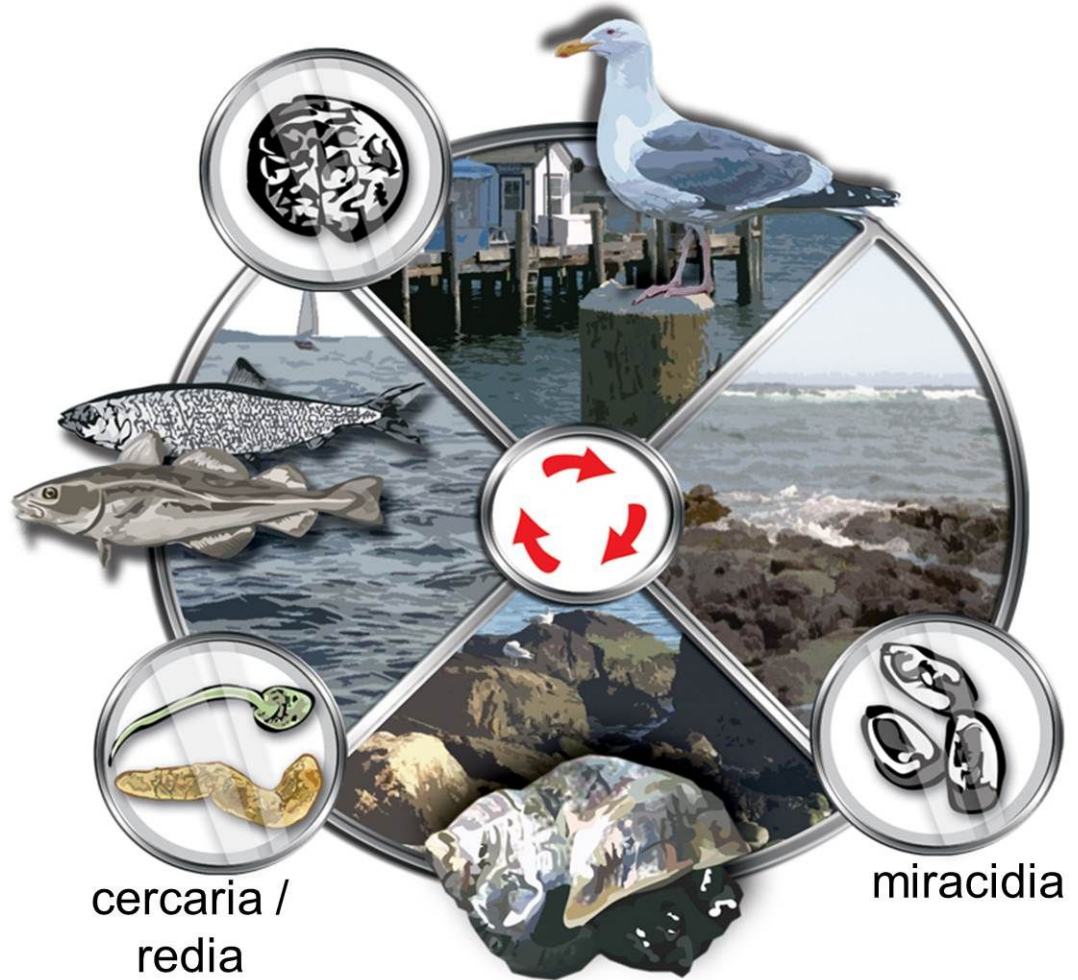


Lab 2: Parasite Life History Strategies

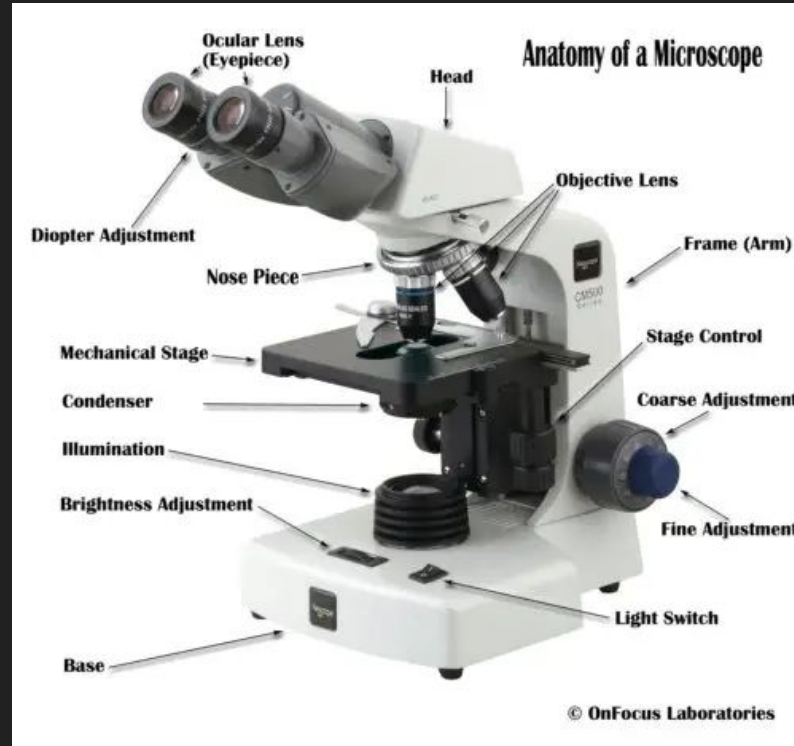


Today's lab (01/24)

