



Diagnostic Parasitology

Medically Important Trematodes (flukes)

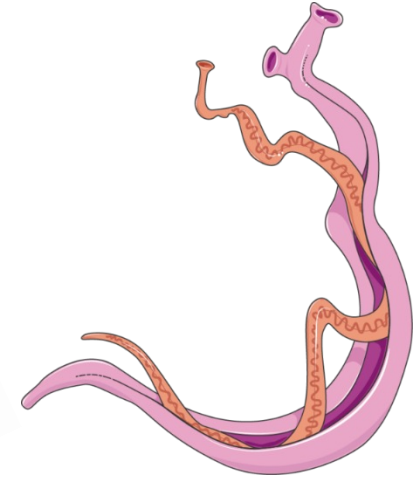
Disclaimer

- This presentation was meant to provide students with both didactic and laboratory skills as they apply to clinical parasitology. It is meant for educational purposes only and does not represent Cleveland Clinic views or practices.
- The presentation contains images and other references copyrighted by another entity or person and credits shall be given to the rightful owners of the materials and I claim no copyright to the said content.
- Most of the information was adopted from the Textbook of Diagnostic Microbiology by Mahon & Lehman (see citation) but condensed for bite sized learning.

Helminths

- Multicellular parasites
- Classified based on structure
 - Trematodes (flukes)
 - Cestodes (tapeworms)
 - Nematodes (roundworms)
- Complex life cycles where humans can serve as
 - Definitive hosts: Individual in which a parasite has its adult and or sexual reproductive stage.
 - Intermediate hosts: Individual in which a parasite has its larval and or asexual reproductive stage
 - Accidental hosts

flatworms



The Trematodes (flukes)

Intestinal

- *Fasciolopsis buski*

Liver

- *Fasciola hepatica*
- *Clonorchis sinensis*

Lung

- *Paragonimus westermani*

Life Cycle




Blood

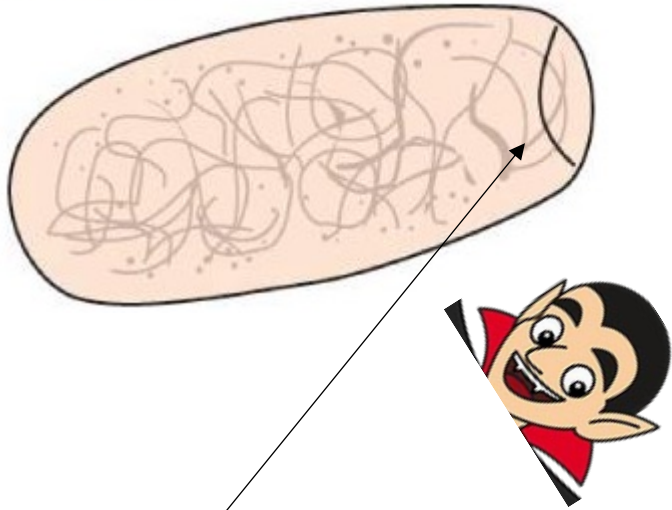
- Three medically important members
 - *Schistosoma mansoni*
 - *Schistosoma haematobium*
 - *Schistosoma japonicum*

Life Cycle



Organism	2 nd intermediate host 
<i>Fasicola hepatica</i>	Freshwater plants (eg.watercress)
<i>Fasciolopsis buski</i>	Freshwater plants (eg. water chesnuts)
<i>Paragonimus westermani</i>	Crustaceans
<i>Clonorchis sinensis</i>	Fish

Intestinal Fluke: *Fasciolopsis buski* (giant intestinal fluke)

