first cleavage division, surrounded by the fertilization envelope. The nucleus is visible in the center.

(b) **Four-cell stage.** Remnants of the mitotic spindle can be seen between the two cells that have just completed the second cleavage division.

(c) **Morula.** After further cleavage divisions, the embryo is a multicellular ball that is still surrounded by the fertilization envelope. The blastocoel cavity has begun to form.

(d) **Blastula.** A single layer of cells surrounds a large blastocoel cavity. Although not visible here, the fertilization envelope is still present; the embryo will soon hatch from it and begin swimming.

# Sequência do desenvolvimento



# Embryonic development

- Animals classified on the basis of tissue development as they develop embryologically.
  - **Diploblastic**
    - Ectoderm
    - Endoderm
  - **Triploblastic**
    - Ectoderm
    - Endoderm
    - Mesoderm
- Ectoderm gives rise to
  - Body covering
  - Nervous system
- Endoderm gives rise to
  - Gut lining
  - Digestive organs
- Mesoderm gives rise to
  - Most other body structures

# Embryonic development

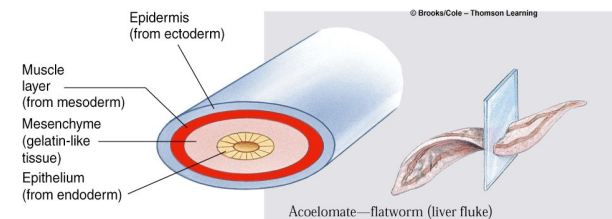
- **Sponges, lack these tissue layers.**
- **Cnidarians** (coral and jellyfish) have only **two of these layers.**
- **Flatworms** all have **three tissue layers.**
- **Vertebrates** including humans are **triploblastic.**

# Embryonic development

- Triploblasts classified according to type of coelom
  - Acoelomates
    - No coelom
  - Pseudocoelomates
    - Body cavity not completely surrounded by mesoderm
  - Coelomates
    - True coelom
      - Protostomia
      - Deuterostomia

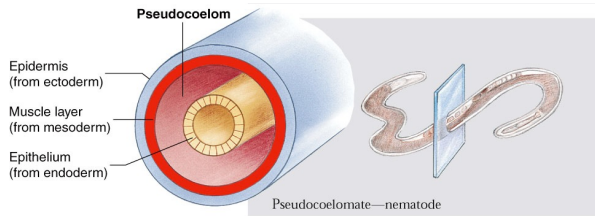
# Embryonic development

- Triploblasts classified according to type of coelom
  - Acoelomates
    - No coelom



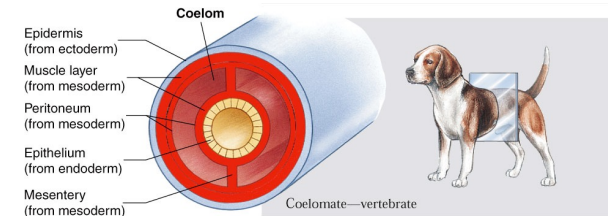
# Embryonic development

- Triploblasts classified according to type of coelom
  - Pseudocoelomates
    - Body cavity not completely surrounded by mesoderm

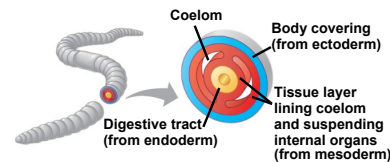


# Embryonic development

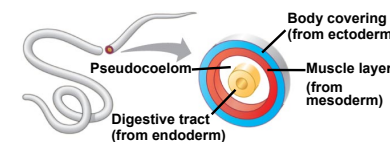
- Triploblasts classified according to type of coelom
  - Coelomates
    - True coelom
      - Protostomia
      - Deuterostomia



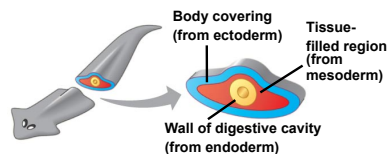
# Celoma



(a) Coelomate



(b) Pseudocoelomate

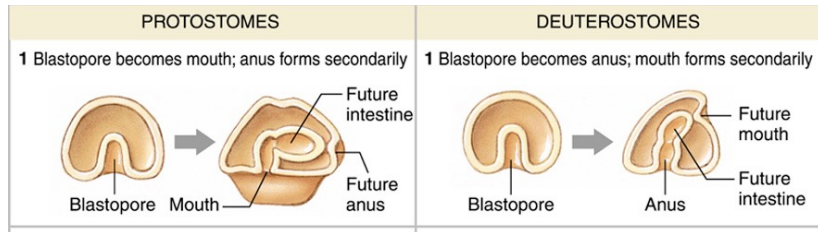


(c) Acoelomate

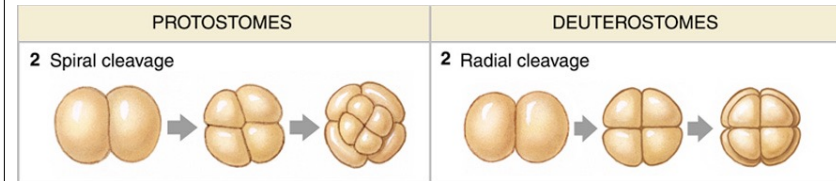
# Estruturas derivadas da camadas embriónicas

