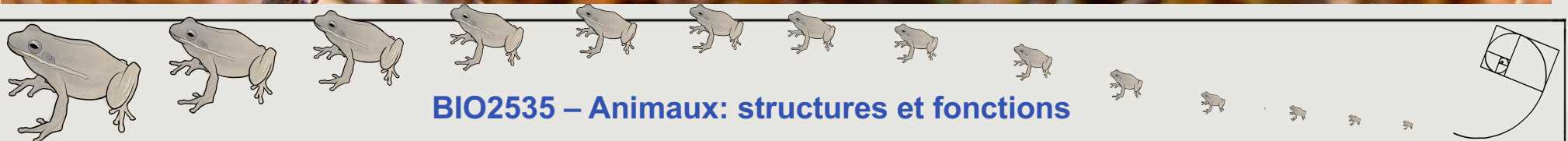


# BIO2535 – Animaux: Structures et fonctions



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BIO2535 – Animaux: structures et fonctions

# L'arbre de la vie

Multicellulaire

Unicellulaire (sans tissus)

Eukaryote

Prokaryote

Organique

Inorganique

Autotrophes

Ingestion

Absorption

Plantae

Animalia

Fungi

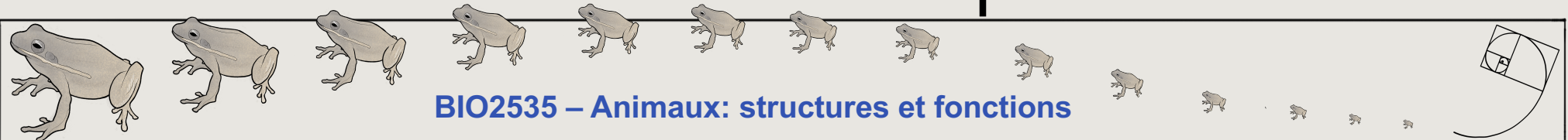
Protista

Domaine

Domaine

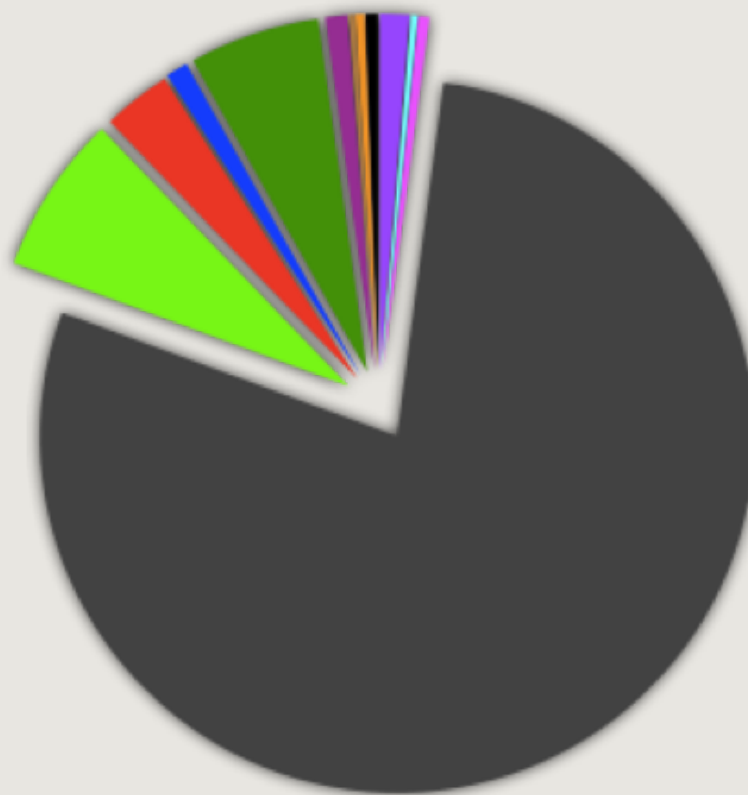
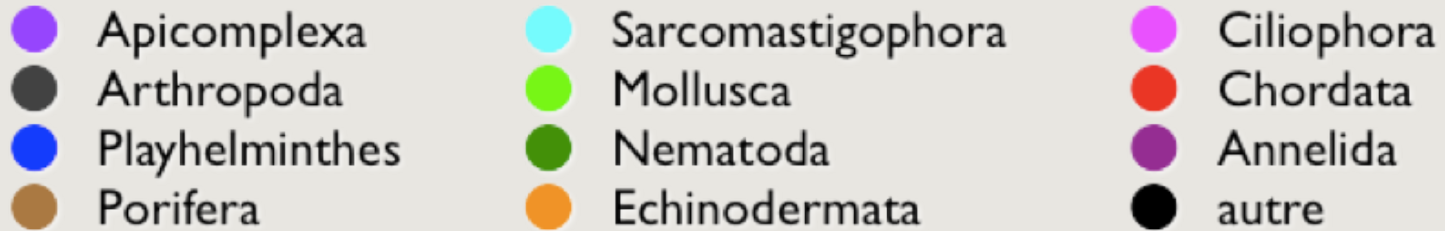
Bacteria