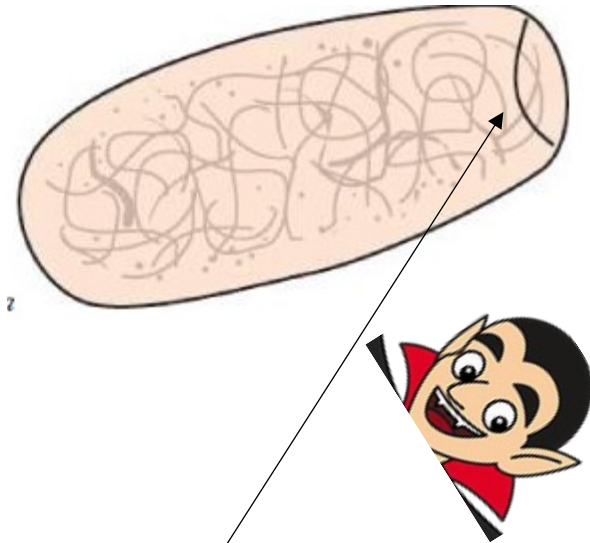


Egg
130-140 μm
Unshouldered operculum



Adult
2-7 cm long

Liver Fluke: *Fasciola hepatica* (sheep liver fluke)



Egg

Unshouldered operculum

Identical to *F. buski*



Adult

3cm long

Liver Fluke: *Clonorchis sinensis* (chinese liver fluke)



Egg

29-35 μm long

Prominent shoulders on operculum

Knob at opposite end

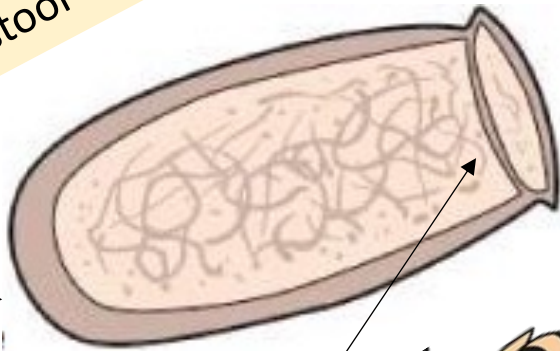


Adult

1-2.5 cm long

Lung Fluke: *Paragonimus westermani* (lung fluke)

