



MICROBIOLOGY

(GI) LAB : 1

DONE BY : Bashar Smadi

Practical class 1

التلخيص شامل (وتم توضيح جودة الصور عن جودتها في السلايدات 😊)

◆ Firstly what is gastroenteritis?

Gastroenteritis is a short-term illness triggered by the infection and inflammation of the digestive system.

Common causes of gastroenteritis:

Toddler = a young child who is just beginning to walk. (2 to 3 years approximately)

	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 ✗ (doctor said that we will not focus at uncommon causes but he pointed at some *in green boxes*)	<ul style="list-style-type: none"> ETEC aeromonas pleiomonas 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

◆ العمر يعطينا فكرة عامة عن نوع الorganism :-

◆*الطفل اللي عمره أقل من 3 سنوات نتوقع أن يكون السبب: viral ثم bacterial ثم parasite

◆*الاطفال اللي في عمر 5-12 ما زال الvirus هو السبب الأول ثم giardia ثم أنواع أخرى من البكتيريا مع ملاحظة

دخول الE.coli عند الcommon causes

◆*عند البالغين يتصدرها الVirus أيضا ثم campylobacter

Diagnostics Microbiology for GIT infections

◆ بالاعتماد على الhistory و physical examination للمريض اتضح لك أنه الحالة هي infective gastroenteritis، شو الفحوصات اللي بتعملها للتأكد من تشخيصك؟

- Stool analysis
- Microscopic examination
- Culture
- Biochemical identification
- Toxin assay (in case of food poisoning)
- Antigen and antibody detection

1. Stool analysis

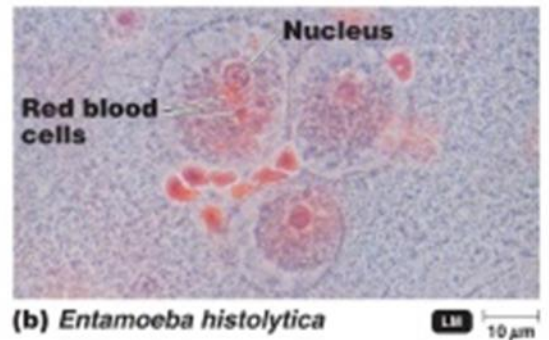
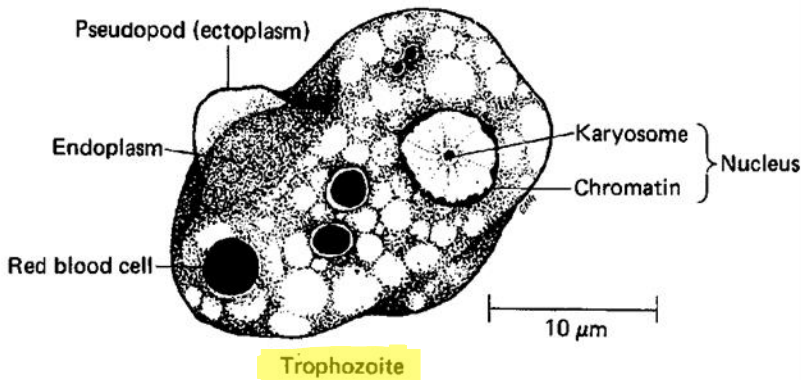
يعتبر فحص سهل, سريع, بسيط و غير مكلف وبيعطيك كثير معلومات

- Macroscopic and microscopic examination
 - ↓ gross appearance
 - ↓ using microscope
- RBCs and WBCs

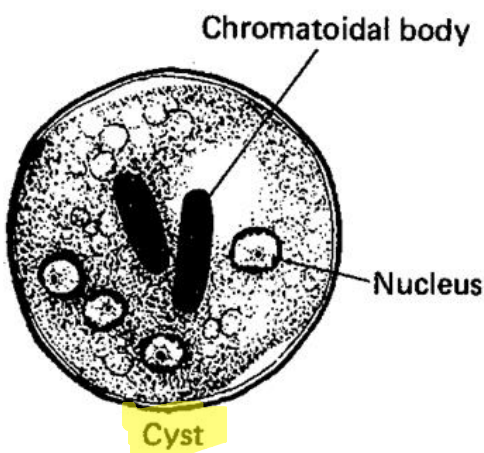
هل في RBC ؟ قلنا انه بهمنا كثير نعرف اذا ال diarrhea هي watery or bloody
هل في WBC ؟ وجود ال WBC بياكد/بيساعد انه في عنا GI infection

- Parasites and bacteria
- Stool for occult blood (here we look for digested RBCs)

