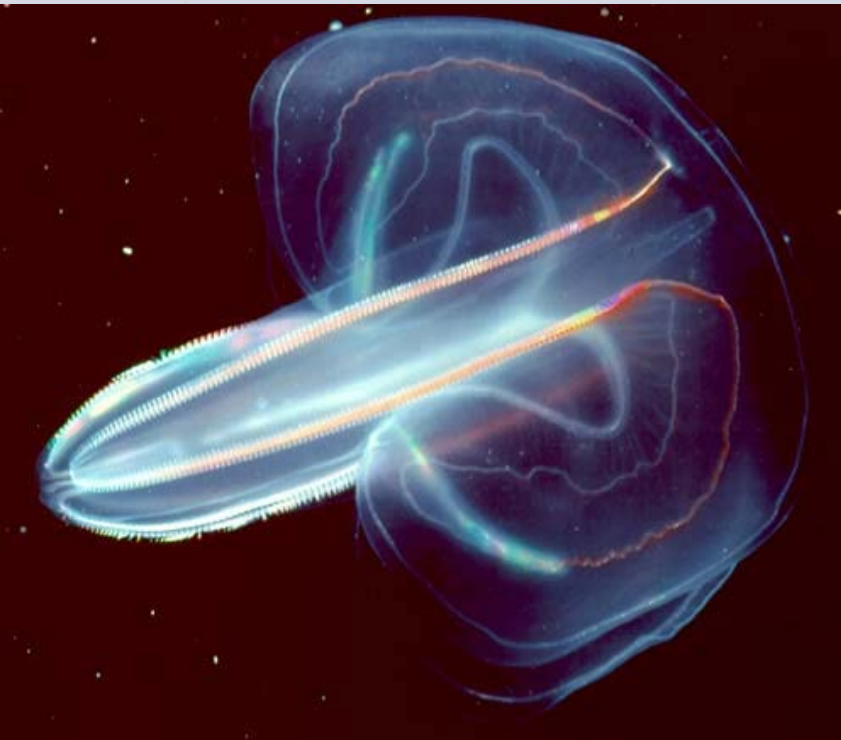
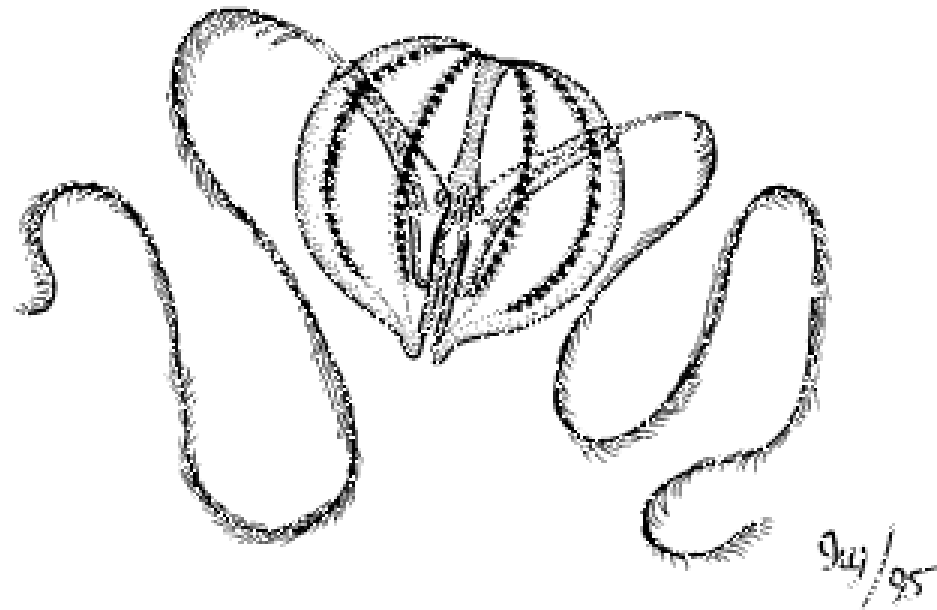


Koljeno: Ctenophora - rebraši





Livingstone, © 2000 D.A.C.

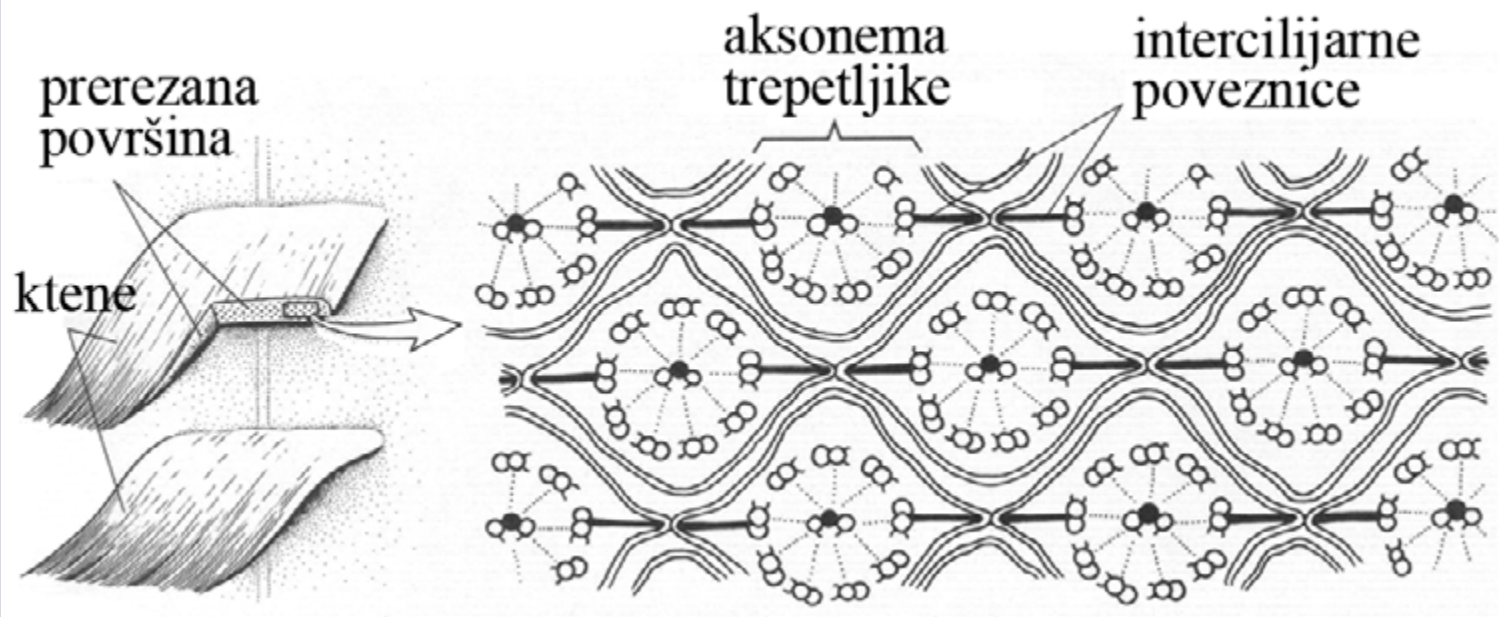
▶▶ **biradijalno simetrični**

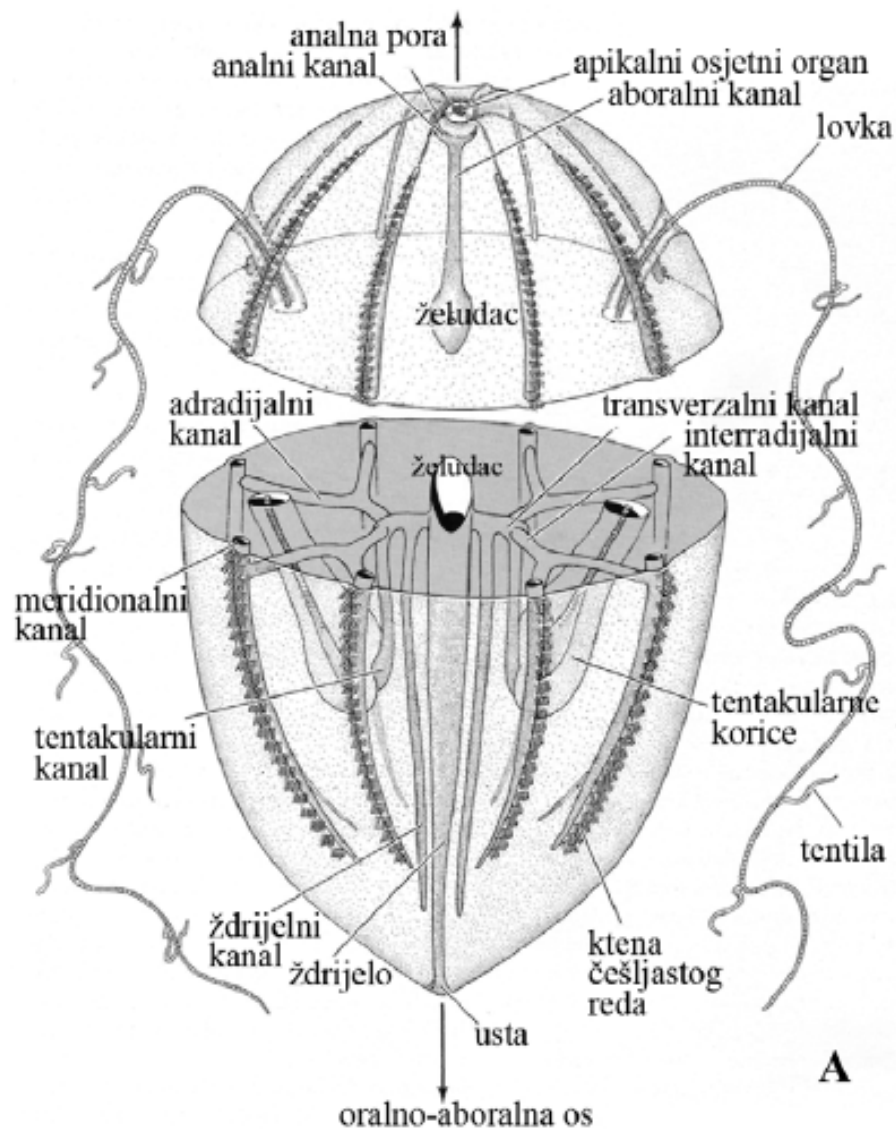
▶▶ **prozirno tijelo sadrži debelu mezogleju -hidrostatski skelet**

▶▶ **jajasto, kruškasto ili spljošteno tijelo: oralni pol (usta) i apikalni pol (sa statičkim osjetilom) većinom imaju 2 lovke**

▶▶ **lovke nemaju žarnica (⇒ “*Acnidaria*”) već ljepljive stanice **koloblaste** koje pribavljaju hranu; isključivo grabežljivci**

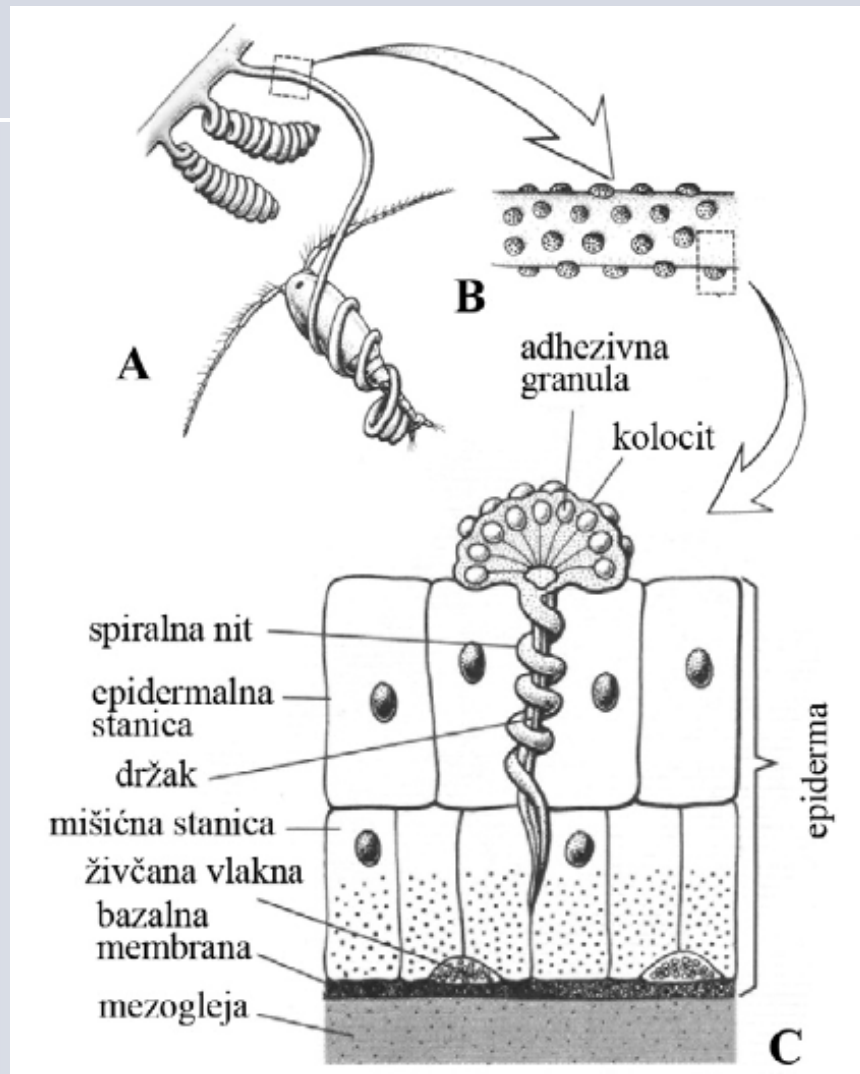
▶▶ **na tijelu 8 redova s češljastih pločica (srasle trepetljike) (grč. *kteis* - češalj, *phora* - nositi) pomoću kojih se kreću**



