

# Genus : Paragonimus

Instructor:

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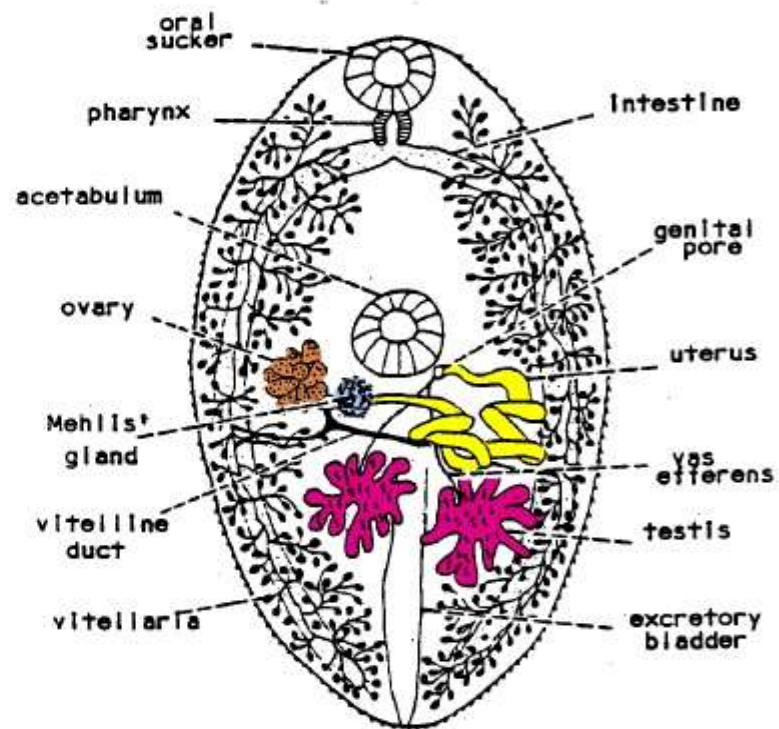
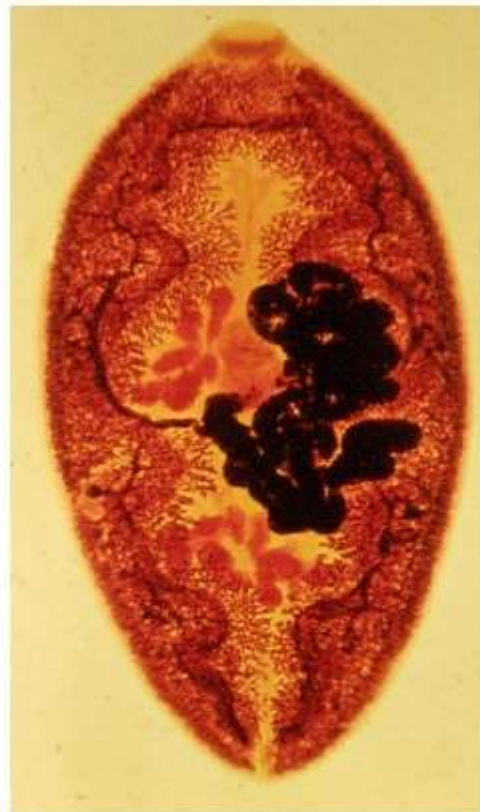
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# Paragonomus : Morphology

- Paragonimus vary in size.
- The adult stage might attain a length up to 15-8 mm.
- The adult flatworm has an oval shape body with spines covering its thick tegument.
- Both the oral sucker and acetabulum are round and muscular.
- The acetabulum is slightly bigger than the oral sucker.
- Ovaries are located behind the acetabulum and posterior to the ovary are the testes.
- The seminal receptacle, the uterus and its metra term, the thick-walled terminal part, lie between the acetabulum and the ovary.