Protozoa: Entamoeba histolytica

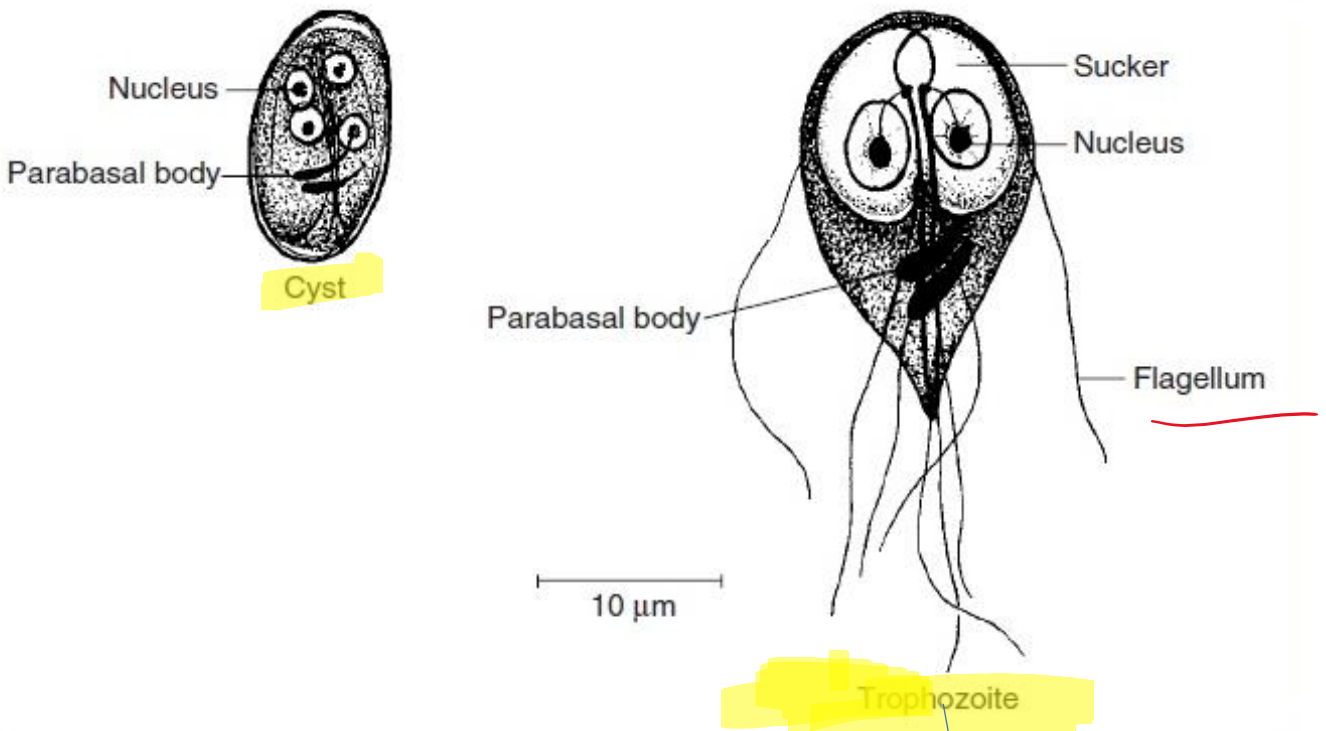


Trophozoite : Irregular ,has pseudopods (for movement), nucleus (karyosome and chromatin) ,contain RBCs or bacteria and has vacuoles



Cyst : Regular , Cigar shaped chromatin
Mature cyst has 4 nuclei

Flagellates: Giardia lamblia



To the right → trophozoite : pear shaped مثل الإجاصة,
has 2 nuclei and parabasal bodies

