

# Genus: Fasciola.

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# Fasciola : Morphology

- *Fasciola hepatica* is one of the largest flukes in the world.
- The Adult Worms are 30mm in length and 13 mm in width.
- The adult worm has a very characteristic leaf shaped body with the anterior end being broader than the posterior end and an anterior cone-shaped projection.
- The fluke possesses a powerful oral sucker at the end the anterior cone and a ventral sucker at the base of the cone which allow it to attach to the lining of the biliary ducts.
- Each worm possesses ovaries and testes which are highly branched and allow for individual flukes to produce eggs independently.
- The eggs of *Fasciola hepatica* are operculated and average 140  $\mu\text{m}$  in length and 75  $\mu\text{m}$  in width.



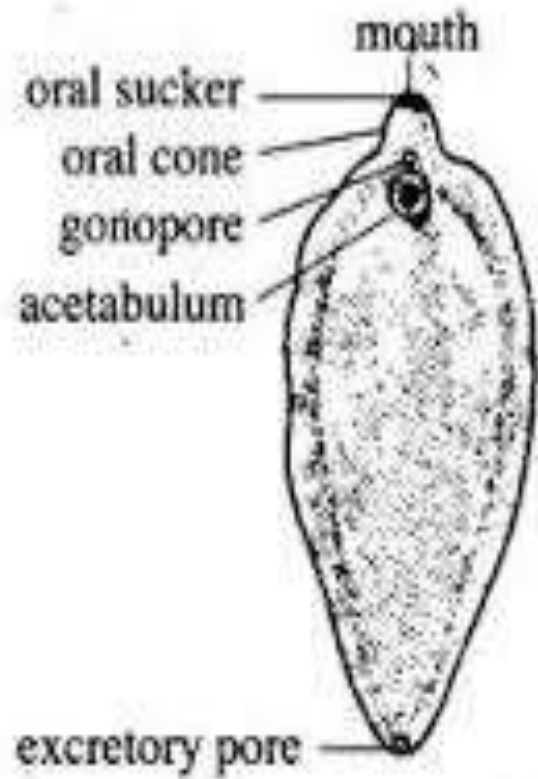
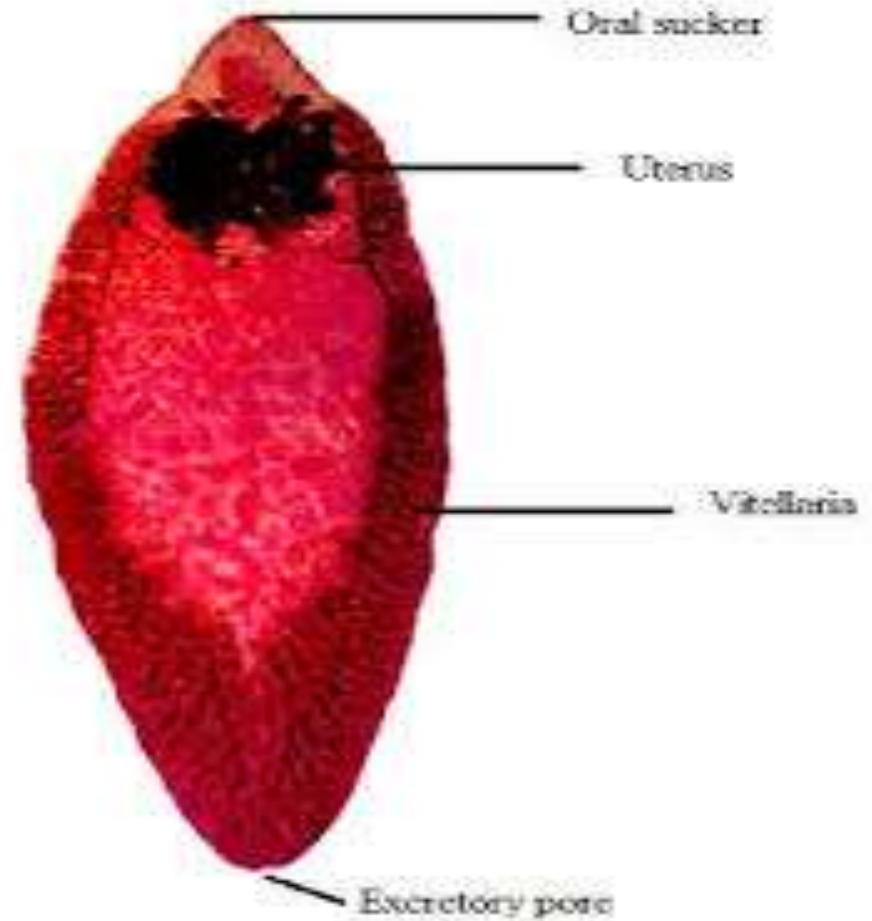