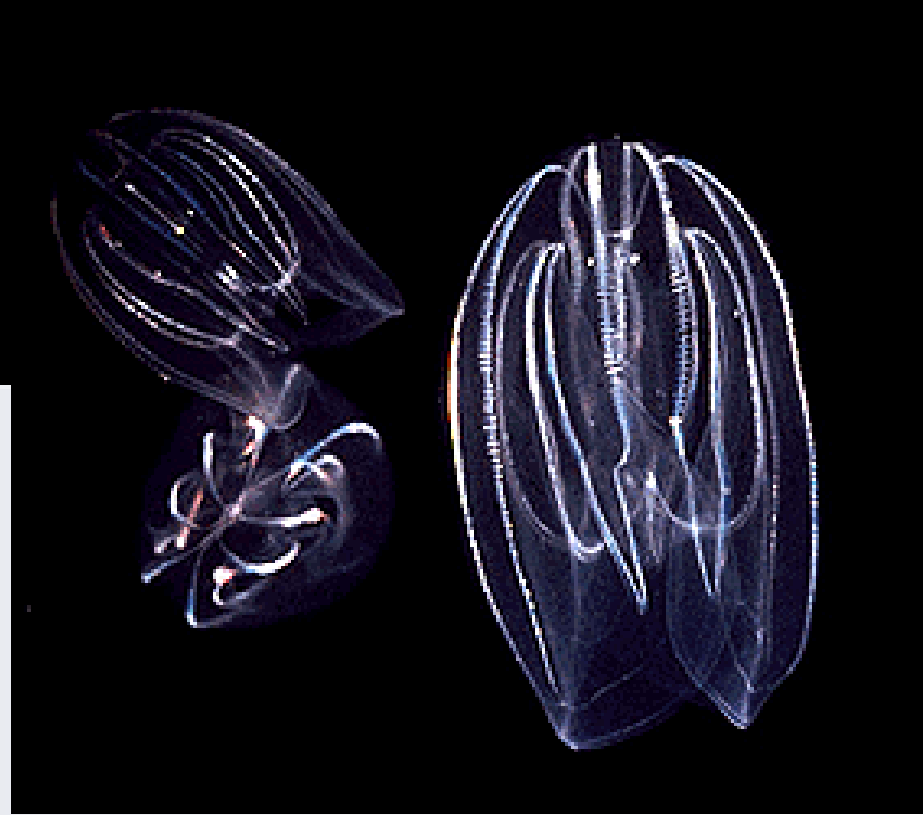


▶▶ usta ⇒ ždrijelo s membranelama ⇒ želudac ⇒ 8 gastrovaskularnih ogranaka (intracelularna probava) ⇒ 2 analna kanala s otvorima

▶▶ statocist i živčana mreža upravljaju kretanjem i ishranom

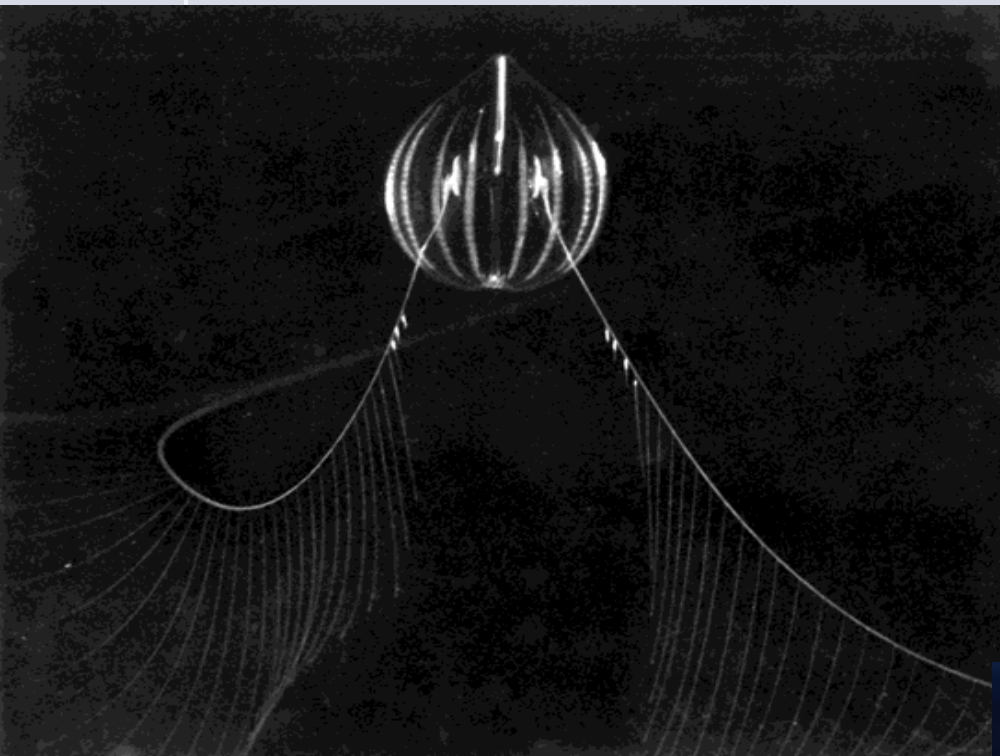


- ▶▶ svi su bioluminiscentni
- ▶▶ većinom dvospolci
isključivo spolno razmnožavanje
- ▶▶ žive isključivo u planktonu mora
- ▶▶ veličina od 1 cm do 1.5 m
- ▶▶ oko 100 vrsta:



Tentaculata (ticalci) imaju par lovki koje mogu uvući u vrećicu
Atentaculata (jajaši) bez lovaka

1. *Tentaculata* (ticalci) - 2 lovke koje mogu uvući u vrećic



***Hormiphora plumosa* -
obični rebraš**



***Cestus veneris* -
venerin pojas**



2. *Atentaculata* (jajaši) - bez lovaka

© Jim Mastro



***Beroë ovata* - jajasti rebraš**



***Mnemiopsis leidyi* – morski orah**

Koljeno: Platyhelminthes - plošnjaci

- primarna biulateralna simetrija ⇨ BILATERIA
- PROTOSTOMIA
- ACOELOMATA

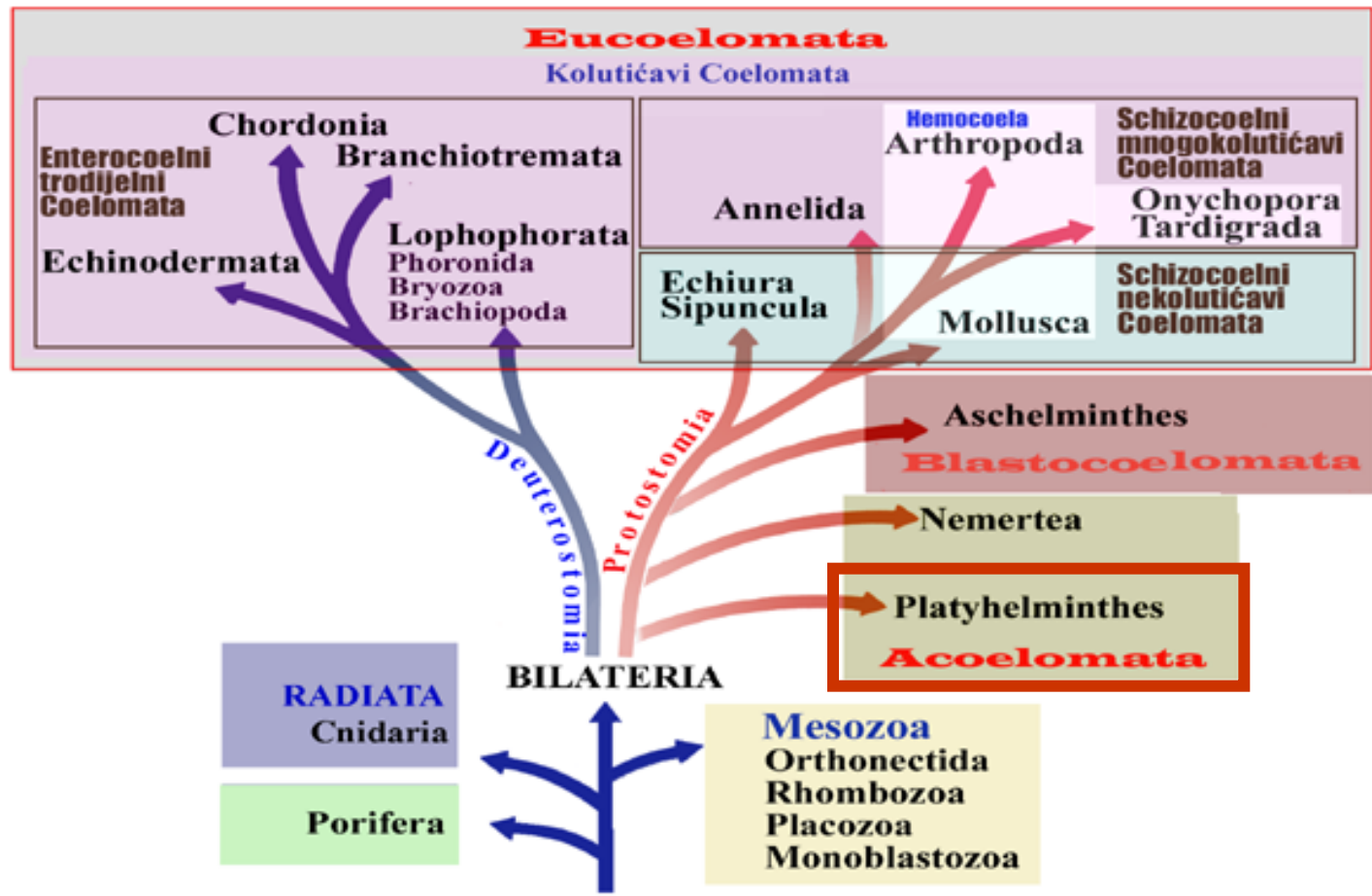
1. Turbellaria - virnjaci

2. Monogenea – jednorodni metilji

3. Trematoda - metilji

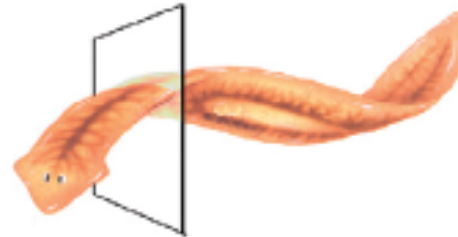
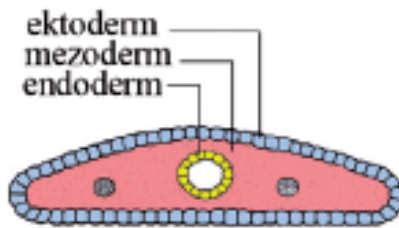
4. Cestoda - trakavice

Položaj plošnjaka (Platyhelminthes) u rodoslovnom stablu



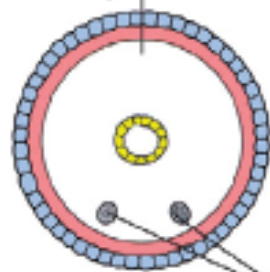
Acoelomata

ACOELOMATA



BLASTOCOELOMATA

blastocelom
(pseudocel)

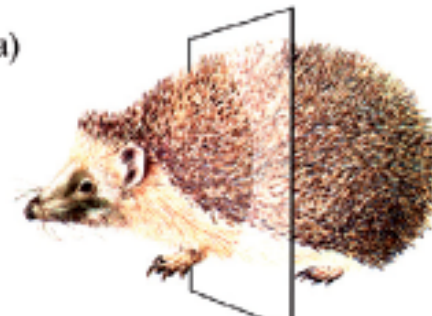
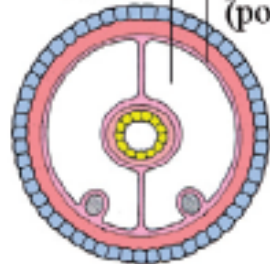


unutrašnji
organi

COELOMATA

celom

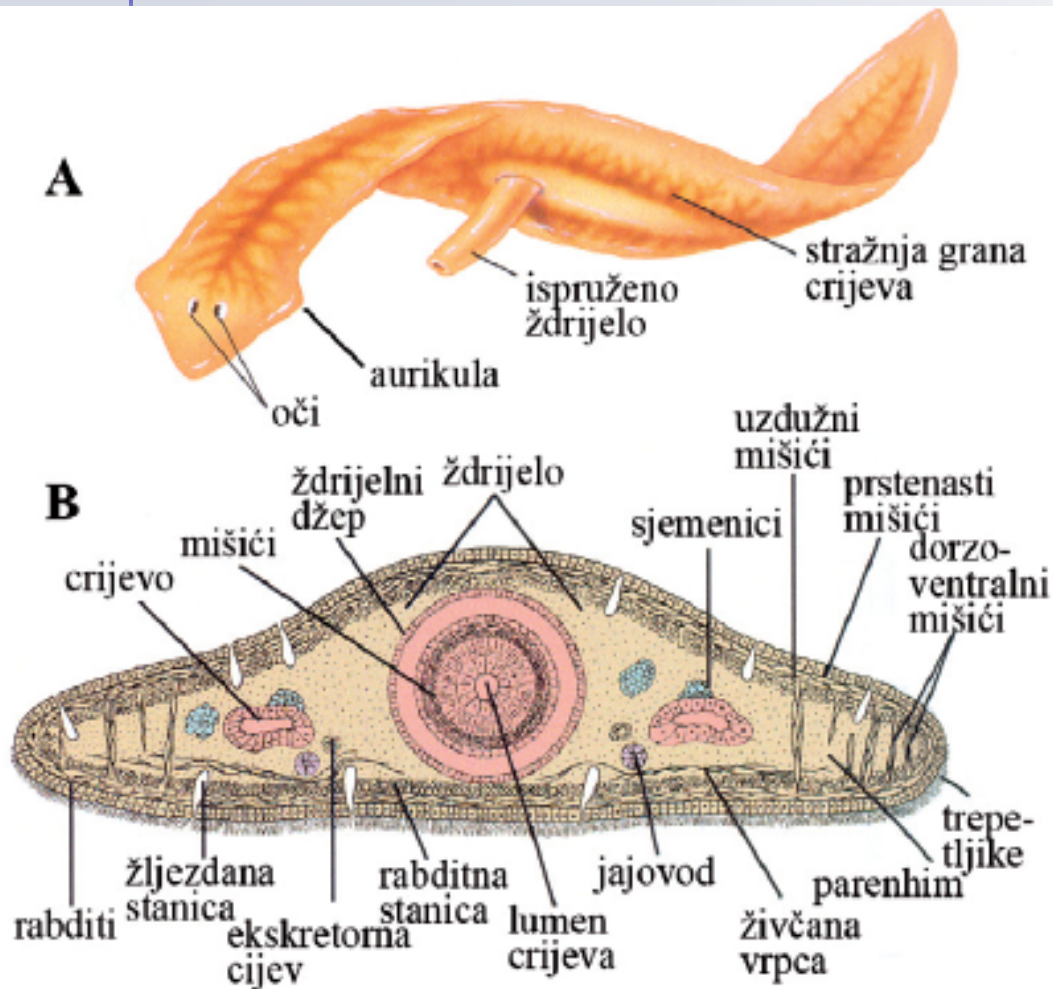
peritoneum
(potrbušnica)