الها كثير تشبيهات مثل الطائرة الورقية أو وجه البومة 🦉 أو smiley face

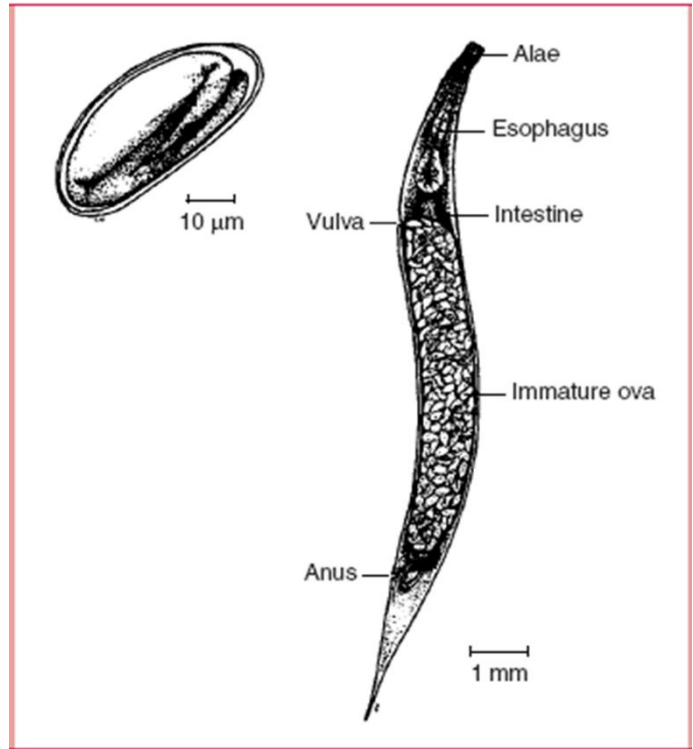
To the left → cyst : has 4 nuclei



Nematodes: 1. Enterobius vermicularis (pinworm)

To the left → eggs : D shaped
To the right : the worm

الدكتور بهاد السلايد صوته راح

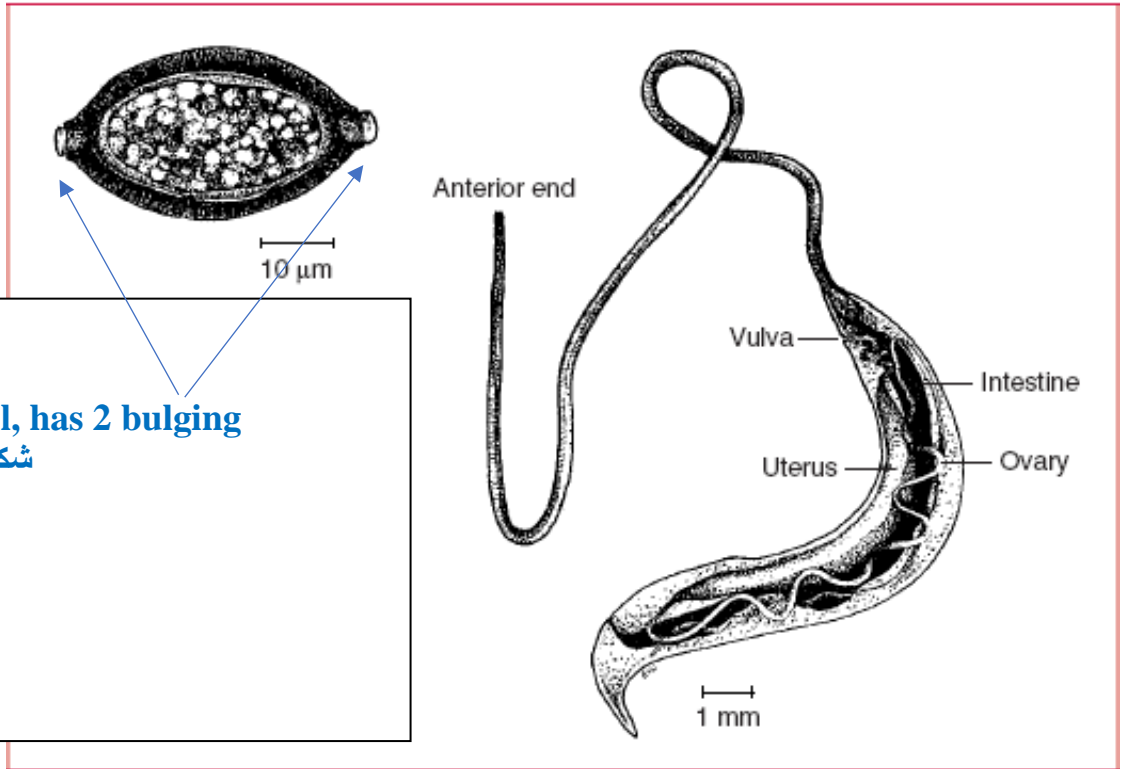


Enterobius vermicularis Eggs

في شفافة , cover , D-shape



Nematodes: 2.
Trichuris trichiura (whipworm)



Whip = سوط
 egg= thick wall, has 2 bulging
 شكلها زي "الصينية"

