



Vývojová morfologie živočichů

III.

Svalová soustava



evropský
sociální
fond v ČR



EVROPSKÁ UNIE



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



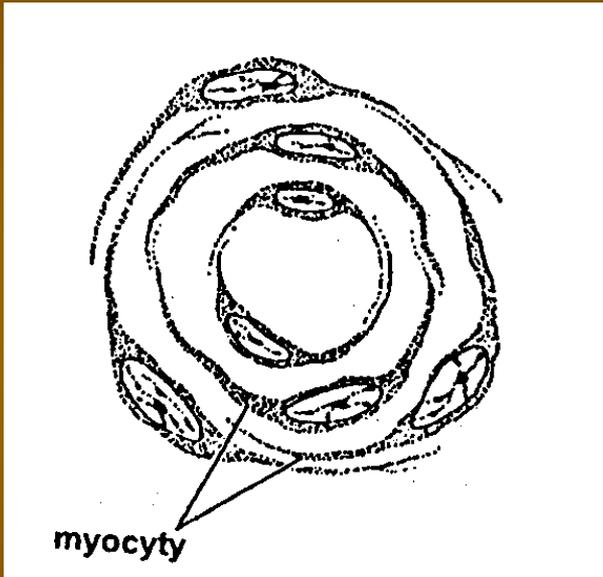
OP Vzdělávání
pro konkurenceschopnost



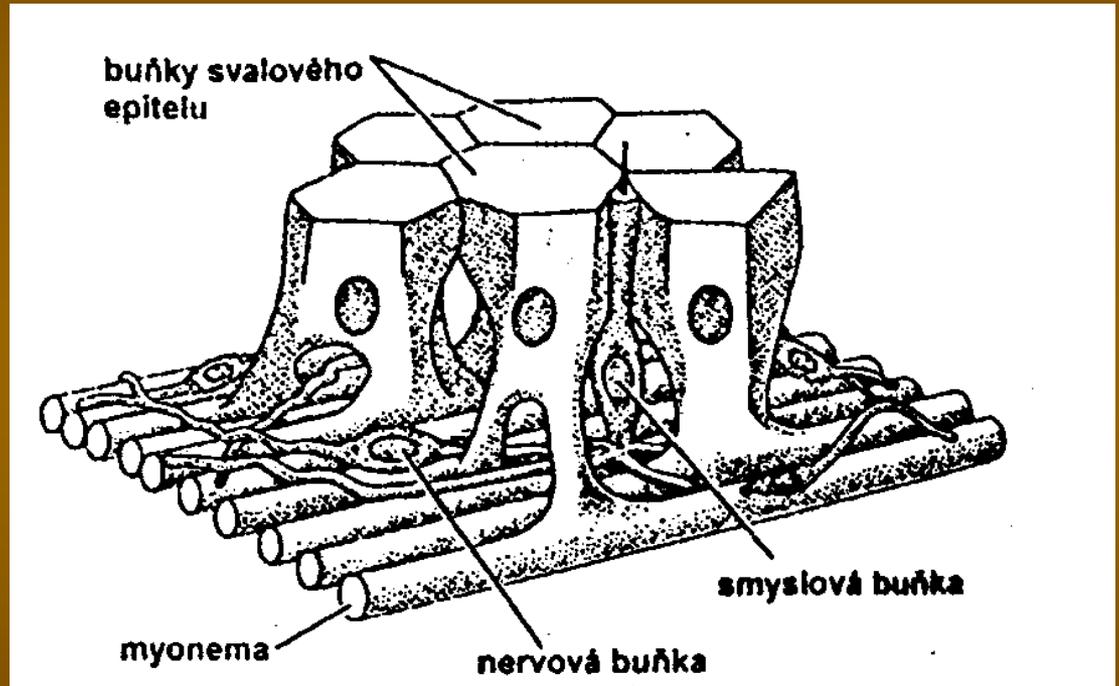
INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Svalová soustava

Houbovci (Porifera)



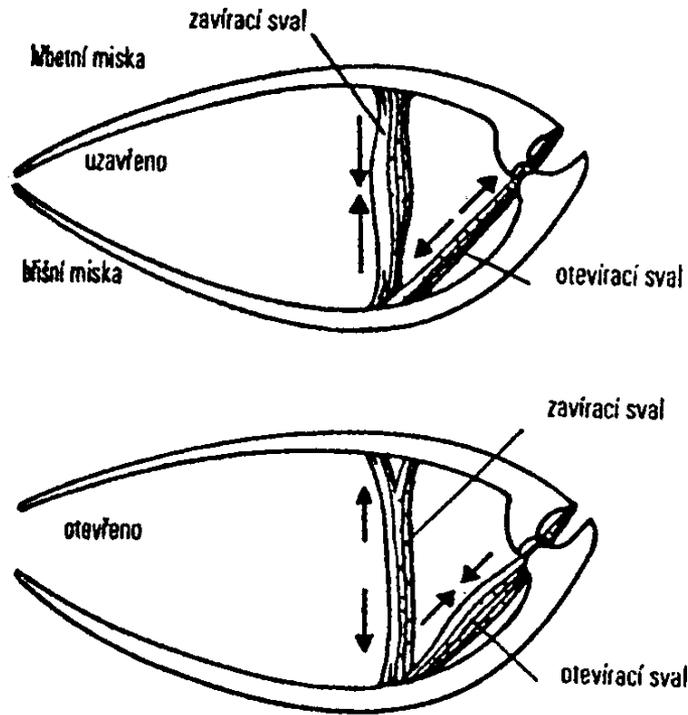
Žahavci (Cnidaria)



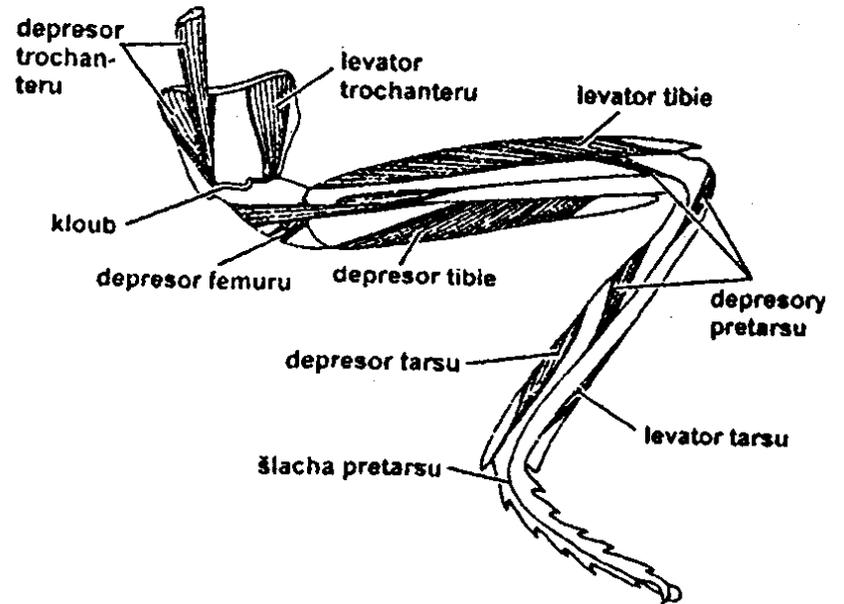
myoepiteliální buňky (buňky svalového epitelu)

Svalová soustava

Ramenonožci (Brachiopoda)

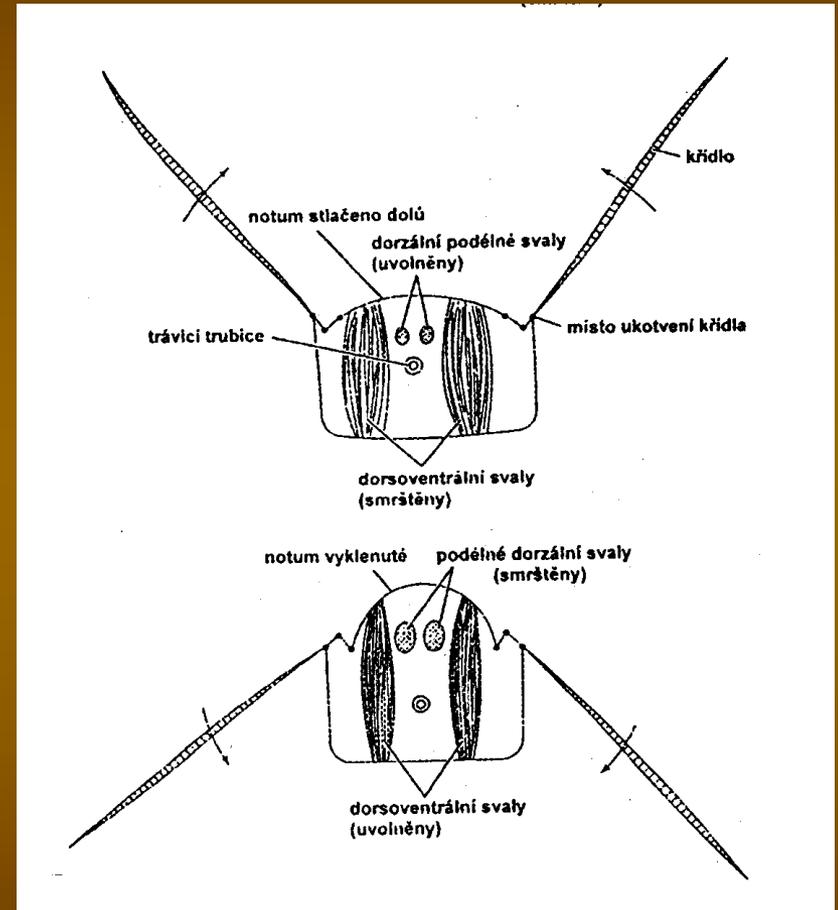
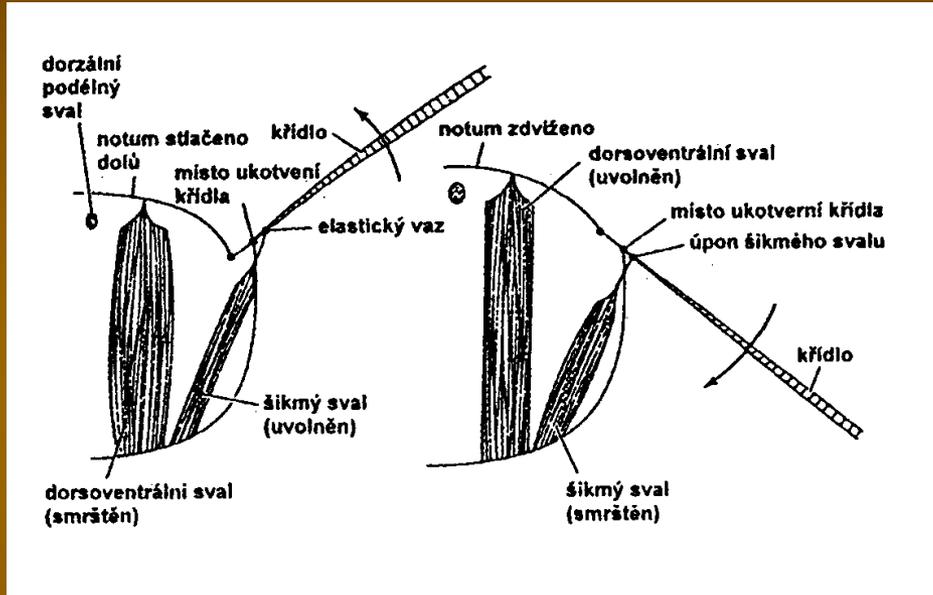


Hmyz



Svalová soustava

Létací svaly hmyzu



Svalová soustava

Svalová soustava obratlovce

1. Somatická svalovina - z myotomu somitů, příčně pruhovaná
 - Svalovina trupu (somatická) →
 - epaxiální
 - hypaxiální
 - Svalovina končetin (apendikulární)
 - primární
 - sekundární
2. Branchiální svalovina - z BNL, příčně pruhovaná
 - pohyb segmentů žaberních oblouků, pohyb čelistí
 - žvýkací a mimické svaly savců
3. Viscerální svalovina - ze splachnopleury, hladká
 - útrobní, srdeční sval, autonomní inervace
4. Kožní svalovina - z dermatomu
 - čepýření peří, ježení srsti
5. Svalovina ektodermálního původu
 - ciliární sval v oku

Svalová soustava

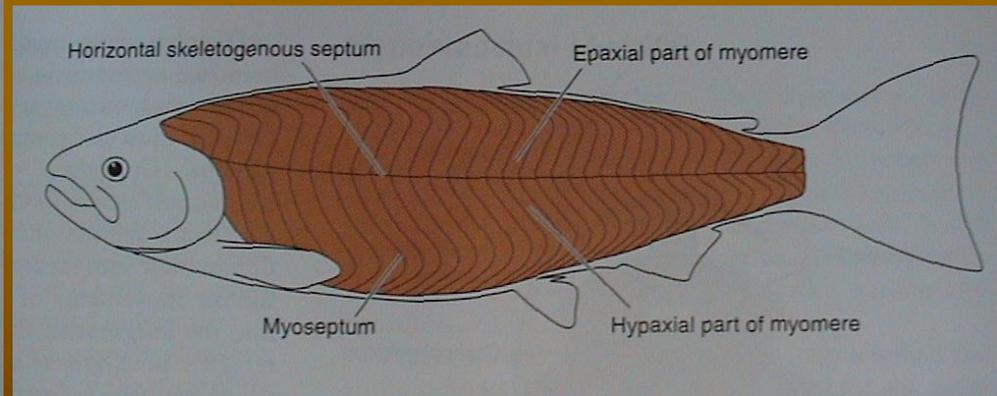
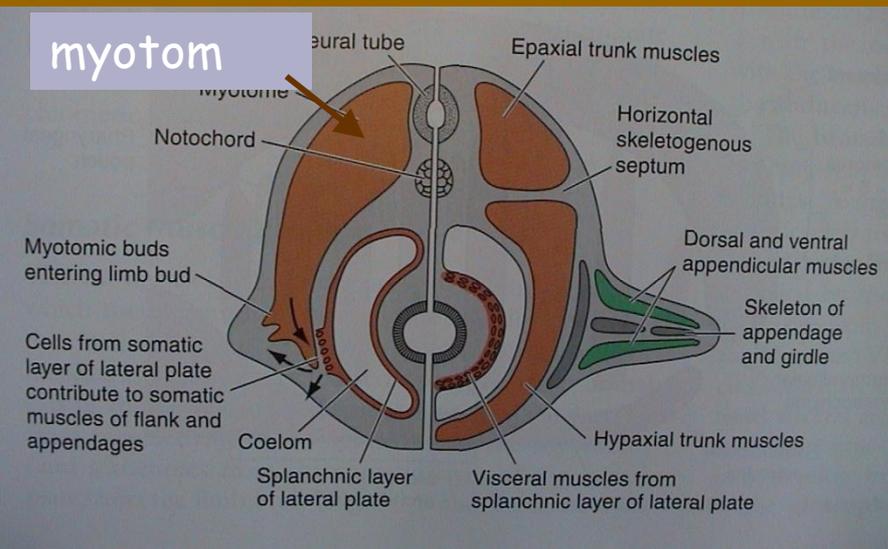
Svalová soustava obratlovce

Vodní obratlovci

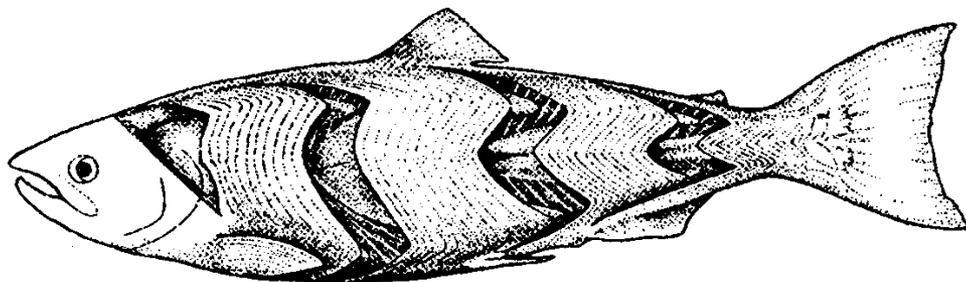
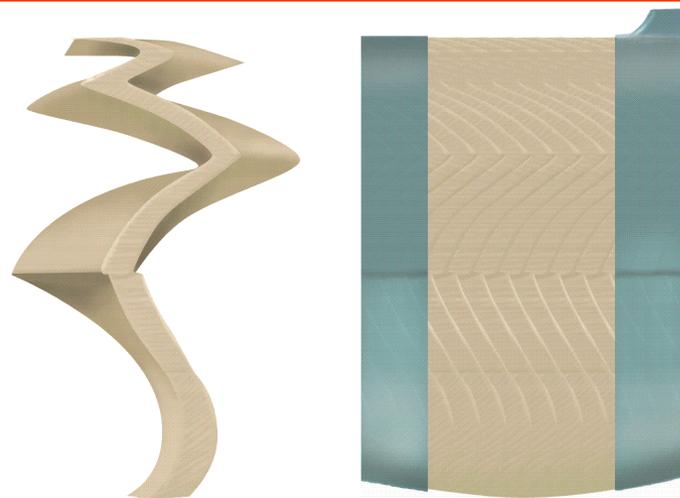
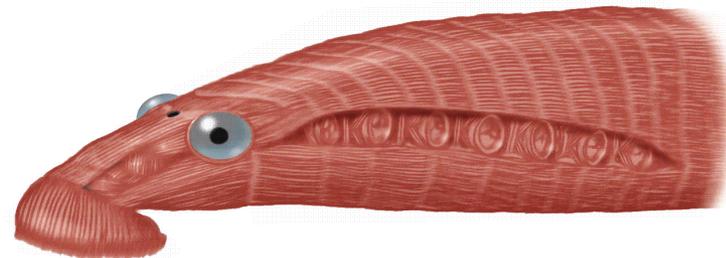
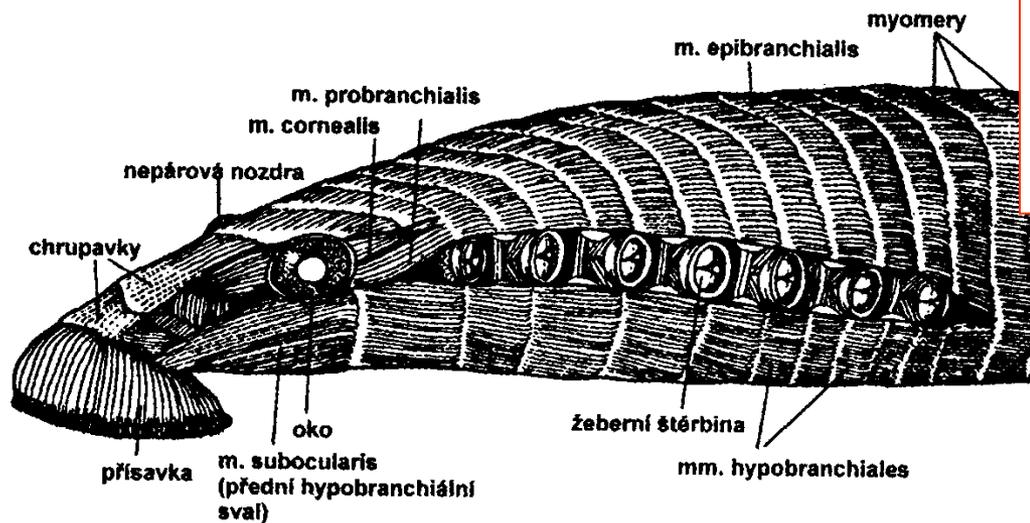
Svalovina trupu - boční sval, segmentovaná - metamerie

- myomery a myosepta

- epaxiální a hypaxiální část, septum horizontale



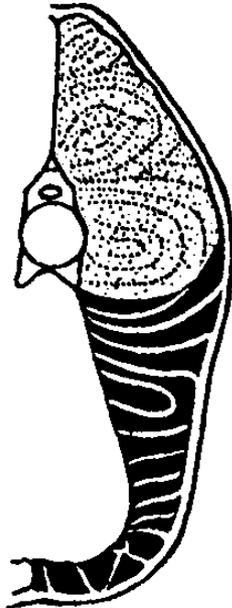
Svalová soustava



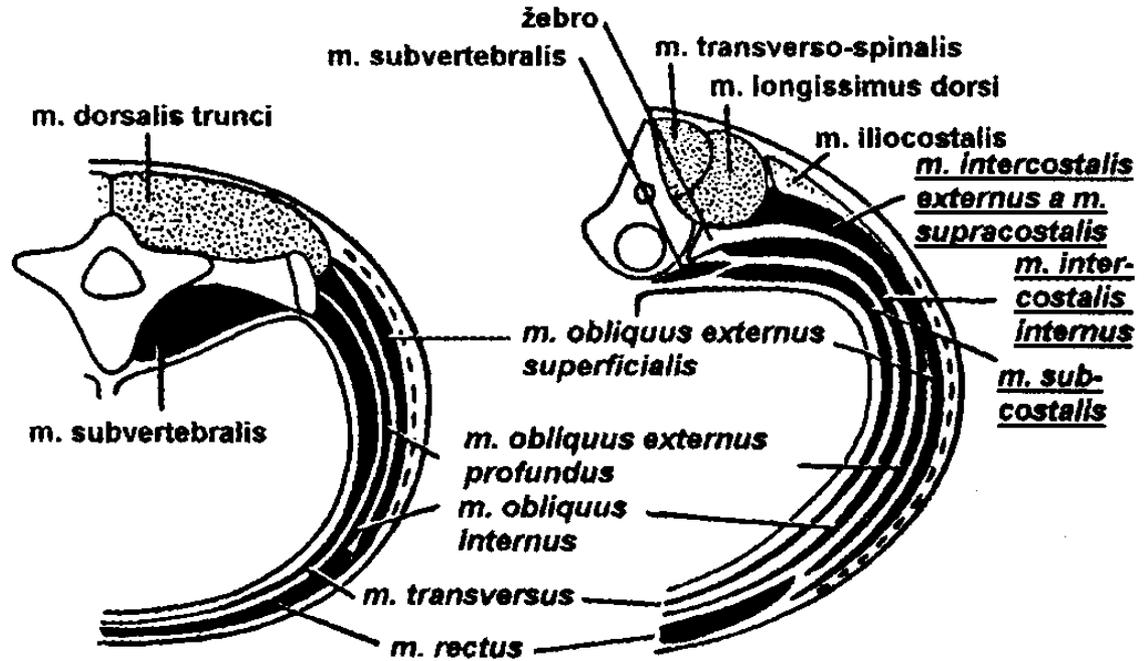
Svalová soustava



ŽRALOK
(ocasní část)



