

Microbiology sheet

TREMATODES

FASCIOLOPSIS BUSKI

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Fasciolopsis buski

The giant intestinal fluke

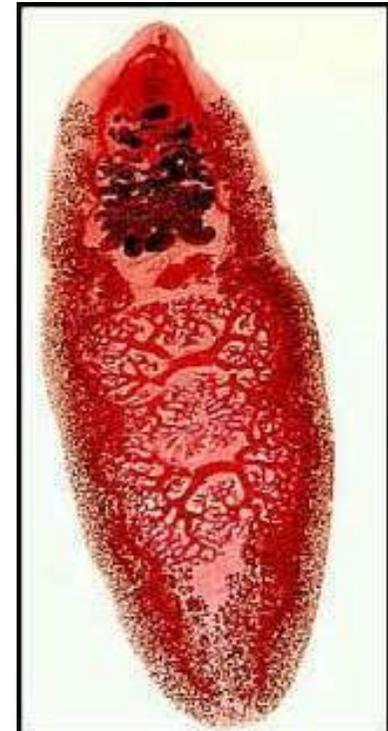
: Geographical distribution



.Far east ➤

More prevalent in areas where **pigs** are raised or where ➤
.aquatic plants are consumed

Disease: Fasciolopsiasis



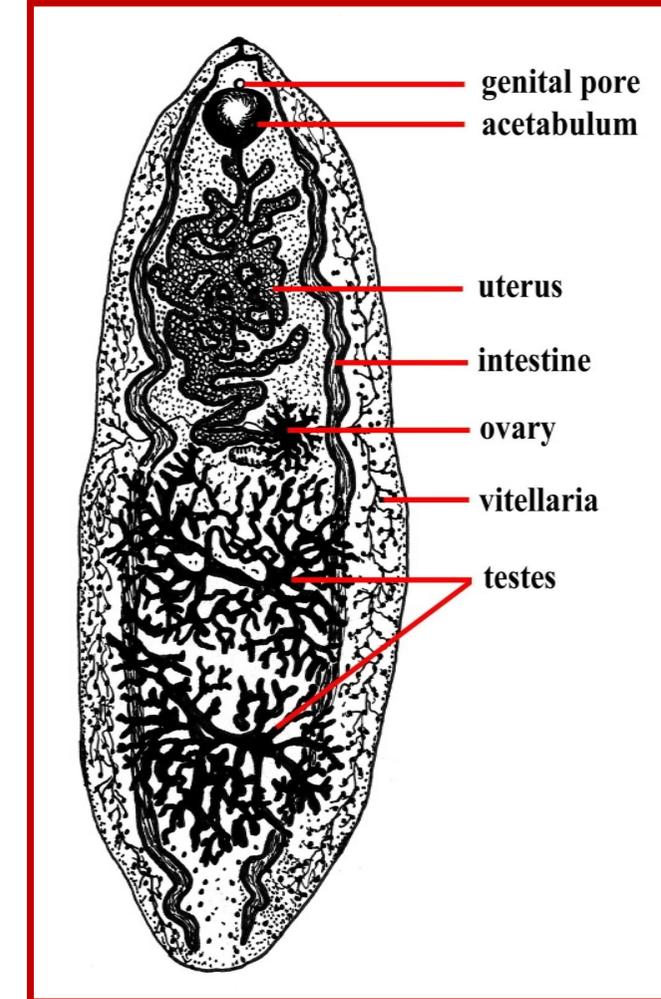
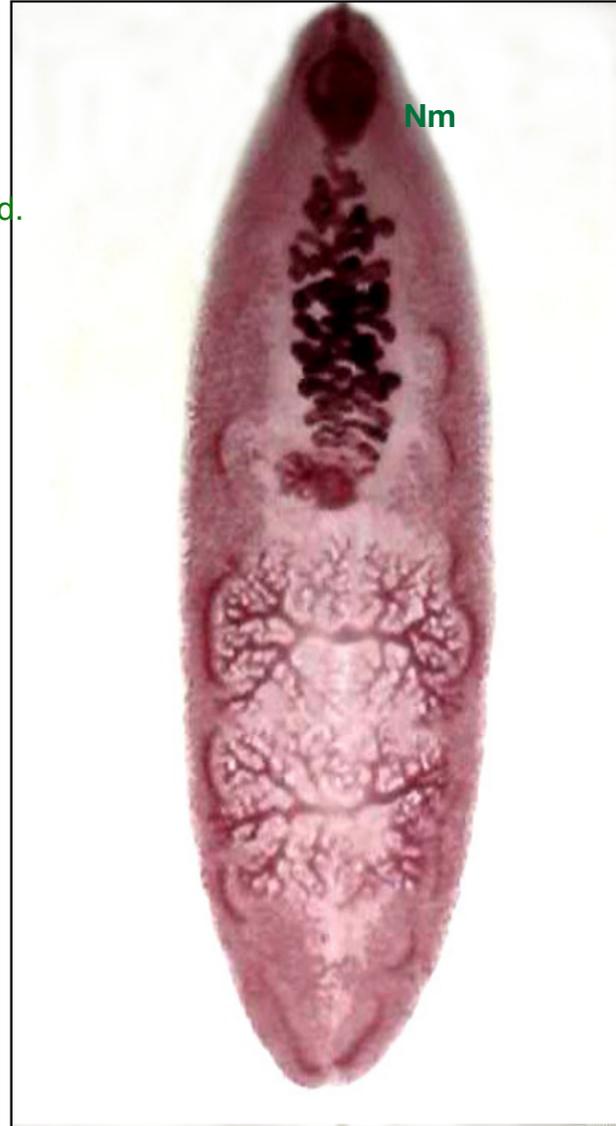
Morphological characters

