

Paramphistomatidae

Charakteristika:

- Břišní přísavka velká, na konci těla
- Tělo kulovitého tvaru
- Cizopasí hlavně u savců, včetně hospodářských zvířat a člověka

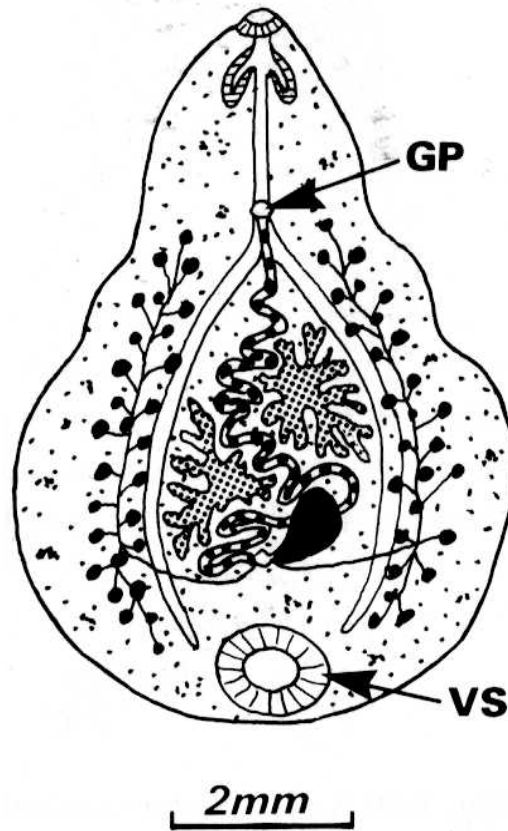
Vývoj:

- 1.Mz –plži (Planorbidae) – paramfistomní cercárie
- Metacercárie (adoleskarie) na vegetaci

Zástupci:

- *Paramphistomum cervi* – skot, jeleni, ovce
- ***Gastrodiscoides hominis*** (subtropy) - člověk

Gastrodiscoides hominis



Echinostomatidae

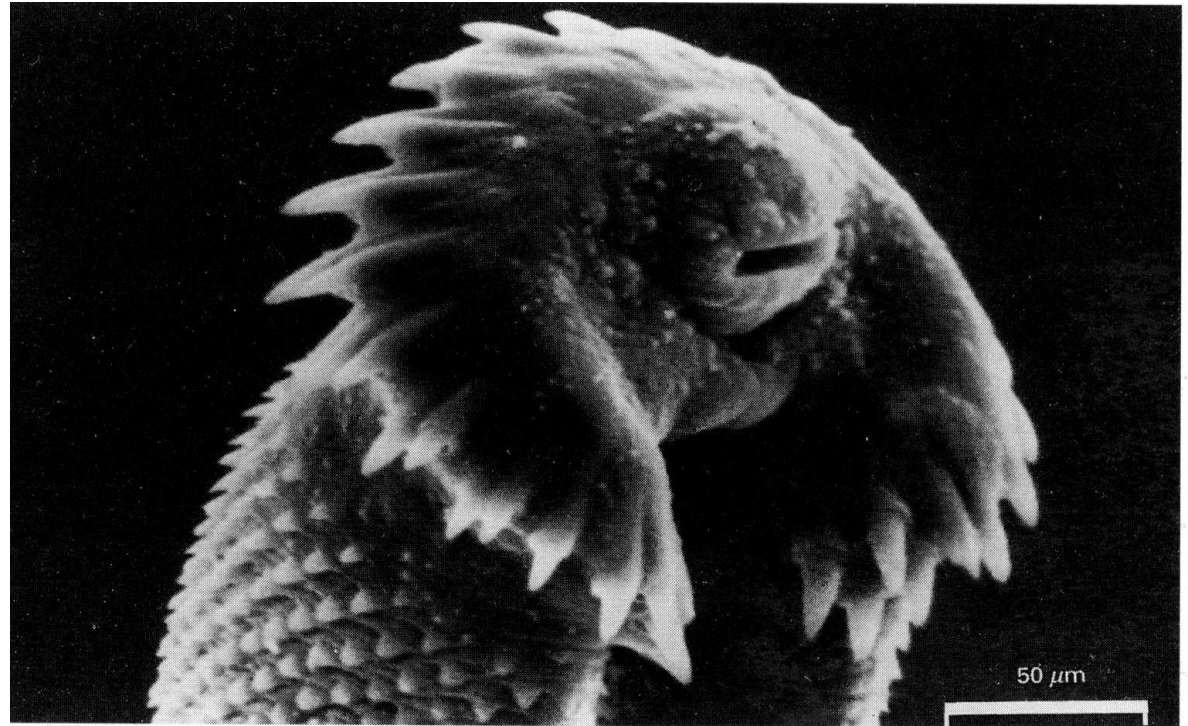
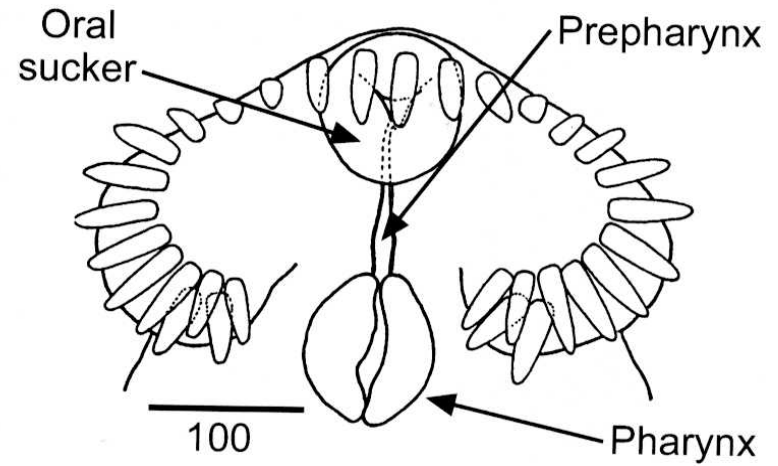
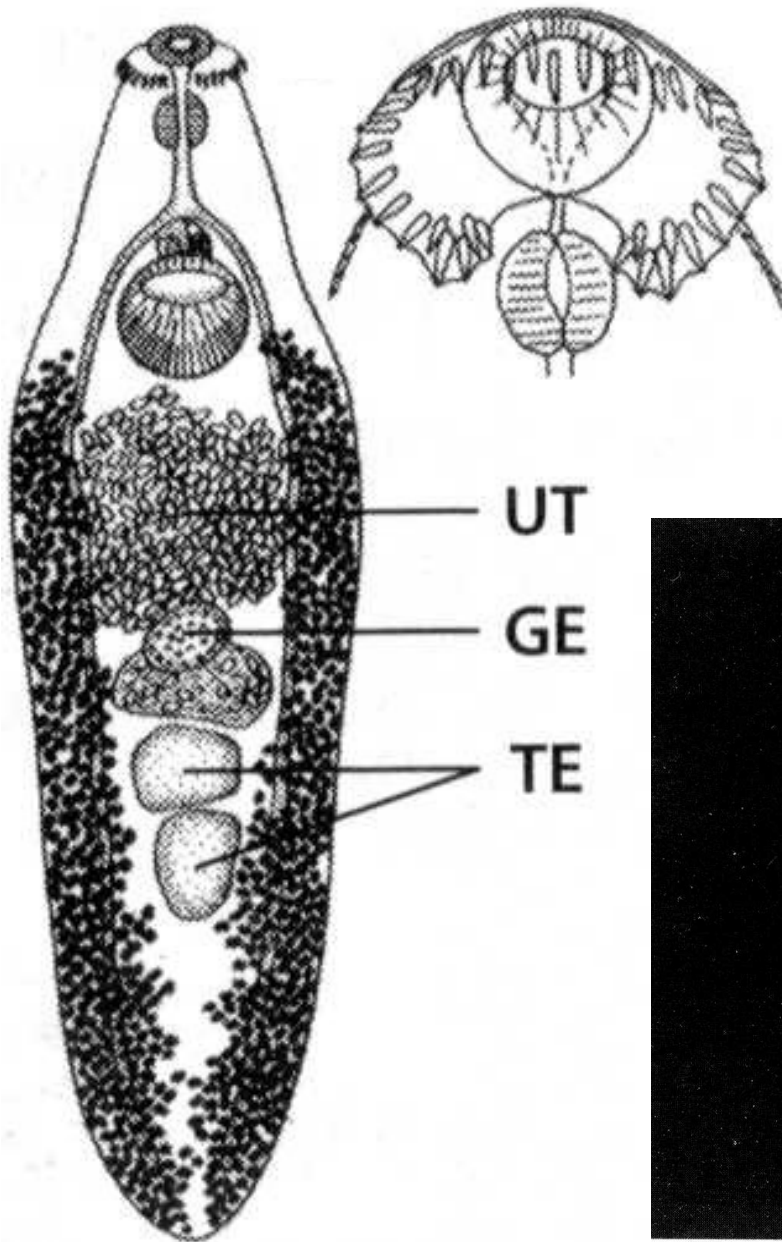
Charakteristika:

- Běžné střevní motolice ptáků a savců, vzácně u lidí
- Límeček s trny

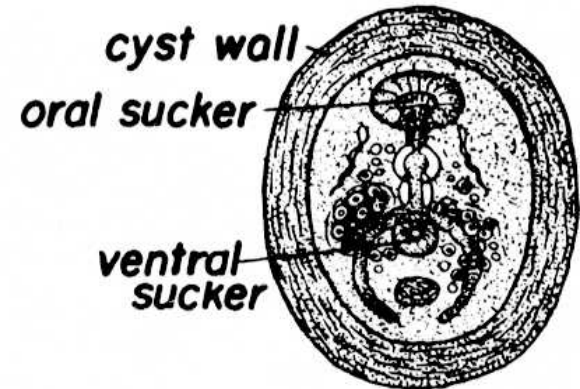
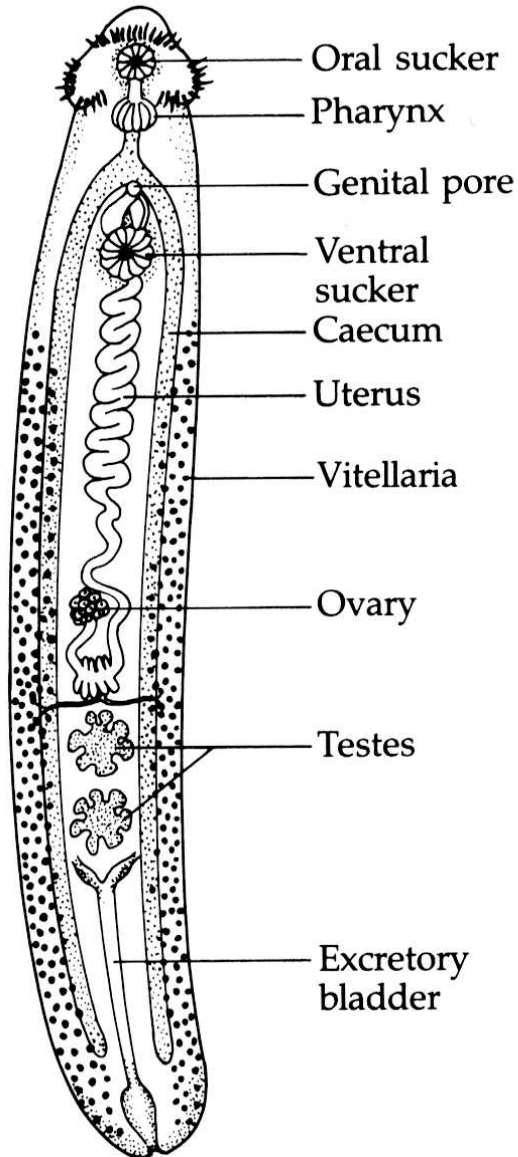
Vývoj:

- 1. Mz – plži (*Lymnaea*, *Physa*, *Bithynia*) – echinostomní cercárie
- 2. Mz – bezobratlí (především, měkkýši) ale i obratlovci (žáby, ryby)
- **Zástupci:**
- ***Echinostoma revolutum***
- *Echinoparyphium*, *Petasiger*, *Hypoderaeum*

Echinostoma revolutum

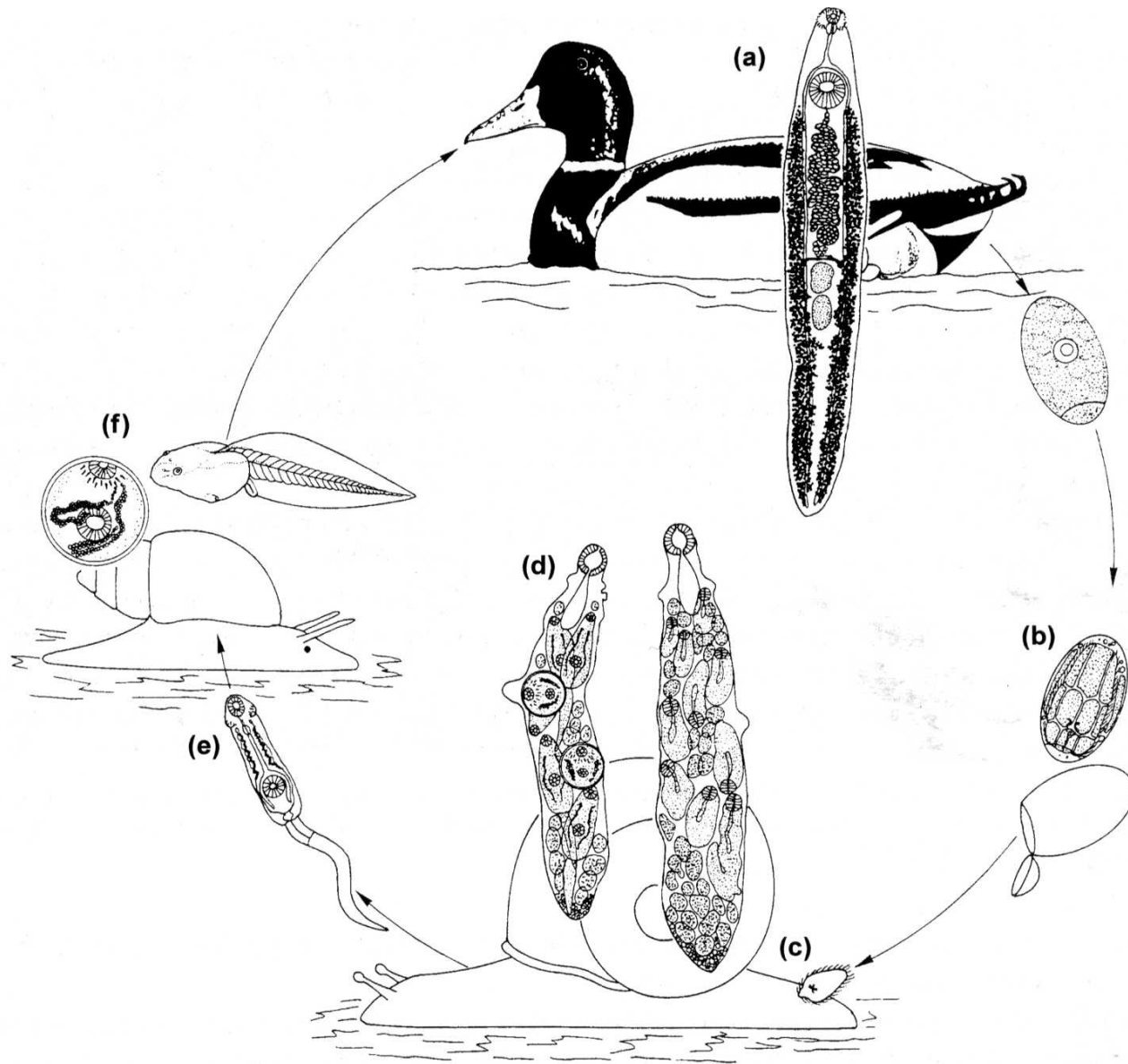


Echinostoma revolutum



**METACERCARIA
(X 100)**

Echinostoma revolutum



Paragonimidae

Charakteristika:

- Plicní cizopasníci

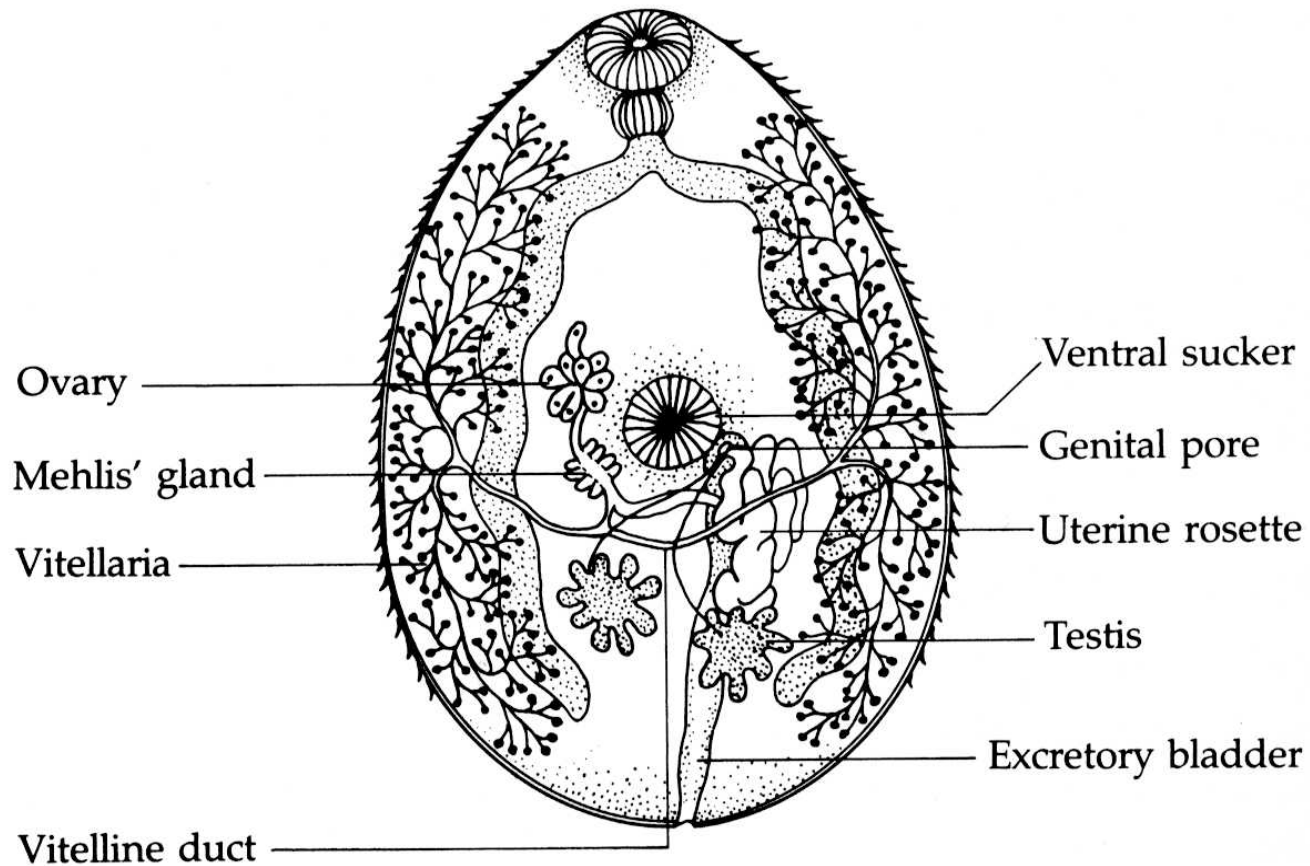
Vývoj:

- 1. Mz – okružáci (Planorbis, Melania) – mikrocerkárie
- 2. Mz – krabi a raci (Astacus sinensis, Eriocheir sinensis)

Zástupci:

- **Paragonimus westermani** (východní Asie)
 - Šelmy, buvoli, člověk
 - Červi žijí 20 – 30 let
 - Častá záměna s TBC (krvavé sputum), kaverny v plicích až smrt
 - Léčba málo úspěšná

Paragonimus westermani (motolice plicní)



Paragonimus westermani

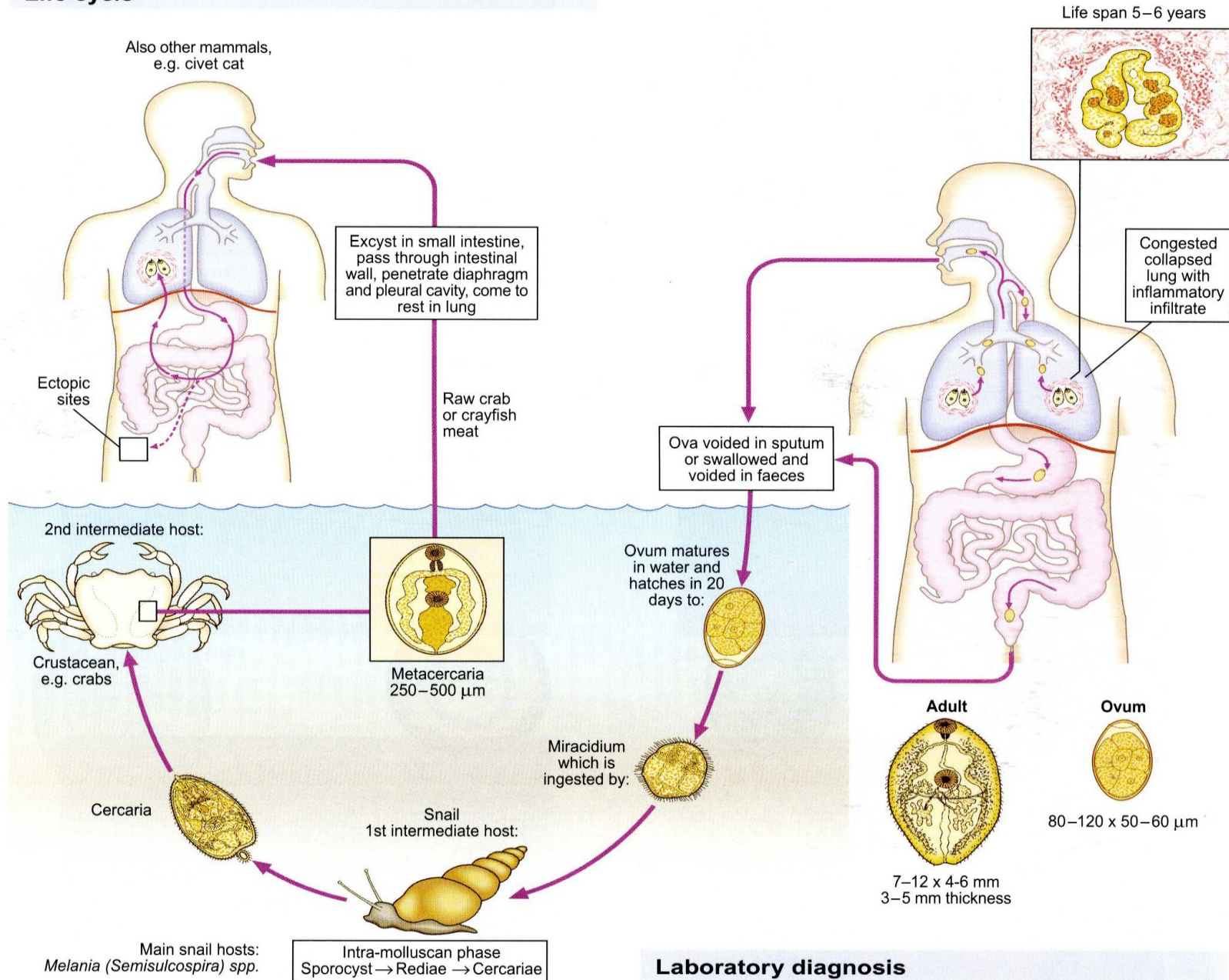
Distribution

5 million infected worldwide.

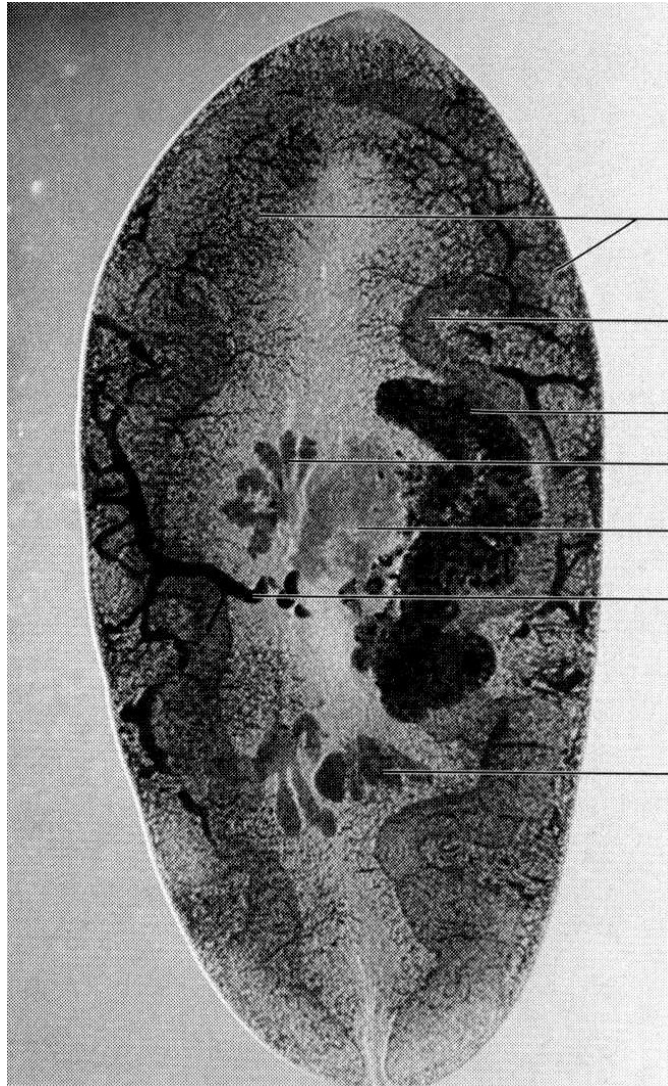


Paragonimus westermani (lung fluke)

Life cycle



Paragonimus westermani



Vitellaria

Intestine

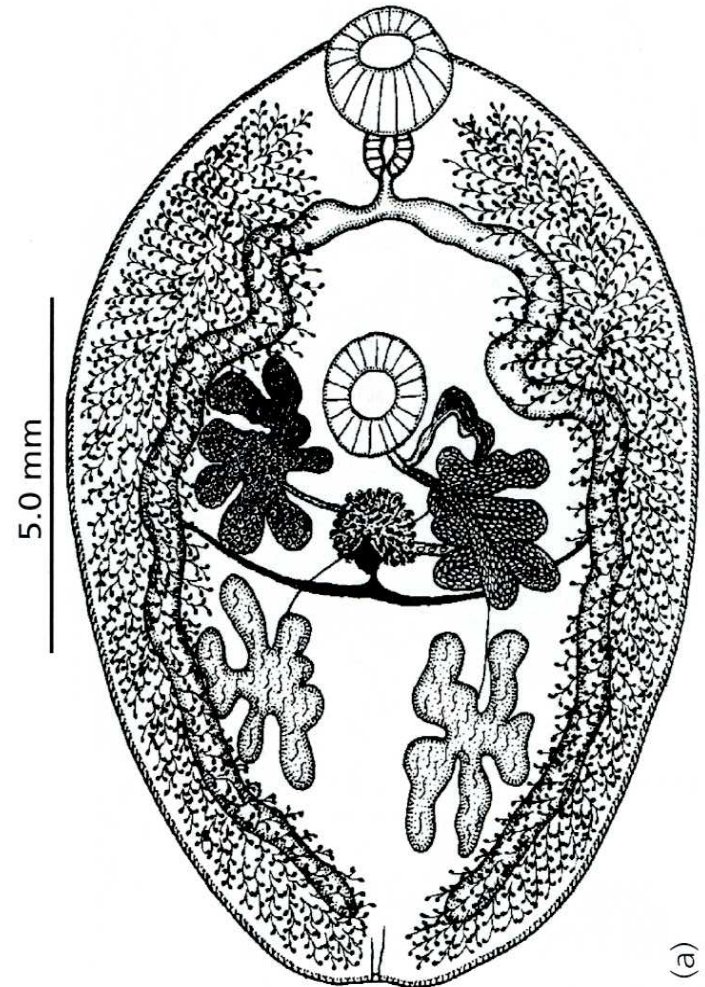
Uterus

Ovary

Mehlis' gland

Vitelline duct

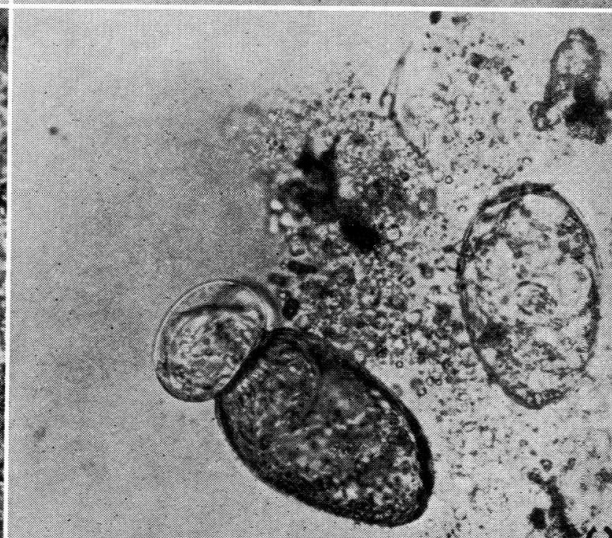
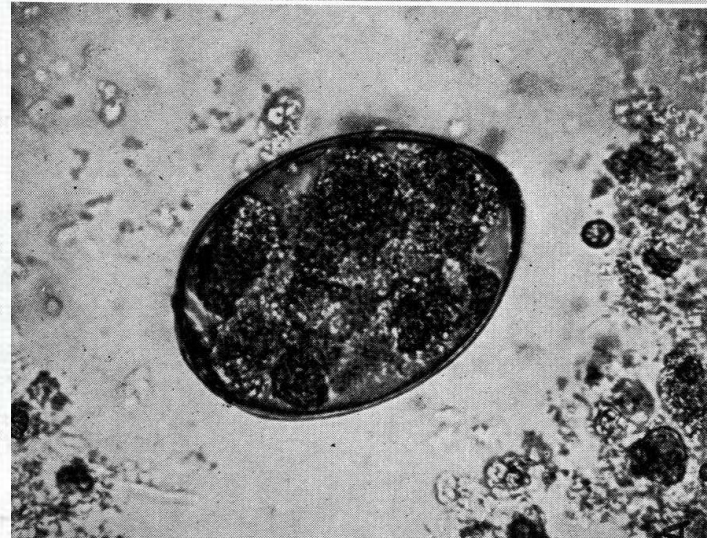
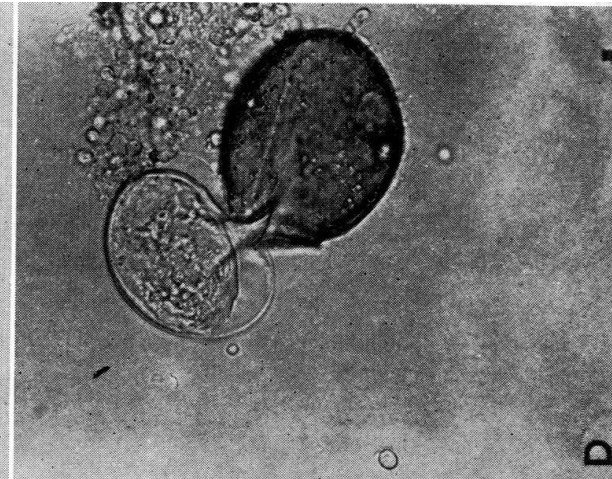
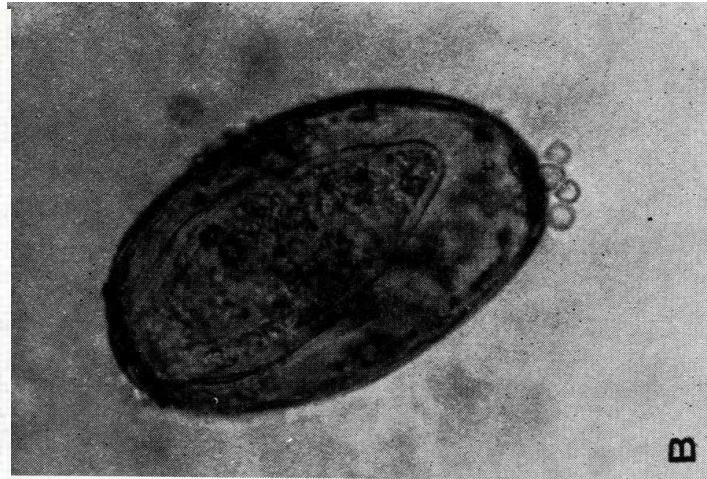
Testis



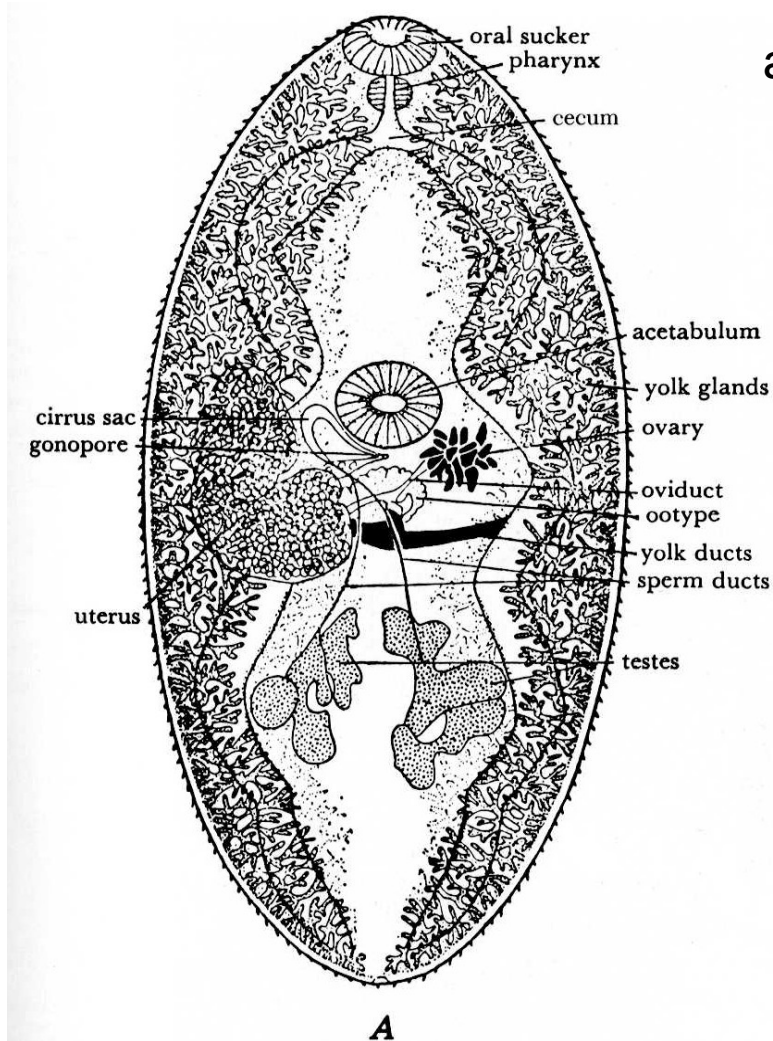
5.0 mm

(a)