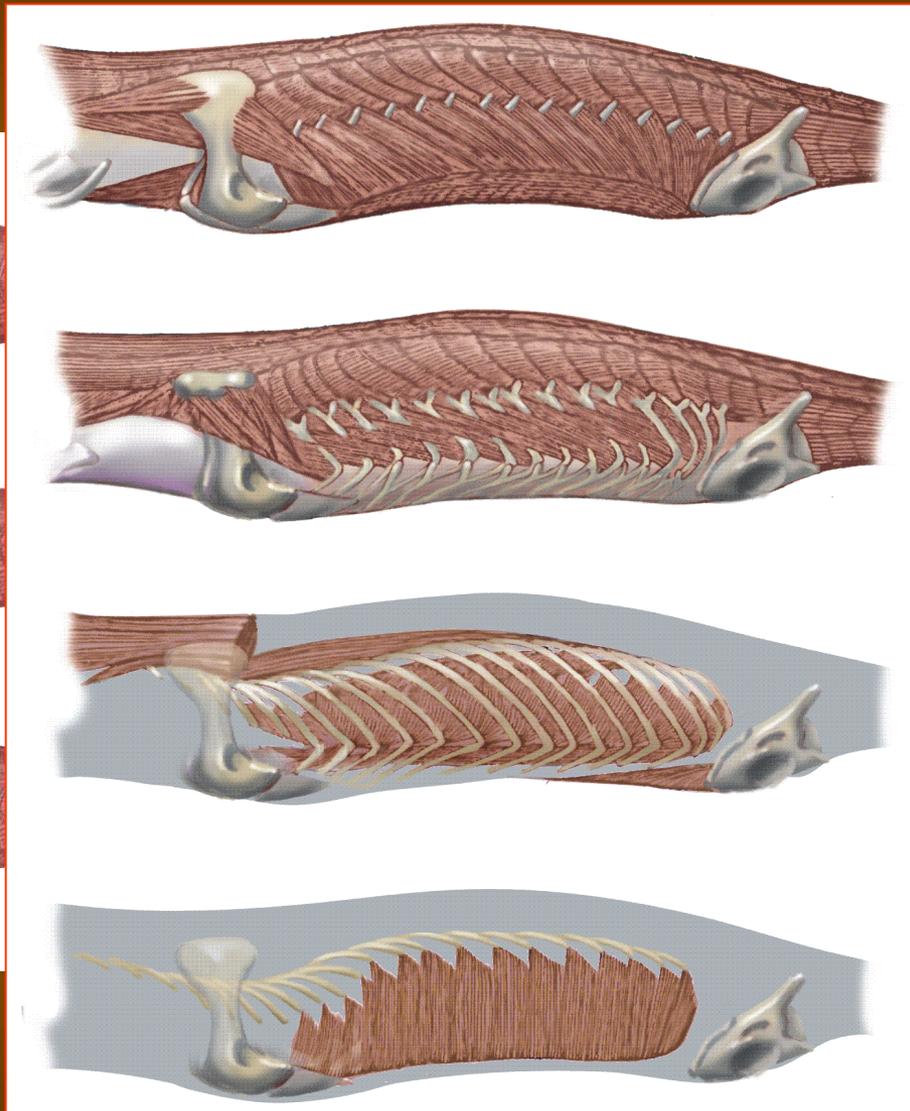
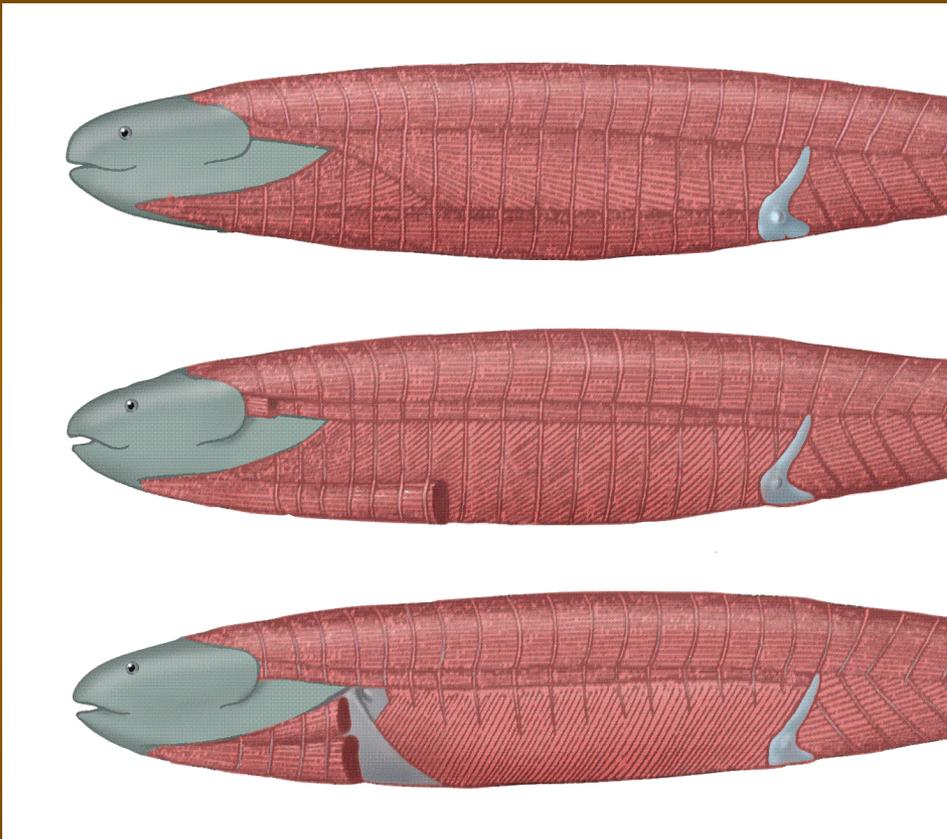
ŽRALOK
(trupová část)



OCASATÝ OBOJŽIVELNÍK

PLAZ

Svalová soustava

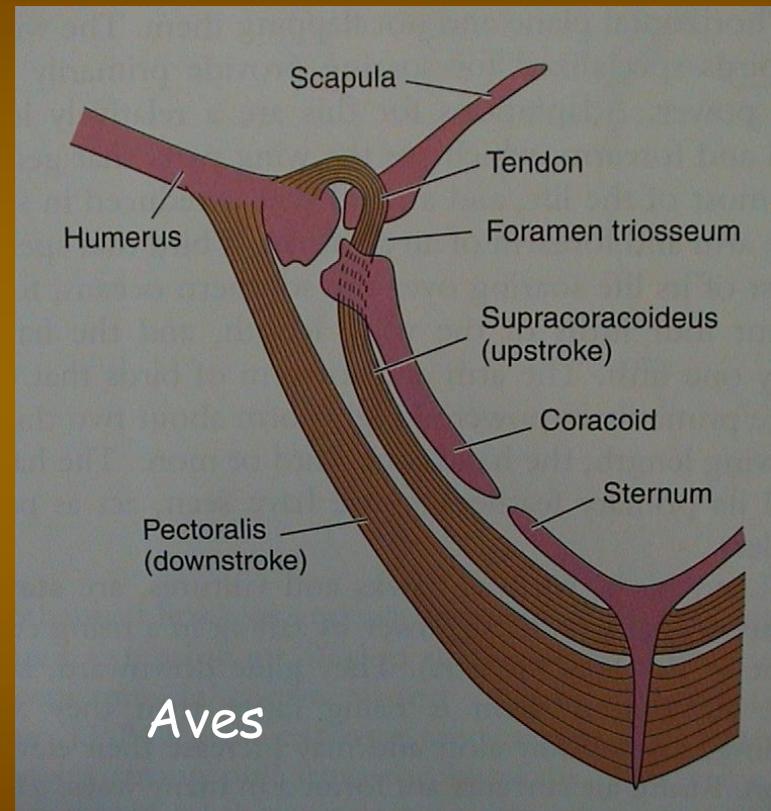


Svalová soustava

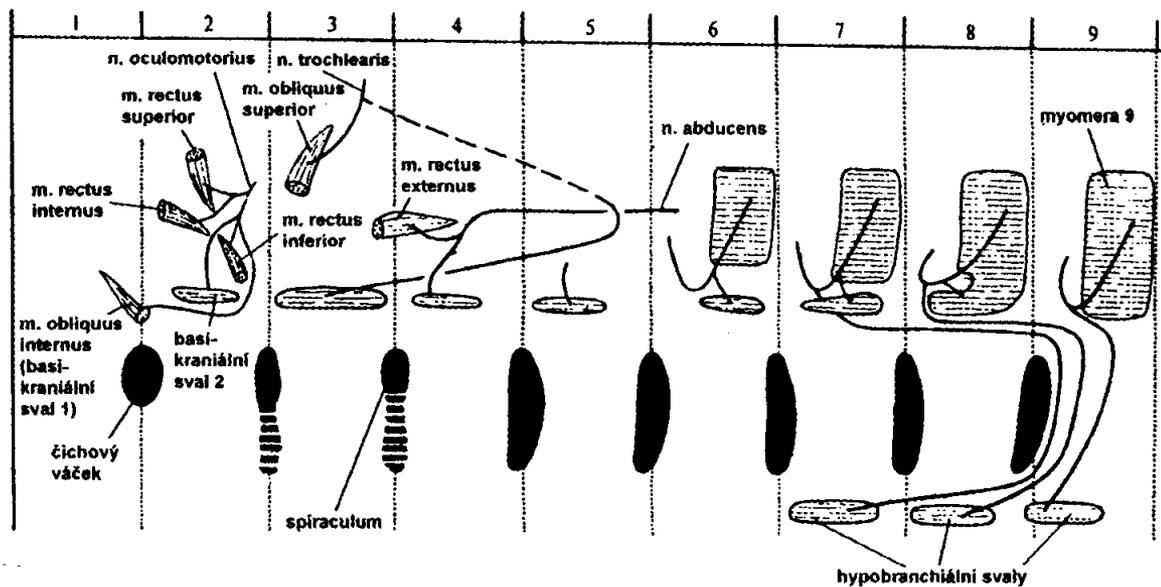
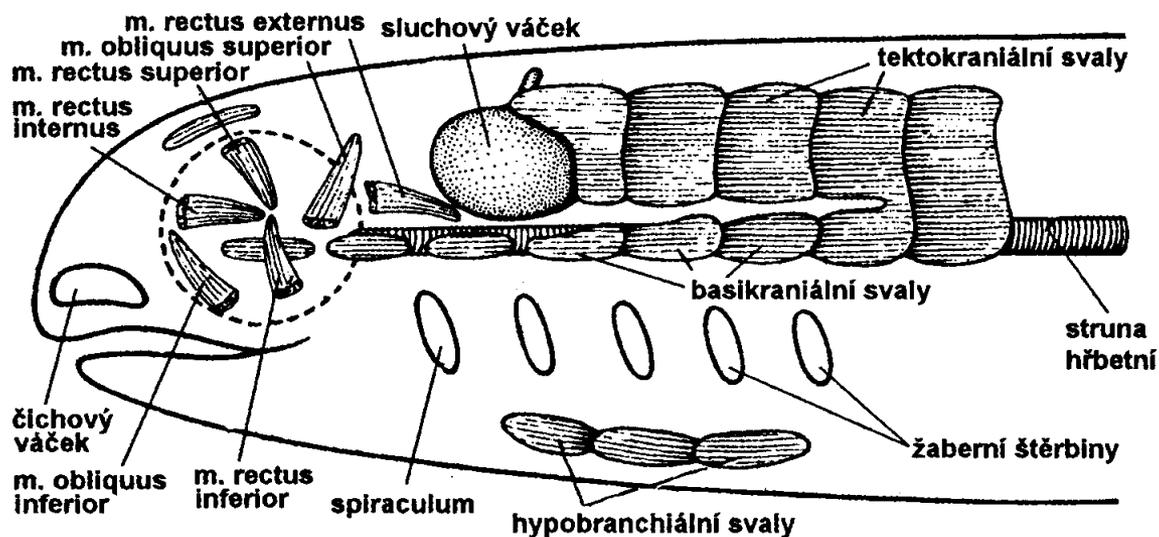
Suchozemští obratlovci

Rozpad bočního svalu

Rozvoj svalstva končetin

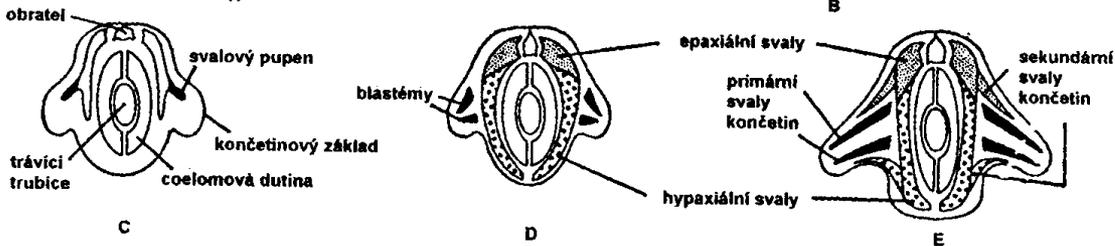
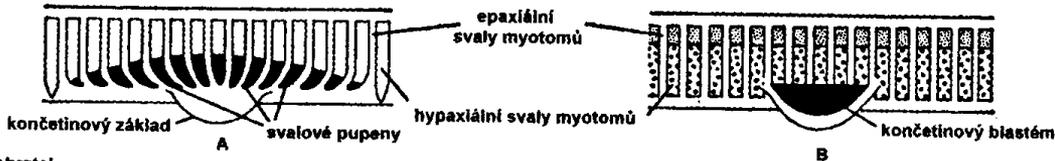
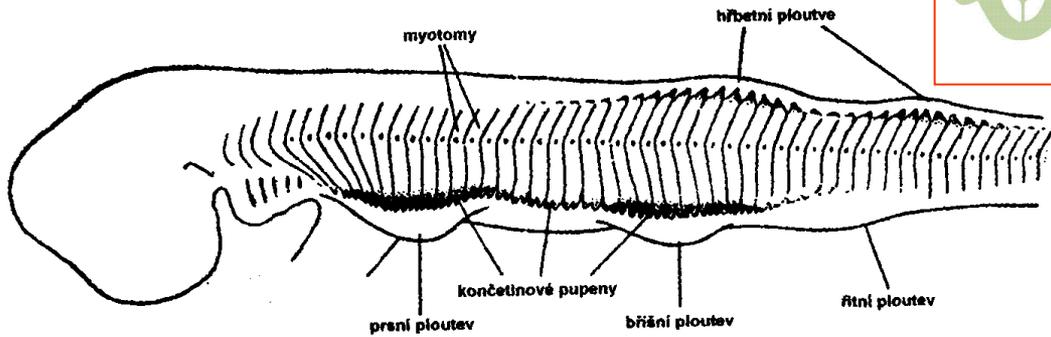
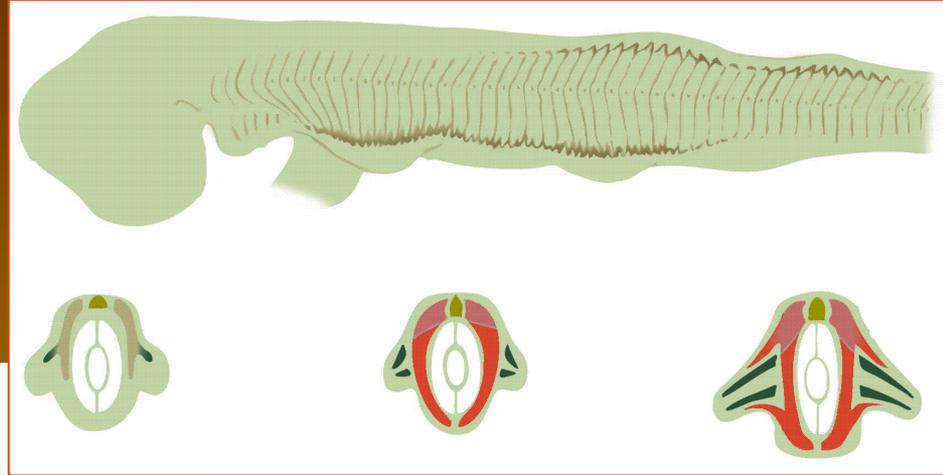


Svalová soustava



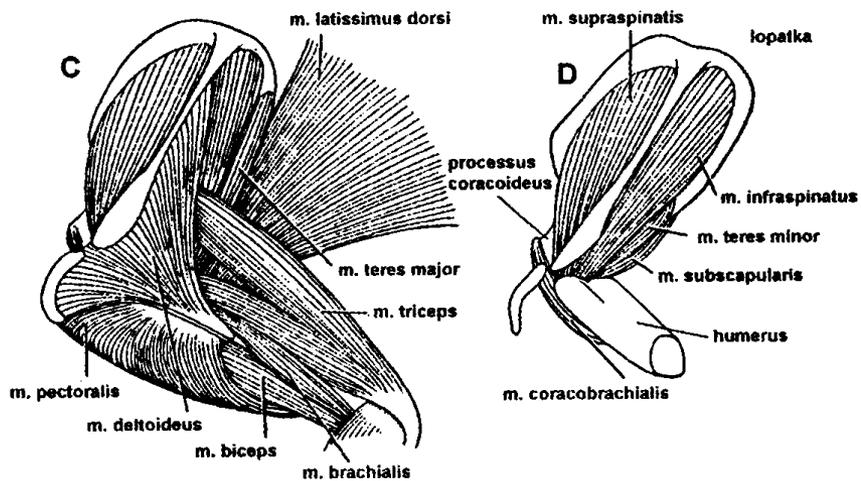
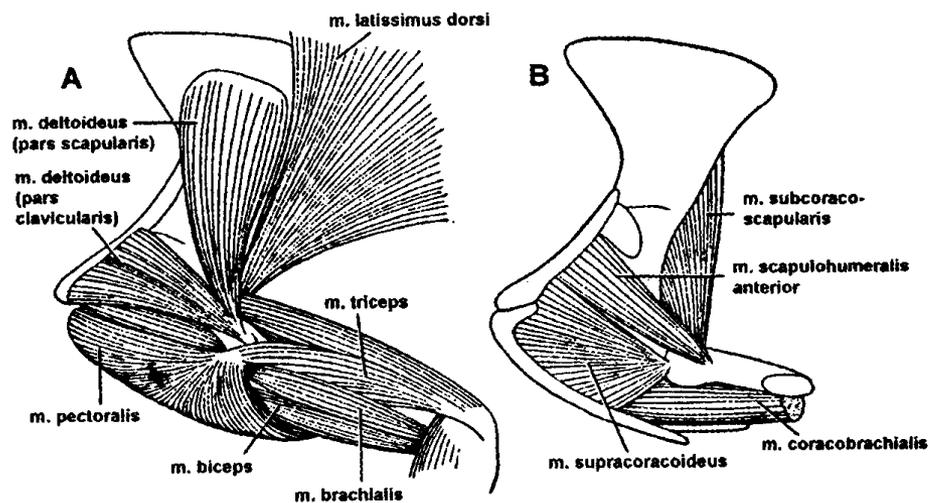
Svalová soustava

