Blood and Intestinal fluke

Kingdom: Animalia

Phylum: Platyhelminthes

Class: Trematoda

Subclass: Digenea

1- Order: Prostomata

4-Family: Schistosomatida

Genus:1-*Schistosoma haematobium*

2-*Schistosoma mansoni*

3-*Schistosoma japonicum*

2-Order: Opisthorchiida

Family: Heterophyidae

Genus: *Heterophyes heterophyes*

3- *Order: Echinostomida*

Suborder: Echinostomata

Family: Fasciolidae

Genus: Fasciolopsis buski

1-Blood flukes

The Schistosomes are blood flukes. They differ from other trematodes in that they have separate sexes.The cuticle of the male is covered with minute papillae While the female only posses theseat the anterior and posterior end as the middle section being covered by the male body. Oral and ventral suckers are present, with the ventral one being lager serving to hold the worms in place.

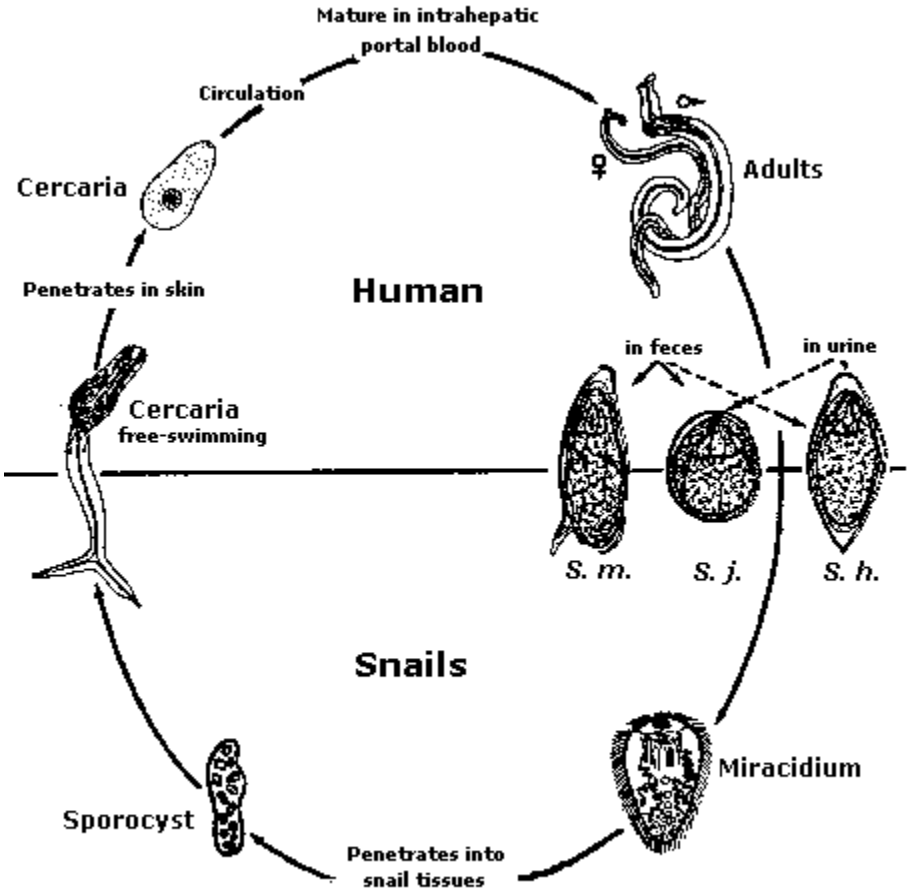
Definitive host:Human

Intermediate host:snail

Infective stage: cercaria (forked tailed)

Diagnostic stage:egg

The schistosome life cycle is very similar, with the exception that different species differ in the final location where the adult worms prefer to reside within the human body.



1-Schistosomaheamatobium

Disease name:urinary schistosomiasis

Site of infection: bladder, ureters or kidneys

Morphology:

The adult males measure up to 15 millimeters in length and females up to 10μm. The male is actually flat has 5-3 testes but the sides roll up forming the canal in which the selender female resides the female has ovary in the dorsal partThe ova are relatively large, They have an elongated ellipsoid shape with a prominent terminal spine.

2-Schistosomamansoni

Disease name: Intestinal schistosomiasis

Site of infection: Large intestine (the plexus of veins draining the rectum and colon, and in branches of the portal vein in the liver

Morphology: male has 7-8 testes and female ovary in the front part The ova of *S. mansoni* are light yellowish brown,elongate and possess a lateral spine.