Archaea

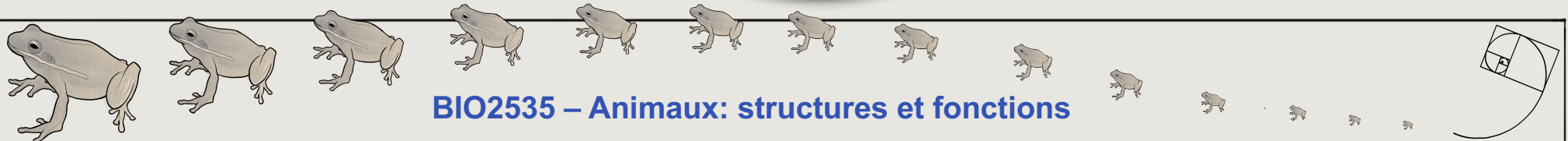




# Nombre d'espèces

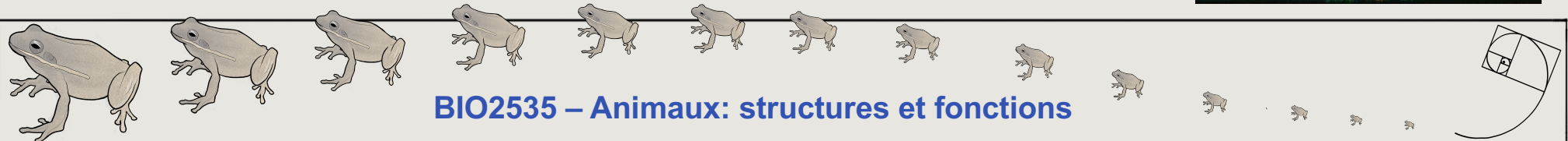


Approx.  
1 500 000 !!

