

**Tikrit University**

**College of Nursing**

**Basic Nursing Sciences**



**Second Year - 2023-2024**

**Microbiology**

**Nematoda**

**By: assistant lecturer**

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## **Nematoda**

Kingdom:Animalia

Phylum :Nematoda

A:Class:Secernentea

1-Order:Strongylata

1-Family:Ancylostomatidae(hook worm)

Genus: Ancylostoma duodenale Old World hookworm

: Necator americanus New World hookworm

2-Order:Ascaridata

1-Family: Ascarididae

Genus: Ascaris lumbricoides

2- Family: Oxuridae

Genus: Enterobius vermicularis

3-Order:Rhabditida

Genus: Strongyloides stercoralis

Phylum: Nematoda

Round worms are classified according to site of infection:

I: Intestinal round worms

II: Tissue round worms

The intestinal round worms are those which:

- \* Adult worms live in lumen of intestine.
- \* They include 8 worms of medical importance.

These worms are classified into two classes as follows:

1- Class :Secernentea( Phasmodia)

2- Class : Adenophorea(Aphasmidia)

Class: Phasmodia

1-order: Strongylida :This order has one family with medical important, it is:

Family: Ancylostomatidae

*Ancylostoma duodenale*

Common name: Old world hookworm

Disease name: Ancylostomiasis (Tunnel disease)

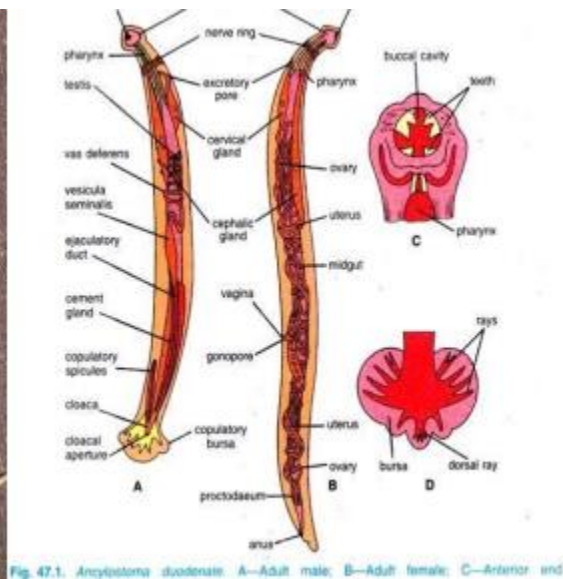
Site of infection: small intestine

Definitive host: human

No intermediate host

Morphology

\* The mature *Ancylostoma duodenale* worms are cylindrical and creamy-white in color, Worms have club-shaped esophagus.

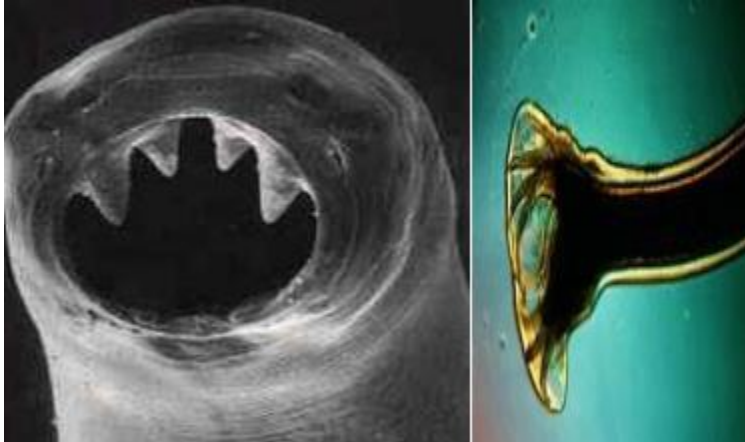


buccal cavity bears two hook like teeth on the top and two triangular cutting plates on the bottom, helps in worms feeding by sucking blood.

The male posterior end is flattened and equipped with copulatory bursa supported

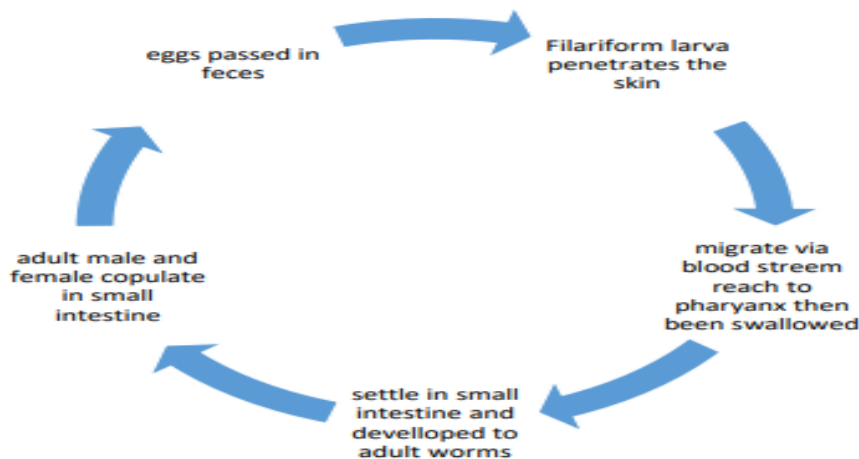
by rays, used to catch and hold the female during mating.