- 1) Presentation: Talk through some basic terms and parasite life history strategies
- 2) Scope work: Look at some complex life-cycle parasite specimens
- 3) Case Study: An ecological approach to Guinea Worm control



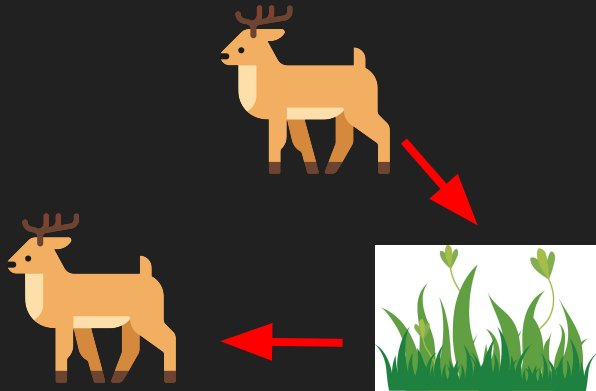
Reminder: Make sure you know your microscope anatomy



Basic Terms For Parasite Life Cycles

Simple/Direct Life Cycle

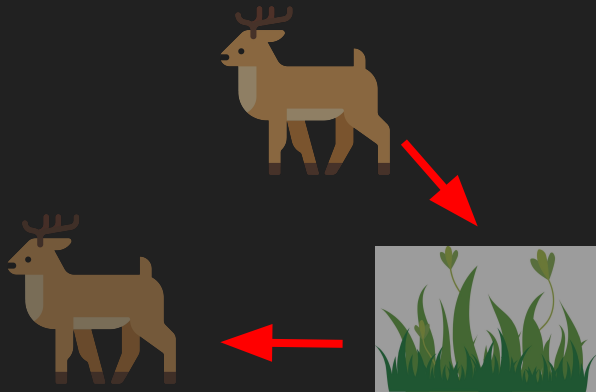
- only use a single (definitive) host species in their life



Basic Terms For Parasite Life Cycles

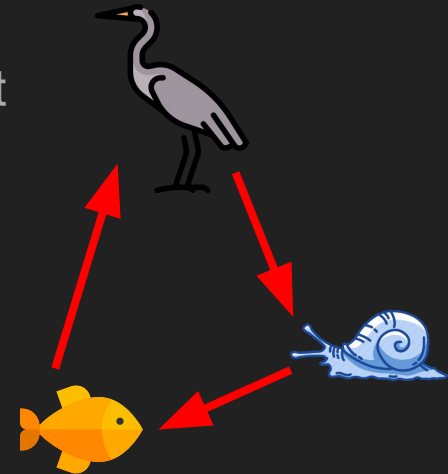
Simple/Direct Life Cycle

- only use a single (definitive) host species in their life



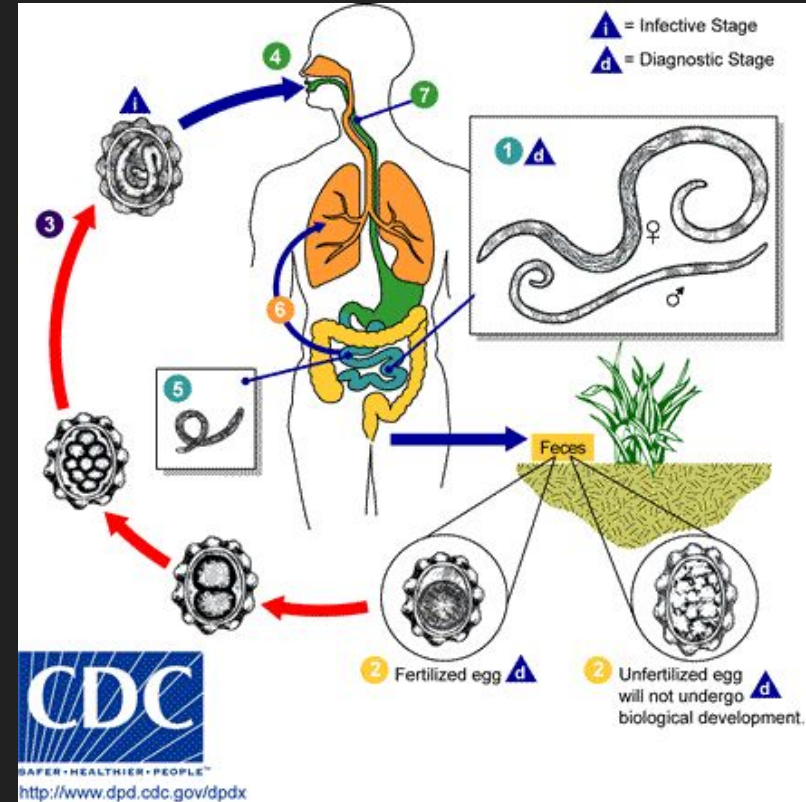
Complex/Indirect Life Cycle

- Need to use multiple host species in sequence to successfully develop and reproduce.
- Immature stages infect intermediate hosts
- Mature Stages infect definitive host