Fig. 1.50 : *Fasciola hepatica*. External features in ventral view.



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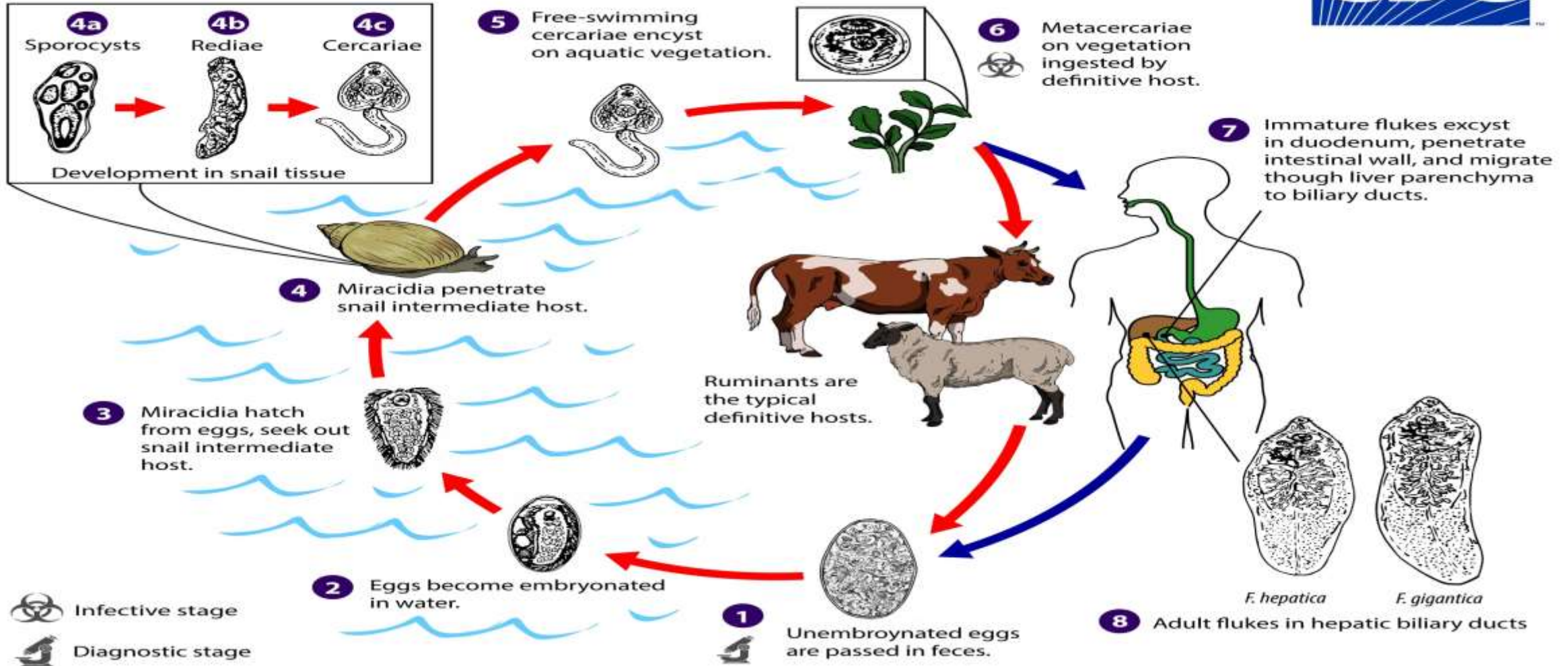
# Fasciola : Parts of body