Eggs can be found in the sputum and stool

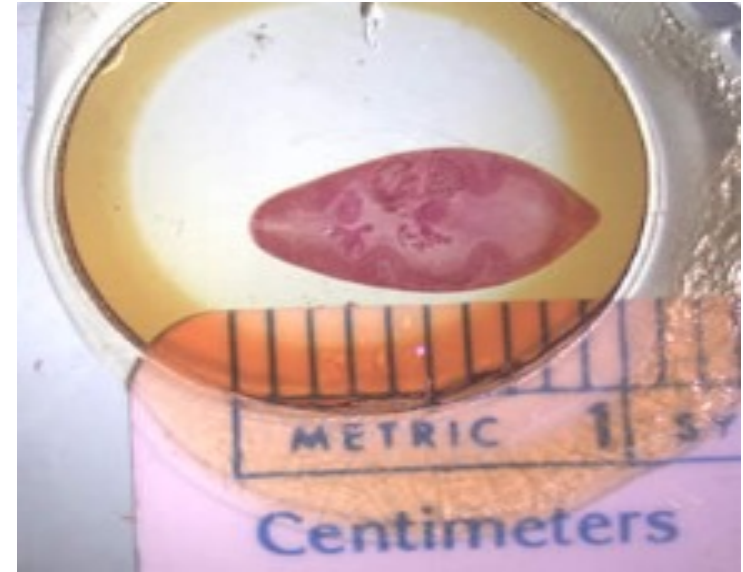


Egg

80-115 x 48-60 μm

Shoulder operculum

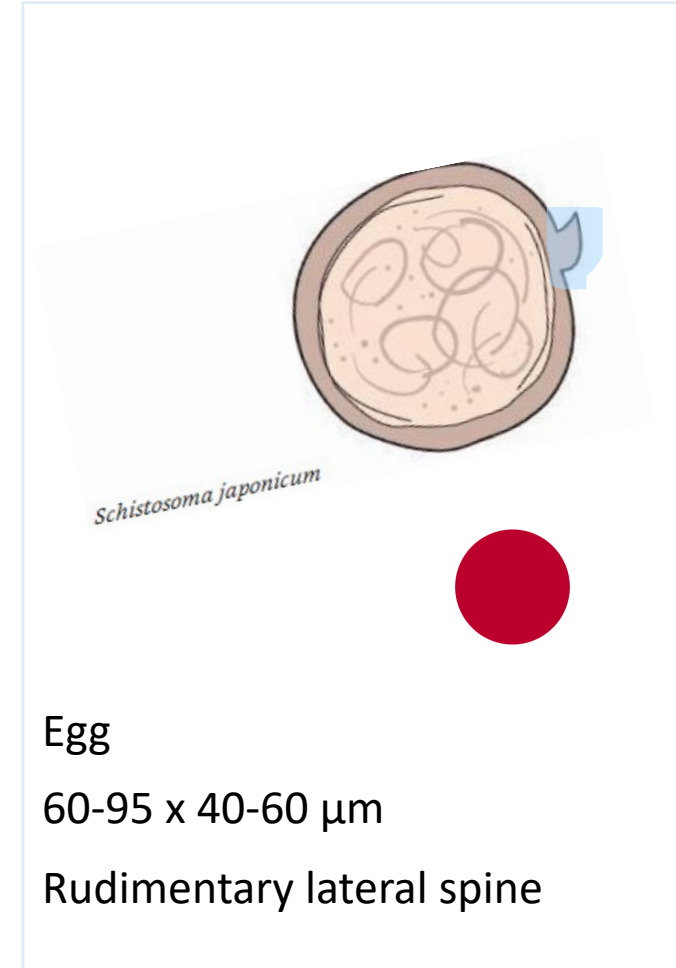