3-Schistosomajaponicum
Disease name: Oriental schistosomaiasis
Site of infection: small intestine
Morphology
The adult worms are longer and narrower than the *S. mansoni*worms males have 6-7 testes females ovary in the center. The oval is more roundwith a minute lateral spine or knob (vague spine).
Symptoms
The main lesions are again due to the eggs, occurring in the intestine and liver. The eggswhich are sequesters in the intestine mucosa or submucosa granulomatous reactions,resulting in the formation of pseudotubercl

Laboratory Diagnosis
Microscopy
Laboratory confirmation of infection can be made by finding the eggs in the feces after an iodine stained, formol-ether concentration method for *Schistosomamansoni* and *Schistosomajaponicum* When eggs cannot be found in the feces, a rectal biopsy can be examined,While*Schistosomahematobium* found in urine or feces.
Serology

Serological tests are of value in the diagnosis of schistosomiasis when eggs cannot be found.An enzyme linked immunosorbent assay (ELISA) using soluble egg antigen.

2-Intestinal flukes

1-*Heterophyes heterophyes*

It is a minute intestinal fluke, with different

shapes.• It infects small intestine of various fish eating

mammals including humans.• The disease caused by the fluke is called

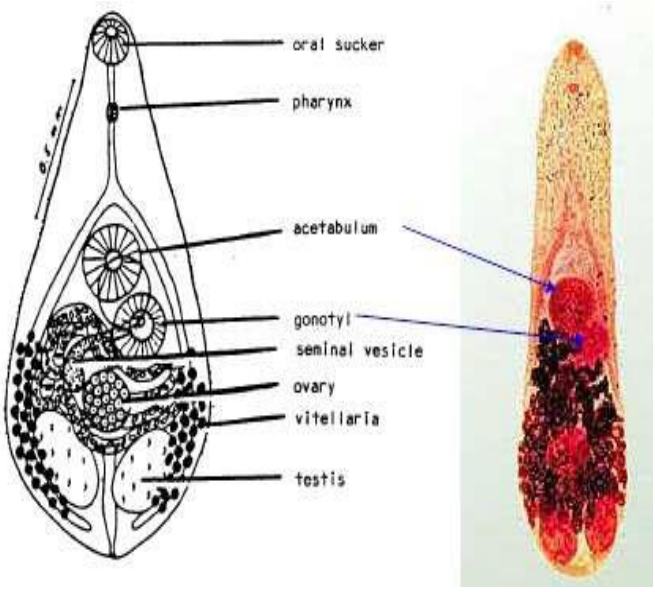
heterophyiasis.

Adult morphology:

pyriform or pear shape,spines cover the cuticle anterior. three suckers.

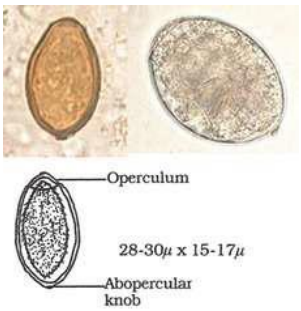
– Oral sucker: small.– Ventral sucker: large.

– Genital sucker (gonotyle): postero-lateral toventral sucker.



Egg:

Shell: thick.Special character: operculum at one pole and a small knob at the other. Colour: golden yellow.Content: mature (miracidium).



Life cycle:

Habitat: embeded between villi of smallintestine.

Definitive host: man.

