

Gastro-Intestinal Tract

Practical Class

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GIT module microbiology

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Common causes of gastroenteritis

	Infants and toddlers	Children 5-12 years old	Adolescents
Common	<ul style="list-style-type: none"> • rotavirus • enteric adenovirus • salmonella • shigella • campylobacter • yersinia • giardia 	<ul style="list-style-type: none"> • Norwalk virus • Giardia • EPEC • EHEC • ETEC • salmonella • campylobacter 	<ul style="list-style-type: none"> • Norwalk virus • campylobacter • ETEC • EHEC • salmonella • shigella
Uncommon	<ul style="list-style-type: none"> • ETEC • aeromonas • plesiomonas • C. difficile • cryptosporidium 	<ul style="list-style-type: none"> • yersinia • aeromonas • C. difficile • rotavirus 	<ul style="list-style-type: none"> • B. cereus • C. difficile • yersinia • V. cholerae • E. histolytica

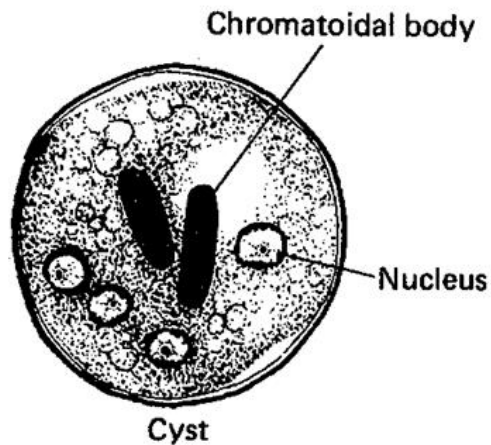
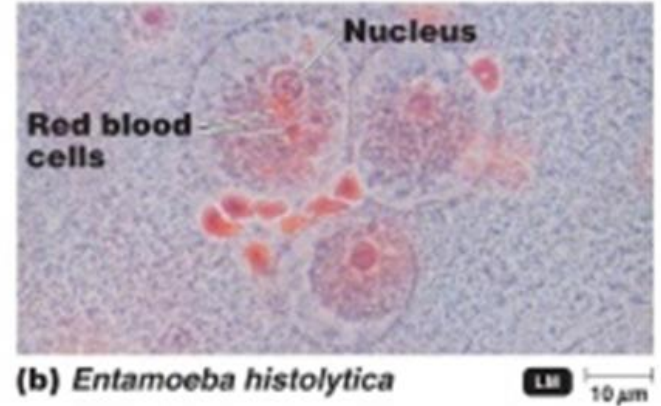
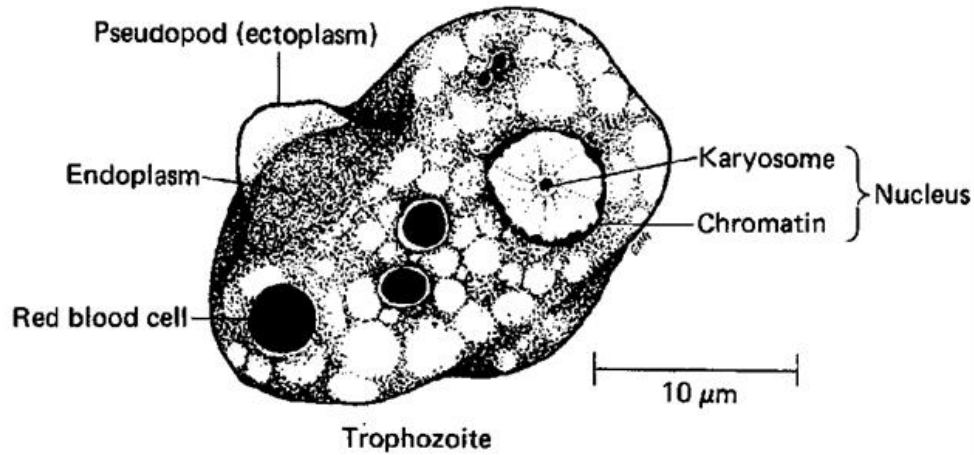
Diagnostics Microbiology for GIT infections

- Stool analysis
- Microscopic examination
- Culture
- Biochemical identification
- Toxin assay
- Antigen and antibody detection

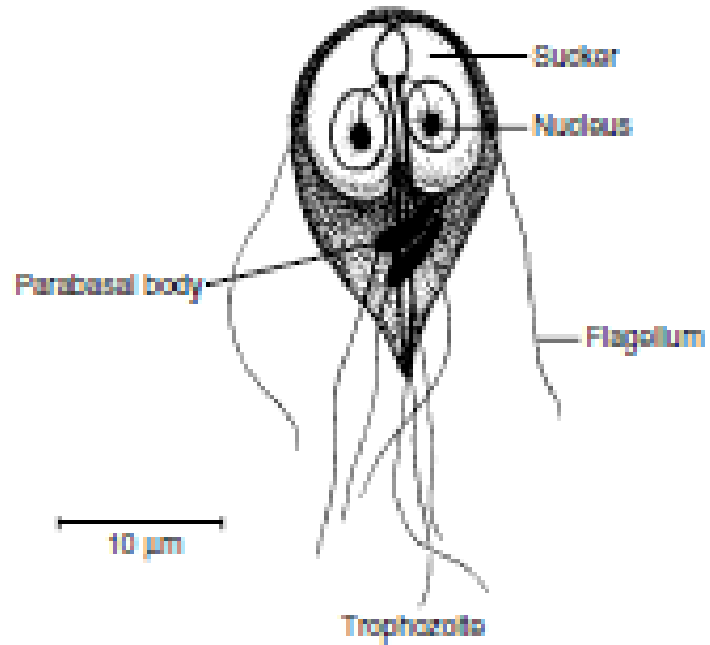
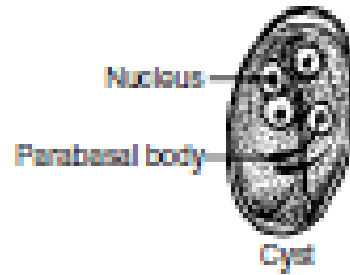
1. Stool analysis