Svalstvo končetin



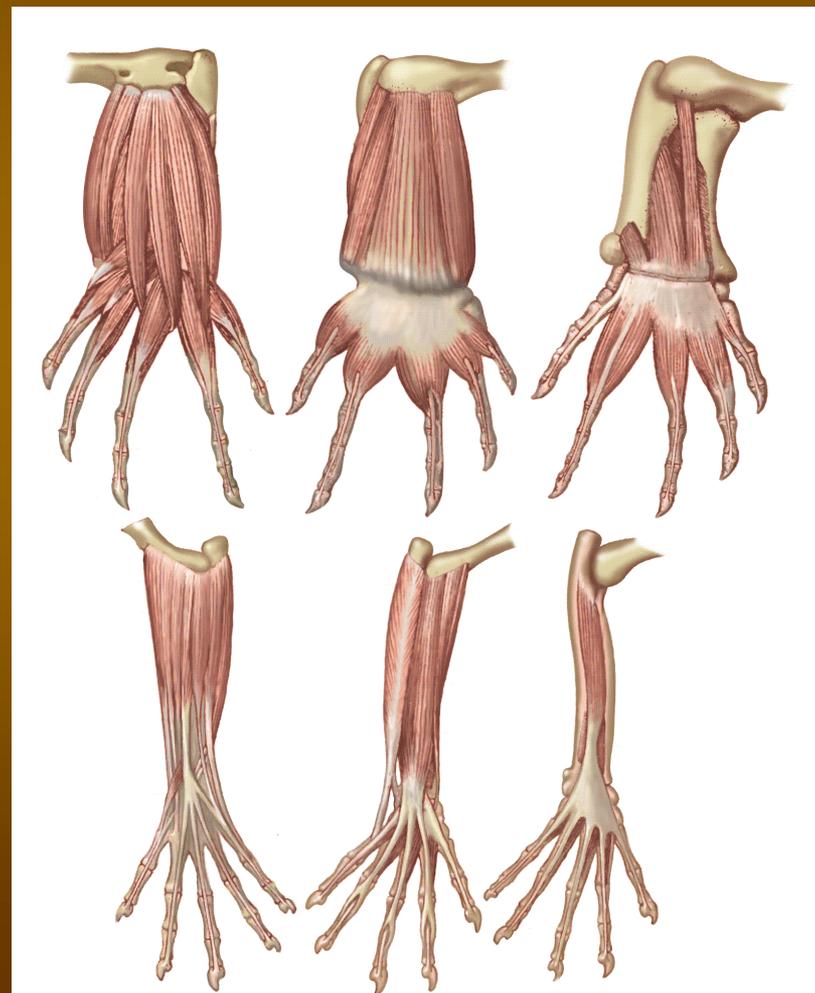
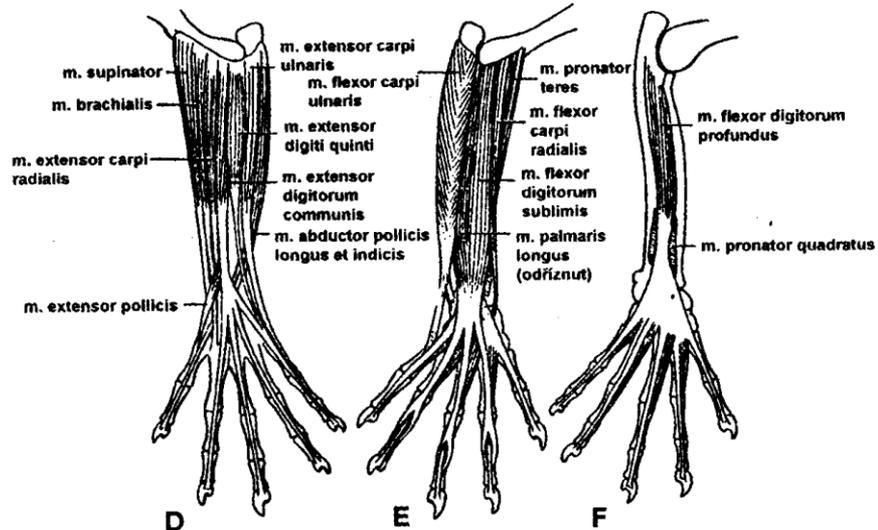
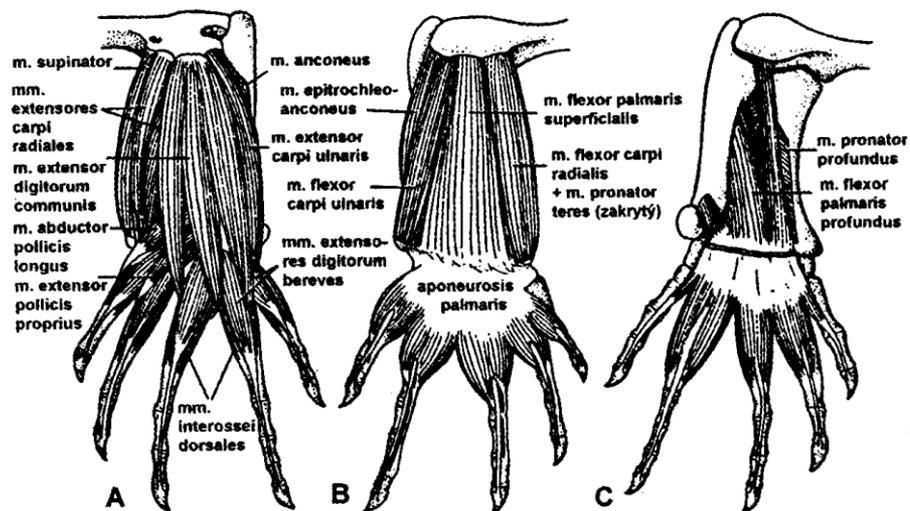
Svalová soustava

Svalstvo předních končetin (lopatkových)



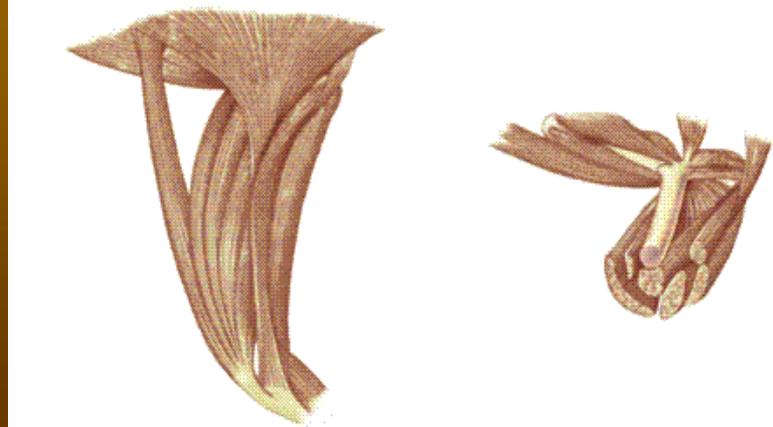
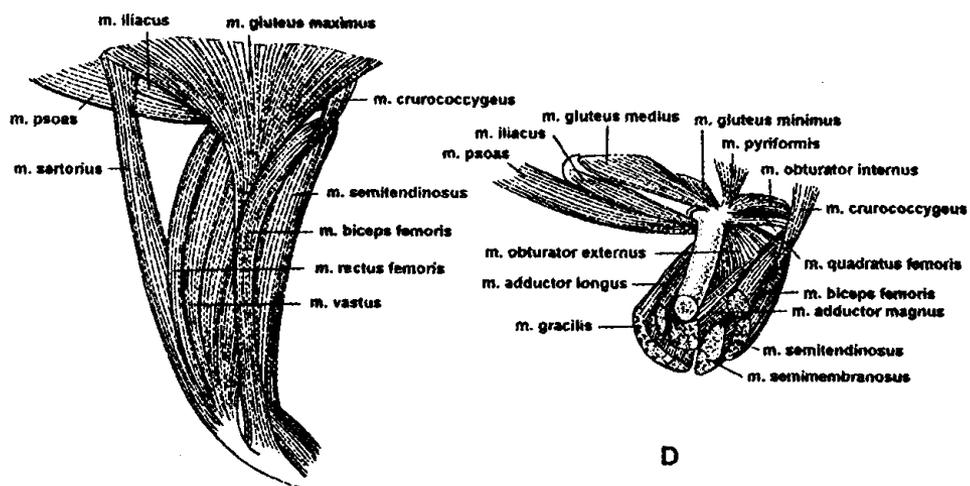
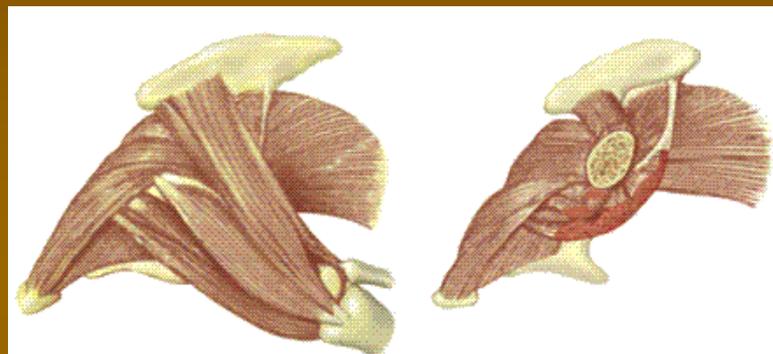
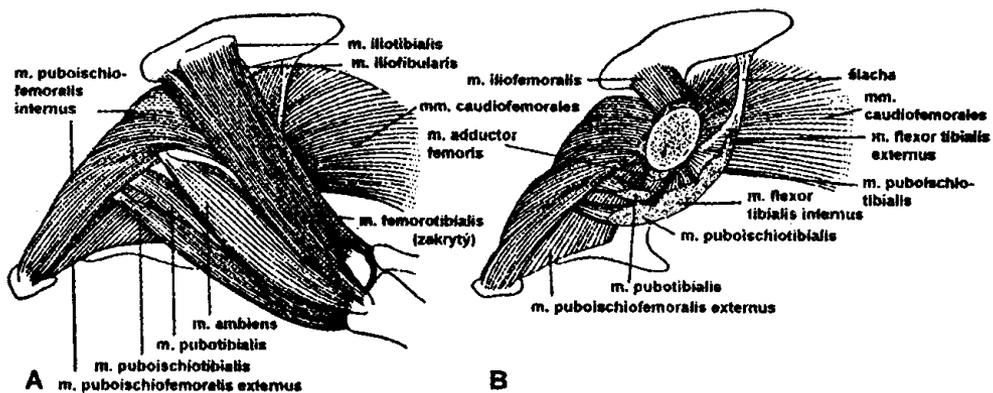
Svalová soustava

Svalstvo předních končetin (lopatkových)



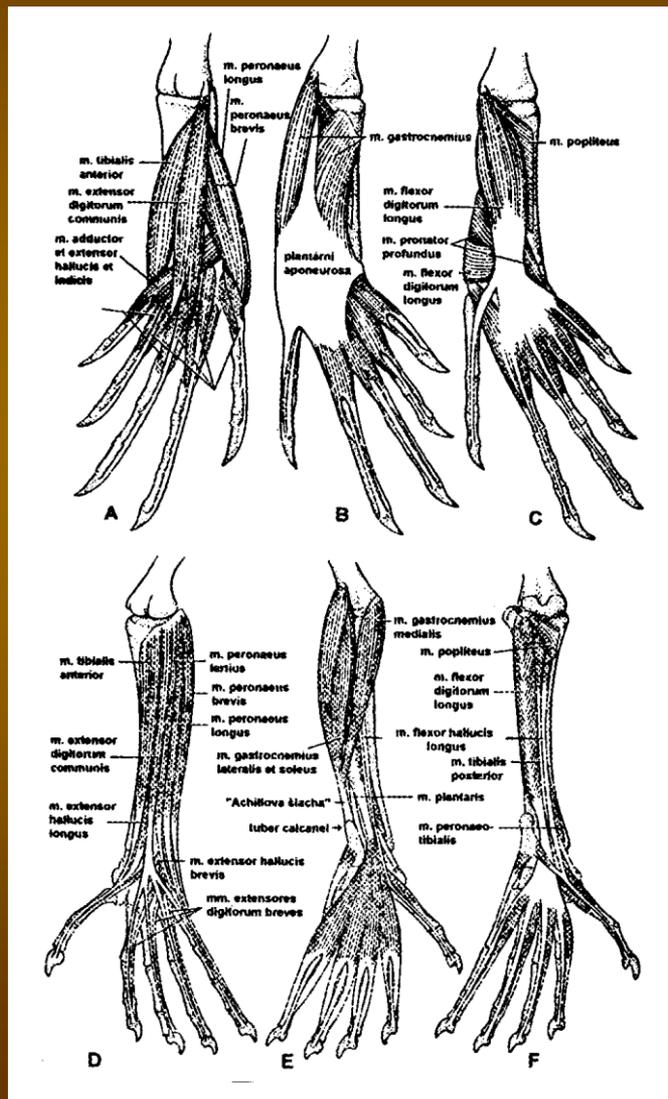
Svalová soustava

Svalstvo zadních končetin (pánevních)

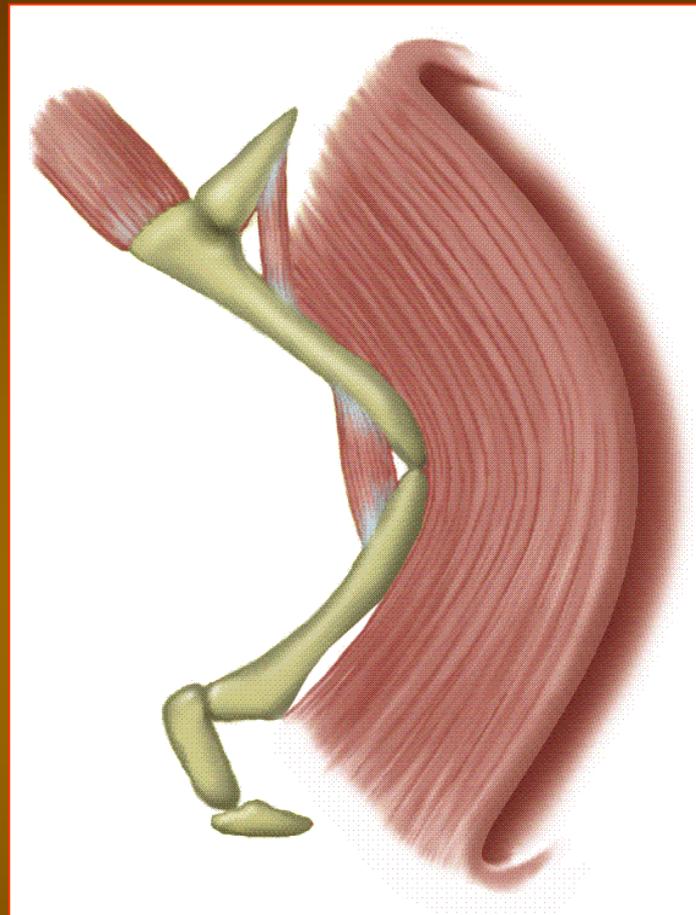
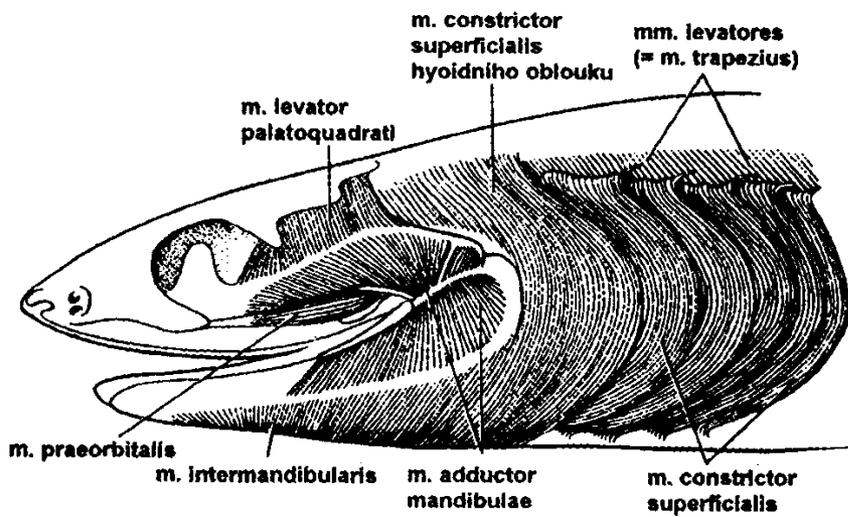
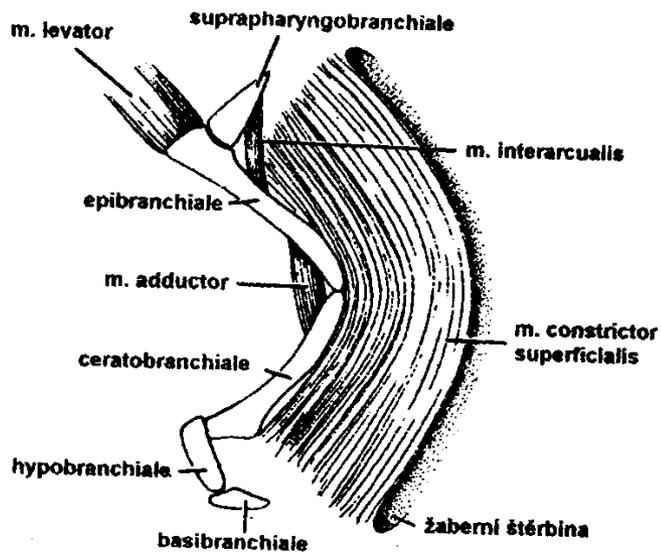


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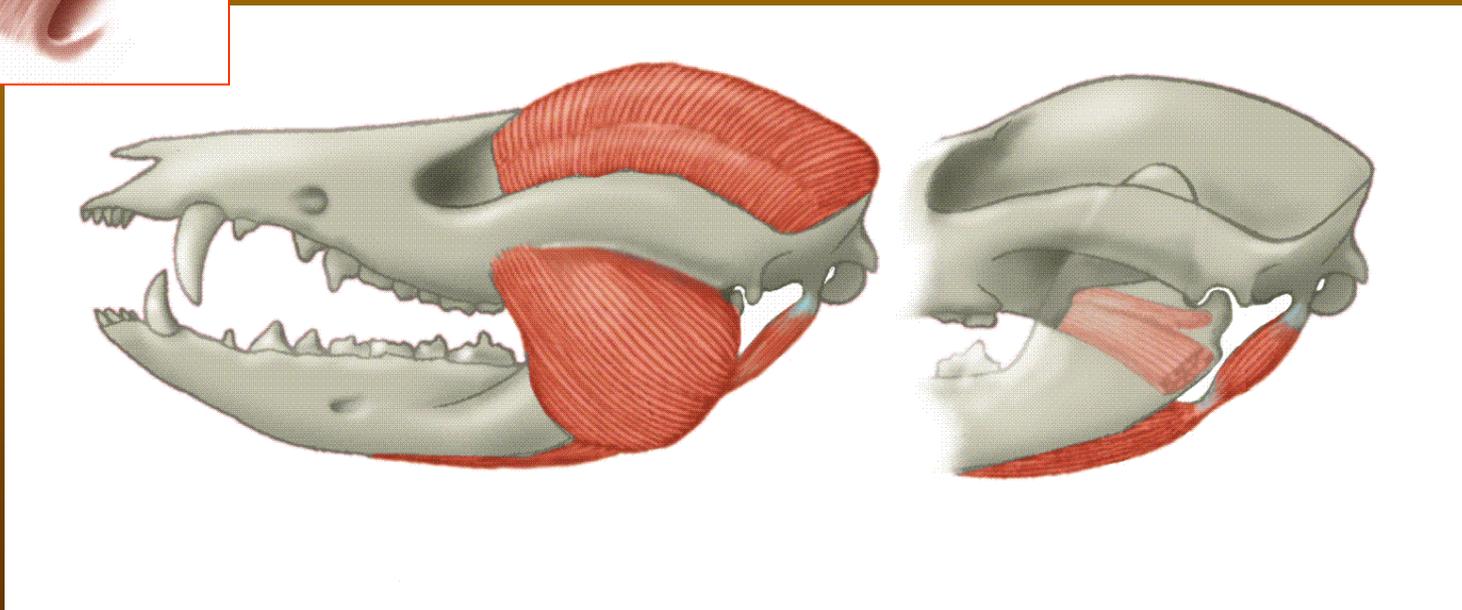
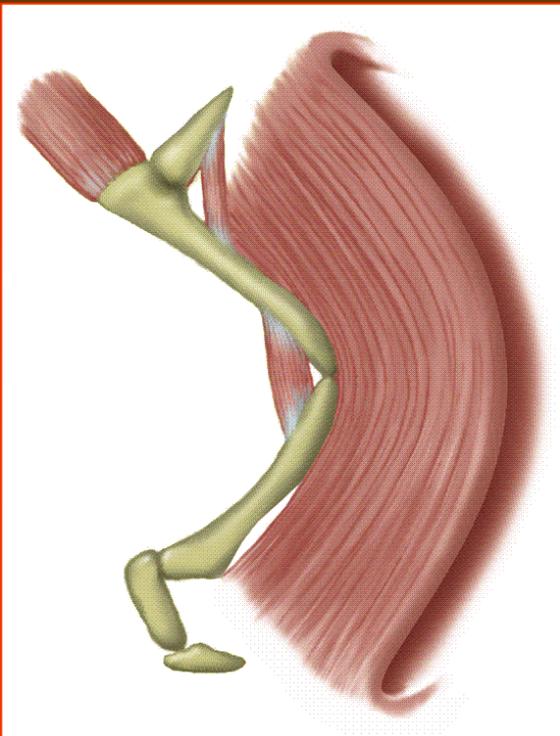
Svalstvo zadních končetin (pánevních)