## Morphology of Adult *Paragonimus westermani*



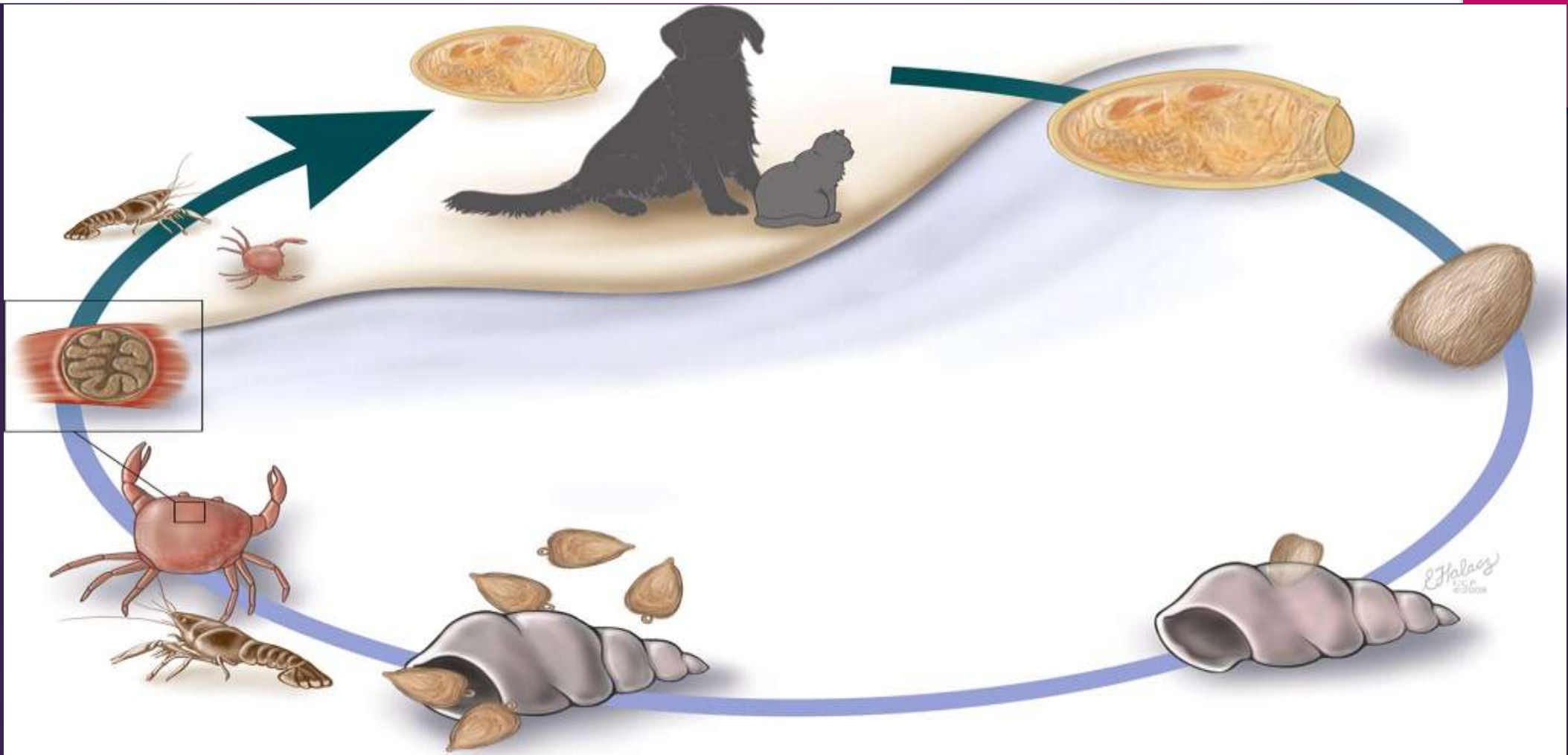
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# Paragonimus : Parts of the body