- Macroscopic and microscopic examination
- RBCs and WBCs
- Parasites and bacteria
- Stool for occult blood

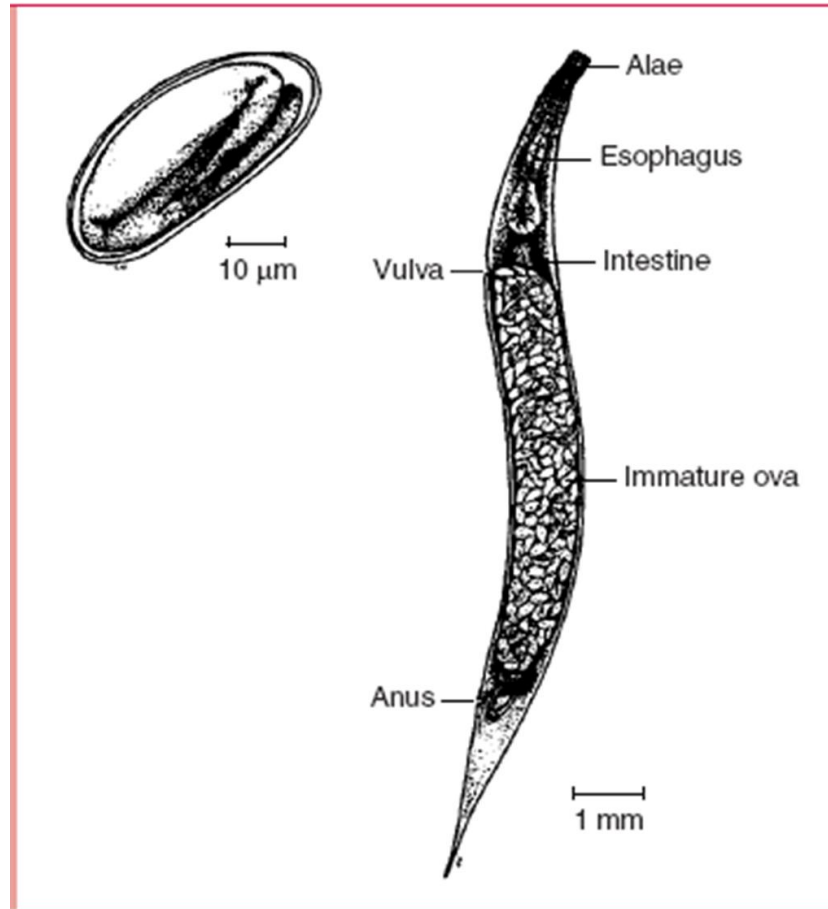
Protozoa: Entamoeba histolytica



Flagellates: Giardia lamblia



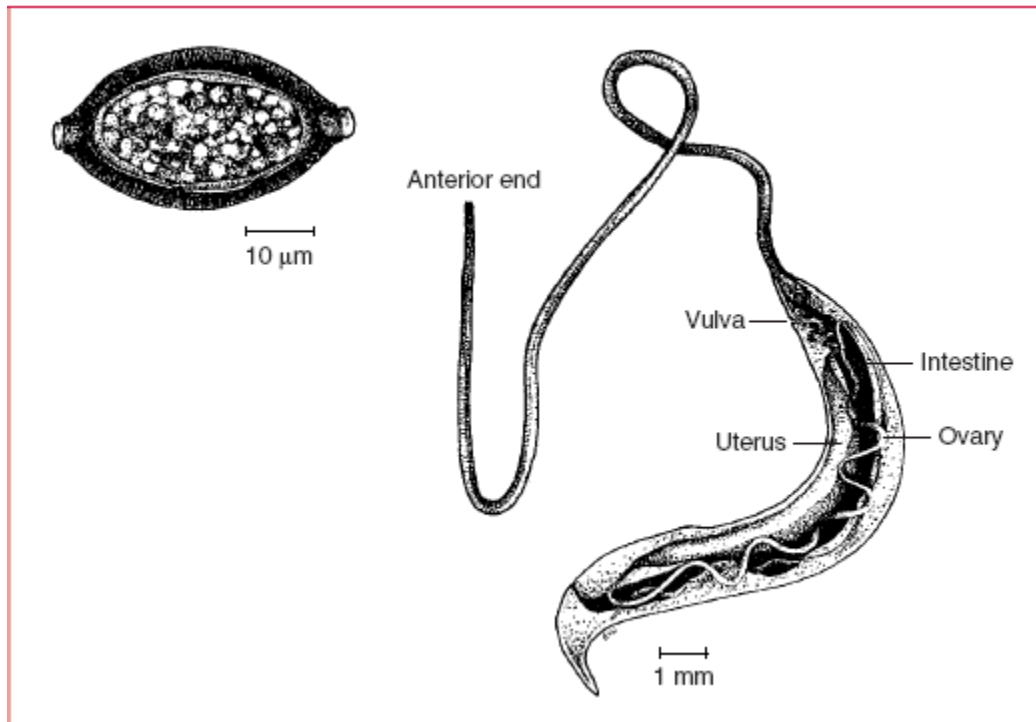
Nematodes: 1. *Enterobius vermicularis* (pinworm)



