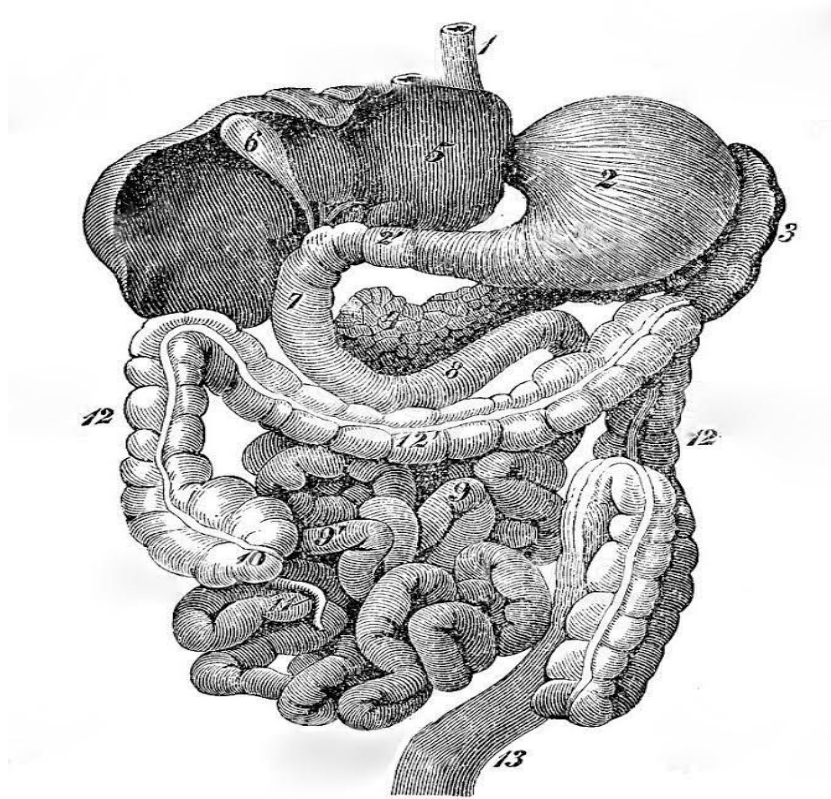


Microbiology

435's Teamwork
GastroIntestinal & Nutrition Block



- Kindly check our [Editing File](#) before studying the document.
- Please contact the team leaders for any suggestion, question or correction.
- Pay attention to the statements highlighted in **red**.
- Extra explanations are added for your understanding in **grey**.
- **Footnotes color code:** General | **Females** | **Males**.
- **color code:** **Female's notes** | **Male's notes**.



Intestinal helminthes

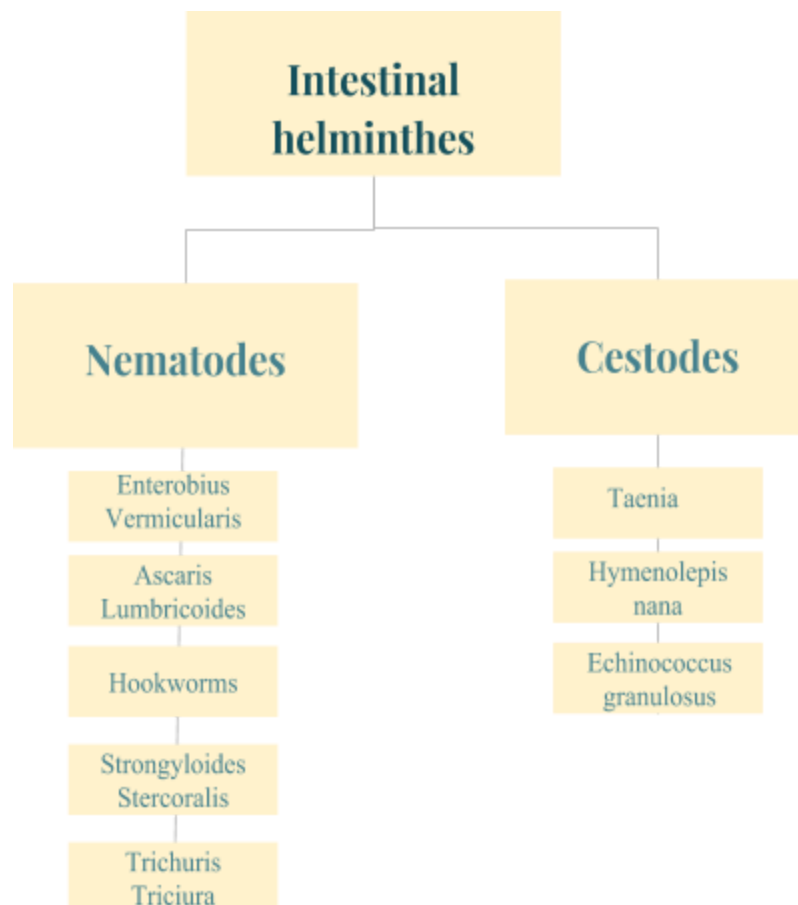
Resources: Foundation block will give students the required background,...