Ascaris lumbricoides (Nematoda)

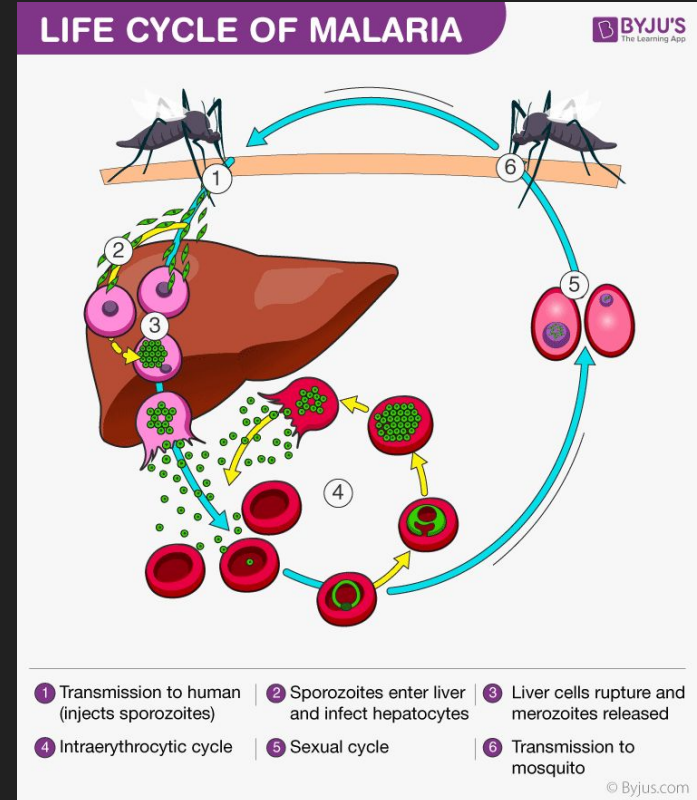
- Simple (Direct) life cycle
- Most common macroparasites of humans
- > 1 billion infected people worldwide
- Females produce ~200,000 eggs/day
- Adults live 1-2 years



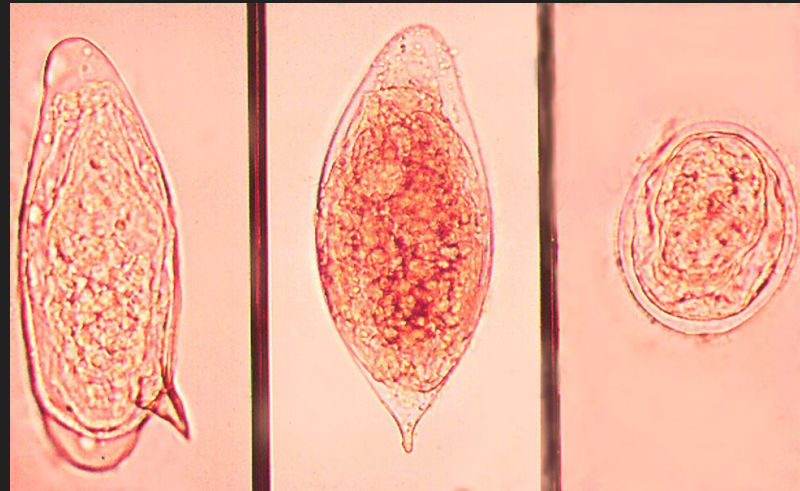
Vector-borne Disease

Malaria: *Plasmodium* spp.

