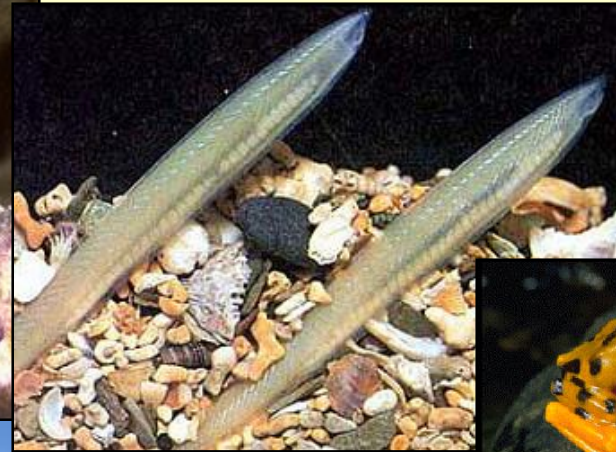
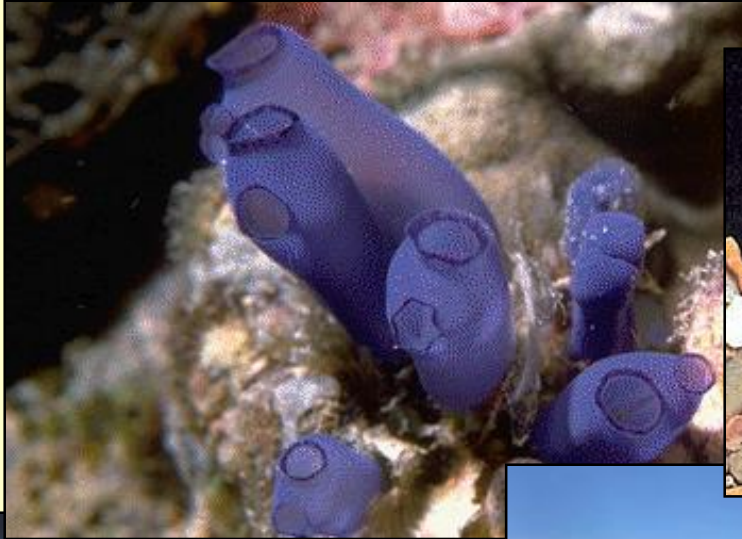


CHORDATA

Latim *chorda* (corda)



Phylum Chordata

- Filo bem demarcado dos restantes
- Animais Eumetazoários, Eucelomados, Enterocélicos e Deuterostómios
- Presença de uma NOTOCORDA (pelo menos durante parte do ciclo vital)
- Celoma enterocélico (primitivamente tripartido)
- Fendas branquiais abertas para o exterior a partir do tubo digestivo (pelo menos durante parte do ciclo vital)
- Sistema nervoso central dorsal derivado do epitélio superficial do embrião (geralmente sob a forma de um cordão nervoso dorsal ôco - pelo menos durante parte do ciclo vital)
- Sistema circulatório fechado com um coração ventral que bombeia o sangue através de arcos aórticos para um vaso dorsal onde ele circula para a parte posterior do corpo
- Cauda pós-anal propulsora, conjunto de músculos dispostos lateralmente ao esqueleto axial e posteriormente ao ânus

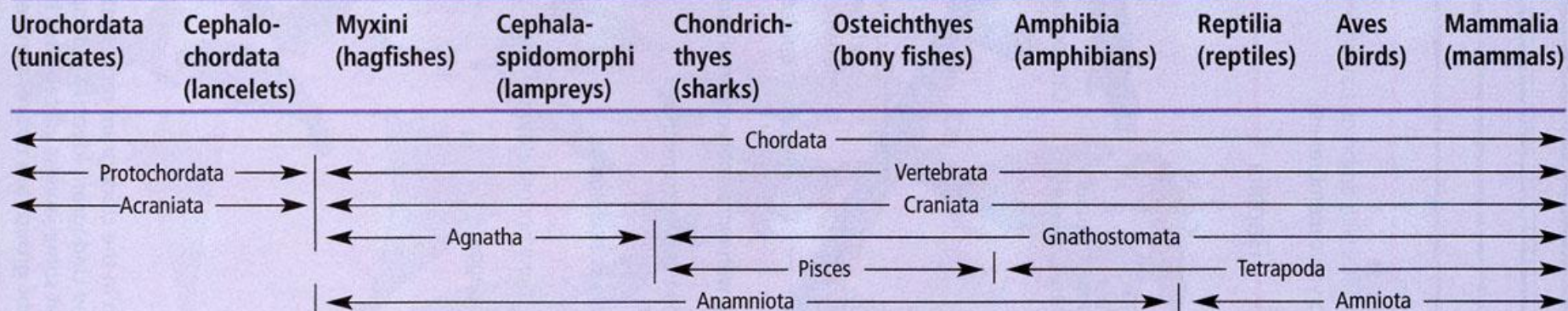
- 25000 espécies fósseis e + 48500 espécies actuais

• **3 sub-Phyla: UROCHORDATA; CEPHALOCHORDATA, VERTEBRATA**

CLASSIFICAÇÃO TRADICIONAL

TABLE 23.1

Traditional Divisions of the Phylum Chordata



Chordate Subphyla

Phylum. **Chordata**

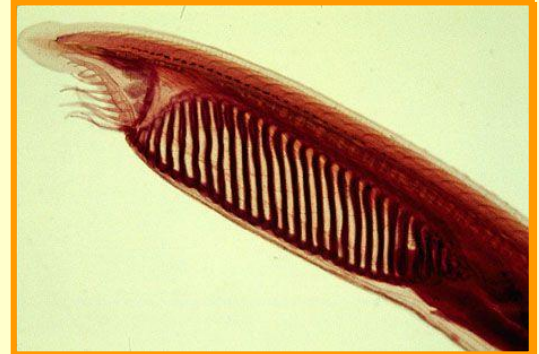
Subphylum. **Urochordata**

Subphylum. **Cephalochordata**

Subphylum. **Vertebrata**



PROTOCHORDATA / PISCIS



FILO CHORDATA

Grupo Protochordata (Acraniata)

Sub-filo UROCHORDATA (Tunicata)