Líhnutí miracidia z vajíček

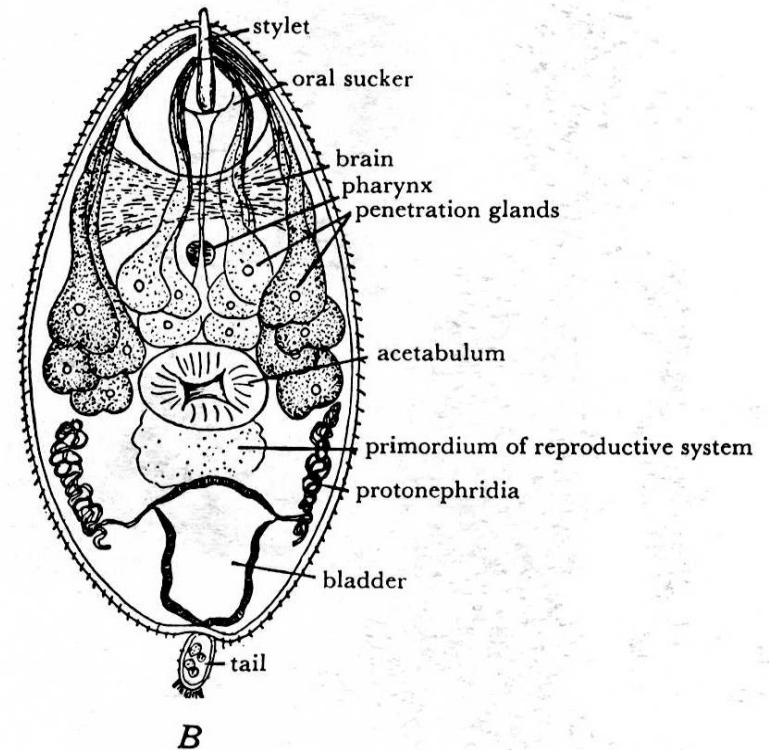


Paragonimus westermani

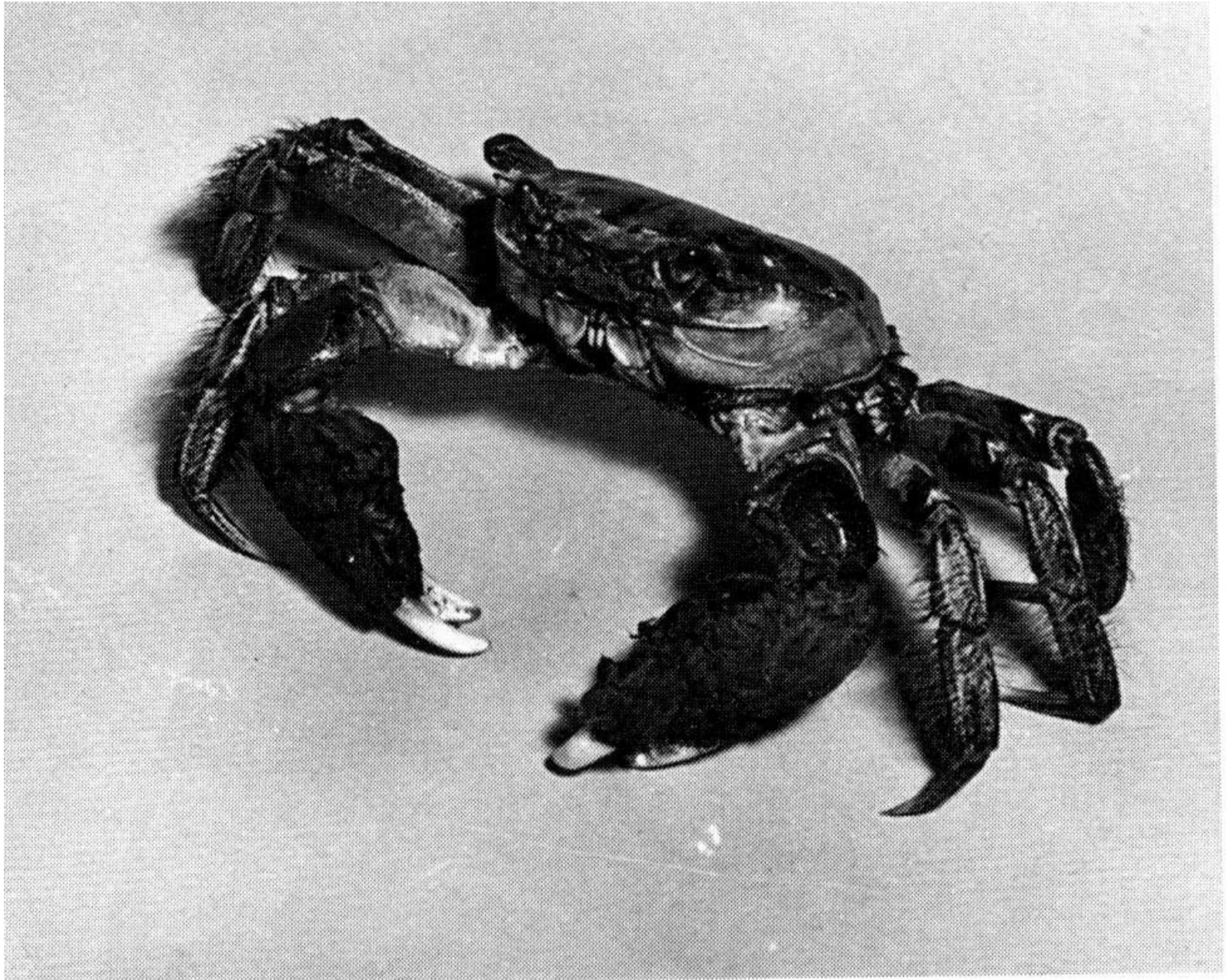


adultní motolice

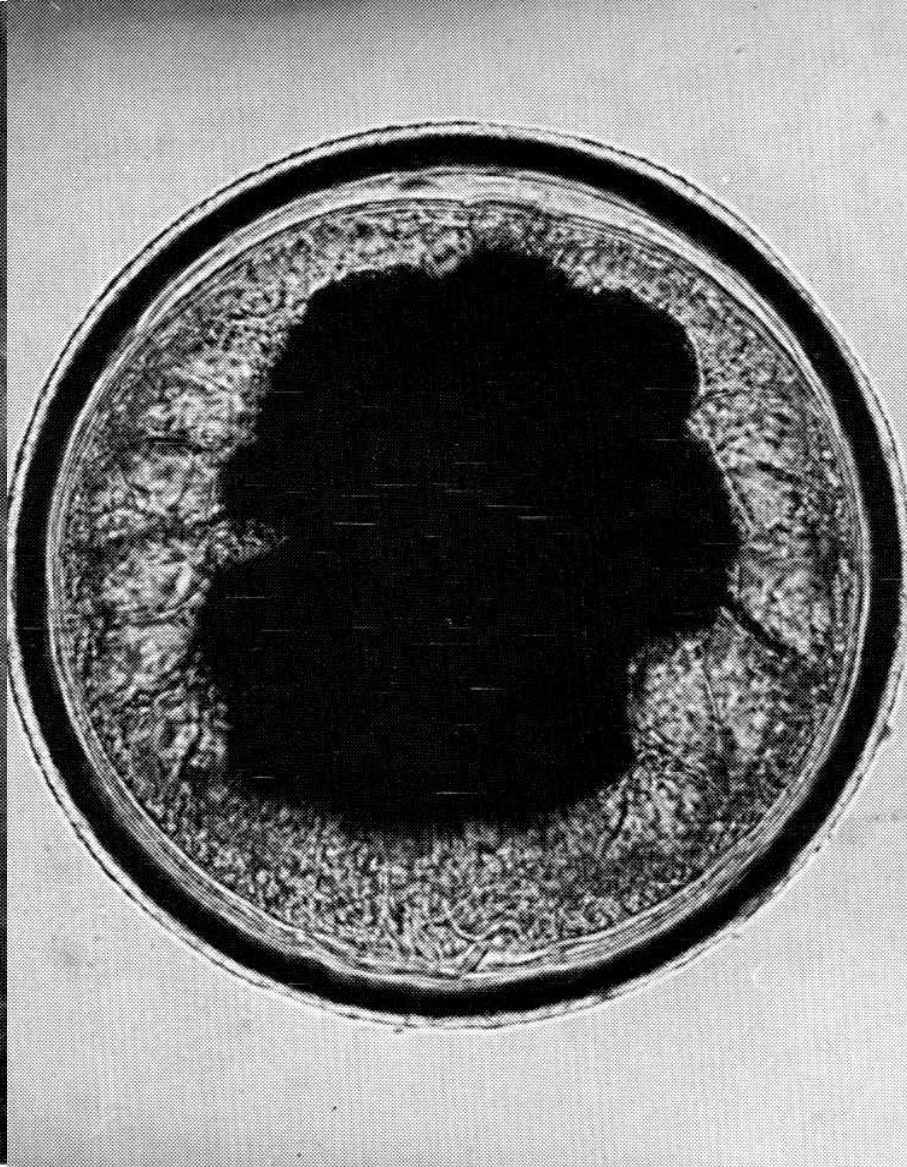
cerkárie



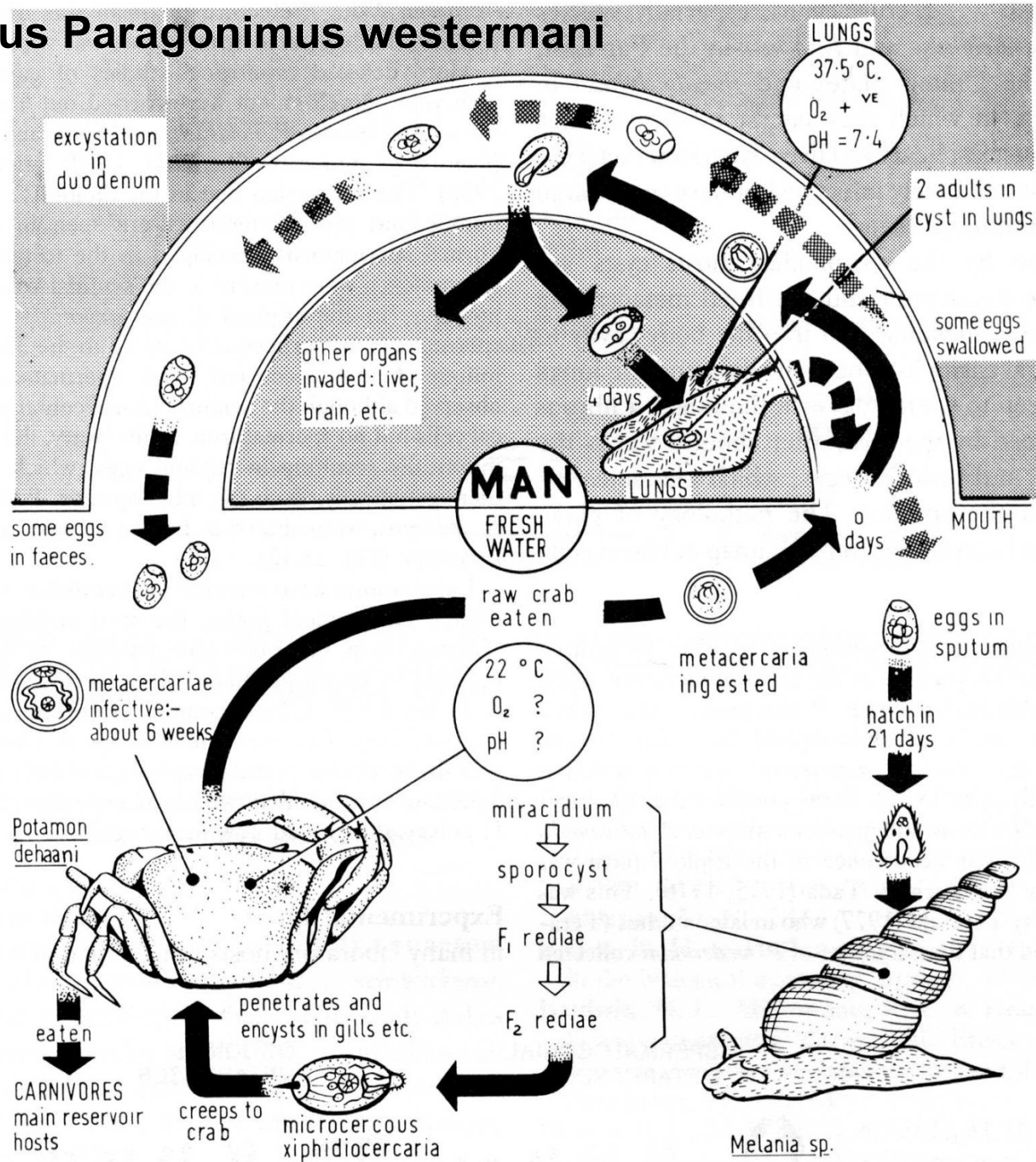
Eriocheir japonicus - mezihostitel



Metacerkarie *Paragonimus westermani*



Životní cyklus *Paragonimus westermani*



Dicrocoelidae

Charakteristika:

- Cizopasníci jater a žlučovodů ptáků a savců
- Hospodářsky významné druhy
- Suchozemské prostředí

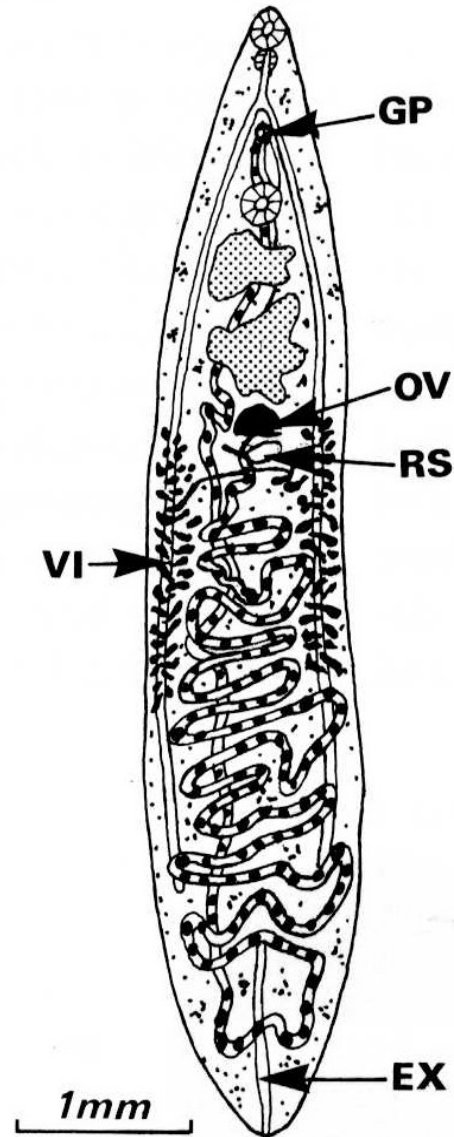
Vývoj (*D. dentriticum*):

- 1. Mz – suchozemští plži (*Zebrina*, *Theba*, *Helicella*) – cercaria vitrina – se slizem v kuličkách na vegetaci
- 2. Mz – mravenci (*Formica*, *Tetramorium*)

Zástupci:

- ***Dicrocoelium dentriticum*** (syn. *D. lanceolatum*)
- Přežvýkavci, divoká zvěř, člověk, záněty a rozšíření žlučovodů

Dicrocoelium dentriticum



Fasciolidae I

Charakteristika:

- Jaterní (Fasciolinae) nebo střevní (Fasciolopsinae) motolice
- Významní cizopasníci lidí, hospodářských zvířat i zvěře
- Velké tělo listovitého (kopinatého) tvaru
- Keříčková varlata i vaječník
- Střevo bohatě rozvětvené (pouze Fasciolinae)