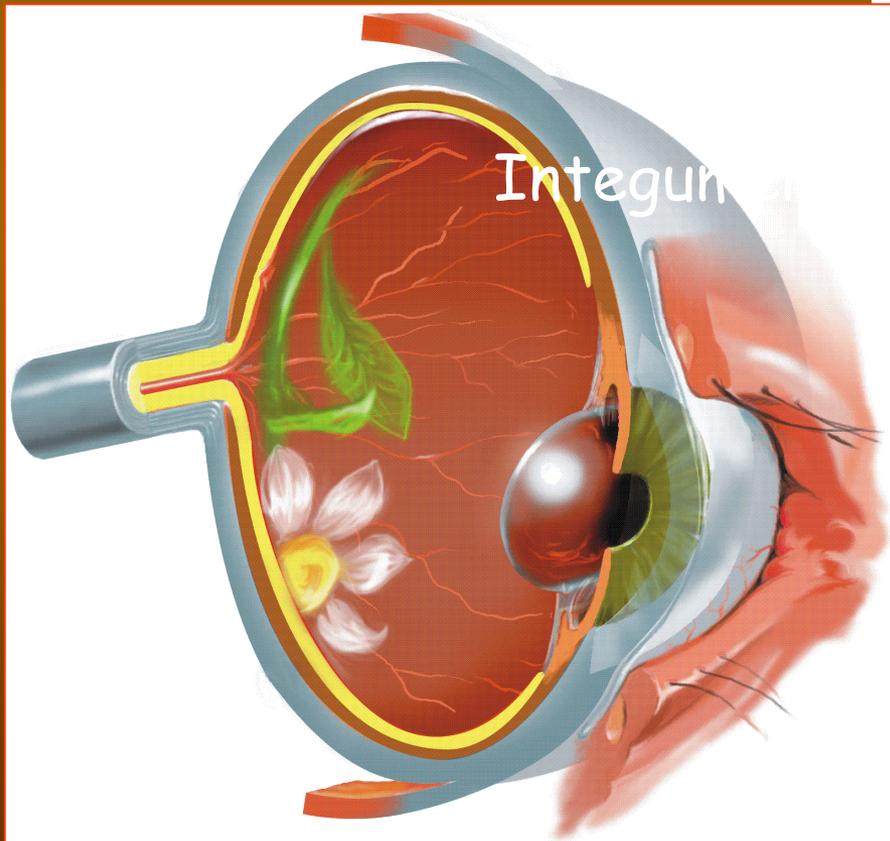
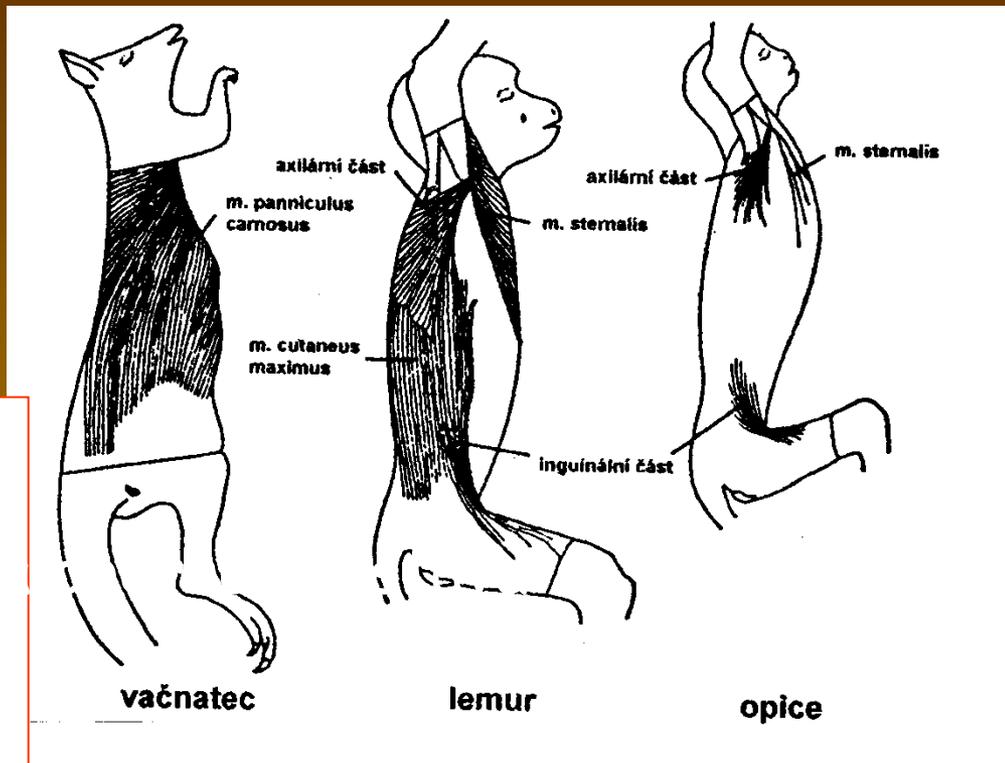
Svalová soustava



Svalová soustava



Svalová soustava

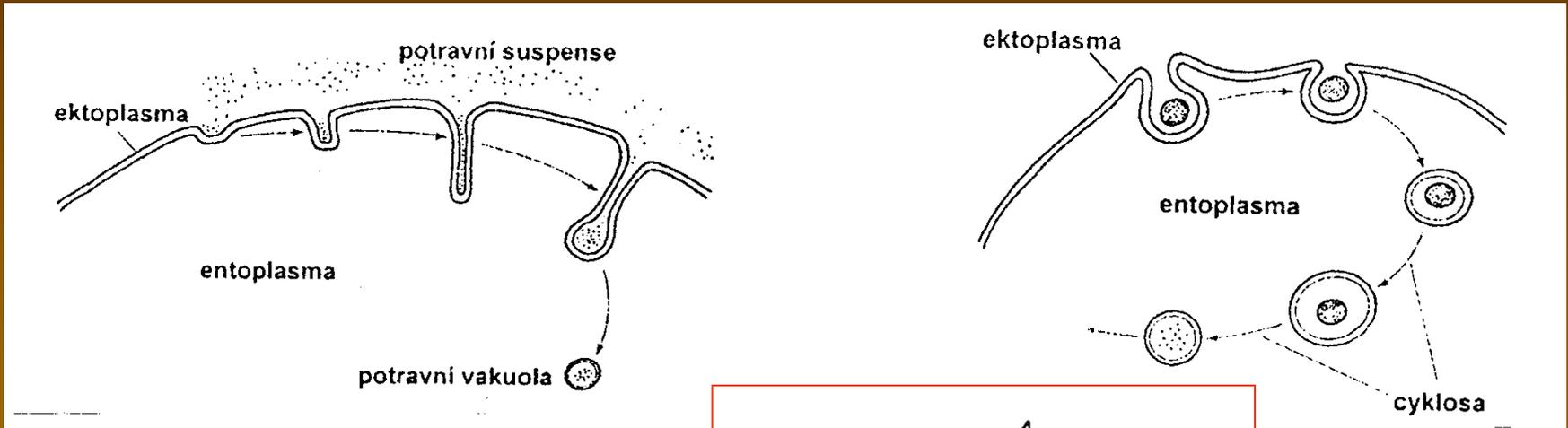


Vývojová morfologie živočichů

IV.

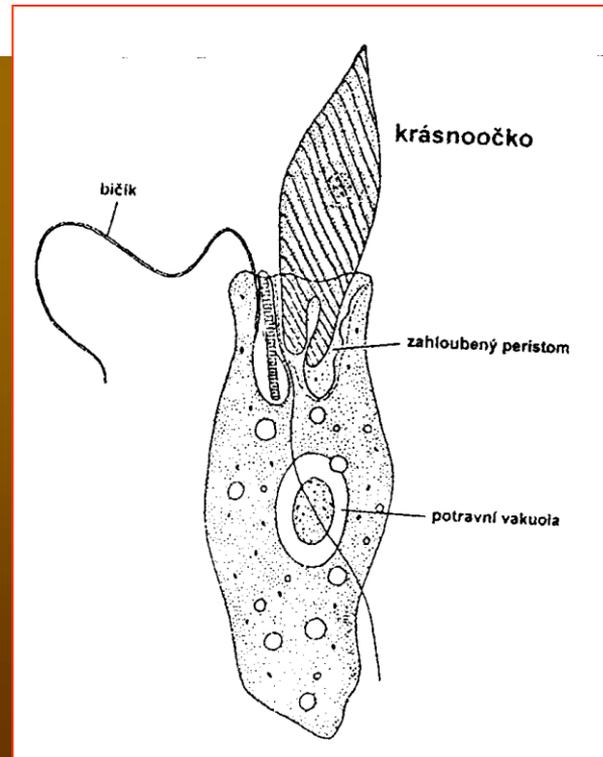
Trávicí soustava

Trávicí soustava

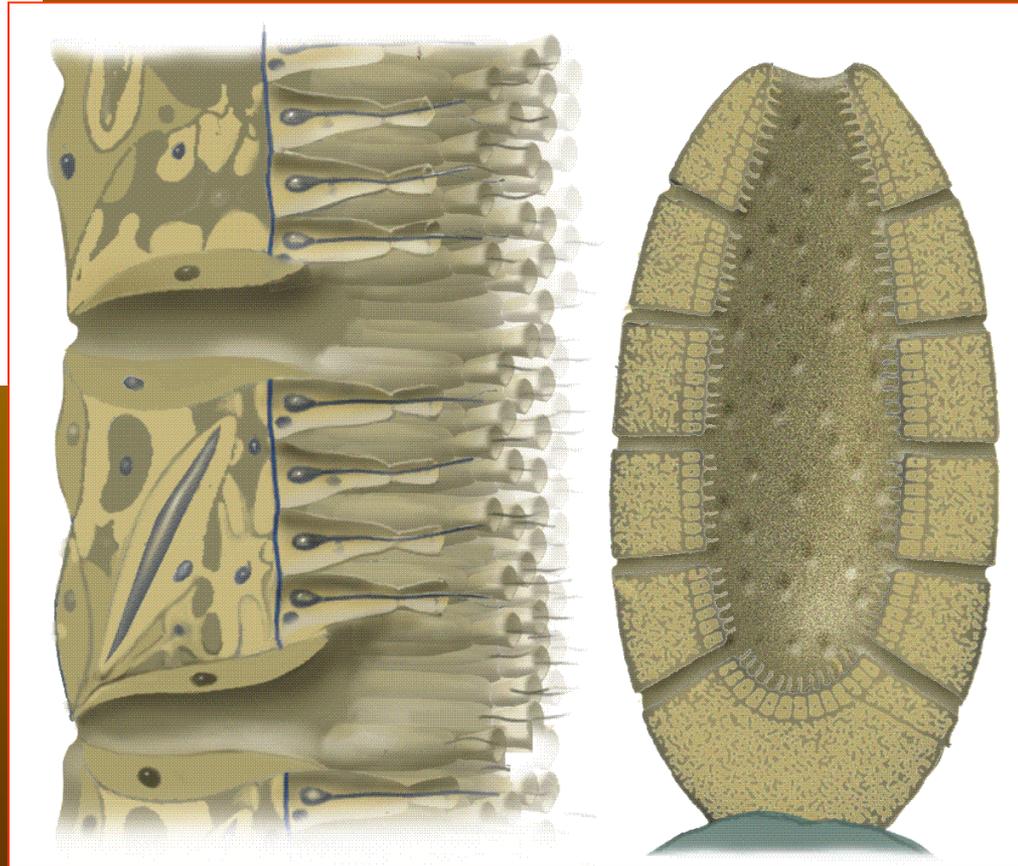
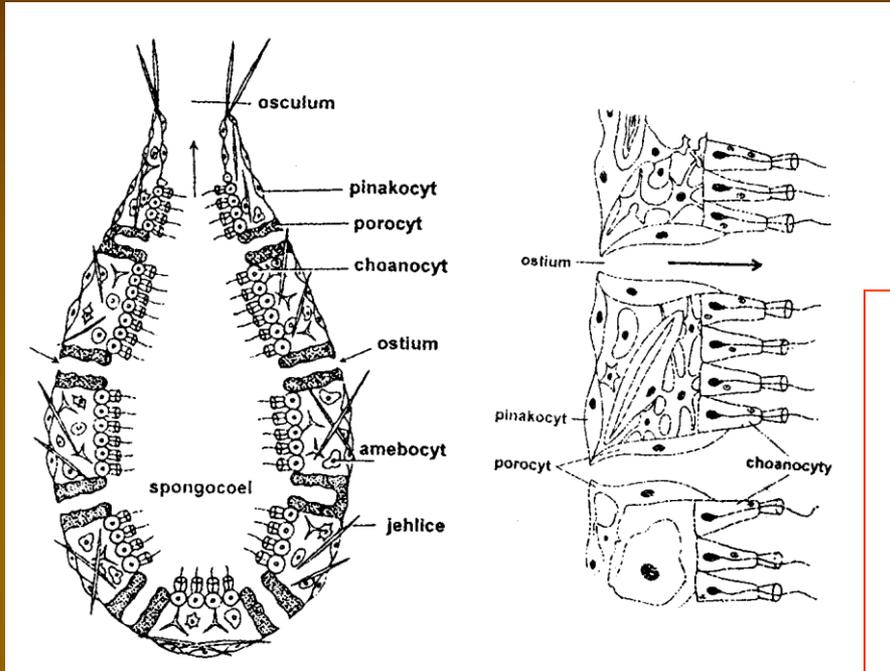


Jednobuněční

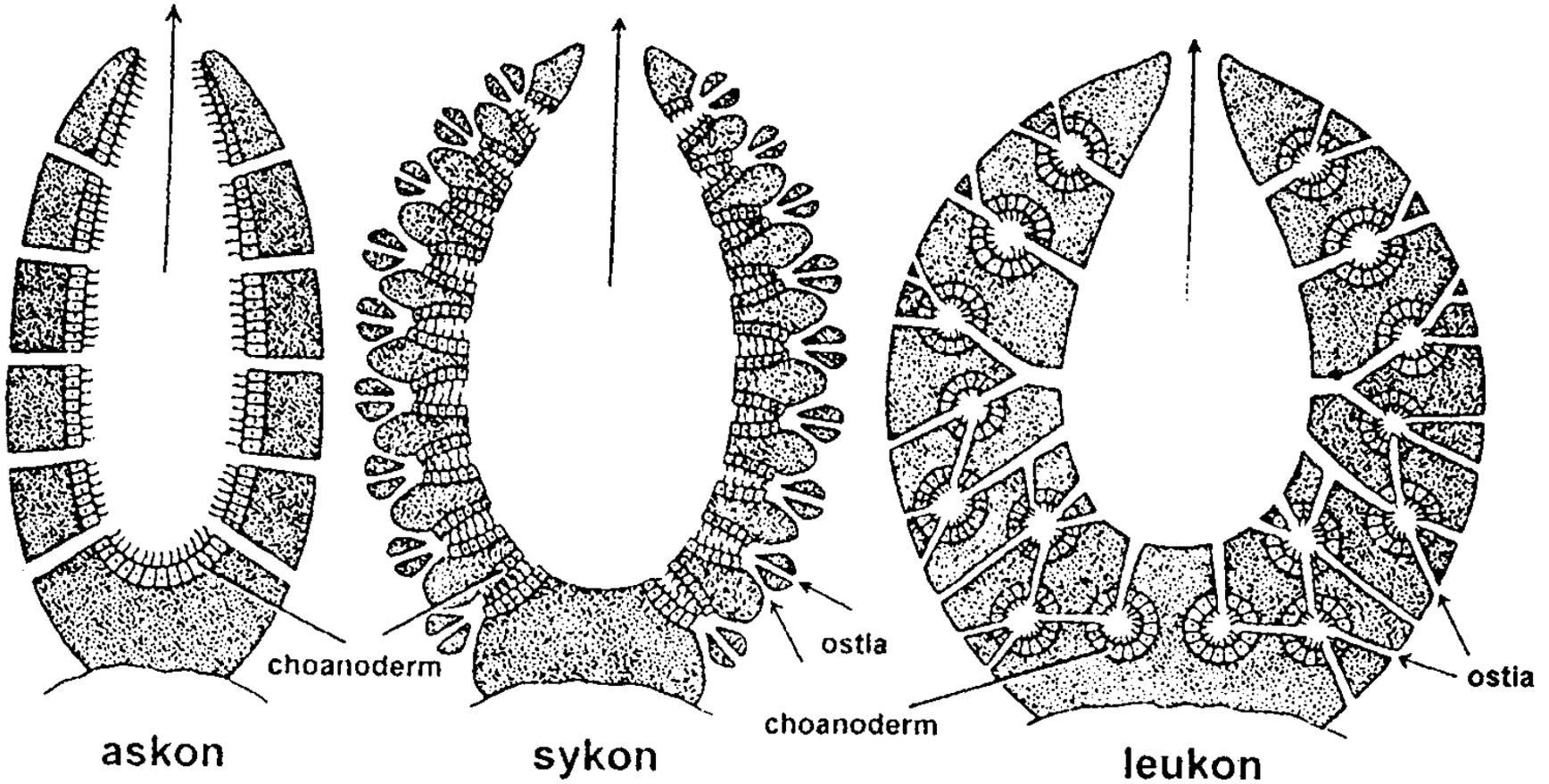
nitrobuněčné trávení



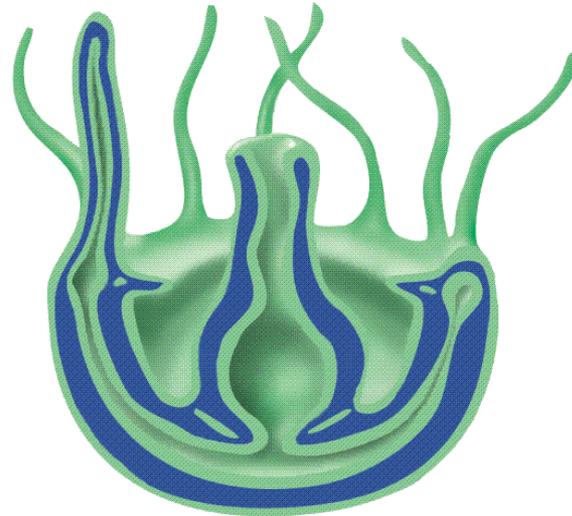
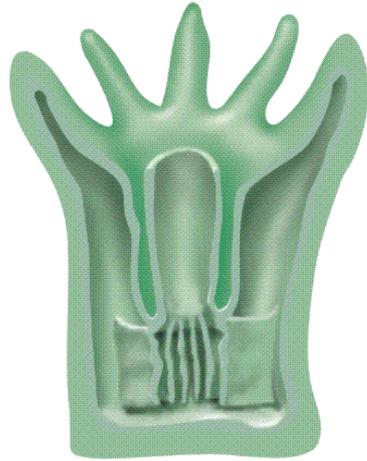
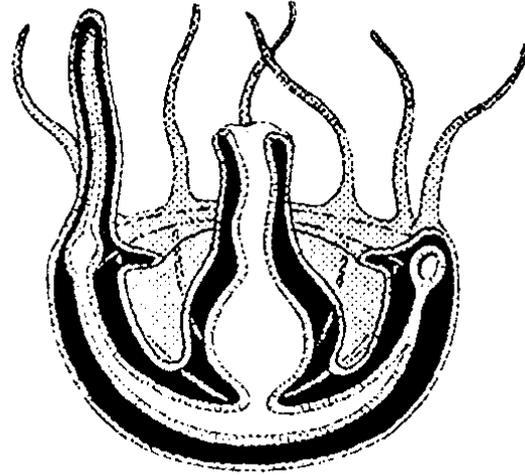
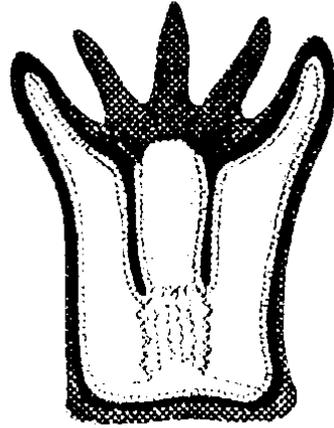
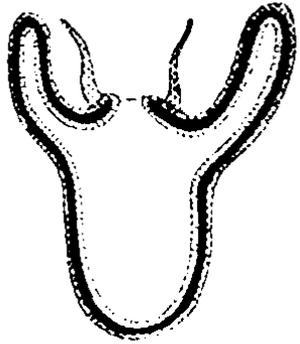
Trávicí soustava



