

GENERAL CONCEPTS PERTAINING TO PARASITOLOGY

1. Is a type of symbiosis (two organisms interacting with each other) in which one partner (the parasite) benefits and the other (the host) is harmed.

Other kinds of symbioses include:

- Competition - Both organisms are harmed by the encounter.
- Mutualism - Both organisms benefit by the encounter.
- Commensalism - One organism benefits, the other is not affected.
- Predation - One organism is harmed (killed) the other benefits.

2. In the ideal parasitic relationship, the host is not killed but remains alive long enough for the parasite to reproduce and colonize a new host.

3. Two categories of parasites:

- A. Ectoparasites live outside the body (e.g., leeches).
- B. Endoparasites live inside the body (e.g., *Plasmodium* (causes malaria), *Giardia*, fungi, bacteria).

4. Parasites and their hosts are thought to co-evolve.

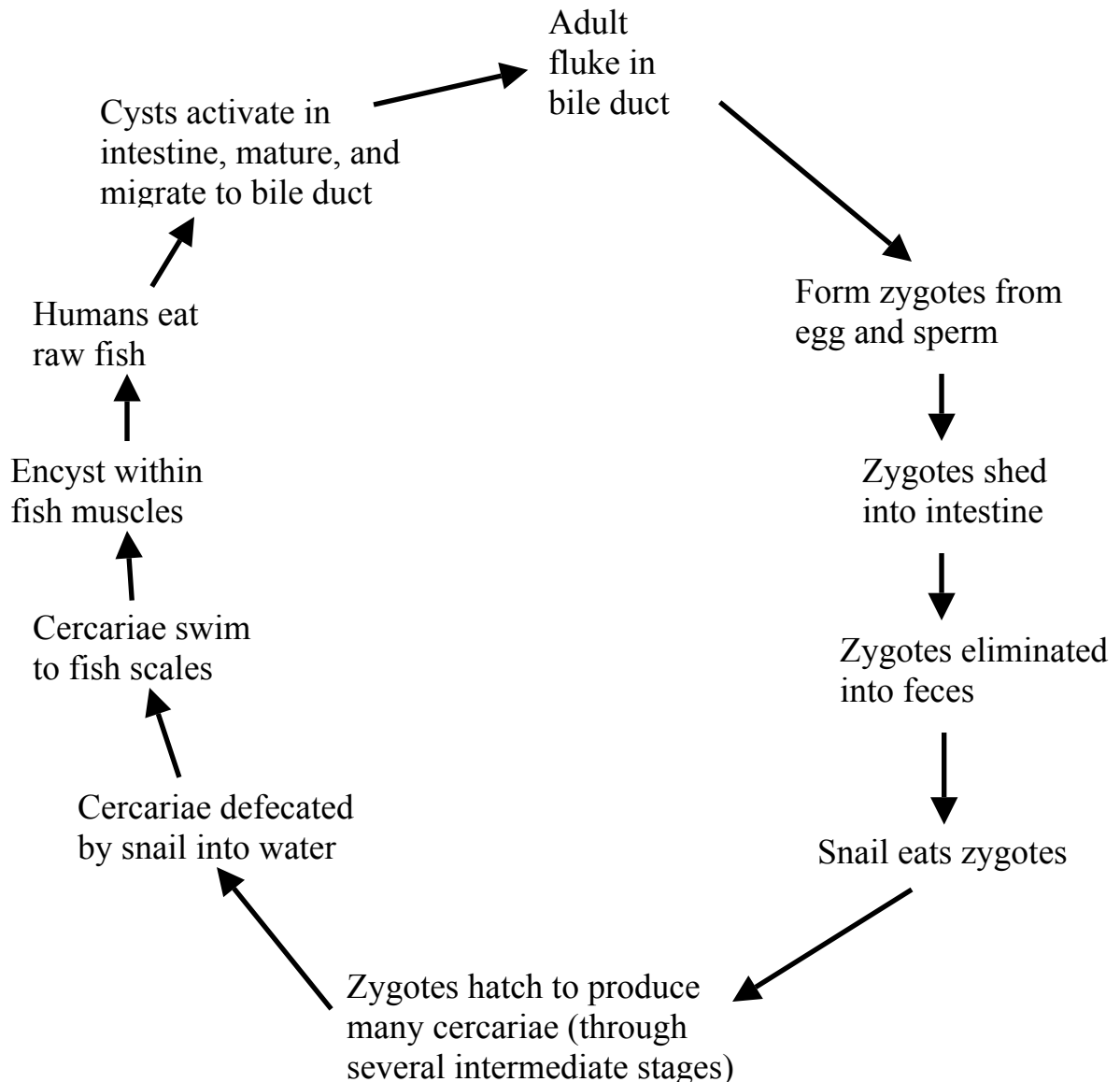
- A. Hosts are under selective pressure to evolve resistance to the parasite.
- B. Parasites are under selective pressure to overcome evolving host resistance.