Enterobius vermicularis Eggs



Nemtaodes: 2. *Trichuris trichiura* (whipworm)



Female *Trichuris trichiura* Male

Trichuris trichiura

Female



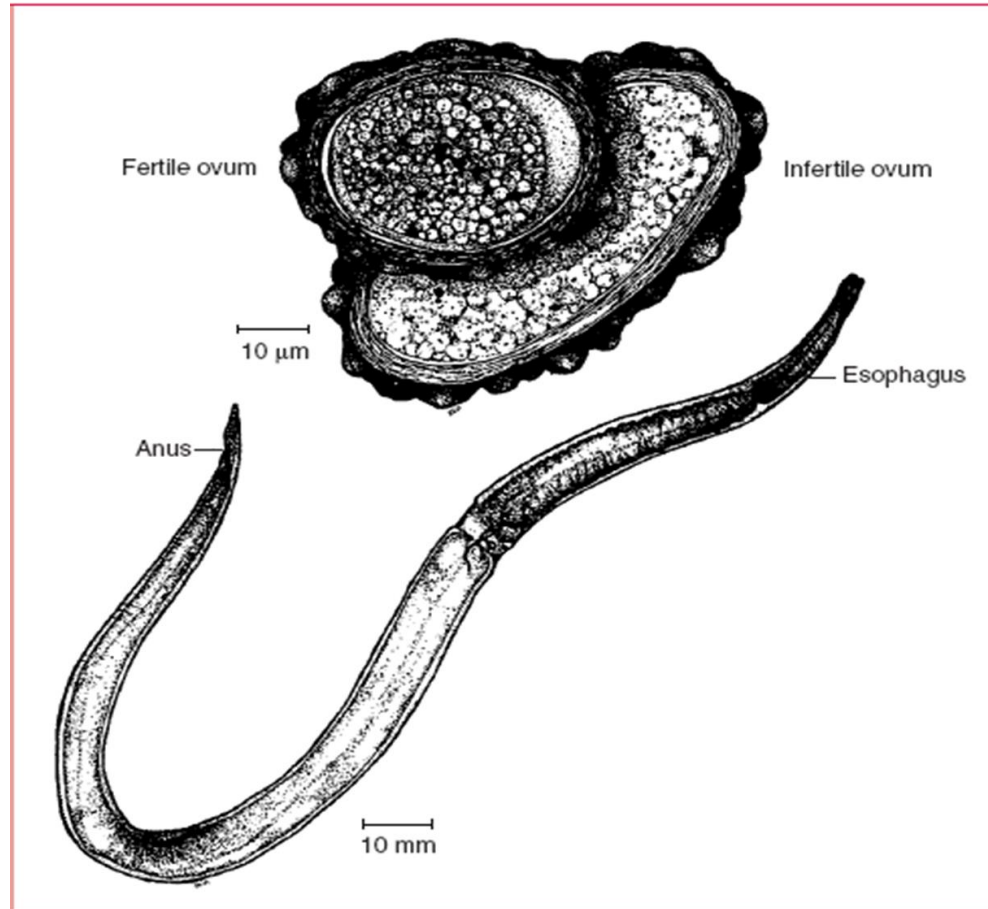
Male