Classe Ascidiacea

Classe Larvacea

Classe Thaliacea



Sub-filo CEPHALOCHORDATA

Grupo Craniata

Sub-filo VERTEBRATA



Ph. CHORDATA
Sub-Ph. Vertebrata

9 classes

- "Pisces" (5)
 - Amphibia
 - Reptilia
 - Aves
- Mammalia

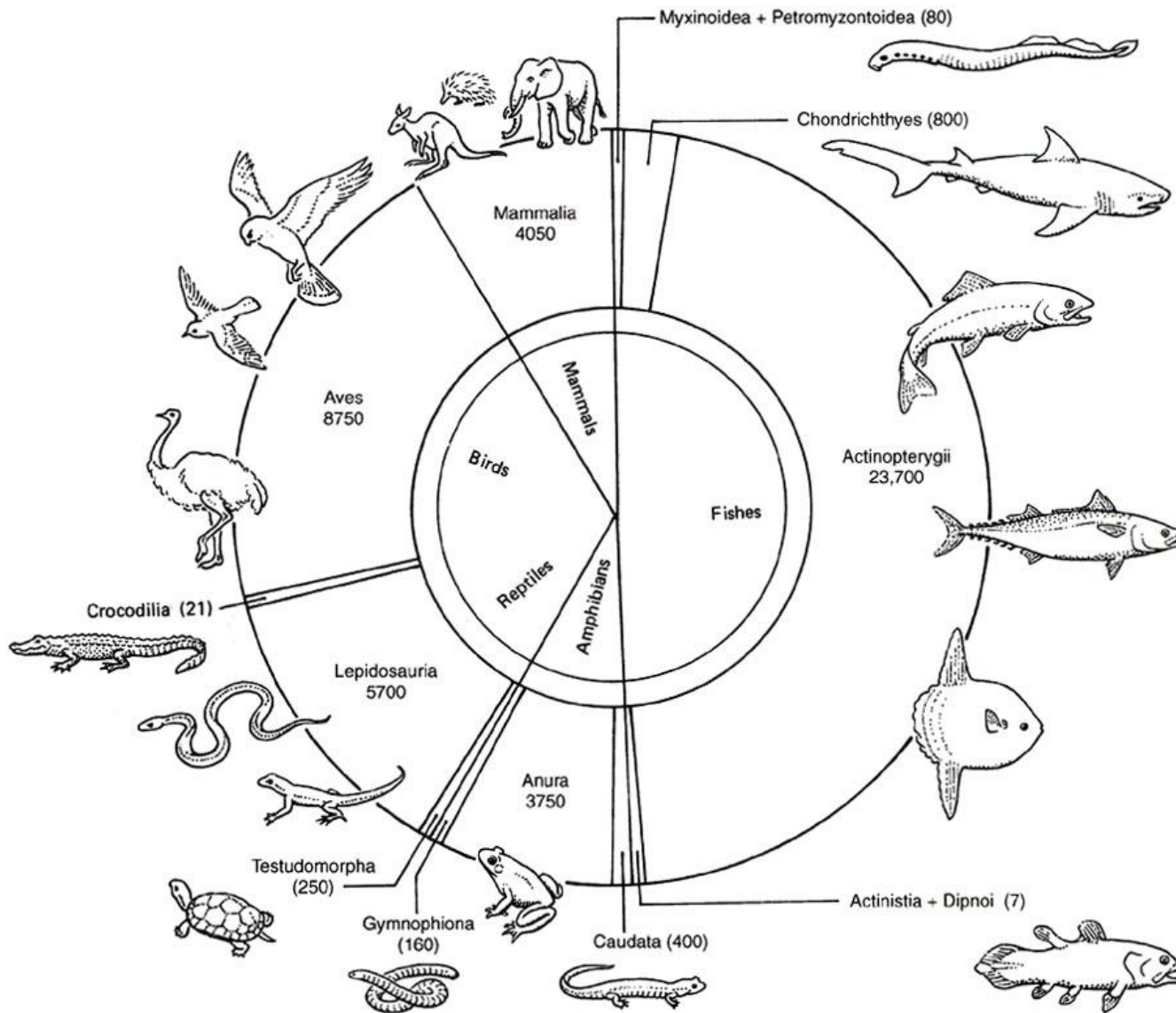


Figure 1-1 Diversity of vertebrates. The areas within the diagram correspond to the approximate numbers of living species in each group. Common names appear within the inner circle, and the formal names for the groups are on the outer parts of the diagram.

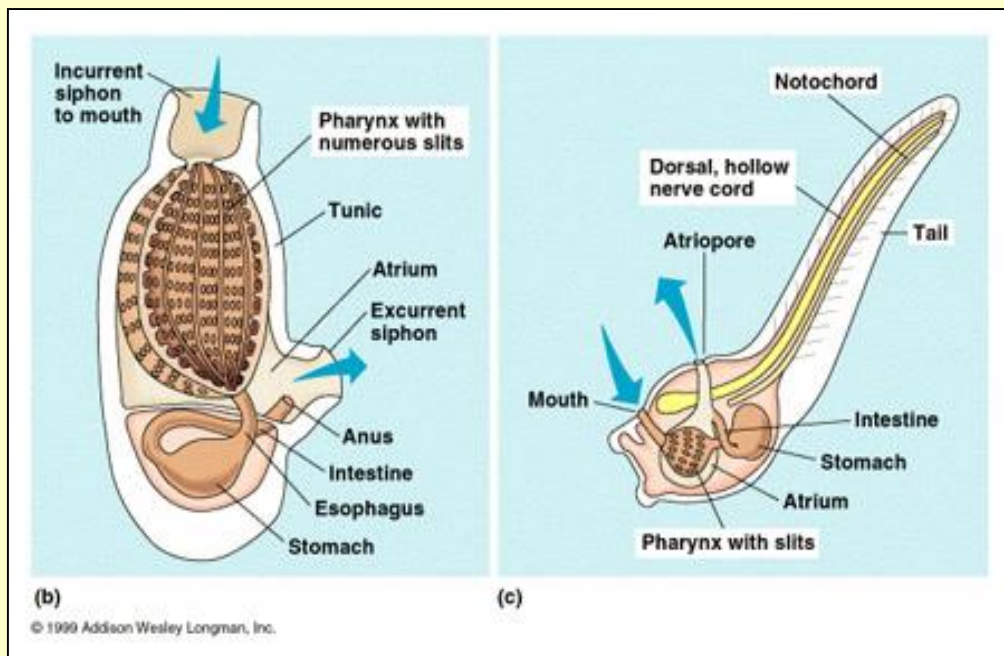
Sub-filo UROCHORDATA (Tunicata)

Corpo dividido em tronco e cauda; cauda desaparece durante o desenvolvimento

Notocorda limitada à cauda, presente apenas durante a fase larvar

Cordão nervoso dorsal, reduzido a um gânglio dorsal no indivíduo adulto

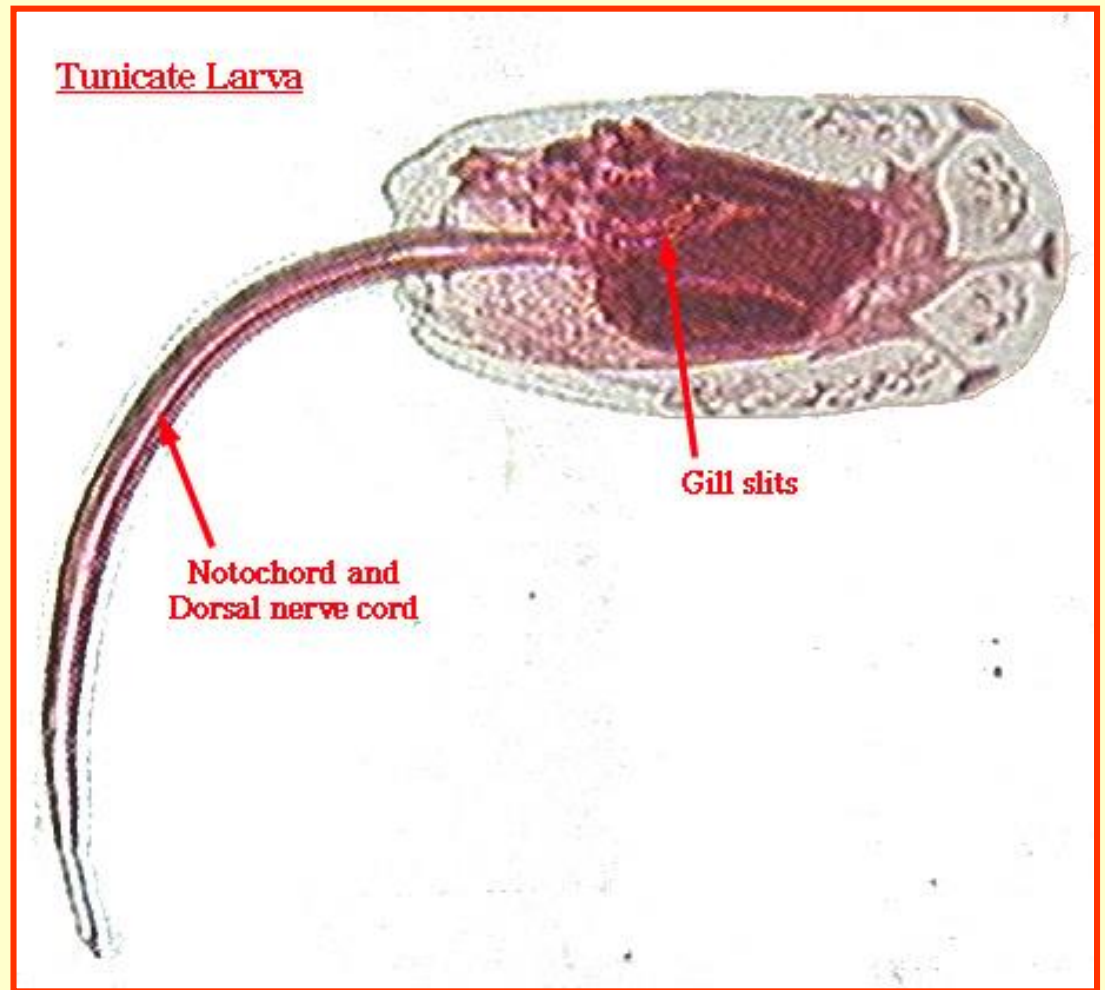
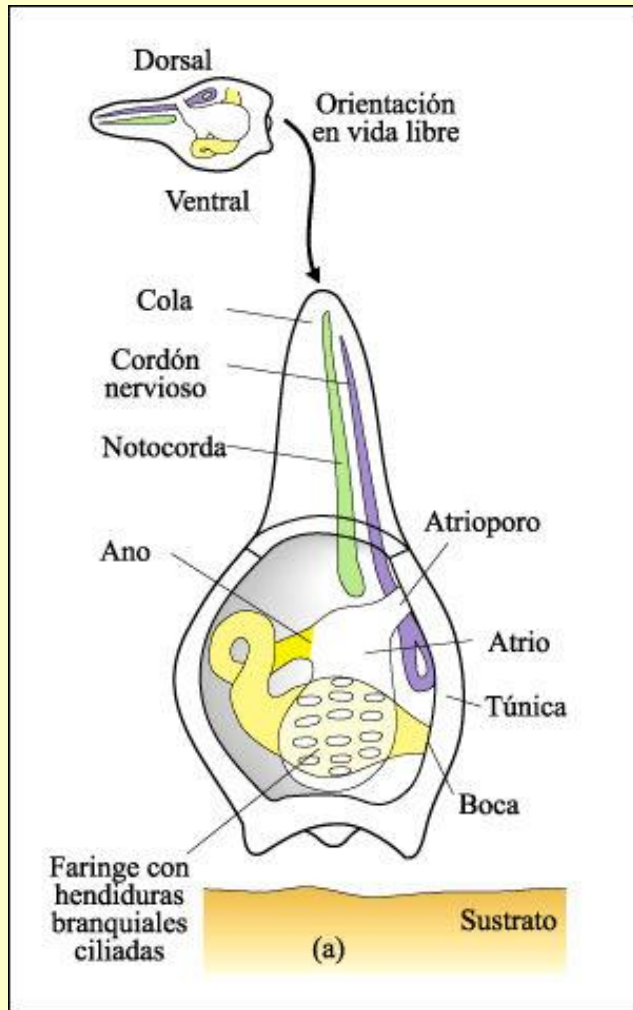
Faringe perfurada, formando uma rede complexa