Vývoj: 1. Mz – plži (Lymnaeidae, Planorbidae) – gymnocephalní cercárie

- Metacercárie (adoleskárie) na vegetaci

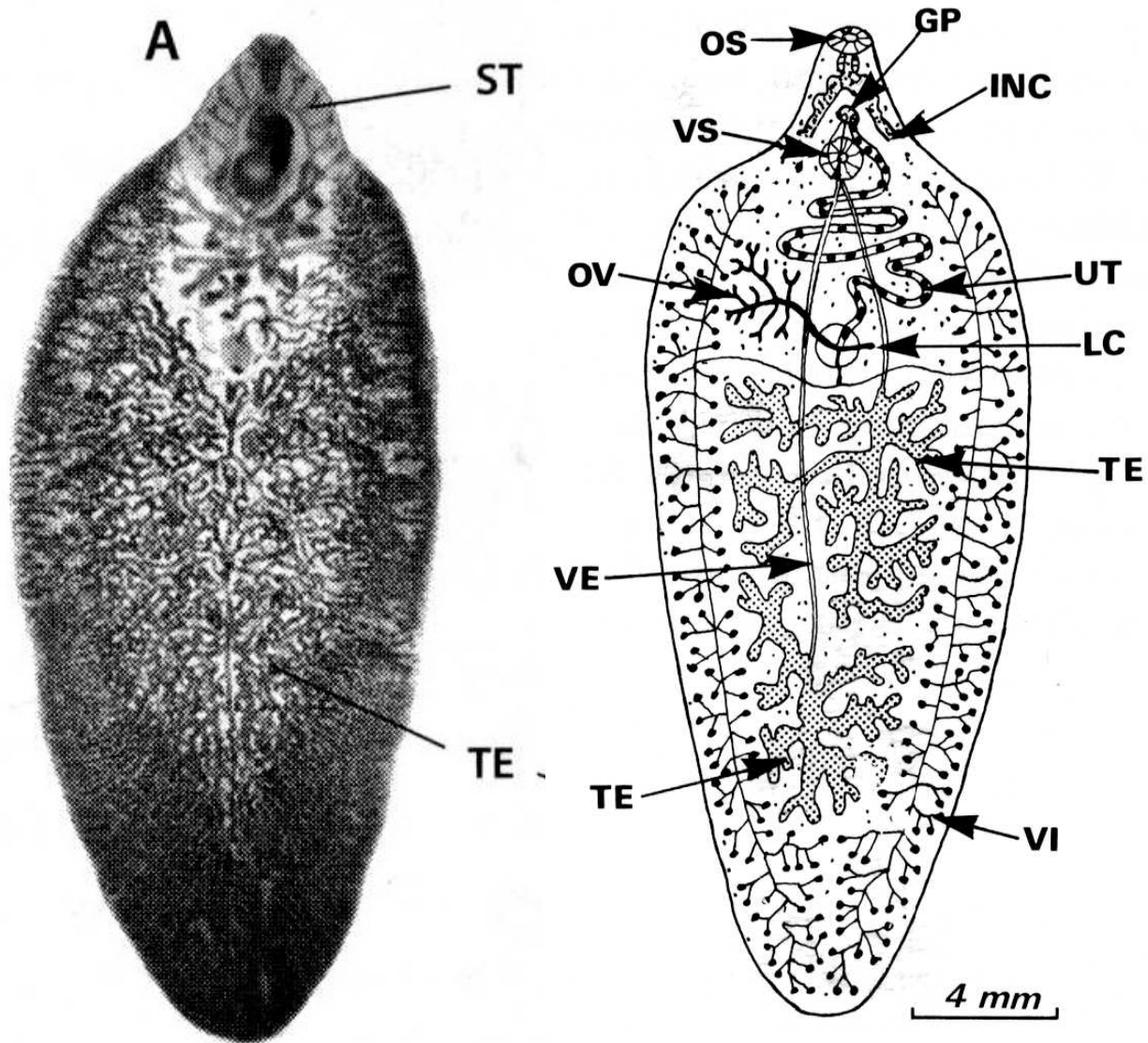
Fasciolidae II

Zástupci:

- **Fasciola hepatica**
 - Ovce, skot, jeleni, člověk
 - Kosmopolitní rozšíření
 - Asi 2 mil vajíček za život
 - Mz Lymnaea (= Galba) truncatula (bažinný druh), Lymnaea, Physa,
 - Migrace v definitivním hostiteli (bránice, játra)
- **Fasciola gigantica** – až 8 cm, Bulinus truncatus

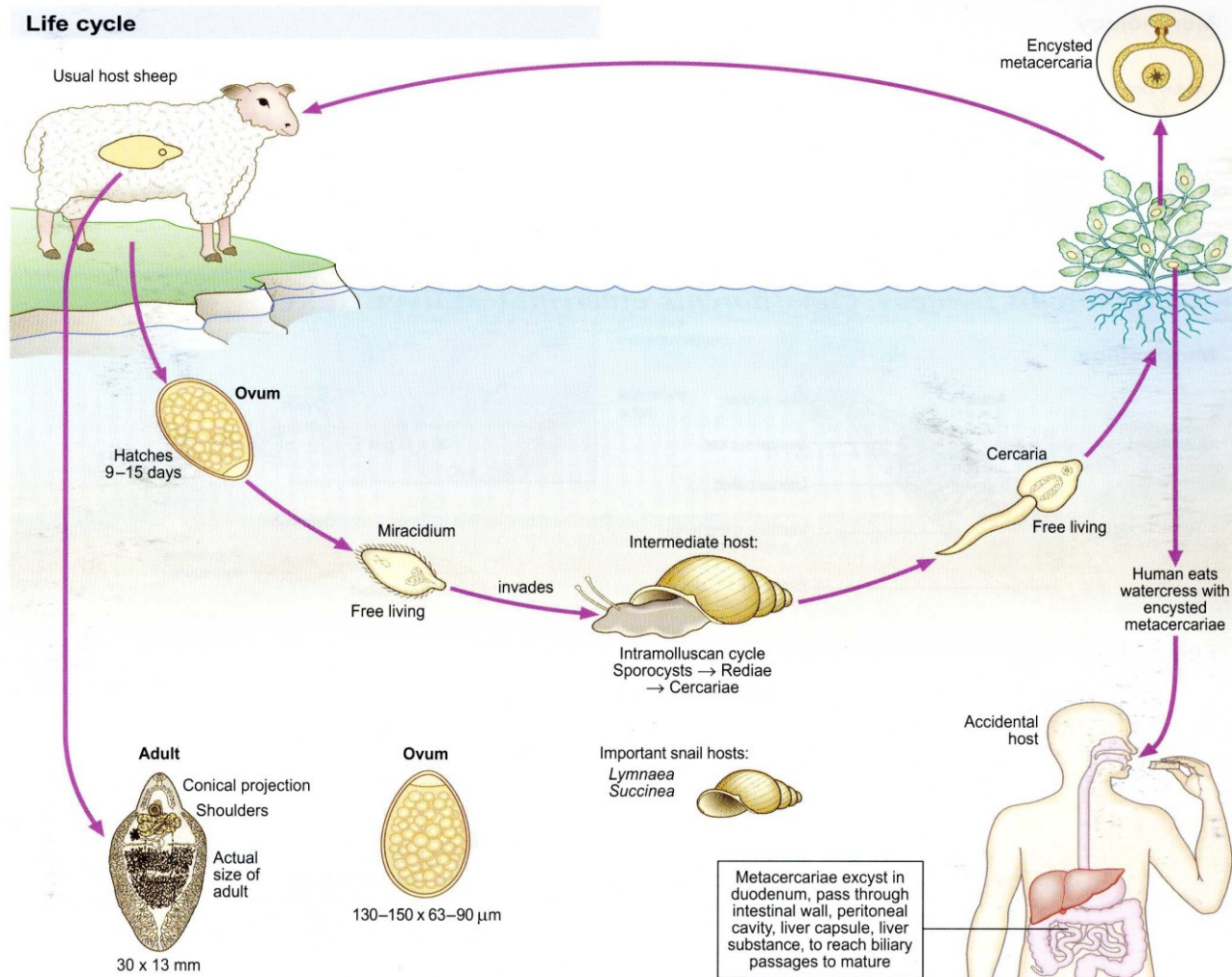
Fasciola hepatica

(motolice jaterní)



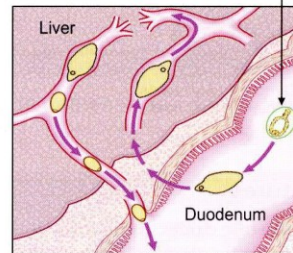
Fasciola hepatica (sheep liver fluke)

Life cycle



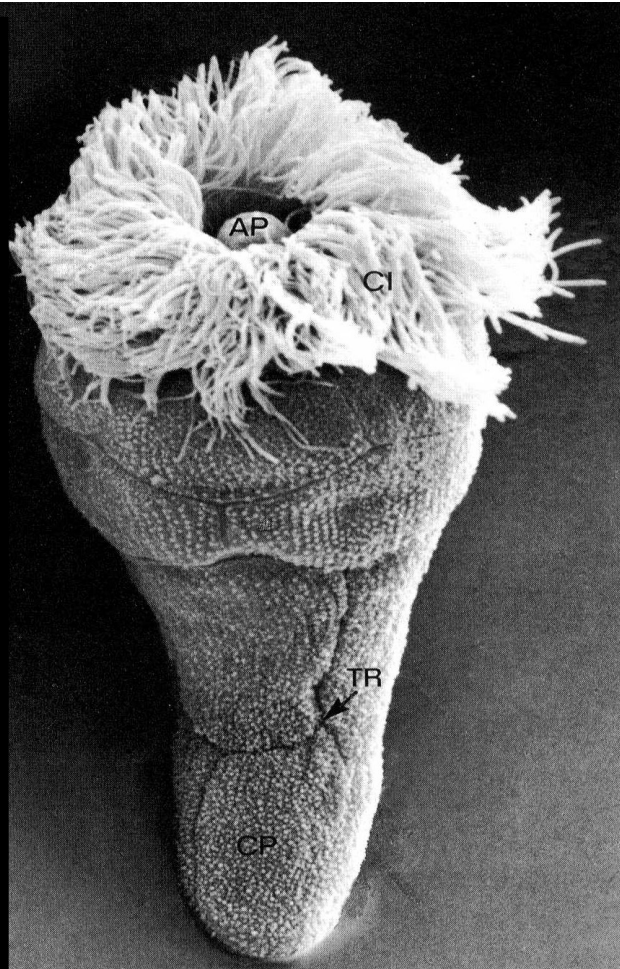
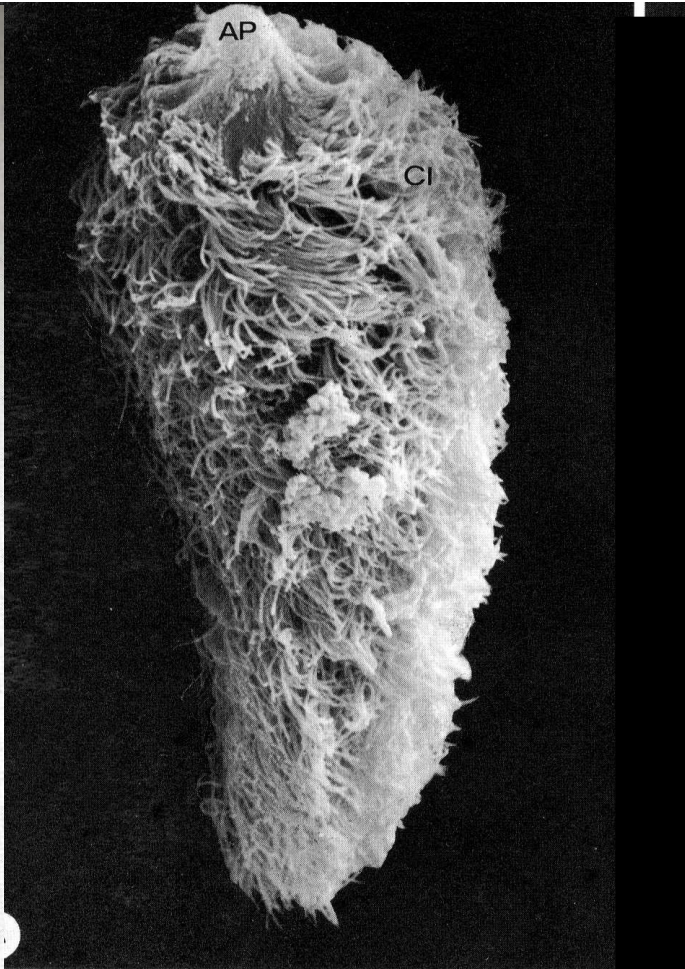
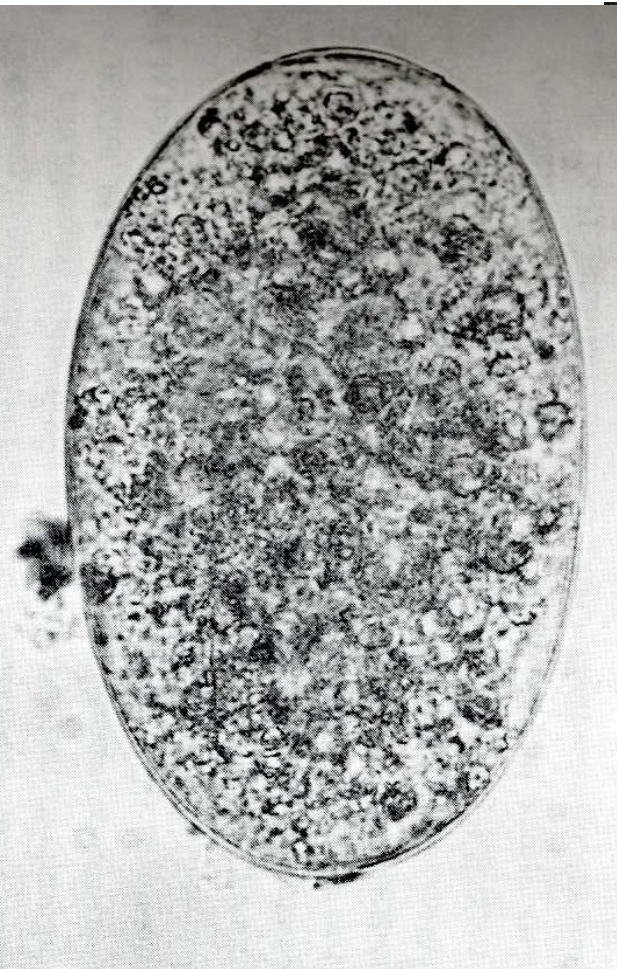
Pathology and Clinical features

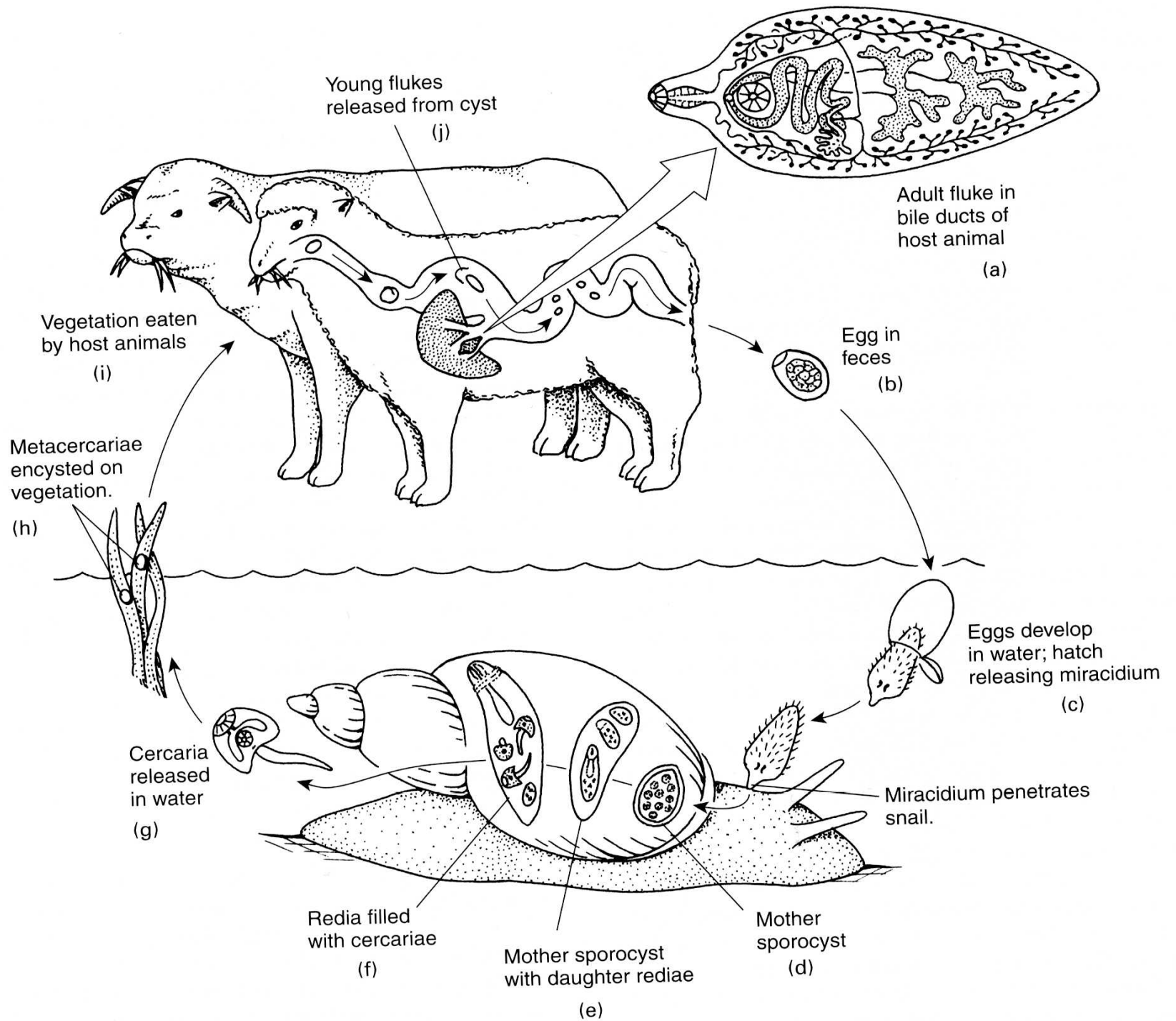
Transit of immature worms through the liver can cause mechanical and toxic irritation with toxæmia, necrosis and secondary fibrosis. Development in the bile ducts causes cystic enlargement, endothelial hyperplasia and adenomata, and secondary inflammatory infiltration causing fibrosis and cholangitis. There can be secondary bacterial infection causing abscesses. Eosinophilia is marked. Worms can appear