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# Paragonomus : Life cycle

- Eggs are excreted in sputum or stool of infected people.
- In the environment, the eggs develop, hatch into an immature form e.g miracidia, which are ingested by snails.
- Inside the snail, the miracidia go through several stages to develop into cercariae. which can swim.
- The cercariae infect crabs or crayfish and form cysts called metacercariae.
- People are infected when they swallow cysts in raw, undercooked, or pickled freshwater crabs or crayfish.
- In the intestine, the larvae leave the cyst.
- The larvae penetrate the wall of the intestine, pass through the diaphragm, and invade the lungs. Where they develop into adults and produce eggs.
- These eggs are passed in sputum that is coughed up and spit out or swallowed and passed in stool.

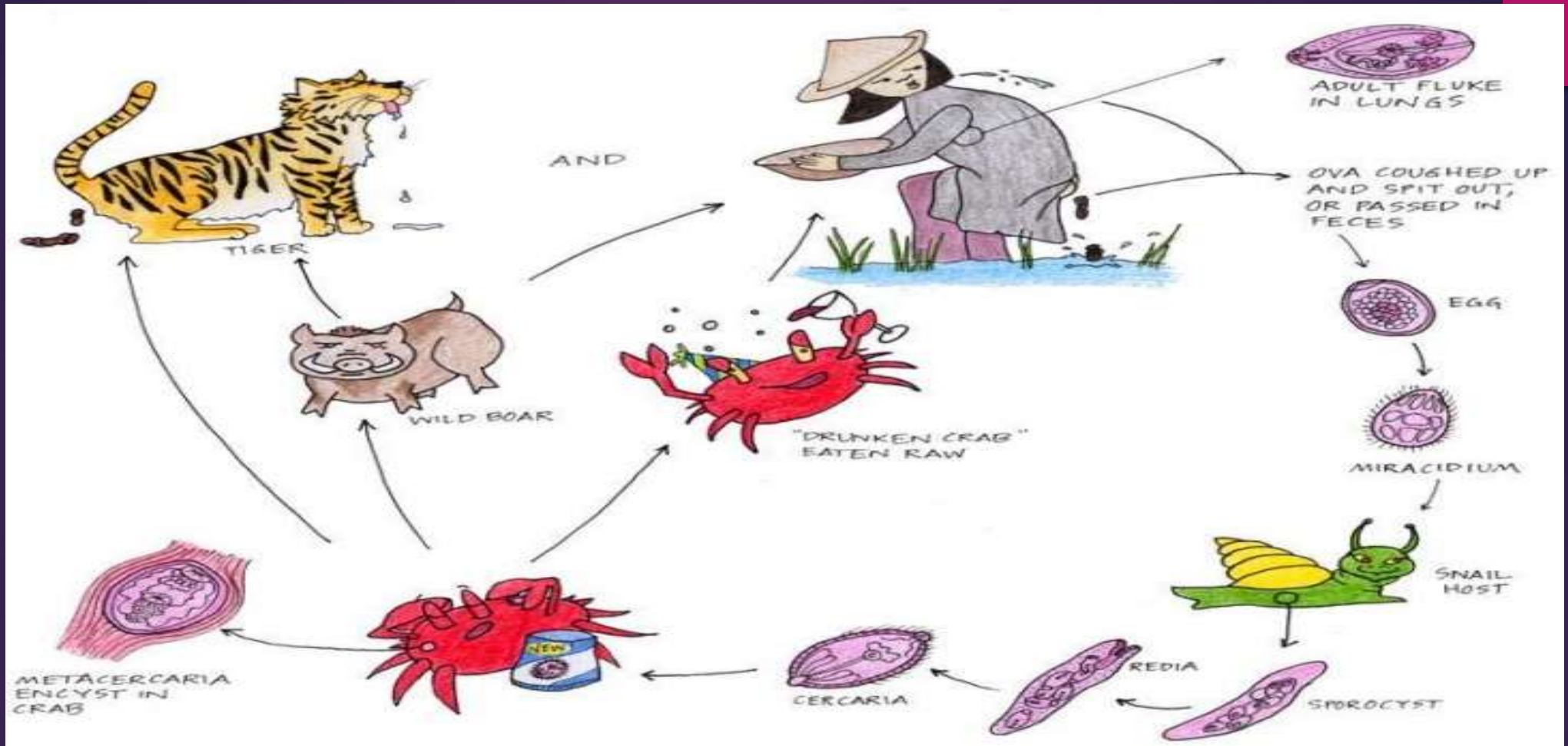


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## *Paragonimus kellicotti* : Life cycle

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## *Paragonimus westermani* : Life cycle

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# Paragonomus : Pathogenesis

- Invasion and migration of the flukes causes diarrhea, abdominal pain, fever, cough.
- Other symptoms urticaria, hepatosplenomegaly, pulmonary abnormalities, and eosinophilia may also be develop.
- In chronic phase, the lungs are damaged most, but other organs may be involved.
- Manifestations of pulmonary infection develop slowly and include chronic cough, chest pain, hemoptysis, and dyspnea.
- The clinical signs are sometimes confused with tuberculosis.
- In cerebral infections, seizures, aphasia, paresis, and visual disturbances can also be occur.