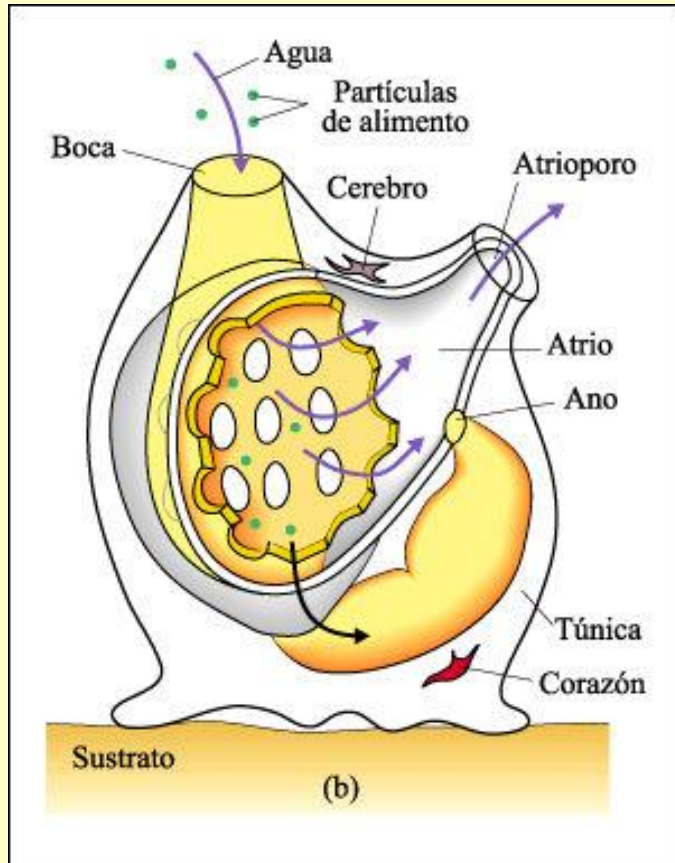
Corpo rodeado por uma tunica
Sifão incorrente – Ext. anterior
Sifão excurrente – F. dorsal
Endóstilo na face ventral da faringe
Coração ventral e 2 vasos
Em geral hermafroditas

Orgãos de excreção em geral ausentes

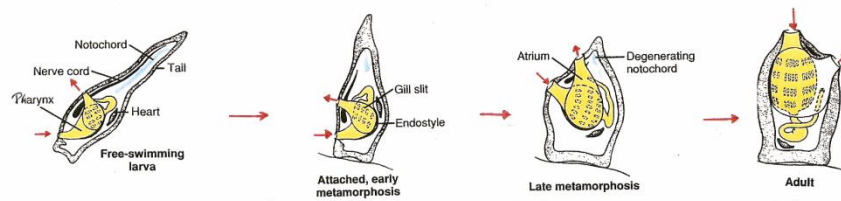
Sub-filo UROCHORDATA (Tunicata) - Larva



Sub-filo UROCHORDATA (Tunicata) - Adulto



Urocordados - Ascídias



Sub-filo CEPHALOCHORDATA

(*Amphioxus lanceolatus*)

Tubo nervoso dorsal

Corda dorsal (notocorda) persistente

Faringe com numerosas fendas branqueais

Barbatana caudal

Corpo alongado e comprimido lateralmente

Epiderme simples

Musculatura segmentada

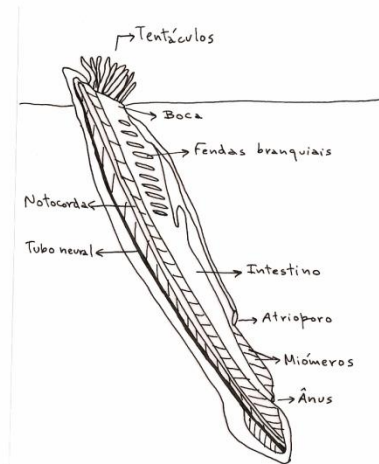
Sistema circulatório fechado, complexo

Nefrídeos numerosos

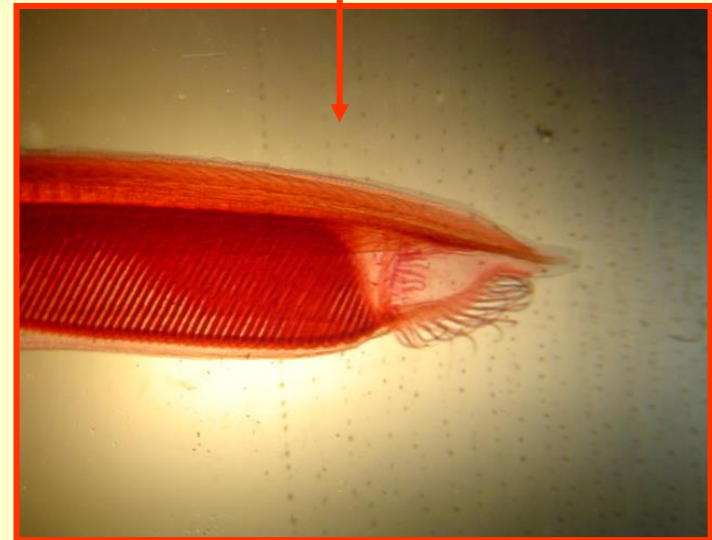
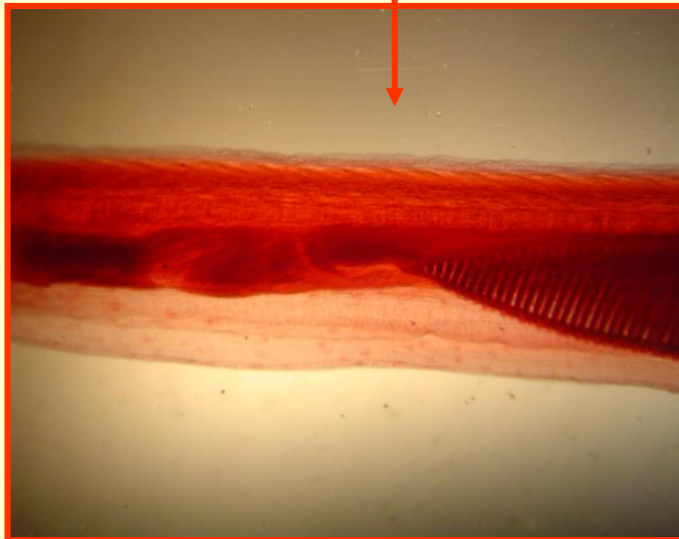
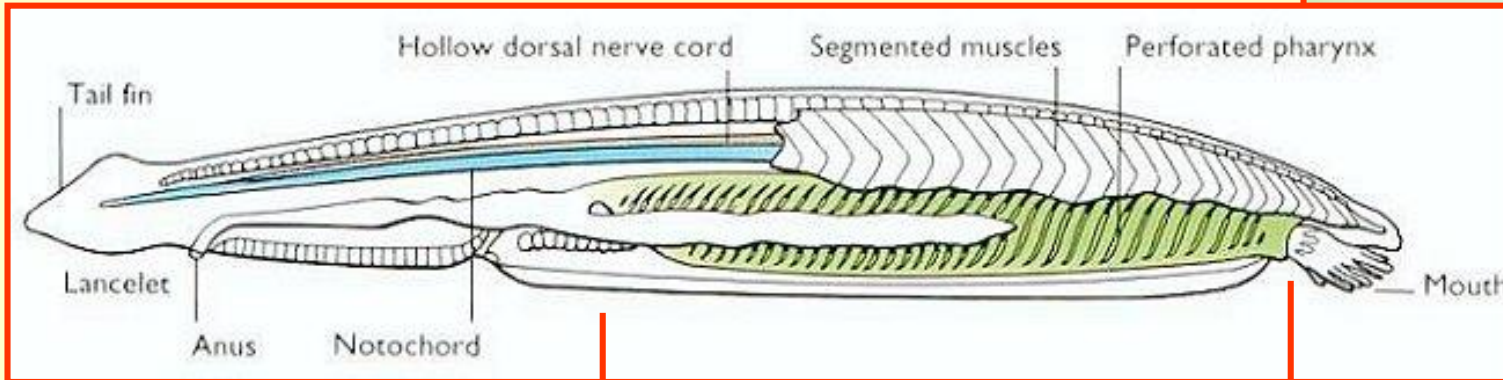
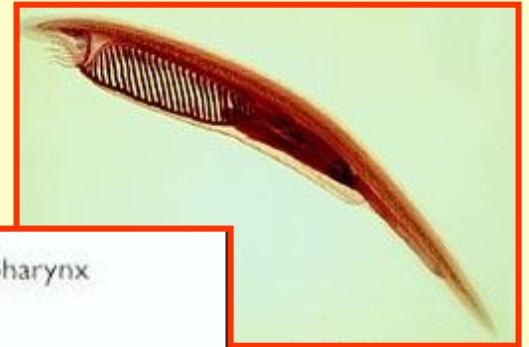
Sexos separados