Simple intestinal caeca -

Oval in shape -

Size: 7 x 2 cm -

simple intestinal caeca /closed tube don't have any branched.
male +female reproductive sys in the same fasciola.
branched testes +branched ovary--->open in genital pore



-:Egg (D.S)

S/S/S/C/C

.Size : 140 x 70 μm

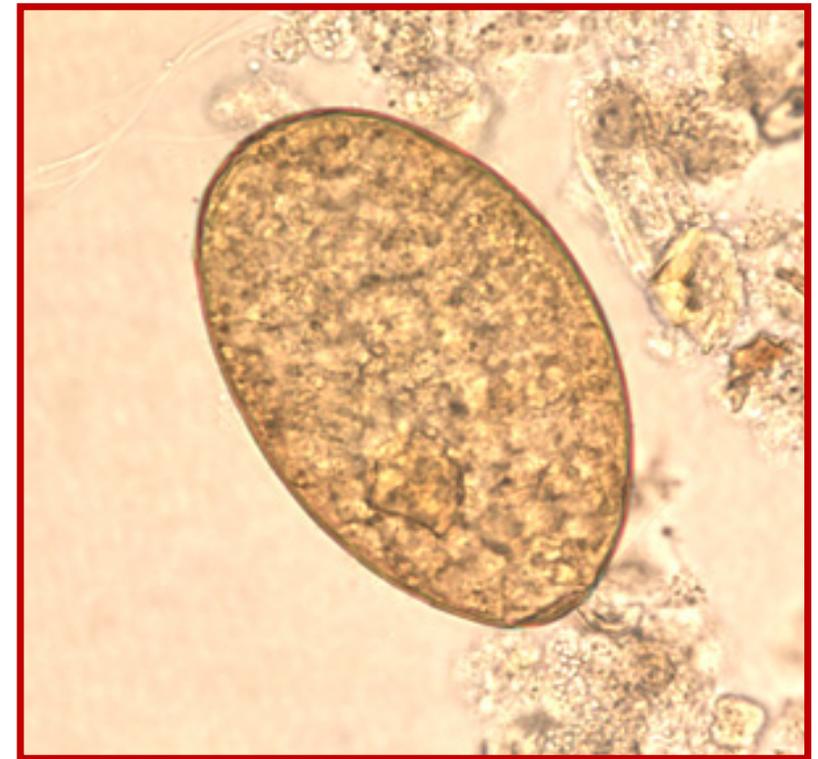
.Shape : Oval

.Shell : Thin, operculated

.Color : Yellowish brown

.Content : Immature (ovum

.& yolk cells) same to fasciola egg



.I.H: Segmentina snail



miracidium → sporocyst → redia)

.cercaria (leptocercous cercaria)



Encysted metacercaria (I.S):