The female is longer than male is an S-shaped worm because of its flexure at the frontal end. The worm is pinkish-white.



### [Life cycle]

Man gets infected on ingestion of eggs, or encysted larva in muscles or the filariform larva with vegetables or by penetrating filariform larva of the skin.



Infective stage: Filariform larvae

Diagnostic stage: egg

### Symptoms:

\* red raised area of the skin ,oedema of the feet and ankles..

\* Loss of blood daily, severe anaemia .

## [Diagnosis]

Based on finding the eggs in the feces. (The eggs are oval, colorless, thick-walled).

*Necator americanus*

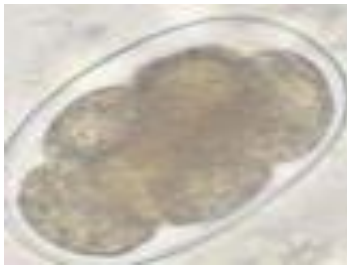
Common name: New world hookworm

Disease name: Necatoriasis

## Morphology

Adult worms are slightly smaller than *Ancylostoma duodenale*, the anterior end is curved dorsally giving them their hook appearance

The buccal cavity has four cutting plates, two on the ventral and two on the dorsal surfaces. The bursa is well developed in adult male, the needle

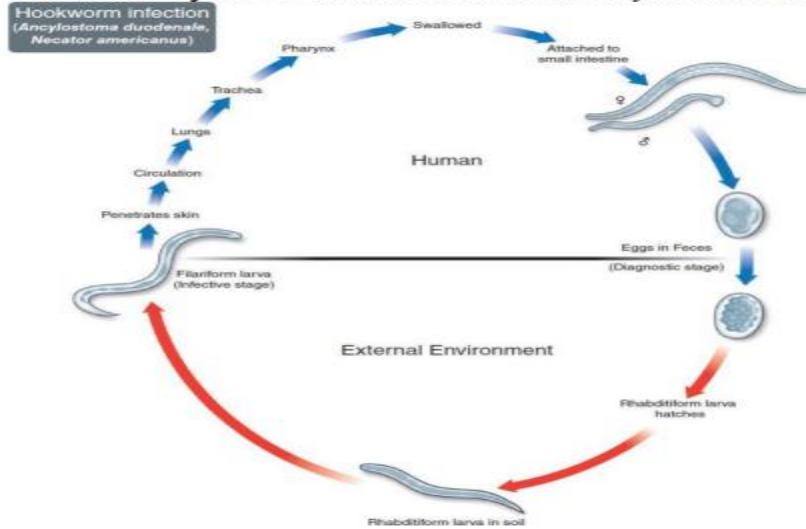


*Ancylostoma duodenale* copulatory spicules



*Necator americanus* copulatory spicules

Their life cycle is similar to that of *Ancylostoma duodenale*.



Symptoms: anemia, malnutrition from protein loss

Laboratory diagnosis: The microscopic examination of stool



## 2-Order: Ascanidida

1-Family: Ascarididae

Genus: *Ascaris lumbricoide*

Site of infection: small intestine of man

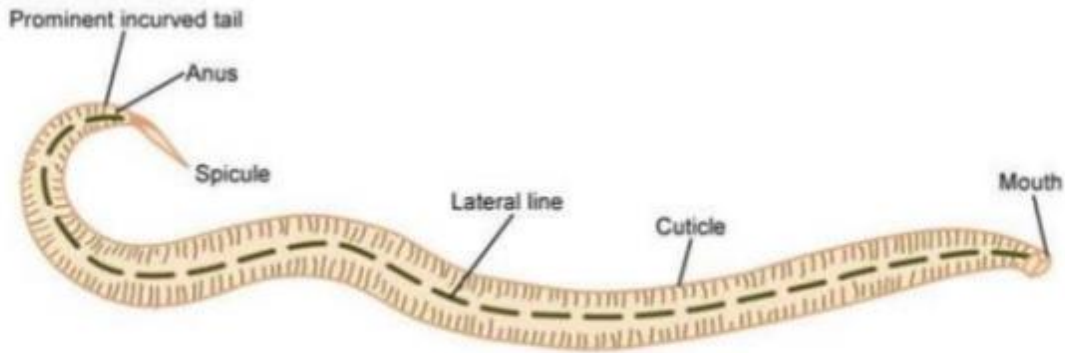
### Morphology:

The worm is the largest of the human intestinal nematodes; it is brownish yellow in color. Mouth with three lips one of the three lips is dorsal and the other two are ventral, The lips have minute teeth, esophagus is a club-shaped

The male is a little smaller than the female. Its posterior extremity is definitely

pointed and curved ventrally and provided by equal size of copulatory spicules  
The female posterior is straight, the vulva in the middle of the body. Females are  
Oviparous

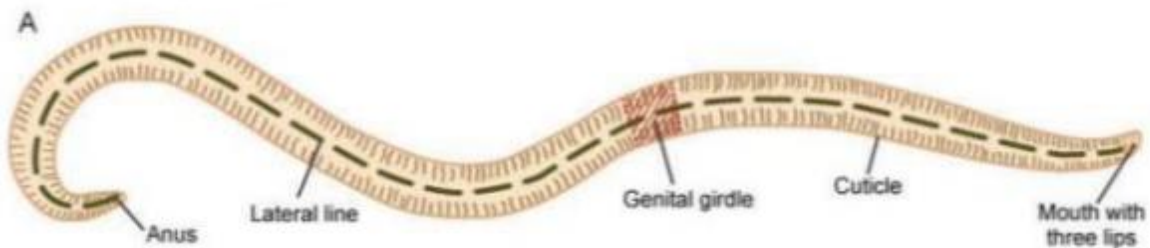
### Adult male



Average size: length is seldom up to 30 cm

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### Adult female



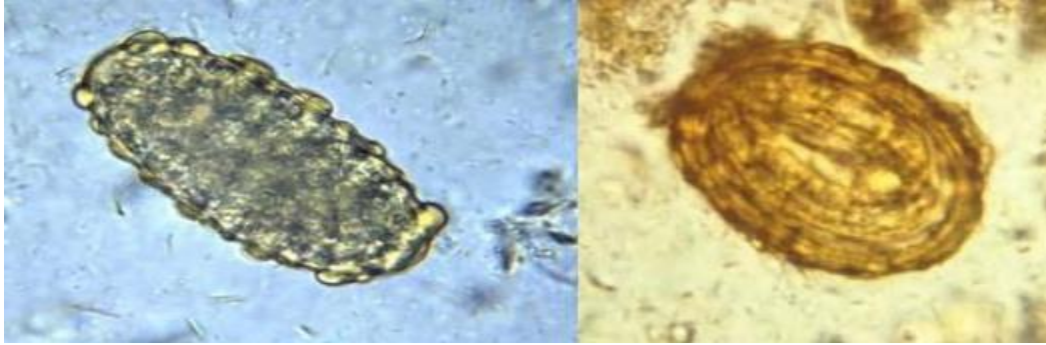
Average size: 22-35 cm long

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The fertilized egg are easily recognized, oval in shape with a thick wall The outer covering has an albuminoid coat, stained golden brown by bile stain.

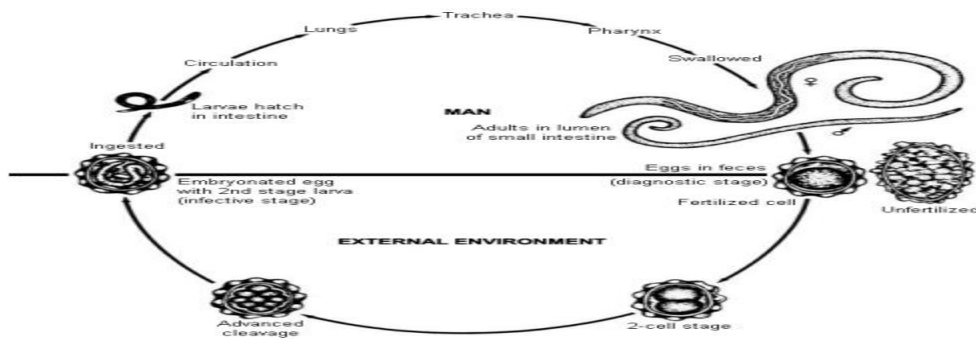
The unfertilized eggs are longer and narrower than fertilized eggs, having a thinner shell, a smaller coat albuminoid coat.





### Life cycle of *Ascaris lumbricoide*:

- \* Eggs in human faeces are not infective to man when passed which are found in soil, water or on green vegetables.
- \* Infective stage second larva



### Symptoms:

- \* intestine obstruction (blockage)
- \* vomiting and abdominal pain
- \* cough and low grade fever

### Diagnosis

Based on the identification of worms passed or on finding eggs in the faces.