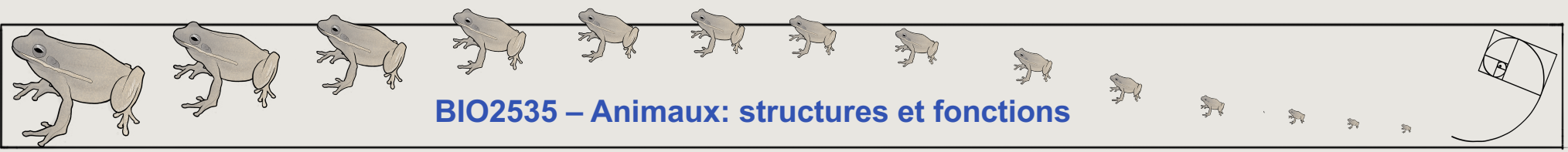
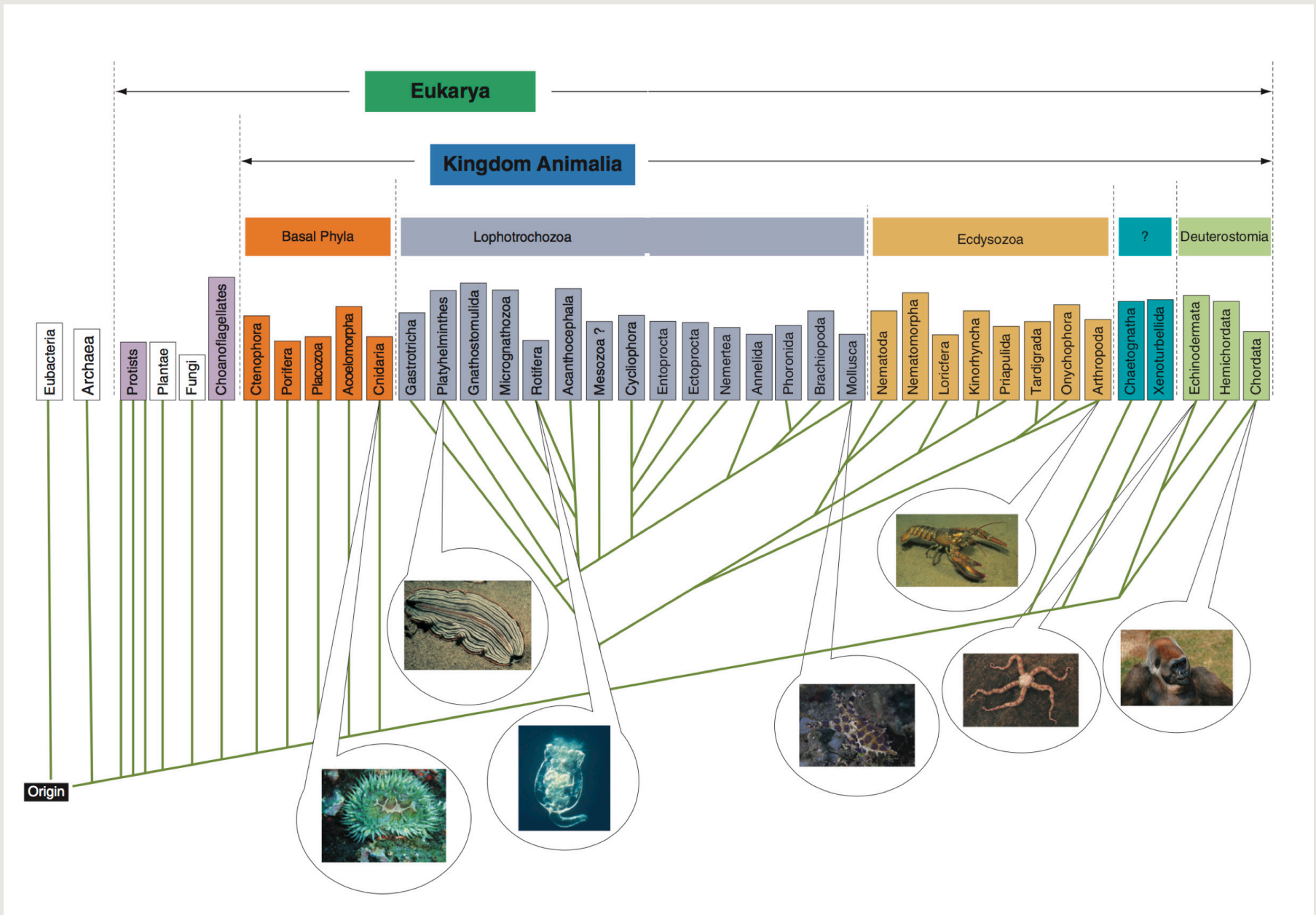


# La diversité animale

- **Loup (*Canis lupus*)**
  - Phylum Chordata
- **Étoile de mer**
  - Phylum Echinodermata
- **Moustique**
  - Phylum Arthropoda
- **Nautilus**
  - Phylum Mollusca
- **Ver Polychète**
  - Phylum Annelida
- **Corail**
  - Phylum Cnidaria
- **Éponge**
  - Phylum Porifera

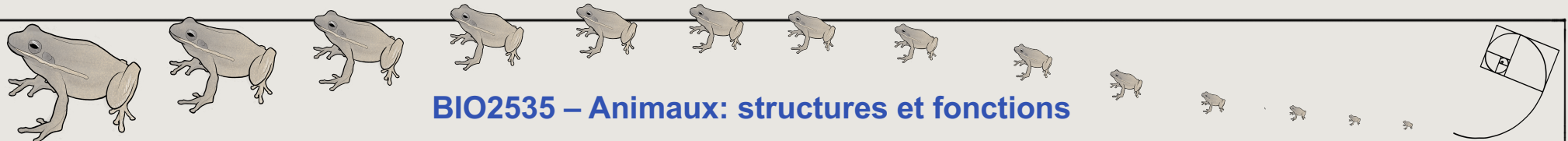






# Milieu marin

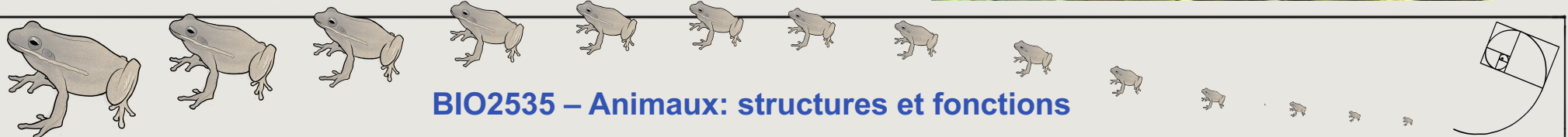
- Étendu
- Ancien
- Dense
- Température tamponnée
- Pression osmotique neutre (isotonique)
  - Vertébrés sont généralement hypotoniques à l'eau
- Oxygène rare