.encysted on water plants & in water



:Mode of infection

Ingestion of water plants (chestnuts and bamboo) -1

.infected with encysted metacercaria

Drinking water contaminated with encysted -2

.metacercaria

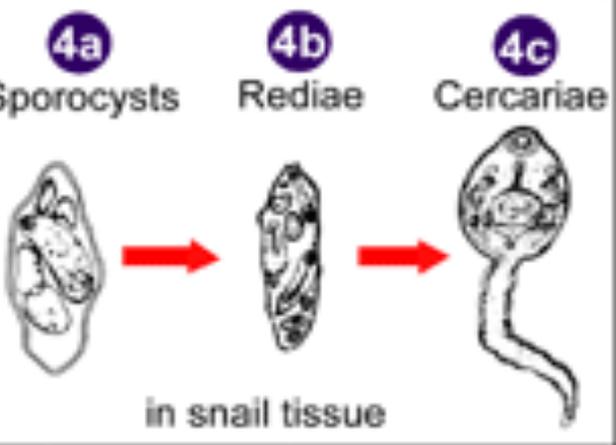
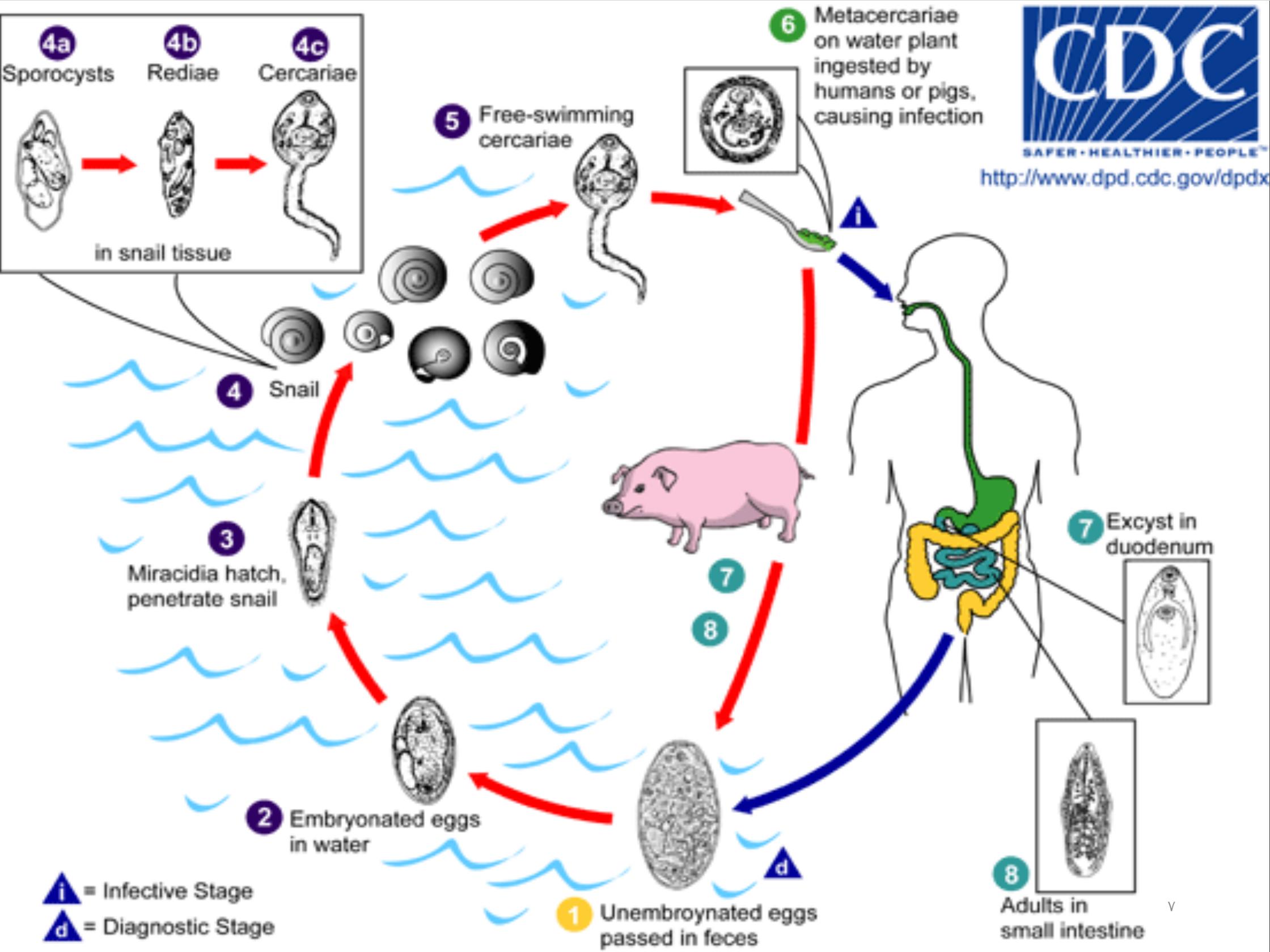
Water plants



Chestnuts



Bamboo



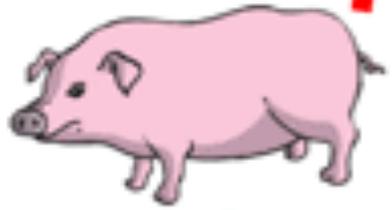
6 Metacercariae on water plant ingested by humans or pigs, causing infection



<http://www.dpd.cdc.gov/dpdx>

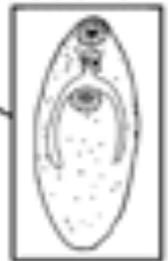
4 Snail

3 Miracidia hatch, penetrate snail



7
8

7 Excyst in duodenum



8

Adults in small intestine



2 Embryonated eggs in water

1 Unembryonated eggs passed in feces

i = Infective Stage
d = Diagnostic Stage

Habitat small intestine of man & pigs

Host

Definitive host man

Intermediate host snail

Reservoir host pig

Diagnostic stage egg in stool

Infective stage encysted metacercaria

Mode of infection

LIFE CYCLE
adult found in small intestine of man and pigs--->egg exit with stool --->reached to fresh water ----> maturation of the egg to become miracidium---. enter to the snail (segmentina snail)--->sporocyst-->Redia--->cercaria-->encysted metacercaria(in water or water plant) the man will infected by water &water plant contaminated by encysted metacercaria----> when man digest this cystol dissolve -->exit from sucker and attached with mucosa of small intestine

-
-
-

Pathogenesis & symptomatology

Adult worm causes traumatic, ^{because of friction} mechanical & ^{by metabolite that secret by adult} toxic effects. ❖

Ulceration & abscess formation occurs due to its attachment to the .intestinal mucosa by the ventral sucker

:Clinical pictures ❖

:Symptoms depend on the parasitic load ➤

.Light infection are asymptomatic -1

Moderate infection may presented by abdominal pain, nausea & -2
.vomiting especially in the morning

Heavy infection causes fever, severe abdominal pain, **bloody** -3
diarrhea, malabsorption, protein losing enteropathy, generalized oedema due to toxic metabolites, anaemia due to bleeding at the
.site of attachment & intestinal obstruction

Diagnosis

.Clinically -1

:Laboratory -2

.Stool examination to detect eggs

how to differ between egg of fasciola & fsciolopsis?
during symptom

Treatment

.Praziquantel is the drug of choice



Trematodes

have multiple shape

Heterophyes heterophyes

Heterophyes heterophyes
Covered from lower to third
(The smallest intestinal worm)

-: Geographical distribution ❖

.Far East : China, Japan, Korea, Taiwan ➤

Egypt : Mainly found in the north part ➤

of Delta especially in Borollos and

.Manzala lakes this parasite love salt water

Morphological characters

Shape: pear-shaped with 3 suckers - (oral+ ventral+ genital)