Learning Objectives:

By the end of this lecture, you should know the...

1. Name the 3 main groups of parasitic Helminths and their characteristic morphological
 2. features.
 3. Know the 5 common examples of Nematodes with their scientific and common names.
 4. Describe the life cycle of these 5 examples of Nematodes with pathology, diagnosis and
 5. treatment.
 6. Describe the life cycle of *Taenia saginata* and *T. solium* and *Hymenolepis nana*
 7. Describe the life cycle *Echinococcus granulosus* and diagnosis
 8. Know treatment of Tapeworms.
-

Lecture Outline:



Recall:

Protozoa	Helminths
Unicellular Single cell for all functions	Multicellular Specialized cells
Types: 1- Aeobae: move by pseudopodia 2- Flagellates: move by flagella 3- Ciliates: by cilia 4- Apicomplexa (Sporozoa): tissue parasites Move with no need to flagella or cilia	Types: 1- Round worms (Nematodes): Elongated, cylindrical & unsegmented. 2- Flat worms: - Trematodes: leaf-like & UNsegmented. - Cestodes: Tape-like & segmented.

1st: Nematodes: الديدان الخيطية

- Location in the human body:

Intestinal Nematodes - Tissue Nematodes

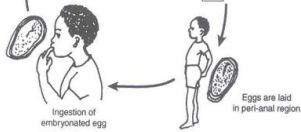
- General features:

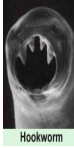
- 1- They are elongated, cylindrical and unsegmented.
- 2- Variable in size. (can be less than 1 cm and up to 100 cm)
- 3- Sex separate, and male is smaller than female.

- Common intestinal infectious worms:

**Enterobius Vermicularis - Trichuris Trichiura - Ascaris Lumbricoides -
Ancylostoma duodenale and Necator americanus - Strongyloides stercoralis**



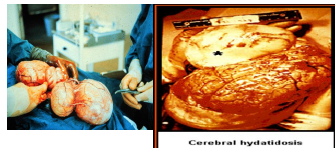
	Enterobius Vermicularis (الدبوسية الدودية) (Oxyuris)	Ascaris Lumbricoides دودة الاسكارس (الاسطوانية)	Trichuris Trichiura السوطية	Hookworms الخطافية	Strongyloides Stercoralis اسطوانية برازية
habitat	Adult worms are mainly located in lumen of cecum (in large intestine) , and females migrate to rectum to deposits the eggs on the anus and per anal skin	small intestine	Large intestine	-Two species of hookworm cause human infection: Ancylostoma duodenale & Necator Americanus -Small intestine	ADULT line in Small intestine
transmission	autoinfection mainly in children occurs by contamination of egg with fingers 	Transmitted by fecal oral route eating food contaminated with (fertilized)embryonated egg			Cause AUTOINFECTION very serious in immune compromise pt: <ul style="list-style-type: none">● Internal :when the rhabditiform larva become a filariform larva in the intestine and penetrate the intestine● External : fecal contamination of skin rhabditiform larva filariform penetrates the skin
Infective stage	Egg	(fertilized) embryonated egg (unfertilized eggs need to stay in soil to become fertilized)		filariform larvae (The eggs need to stay in soil 2wks to become filariform larva)	
Diagnostic stage		(unembryonated) unfertilized egg		Egg in stool	
Life cycle	eggs ingested from contaminated surfaces → mature into adults in large intestine → Fertilization → at night, females	لارفا من الامعاء تروح للرنه يكبر حجما (بس ماتبلغ) لما يكج بيتلعبها ثم ترجع للامعاء وتبلغ فيها Embryonated eggs ingested from contaminated soil → hatch in small		توصلى لما اكون ماشية في بيئة ملوثة بالفيس كالمناطق الزراعية الخصبة تدخل من الجلد للسيركيوليشن ثم تروح للرنه لانها تحب الاوكسجين لما اكح ترجع للامعاء الدقيقة	

	migrate out of rectum to perianal skin → lay eggs	intestine → larvae invade intestinal wall → enter bloodstream and transported to lungs → enter alveoli and ascend toward trachea → swallowed again adult in small intestine pass fertilized eggs with stool to the soil *Occur in two stages:intestinal&lung*		filariiform larvae penetrates the skin → go to the circulation (lungs) larva then swallowed and go to small intestine	
Clinical manifestations	- Perianal itching (pruritus ani)mainly in children - Vulvovaginitis in adult	It has pulmonary circulation so it can cause pneumonia	heavy infection → Rectal prolapsed in children is a common complication.	It has a buccal mouth that attaches to small intestine and absorb blood → penetrate the skin → Causing blood loss and severe iron deficiency anemia& protein deficiency  Hookworm	immunocompromised pt → Disseminated strongyloidiasis → Death (Internal infection cause serious complication in immunocompromised pt)
Dx	the eggs are not usually found in feces so use: Cellulose adhesive tape around the anus You put the tape at night (before sleep) and take it for examination in morning after waking up. s	By identifying eggs in stool			
Treatment	Albendazole, Mebendazole				