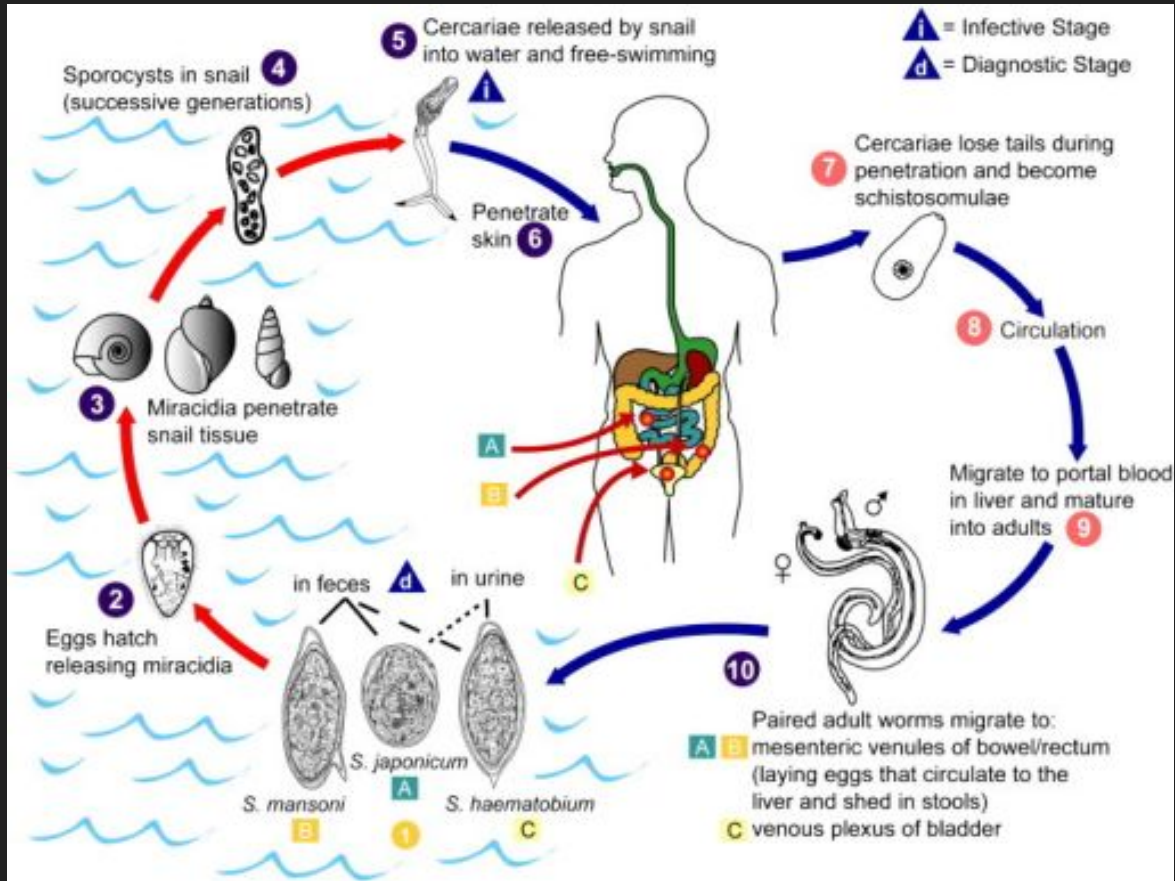
Transmitted by *Anopheles* spp. mosquitoes



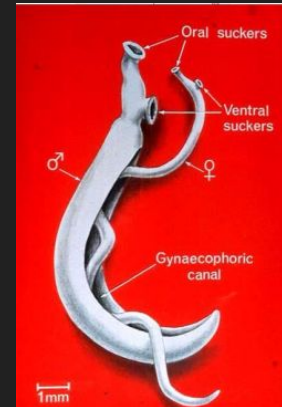
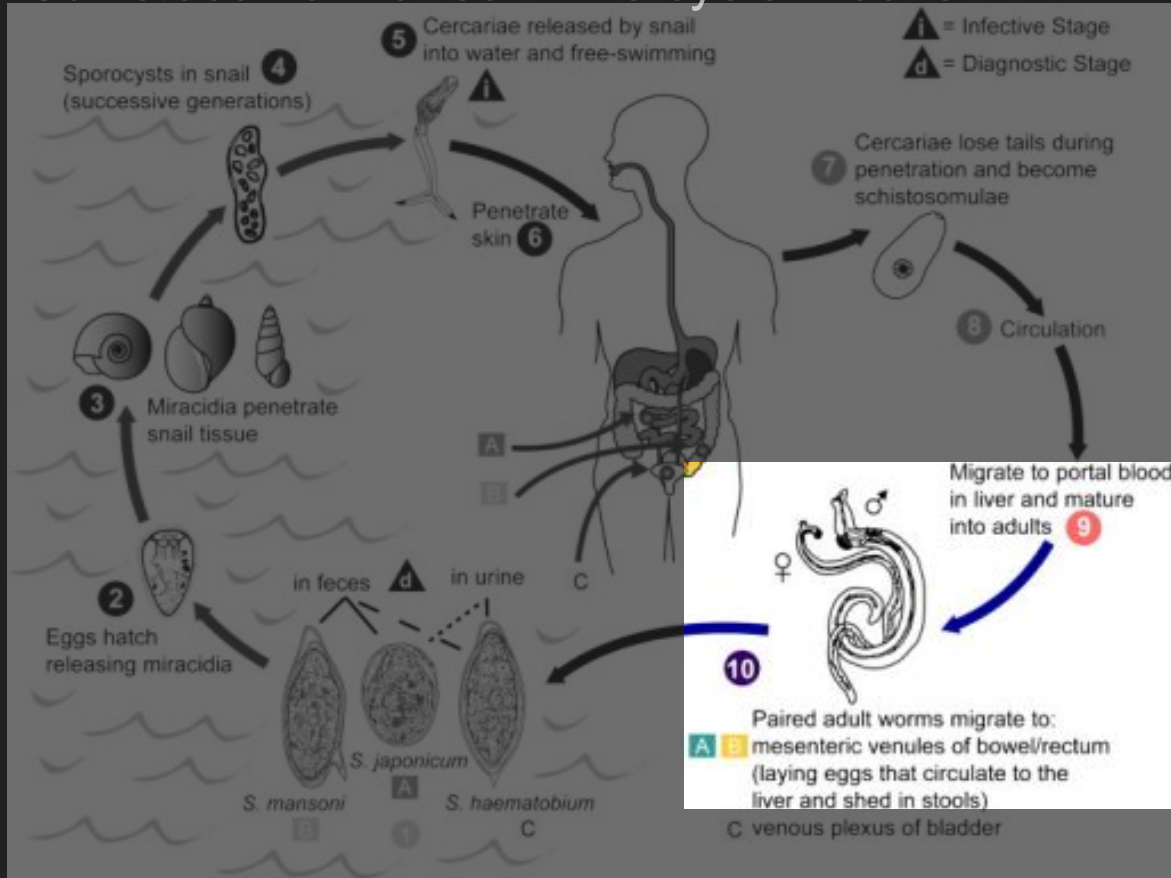
Schistosoma: the blood flukes