Size: 2.5 x 0.75 mm -

Globular 2 testes and one globular ovary -

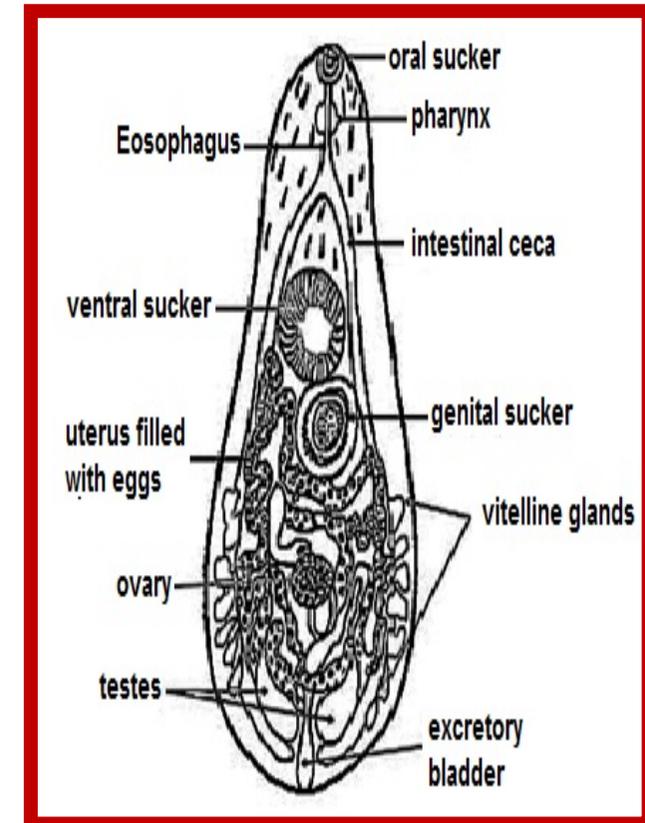
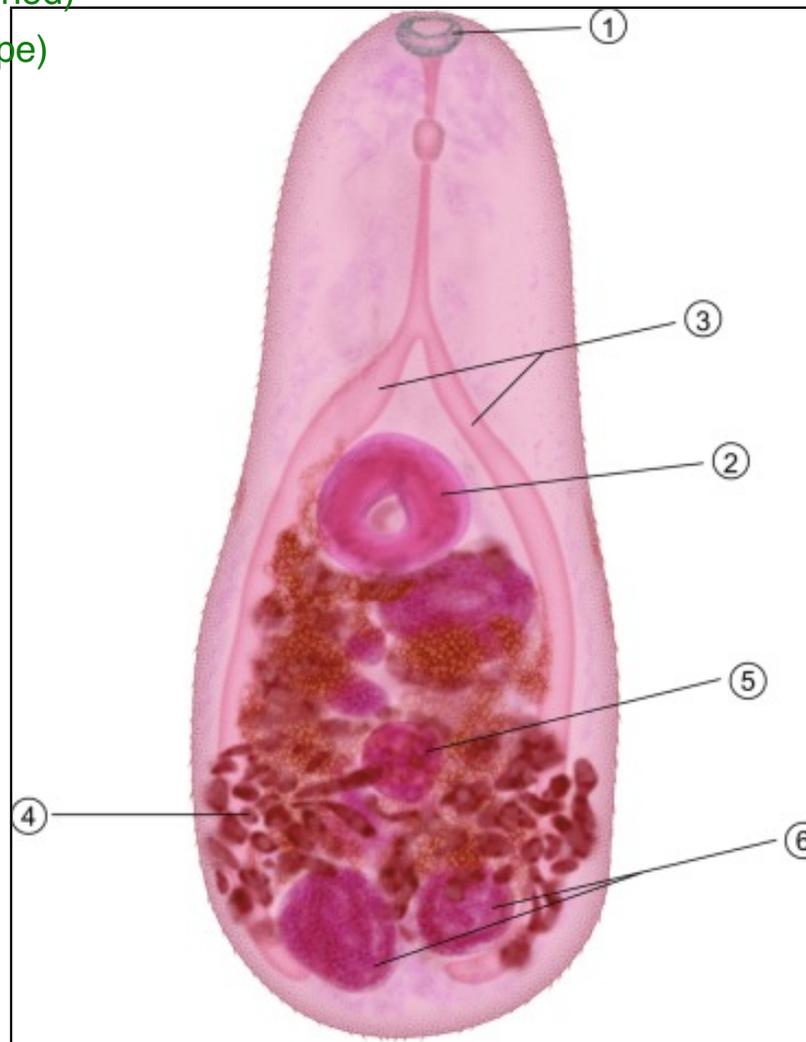
part of female reproductive sys :that production of secretion nutant to ovum)

Globular vitelline glands in the post. third of the body-

have a simple intestinal saeca (no branched)

male---->the testes globular(oval in shape)

female---->one ovary (oval)