ECTODERM	MESODERM	ENDODERM
<ul style="list-style-type: none"> <li>• Epidermis of skin and its derivatives (including sweat glands, hair follicles)</li> <li>• Epithelial lining of mouth and rectum</li> <li>• Sense receptors in epidermis</li> <li>• Cornea and lens of eye</li> <li>• Nervous system</li> <li>• Adrenal medulla</li> <li>• Tooth enamel</li> <li>• Epithelium or pineal and pituitary glands</li> </ul>	<ul style="list-style-type: none"> <li>• Notochord</li> <li>• Skeletal system</li> <li>• Muscular system</li> <li>• Muscular layer of stomach, intestine, etc.</li> <li>• Excretory system</li> <li>• Circulatory and lymphatic systems</li> <li>• Reproductive system (except germ cells)</li> <li>• Dermis of skin</li> <li>• Lining of body cavity</li> <li>• Adrenal cortex</li> </ul>	<ul style="list-style-type: none"> <li>• Epithelial lining of digestive tract</li> <li>• Epithelial lining of respiratory system</li> <li>• Lining of urethra, urinary bladder, and reproductive system</li> <li>• Liver</li> <li>• Pancreas</li> <li>• Thymus</li> <li>• Thyroid and parathyroid glands</li> </ul>

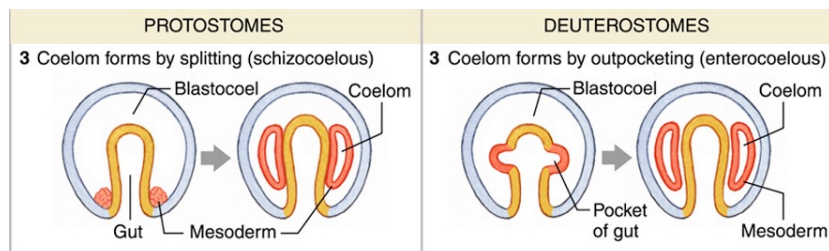
# Proto vs Deuterostomios



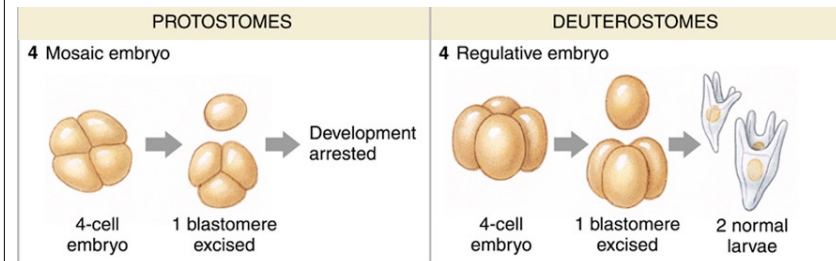
# Proto vs Deuterostomios



# Proto vs Deuterostomios

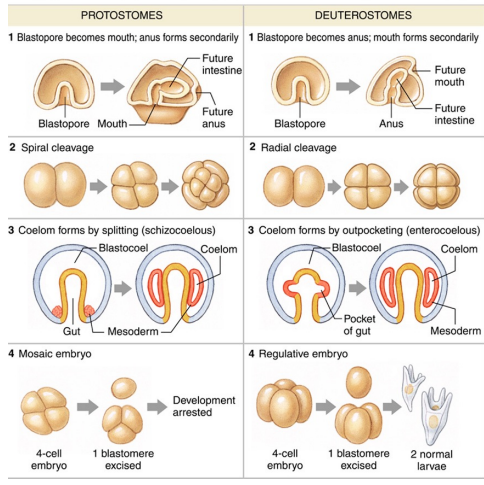


# Proto vs Deuterostomios

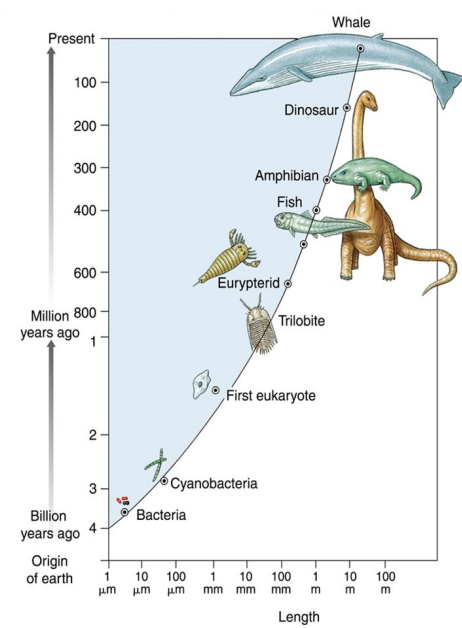
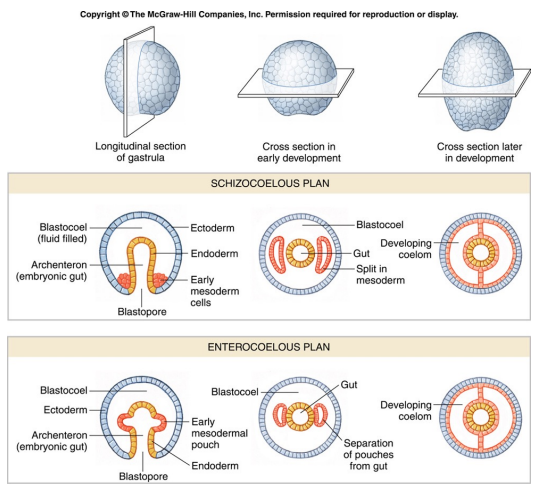




# Proto vs Deuterostomios



# Tipos de mesoderme



# Dimensão e complexidade corporal