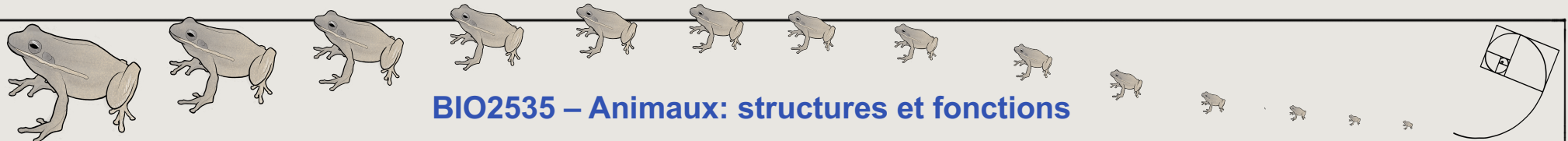
# Milieu dulcicole

- Plus récent
- Stress osmotique
  - Animaux sont hypertoniques à l'eau
- Température peu tamponnée
- Microhabitats
- Oxygène rare



# Milieu terrestre

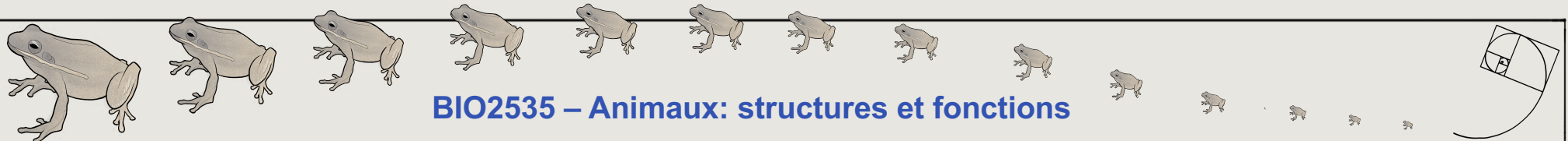
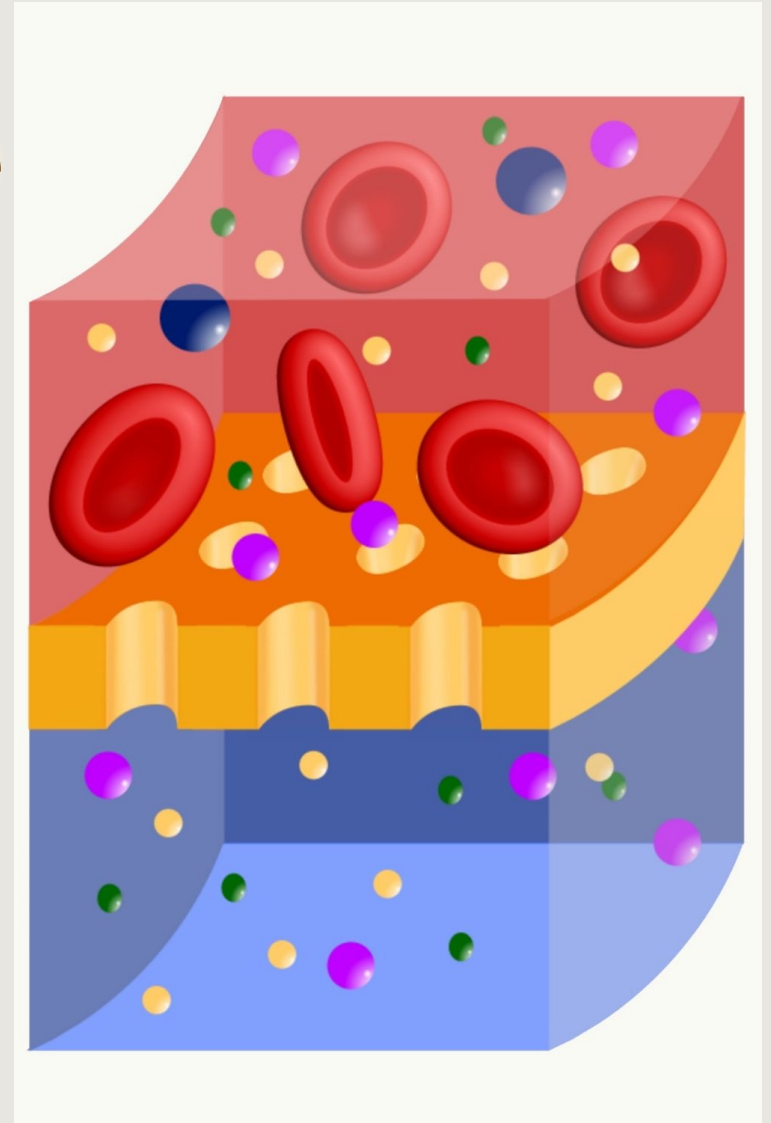
- **Sec**
- **Oxygène abondant**
- **Gravité plus perceptible**
- **Température peu tamponnée**