-: Eggs (D.S) the smallest egg of all parasite ❖

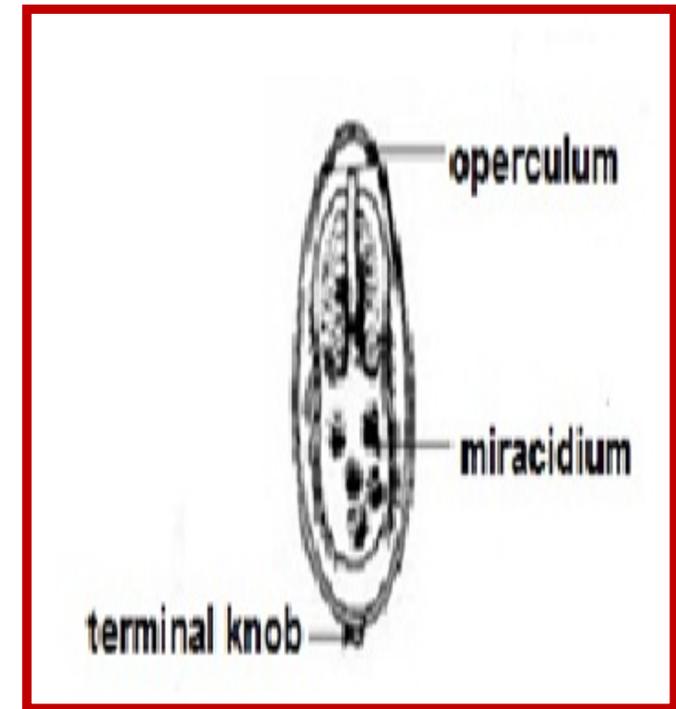
.Size : 30 x 15 µm ➤

.Shape : Oval ➤

Shell : Thick with anterior operculum and a small knob at posterior end ➤

.Color : Yellowish brown ➤

.Content : Mature (miracidium) ➤



:1st IH

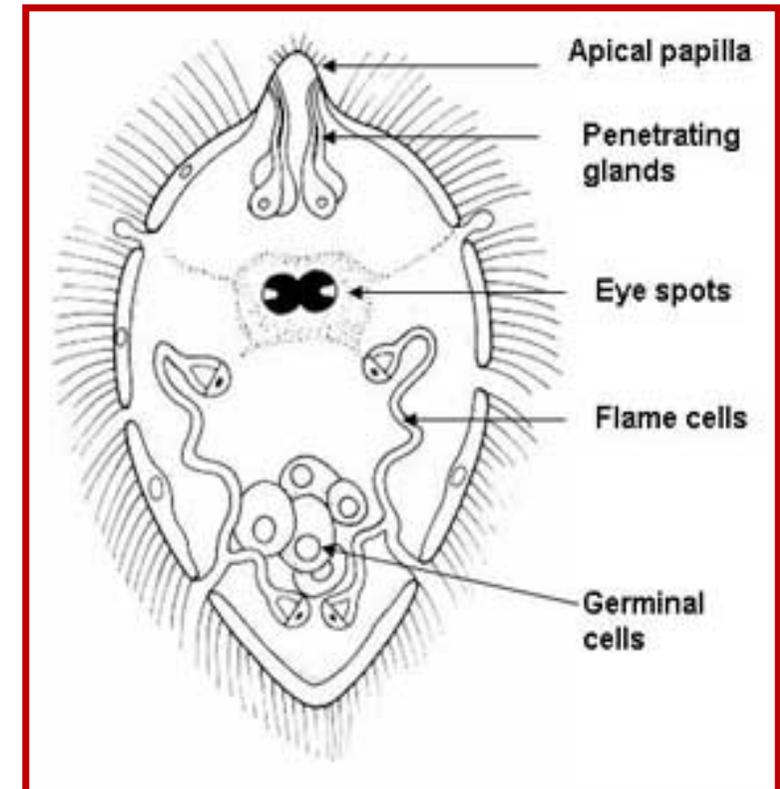
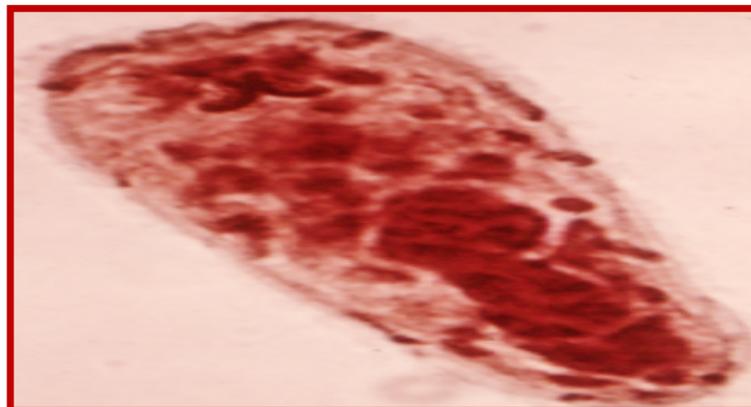
.*Pirenella conica* snail