Cefalocordados - Anfioxo

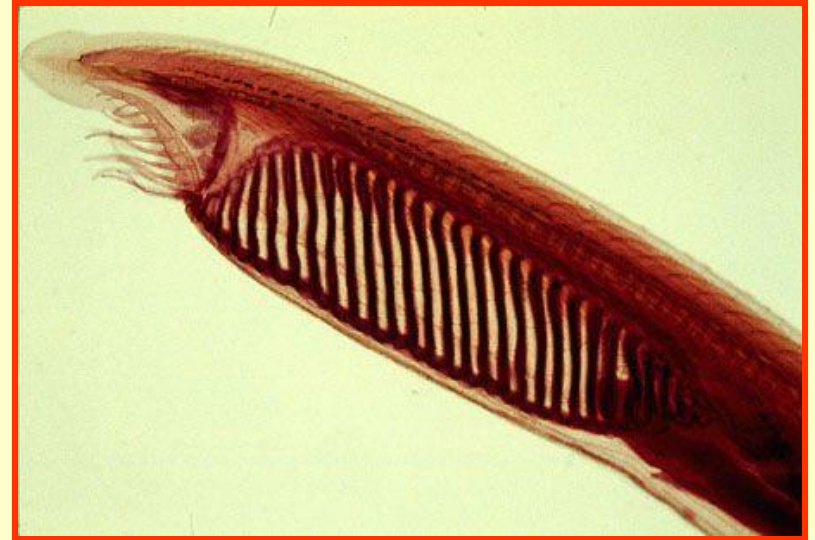
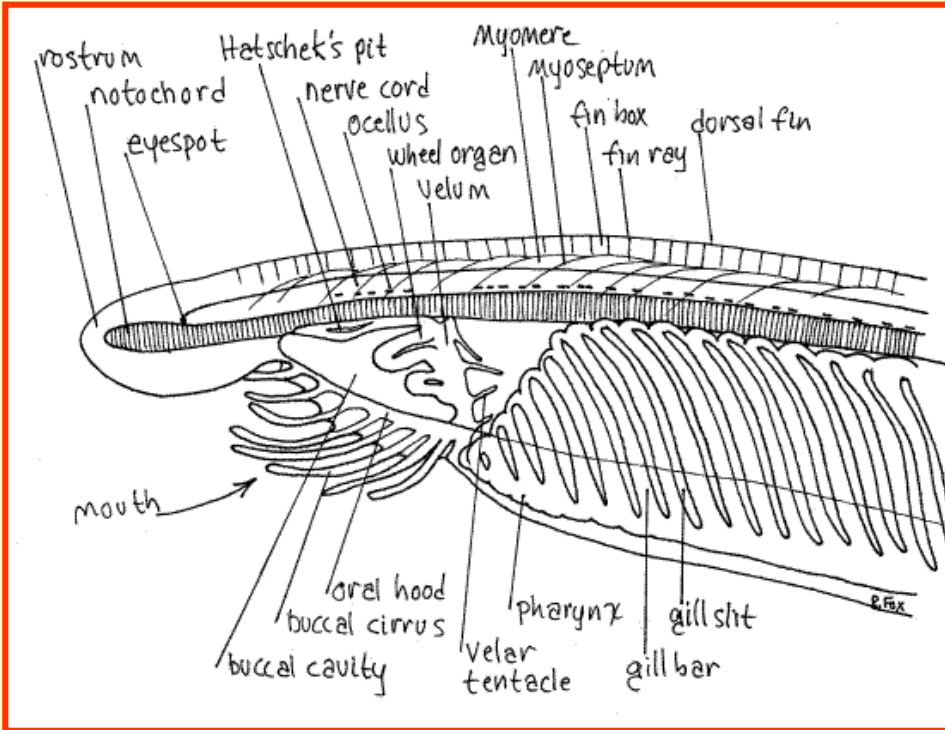