5. Parasitic roundworms and flatworms have certain anatomical modifications:

- A. Degenerate (simple) body form
- B. Outer cuticle to resist being digested by host
- C. Very high fecundity, to ensure at least one offspring can colonize a new host.

6. Many parasites have complex life cycles with multiple hosts.
 - A. Primary host: The one in which the parasite reproduces.
 - B. Secondary host: The one in which the larval form occurs.
 - C. Alternate host: An intermediate host, often between the secondary and a new primary.
7. Parasitic helminthes include flukes, tapeworms, and roundworms
 - A. Affect millions of people worldwide
 - B. Symptoms vary depending on the parasite involved and the degree of infection
 - C. Humans often become infected by eating undercooked meat and unwashed vegetables
 - D. Properly disposing of human waste is an effective means of preventing spread
 - E. Parasites can be detected by looking for zygotes and parasite body parts in feces
 - F. Infected people can be treated by anthelmintic drugs to expel worms

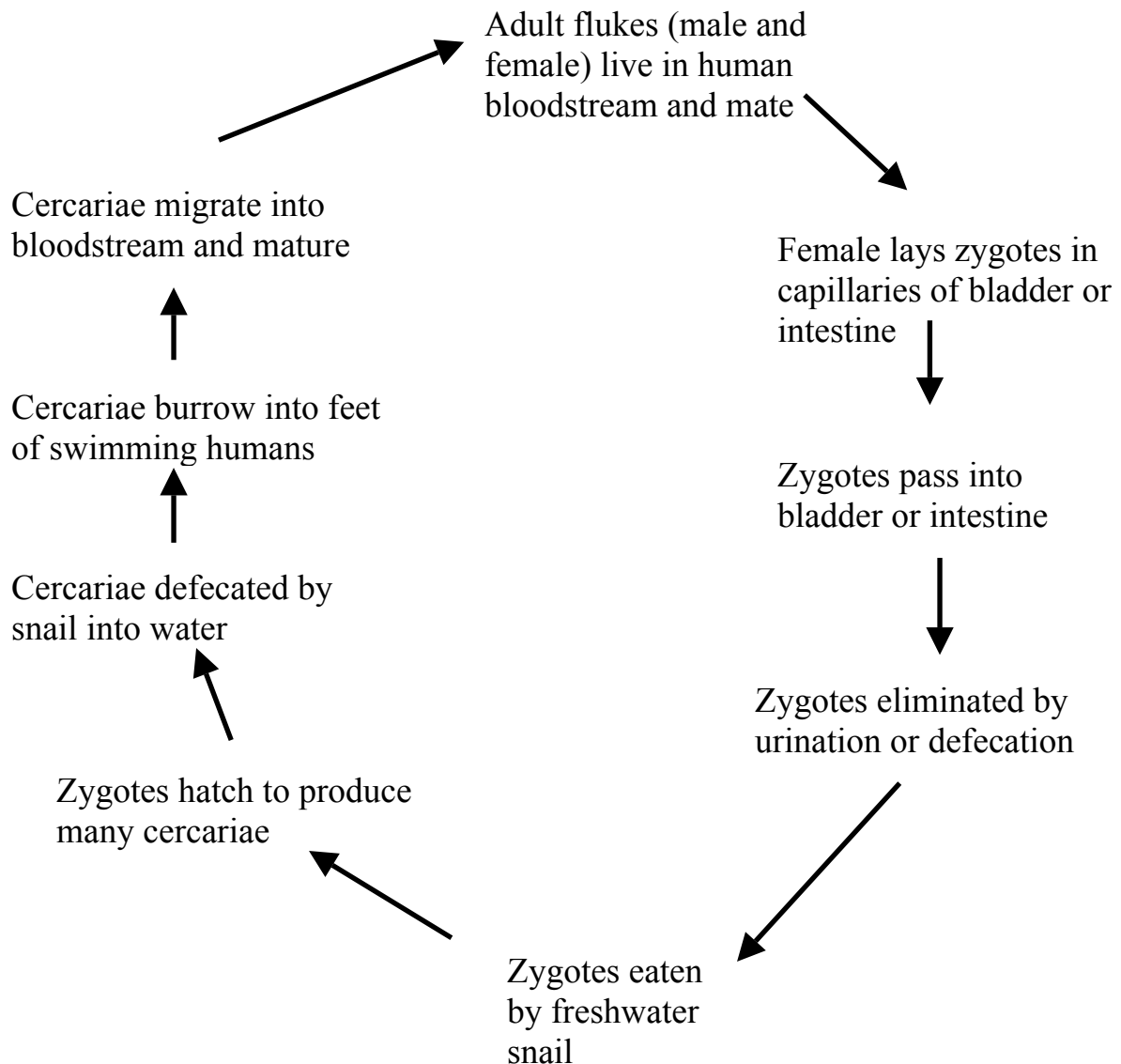
Chinese Liver Fluke (*Opisthorchis sinensis*) - Platyhelminthes



Symptoms: None in mild cases; destruction of liver, bile stones and clogging of bile duct in severe cases.

Controlled by: 1. Properly disposing of and treating human wastes.
2. Avoiding raw fish.