Trichuris trichiura



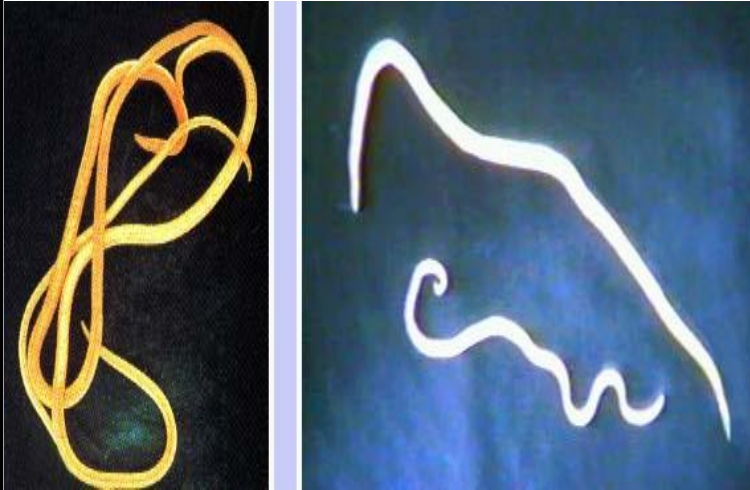
باغلب الworms الذكر اصغر من الانثى

Trichuris trichiura egg



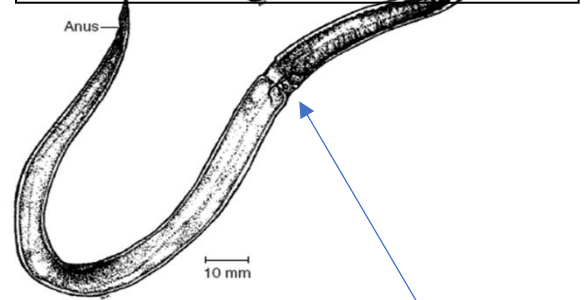
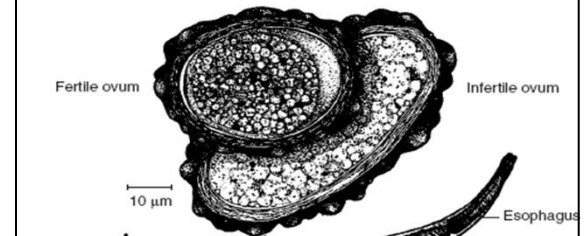
الفرق بينها وبين اللي قبلها
-انها لونها بني بينما ال EV egg شفافة
-ال membrane تبعا Thick
-بتحتوي على two bulging شكلها زي الصنيه

Nematodes: 3. Ascaris lumbricoides



الذكر اصغر من الانثى

Egg= have very thick wall or coat and dark color



اللي بيميز ال adult worm
عن الاتنين يلي قبلها هو هاد الحزام
vulvar wrist

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*)