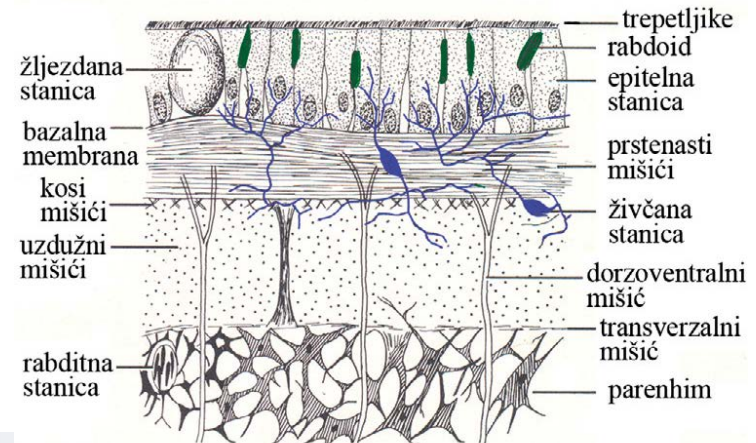
Osnovna strukturalna obilježja Platyhelminthes

- dorzoventralno spljošteni
- **triploblastični**
- parenhimatozni **acelomata**
- trepetljikava epiderma ili **neoderma**
- neprohodno probavilo ili reducirano
- nemaju razvijen optjecajni ni dišni sustav
- mrežasti živčani sustav
- protonefridiji

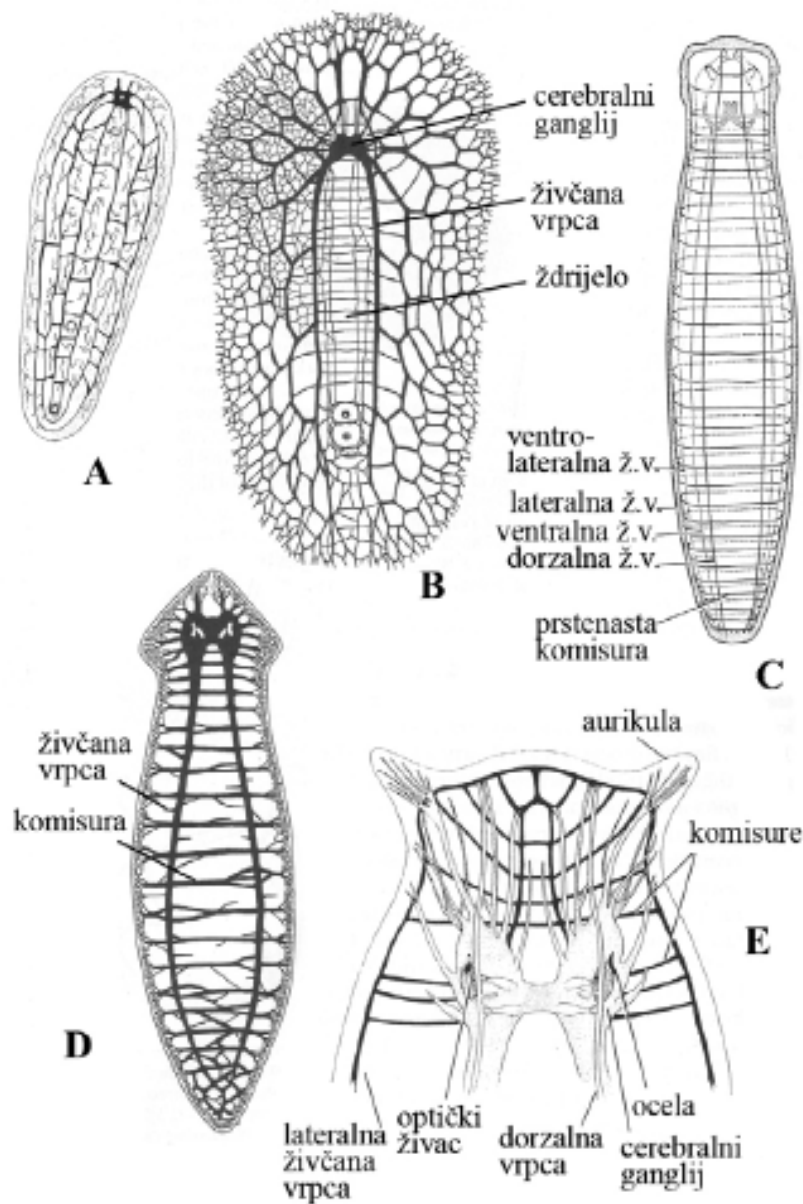
Razred: Turbellaria - virnjaci



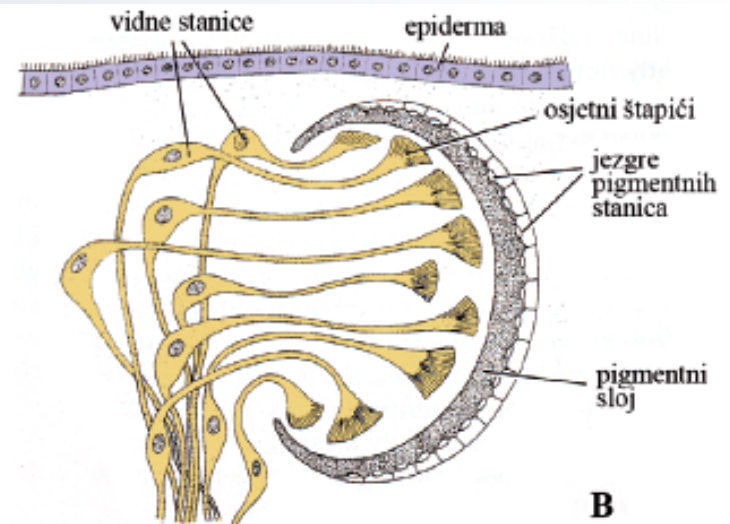
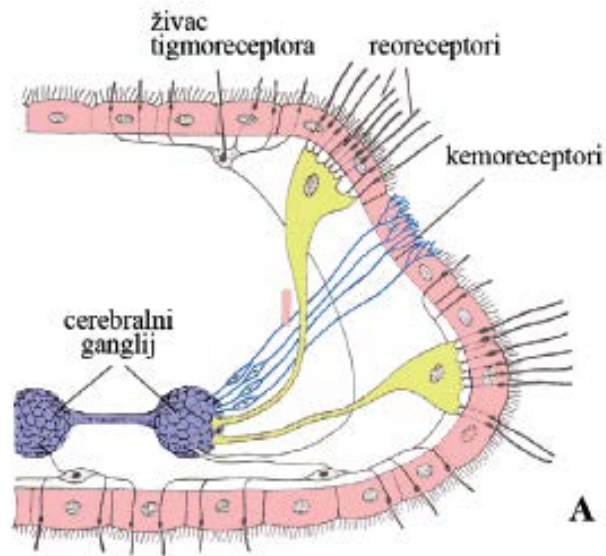
- u moru, slatkim vodama i vlažnim staništima
- 0,5 do 20 mm
- jednoslojna trepetljikava epiderma
- rabdoidi, rabditi
- 3 sloja mišića
- schizocel



Živčani sustav Turbellaria

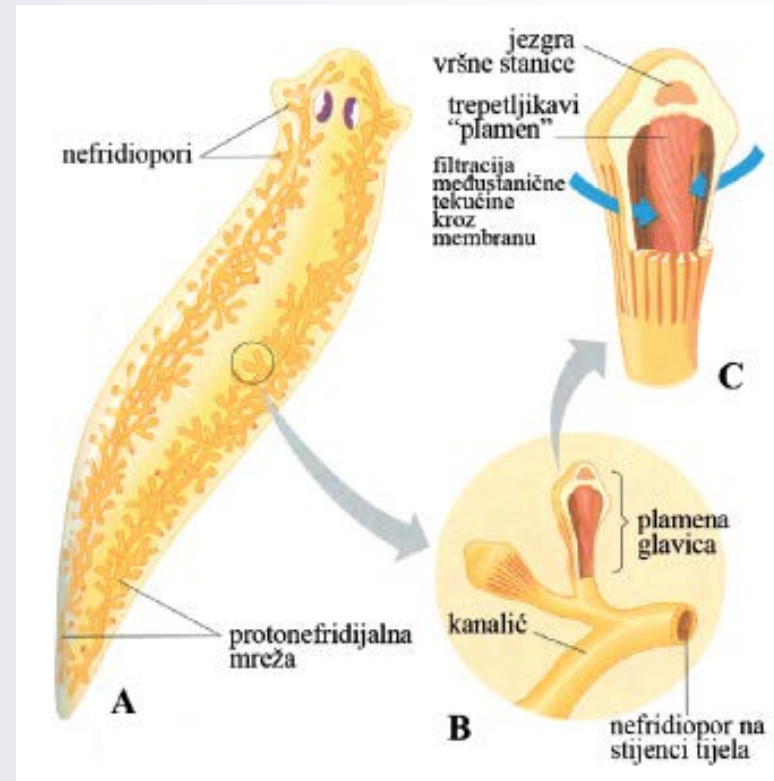
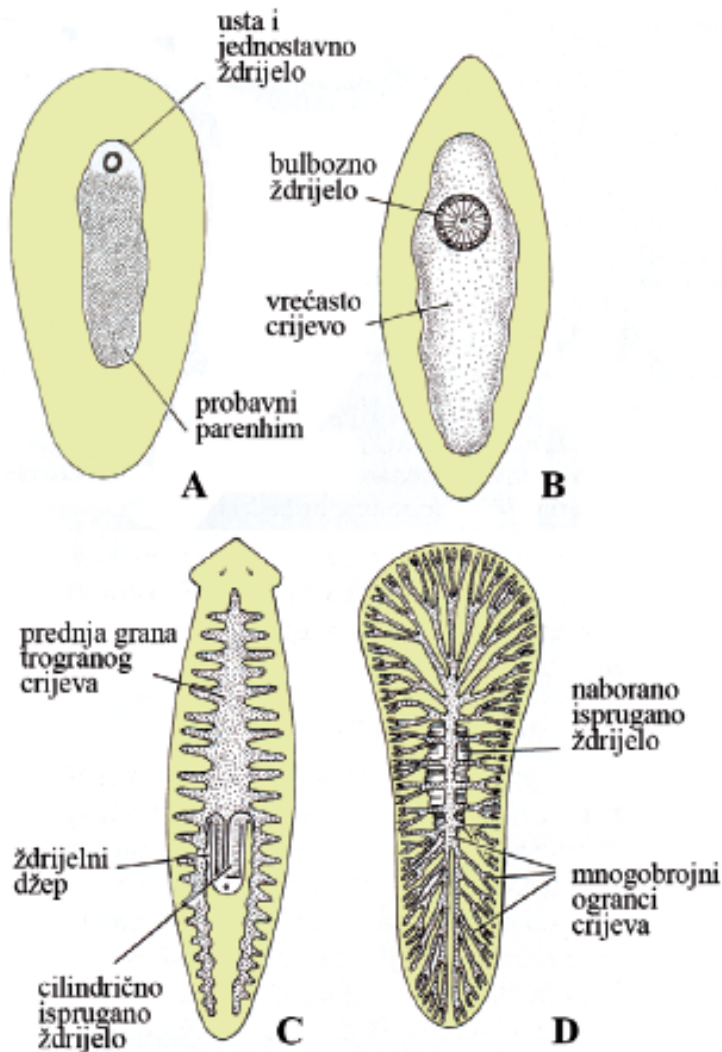