Ova
Laid in biliary passages, pass to intestine and voided in faeces

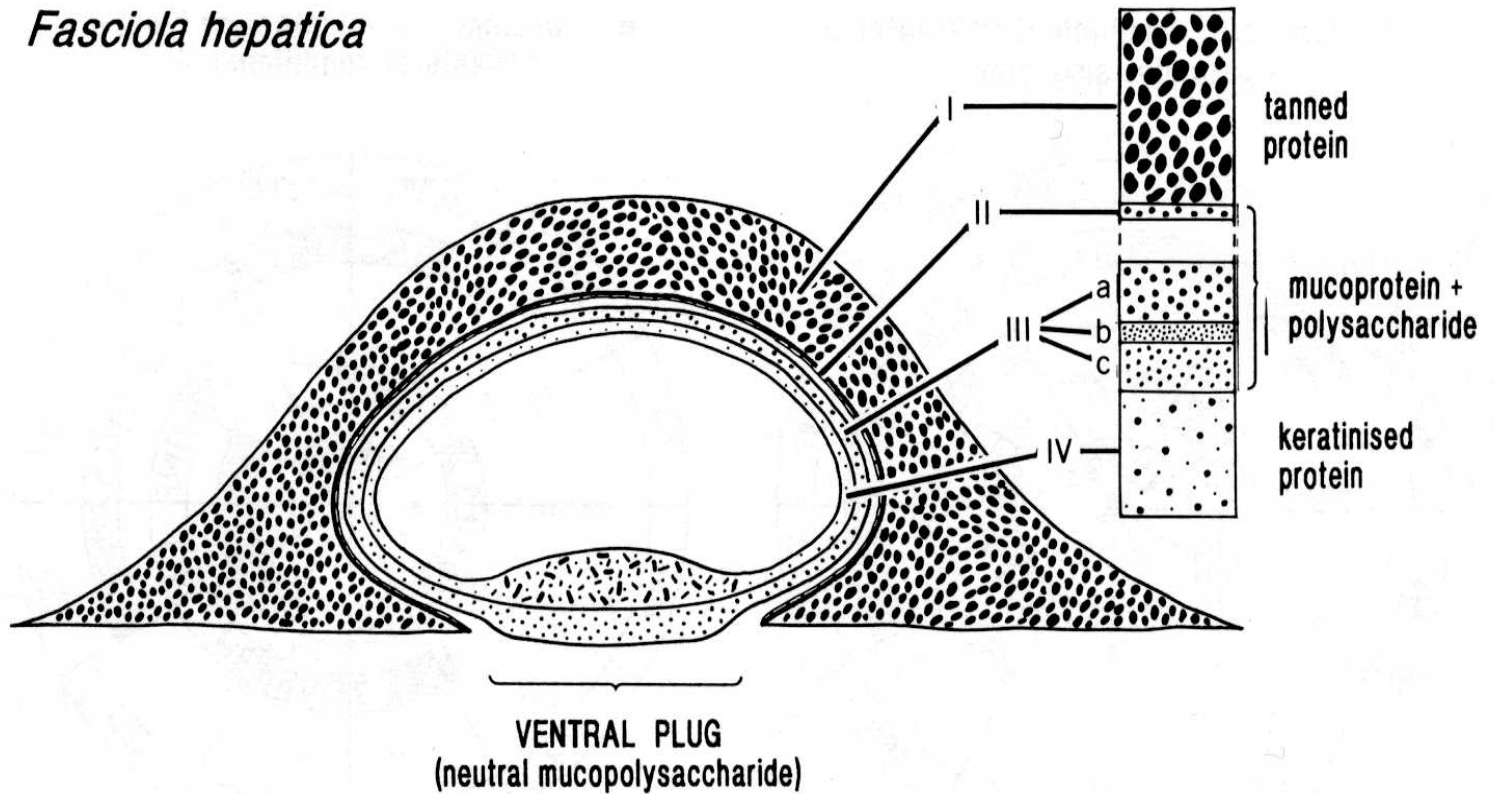
Vajíčko a miracidium





Tvorba metacerkárie - adoleskárie

Fasciola hepatica

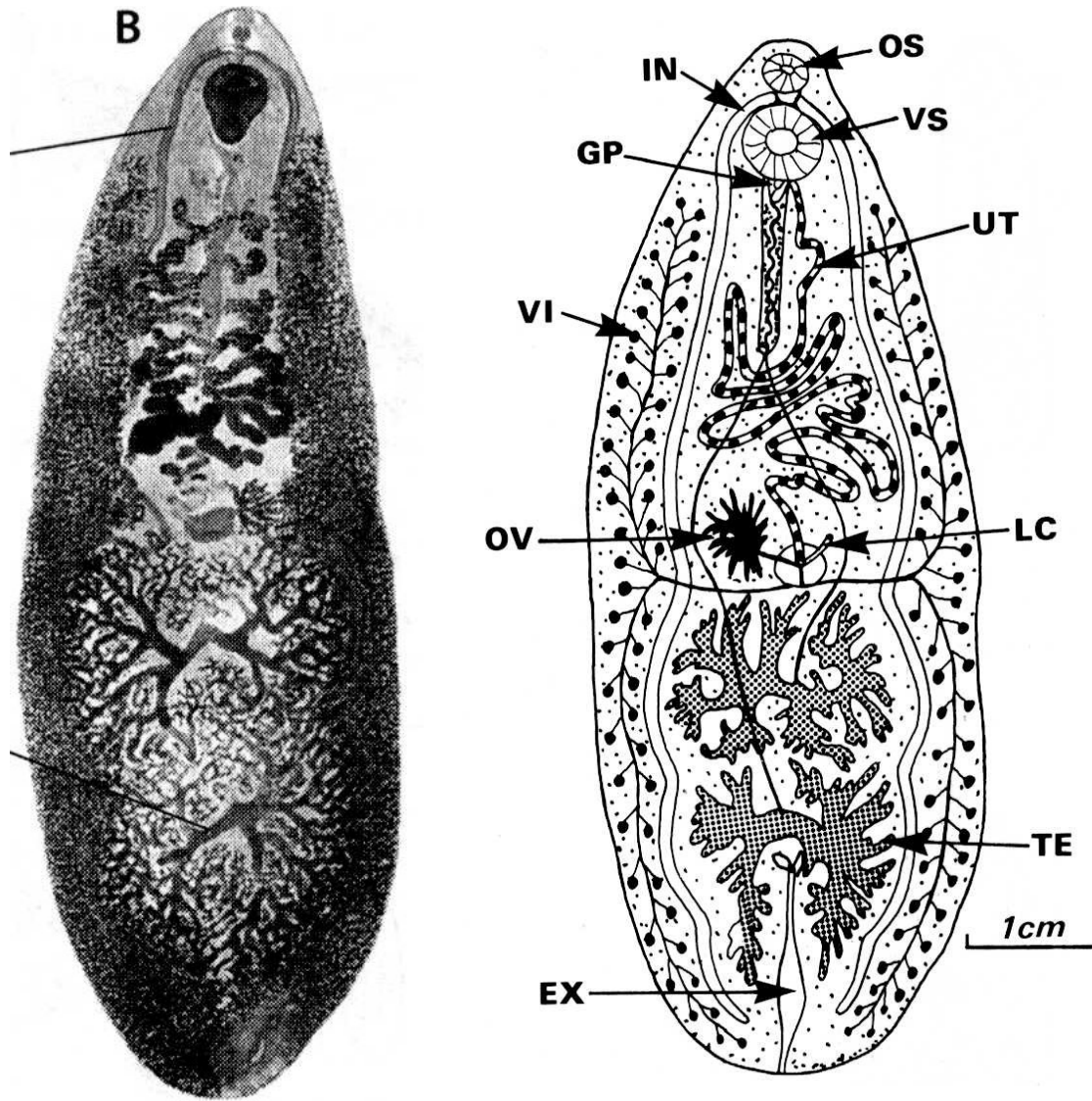


Fasciolidae III

Zástupce:

- **Fasciolopsis busci**
- Velikost až 7 cm
- Střevní parazit prasat, psů, člověka v Asii
- Mz – Melania, Oncomelania, Planorbis
- Adoleskárie na Trapa natans, lotosu
- Těžké poškození střev

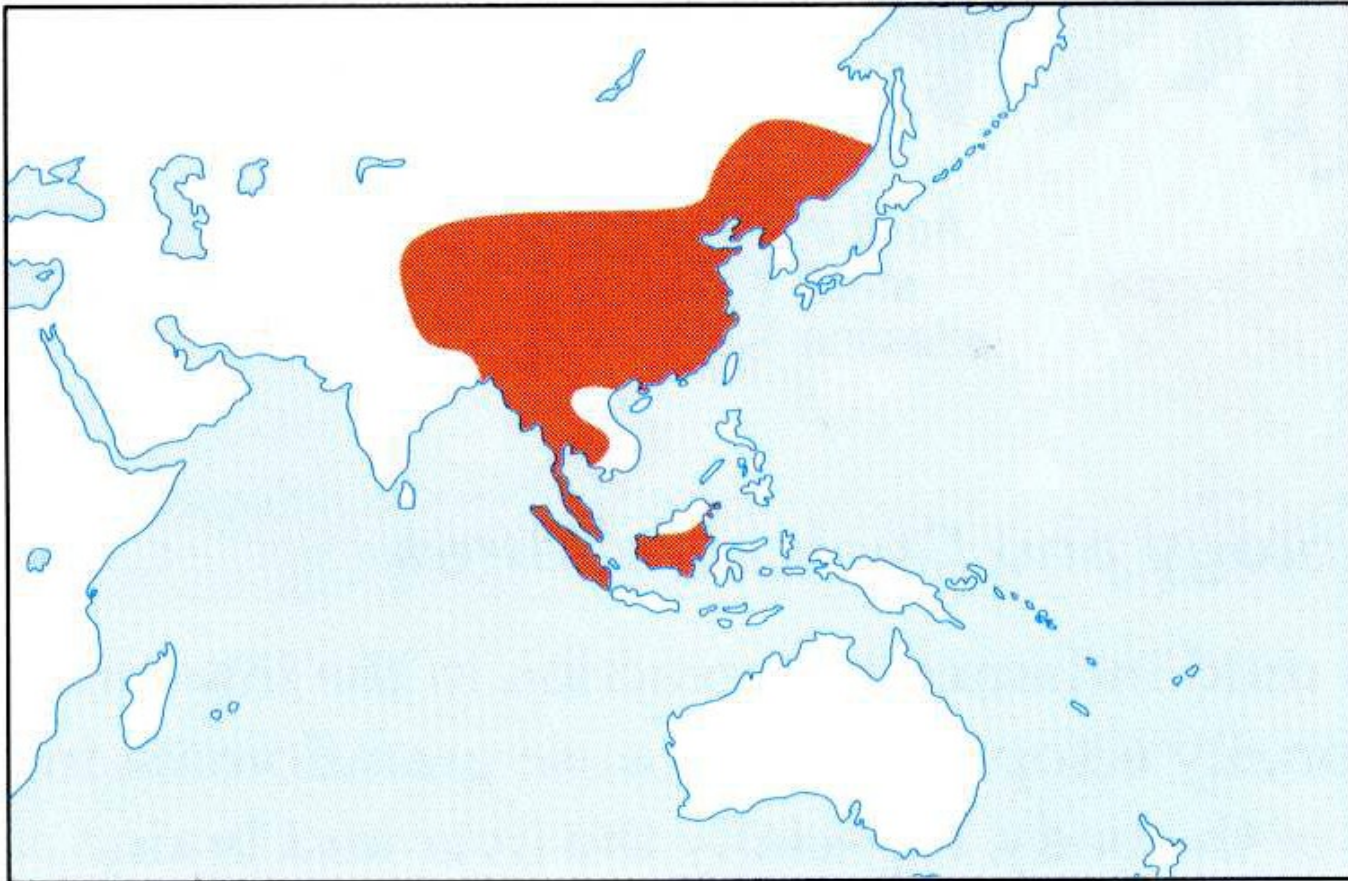
Fasciolopsis busci



Fasciolopsis busci

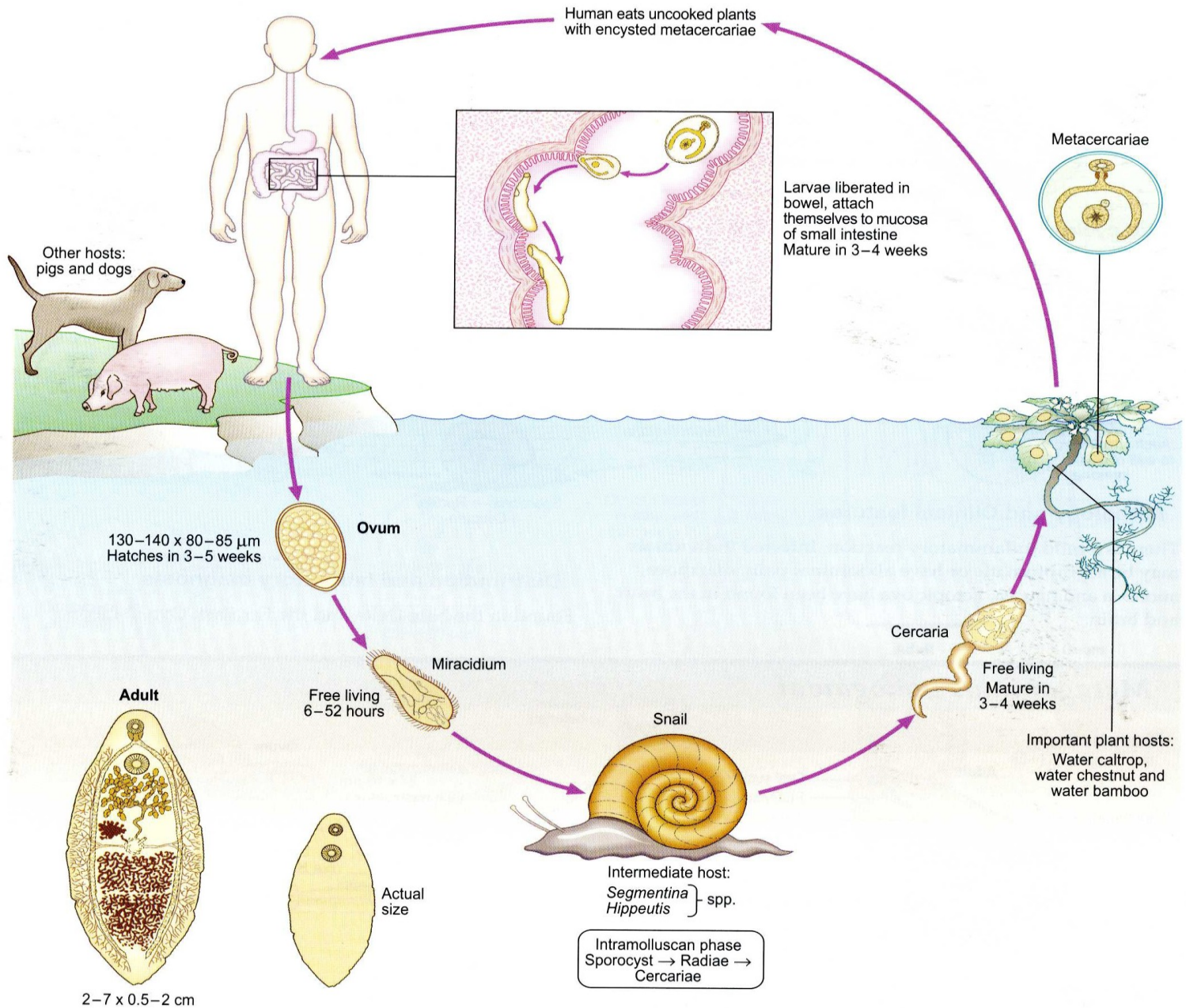
Distribution

15 million infected worldwide.