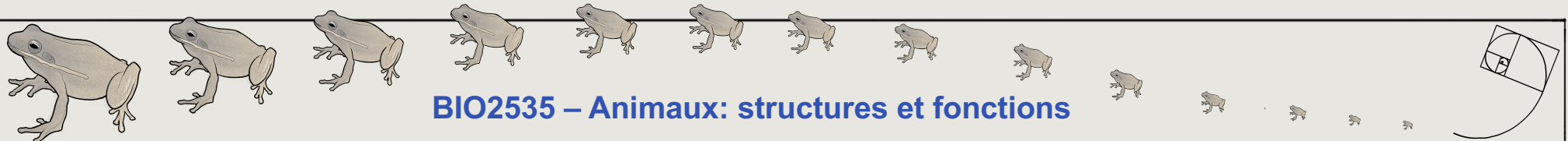
# Diffusion

- **Processus à la base des échanges avec l'environnement**
  - **Gas**
  - **Éléments nutritifs**
  - **Déchets métaboliques**



# Loi de Fick

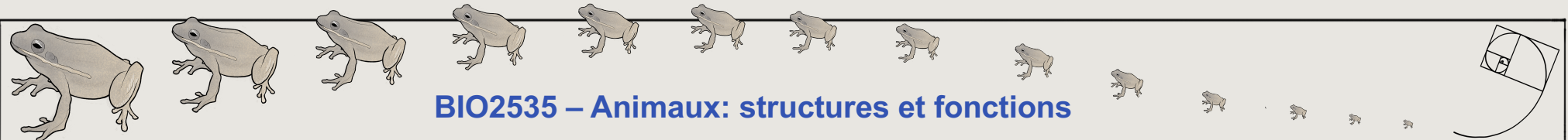
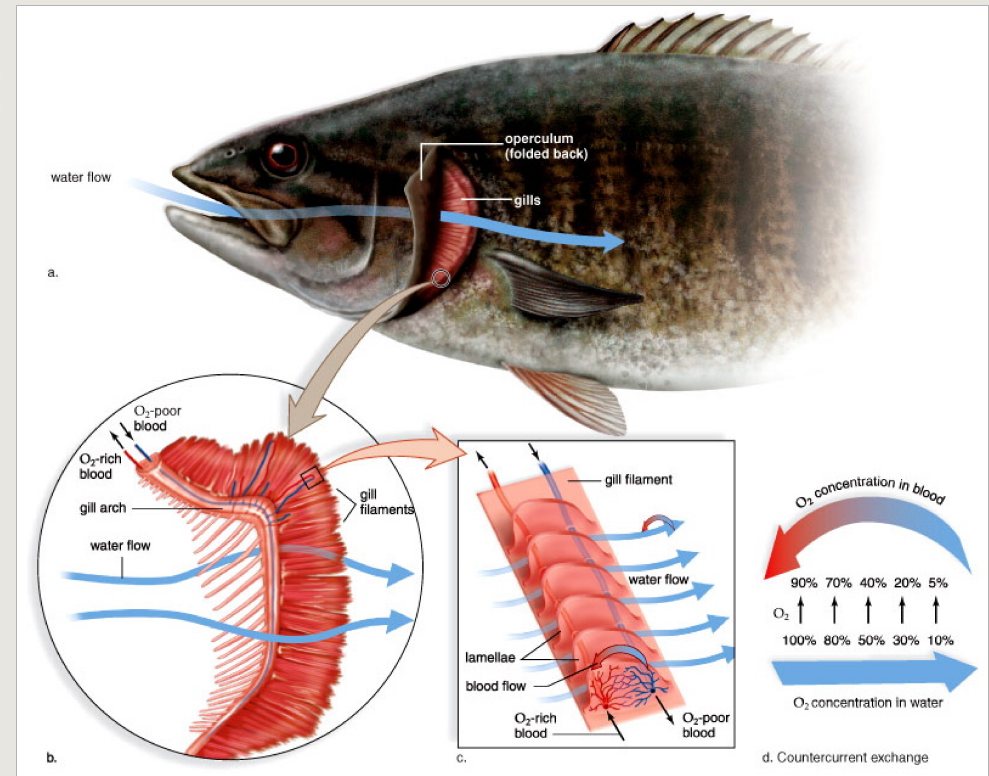
- **D = diffusion ( $\text{g} \times \text{s}^{-1}$ )**
  - **k = constante**
  - **S = Surface d'échanges**
  - **$\Delta C$  = différence de concentration de chaque coté de la membrane ( $\text{g} \times \text{L}^{-1}$ )**
  - **L = épaisseur de la membrane**
- $$D = \frac{kS\Delta C}{L}$$