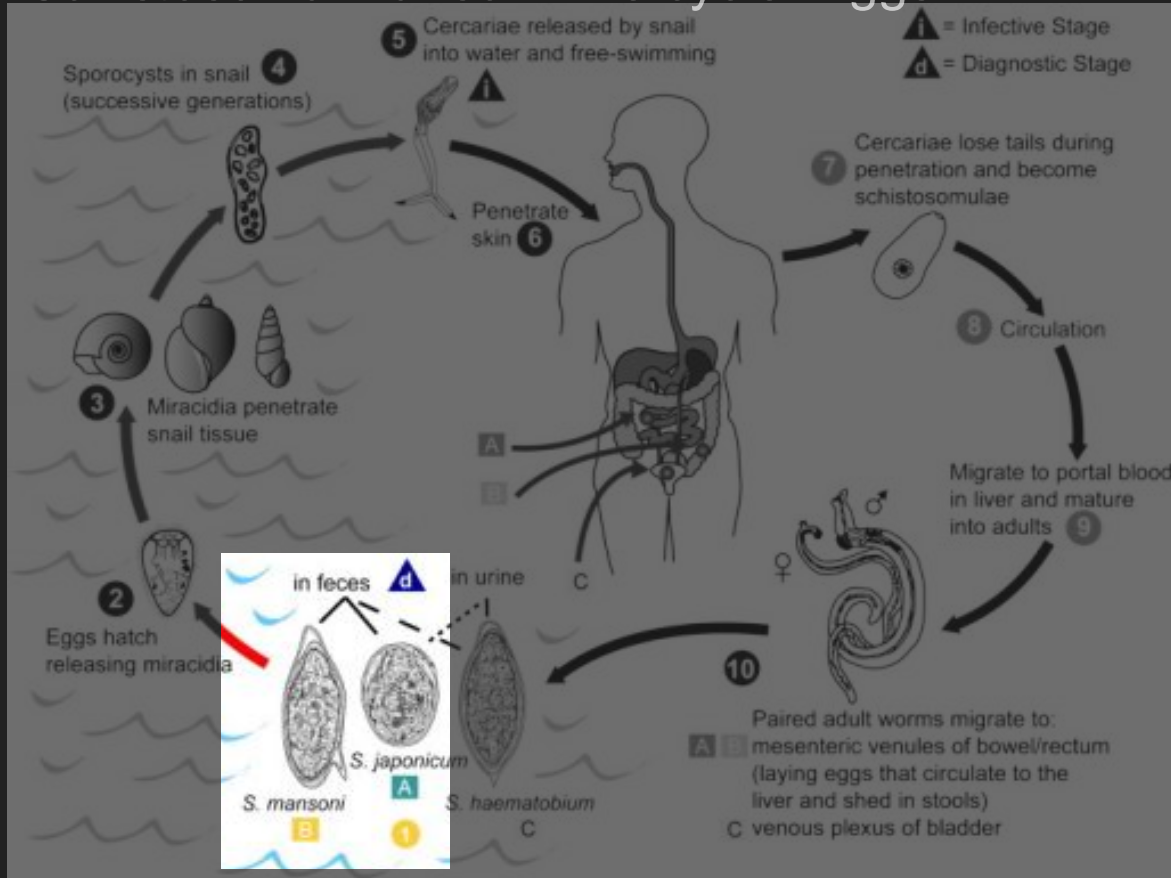
Schistosoma Life cycle



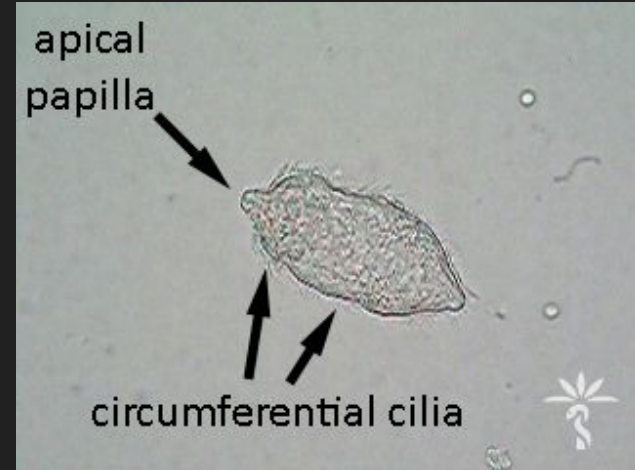
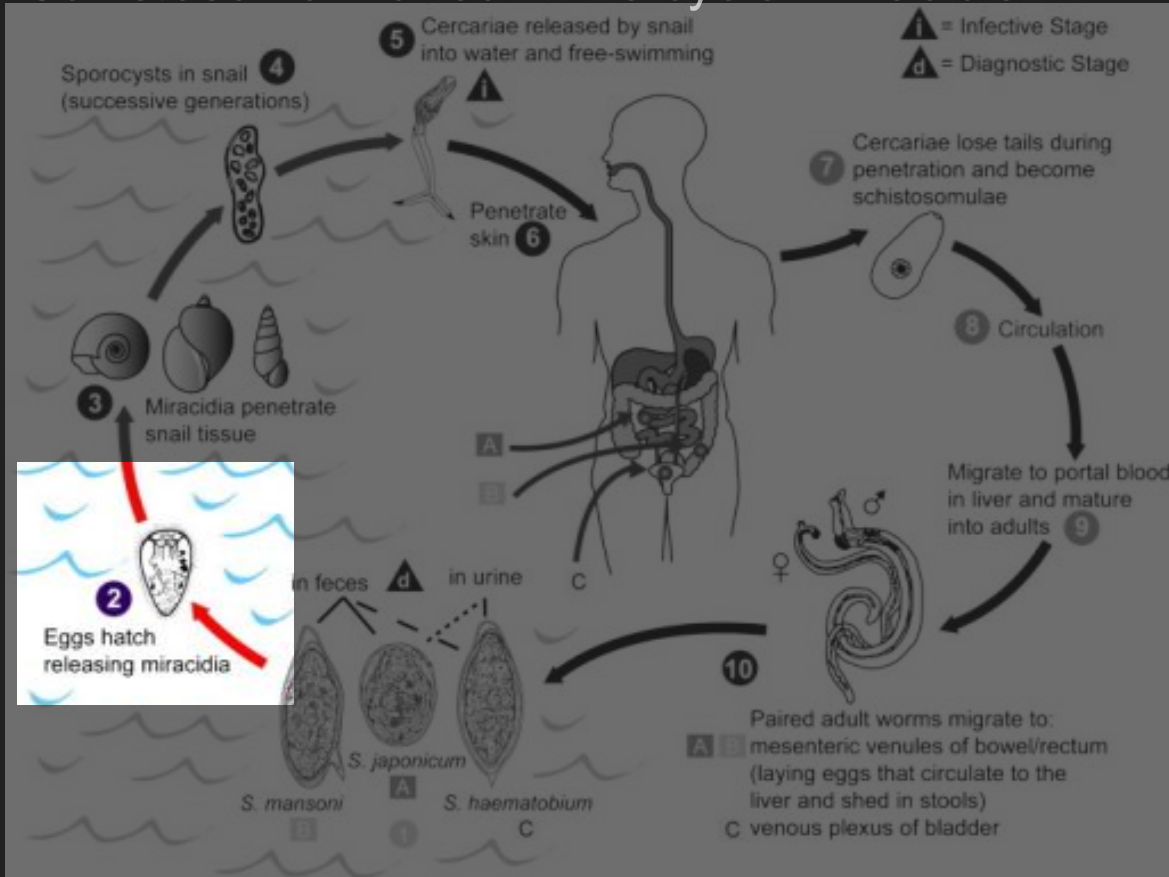
Schistosoma mansoni Life cycle: Adults