1st I.H.: snail, **2nd I.H.:** fish

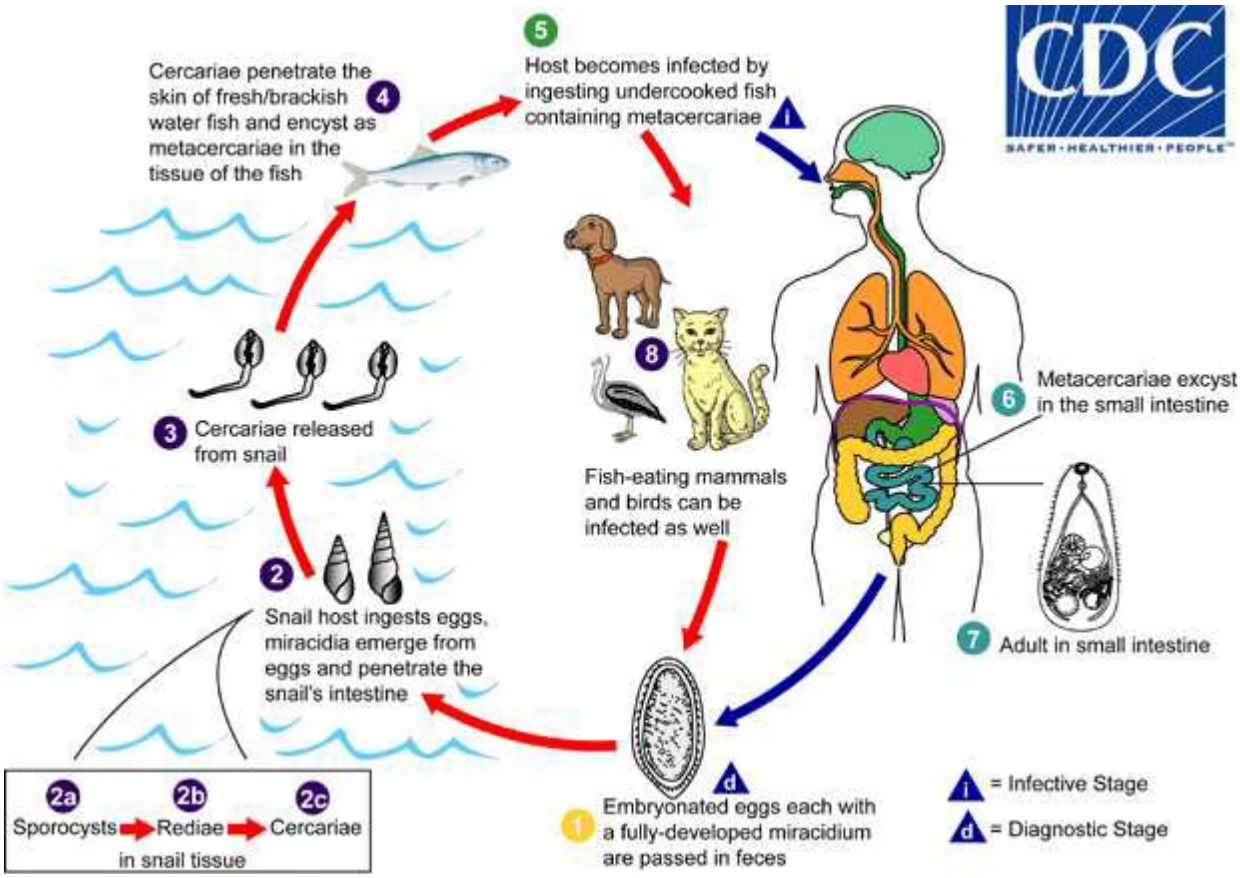
Reservoir hosts: cats, dogs and any fish eating

mammals.**Infective stage:** encysted metacercaria in the

muscles of the 2nd I.H. and their fins, gills and

scales.

Stages in life cycle: egg → miracidium →sporocyst → redia → cercaria → encysted metacercaria → adult.



Symptoms:

• Abdominal colic.

• Abdominal discomfort.

• Chronic intermittent diarrhea, sometimes with blood.

Diagnosis:

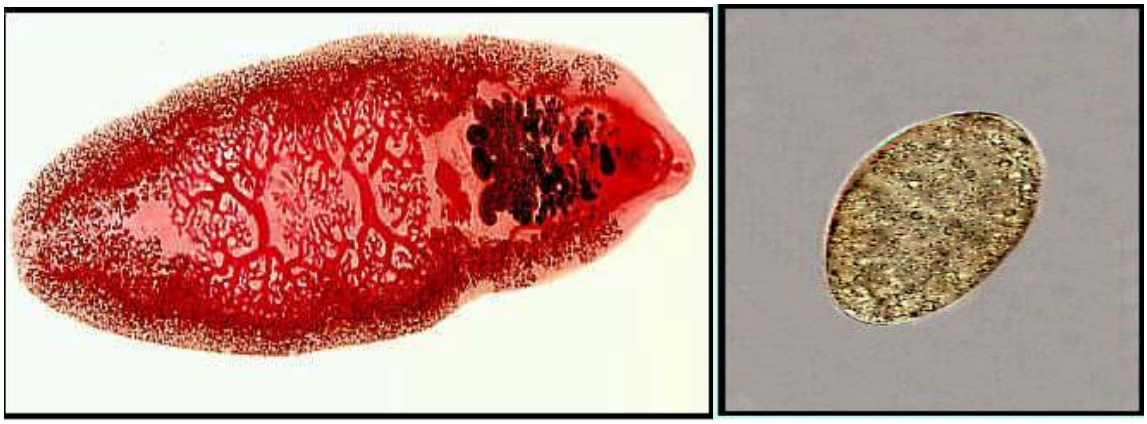
1. Clinical.2. Laboratory: by detection of the characteristic mature eggs in stool.3. Eosinophilia.

2-*Fasciolopsis buski*(gaint intestinal fluke)

The prevalence of fasciolopiasis is related to growing water plants and feeding pigs on water plants.