Fasciolopsis buski

Life cycle



Heterophyidae

Charakteristika:

- Střevní motolice ptáků a savců, včetně člověka (fish-born diseases)
- Malé motolice
- Otrněný tegument
- Břišní přísavka modifikována (ventrogenitální komplex s trny a sklerity; někdy genitální přísavka)

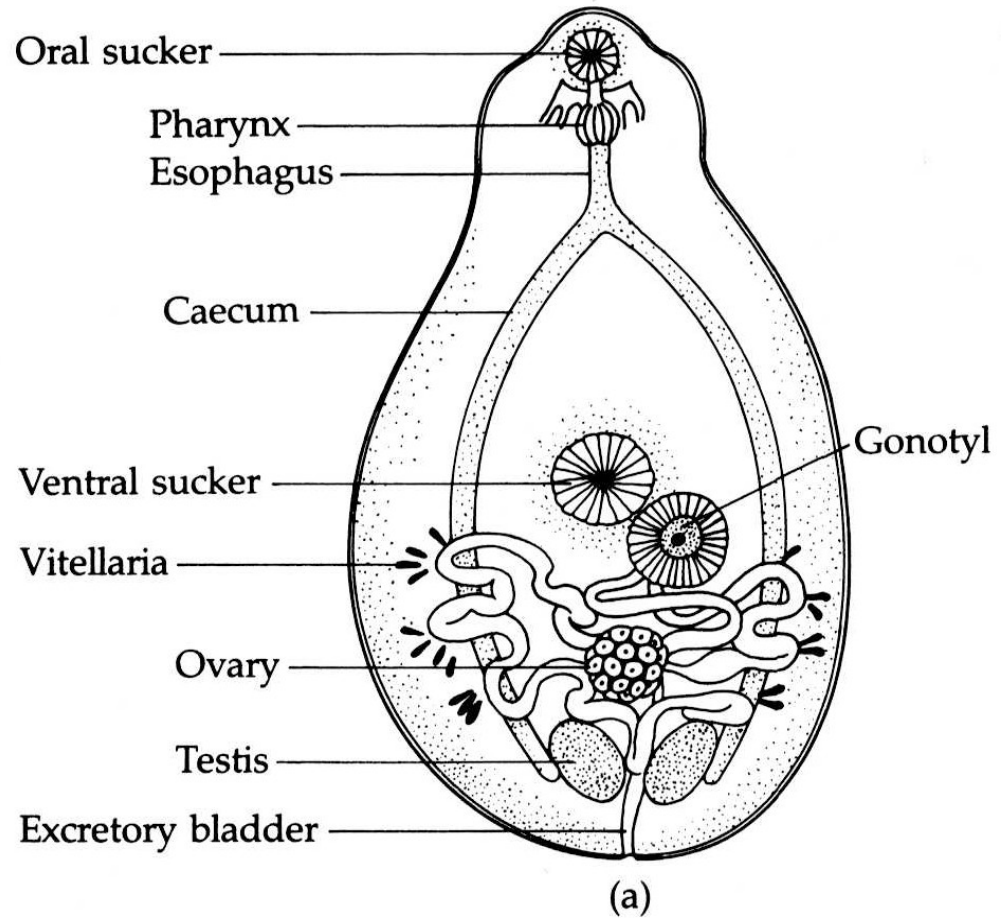
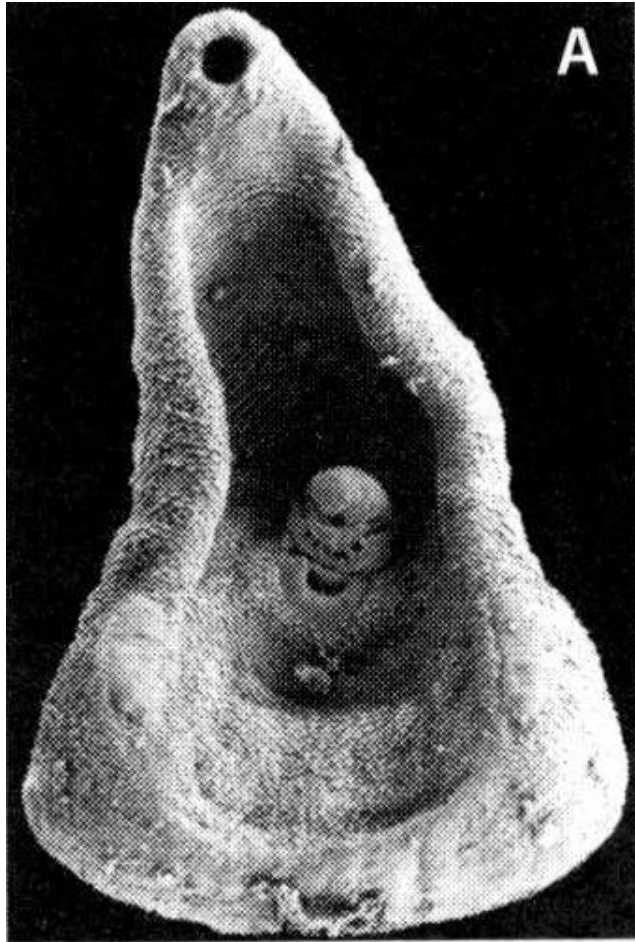
Vývoj:

- 1. Mz – plži – oculopleurocercárie
- 2. Mz – ryby

Zástupci:

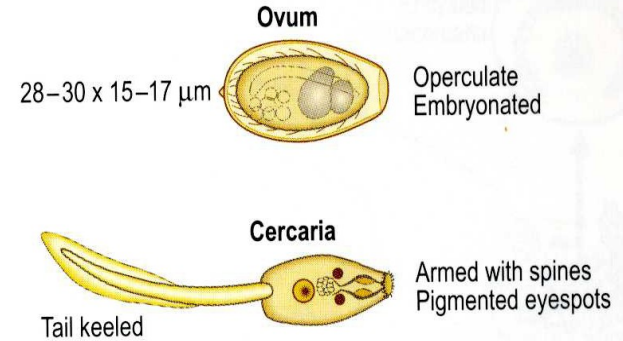
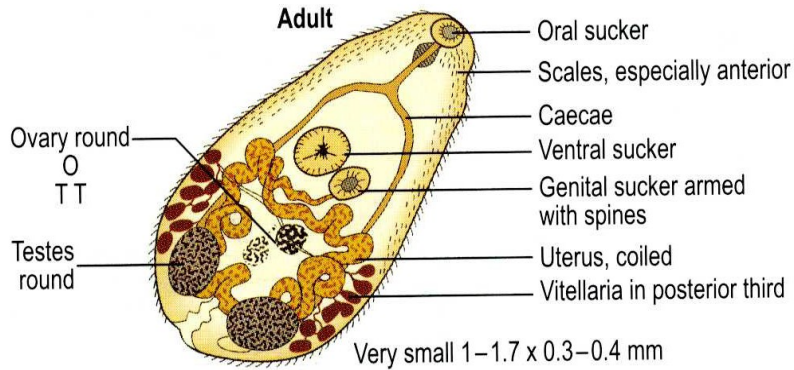
- **Heterophyes heterophyes** – Asie, středomoří, 1,5mm
- **Metagonimus yokogawai** - šelmy, člověk, Asie, Podunají; Melania, Oncomelania, Melanoides; metacercárie pod šupinami
- **Haplorchis spp** – nákazy lidí v jv. Asii

Heterophyes heterophyes

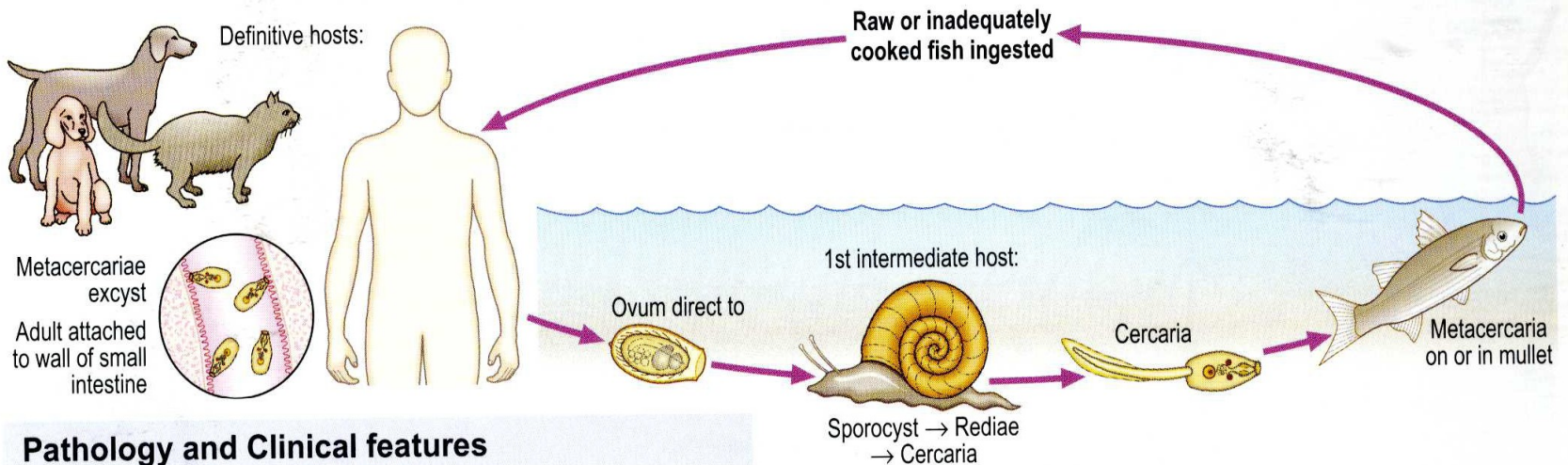


Heterophyes heterophyes

Morphology



Life cycle



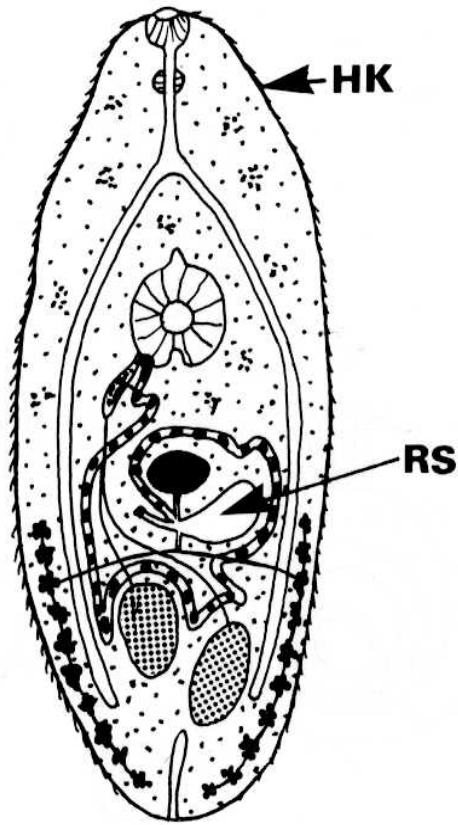
Pathology and Clinical features

There is a mild inflammatory reaction. Infected individuals may be asymptomatic or have abdominal pain, diarrhoea, anorexia and nausea. Ectopic ova have been found in the heart and brain.

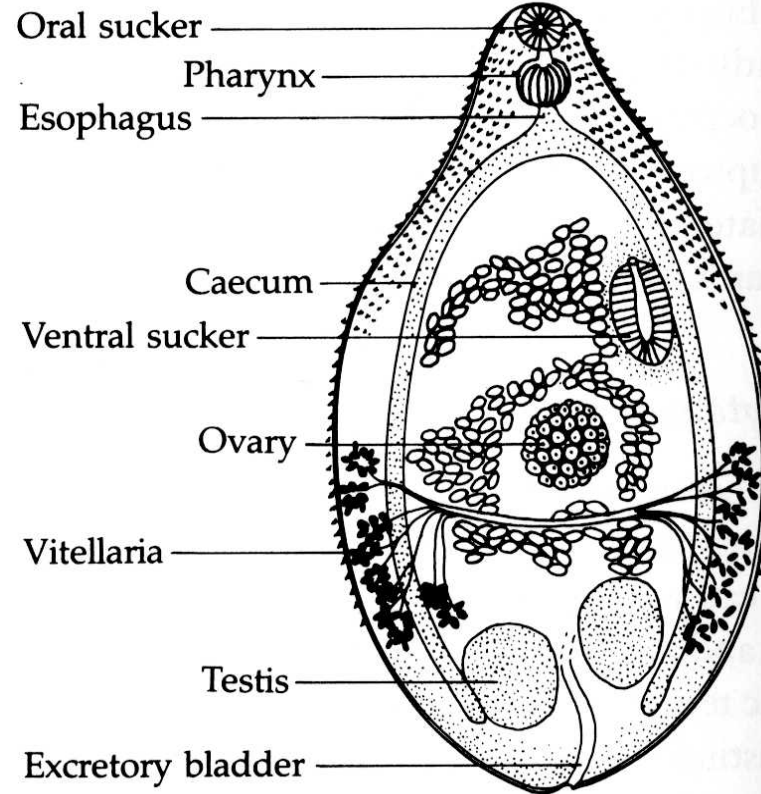
Distribution and laboratory diagnosis

Found in the Nile Delta and the Far East. Ova in faeces.

Metagonimus yokogawai



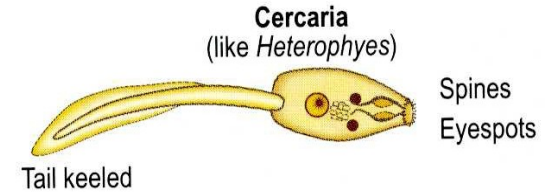
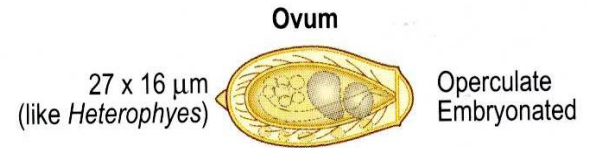
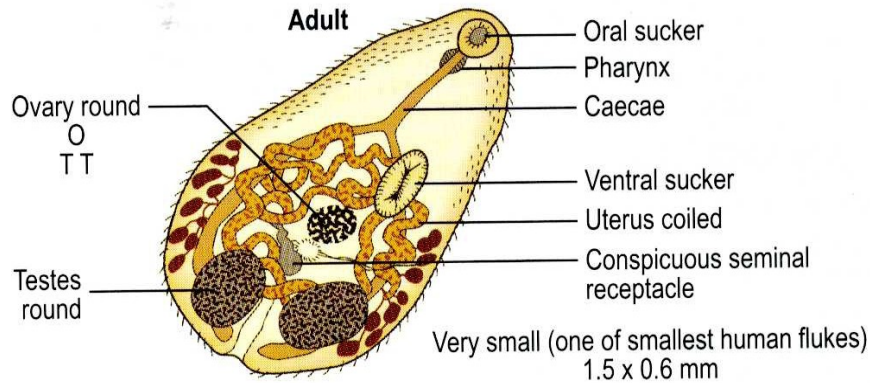
0.2mm



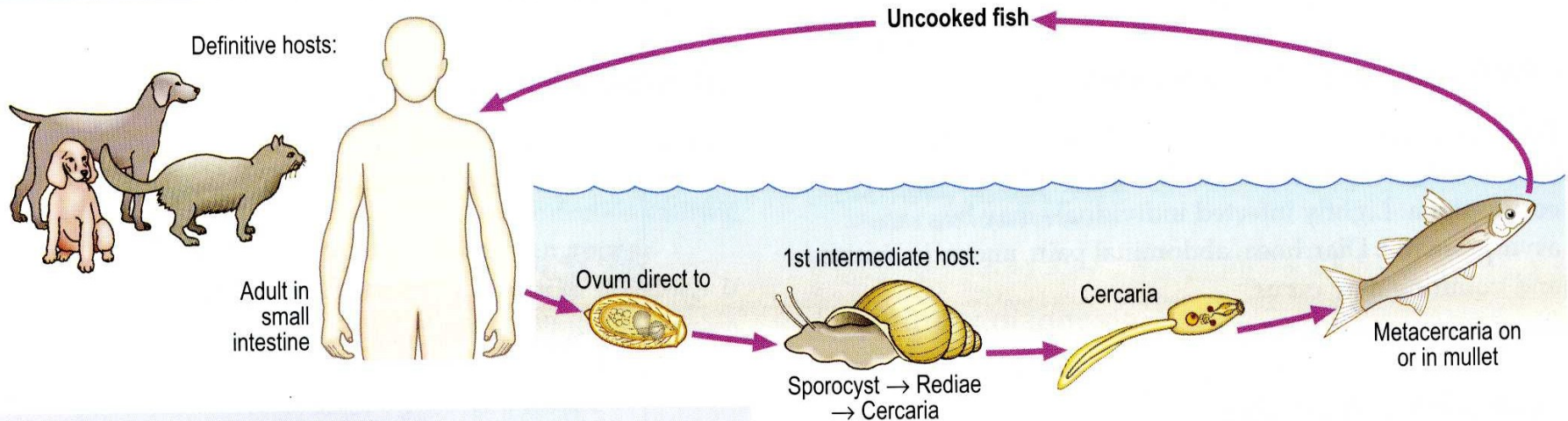
(b)

Metagonimus yokogawai

Morphology



Life cycle



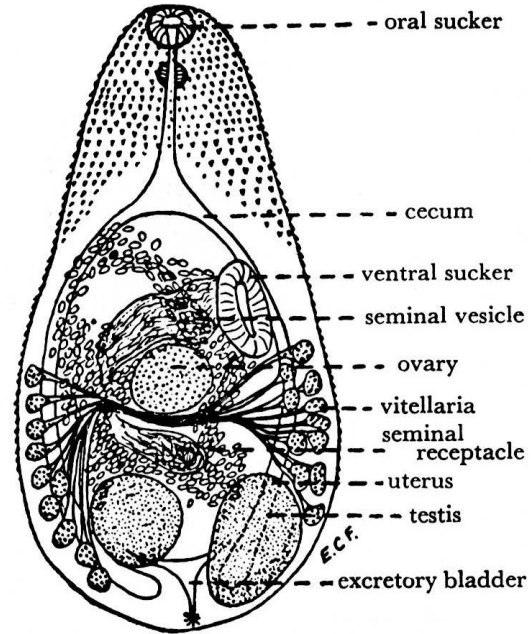
Pathology and Clinical features

Causes mild inflammatory reaction in the intestine.
Occasionally ectopic ova can cause granulomata in other organs of the body, especially the liver and brain.

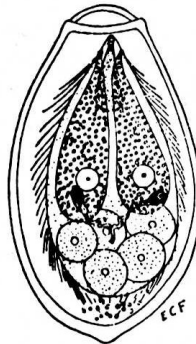
Distribution

Prevalent in the Far East.