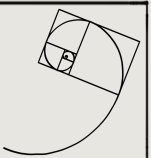
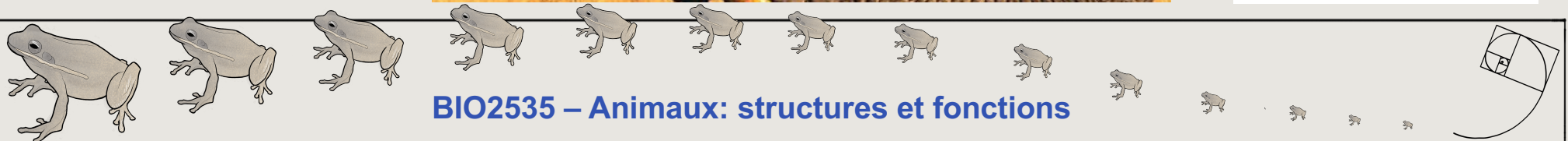
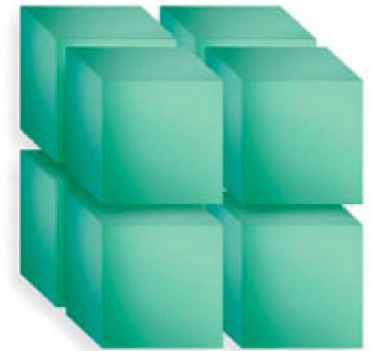
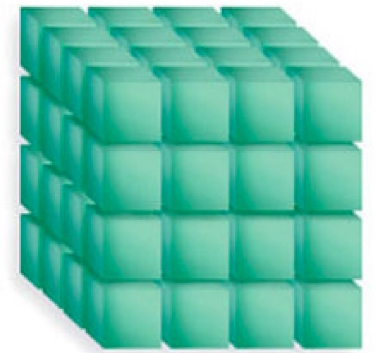
# Ex. Ventilation des surfaces

- Maintient le gradient de la concentration et maximise la diffusion
- Ventilation des poumons
- Opercules des poissons