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# Fasciola: Life cycle

- The Immature eggs are discharged in the biliary ducts and passed in the faeces.
- After hatching the miracidia released from the eggs, which invade a suitable snail, the intermediate host .
- In the snail the parasites undergo several developmental stages e.g sporocysts, rediae , and cercariae.
- The cercariae are released from the snail and encyst as metacercariae on aquatic vegetation or other surfaces.
- Mammals acquire the infection by eating vegetation containing metacercariae.
- After ingestion, the metacercariae excyst in the duodenum and migrate through the intestinal wall, the peritoneal cavity, and the liver parenchyma into the biliary ducts, where they develop into adults .
- The adult flukes reside in the large biliary ducts of the mammalian host.
- *F. hepatica* flukes can infect various animal species, mostly herbivores.





# Fasciola: Mode of transmission

- Transmission occurs through the ingestion of raw, fresh-water vegetation on which the flukes in their metacercariae form are encysted.
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- The plants become exposed to the metacercariae when the growing vegetation becomes contaminated by eggs in the faecal matter of an infected host.



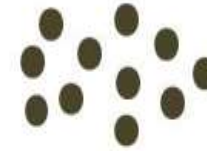
Sheep ingests cysts, juvenile flukes excyst and migrate through the liver of the host



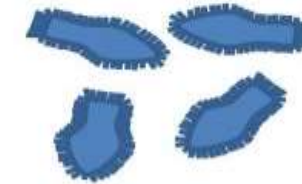
Migration of juveniles takes about 6-8 weeks to reach the bile ducts. PPP is 10-12 weeks from ingestion of the cysts until eggs are seen in the faeces

Adult flukes reside in the bile ducts, and lay their eggs

Fluke eggs are passed in faeces



Eggs can hatch in 9-10 days under ideal conditions (22 – 26°C)



Miracidium hatch then have 3 hours to find a snail intermediate host

Cercariae leave the snail when the temperature and moisture levels are suitable, and encyst as metacercariae on pasture



Miracidium to metacercariae takes about 6-7 weeks



Mud snail – *Galba truncatula*.

# Fasciola: Pathogenesis

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## Fasciola : Lesions of Fasciolosis