Morphology

Adult: the body is long elliptic, flesh-colored, looks like a slice of raw meat. the largest trematodes of human. The ventral sucker is near by the much smaller oral sucker. Two coral-liked testes are located in the posterior half of the body egg is oval in shape, slight yellow in color



Life cycle

Site of inhabitation: small intestine

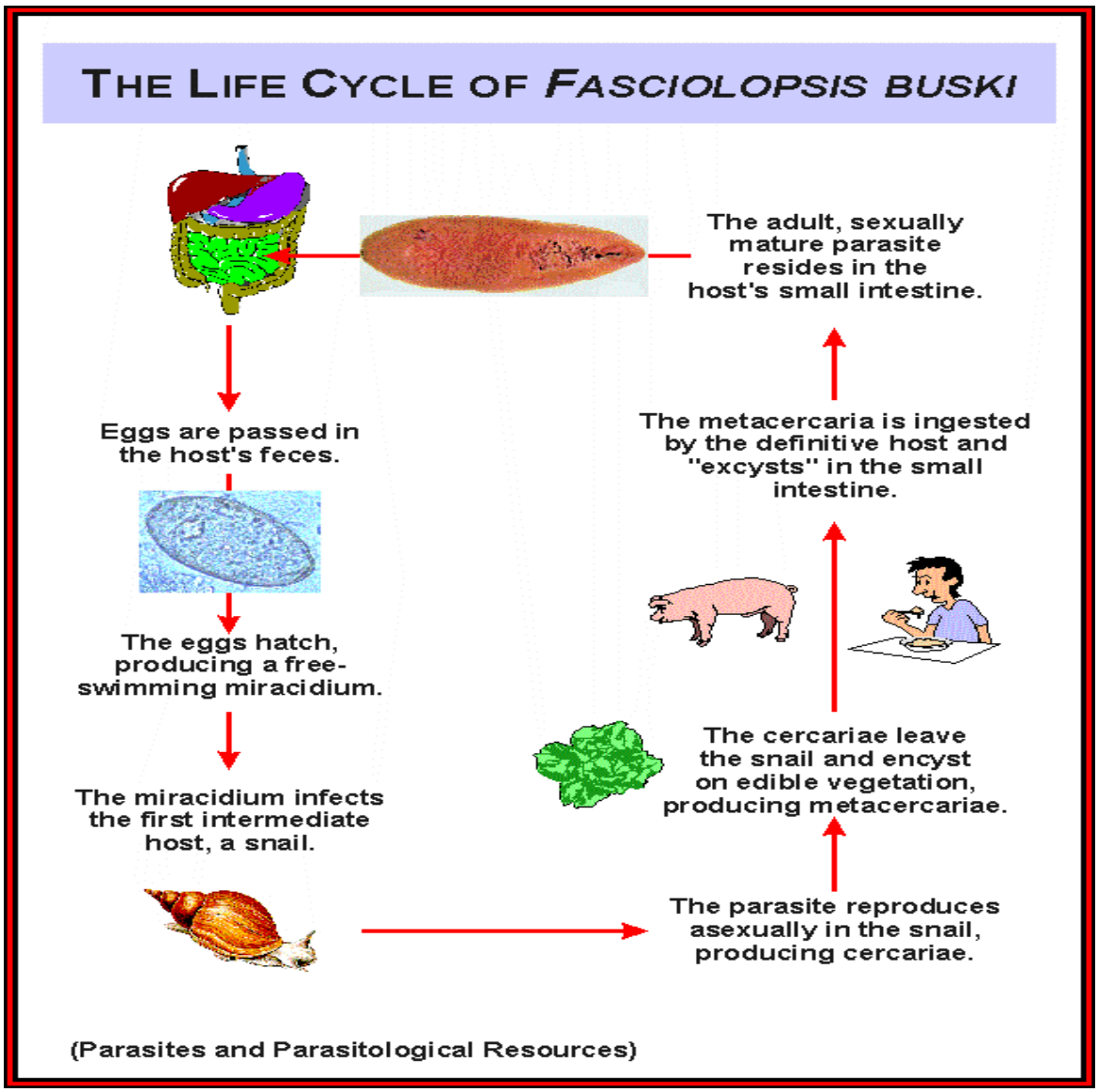
2. **Infective stage**: metacercaria

3. **Infective mode**: eating raw water plants with metacercariae

4. Intermediate hosts: Planorbis snail

5. Reservoir host: pig

6. Life span: 1-4 years



Symptom: abdominal discomfort, nausea, vomiting and diarrhea. Malnutrition

Diagnosis: Stool examination: 1. Direct fecal smear 2. Water sedimentation method