# Rapport surface:volume

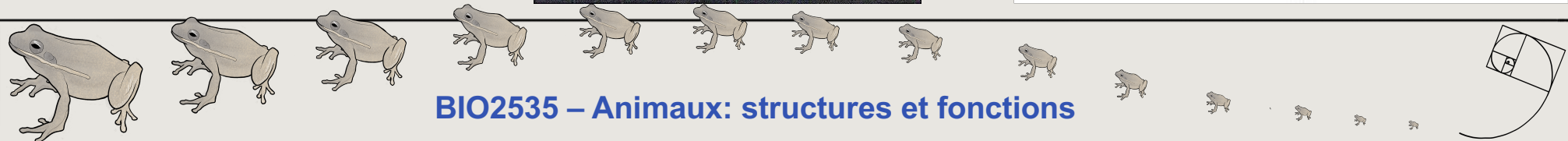
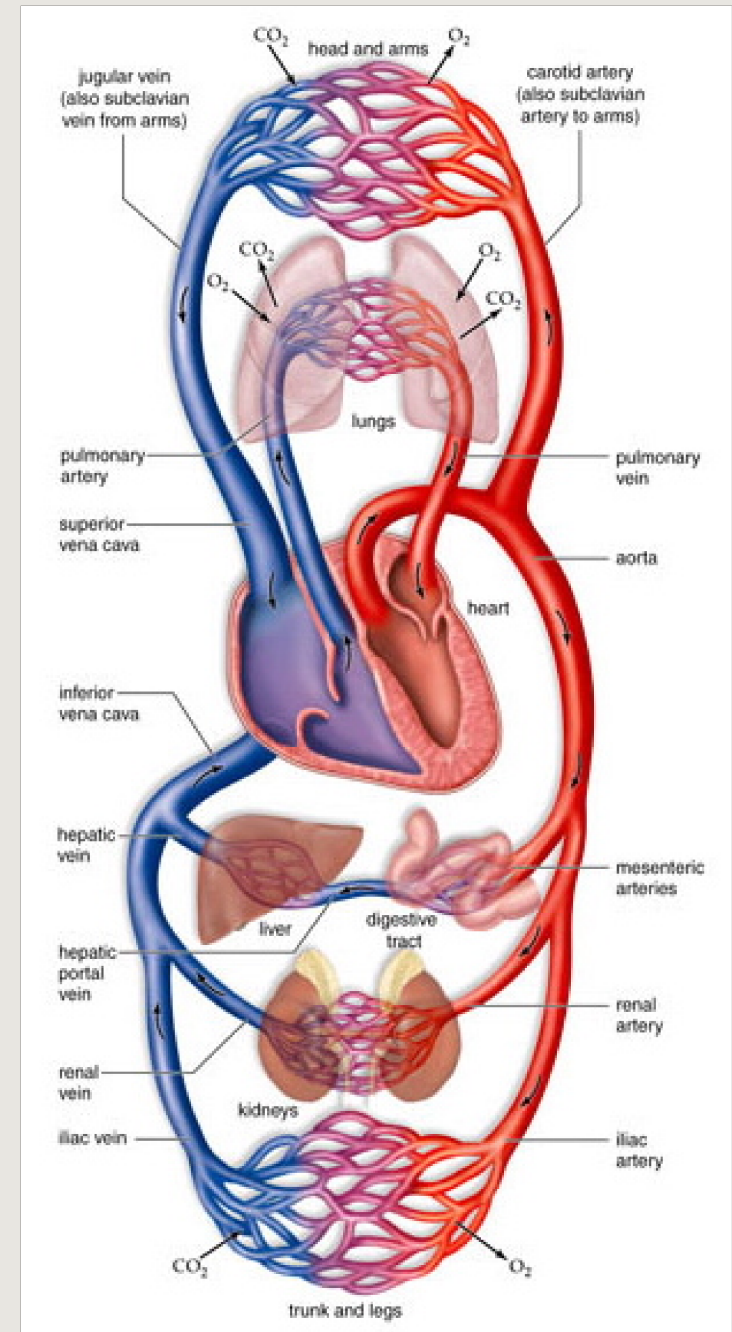
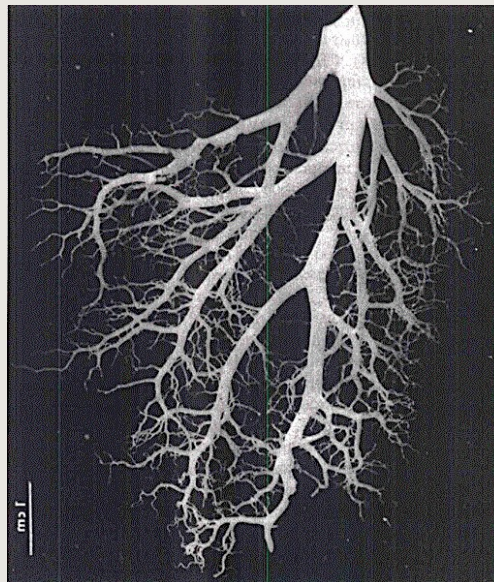
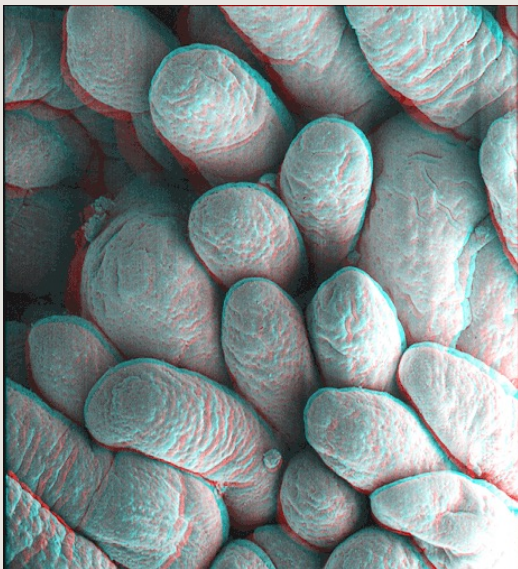
- Quand taille augmente, le rapport diminue
- Diffusion proportionnelle à la surface d'échange
- Besoin proportionnel à la masse (volume)