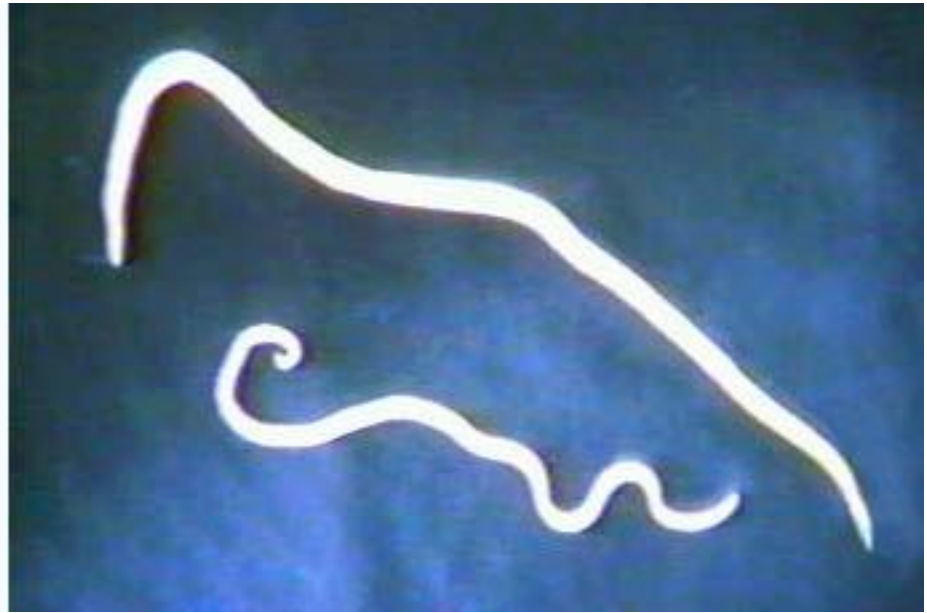
Trichuris trichiura egg



Nematodes: 3. *Ascaris lumbricoides*



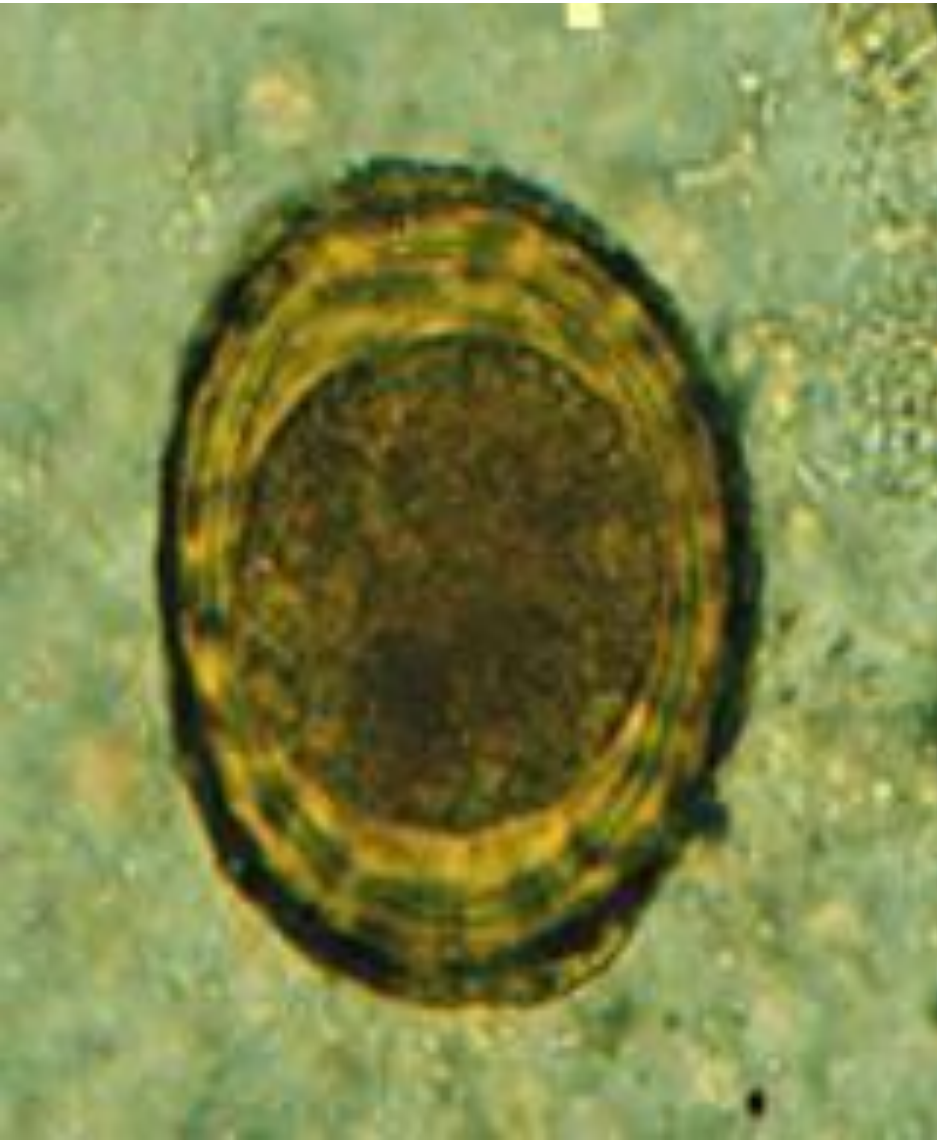
Adult worm of *A. lumbricoides*