Sub-filo CEPHALOCHORDATA – Anfioxo



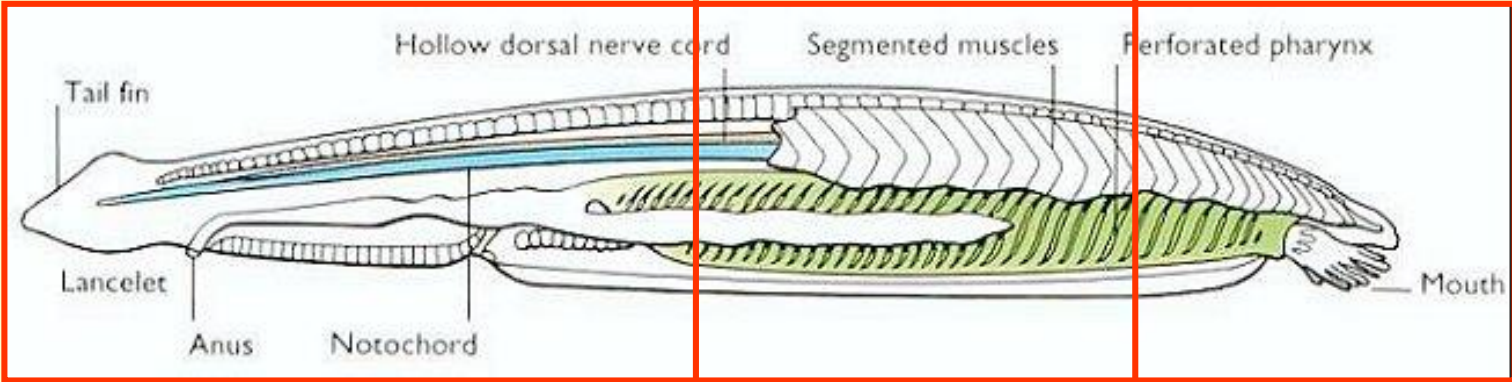
Sub-filo CEPHALOCHORDATA

Anfioxo - Região anterior do corpo

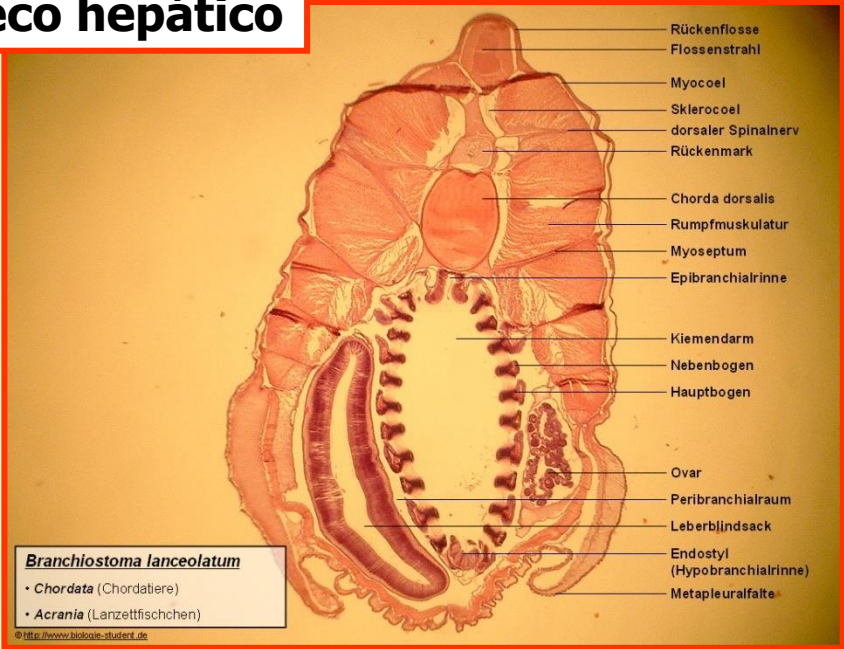


Sub-filo CEPHALOCHORDATA

Anfioxo – Secção transversal



Ceco hepático



Faringe

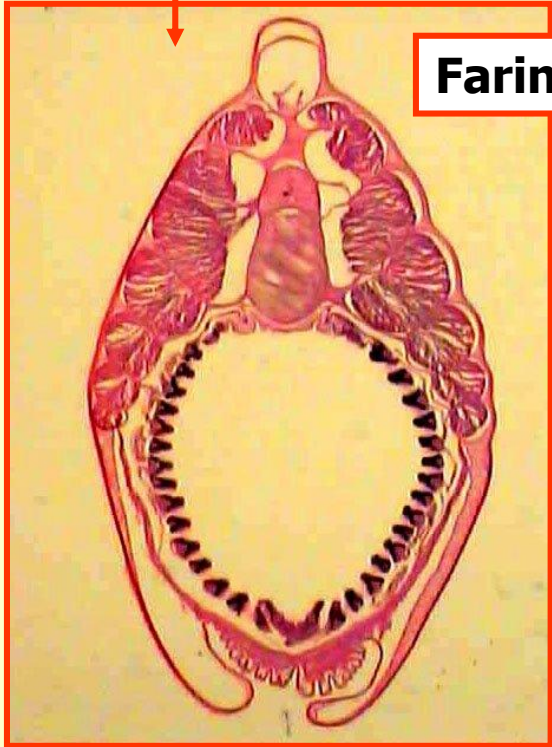
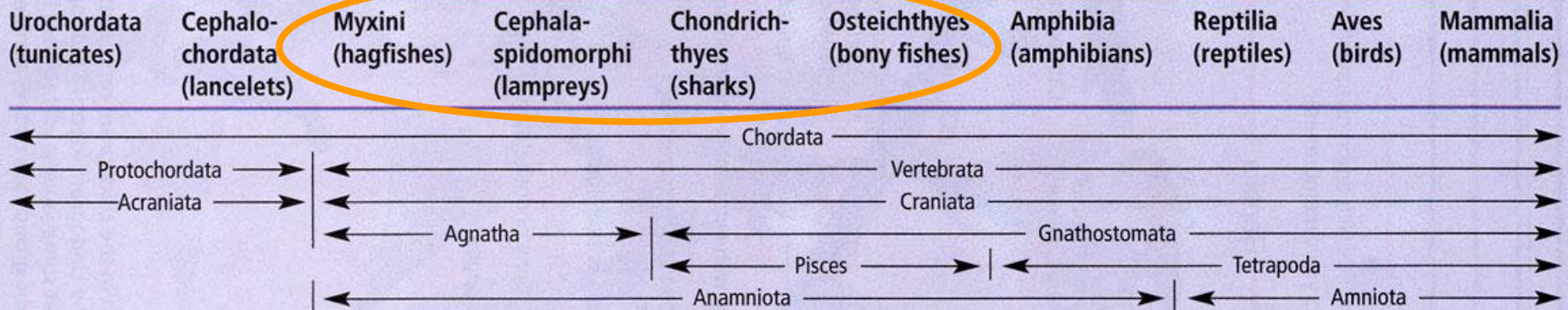


TABLE 23.1

Traditional Divisions of the Phylum Chordata



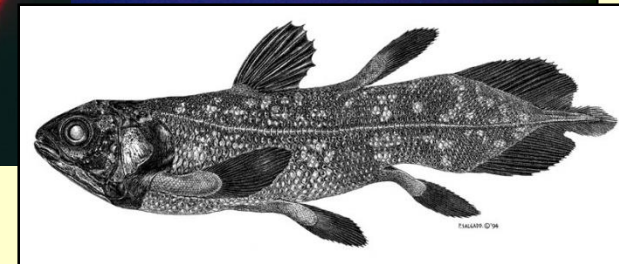
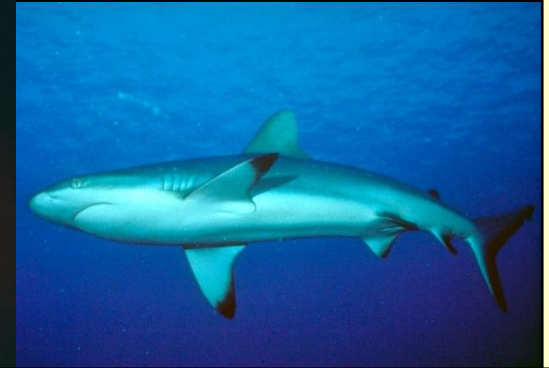
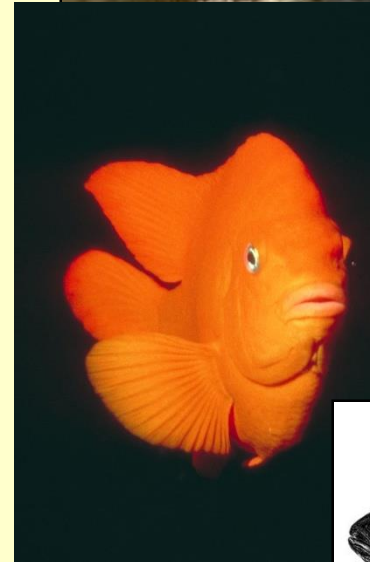
5 CLASSES

Myxini, Cephalaspidomorphi, Chondrichthyes, Actinoperygii, Sarcopterygii

CARACTERÍSTICAS GERAIS

Ph. CHORDATA
Sub-Ph. Vertebrata
"Pisces"

- Vertebrados **aquáticos**
- Corpo coberto por **escamas**
- Locomoção por **barbatanas**
- Respiração por **brânquias**



DIVERSIDADE

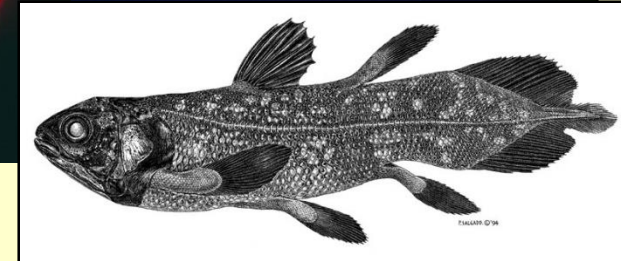
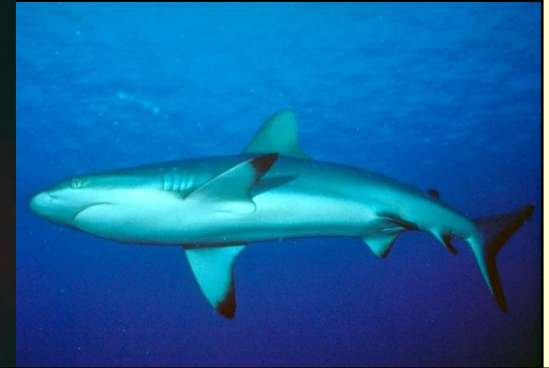
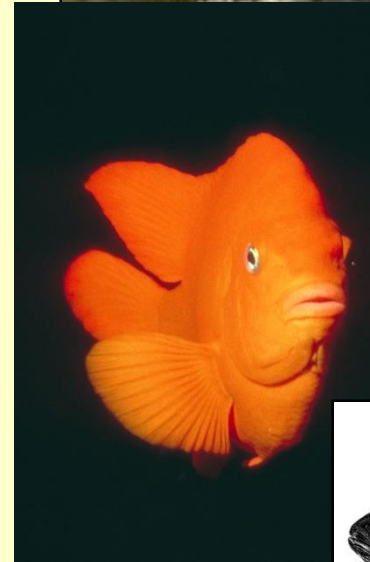
Super-Classe AGNATHA

- Myxini
- Cephalaspidomorphi



Super-Classe GNATHOSTOMATA

- Chondrichthyes
- Actinopterygii
- Sarcopterygii



ORIGEM E DIVERSIDADE

Ph. CHORDATA
 Sub-Ph. Vertebrata
 "Pisces"