Blood Flukes (Schistosomiasis) (*Schistosoma* spp.) - Platyhelminthes

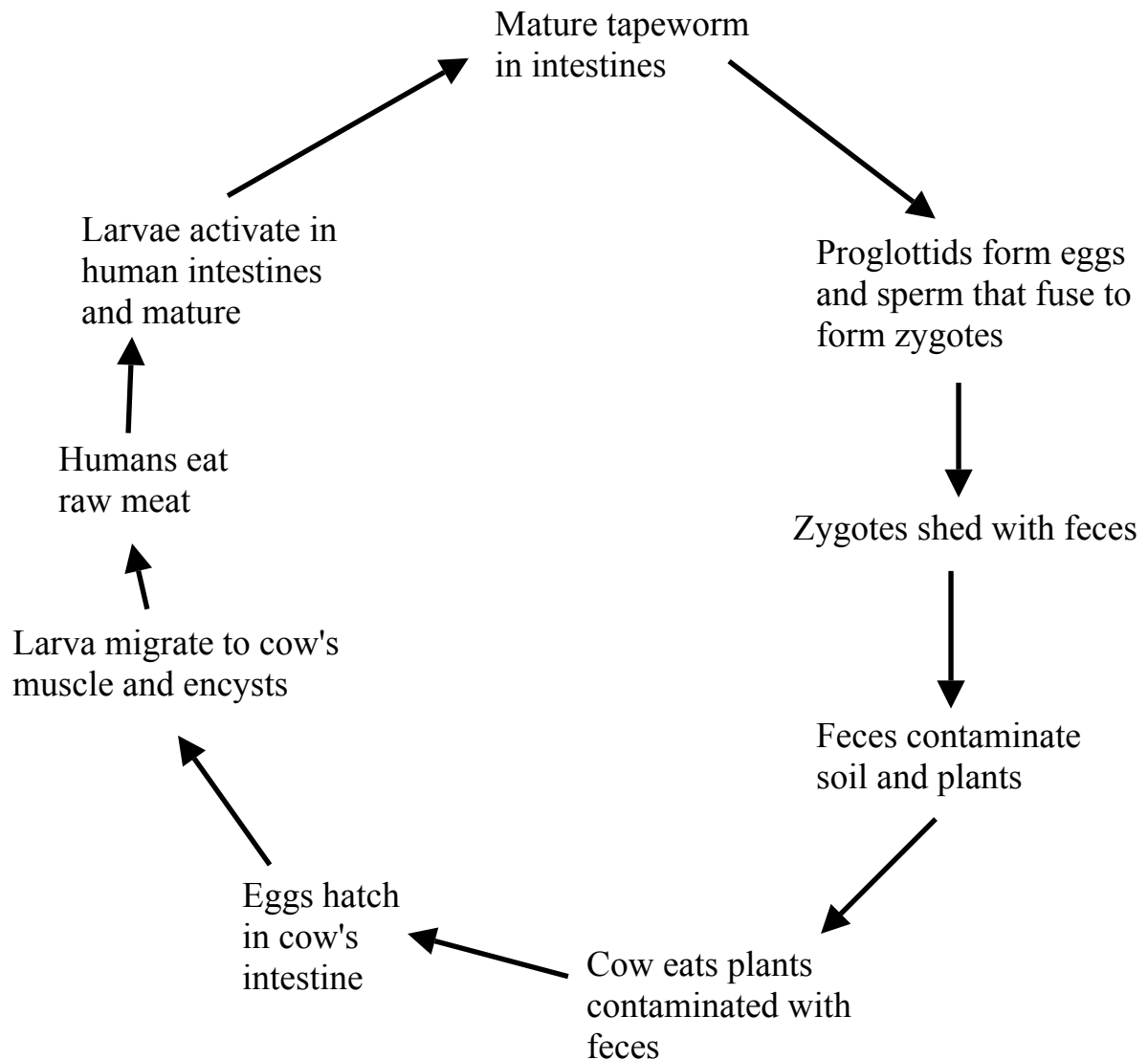


Symptoms: Enlargement of liver and spleen; bloated abdomen, wasted arms and legs, urinary disorders.

Controlled by: 1. Properly disposing of and treating human wastes.
2. Avoiding swimming in freshwater in tropics