A ball of *Ascaris lumbricoides* worms removed from the colon of an adult



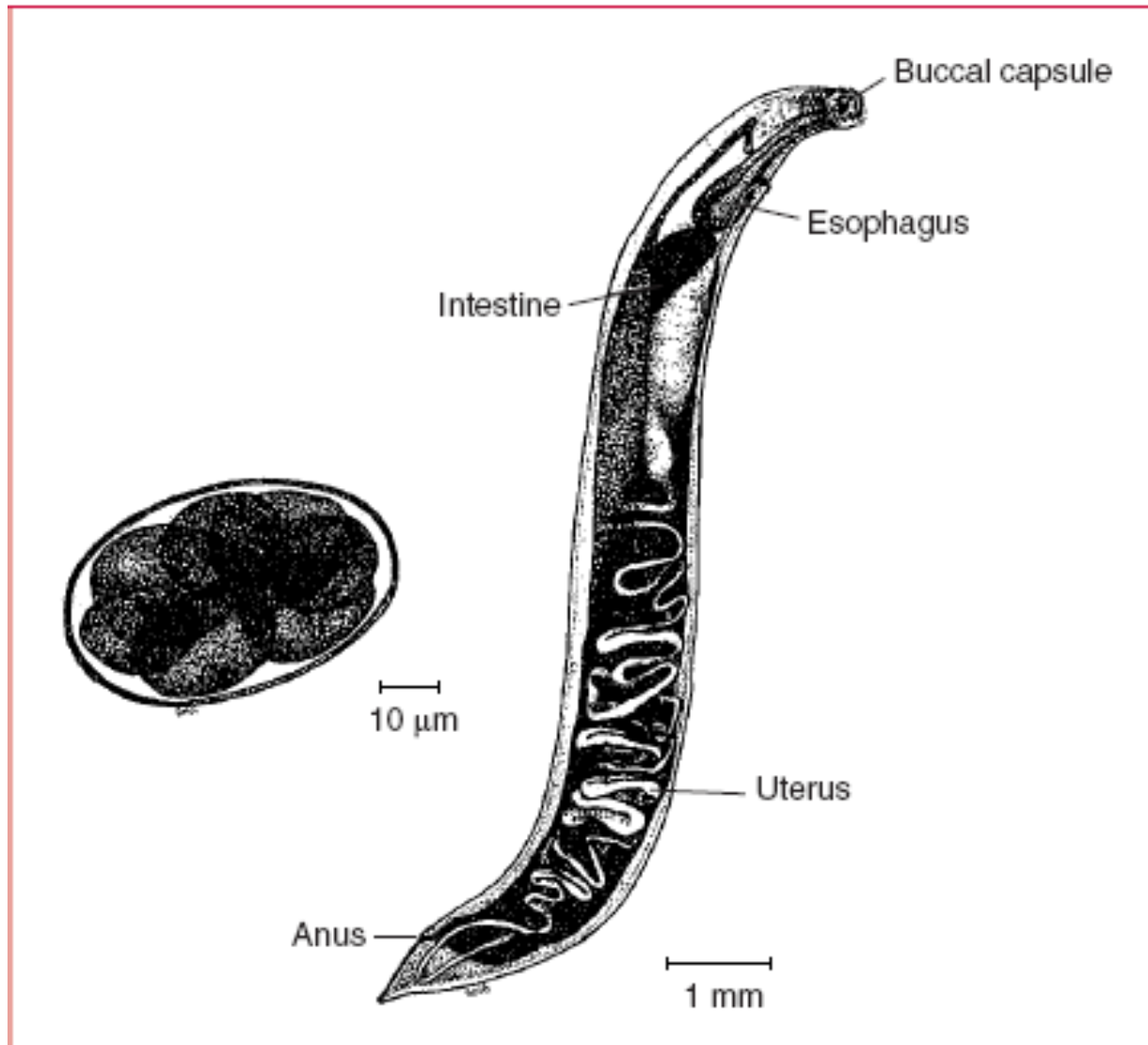
Fertilized *Ascaris* Egg



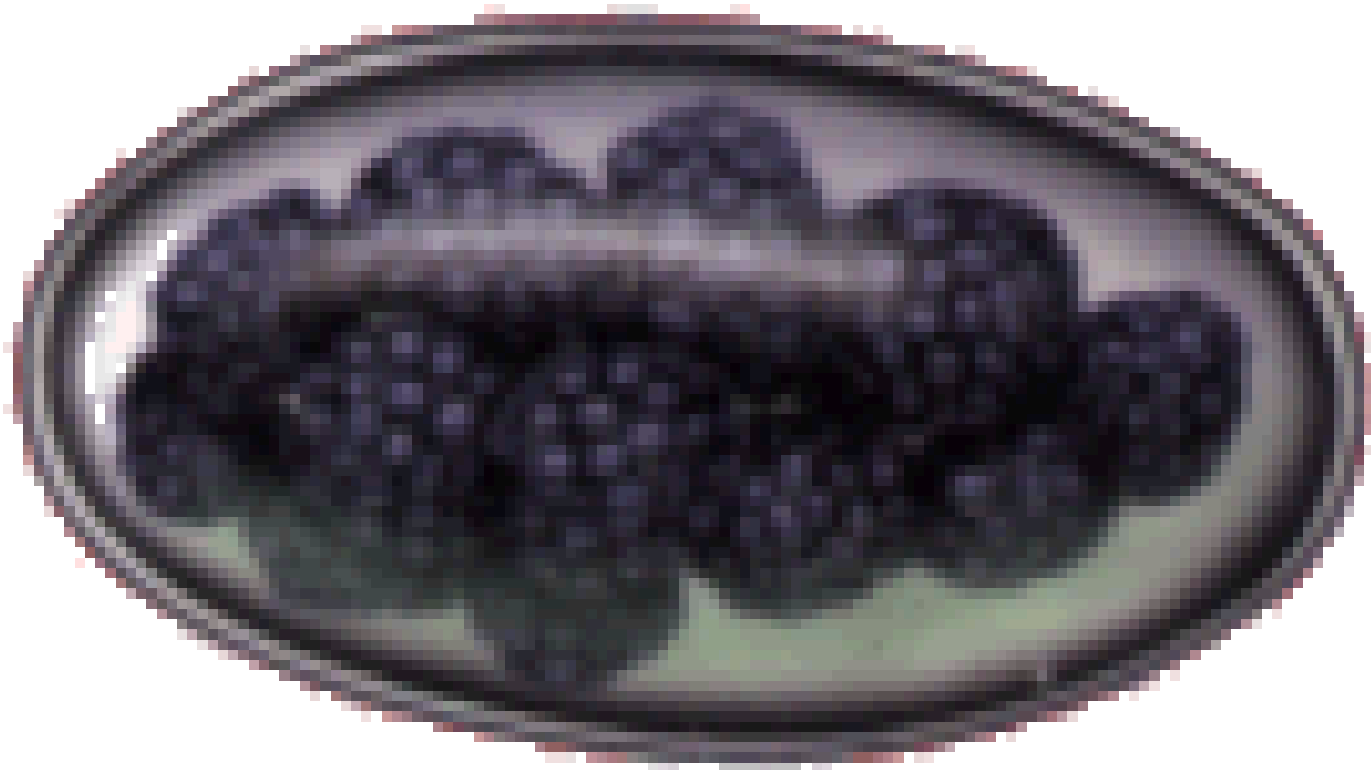
Unfertilized *Ascaris* egg