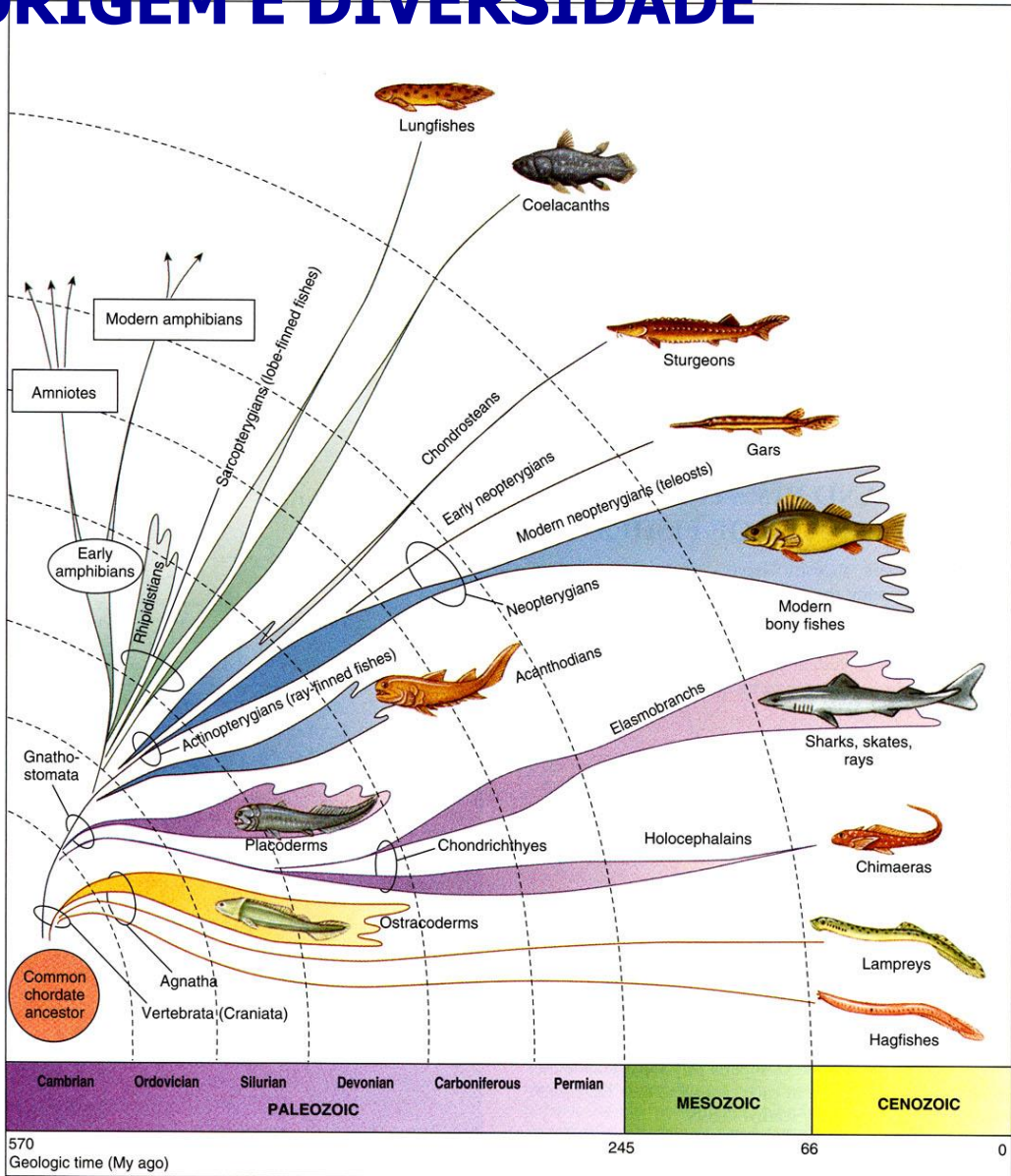


Figure 24-1
 Graphic representation of the family tree of fishes, showing evolution of major groups through geological time. Numerous lineages of extinct fishes are not shown. Widened areas in the lines of descent indicate periods of adaptive radiation and relative number of species in each group. The lobe-finned fishes (sarcopterygians), for example, flourished in the Devonian period, but declined and are today represented by only four surviving genera (lungfishes and coelacanths). Homologies shared by sarcopterygians and tetrapods suggest that they form a clade. Sharks and rays radiated during the Carboniferous period, declined in the Permian, then radiated again in the Mesozoic era. Johnny-come-latelies in fish evolution are the spectacularly diverse modern fishes, or teleosts, which make up most living fishes.



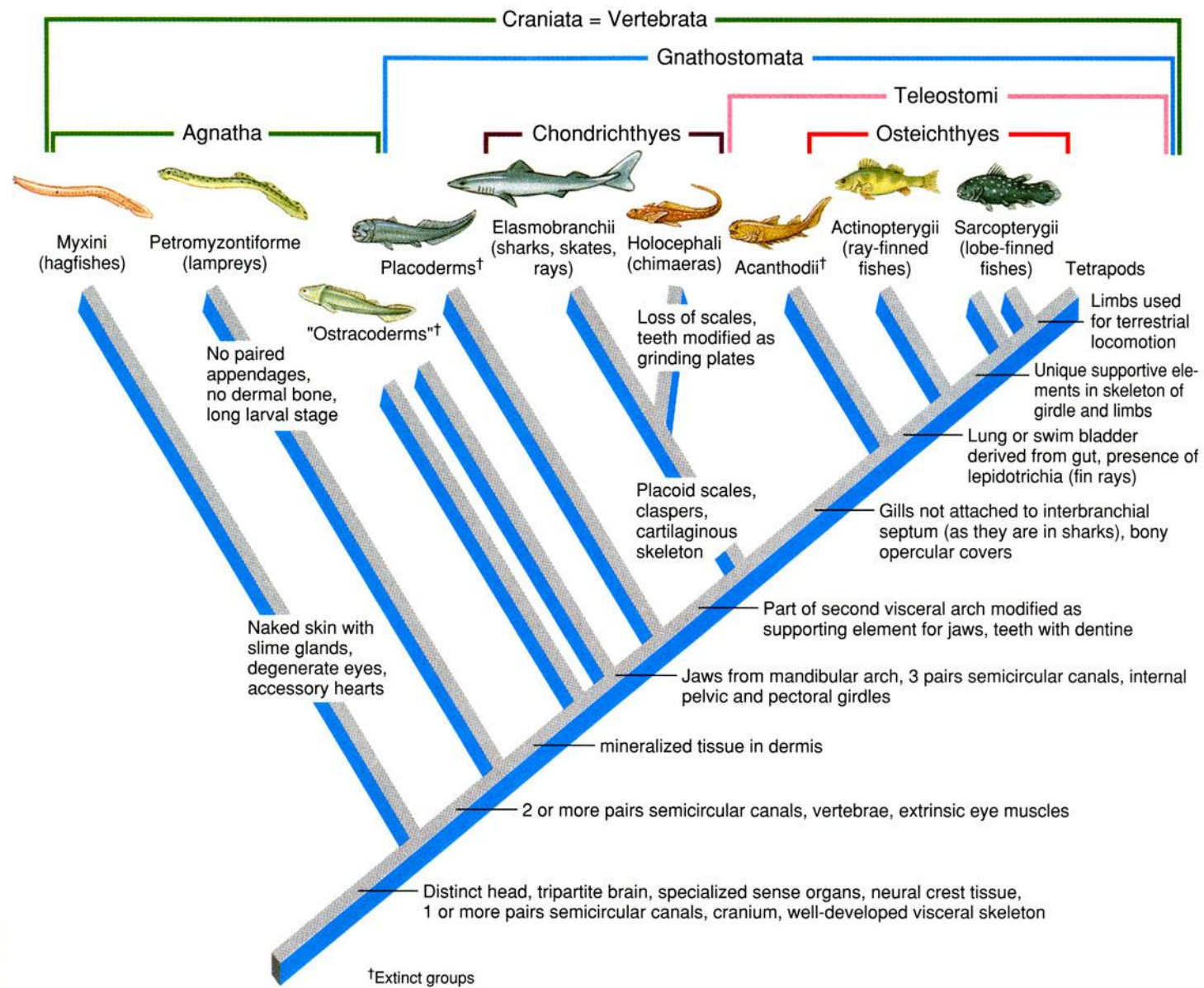


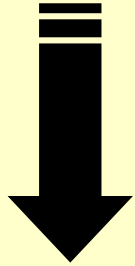
Figure 24-2

Cladogram of the fishes, showing the probable relationships of major monophyletic fish taxa. Several alternative relationships have been proposed. Extinct groups are designated by a dagger (†). Some of the shared derived characters that mark the branchings are shown to the right of branch points. The groups Agnatha and Osteichthyes, although paraphyletic structural grades considered undesirable in cladistic classification, are conveniently recognized in systematics because they share broad structural and functional patterns of organization.