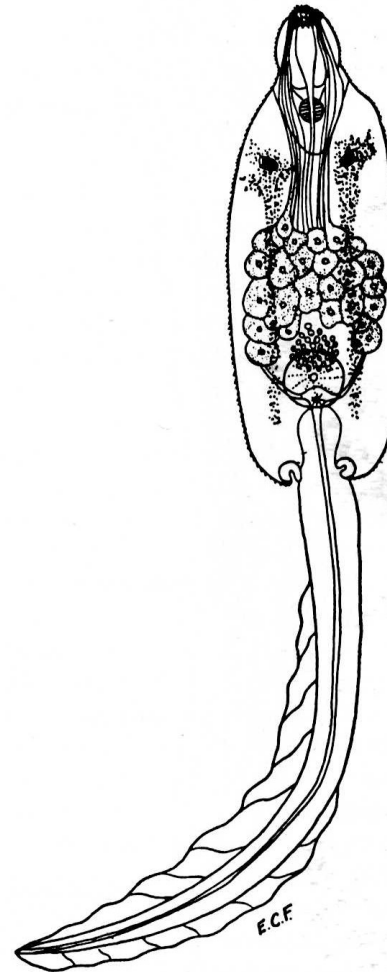
Vývojová stádia



A



B



C

Opisthorchidae

Charakteristika:

- Cizopasníci žlučového měchýře a žlučovodů savců včetně člověka, (fish-borne diseases)
- Dlouhodobé přežívání – podíl na vzniku karcinomu jater

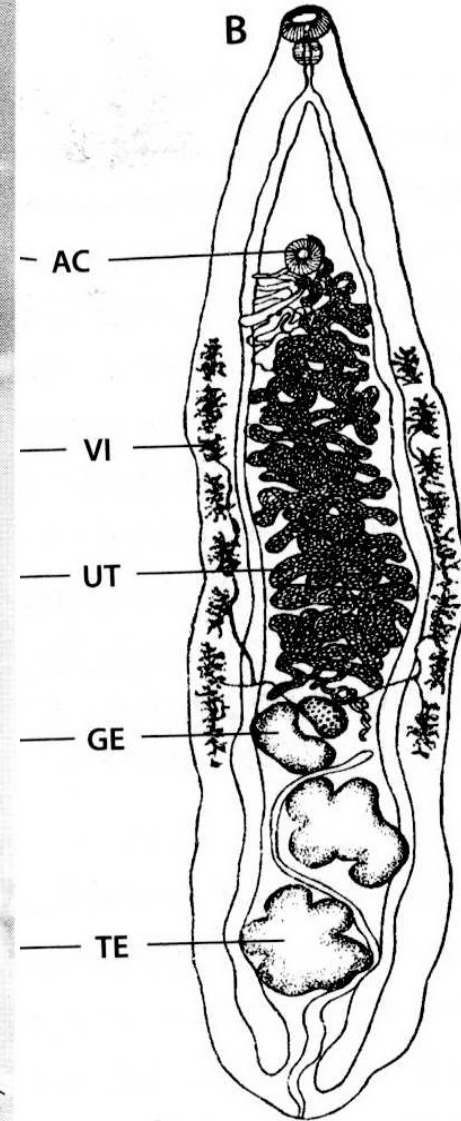
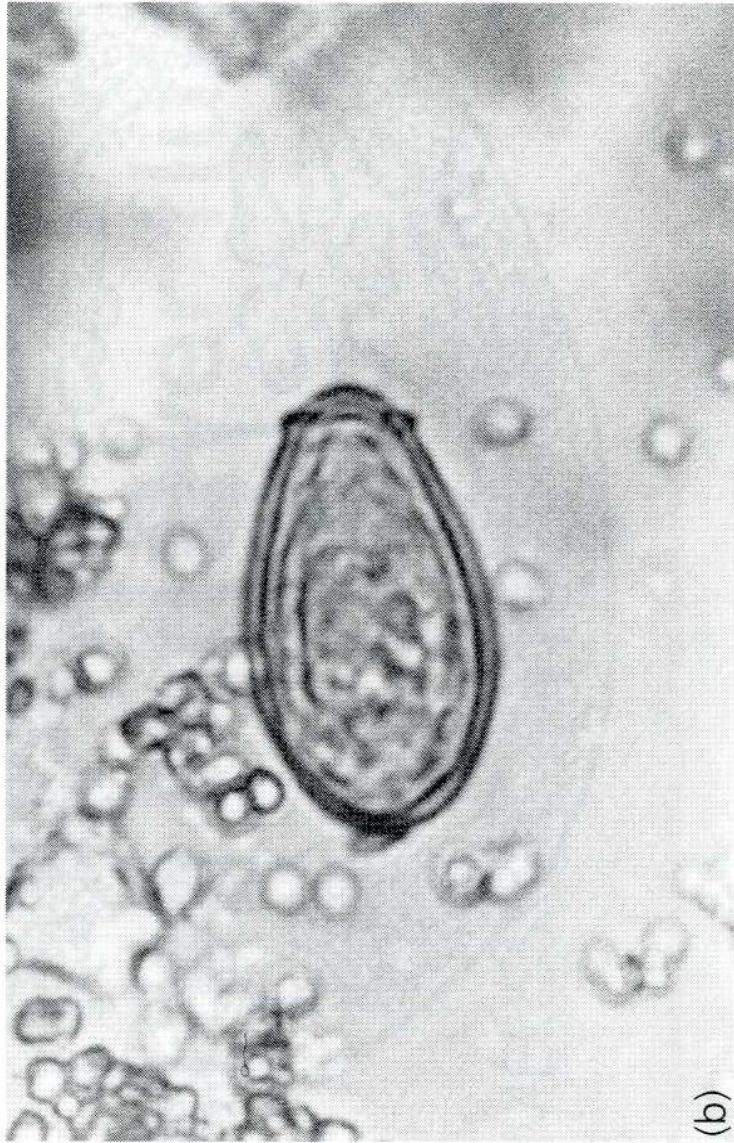
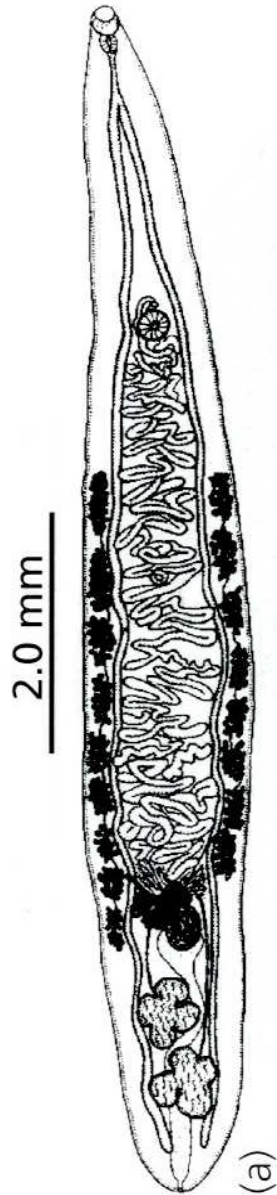
Vývoj:

- 1 Mz. – předožábří plži (Bithynia) – oculopleurocercárie
- 2. Mz – ryby (svalovina)

Zástupci:

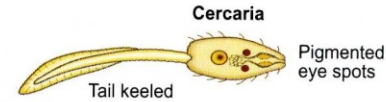
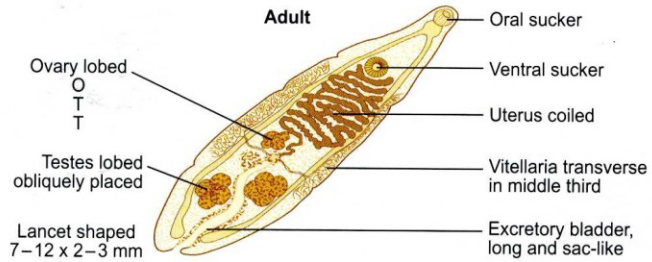
- **Opisthorchis felinus** – severní Evropa, Sibiř
- **Opisthorchis viverrini** – Thajsko, Indočína
- **Clonorchis sinensis** – Čína, Korea, Dalný východ

Opistorchis viverrini a O. felineus

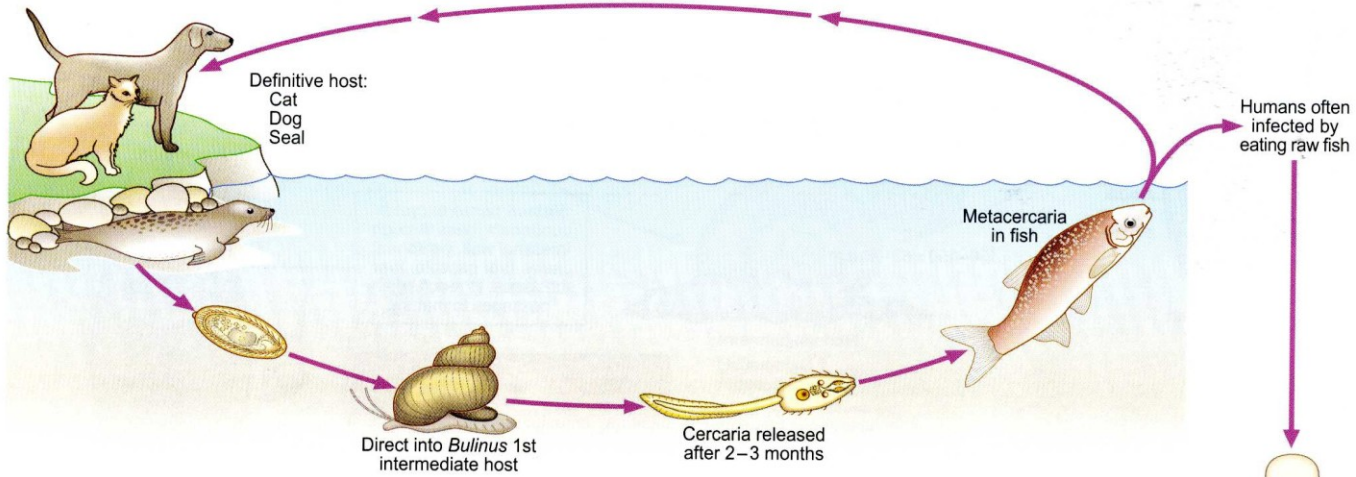


Opisthorchis felinus, *Opisthorchis viverrini* (cat liver fluke)

Morphology



Life cycle



Pathology and Clinical features

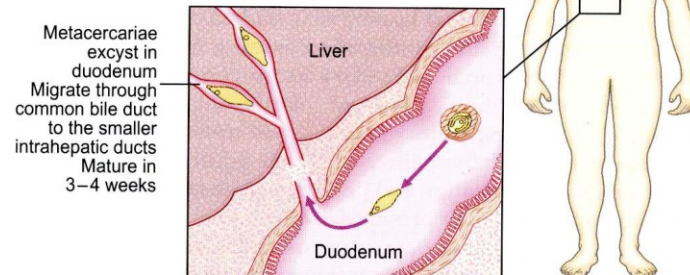
There are proliferative changes in the bile ducts. If the infection is massive or repeated then there may be chronic cholangitis. Clinical features are similar to those of clonorchiasis.

Laboratory diagnosis

Ova can be found in faeces.

Distribution

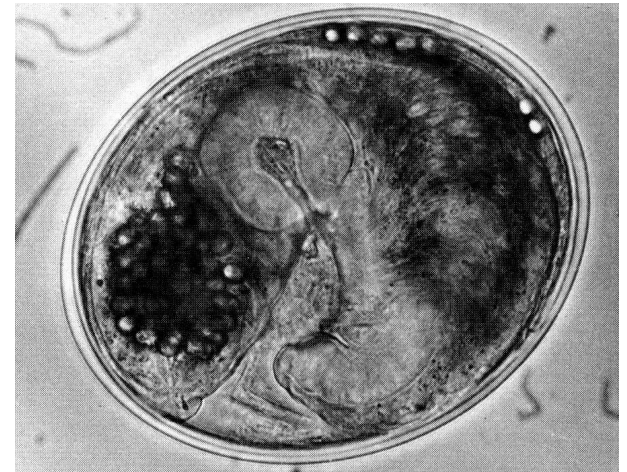
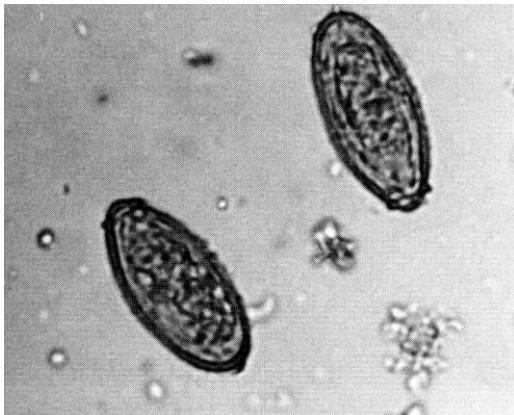
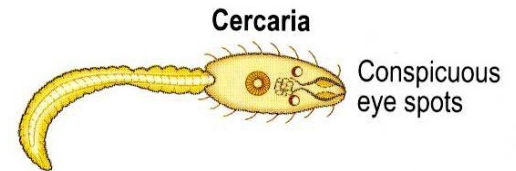
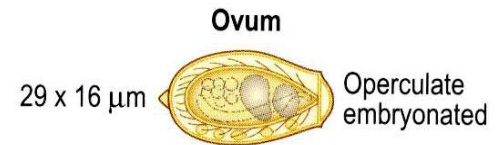
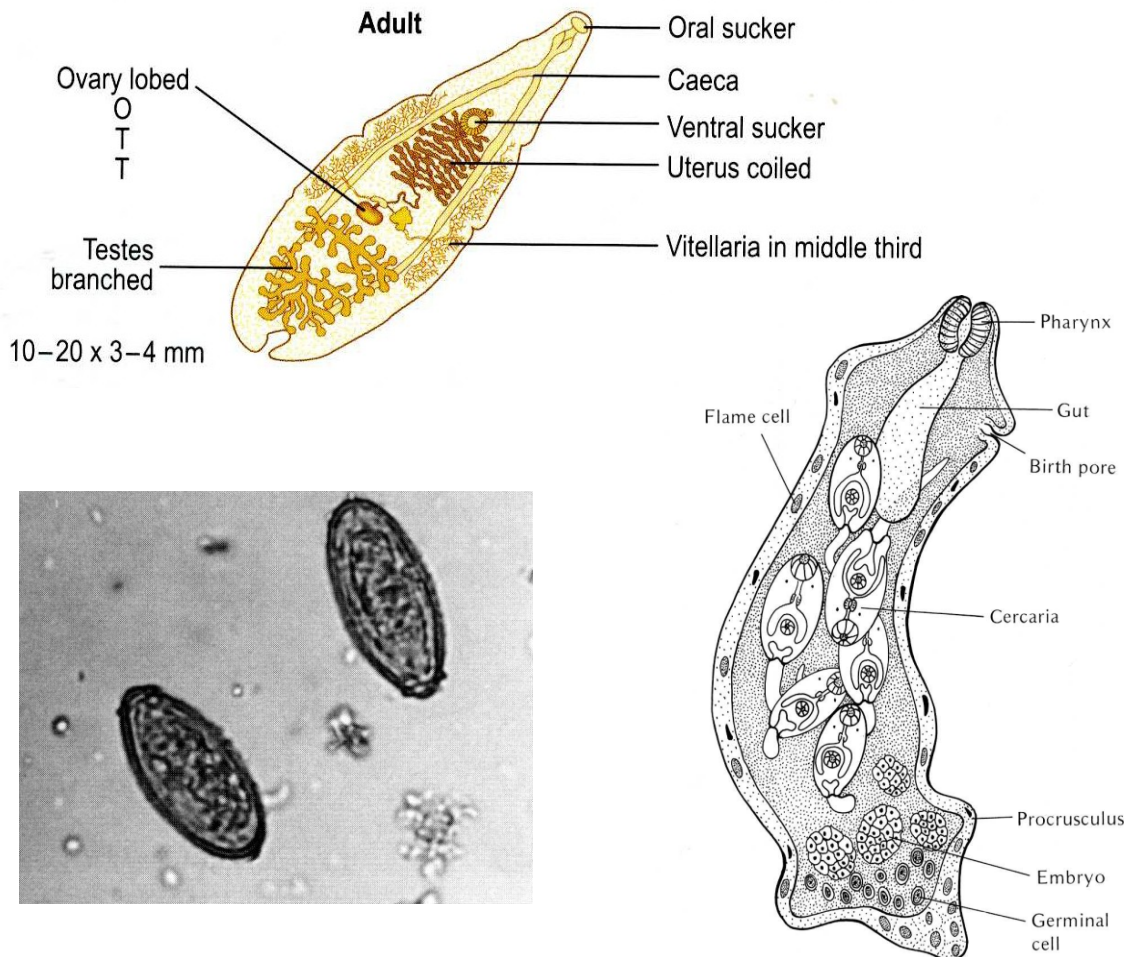
O. felinus is found mainly in Eastern Europe and Russia.
O. viverrini occurs in Thailand.