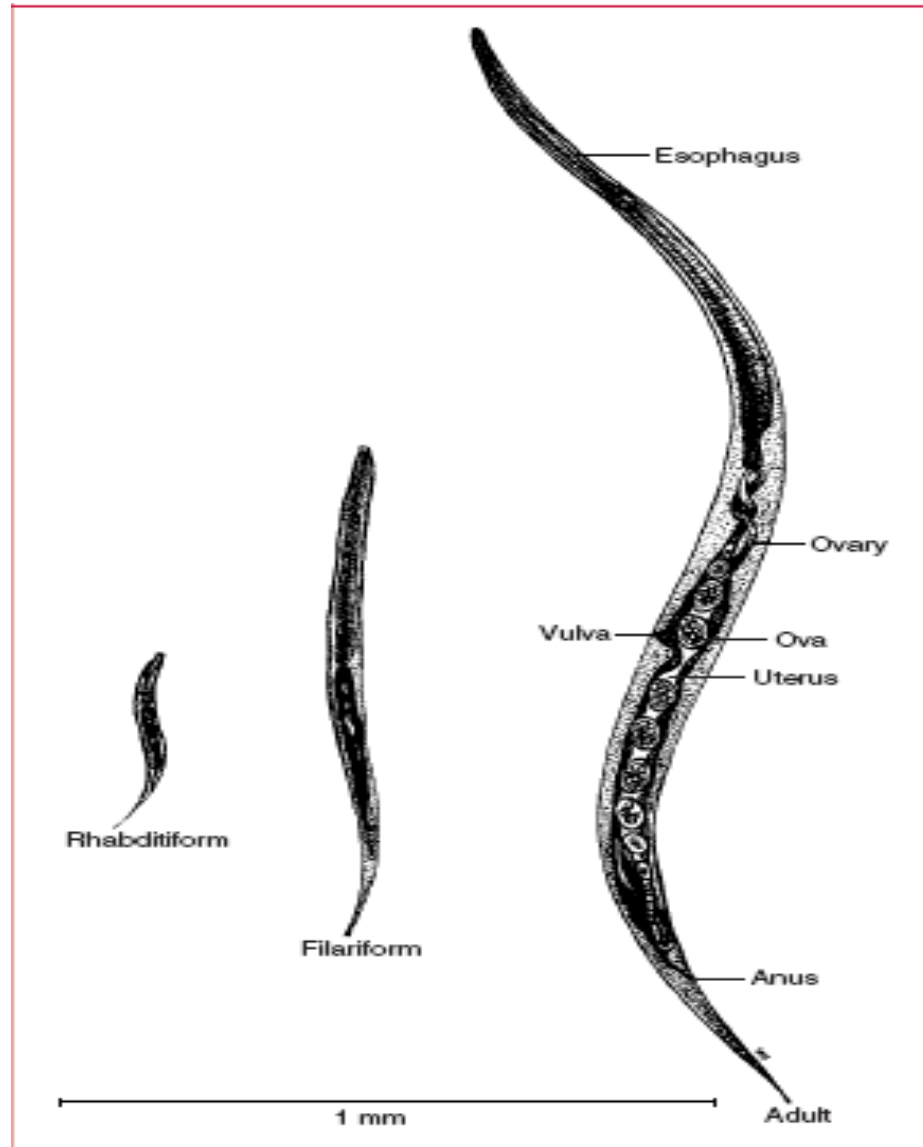
Nematodes: 4. Hookworms (*Ancylostoma duodenale*, *Necator americanus*)



Hookworm Egg



Nematodes: 5. *Strongyloides stercoralis*



Cestodes: 1. Taenia saginata (beef tapworms)