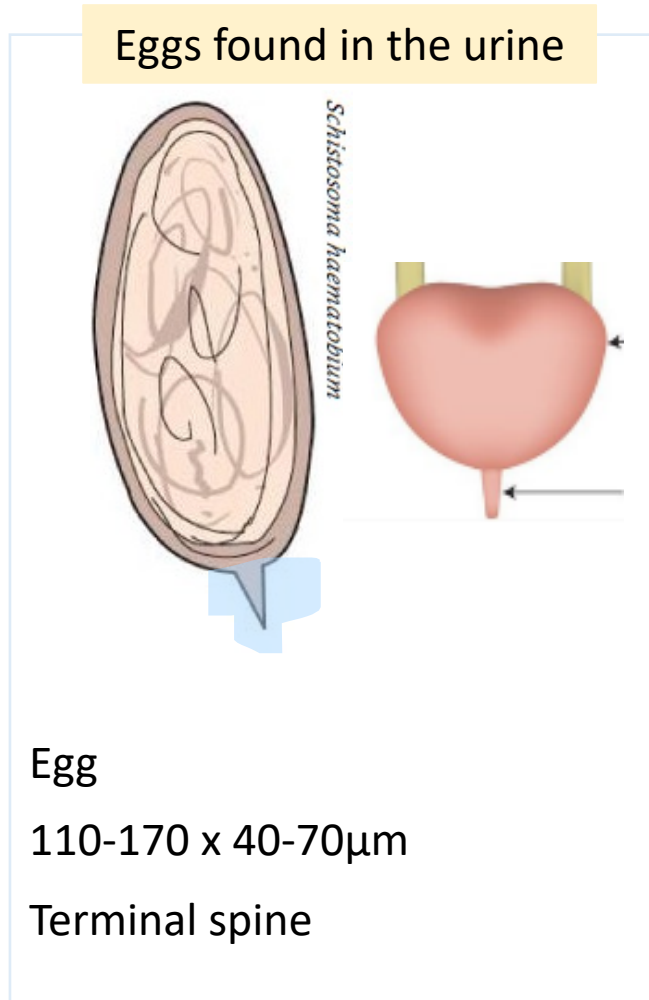
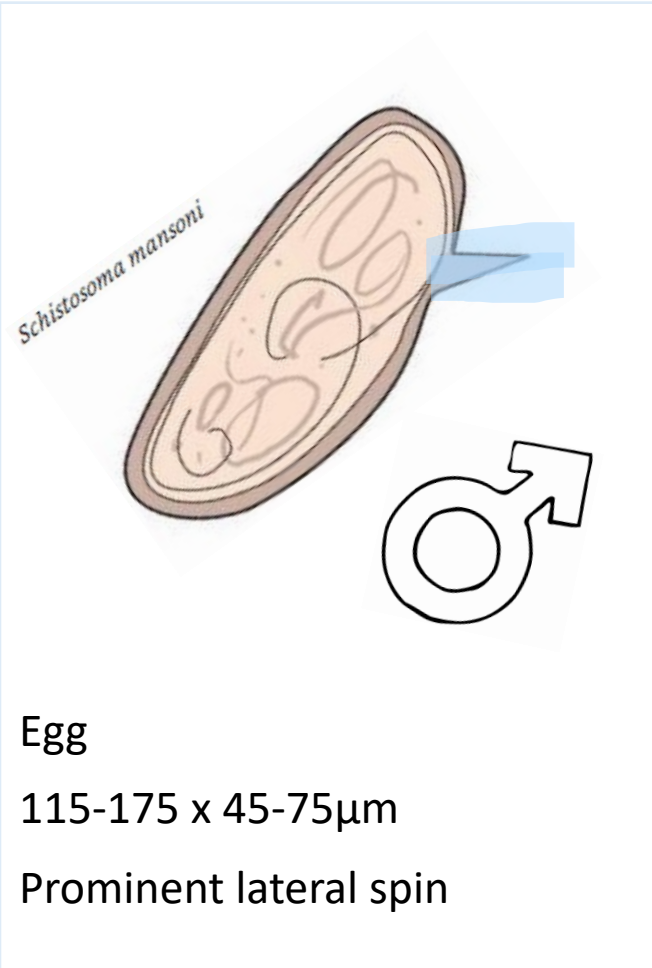
Shell thickens at the end opposite to the operculum