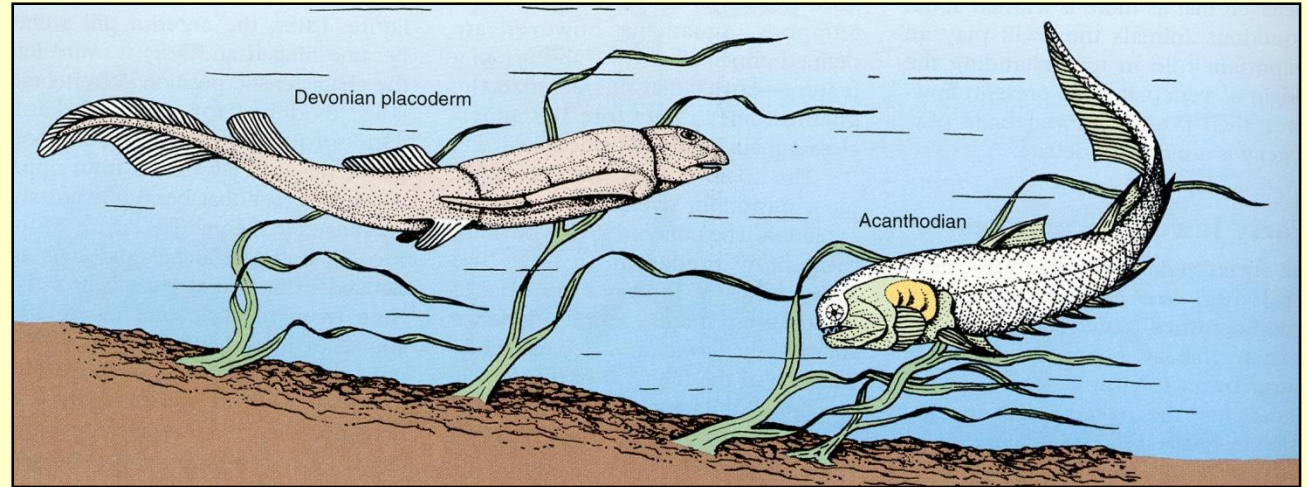
ORIGEM E DIVERSIDADE

Ph. CHORDATA
Sub-Ph. Vertebrata
"Pisces"

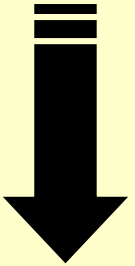
Placodermes e
Acanthodios



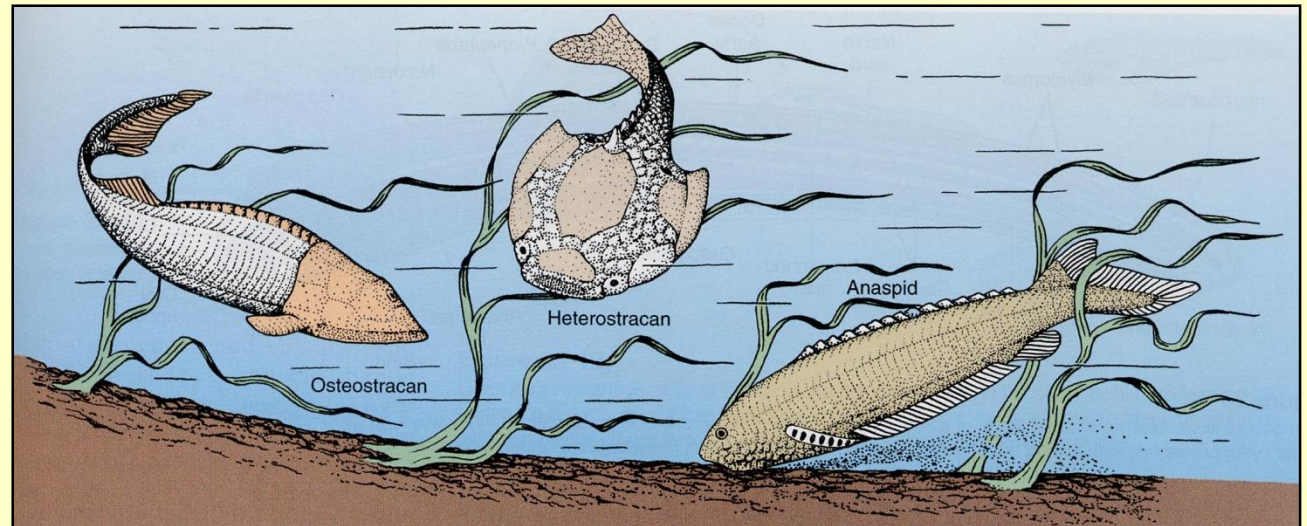
GNATHOSTOMATA



Ostracodermos



AGNATHA



Super-Classe AGNATHA

- Myxini (43 sps)
- Cephalospidomorphi (41 sps)
- Corpo anguiliforme
- Sem maxilas
- Sem coluna vertebral
- Sem escamas
- Sem barbatanas pares



Super-Classe GNATOTHOSMATA

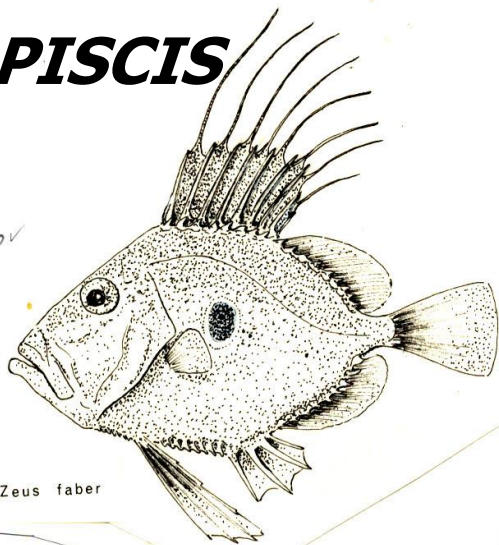
- Chondrichthyes (850 sps)
- Actinopterygii (23600 sps)
- Sarcopterygii (7 sps)

- Corpo de forma variável
- Com maxilas
- Com coluna vertebral
- Com escamas
- Com barbatanas pares