-:Miracidium ❖

.Pyriform ciliated larva ➤

Germinal cells develops into ➤

.sporocyst



-:Sporocyst ❖

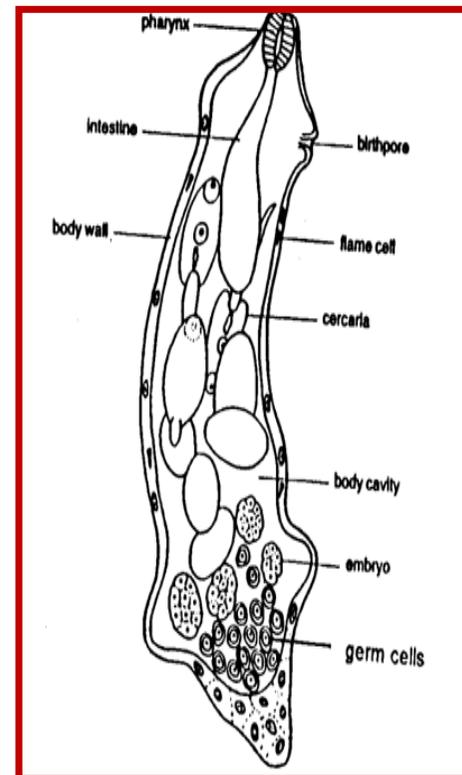
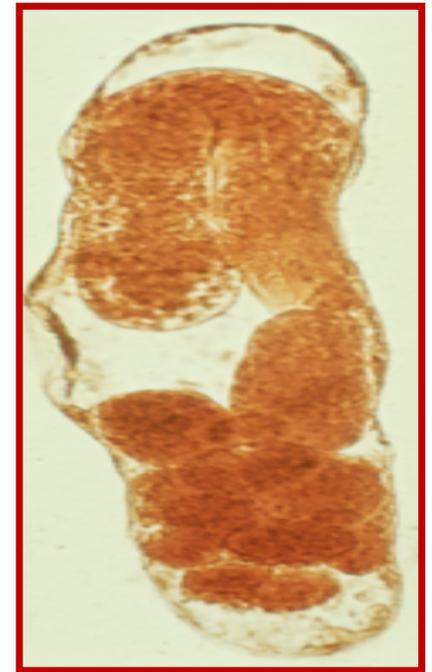
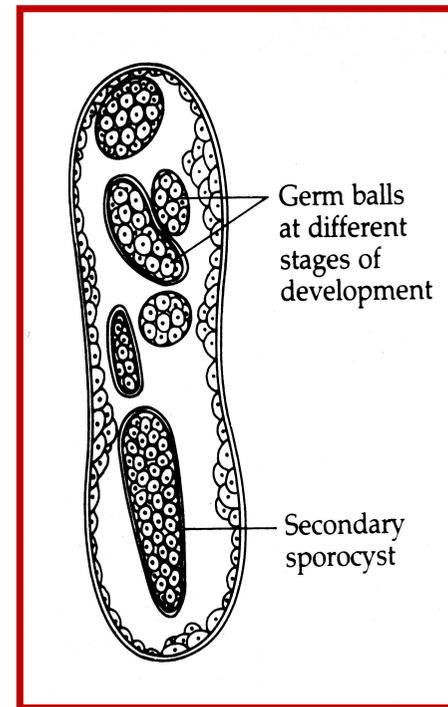
Simple elongated sac
filled with germ cells.
sporocyst develops into
.rediae

-:Redia ❖

.Cylindrical larva ➤

Germ cells develop into ➤

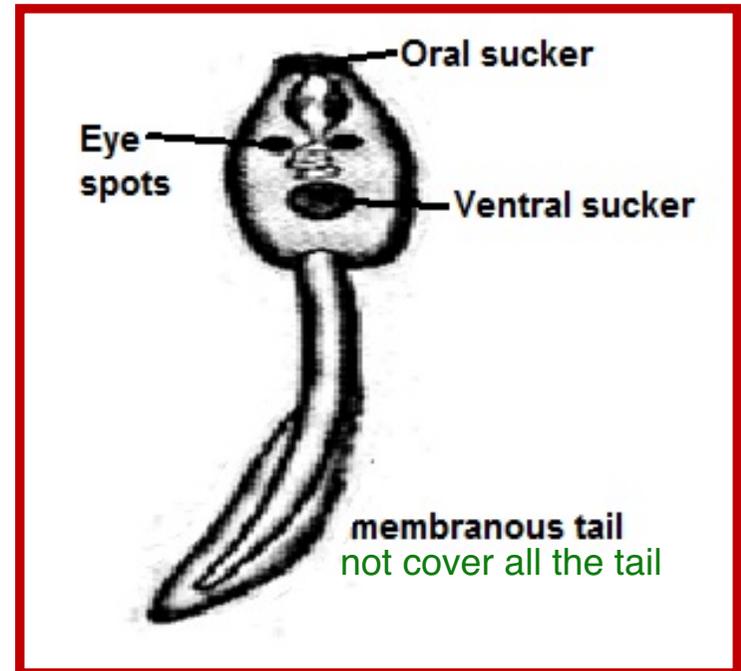
.cercariae



-: Cercaria



Has body and membranous
.tail (lophocercous cercaria)