Osjetila u Turbellaria



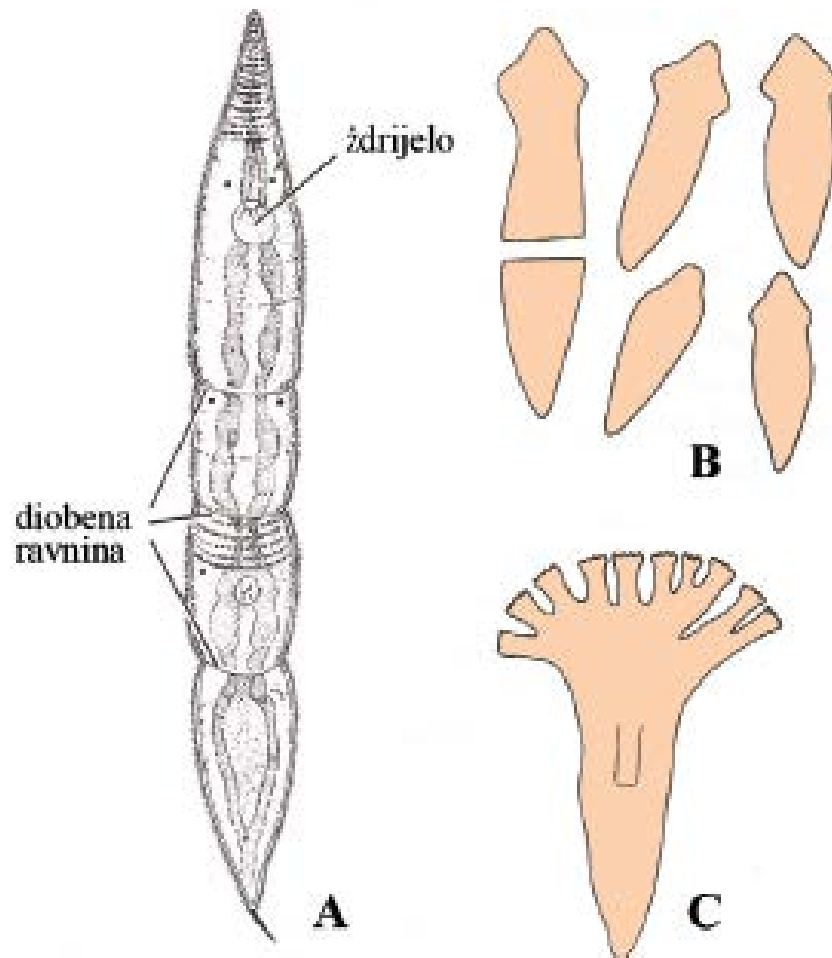
Probavni sustav

Ekskrecija i osmoregulacija



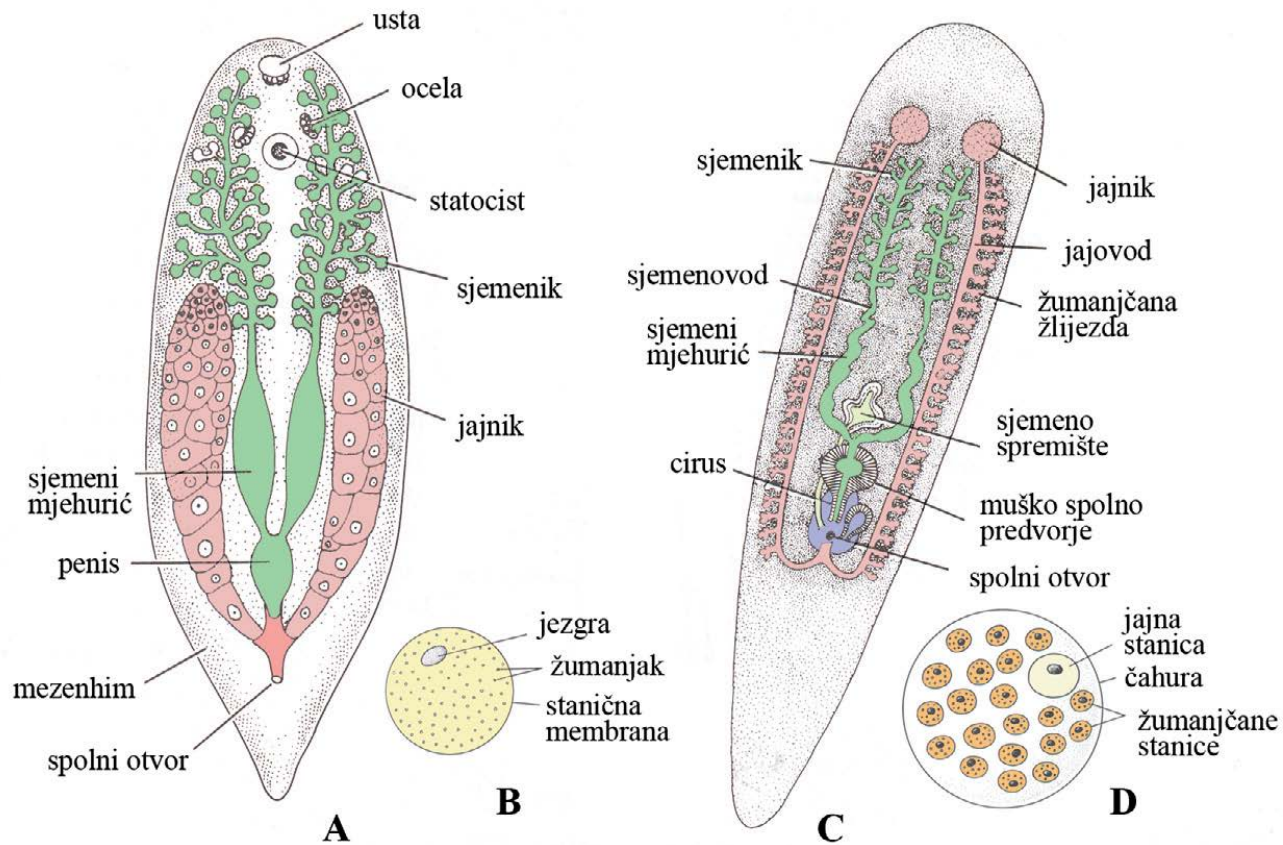
Razmnožavanje

Regeneracija

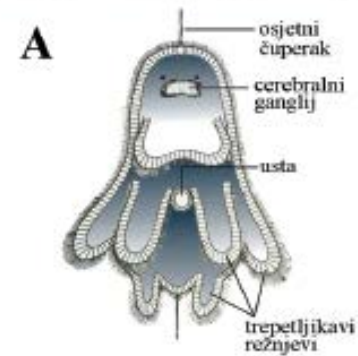
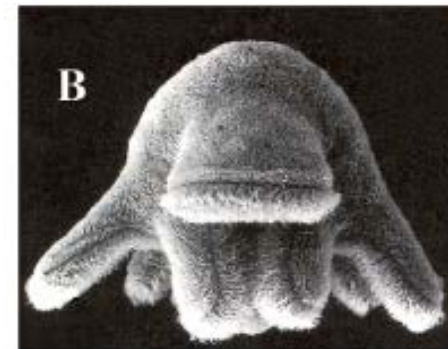
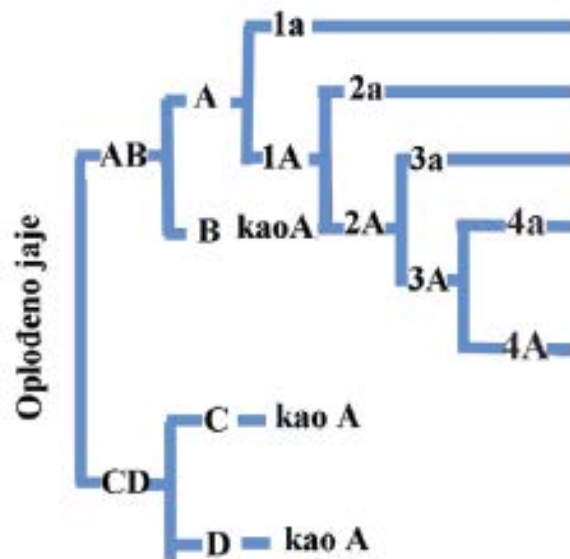
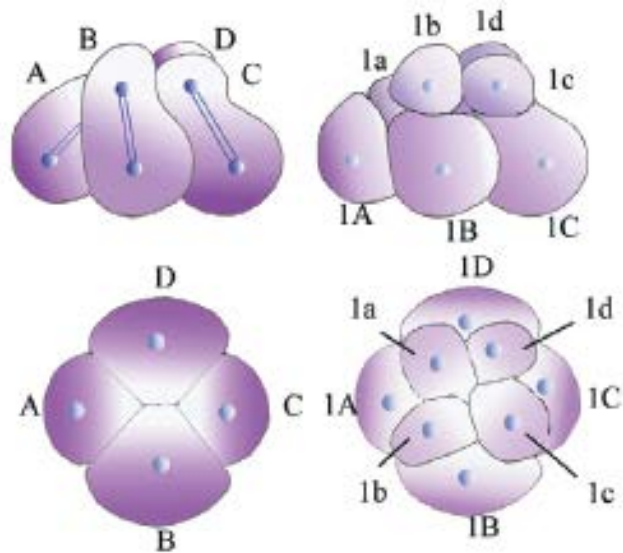


- Nespolno –
poprečna
dioba tijela

Razmnožavanje



- Spolno razmnožavanje - dvospolci



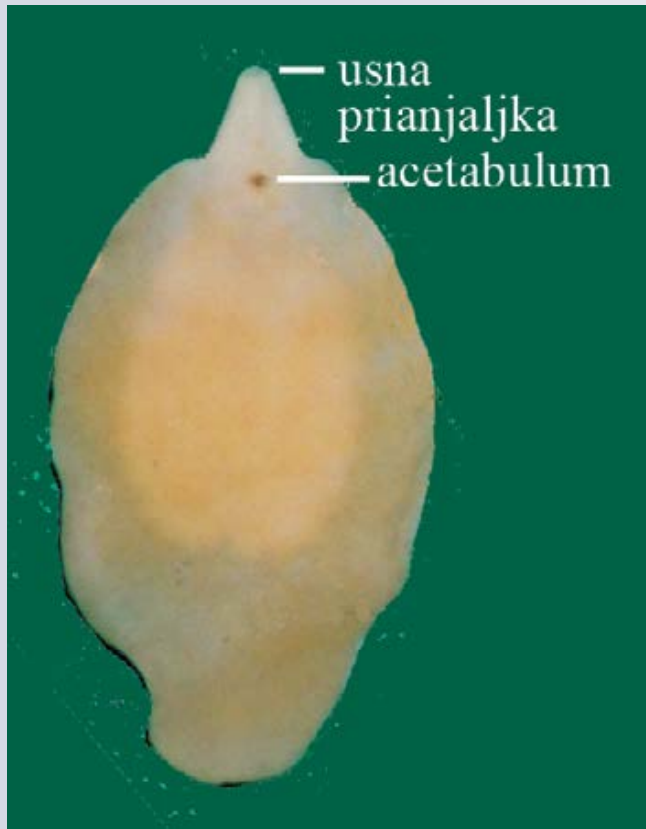
Biološka raznolikost virnjaka (Turbellaria)

- Red: Acoela – bescrijevci
- Red: Catenulida
- Red: Polycladida – mnogocrijevci
- Red: Rhabdocoela –ravnocrijevci
- Red: Tricladida – trocrijevci
 - *Polycelis felina* – mnogooka puzavica
 - *Dugesia gonocephala* – šiljoglava puzavica
 - *Planaria tigrina* – tigrasta puzavica
 - *Crenobia alpina* – alpska puzavica

Razred: Trematoda - metilji

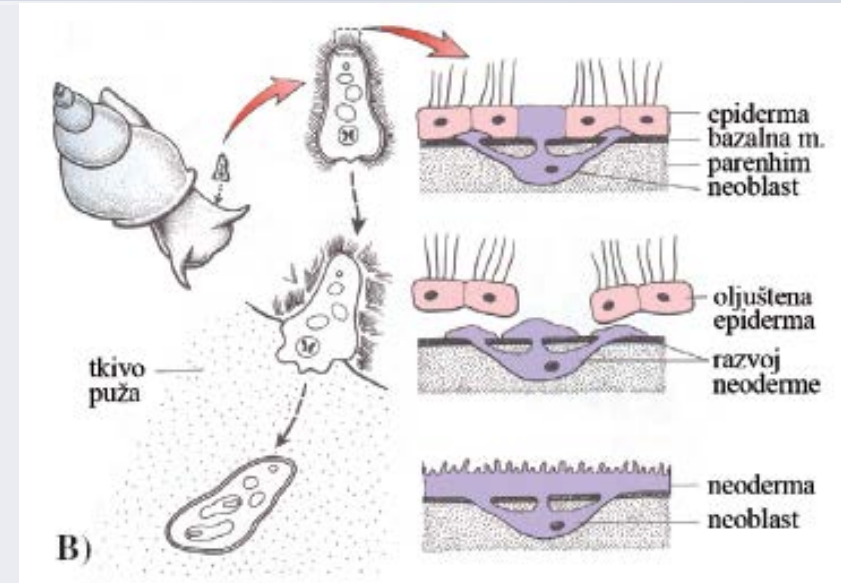
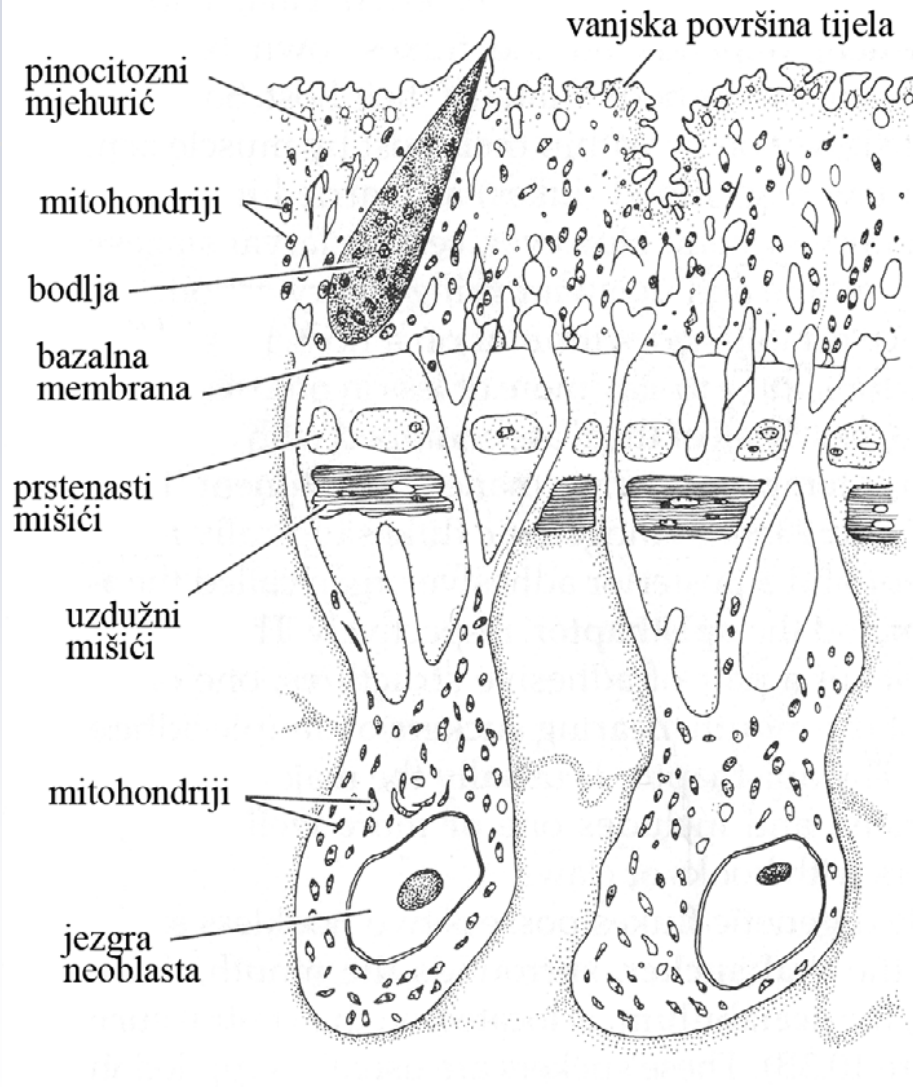