PISCIS

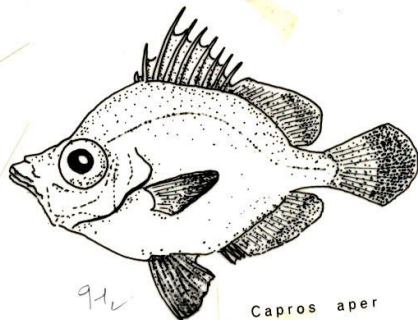
90v



Zeus faber

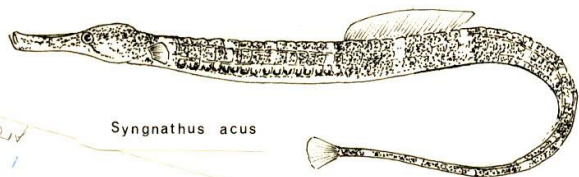
DIVERSIDADE DISSECÇÃO

91v



Capros aper

92v



Syngnathus acus

93v



S. typhle

94v

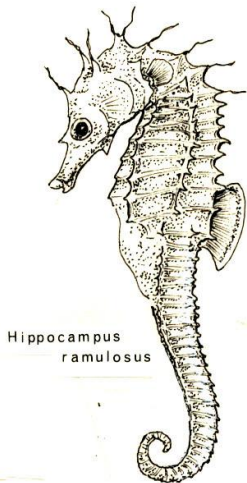


Nerophis lumbriciformis



Entelurus aequoreus

95v



Hippocampus ramulosus

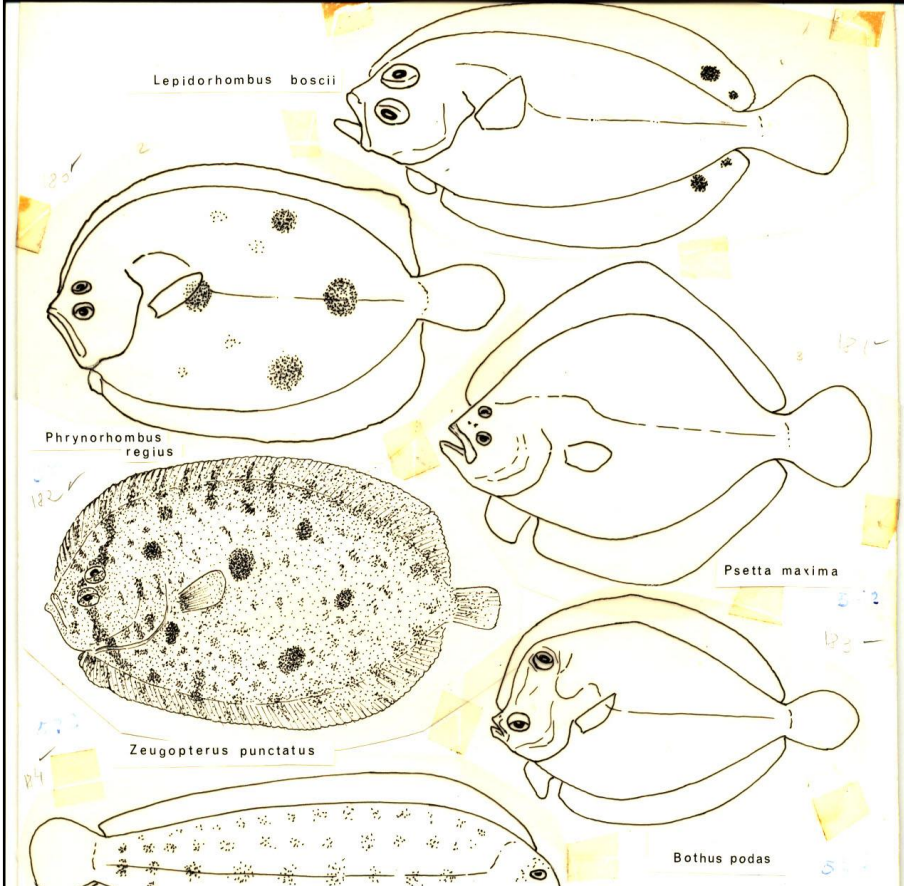
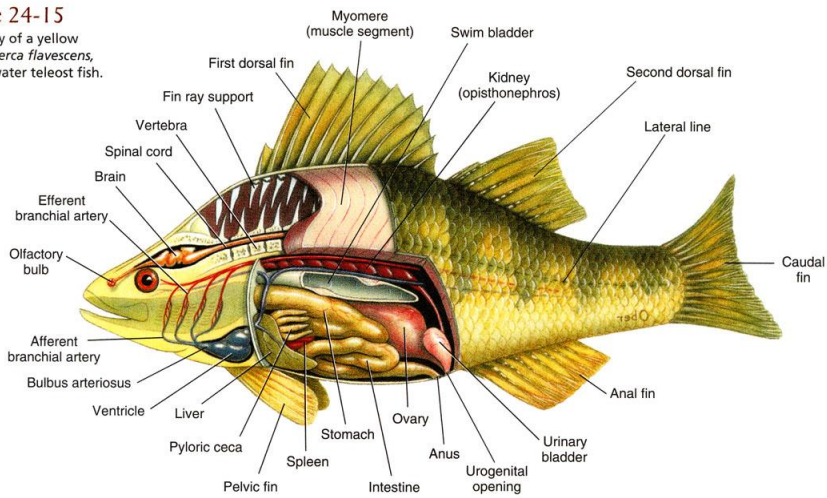
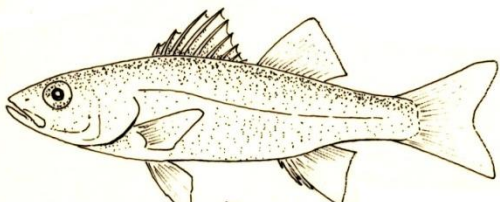


Figure 24-15

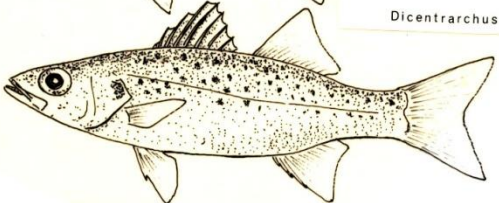
Anatomy of a yellow perch, *Perca flavescens*, a freshwater teleost fish.



122

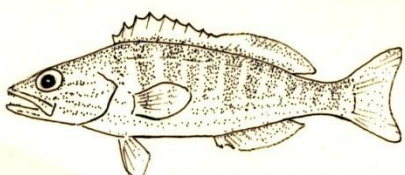


Dicentrarchus labrax

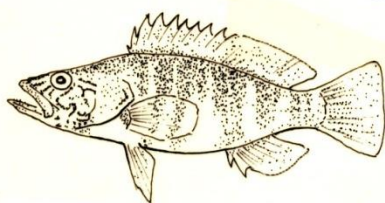


D. punctatus

109



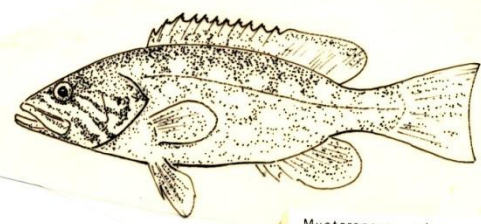
Serranus cabrilla



S. scriba

491

1257



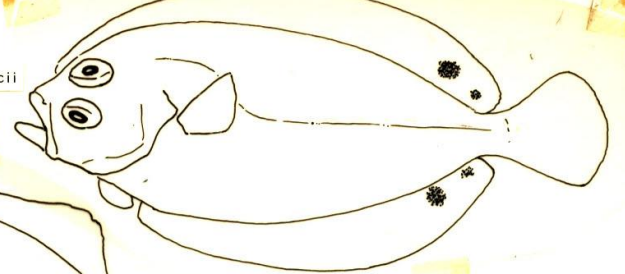
Myxeroperca rubra

490

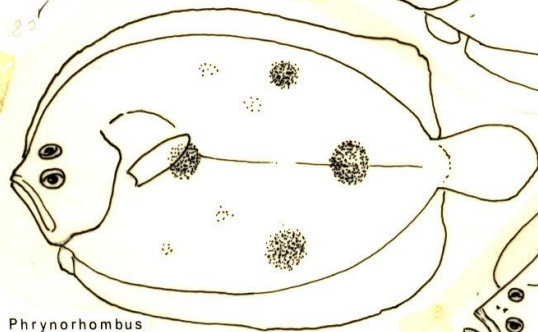
1257

111

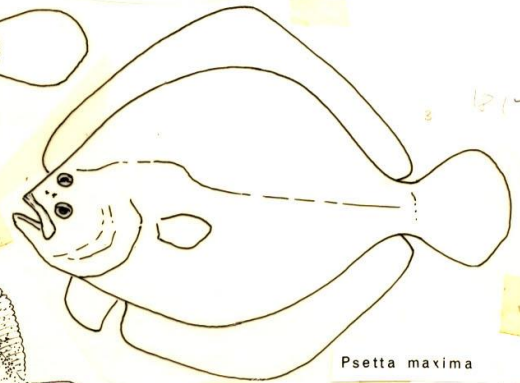
Lepidorhombus boscii



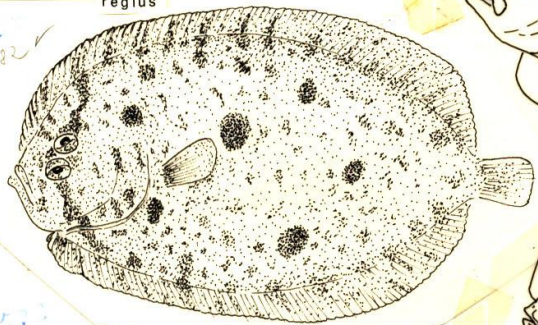
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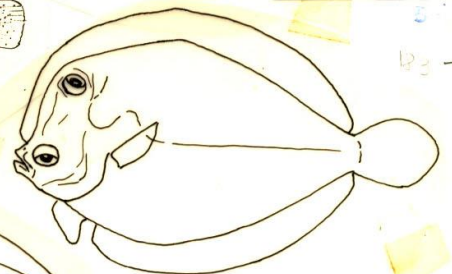
Phrynorhombus regius



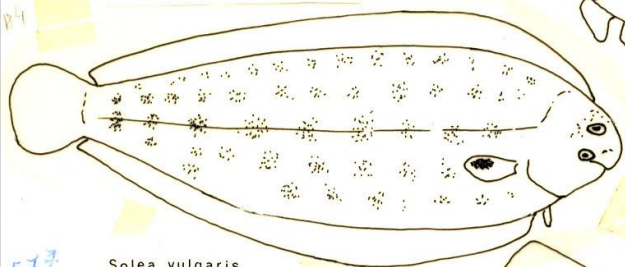
Psetta maxima



Zeugopterus punctatus

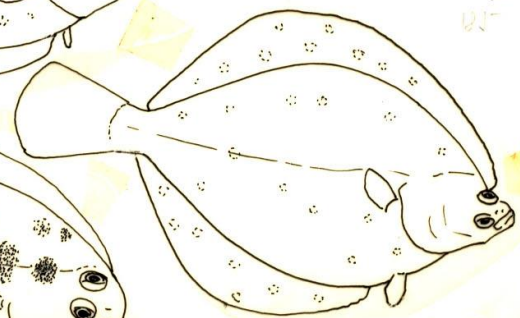


Bothus podas

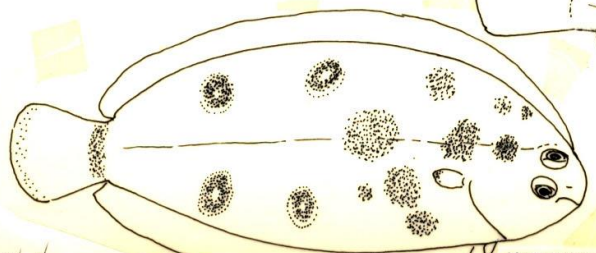


Solea vulgaris

577



Pleuronectes platessa



Microchirus ocellatus

575

Diversidade de formas
Adaptações



Major vertebrate groups

- **Jawless fishes**
- **Jawed animals**
 - Cartilaginous fishes
 - Boney fishes
 - Amphibian
 - Reptiles
 - Birds
 - Mammals



Major vertebrate groups

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