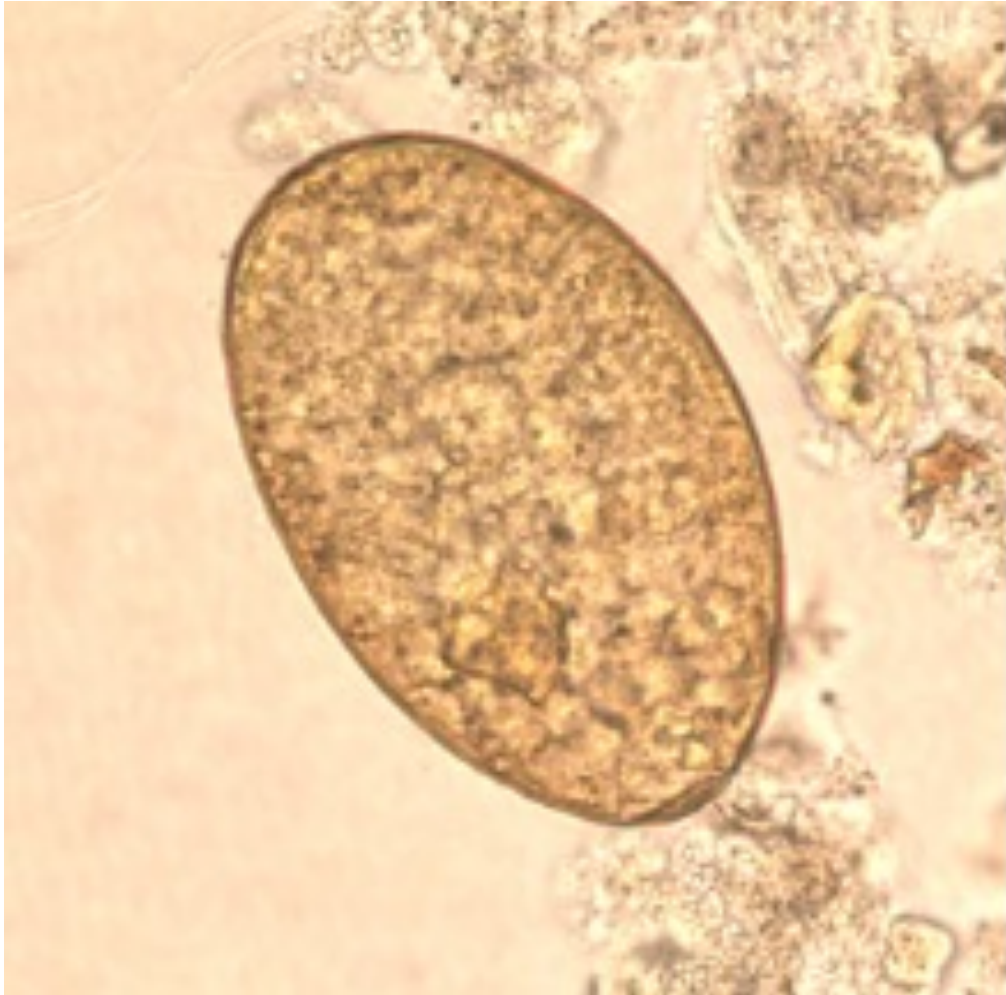
Adult

1 cm long

Blood Flukes: *Schistosoma* species



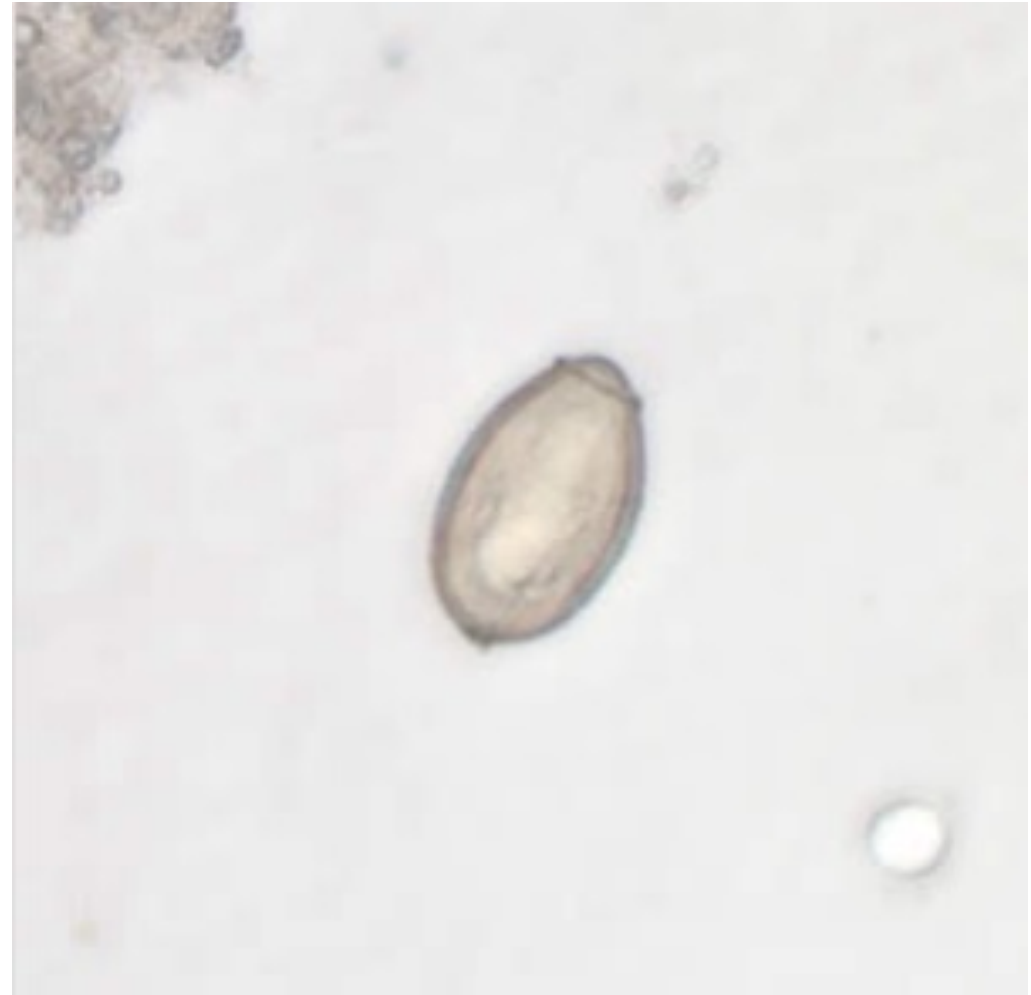
Trematodes Ova and Parasite Examination (OVAP)