Podrazred: Digenea – dvorodni metilji

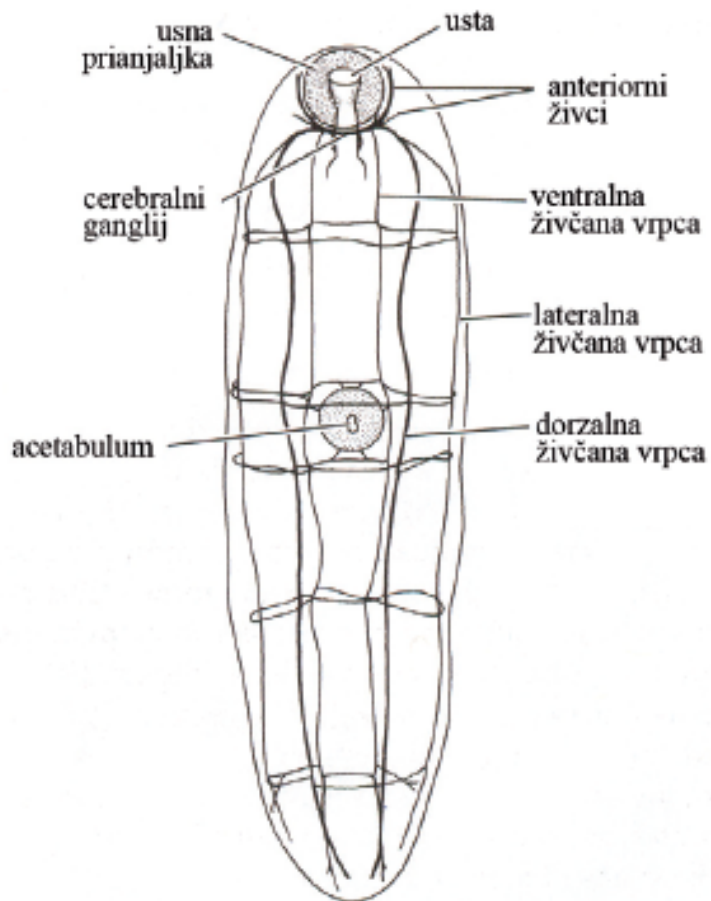


- obligatni paraziti
- 0,2 mm do 60 mm
- usna i trbušna prijanjalka (acetabulum)
- neoderma ili tegumentum

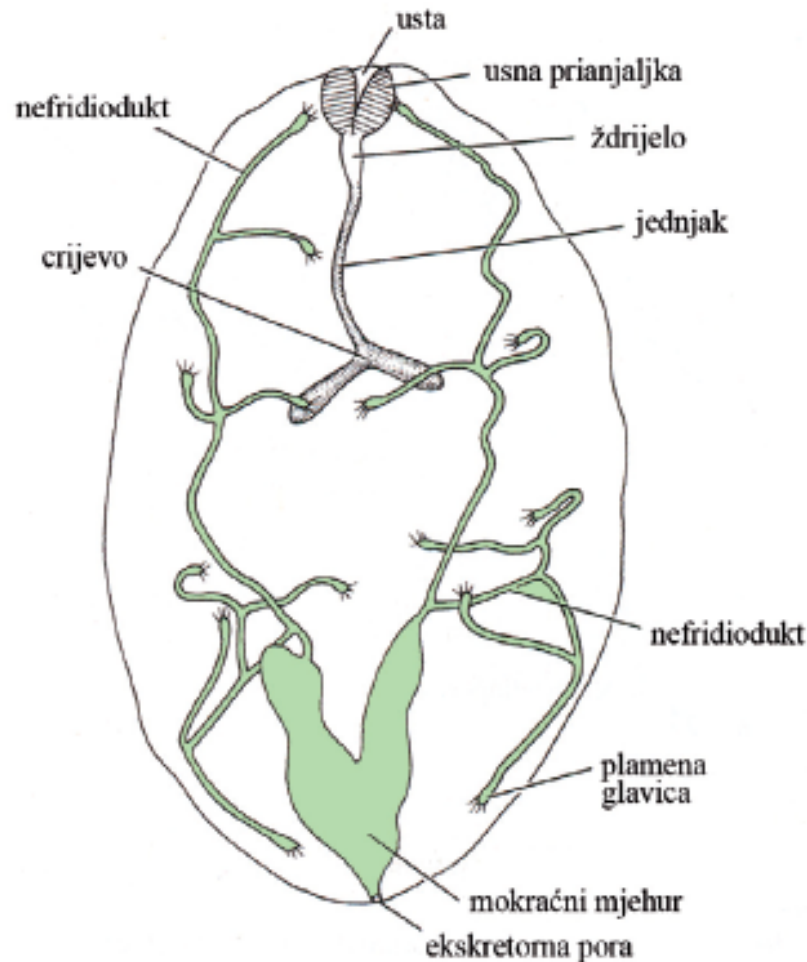
Neoderma



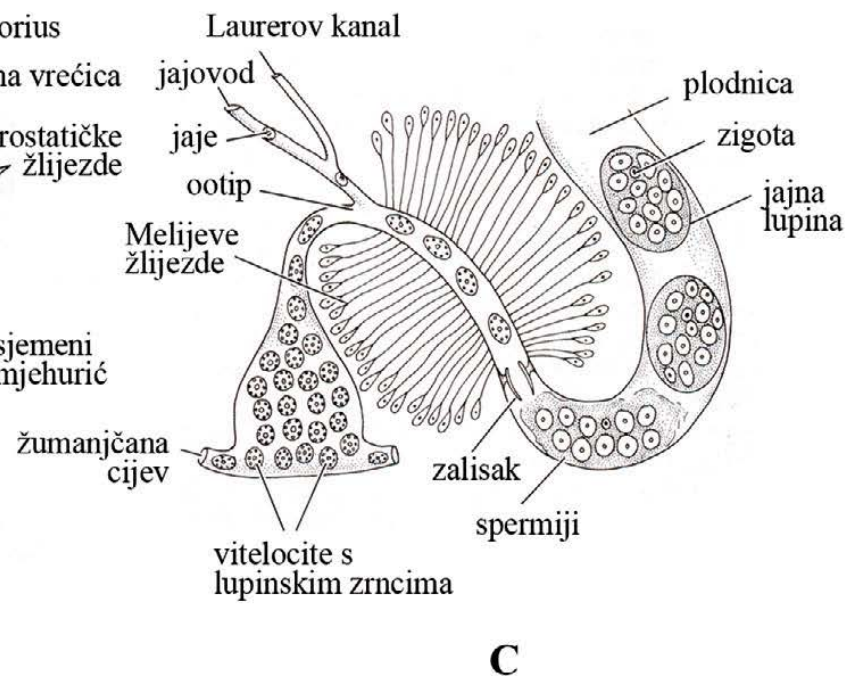
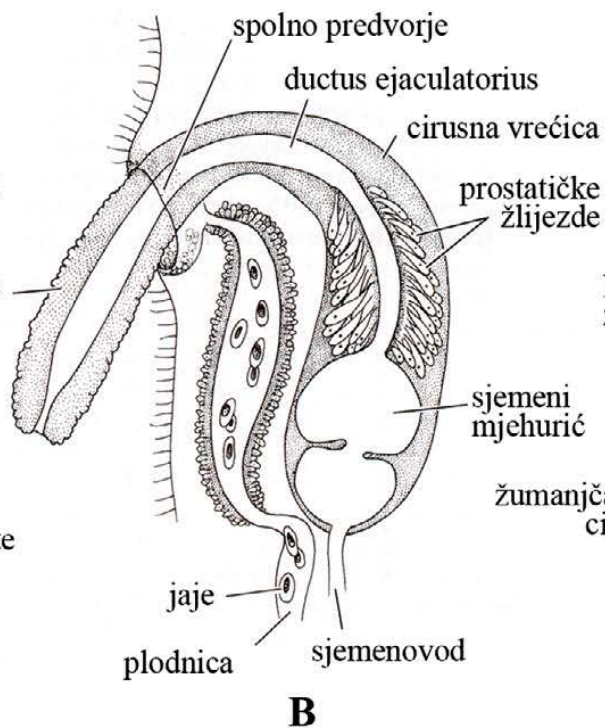
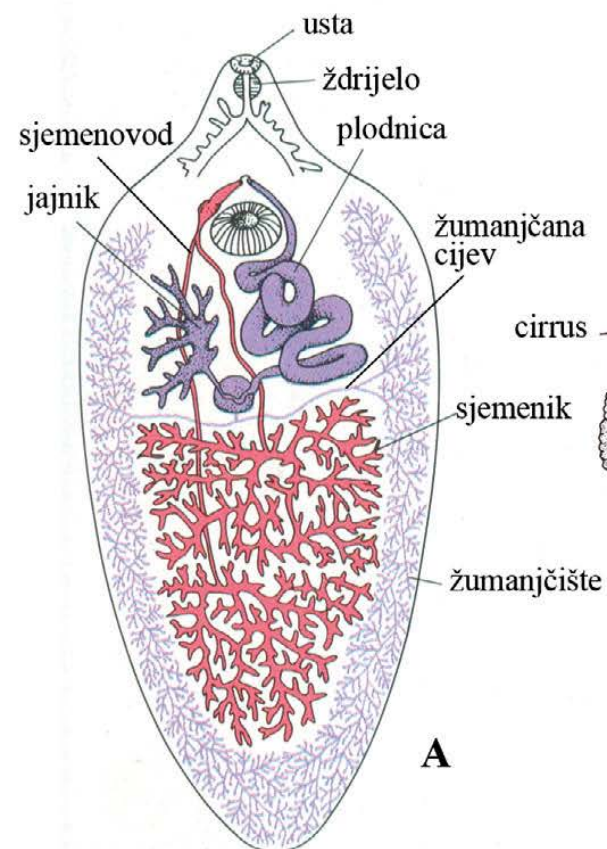
Živčani sustav