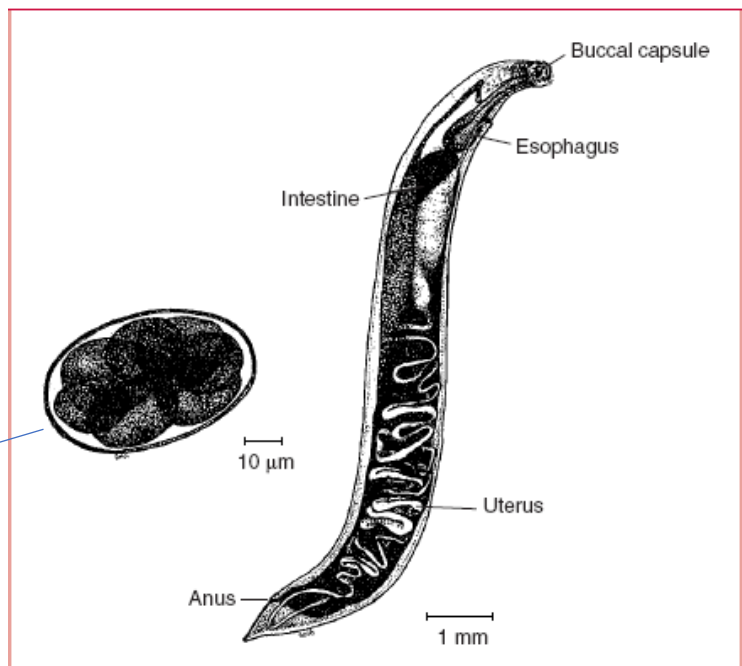
Hook = خطاف

بمساعدها في غرز حالها
بالintestine وبعدها بتبدأ
تسحب دم

Eggs have thin coat
Multilobulated
مثل حبة التوت



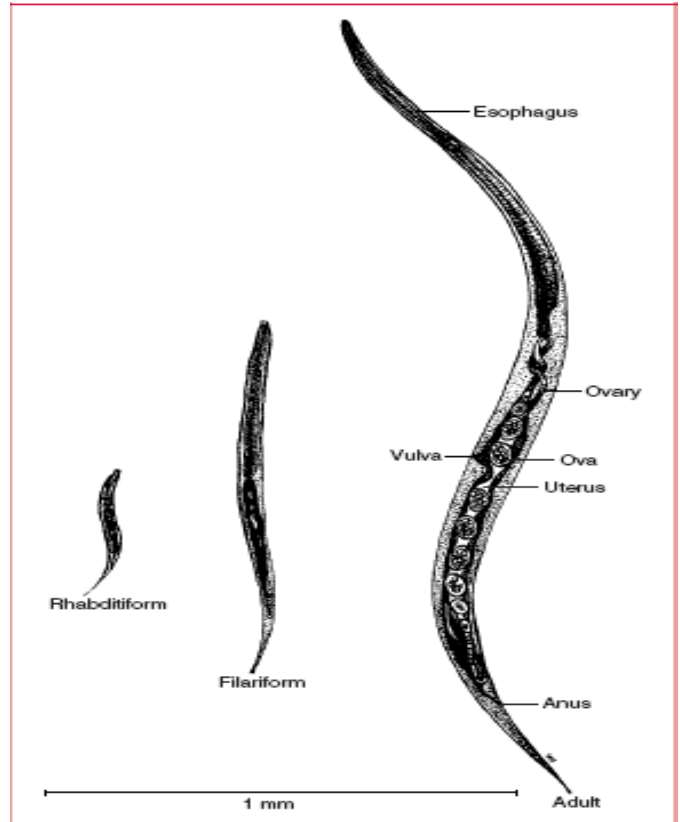
Hookworm Eggs



Nematodes: 5. Strongyloides stercoralis

unlikely to see the eggs but we see different stages of the worm.

Rhabditiform is the smallest
Filariform is larger .



Cestodes: 1. Taenia saginata (beef tapworms)



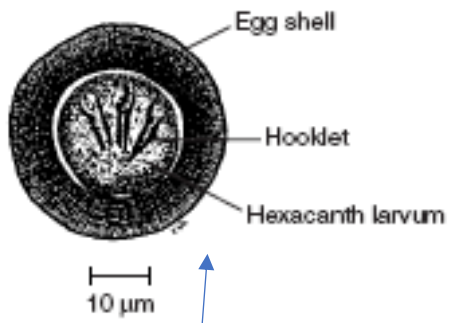
Fig. 1: Taenia saginata in gallbladder.



Fig. 2: Taenia saginata isolated from gallbladder.

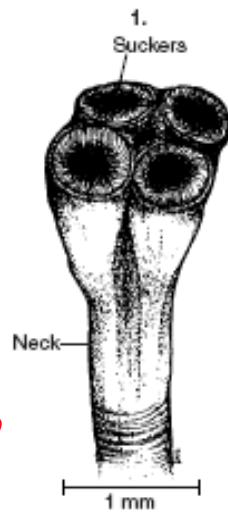


Cestodes = ديدان شريطية ... it is segmented

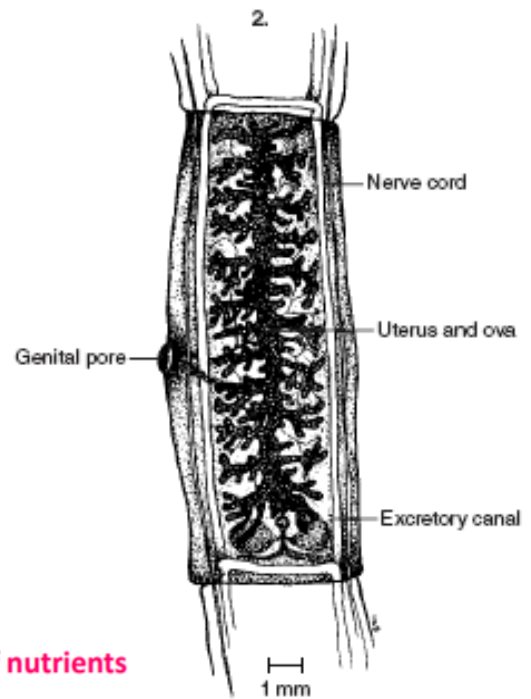


Egg

اللي بميزها عن الباقي انها circular



the head shows 4 suckers of nutrients



Cestodes: 2. Diphyllobotrium latum (fish tapworms)