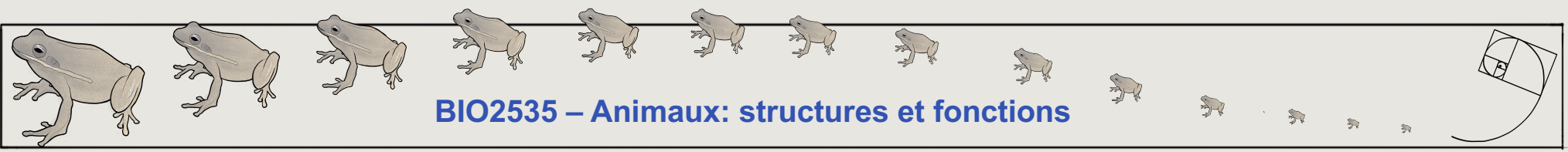
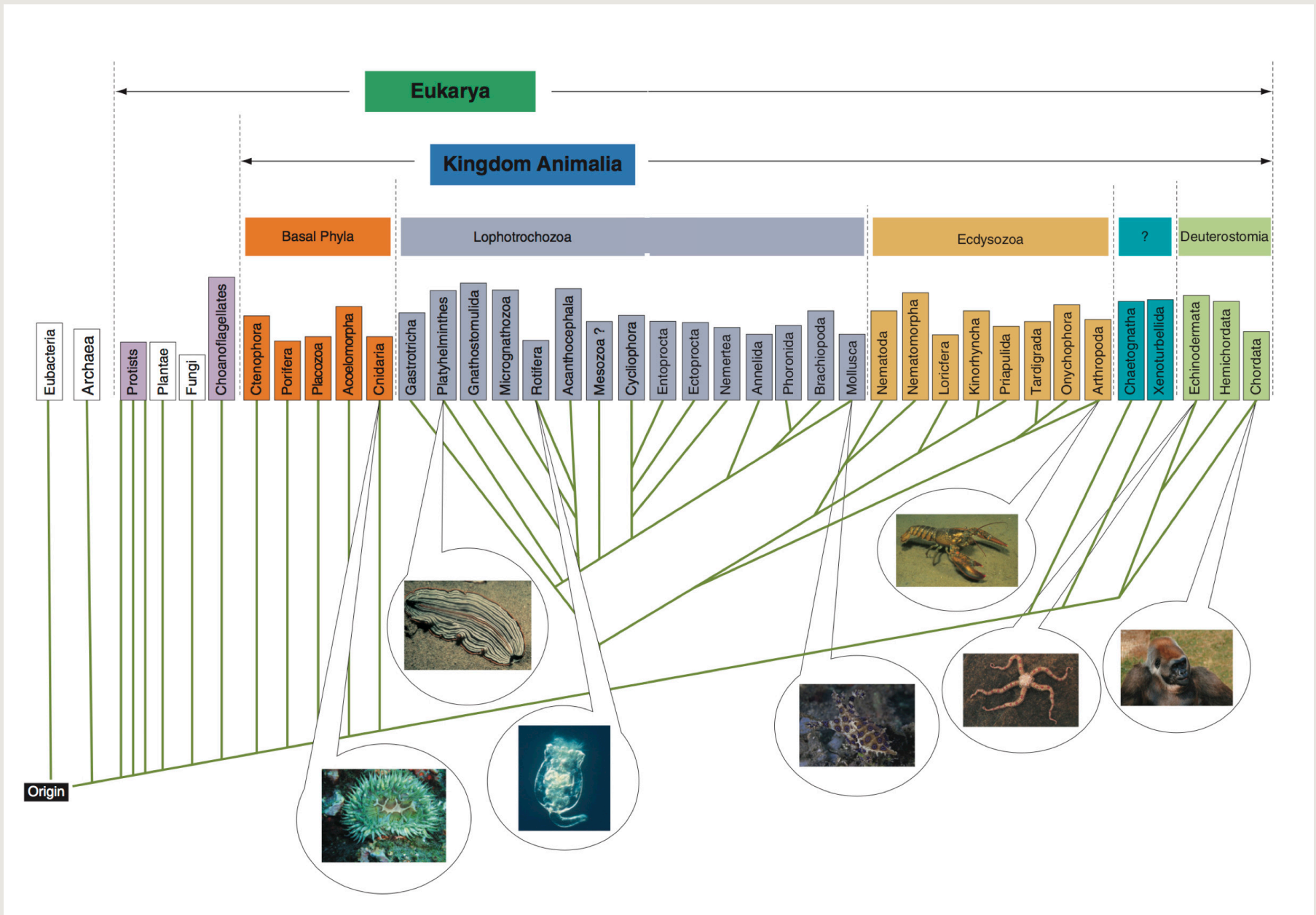




# Solution:

- Systèmes circulatoires, compartmentalization des organes
- Replis des surfaces, bifurcation des conduits



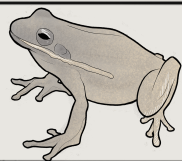




# Questions?



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