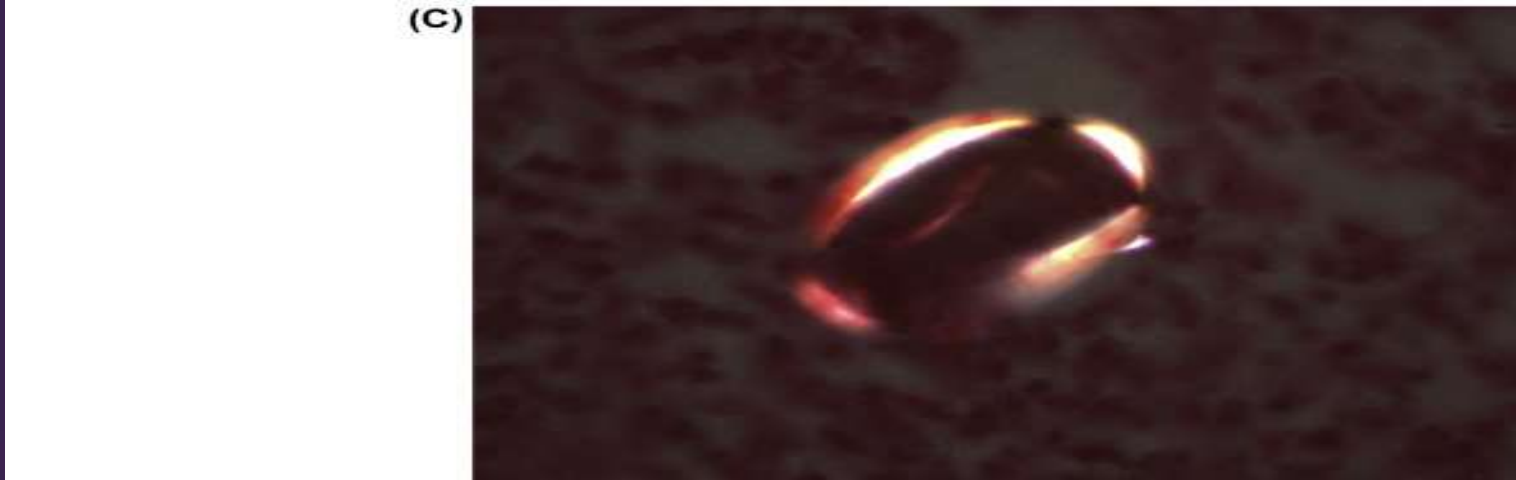
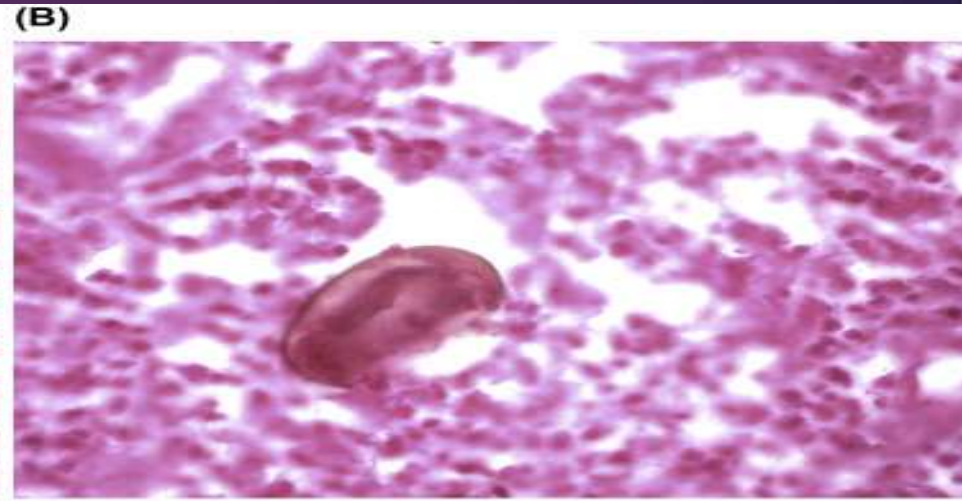
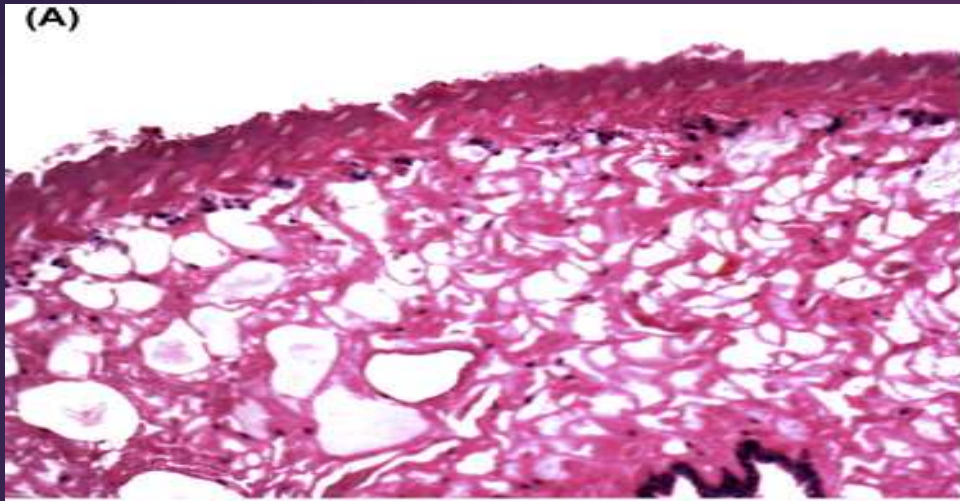
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*Paragonimus westermani* : worms in lungs

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*Paragonimus westermani* : worms in lungs

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# Paragonomus : Diagnosis

- Microscopic examination of sputum and stool.
- Serological tests can be done to detect antibodies
- Faecal examination for detection of characteristic large operculated eggs in sputum or stool. But occasionally, eggs may be found in pleural or peritoneal fluid.



Fig. 3 Eggs of *Paragonimus vietnamensis*. Scale bar=100  $\mu$ m

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## *Paragonimus westermani* : Eggs

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# Paragonomus : Prevention & control

- More hygienic food preparation and safer cooking techniques can be preferred .
- Their should be more sanitary handling of potentially contaminated seafood required .
- The elimination of the first intermediate host, the snail can be practicized.