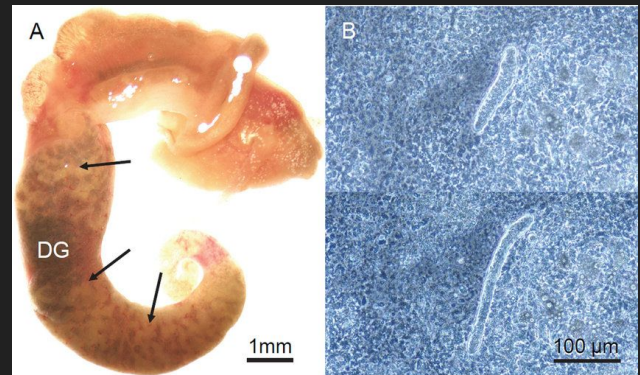
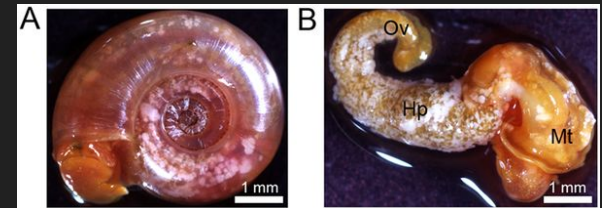
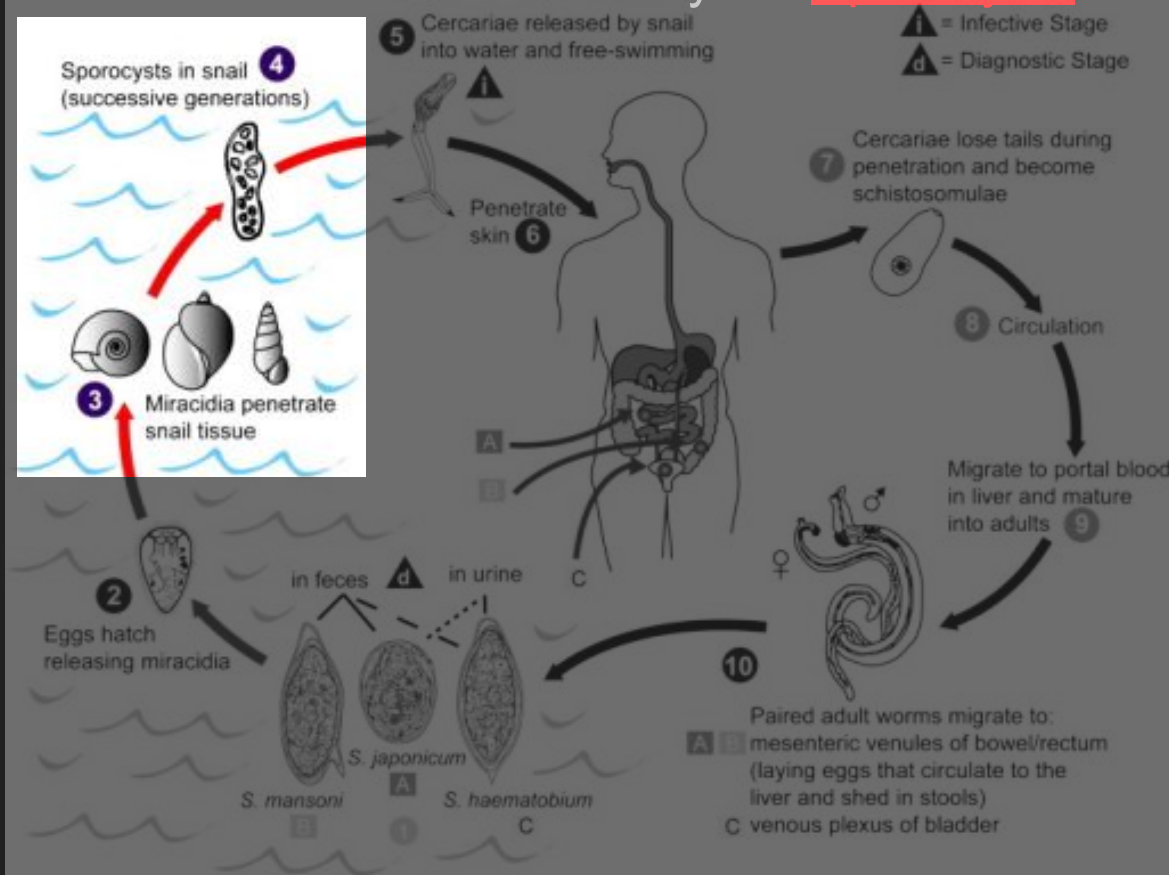