سميها fish لانها بتنتقل عن طريق لحوم الاسماك خاصة اذا لم تكن مطبوخة جيداً

Head

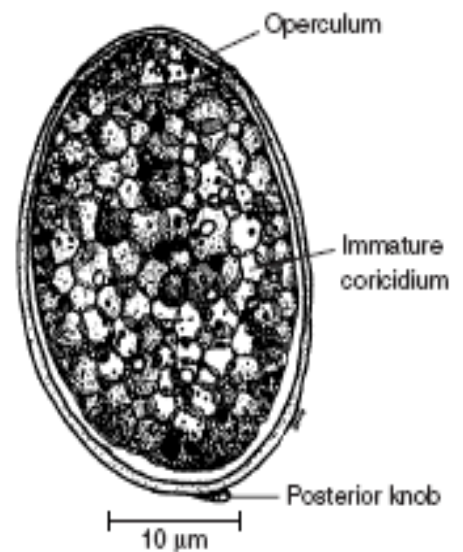
يشبه فم التمساح

Eggs have posterior knob

بروز صغير

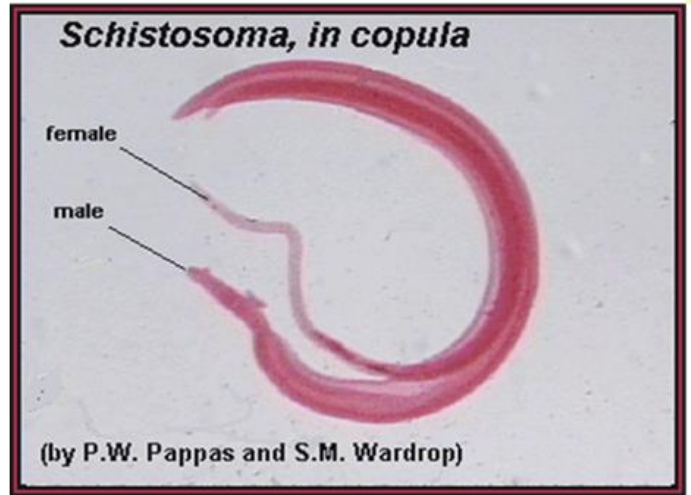
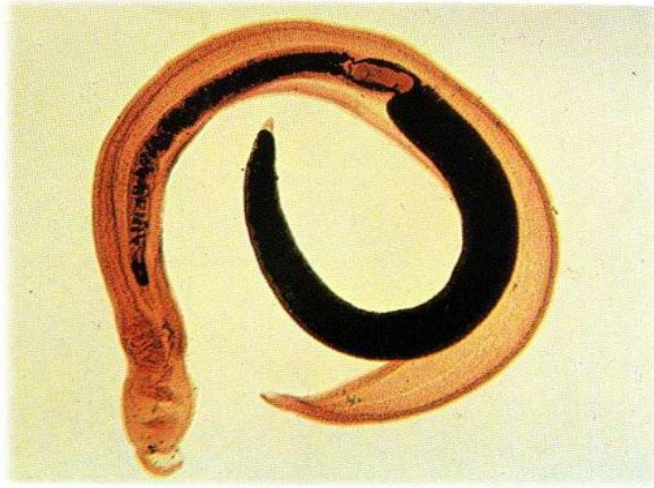