BEEF TAPEWORM

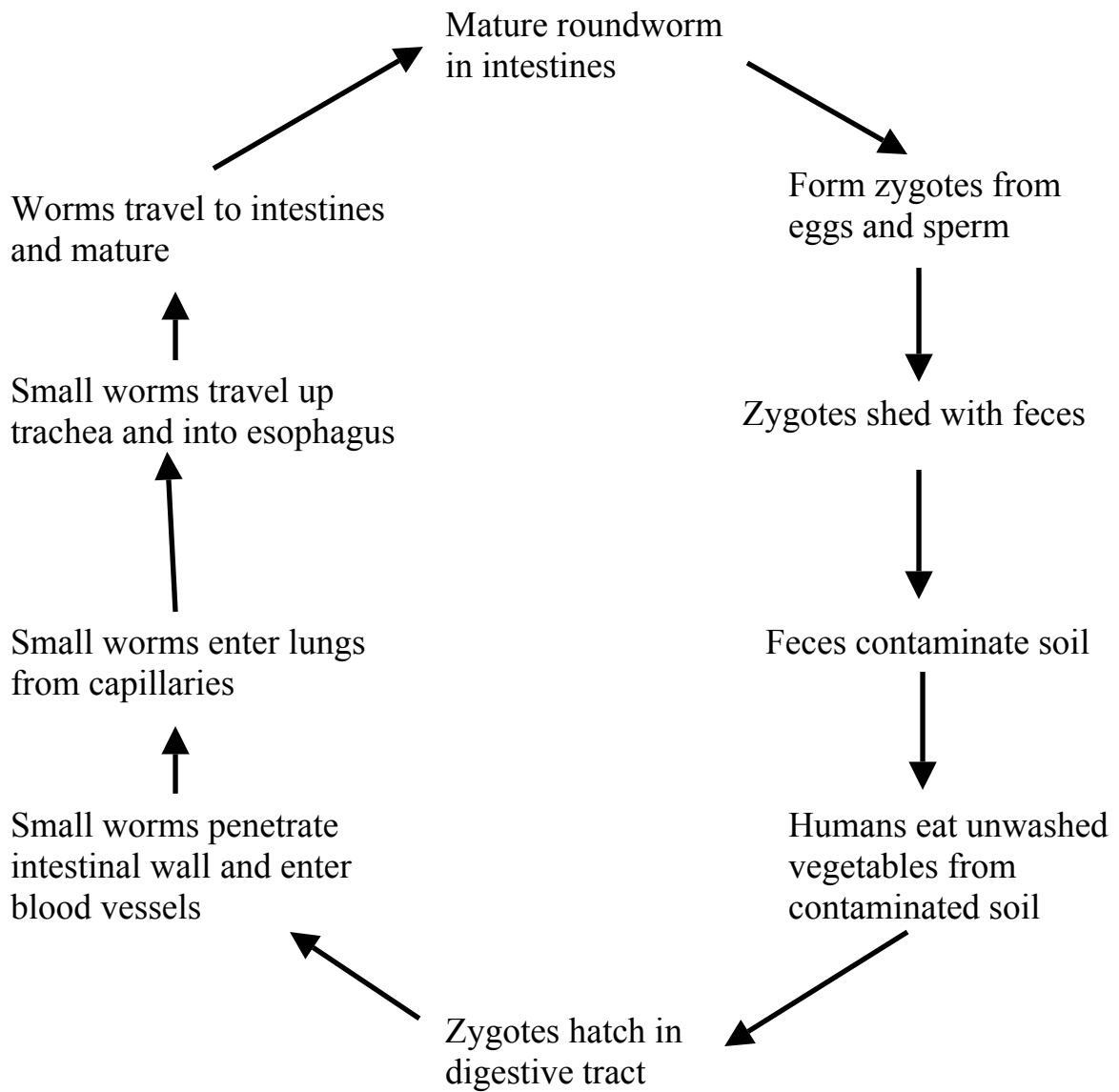
(*Taenia* spp.) Platyhelminthes



Symptoms: Diarrhea, loss of weight and perforation of intestine

Controlled by: 1. Properly disposing of and treating human wastes
2. Avoiding raw (rare) meat

INTESTINAL ROUNDWORM (*Ascaris* spp.) - Nematoda



Symptoms: Diarrhea and intestinal disorders

Controlled by: 1. Properly disposing of and treating human wastes
2. Carefully washing vegetables

MISCELLANEOUS PARASITES OF HUMANS CAUSED BY FLATWORMS AND ROUNDWORMS

Name	Symptoms	Means of Infection
Platyhelminthes:		
Swimmer's itch	Skin irritated after swimming in contaminated water	Burrowing of fluke larvae into skin
Bladder worm	Cysts (up to the size of an orange)	Infected dogs licking people's hands or faces
Pork tapeworm	Intestinal disorders	Eating raw pork
Fish tapeworm	Intestinal disorders	Eating raw fish
Nematoda:		
Pinworm	Anal itching	Females lay zygotes around anal opening, hands transfer zygotes to mouth, infection repeats
Hookworm	Anemia, lethargy	Larvae burrow through feet from moist soil and grass contaminated by human feces
Microfilaria	Bloating of body parts caused by fluid retention	Bites from contaminated mosquitos
Trichinosis	Muscular pain	Eating rare pork