Schistosoma mansoni Life cycle: Eggs



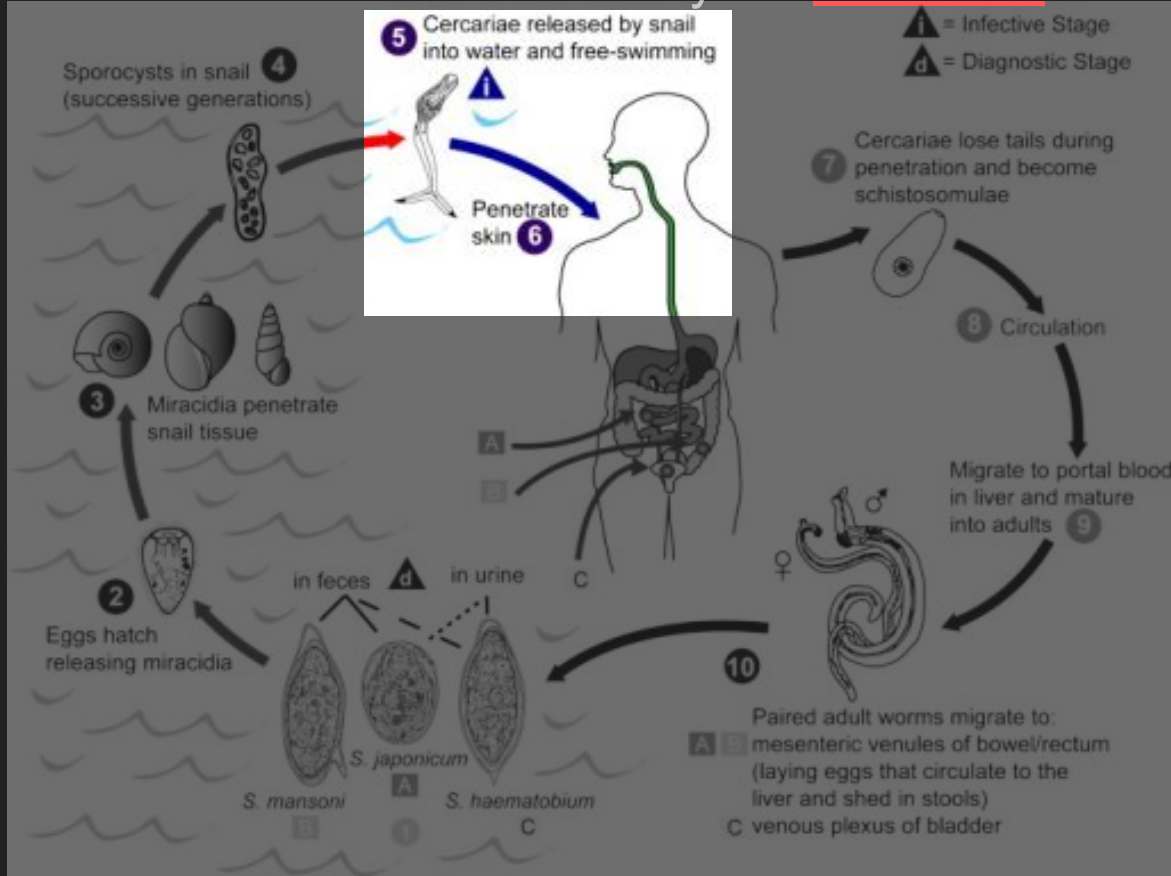
Schistosoma mansoni Life cycle: Miracidia