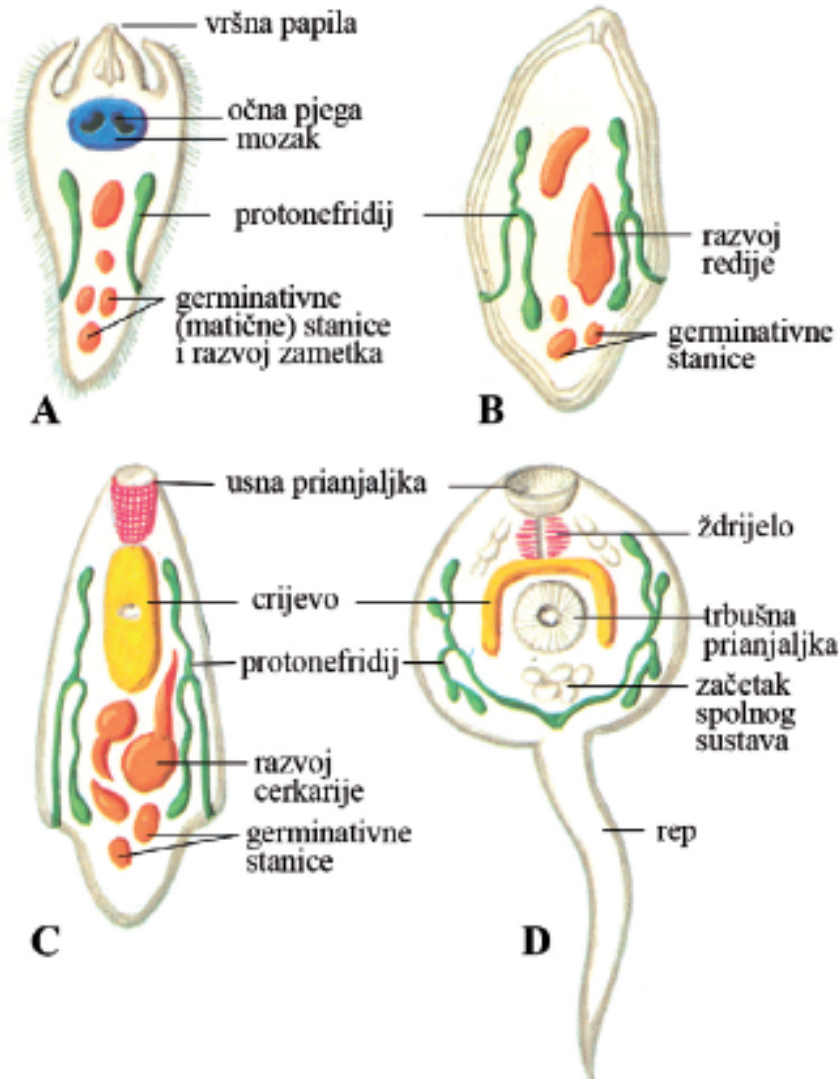
Probavni sustav Protonefridiji

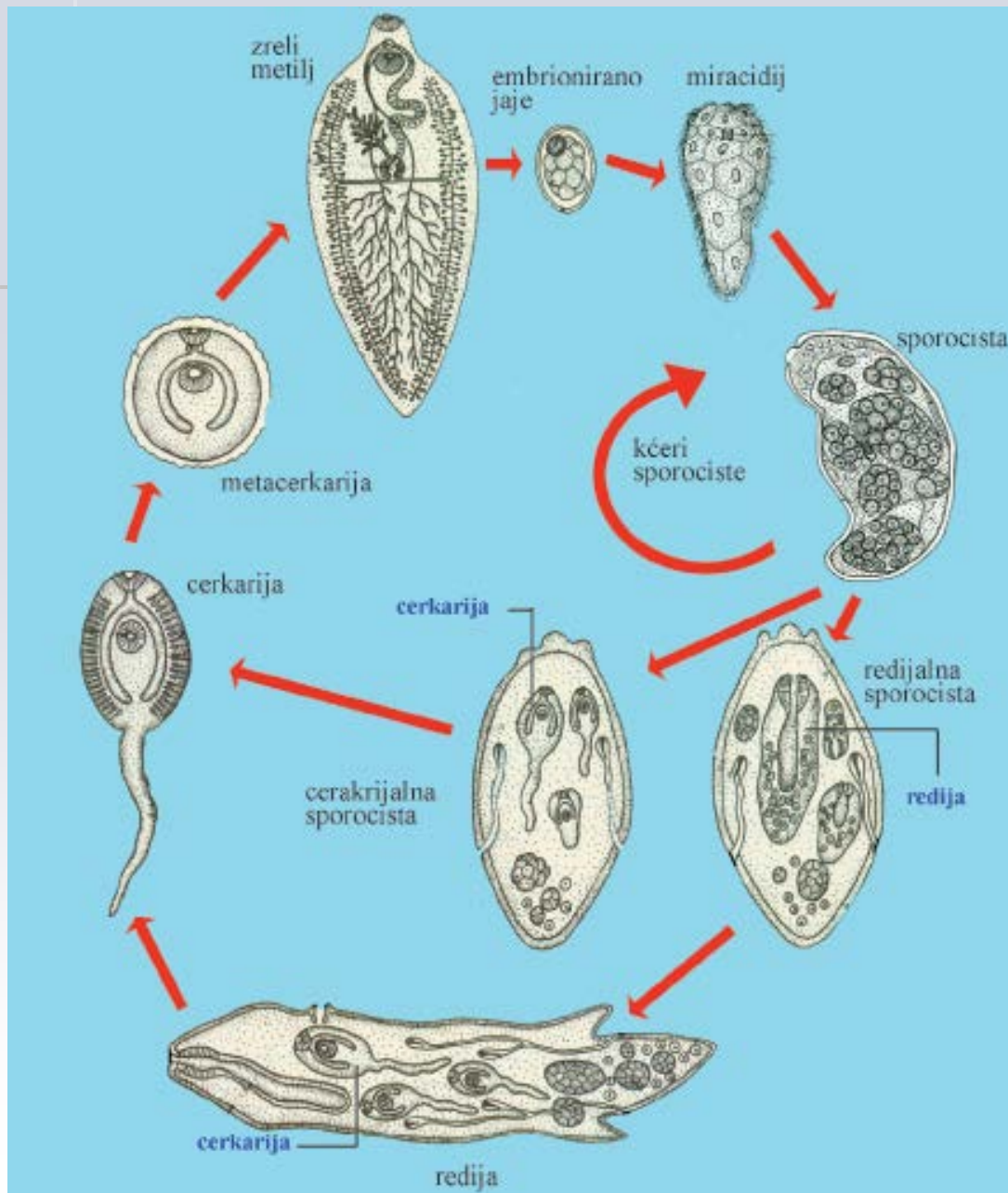


Spolni sustav



Životni stadiji





Životni ciklus
ovčjeg metilja
(*Fasciola hepatica*)

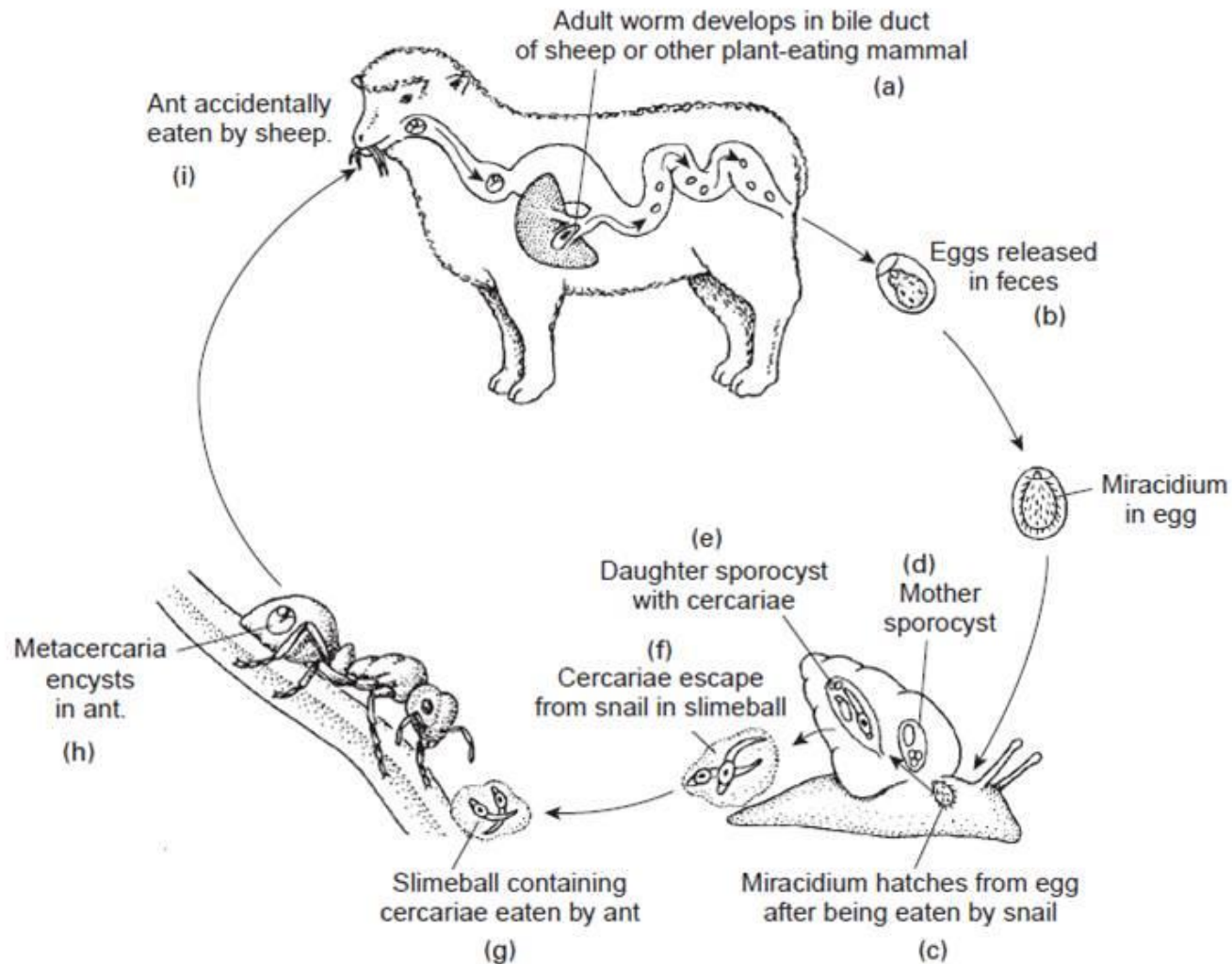


Figure 18.2 Life cycle of *Dicrocoelium dendriticum*.

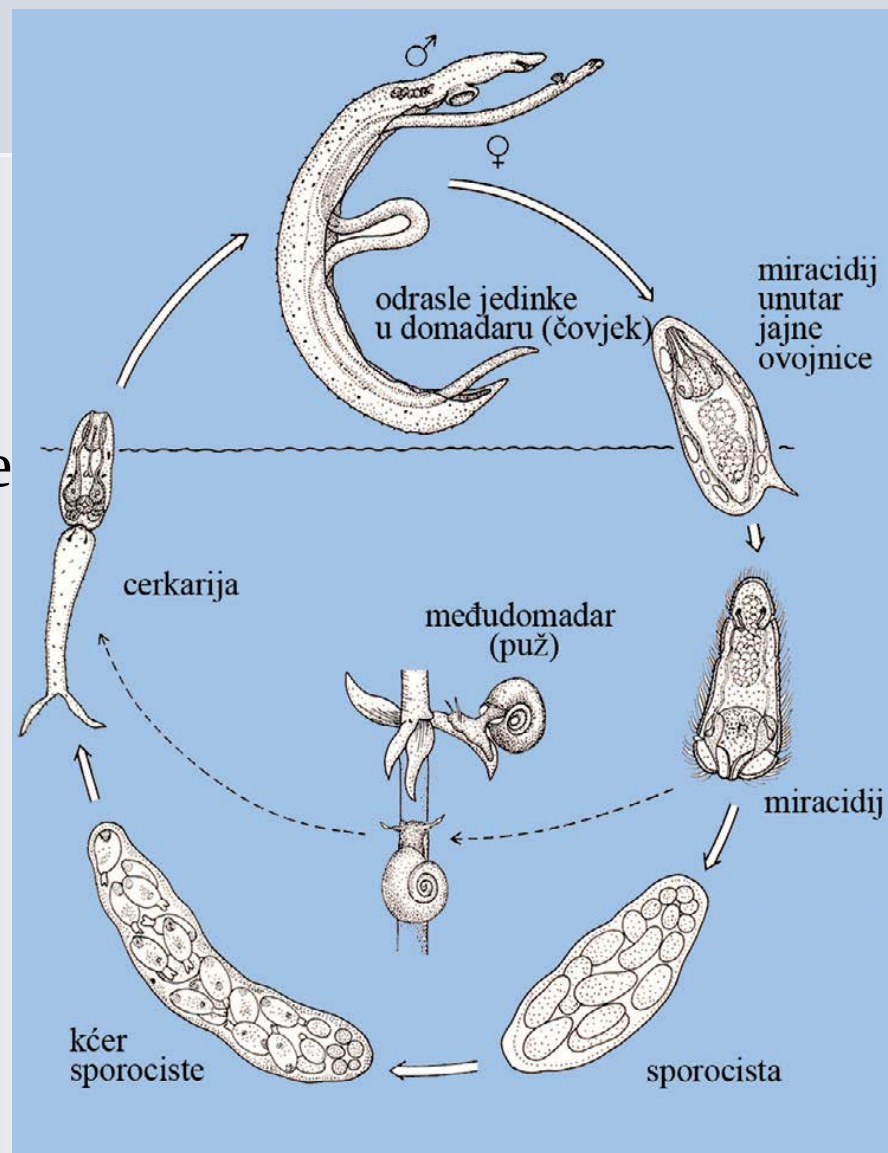
(a) Adult, in bile duct of sheep or other plant-eating mammal. (b) Egg released in feces. (c) Miracidium hatching from egg after being eaten by snail. (d) Mother sporocyst. (e) Daughter sporocyst. (f) Cercariae escaping from snail in slimeball. (g) Slimeballs containing cercariae eaten by ant. (h) Metacercaria encysting in ant. (i) Ant accidentally eaten by sheep.

Drawing by William Ober and Claire Garrison.

Biološka raznolikost metilja (Trematoda)