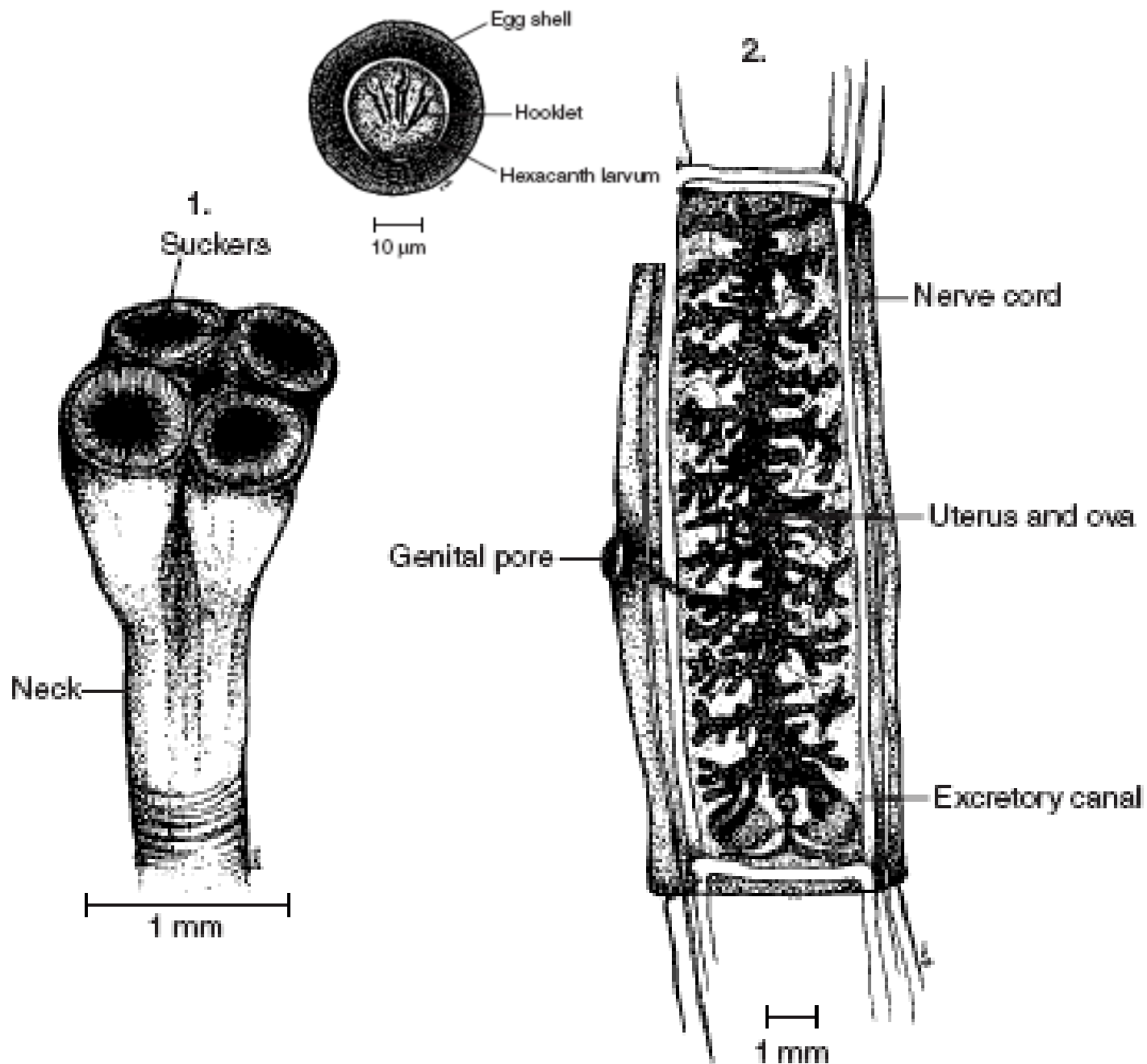
Cestoda



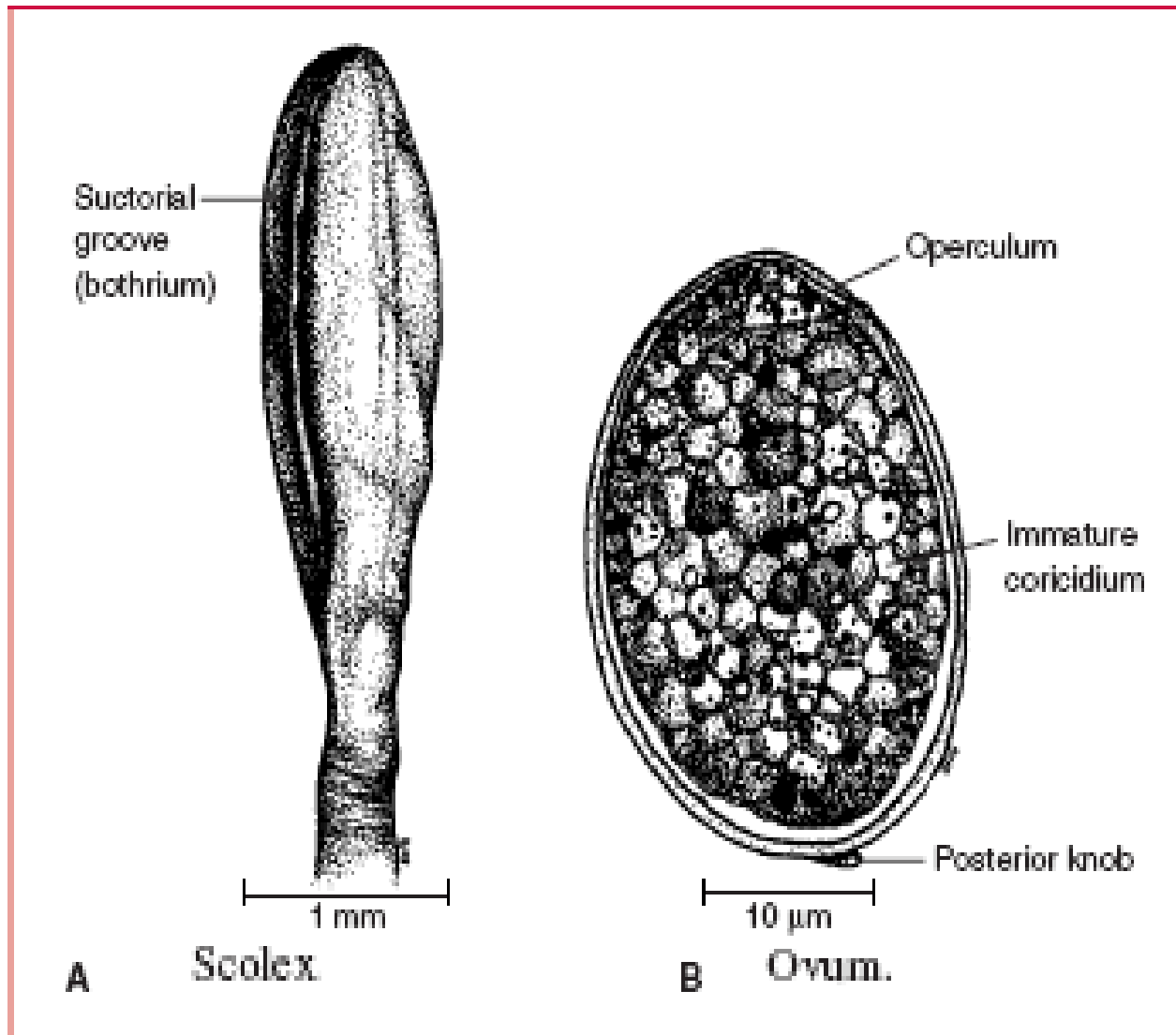
Fig. 1: Taenia saginata in gallbladder.