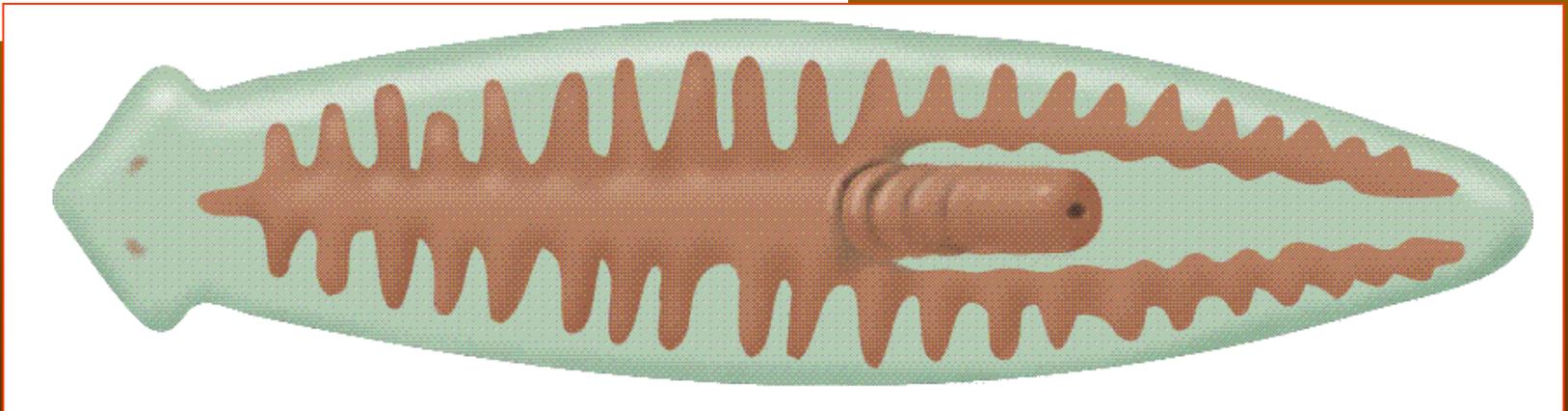
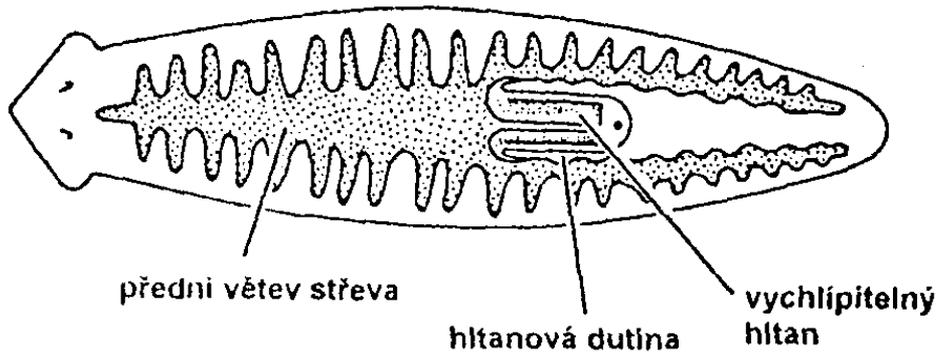
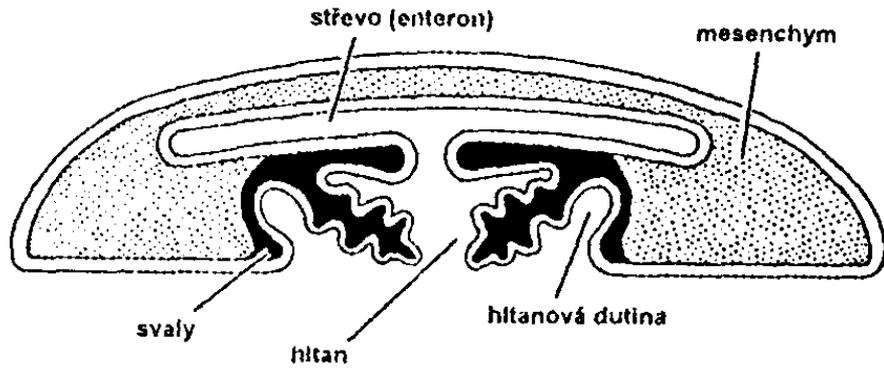
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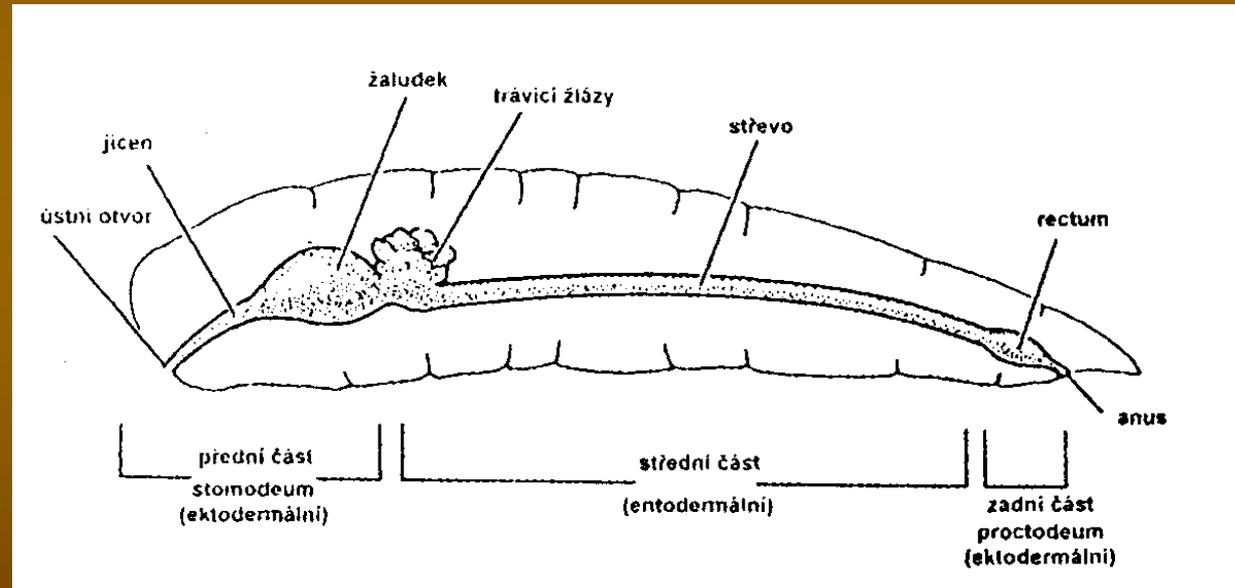
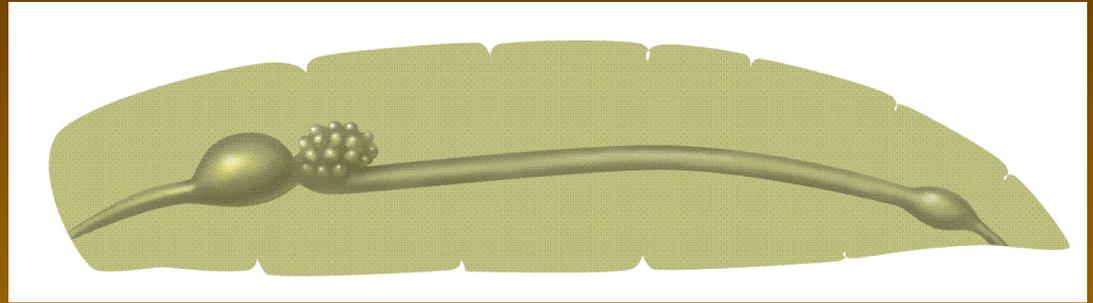
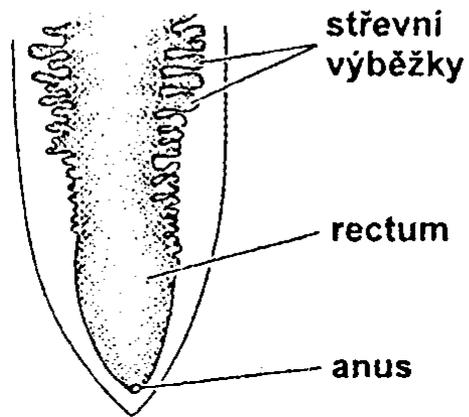
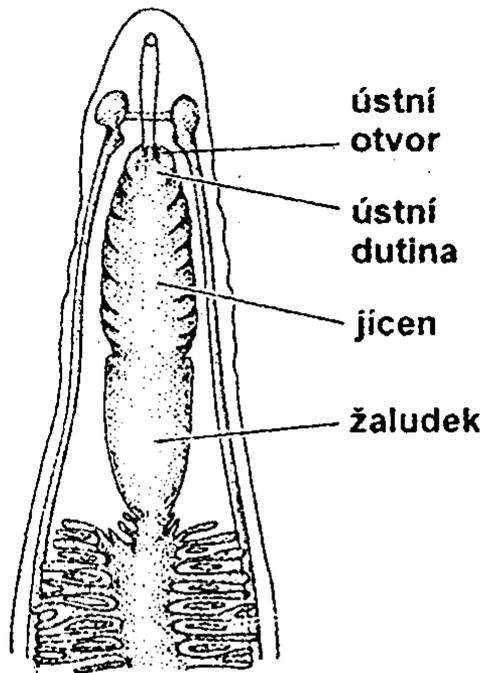
Trávicí soustava



Trávicí soustava

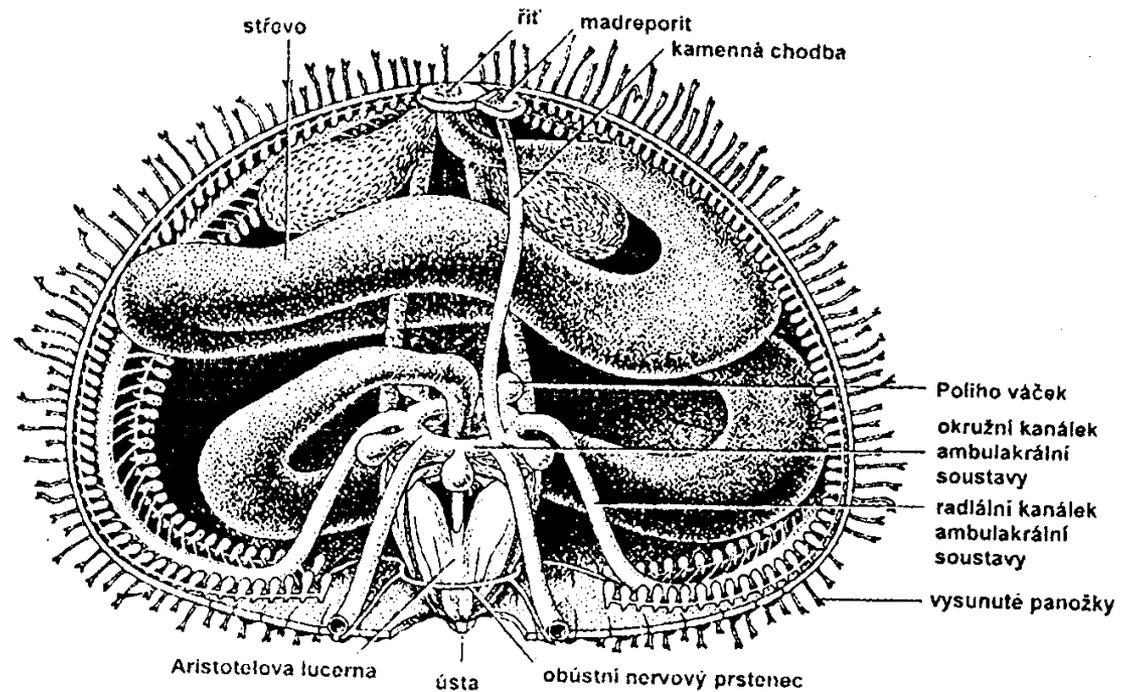
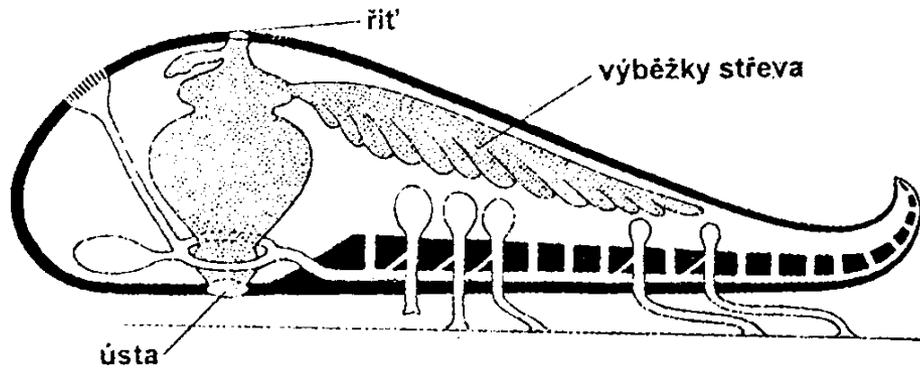


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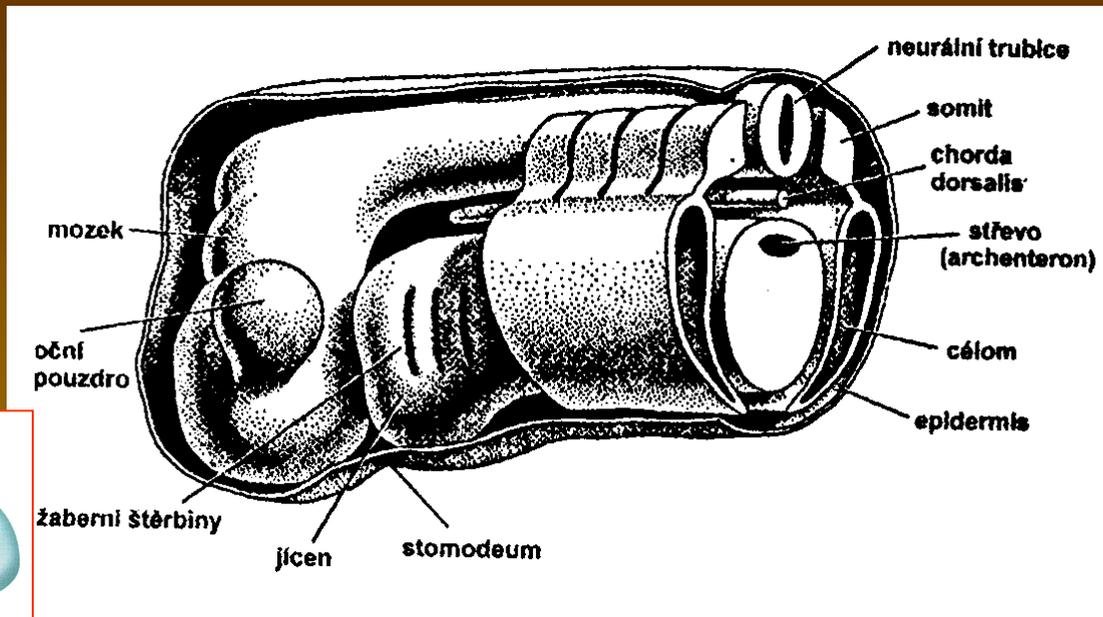
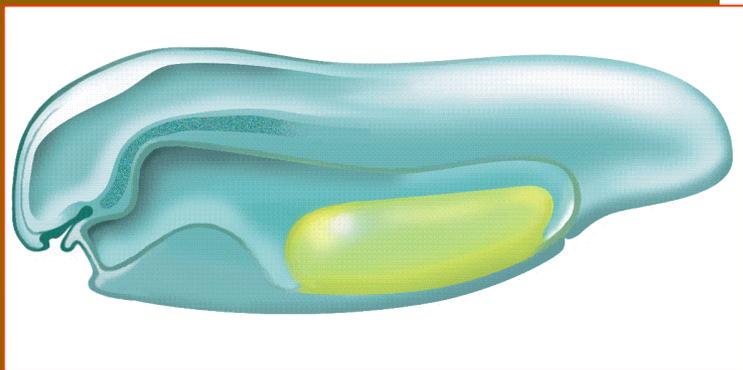
Trávicí soustava

Ostnokožci

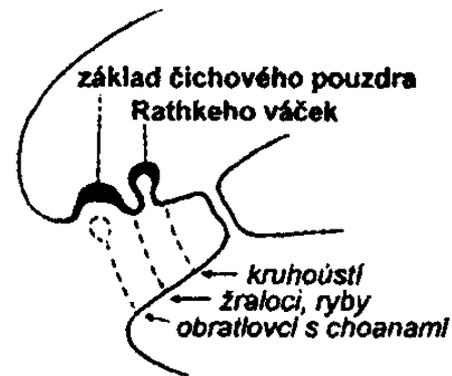
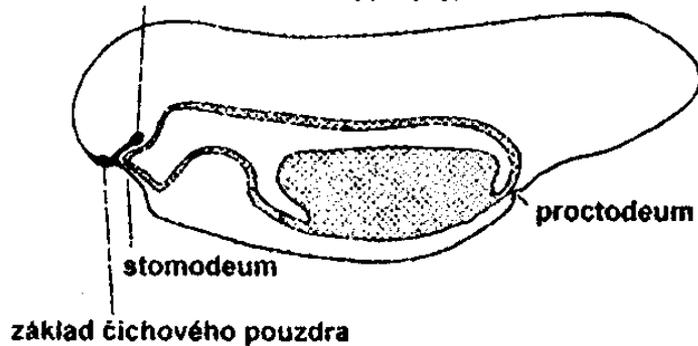


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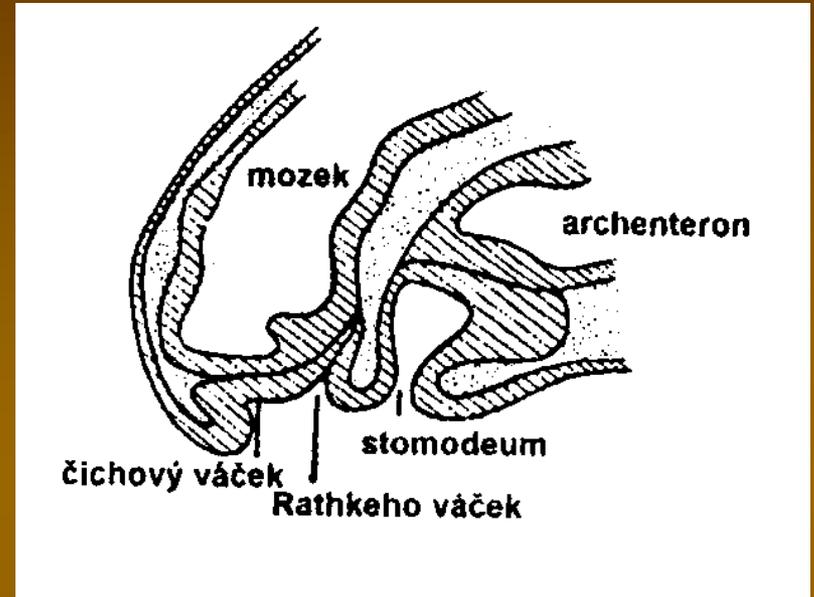
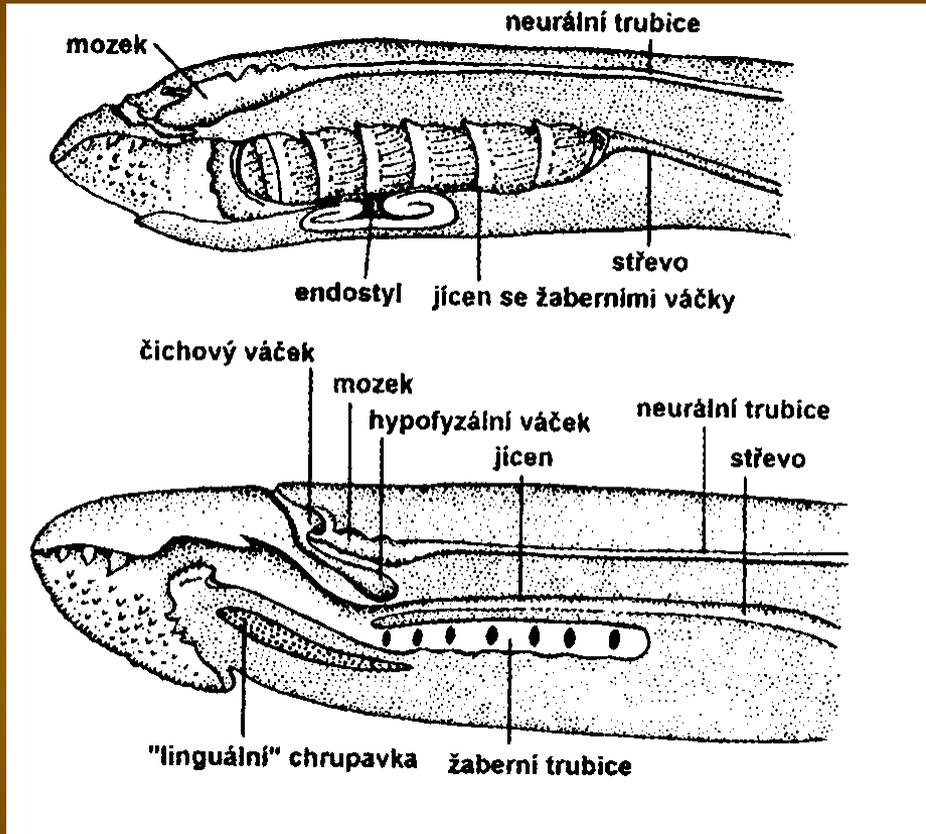
Obratlovci



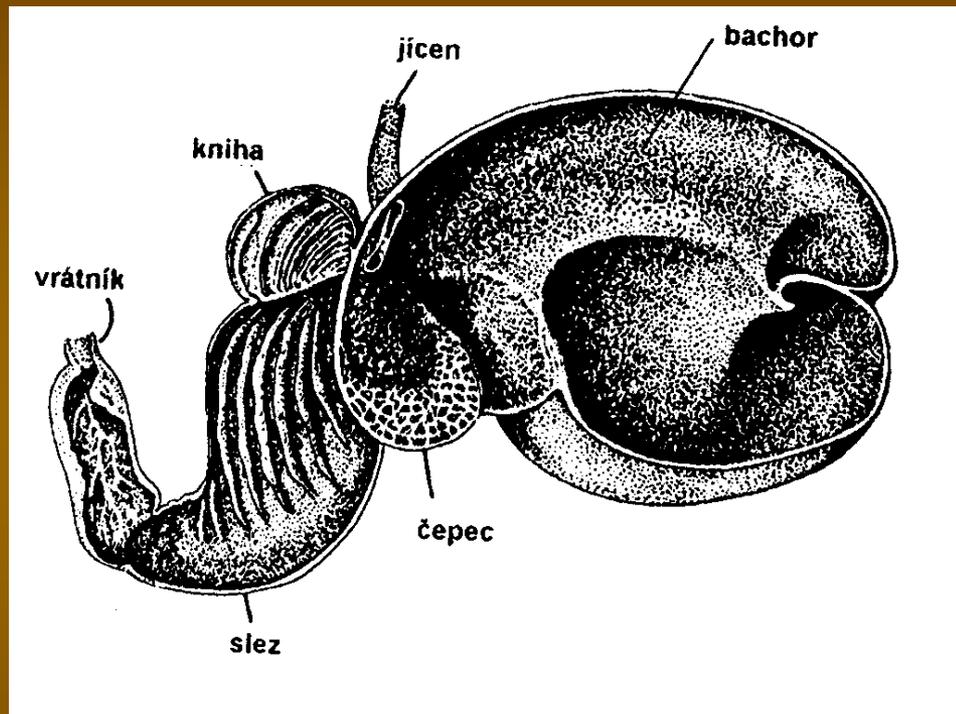
Rathkeho váček (základ hypofýzy)