Fasciola hepatica – ovčji metilj

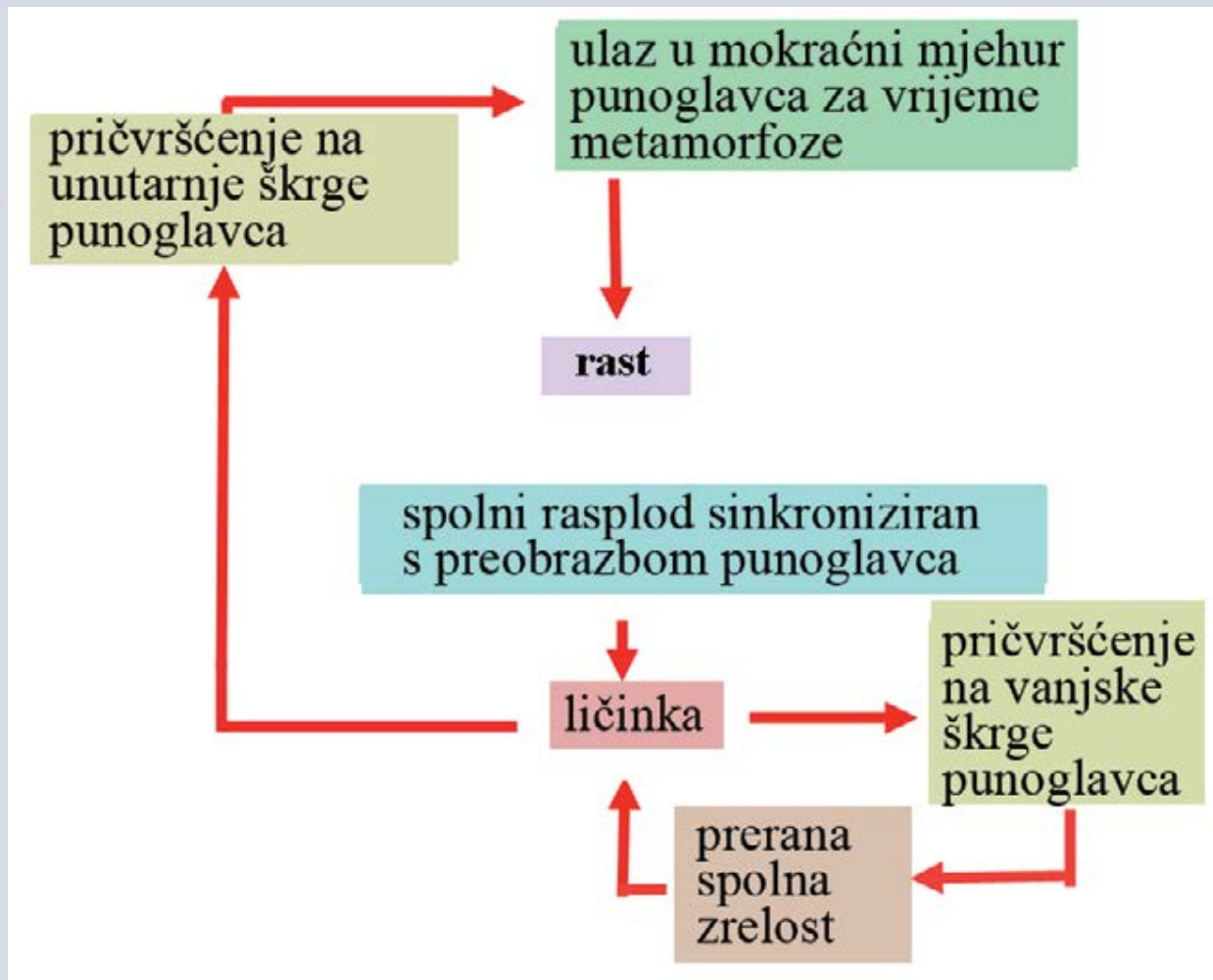
Por. Schistosomatidae – krvni me



Razred: Monogenea - jednorodni metilji

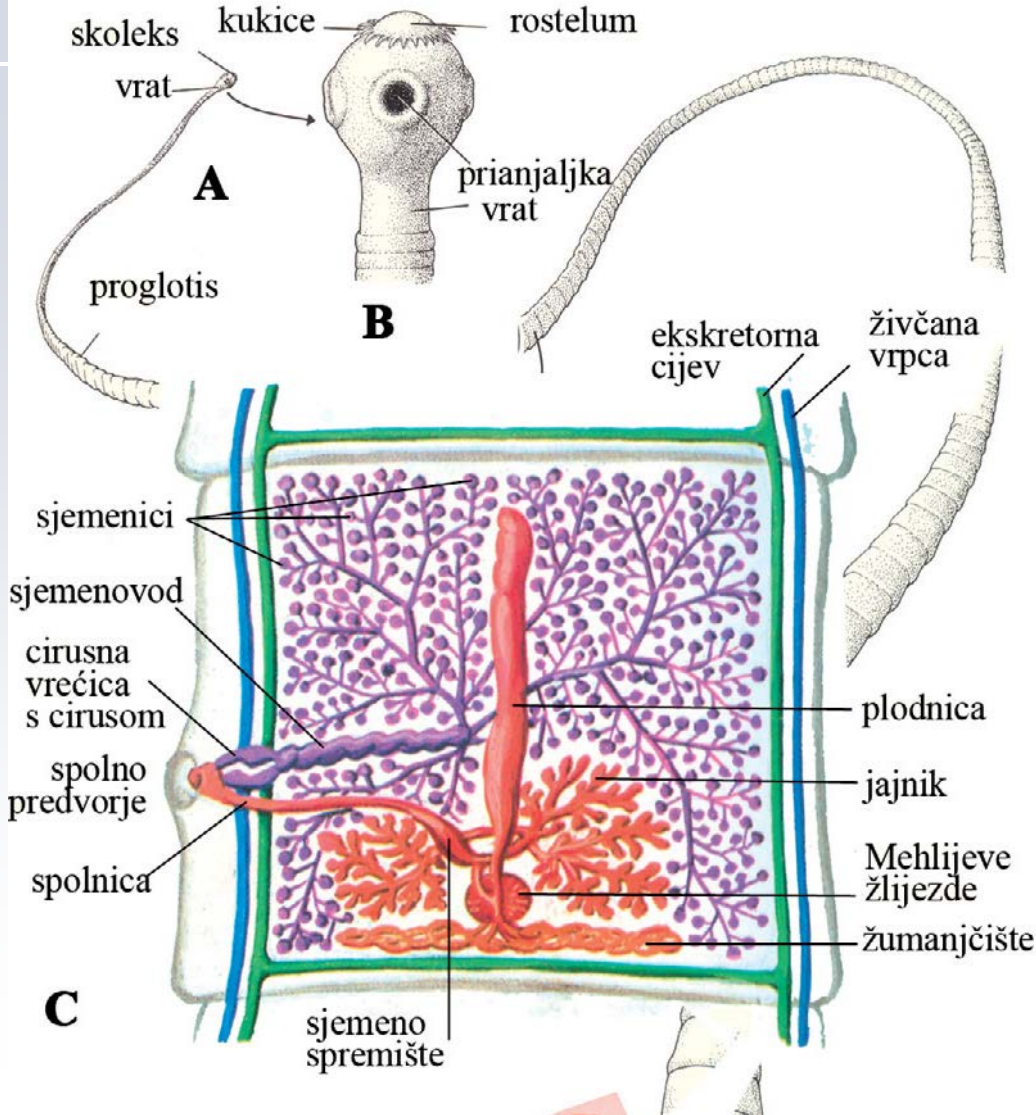


- ektoparaziti
- prohaptor
- opisthaptor



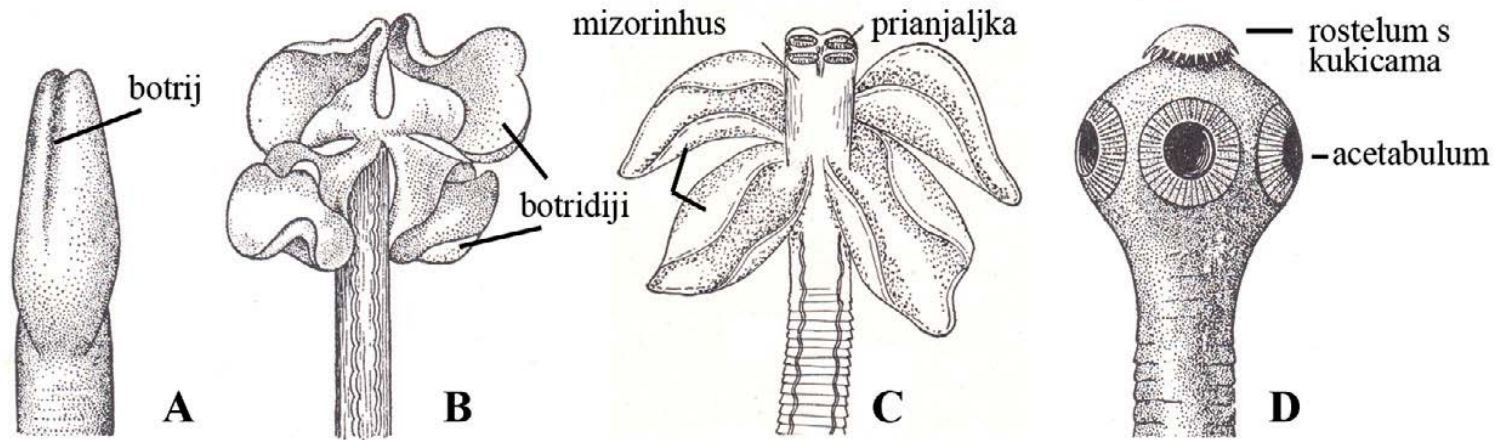
Životni ciklus žabljeg metilja
(*Polystoma integerrimum*)