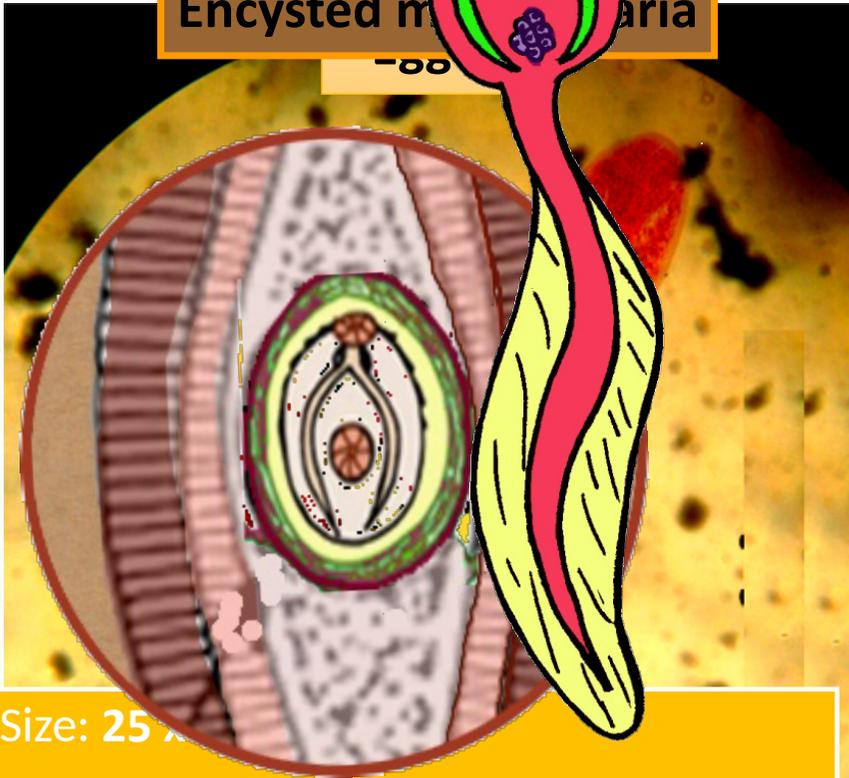


Encysted metacercaria (IS) ❖
in fish (2nd I H)