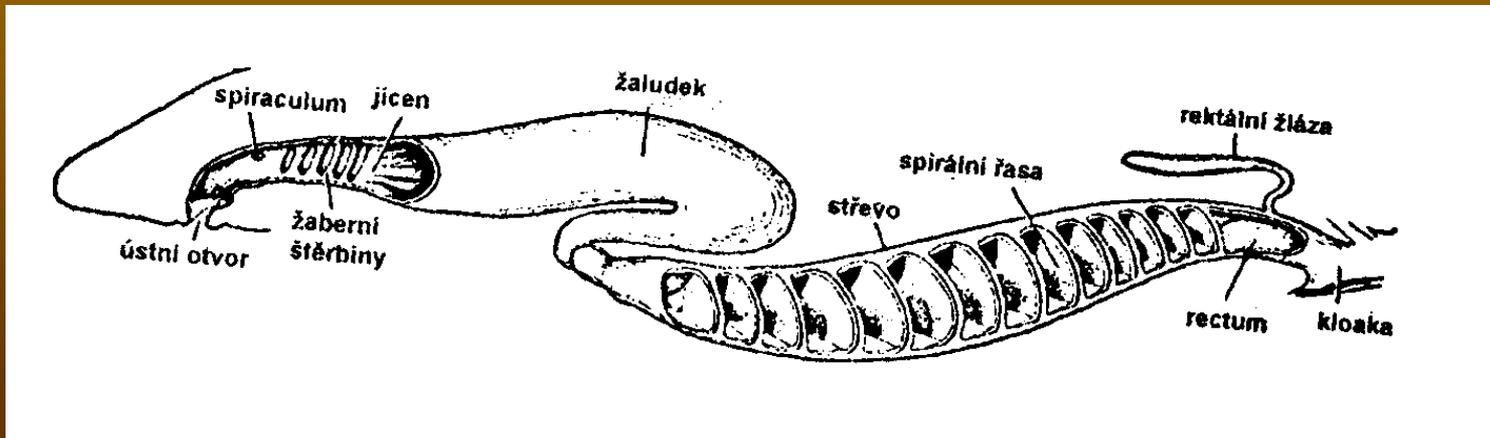
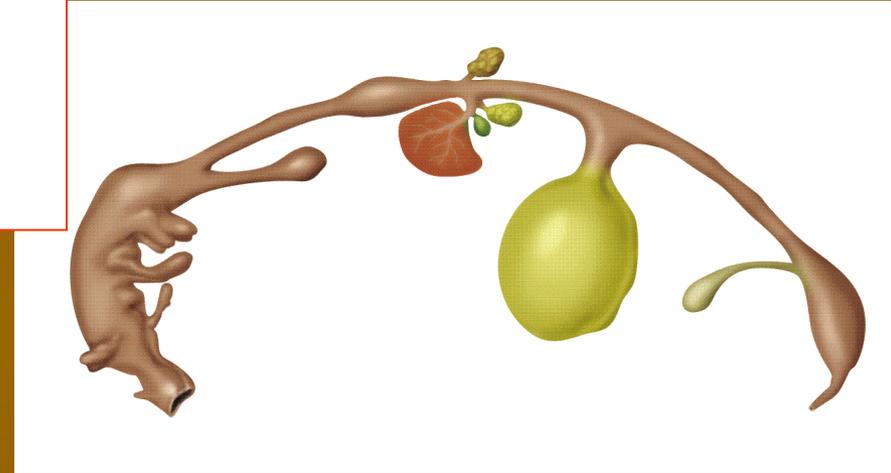
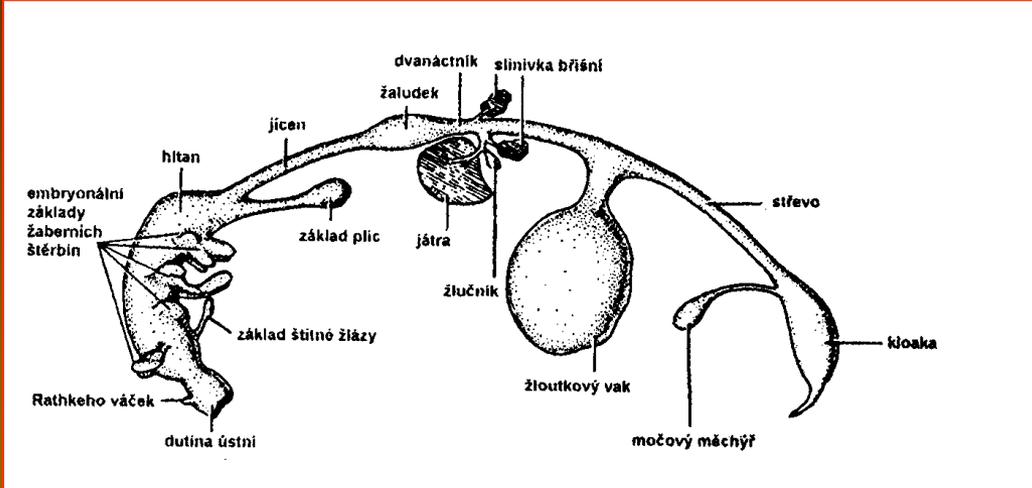
Trávicí soustava



Trávicí soustava

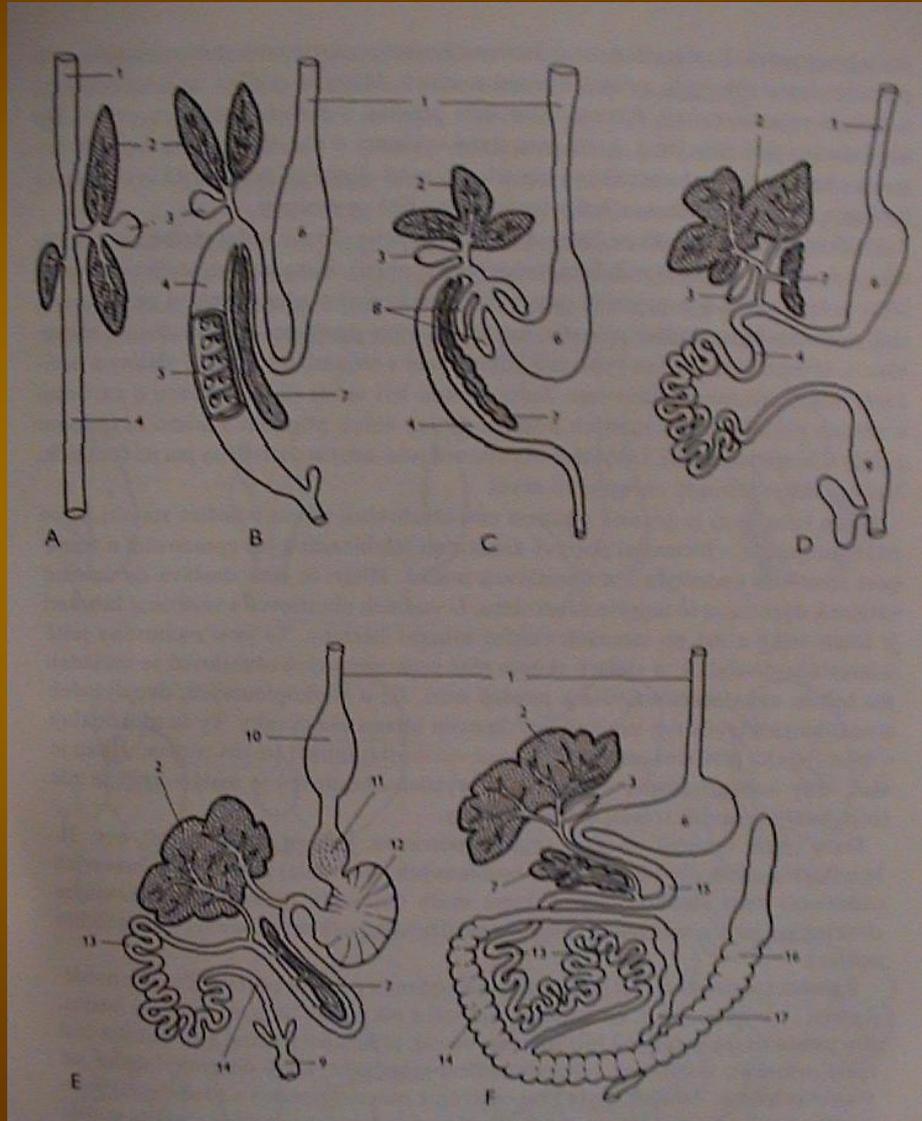


Trávicí soustava



Trávicí soustava

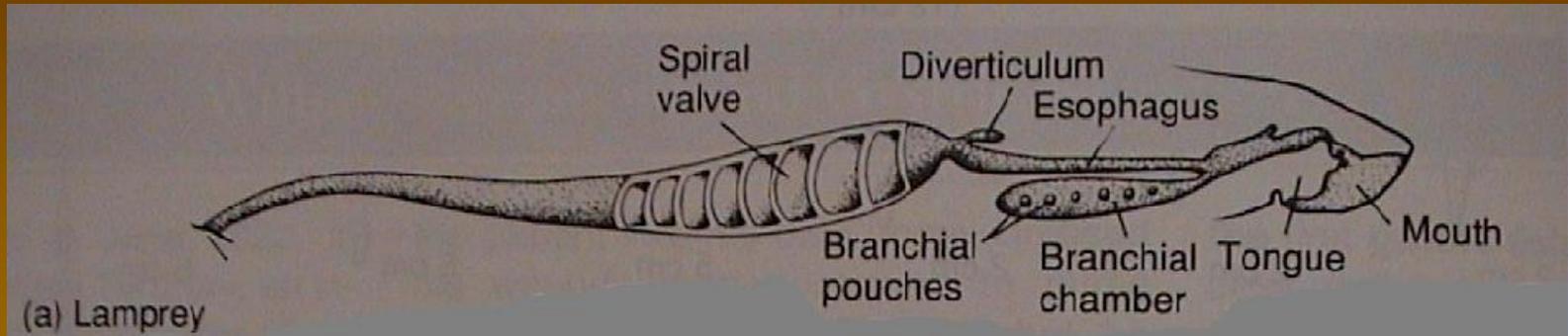
- A) mihule
- B) žralok
- C) okoun
- D) skokan
- E) holub
- F) králík



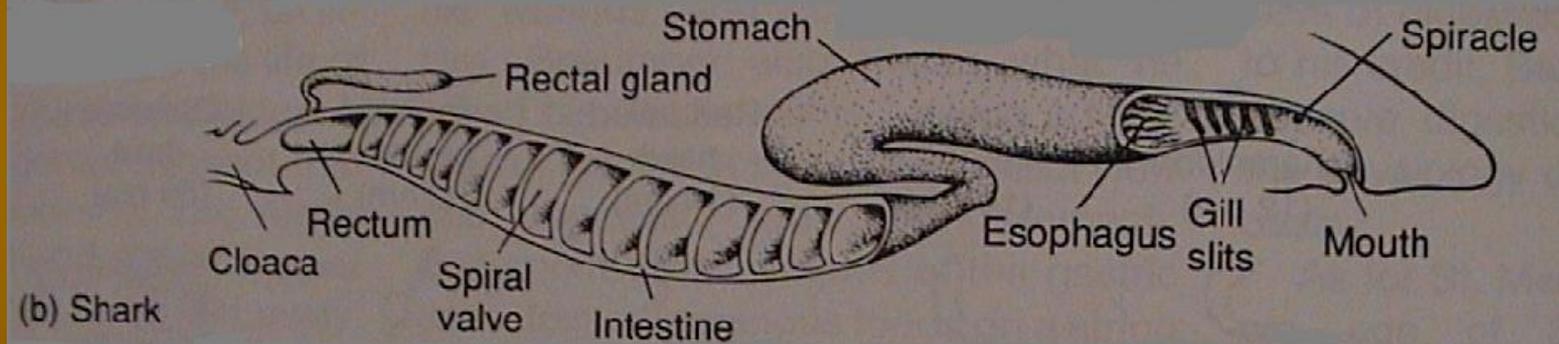
- ústní dutina
- hltan
- jícen
- žaludek
- střevo