Iodine wet preparation



Trematodes Ova and Parasite Examination (OVAP)



Iodine wet preparation



Trematodes Ova and Parasite Examination (OVAP)



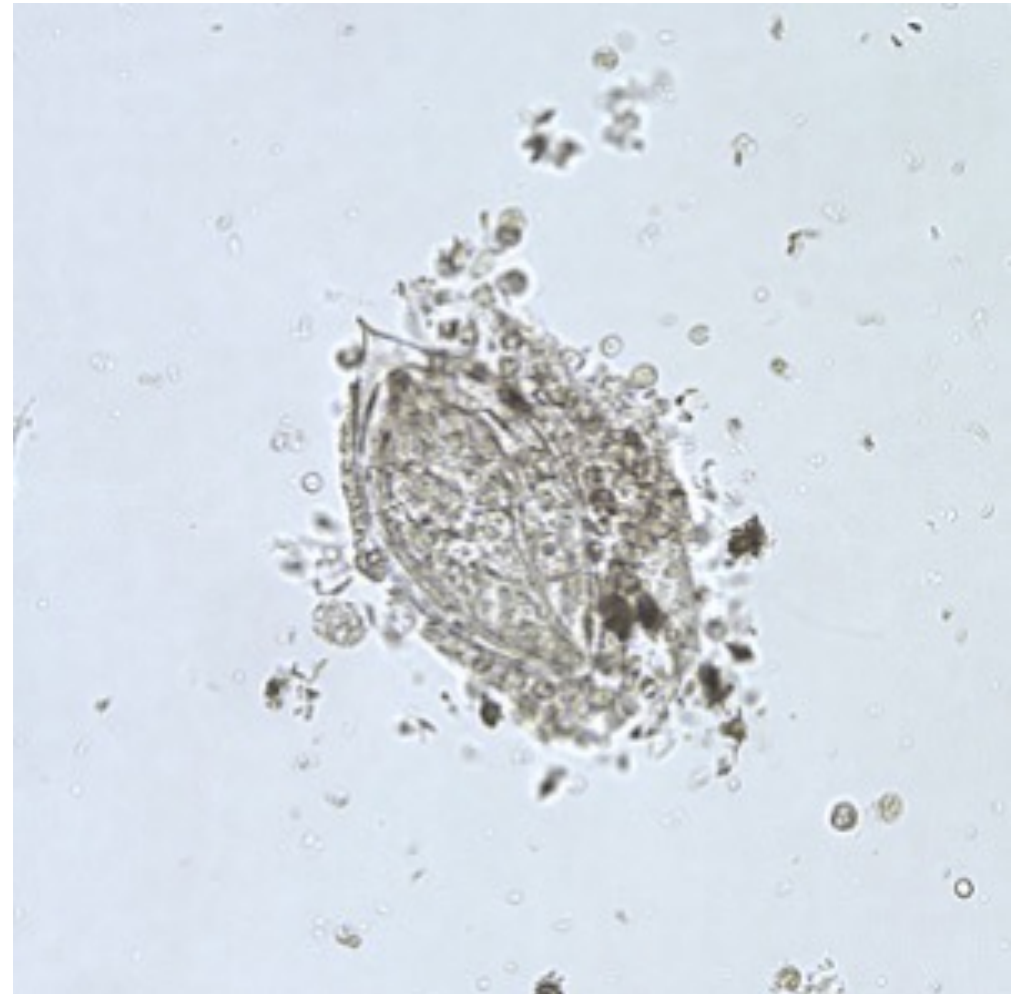
Iodine wet preparation



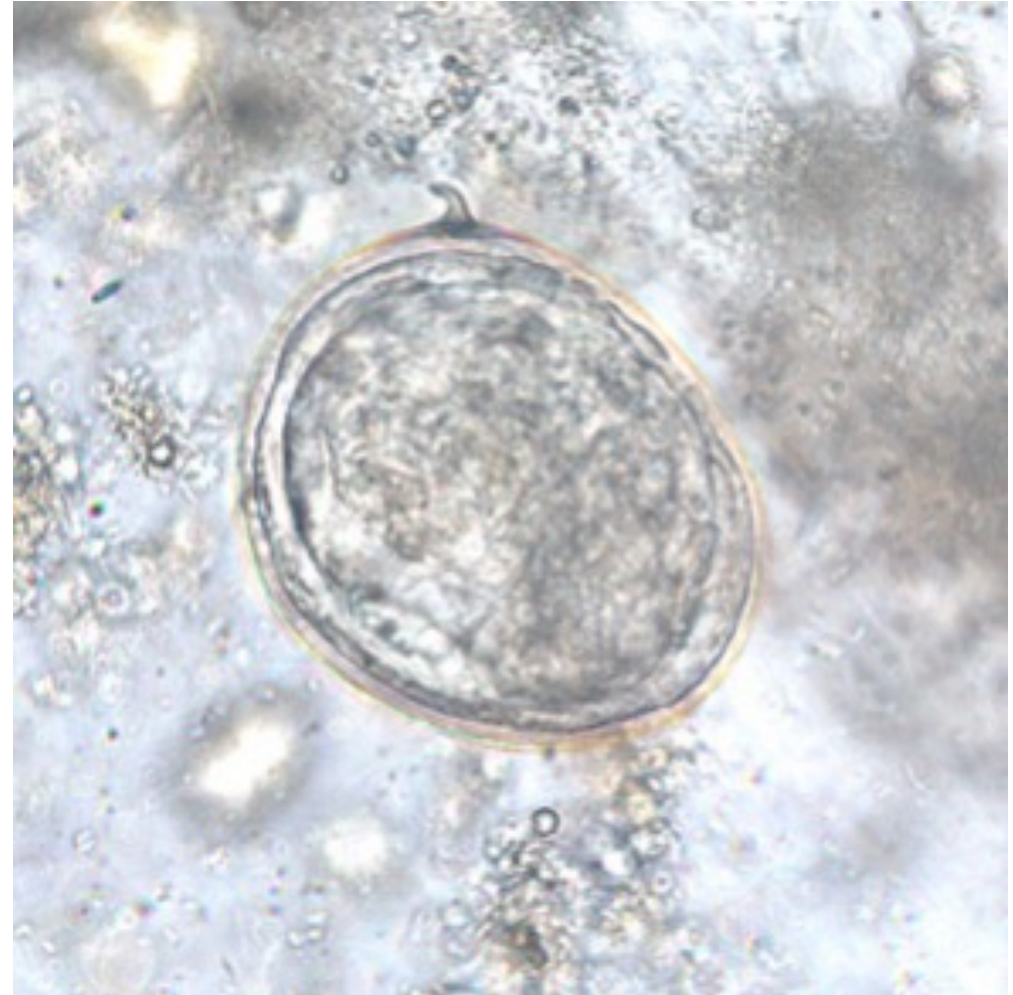
Trematodes: Ova and Parasite Examination (OVAP)



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Trematodes: Ova and Parasite Examination (OVAP)





REMEMBER!

Helminth Names

Common name of worms give you
clues to the distribution and/or
location of adult worms.

*(Ex. Clonorchis-Chinese Liver Fluke,
adults found in the liver)*

Citations

- Mahon, C. R., & Lehman, D. C. (2023). *Textbook of Diagnostic Microbiology* (7th ed., pp. 639-707). Elsevier.
- Centers for Disease Control and Prevention (2019, November 20). DPDx-Laboratory Identification of Parasites of Public Health Concern. Retrieved November 13, 2023, from <https://www.cdc.gov/dpdx/az.html>
- Jarreau, P., & Bakeer, M. (2011). *Clinical laboratory science review: A bottom line approach*. Louisiana State University Health Sciences Center Foundation.