Schistosoma mansoni Life cycle: Sporocysts



Schistosoma mansoni Life cycle: Cercariae



Case Study: *Dracunculus medinensis*

Guinea Worm

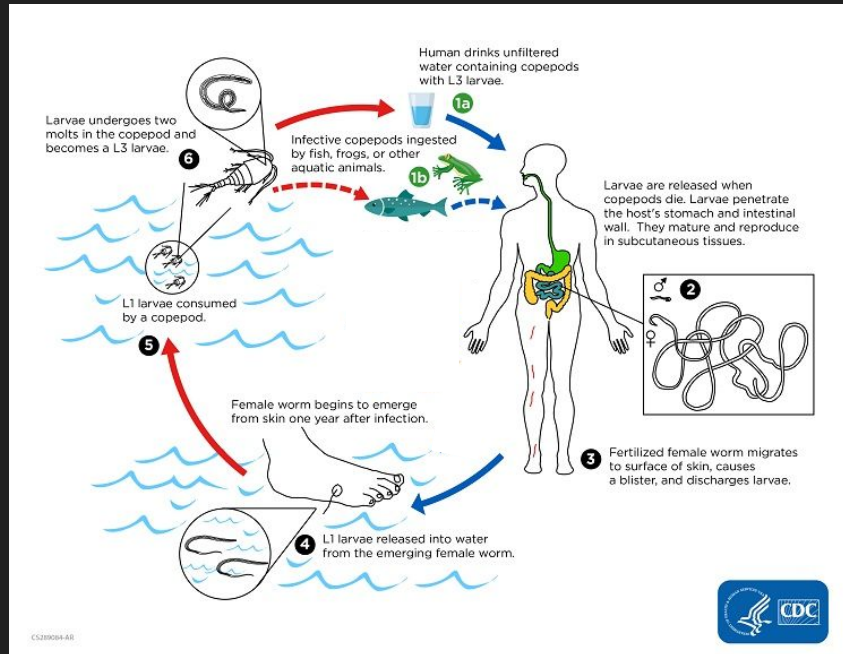
aka

“The Fiery
Serpent”



Guinea Worm: *Dracunculus medinensis*

A Complex Life Cycle Parasite, responsible for the human disease Dracunculiasis



Dracunculiasis

After infection, male and female worms penetrate the gut tract and mate within the body cavity

Approximately 1 year post-infection, females migrate to exit site-usually lower limb

Creates painful blister, which eventually bursts

Worm slowly emerges over several weeks

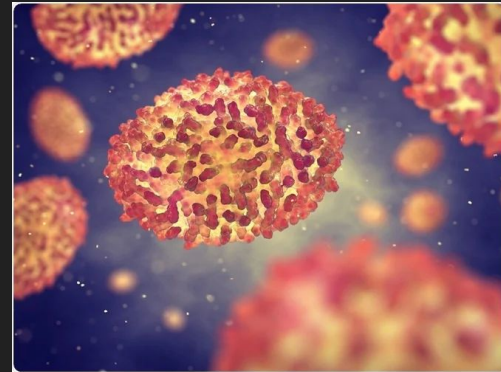


Dracunculiasis

Causes debilitating pain for several weeks

Potential secondary Bacterial Infections of the wound

Targeted for eradication by WHO (Only successfully eradicated parasite to date: smallpox *variola* virus).



Your task

Work with your group to design intervention strategies to help eradicate Guinea worm

Use your knowledge of *D. medinensis* life cycle