Trávicí soustava

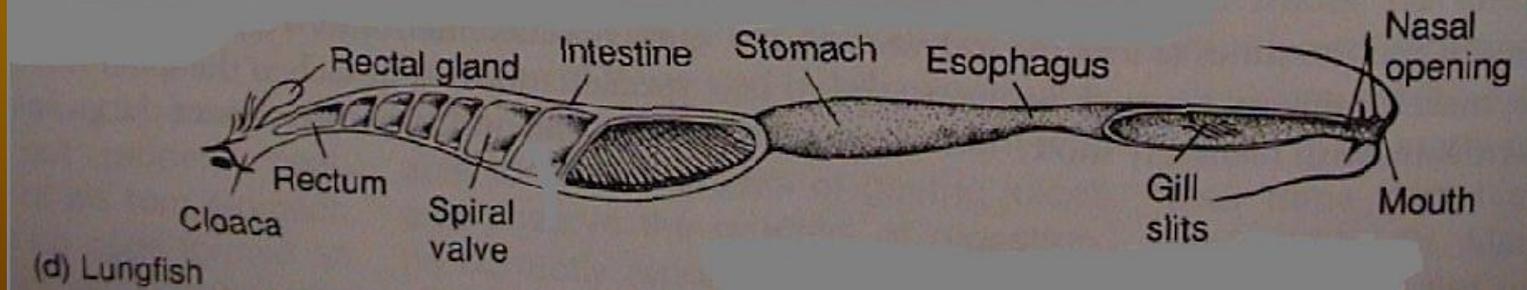
mihule



žralok



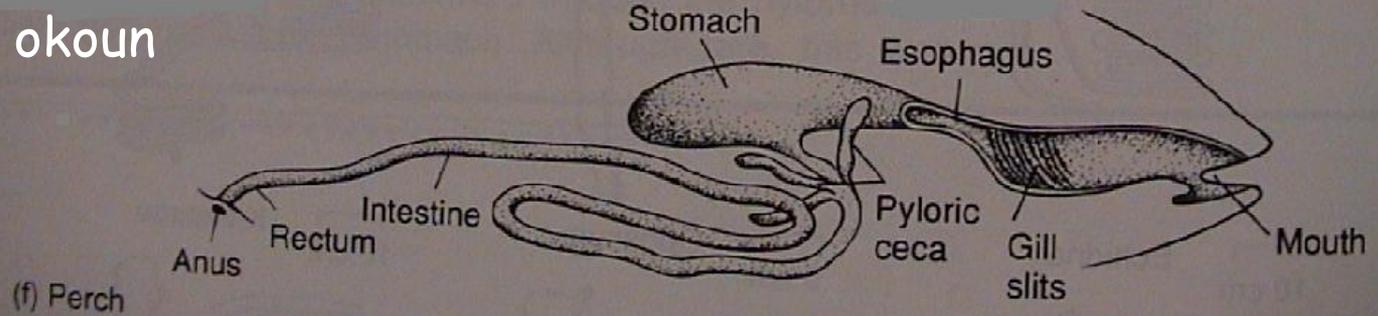
bahník



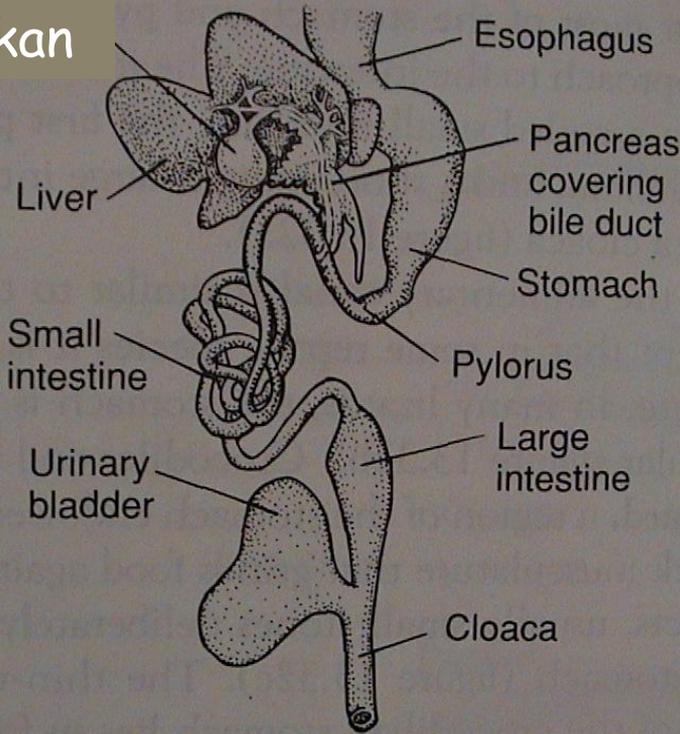
spirální řasa

Trávicí soustava

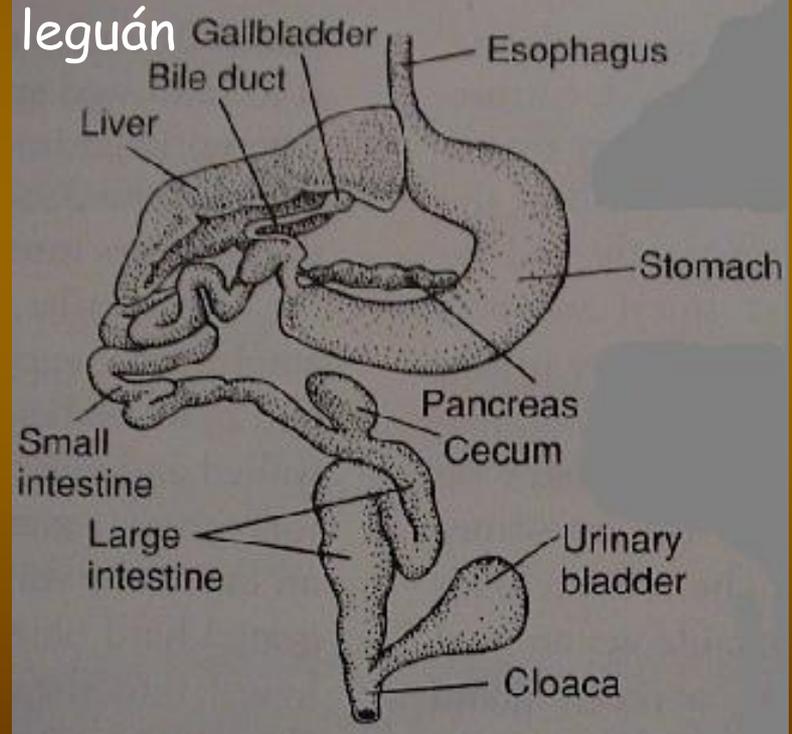
okoun



skokan



leguán

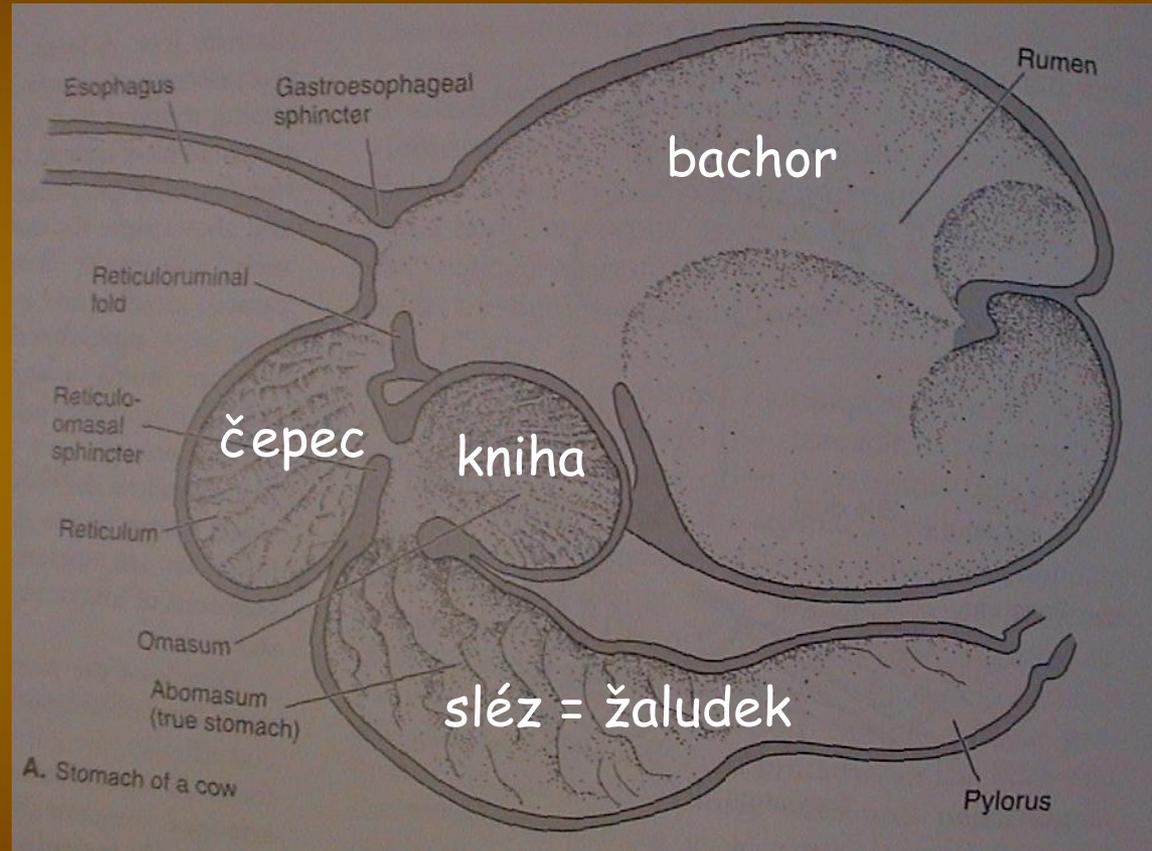
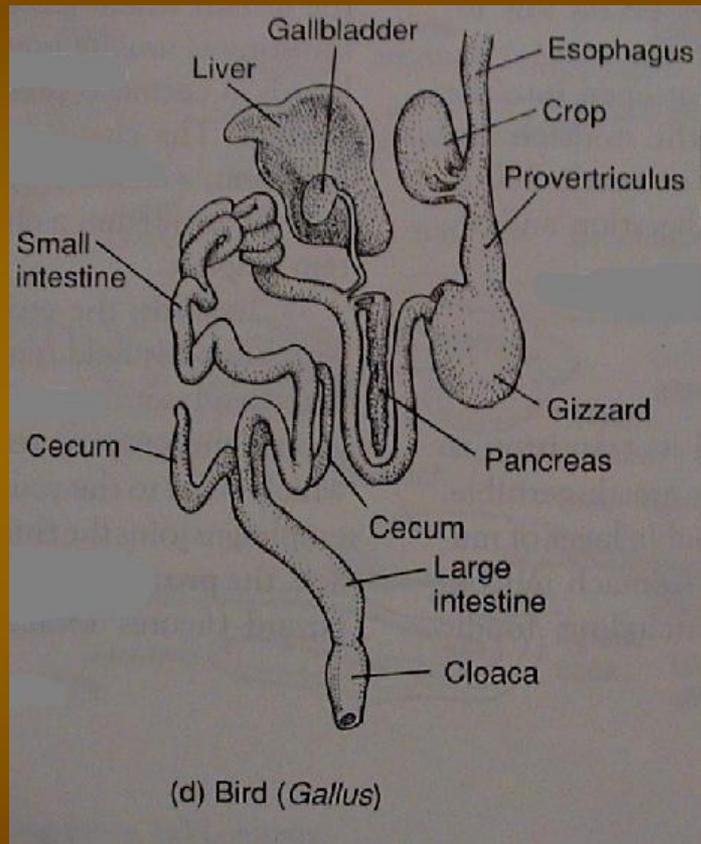


pylorické výběžky - prodlužování střeva (střevní kličky) - diferenciacie (tenké a tlusté střevo)

Trávicí soustava

kur

složený žaludek přežvýkavců



vole (ingluvies), žlázatý (proventriculus) - svalnatý žaludek (ventriculus) - postventriculus

Vývojová morfologie živočichů

v.

Dýchací soustava

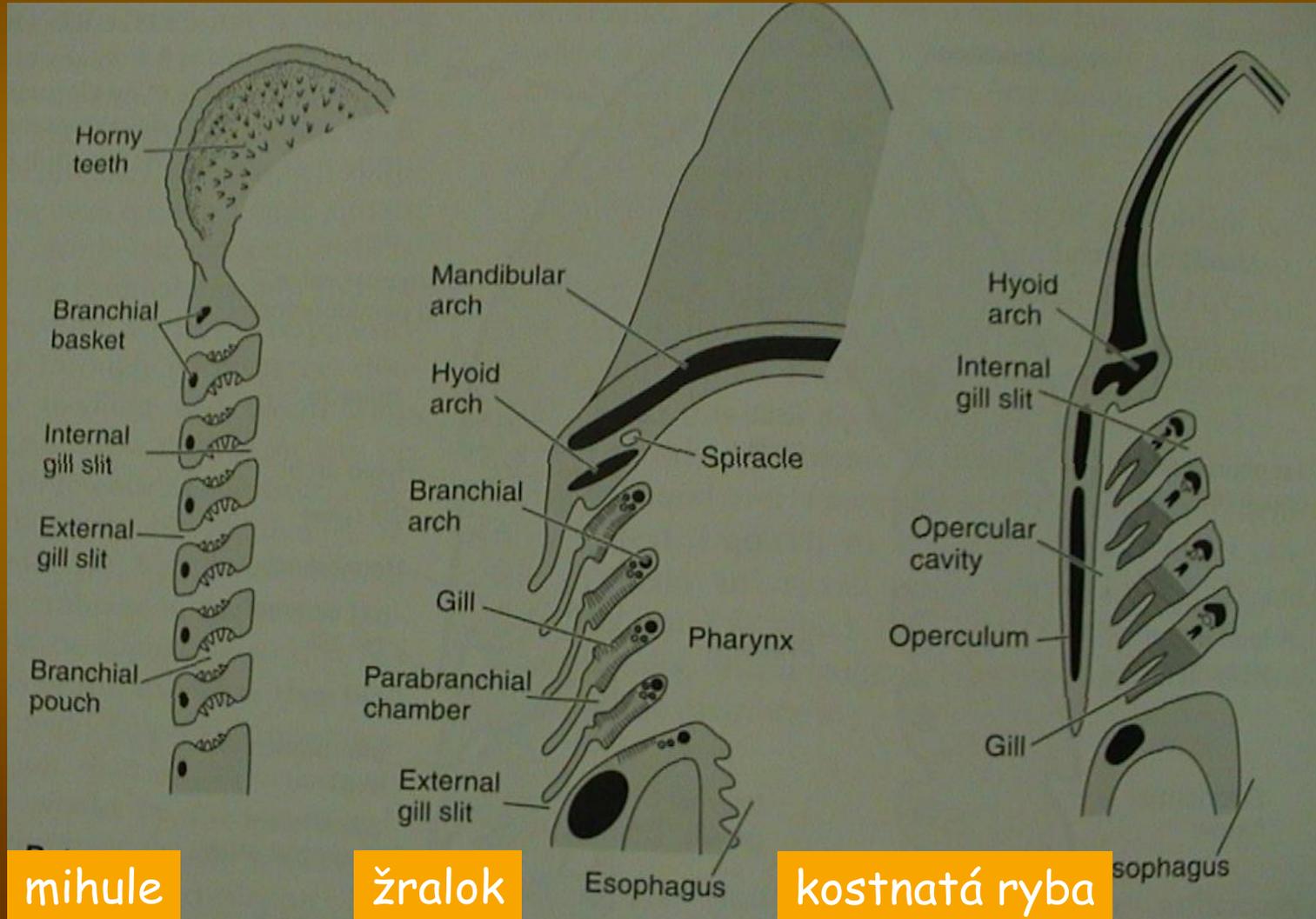
Dýchací soustava

- žábry

žaberní váciky

žaberní přepážky

žaberní oblouky, skřele



mihule

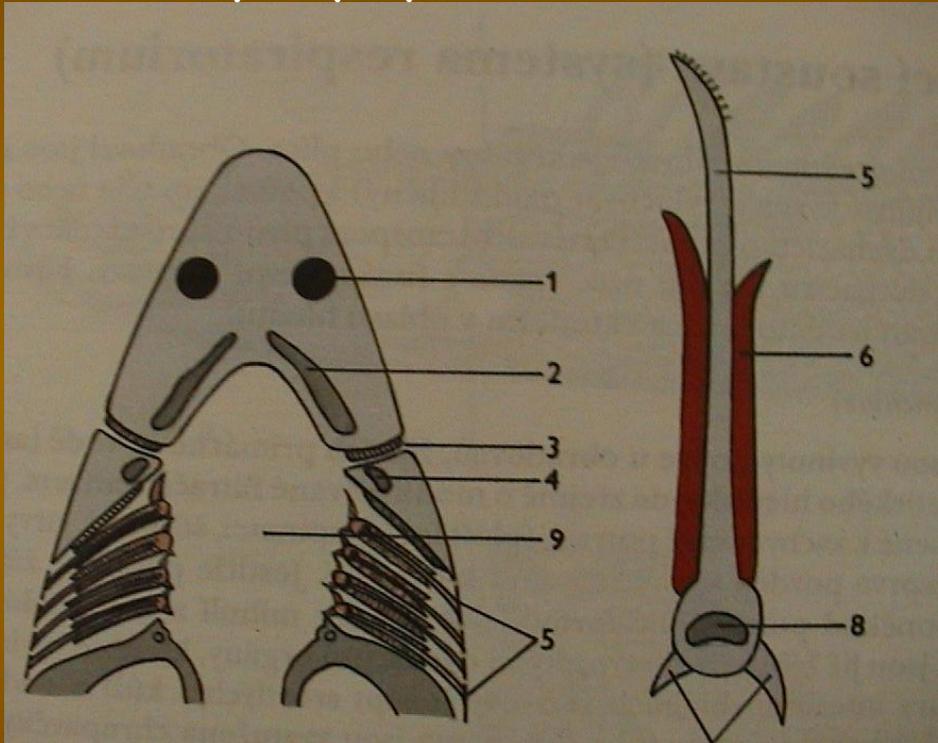
žralok

kostnatá ryba

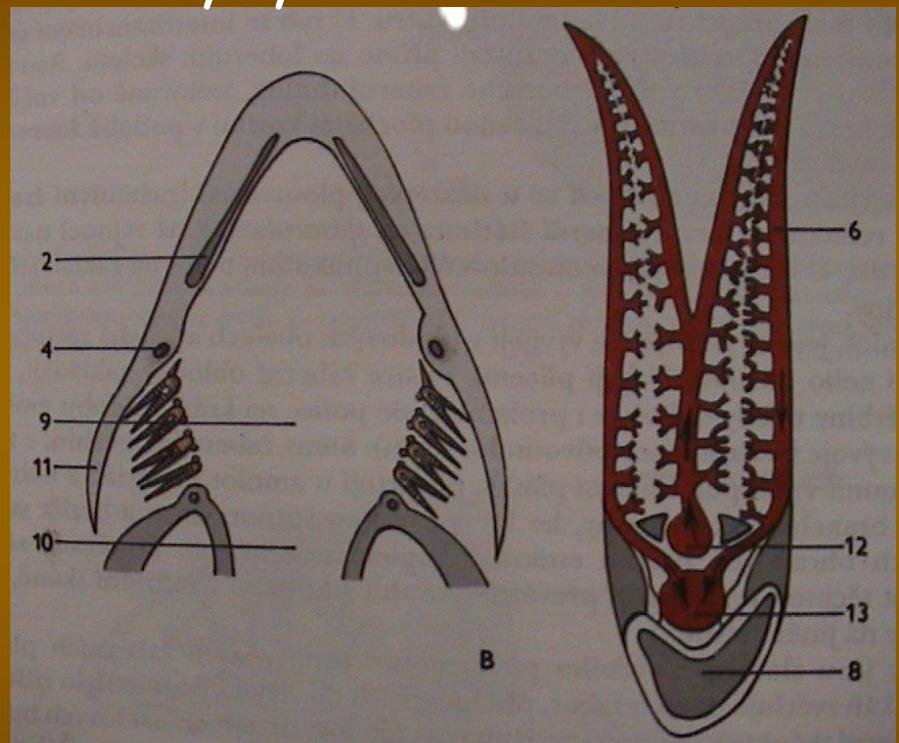
Dýchací soustava

• žábry

paryby



ryby



Dýchací soustava

- plynový měchýř

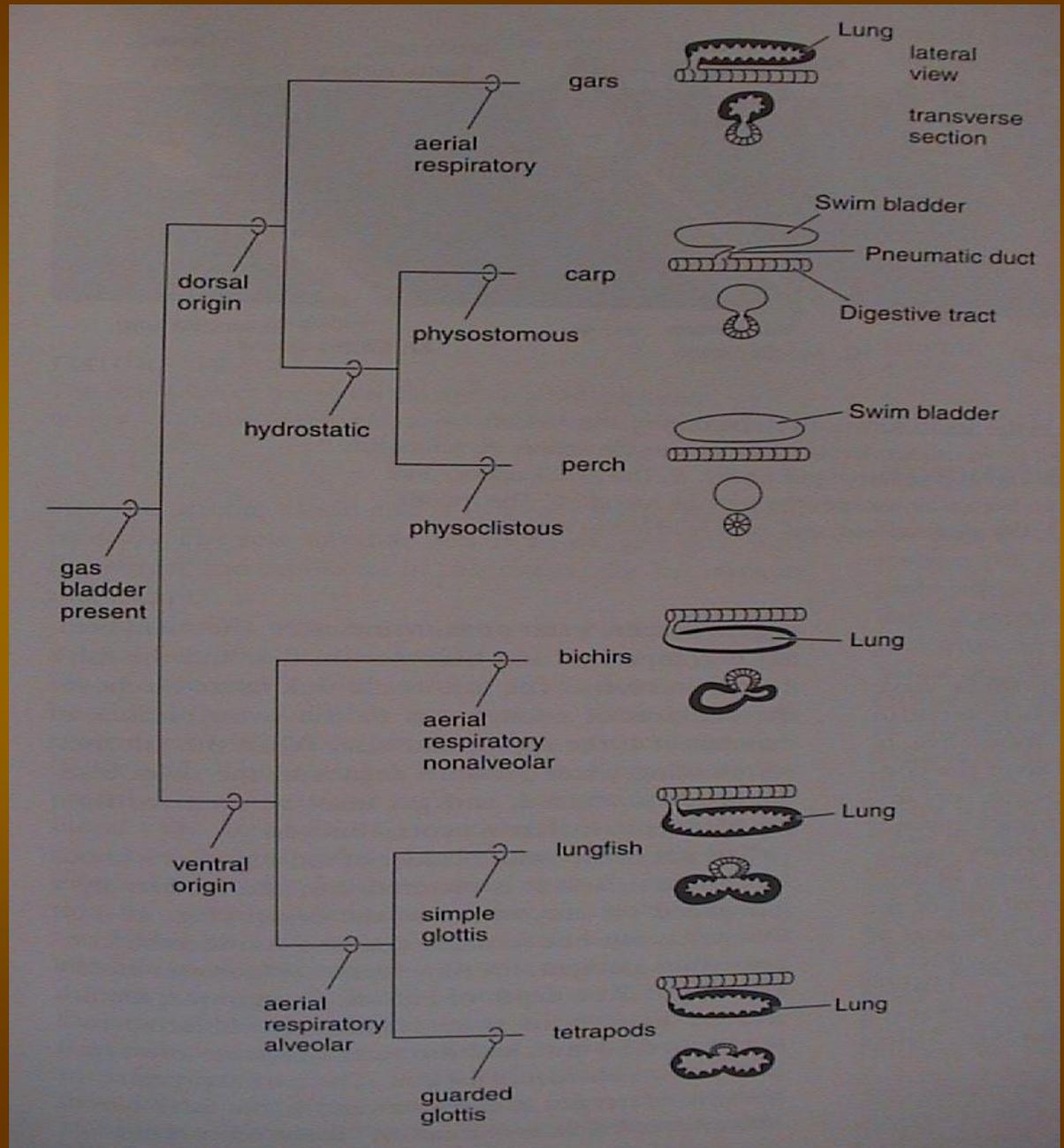
ductus pneumaticus

Physostomi

ovál a červené těleso

Physoclisti

- plicní vaky,
plíce

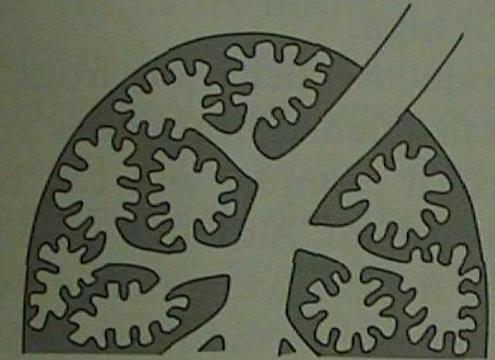
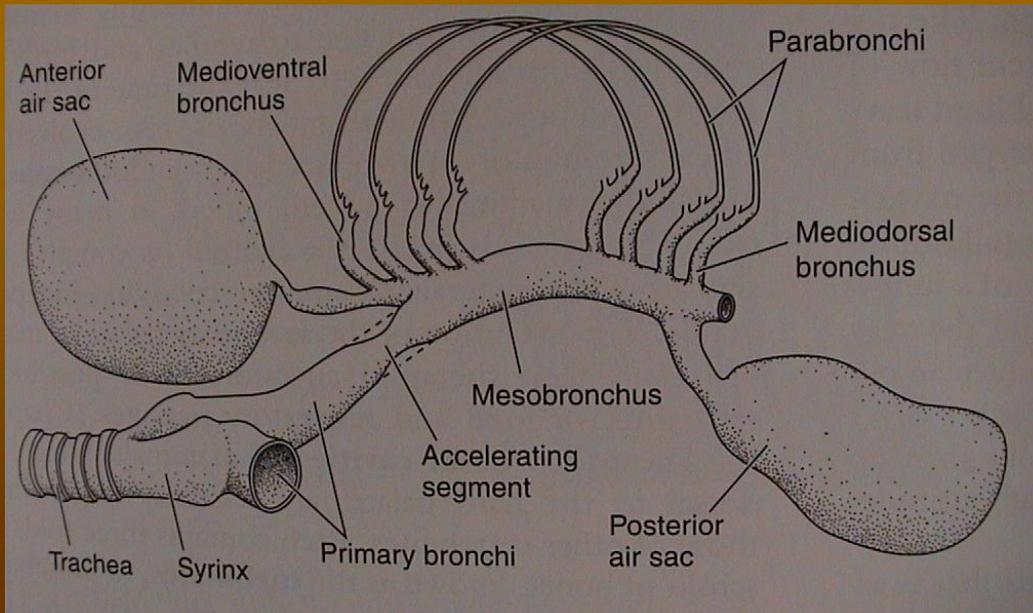
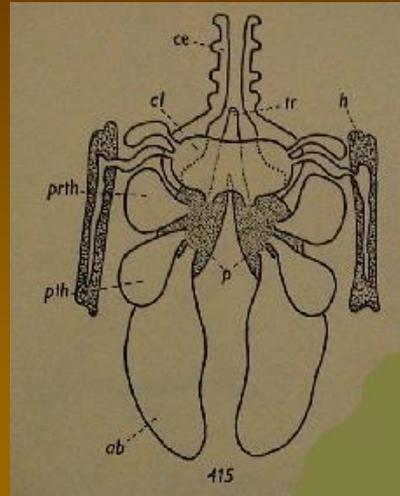


Dýchací soustava

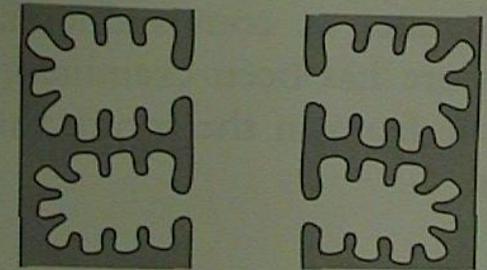
• plíce

pták

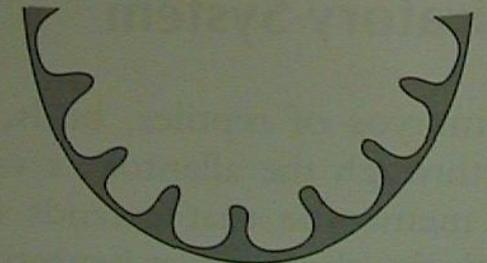
mesobronchus
dorsibronchi
ventrobronchi
parabronchi
vzdušné vaky