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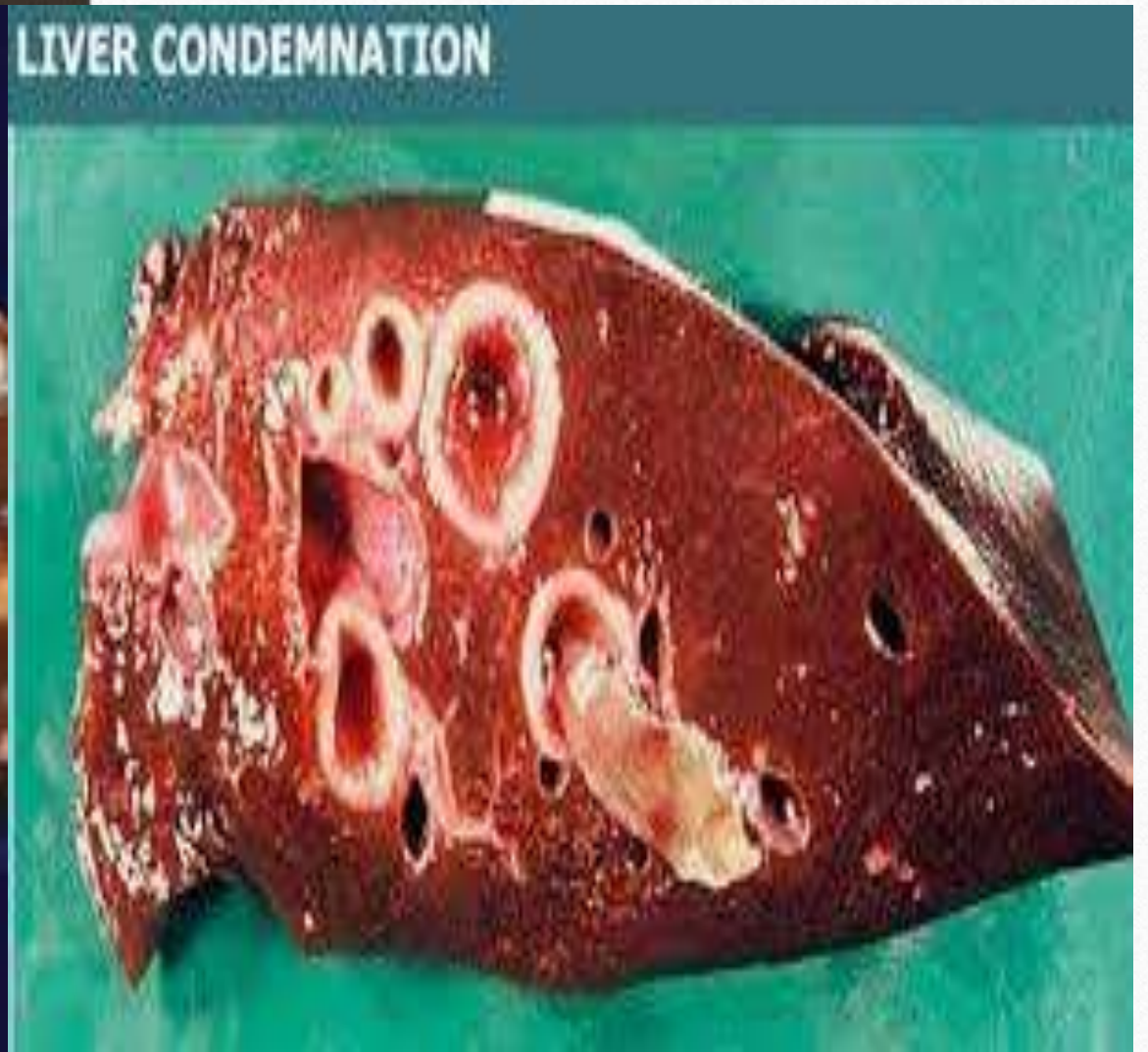
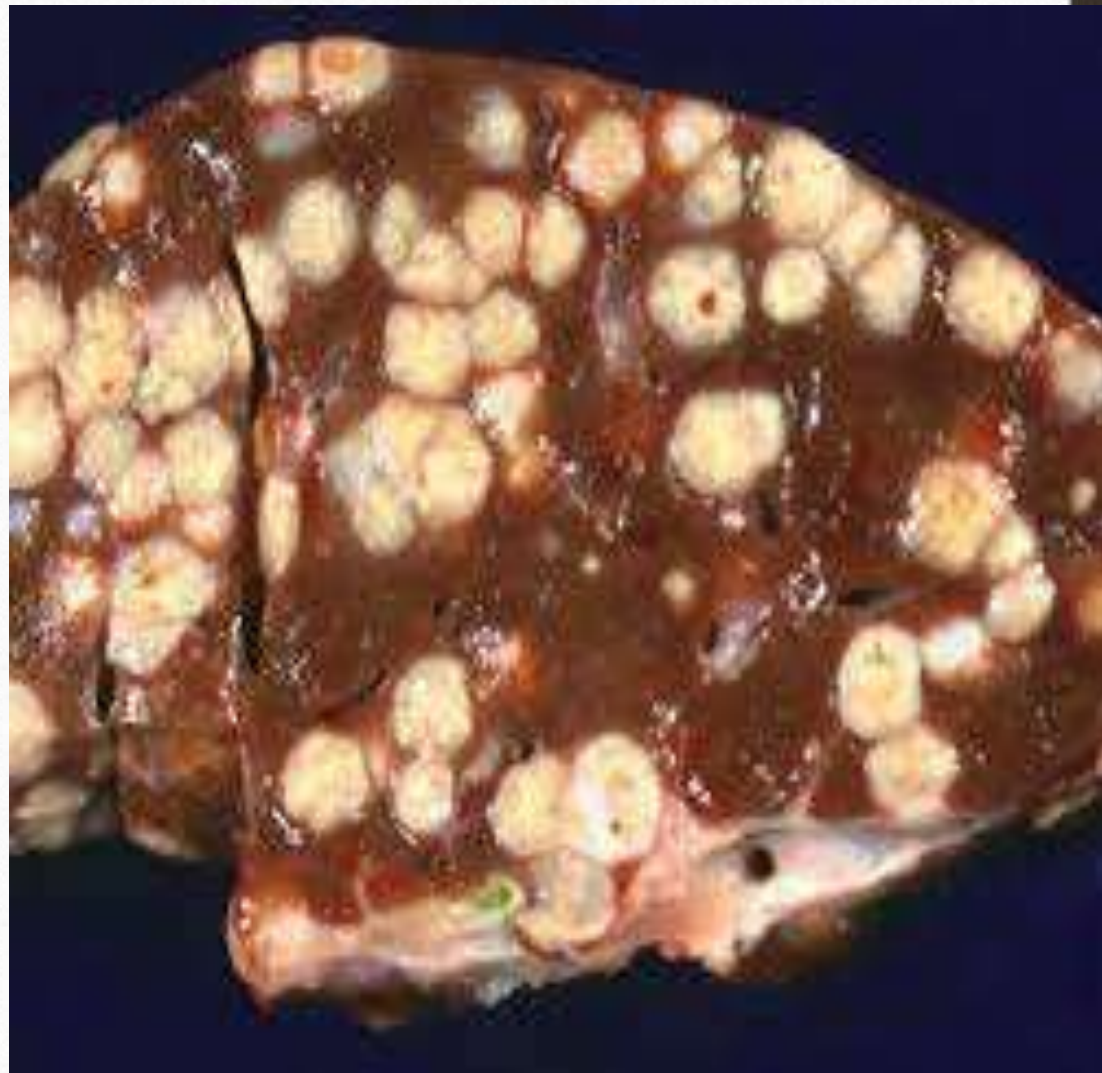