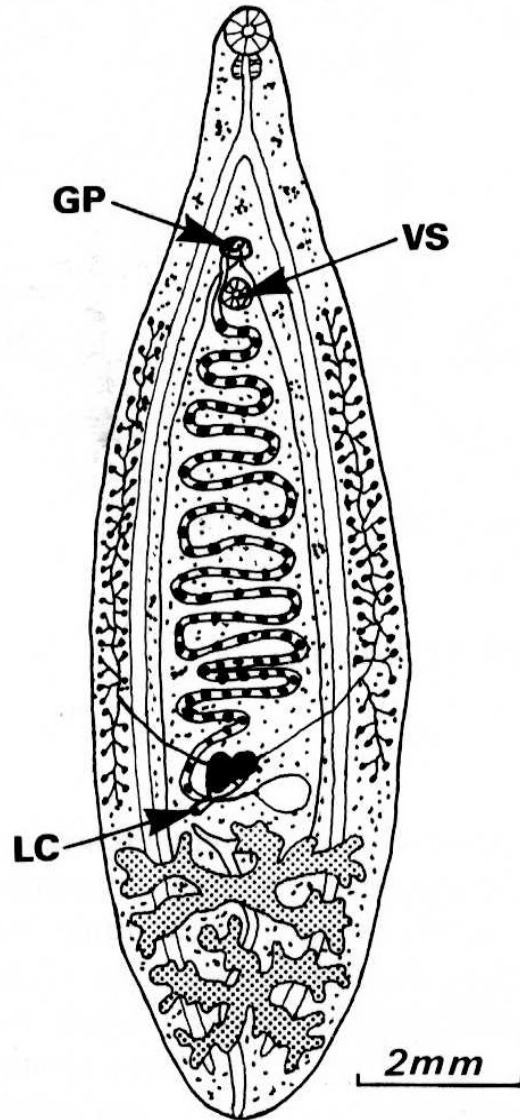
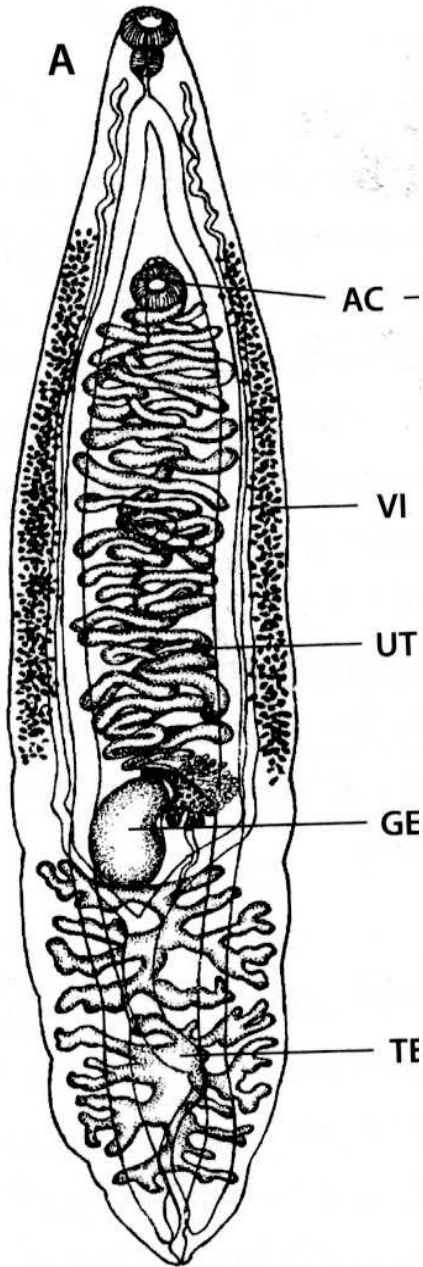


Clonorchis sinensis

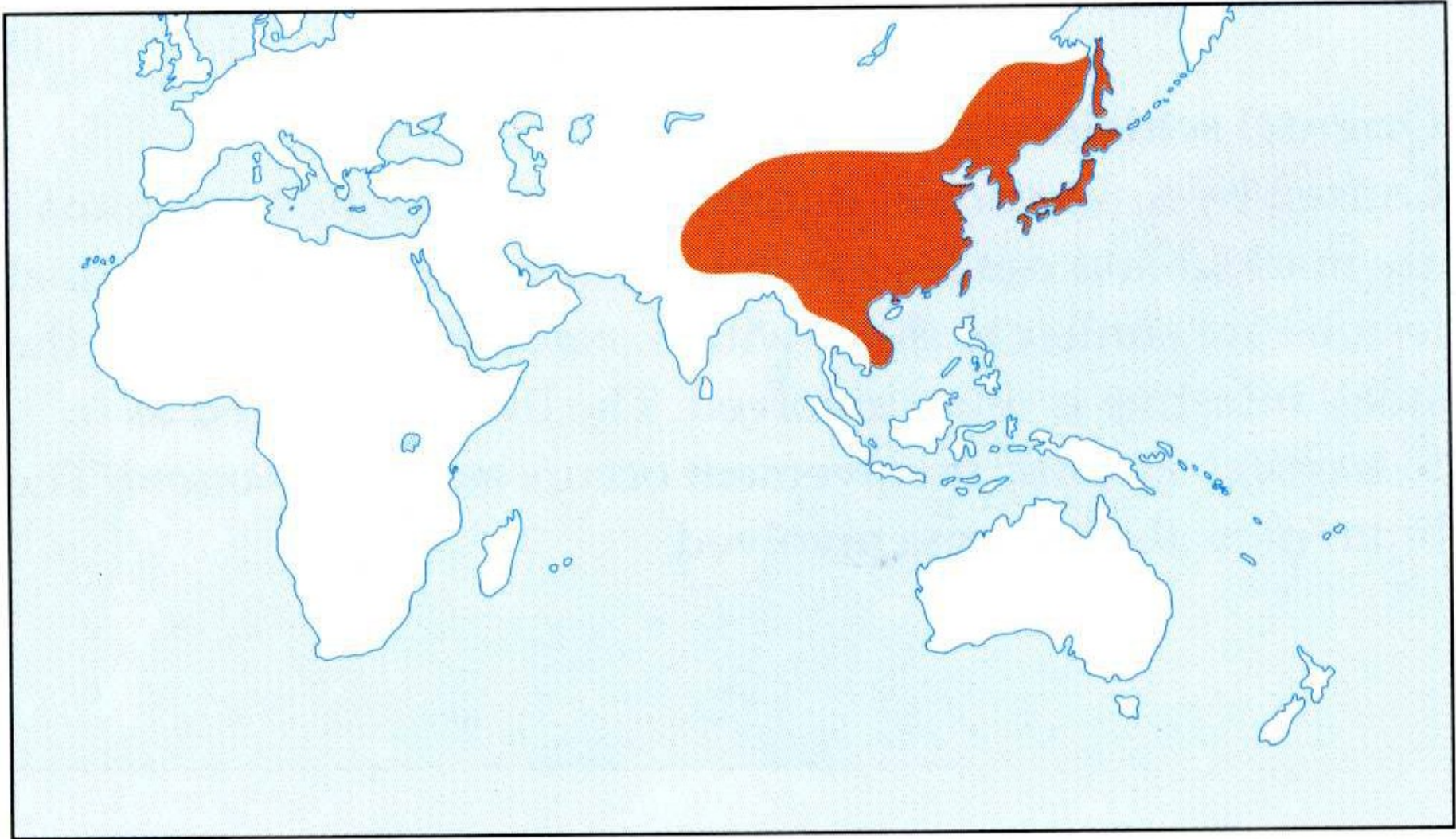
Clonorchis sinensis (continued)

Morphology





Clonorchis sinensis



Ctenopharyngodon idella – 2. mezihostitel

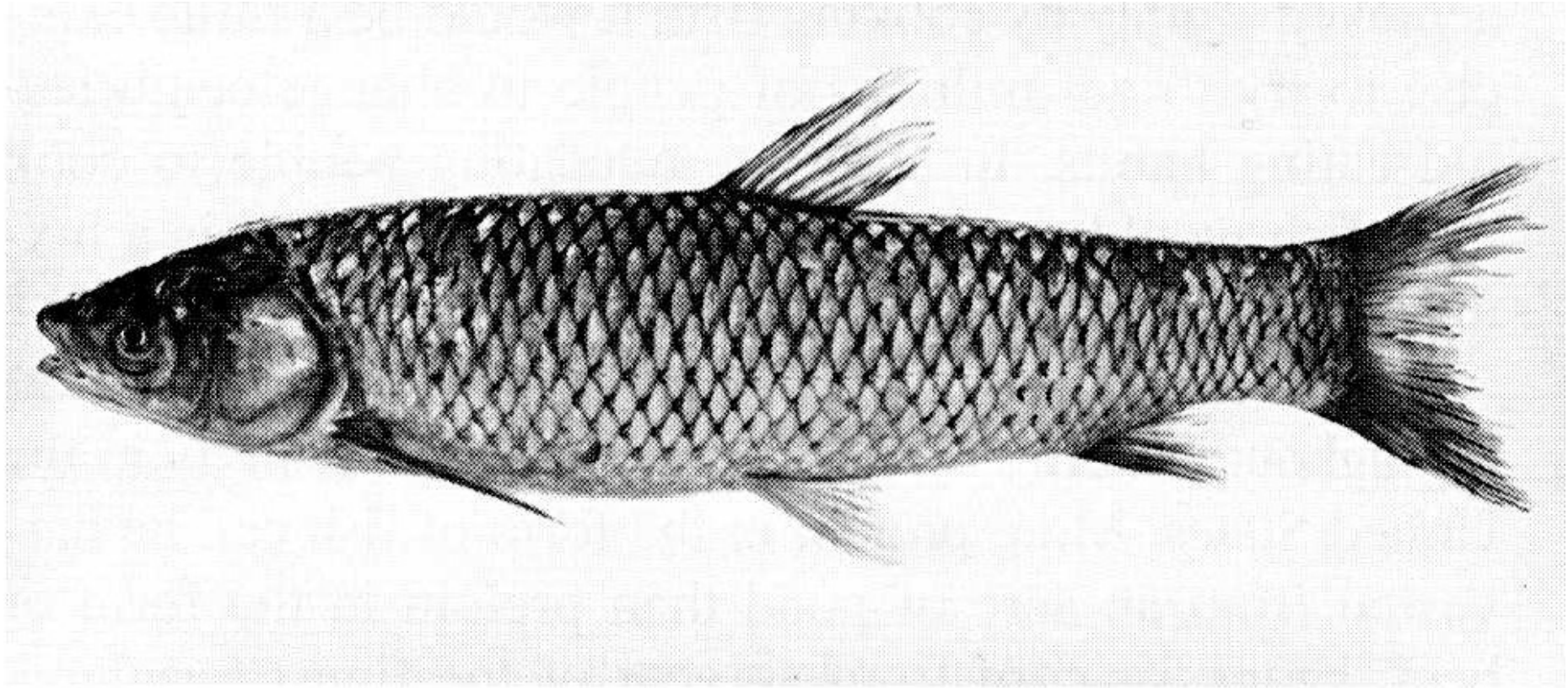
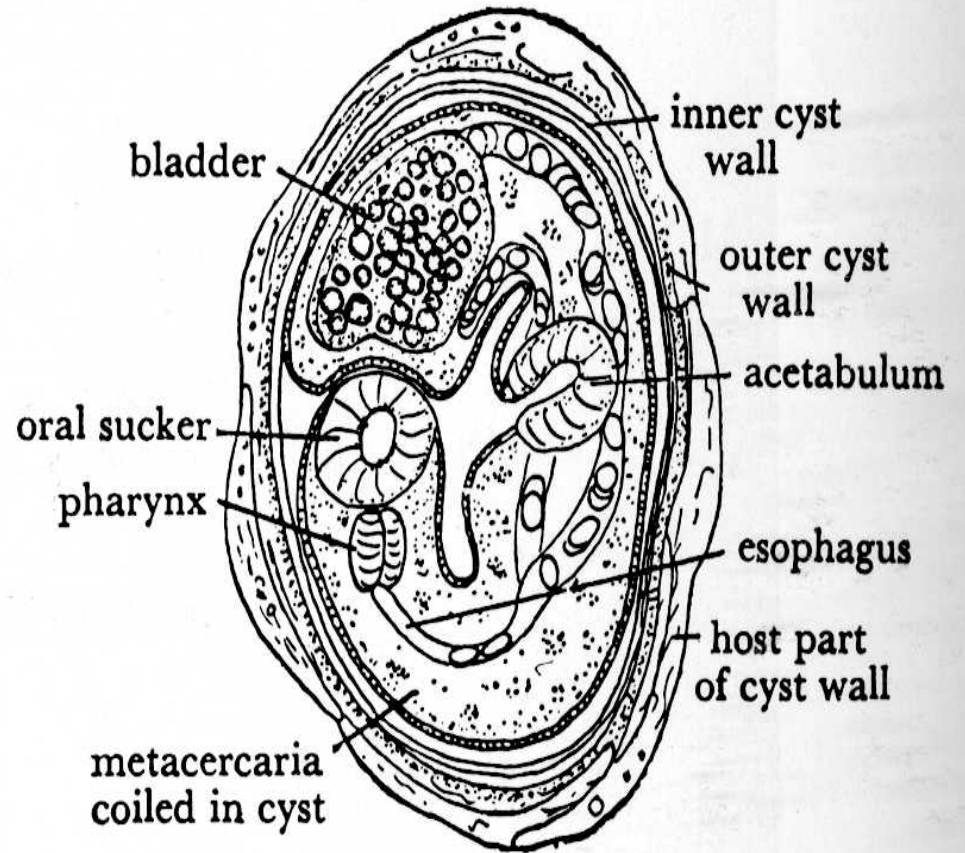
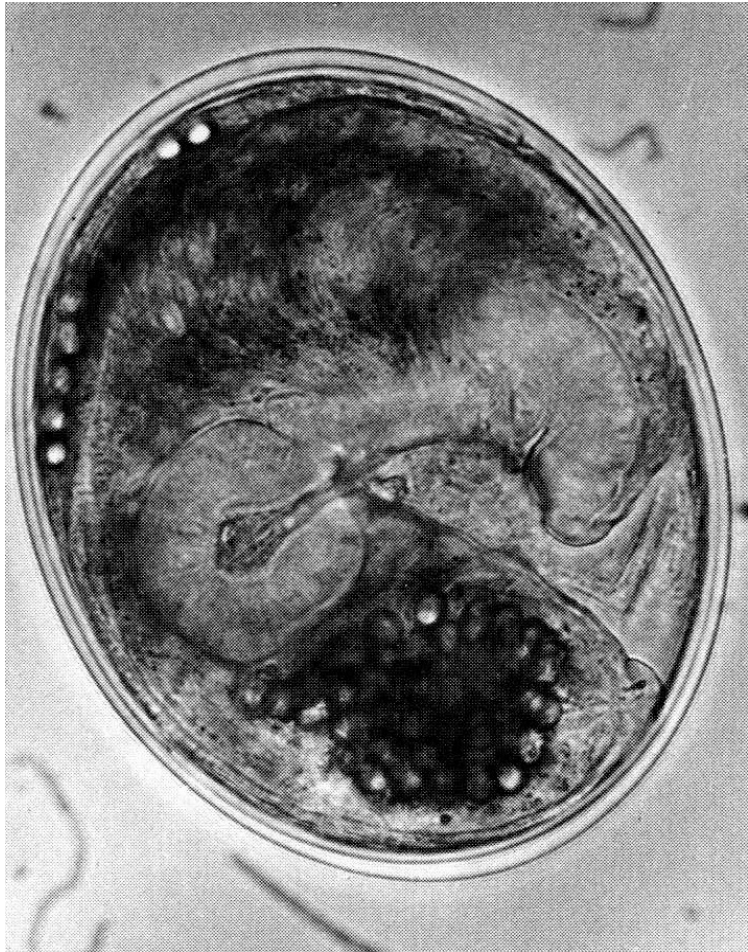


Figure 18.22 Grass carp, *Ctenopharyngodon idellus*, a common second intermediate host of *Clonorchis sinensis*.

Metacerkárie



B

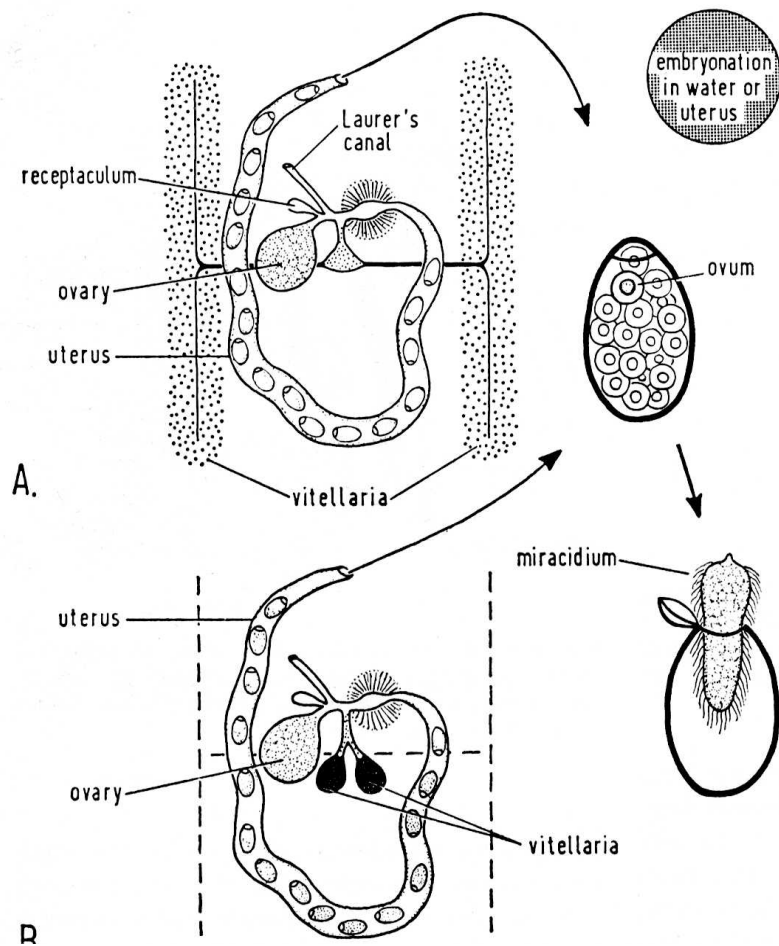


Fig. 9-7. Diagrammatic representation of female genitalia of digenetic trematodes. *A*, with extensive vitellaria; *B*, with condensed vitellaria. (From Smyth and Clegg, courtesy of Exp. Parasitol.)