C. Mammal



B. Reptile

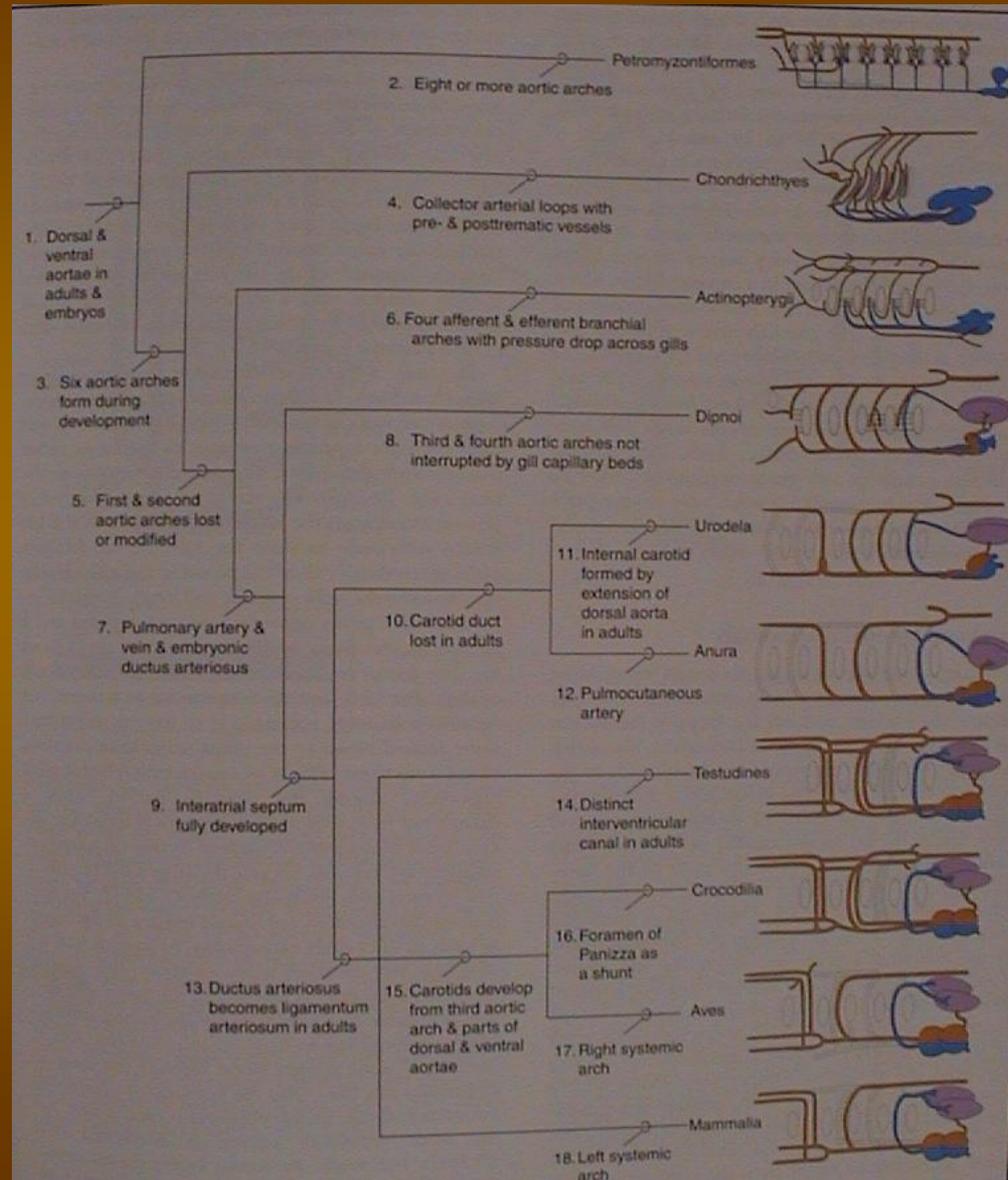


A. Amphibian

Cévní soustava

Srdce

- sinus venosus
- předsíň (1, 2)
- komora (1, 2)
- (ne)úplná mezikomorová přepážka
- conus arteriosus nebo bulbus arteriosus (jen mihule, kaprouni a kostnaté ryby)



mihule

paryby

kostnaté
ryby

dvojdyšní

ocasatí

žáby

želvy

krokodýli

ptáci

savci

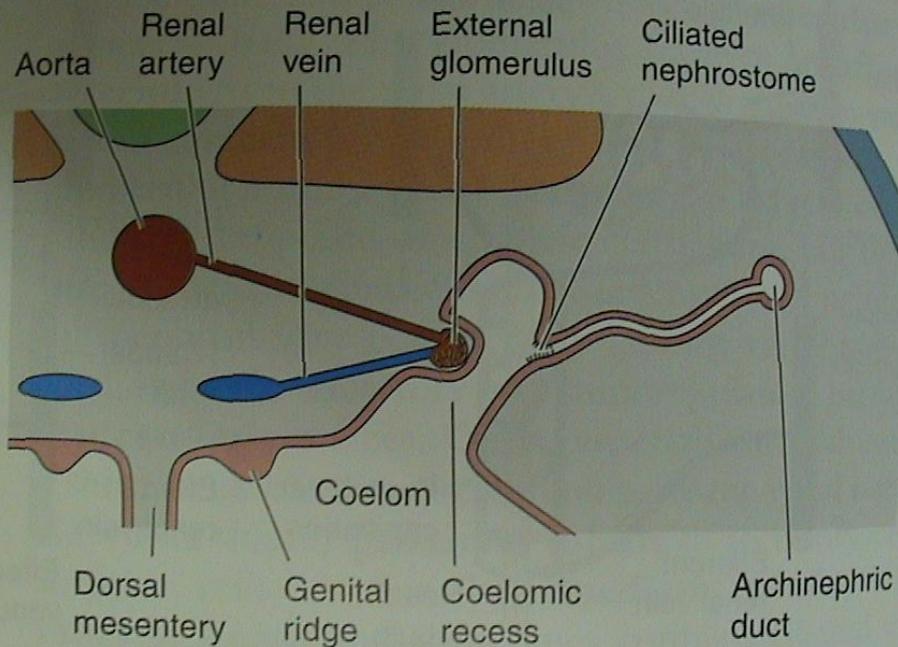
Vývojová morfologie živočichů

VII.

Močopohlavní soustava

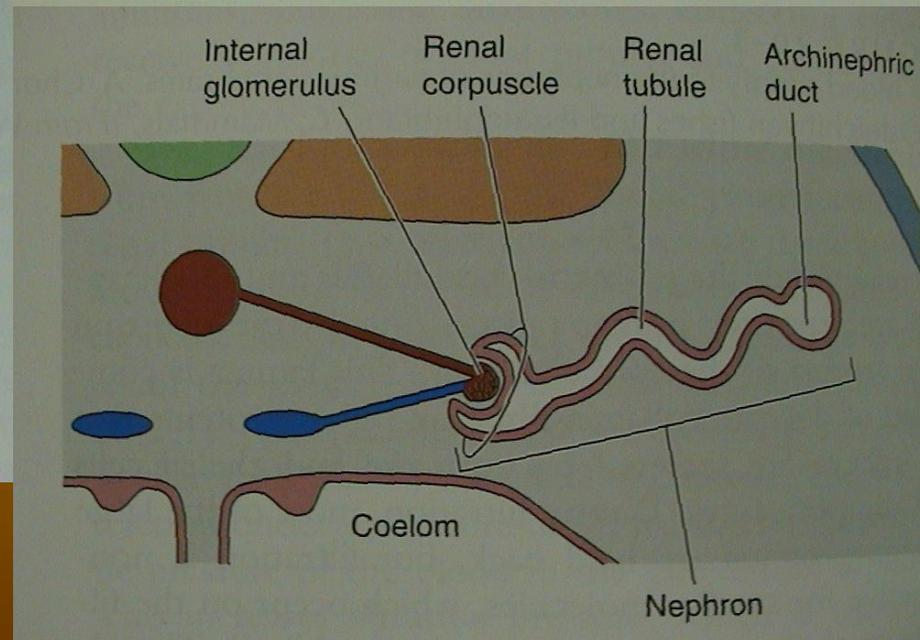
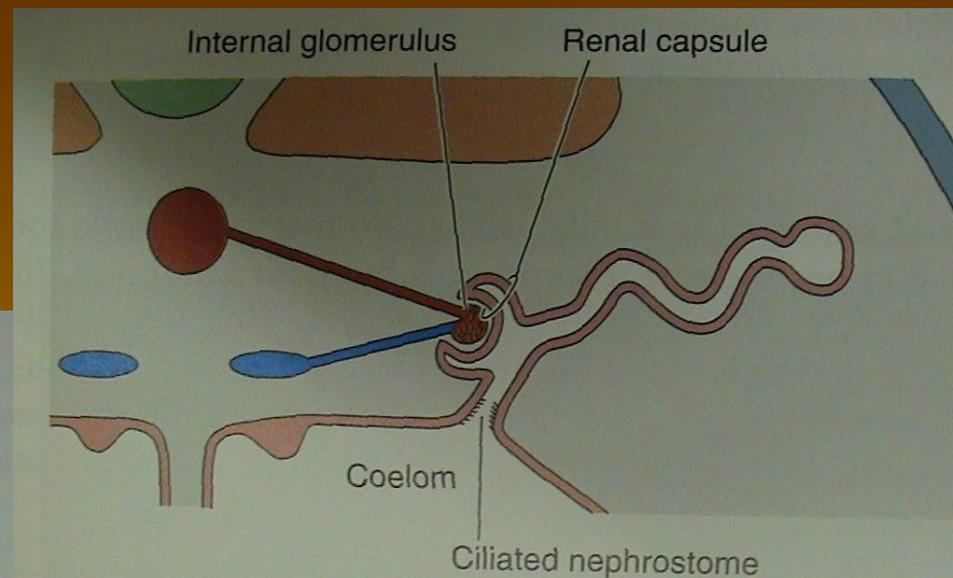
Urogenitální soustava

• nefron



B. Ammocoetes and larval lissamphibians

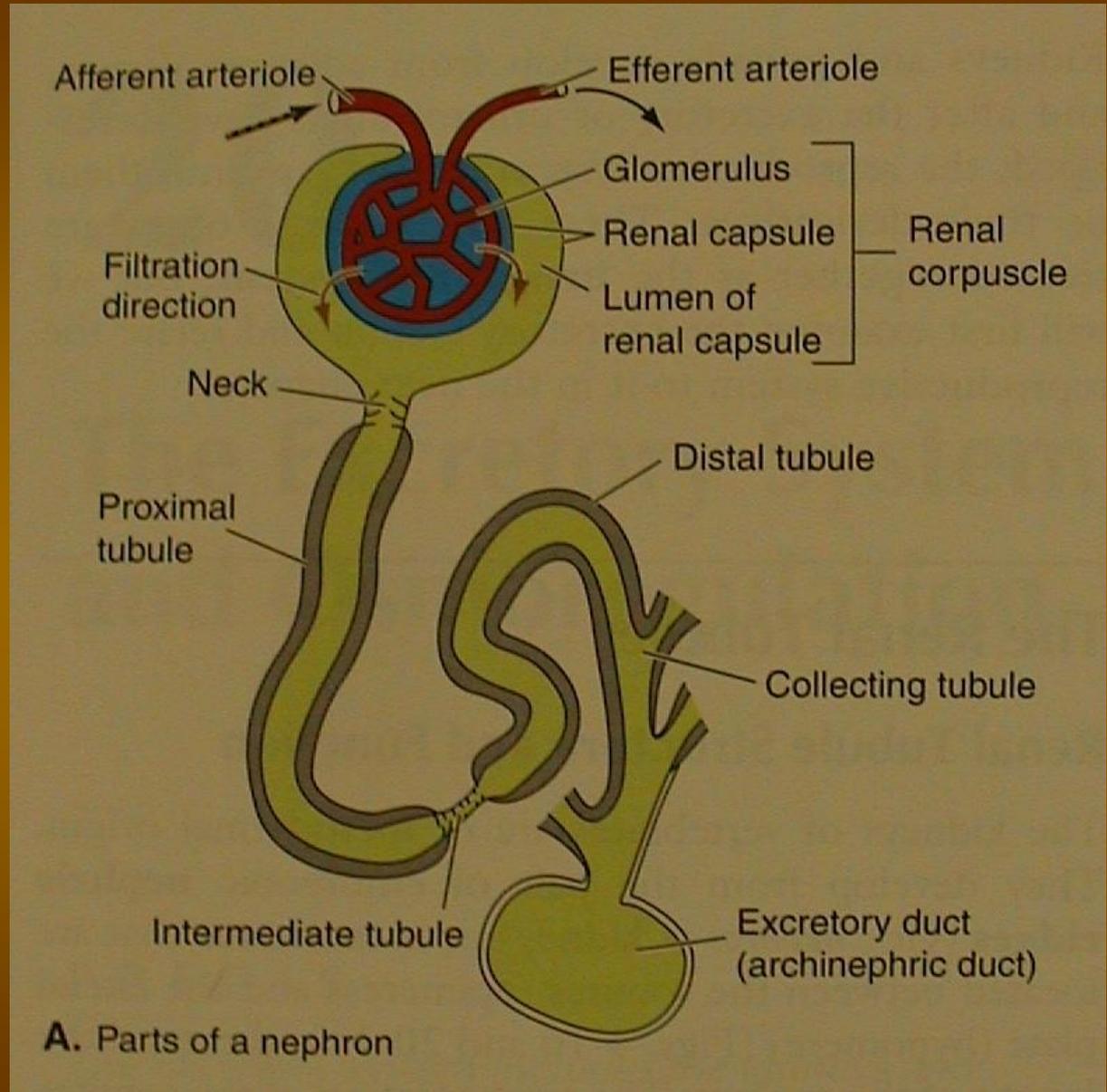
vnější glomerulus
(holonefros, pronefros)



vnitřní glomerulus
(opisthonefros, mesonefros, metanefros)

Urogenitální soustava

• nefron



Malpighiho tělísko =
glomerulus + Bowmannův váček

Urogenitální soustava

• moč

Amotelní (amoniak)

- kostnaté ryby

Ureotelní (močovina)

- paryby, latimérie,
bahníci, žáby, savci
(Henleova klička)

Urikotelní - (kyselina
močová) - plazi, ptáci

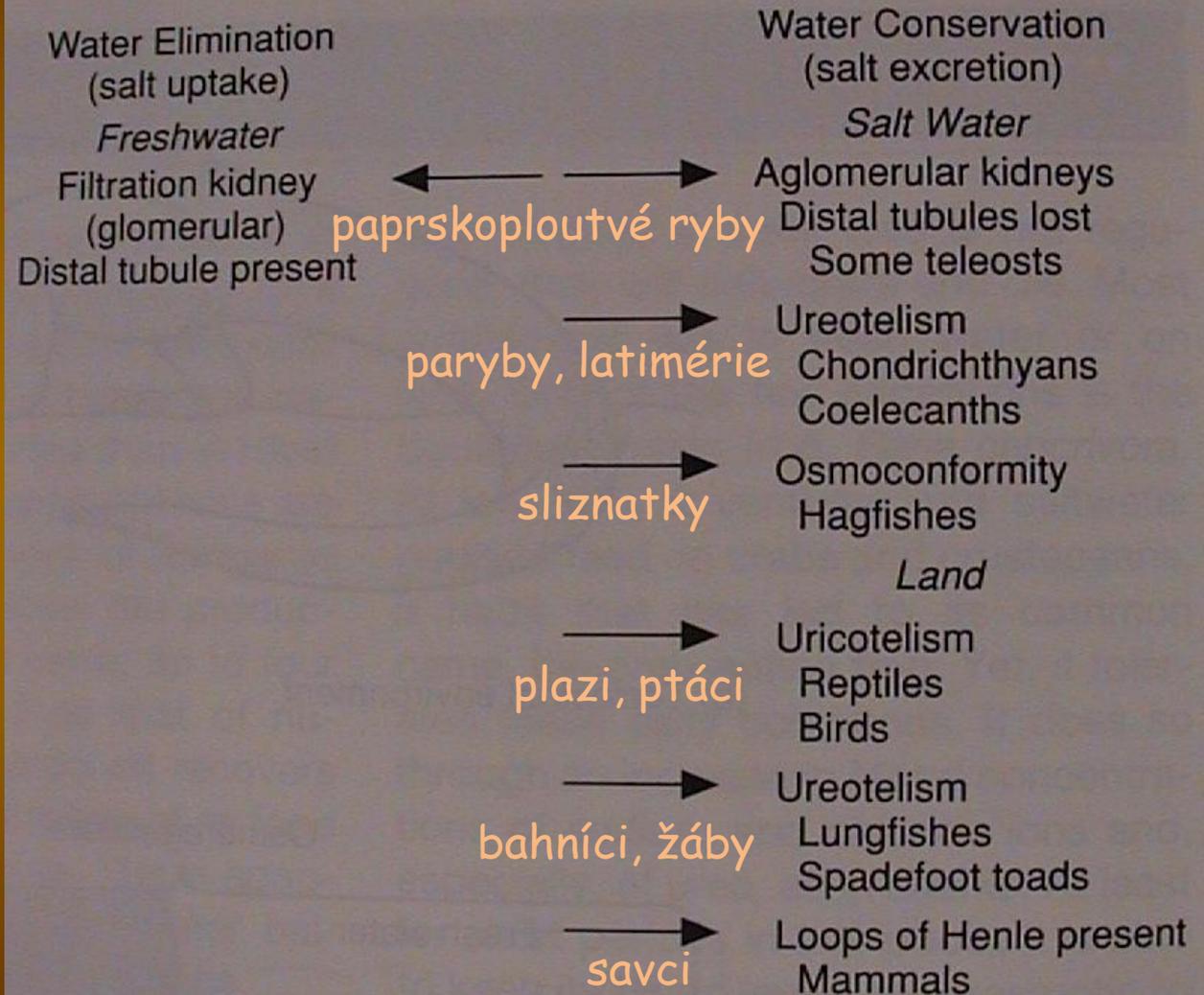


Figure 14.12

Urogenitální soustava

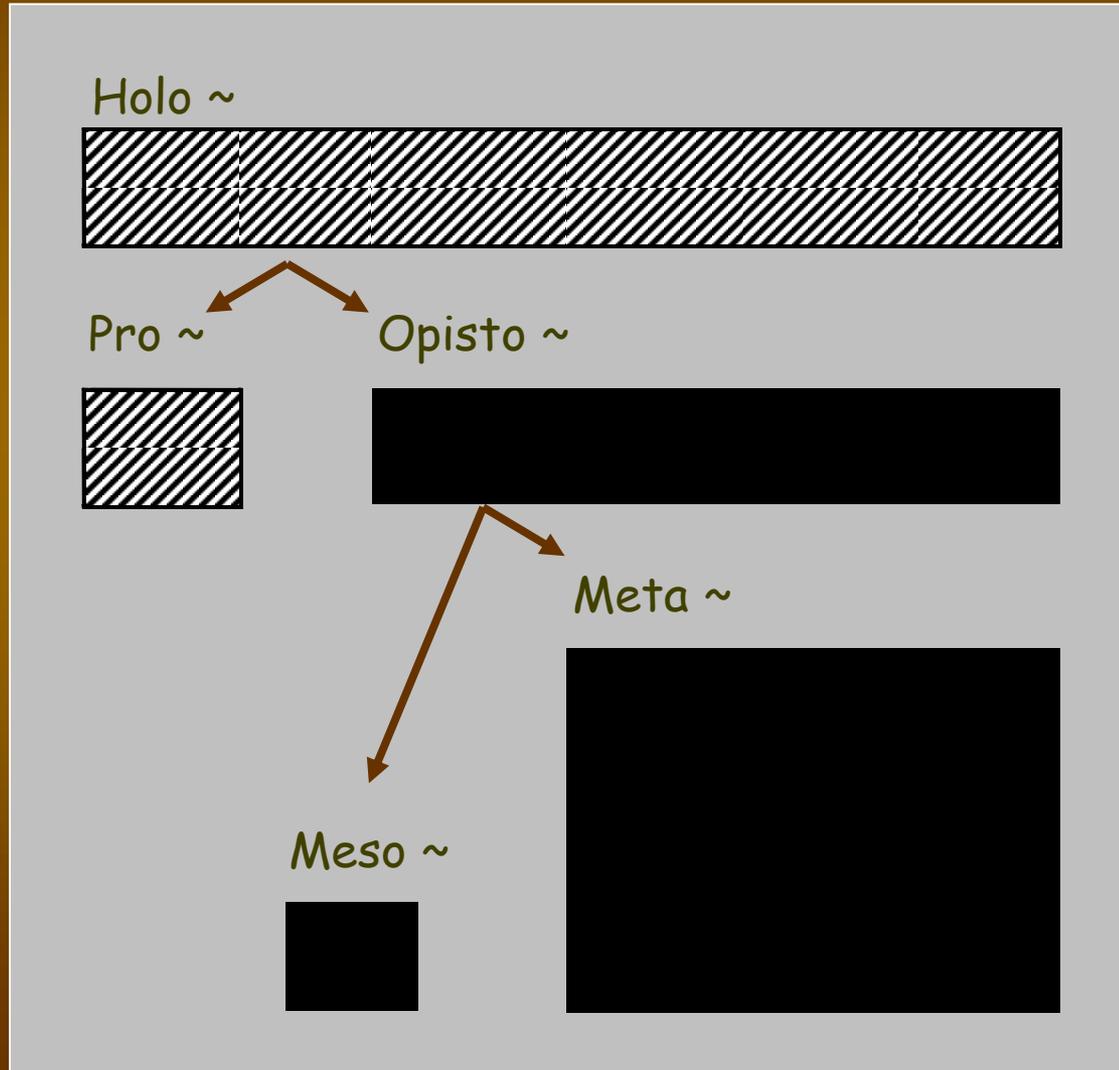
- ledviny - nefros



metamerie, vnější glomerulus



koncentrace, vnitřní glomerulus



Holonefros - minohy a larvy červořů

Pronefros - přední ledvina mihulí, kostnatých ryb a pulců

Opistonefros - ledvina dospělých „Anamnií“

Mesonefros - ledvina embryí Amniot

Metanefros - ledvina dospělých Amniot

„ANAMNIA“

- opisthonefros
- varle

Amphibia

Chondrichthyes

Sarcopterygii

Actinopterygii