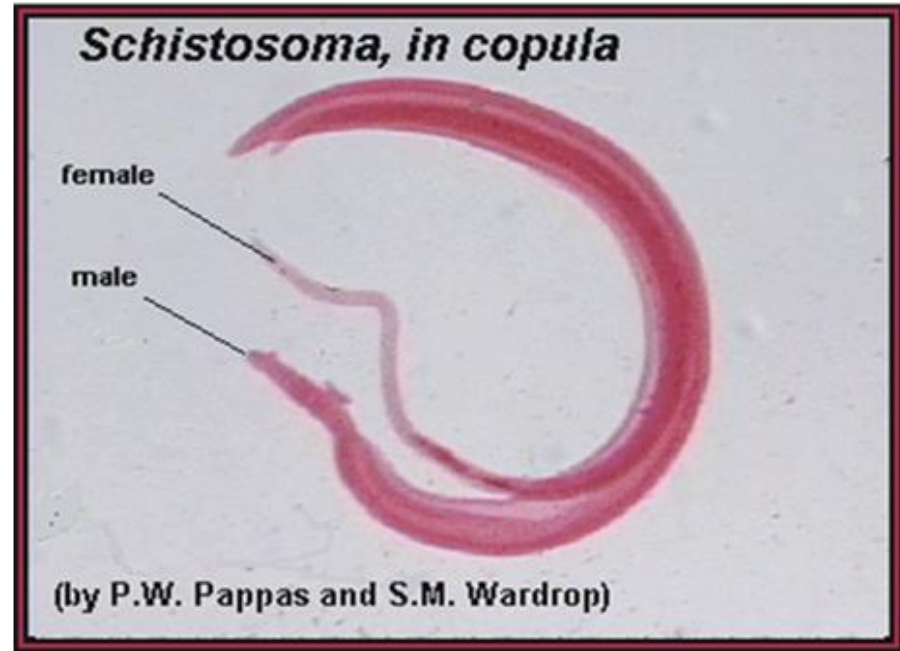
Fig. 2: Taenia saginata isolated from gallbladder.



Cestodes: 2. Diphyllobotrium latum (fish tapworms)



Trematodes: Schistosomiasis



S. mansoni

Lateral spine



S. haematobium

Terminal spine



S. japonicum

Rounded spine



2. Stool culture

- Enriched media
- Shigella-Salmonella agar
- Macconey agar
- Thiosulphate Citrate Bile Sucrose (TCBS) agar

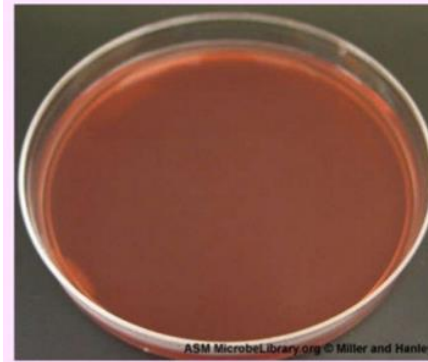


Salmonella

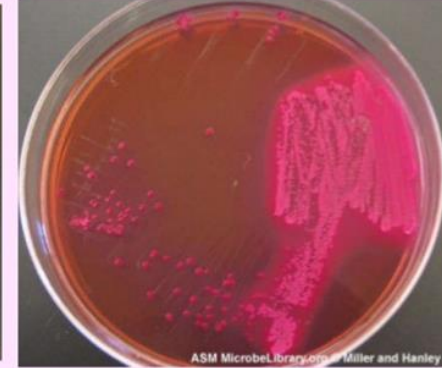


Shigella

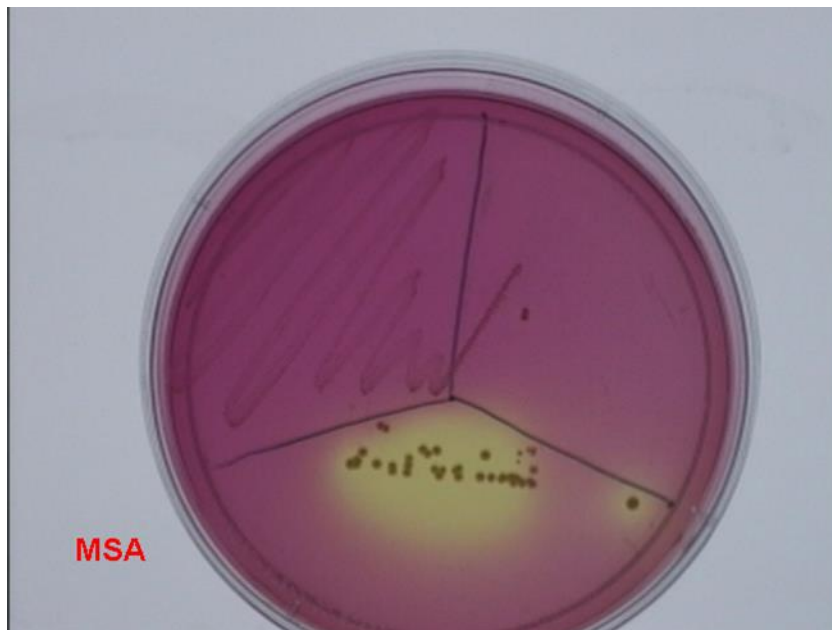
E.COLI ON MACCONKEY AGAR



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MSA



Yellow colonies of *V. cholerae*
due to sucrose fermentation