Cercaria

Encysted metacercaria



Size: 25 x 0.75 mm

Body and membranous tail

Cercarial body within cyst wall under the scales or in the fish-flesh

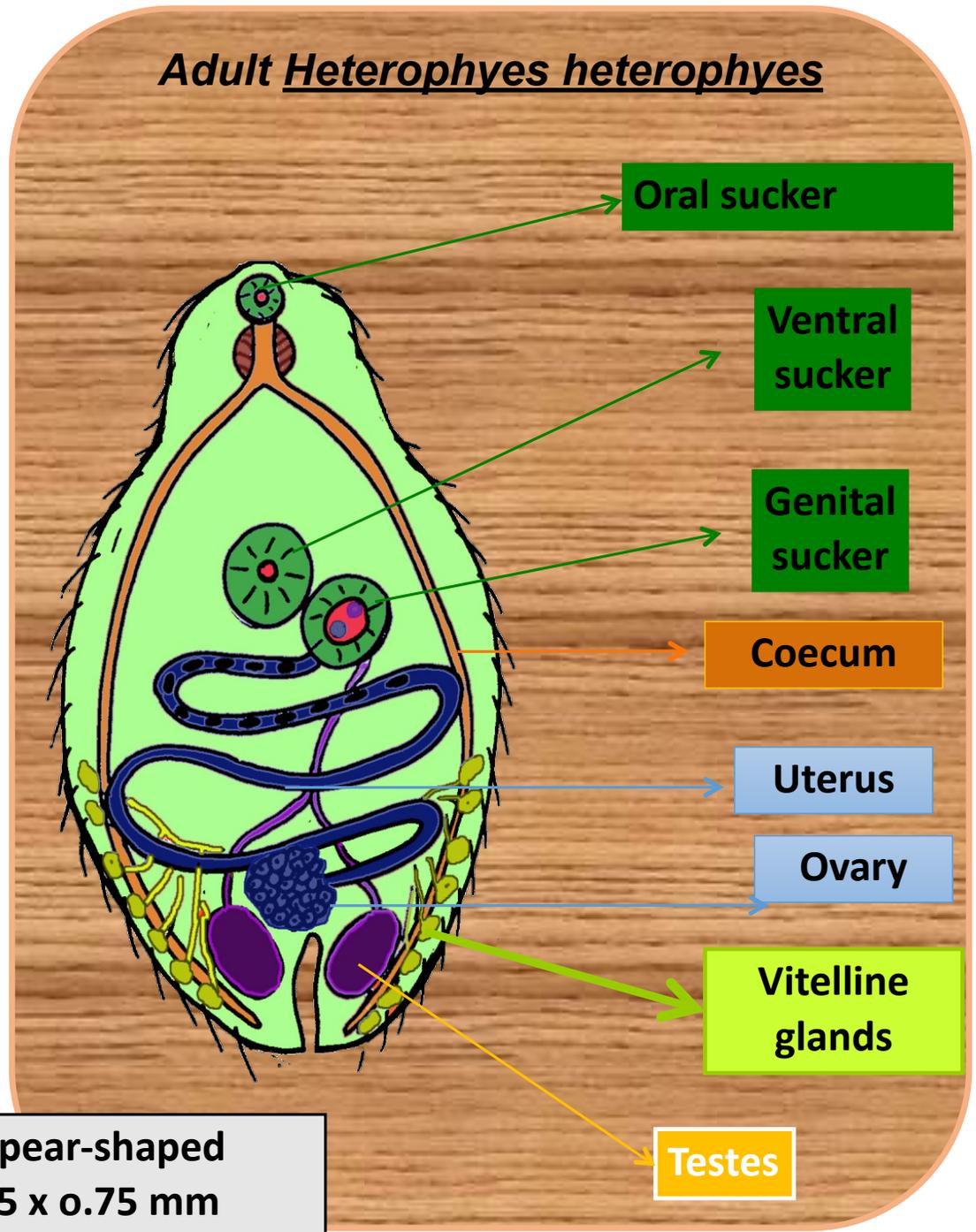
.Simple caeca

.Cystogenous glands

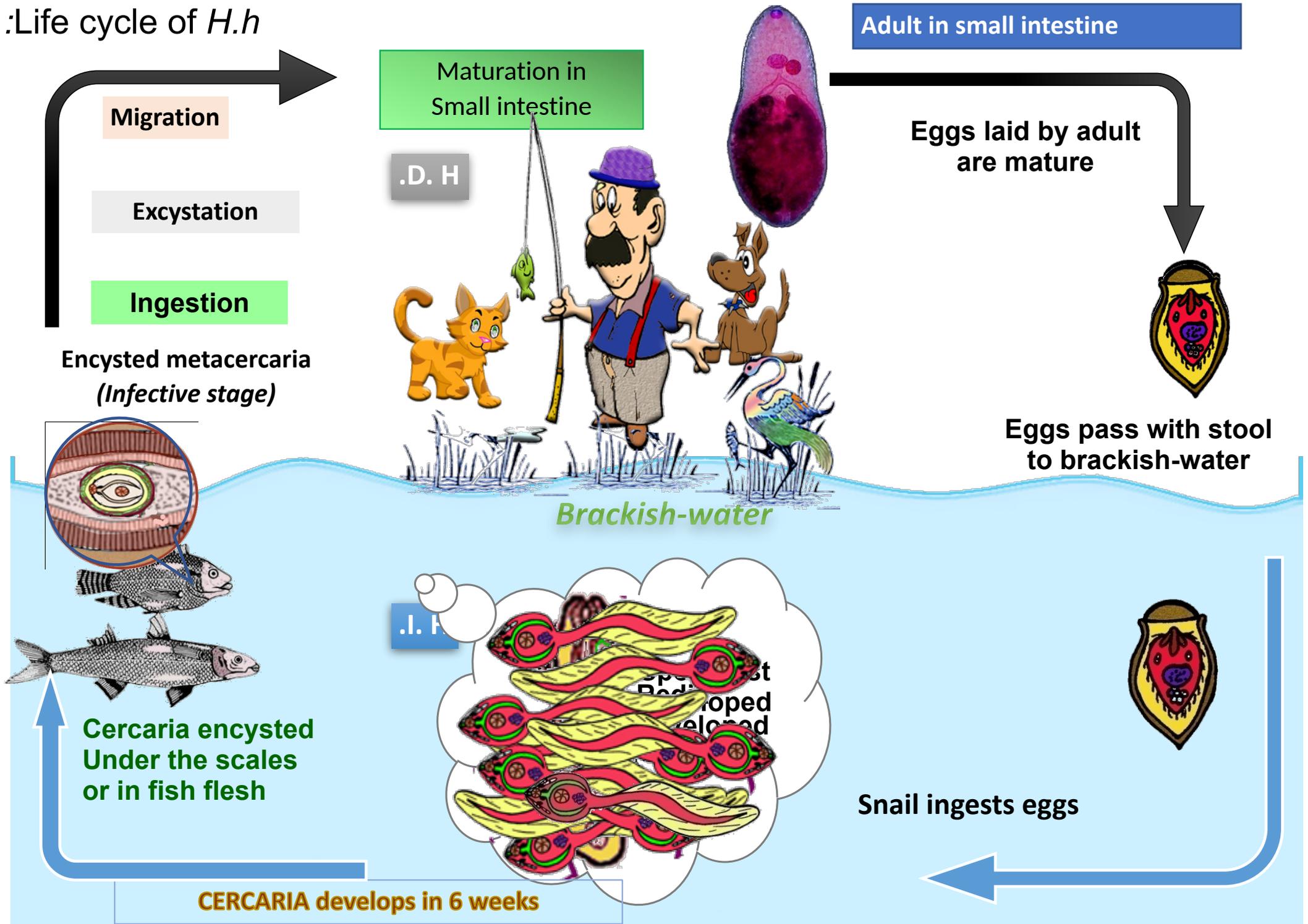
.Flame cells

Shape: pear-shaped
Size: 2.5 x 0.75 mm

Adult *Heterophyes heterophyes*



:Life cycle of *H.h*



LIFE CYCLE:
adult live in man (small intestine) and fish eating animal
when fertilization the egg excreted by stool--->
water --->snail ---->miracidium--->sporocyst--->Redia--->lophocercous
cercaria(dont have membrane out of the blue needed because don't work
infestation in water (needed other host to living in fish)
begin the lophocercous make penetration in fish (convert in side the fish to
encysted metacercaria(last stag)

-: Habitat

.Small intestine (deeply embedded between villi)

D.H :Man

.R.H: fish eating animals (dogs & cats)

.I.H : 1st \rightarrow *Pirenella conica* snail

2nd \rightarrow Brackish water Fish e.g. Bourey and

.Bolty

D.S: eggs

I.S: Encysted metacercaria

man when eat undercooked fish or under salted fish (in this state contain encysted metacercaria) that attached to intestine (enlargement) to became adult



Pathogenesis & Symptomatology

.Diseases :Heterophyiasis

Intestinal phase (1)

Mild inflammatory reaction ➤

.at the site of attachment

In heavy infections, ➤

damage of the mucosa

occur ⊃ **colicky abdominal**

.pain and mucus diarrhea****

Ectopic sites (2)

Sometimes eggs can enter the

blood stream (due to its minute

size) to reach other organs

especially **heart (myocarditis &**

heart failure) and **brain**

.(neurological disorders)

Diagnosis

.Clinically (1

Laboratory: Identification of eggs in the stool (2

.(by direct and concentration methods)

Treatment

.Praziquantel (Biltricide) is the drug of choice



Test Knowledge

Eating fried or grilled fish better in endemic areas to avoid •

?*Heterophyes heterophyes* infection fried fish better than grilled because in fried killed all parasite in fish

Mention the complications of *Fasciolopsis buski* and •

.*Heterophyes heterophyes* infection

heart (myocarditis & heart failure) and brain
•(neurological disorders)

Thank You