الديدان الشريطية Tape worms 2nd:

	Taenia saginata شريطية عزلاء	Taenia solium شريطية وحيدة	المشوكة الحبيبية Echinococcus granulosus مهمه
habitat	SMALL INTESTINE	Pig & human	
cycle	<p>Man become infected by eating undercooked or improperly cooked beef → human passes eggs or gravid segments¹ → cattle will eat grass contaminated the feces → In the cattle formation of CYSTICERCUS BOVIS in the muscle. → human eat uncooked meat contains cyst → in human body it become adult → human will pass eggs or graved segment</p>	<p>يُميِّزها ان الانسان يكون نفس الخنزير ممكن يسوي cyst.</p> <p>-Man can get infected by two ways either by :</p> <ul style="list-style-type: none"> eating undercooked pork >he will develop adult in his body <p>OR</p> <ul style="list-style-type: none"> Eating eggs من خضار cyst in his muscle >وسخه بالأرض <p>-If the pig eat the egg>cyst</p>	<ul style="list-style-type: none"> eggs found in dog (<i>definitive host</i>²) feces → humans (<i>intermediate host</i>) ingest eggs → eggs hatch into larvae in small intestine → larvae penetrate intestinal wall and travel to other tissues → form hydatid cysts in liver, lung, or brain نفس الي يحصل للانسان ممكن يحصل للخروف اذا اكل فضلات الكلب ← hydatid cysts ← يجي الجزار بعد ما يذبح الخروف يرمي اسلانه فيقوم الكلب باكلها ← فيطلع adult. لكن الانسان لو اكل cyst ما يصير له مشاكل فقط يتأثر من egg
Diagnosti c stage	Egg or graved segment	eggs or gravid segments	Hydatid cyst
Infective stage	Man infected by eating uncooked meat contains cyst (CYSTICERCUS BOVIS)	Undercooked pig	Egg

¹ الجرافيد سيقتت هو جزء من رحم الدودة يحوي بيوضها
² يحصل تزاوج الذكر بالانثى داخل جسمه (:

Clinical manifestations			<p>Pathology cyst..serious complication of hydatid cyst disease is the risk of anaphylatic shock, following rupture of the cyst. Their cyst contain water and can cause press on the organ. إذا جات للكبد، على حسب المكان، إذا جات للكبد، أو الرئة فتضغط عليها فيصير الإنسان مايقدر يتنفس أو المخ</p>  <p>Cerebral hydatidosis</p>
Dx	By identifying eggs in stool		<p>By finding the cyst in the liver or lung or other organ BUT MAINLY IN LIVER</p>
Treatment	<p>Intestinal stages: Praziquantel Tissue stages (Hydatid, Cysticercosis): Surgical or Albendazole</p>		

Please NOTICE:

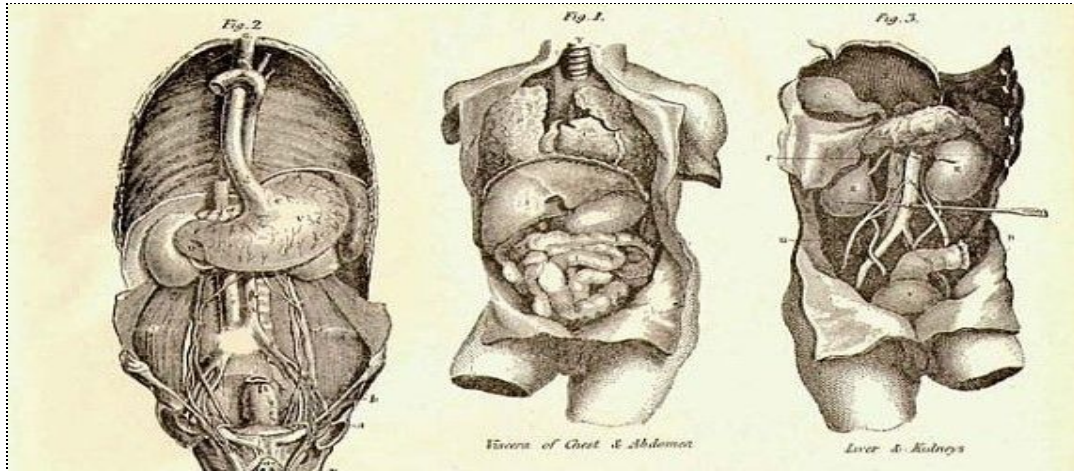
- ***Echinococcus granulosus:***

لو الإنسان اكل السبيست ماراح تسبب له مشاكل بس يتأثر من البيض لكن لو الكلب اكل السبيست سوف تسبب له مشاكل

- ***Taenia saginata & solium :***

لو الإنسان اكل السبيست الي بلحم القررة والخنزير بيحصله مشاكل

- **The difference between ascariis and trichuris is that ascariis grows in small intestine, while trichuris in the large intestine.**



إِنَّا كُلُّ شَيْءٍ خَلَقْتَهُ بِقَدْرِ ٤٩

Team Leaders

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Heartful thanks to our phenomenal team members

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