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## Fasciola : Adult worms in liver

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## Fasciola : tunneling in liver

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**Figure 1.** Non-pruritic urticarial skin lesions



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# Fasciola: lesions

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# Fasciola: Epidemiology

- Fascioliasis is a global disease.
- Infection begins when cyst-covered aquatic vegetation is eaten or when water containing metacercariae is drunk.
- *F. hepatica* frequently causes disease in ruminants, most commonly between March and December.
- Cattle and sheep are infected when they consume the infectious stage of the parasite from low-lying, marshy pasture.
- Sometimes the presence of *F. hepatica* can interfere with the detection of bovine tuberculosis in cattle. This is a major problem in the farming industry.

# Fasciola: Diagnosis

- Clinical signs and symptoms.
- Examination of faecal sample for finding of yellow-brown eggs in the faeces.
- ELISA test is also diagnostic test of choice.





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## Fasciola : Eggs

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# Fasciola: Control

- Strategic flukicide treatments can be practiced in areas with endemic fasciolosis.
- In cattle, a single dose of a flukicide, effective against appropriate stages.
- Newly purchased cattle should be treated with a flukicide, before joining the herd.
- During a low risk year, treatment to kill mature flukes is given to cattle from January.
- In years when epidemiological data indicate a high risk , a treatment in January/February with a different drug may be required to remove adults .