A



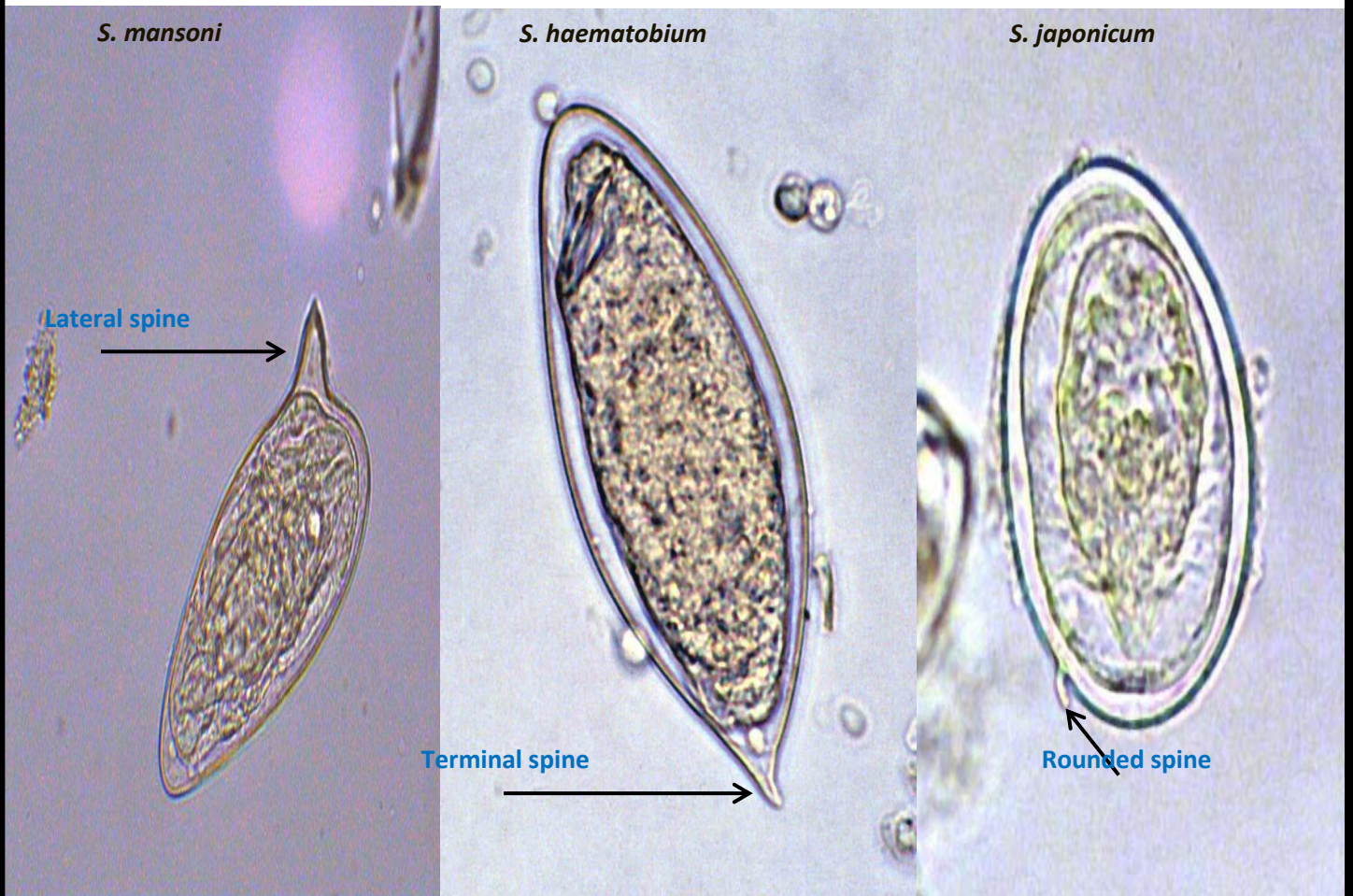
B

Trematodes: Schistosomiasis



اللي بميزهم عن الCestodes و الNematodes بانه
male and female are attached to each other

↓ Eggs ↓



S.Mansoni affect GI system ومنتشرة في الشرق الاوسط عنا
S. Japonicum affect GI system في منطقة شرق اسيا واليابان
S.Haematobium affects urinary system

2. Stool culture

- Enriched media (we start with it to enhance the growth of the bacteria)
- Shigella-Salmonella agar
- Macconky agar (for lactose fermentation)
- Thiosulphate Citrate Bile Sucrose (TCBS) agar (for vibrio cholera)