Razred: Cestoda - trakavice

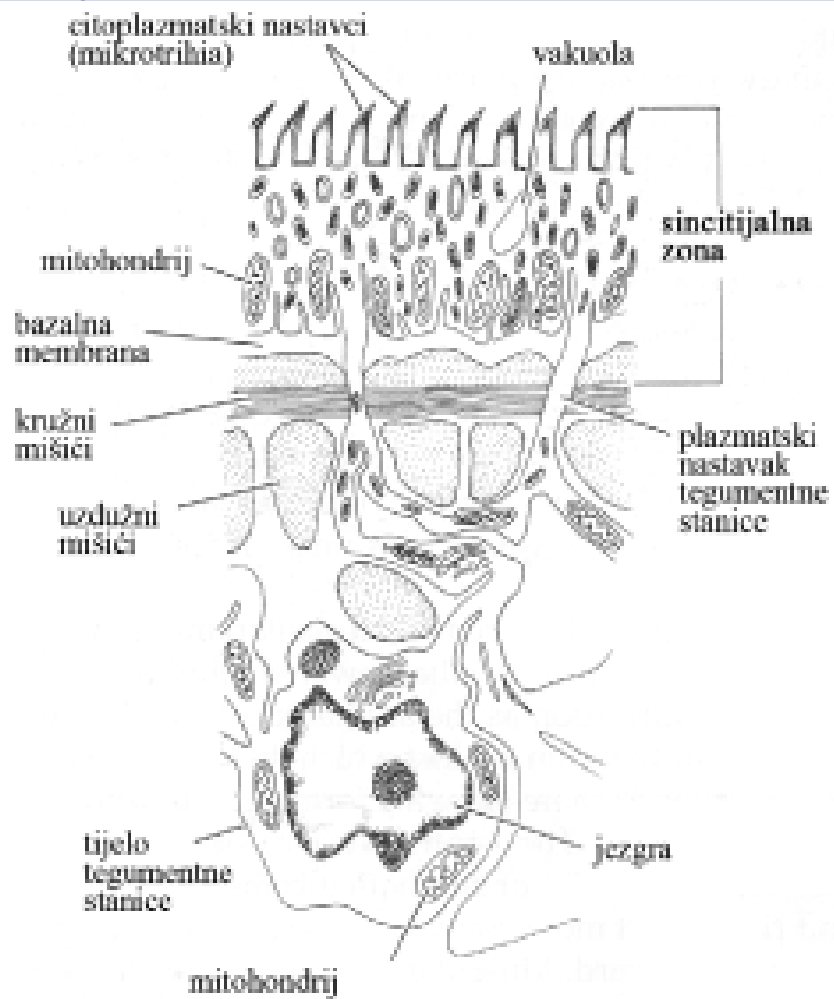


- unutarnji nametnici
- nemaju probavni sustav
- skoleks, vrat, strobila

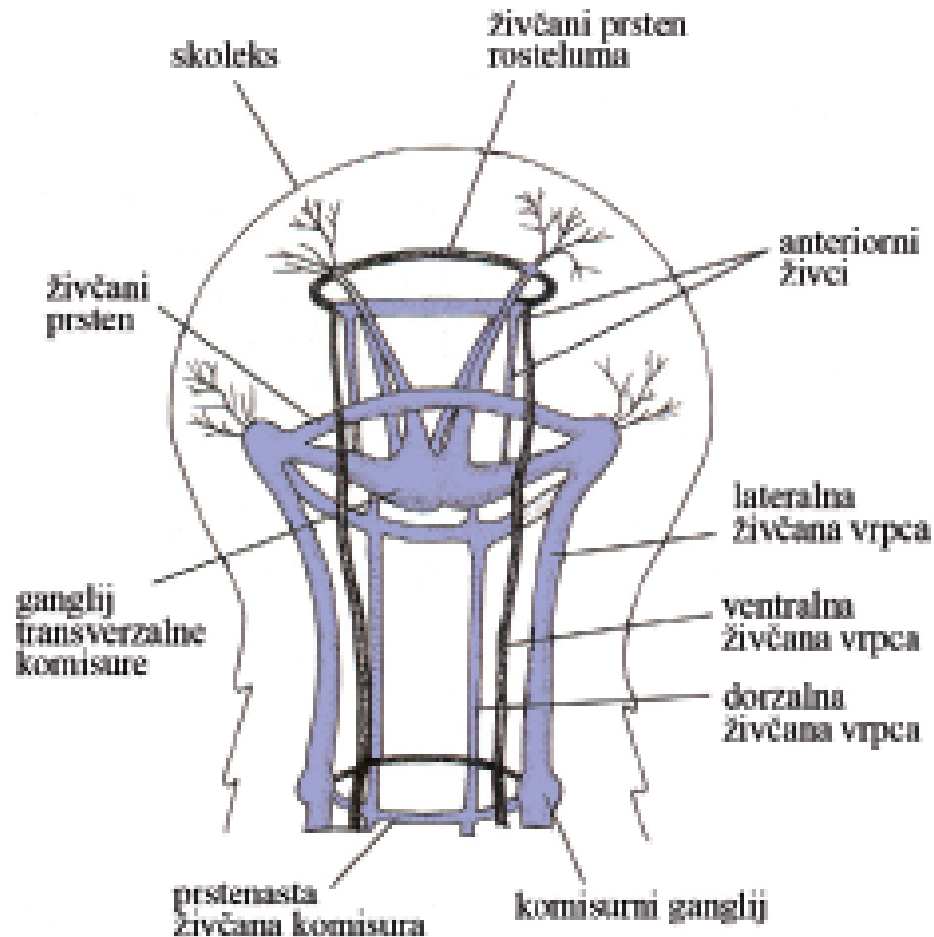
Skoleks



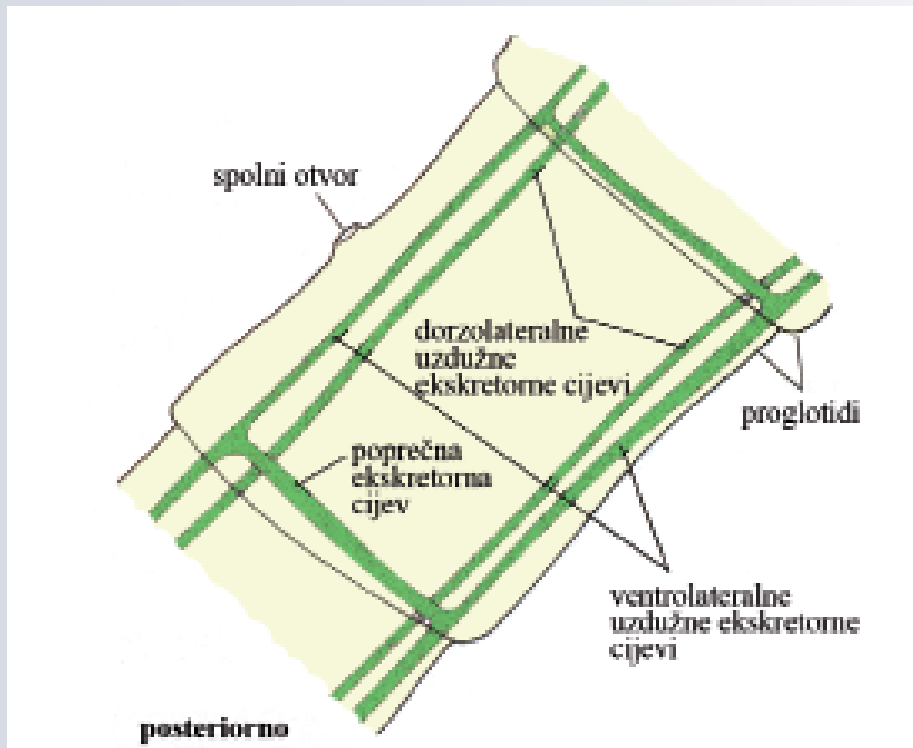
Neoderma



Živčani sustav

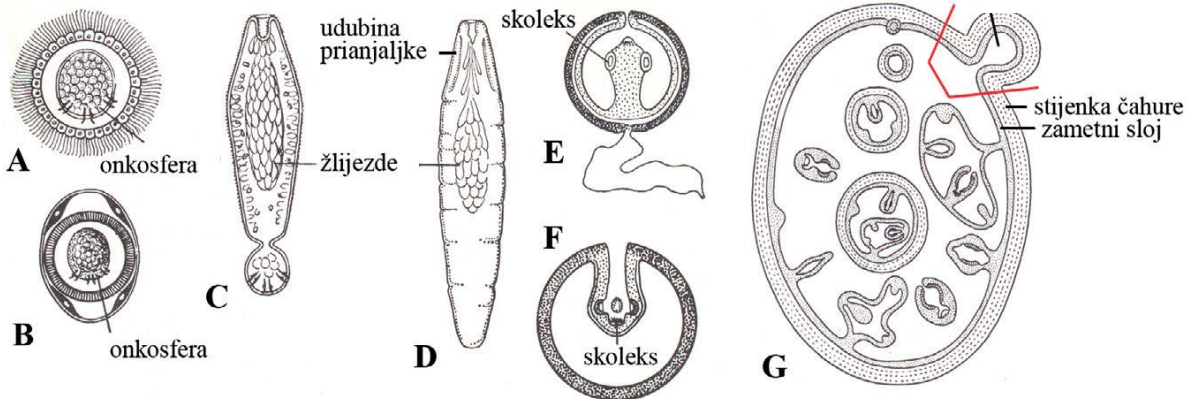
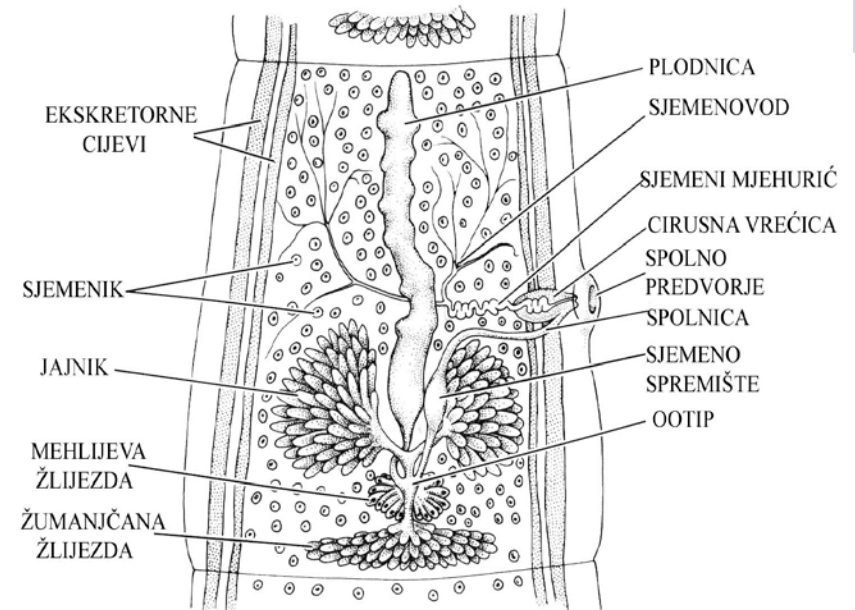


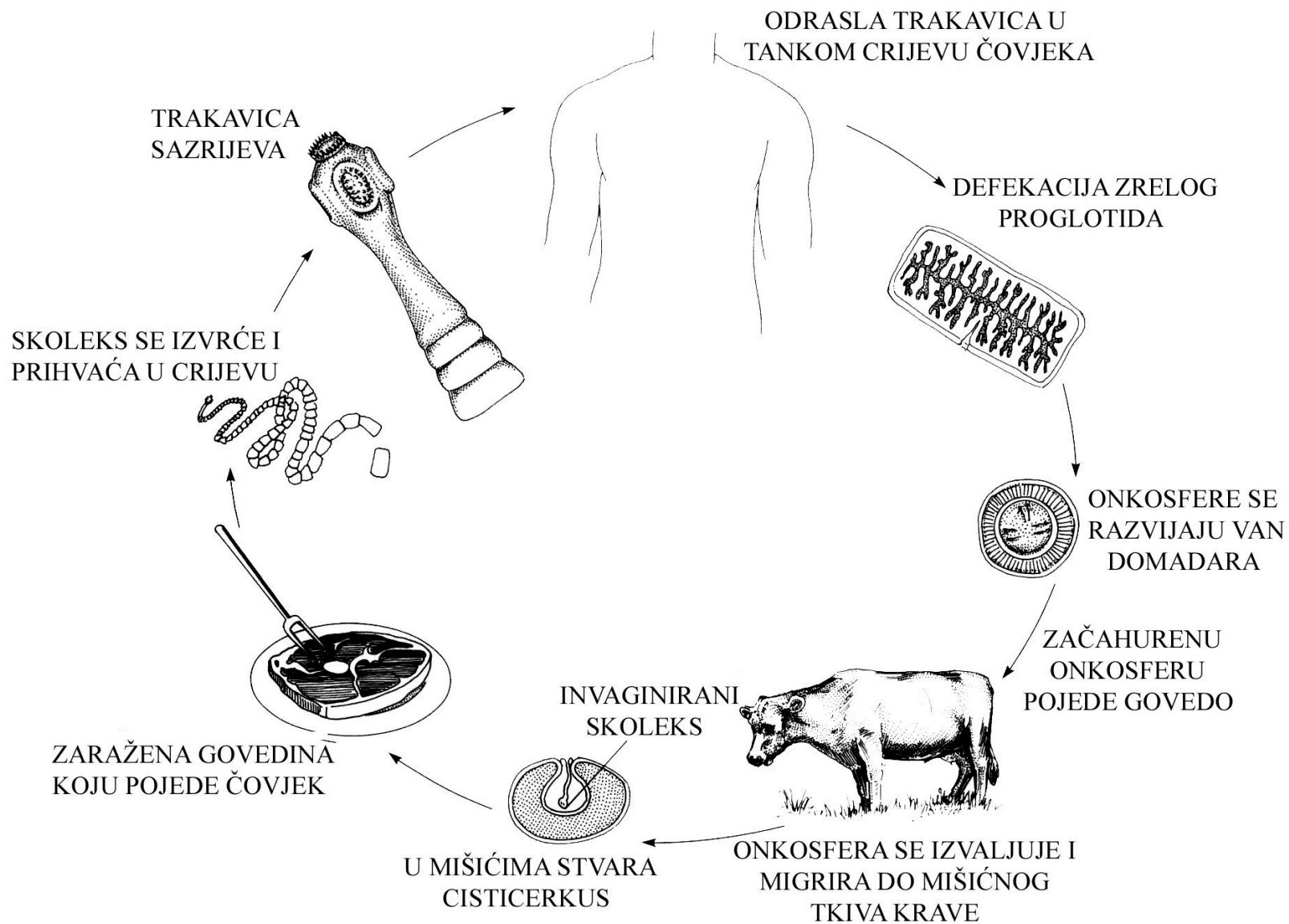
Ekskrecija i osmoregulacija



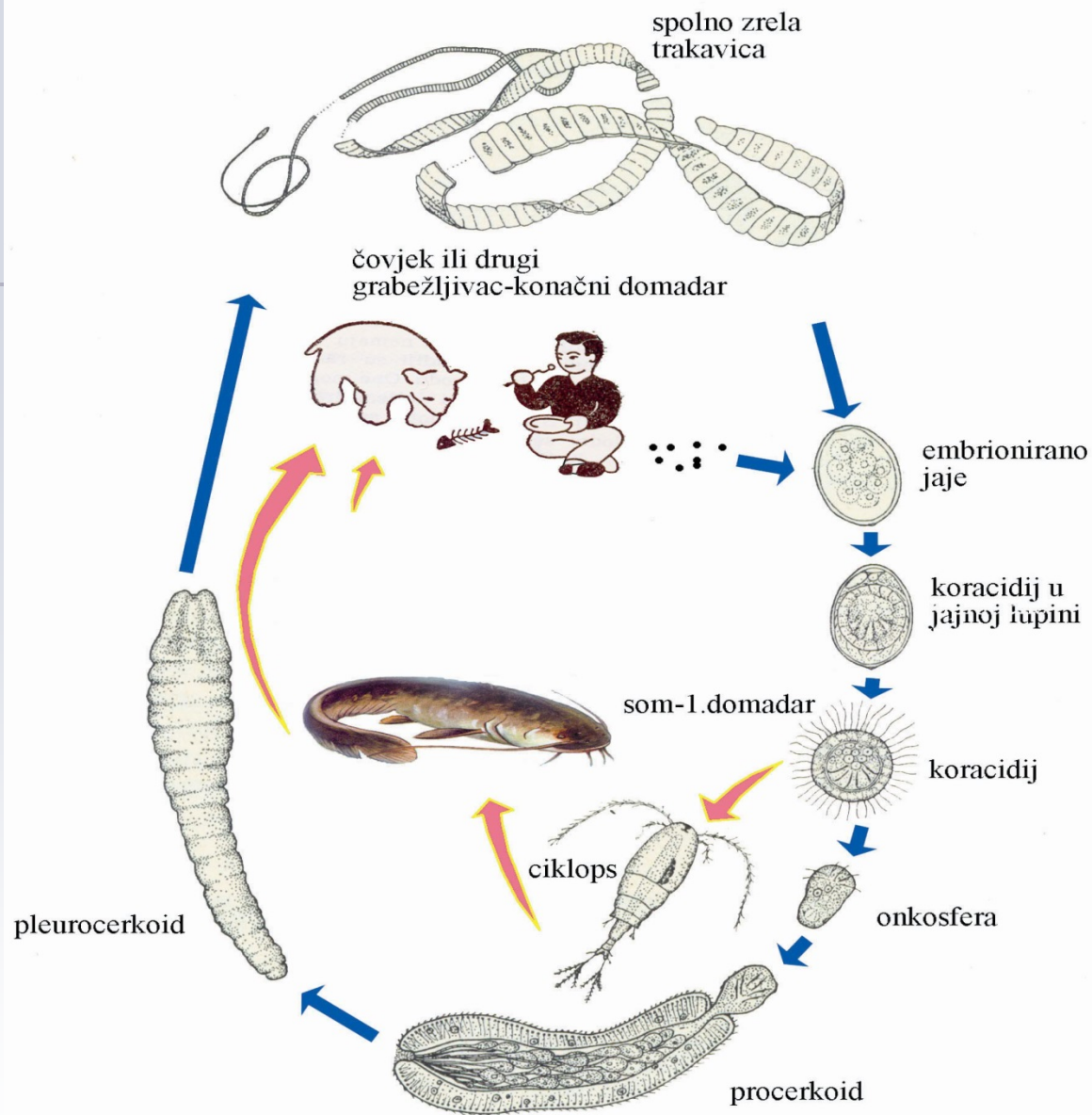
Razmnožavanje

- strobilacija
- razni tipovi ličinki

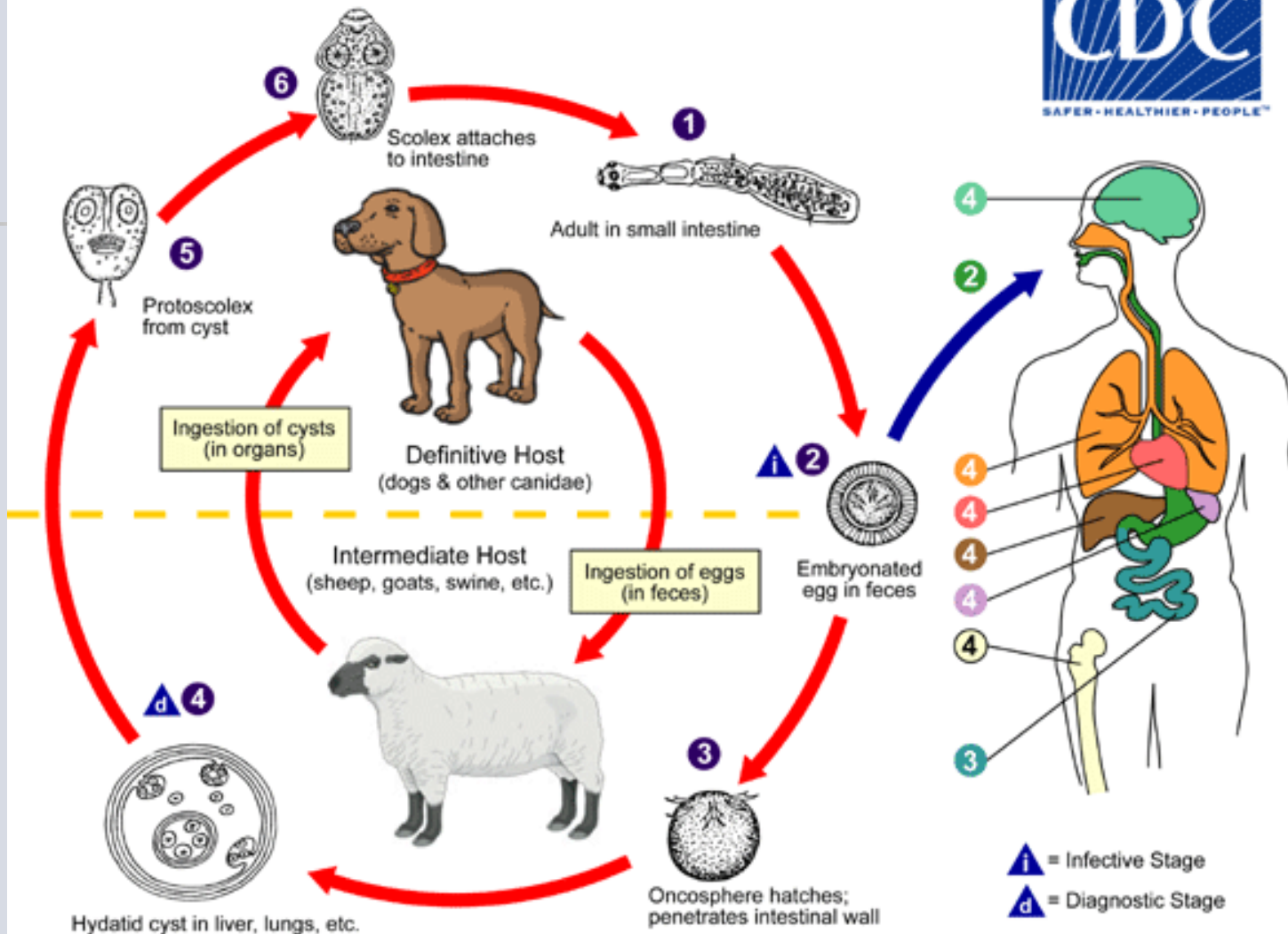




ŽIVOTNI CIKLUS TRAKAVICE *Taenia saginata*



Životni ciklus riblje trakavice
(*Diphyllobothrium latum*)



Životni ciklus pasje trakavice
(*Echinococcus granulosus*)

Biološka raznolikost trakavica (Cestoda)

Cestodaria

Eucestoda – prave trakavice

Diphyllobotrium latum – riblja trakavica

Taenia saginata – goveđa trakavica

Taenia solium – svinjska trakavica

Echinococcus granulosus – pasja trakavica