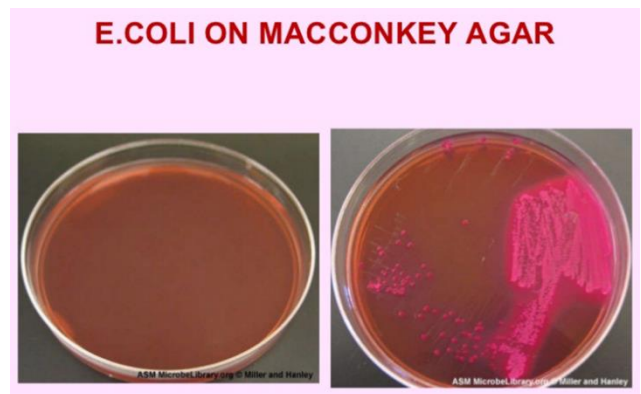


Salmonella on SS Agar

Salmonella produces H₂S and that does the black colony on the SS agar



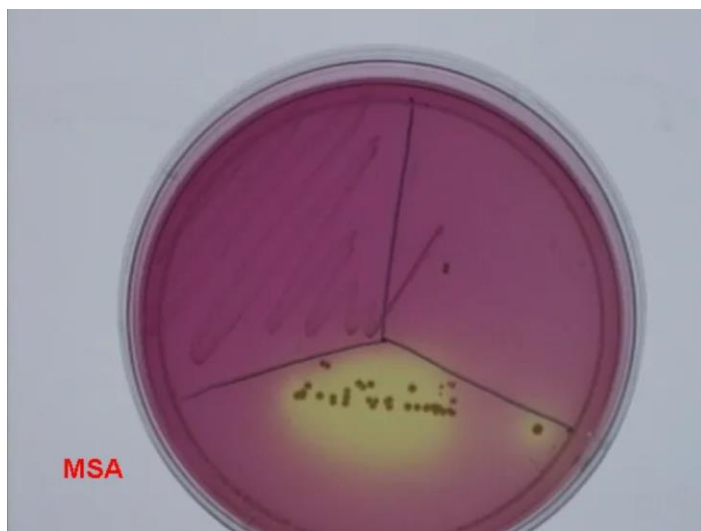
Shigella on SS Agar



E.COLI ON MACCONKEY AGAR

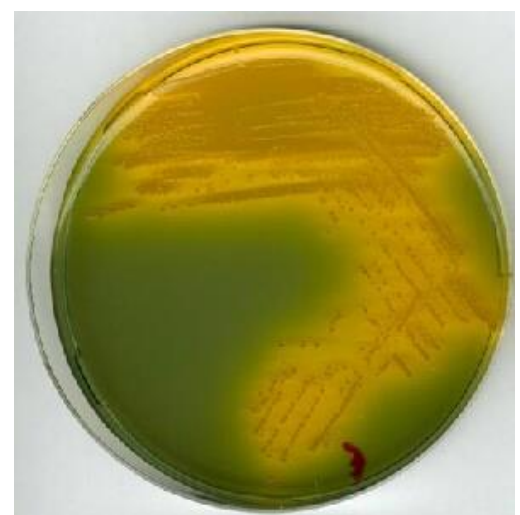
Non lactose fermenter:
growth but no change in color

lactose fermenter: growth + change in color
ex: pink shape is for E.COLI



MSA

MSA is for *staph aureus*
yellow= positive



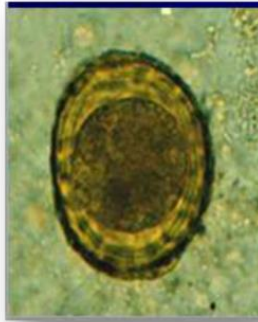
Yellow colonies of *V. cholerae*
due to sucrose fermentation

اسئلة السنوات

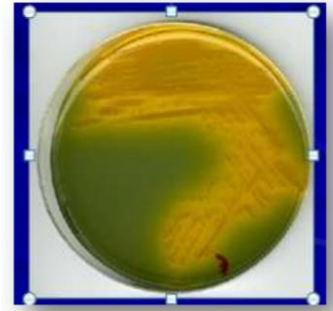
66. A case about giardia lamblia



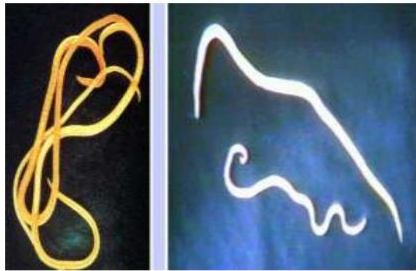
67. Ascaris lumbricoides fertilized egg



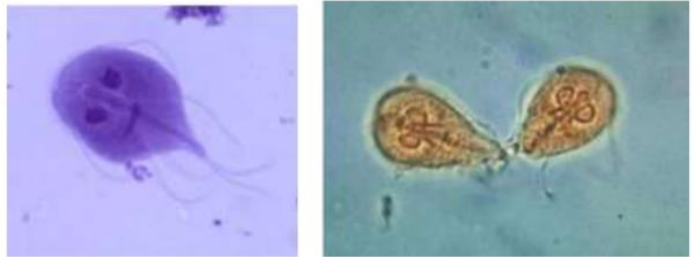
68. TCBS for vibrio cholera



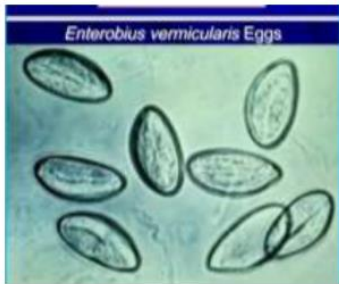
69. Ascaris lumbricoides:



70. Giardia Lamblia:

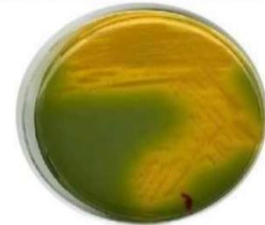


72. E vermicularis:



73. 19 years old boy that recently come from Hiati and he suffer from sever frequent Diarrhea, and when administration he was thirst and tired , culture was made , what is the bacteria that is responsible for his illness ? Answer: Vibirio cholera

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



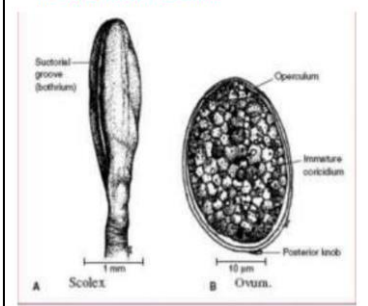
77. Tena saginata egg:



Trichuris trichiura egg



80. Diphylobotrium Latum:



76. Staph aureus:



78. D-Latum egg:

