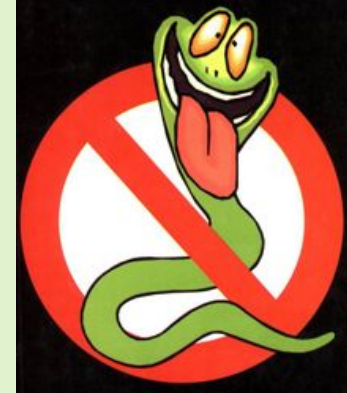


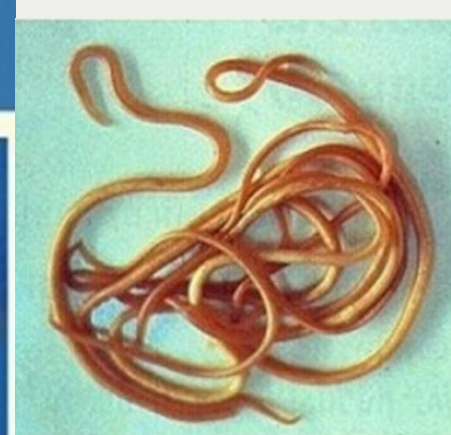
# ТЕМА ЛЕКЦИИ 06:



## Общая и медицинская гельминтология.

### Нематоды 1

**Ascaris lumbricoides** Linnaeus, 1758



**Тип Круглые черви  
(Nemathelminthes).**

**Класс Собственно круглые черви**

# КРУГЛЫЕ ЧЕРВИ

## ГЕОГЕЛЬМИНТЫ

**Аскарида человеческая**  
(*Ascaris lumbricoides*),

**Острица**  
(*Enterobius vermicularis*)

**Анкилостомиды**  
(*Necator americanus*  
and *Ancylostoma duodenale*),

**Власоглав** (*Trichuris trichiura*).

## БИОГЕЛЬМИНТЫ

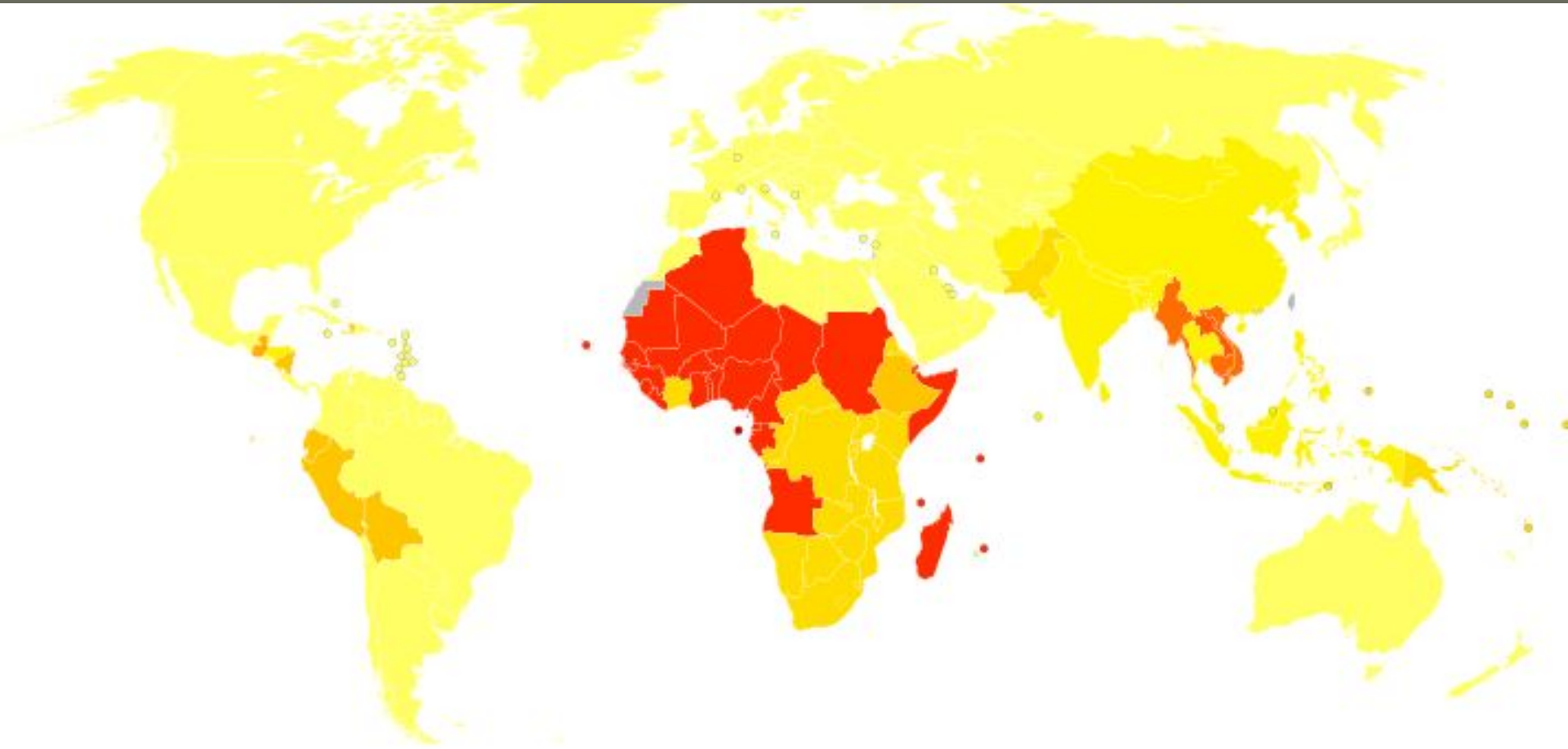
**Трихинелла**  
(*Trichinella spiralis*),

**Ришта**  
(*Dracunculus medinensis*),

**Филярии** (*Wuchereria bancrofti*,  
*Brugia malayi*, *Brugia timori*,  
*Onchocerca volvulus*,  
*Onchocerca coecutiens*, *Loa loa*,  
*Mansonella ozzardi*, *Mansonella perstans*,  
*Mansonella streptocerca*).

**Аскарида человеческая**  
**(*Ascaris lumbricoides*)**

# Распространение аскаридоза

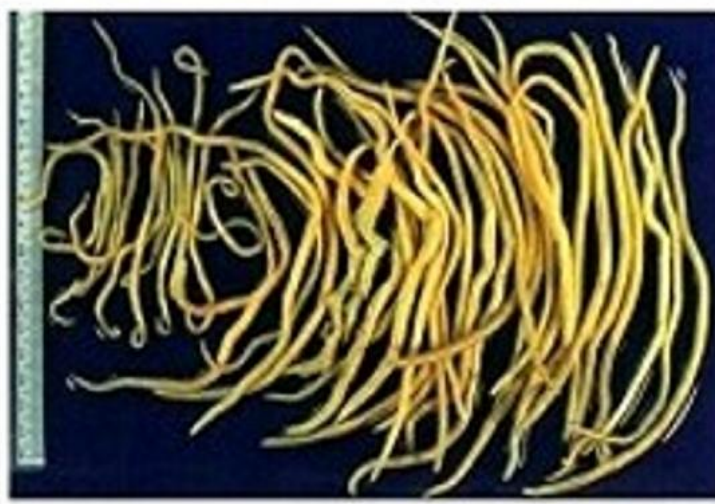
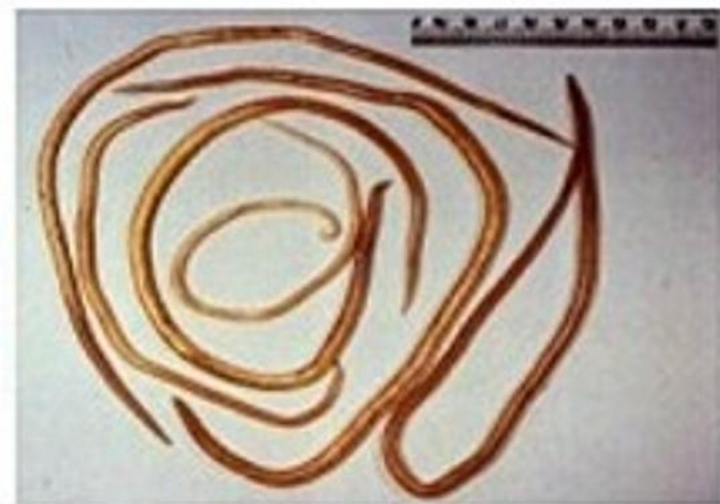
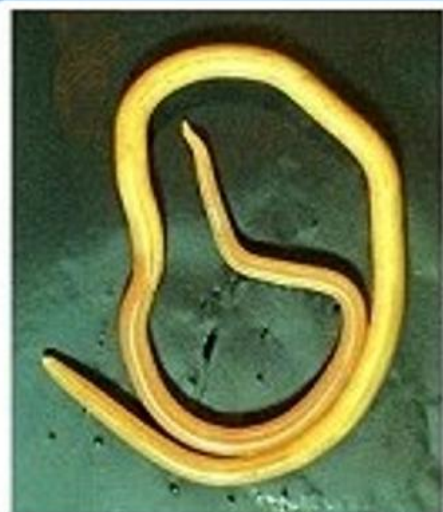


Это заболевание можно встретить практически во всех ландшафтно-климатических зонах, кроме зон вечной мерзлоты, пустынь, полупустынь, а также высокогорья.

● Male 10 ~ 31cm

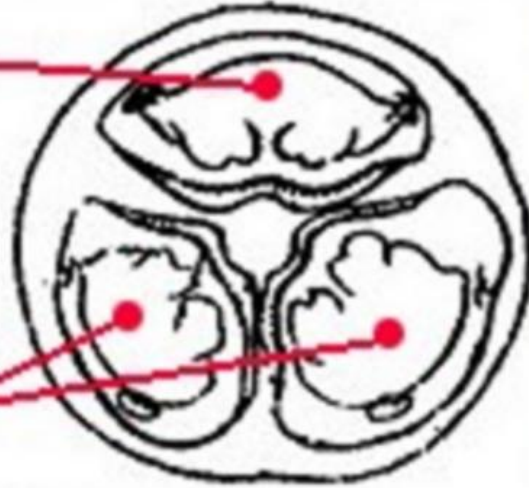


● Female 22 ~ 35cm

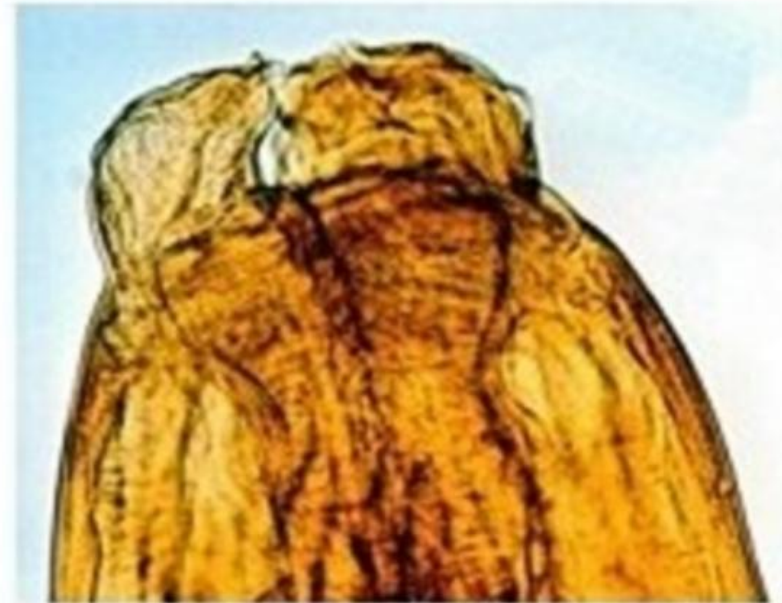
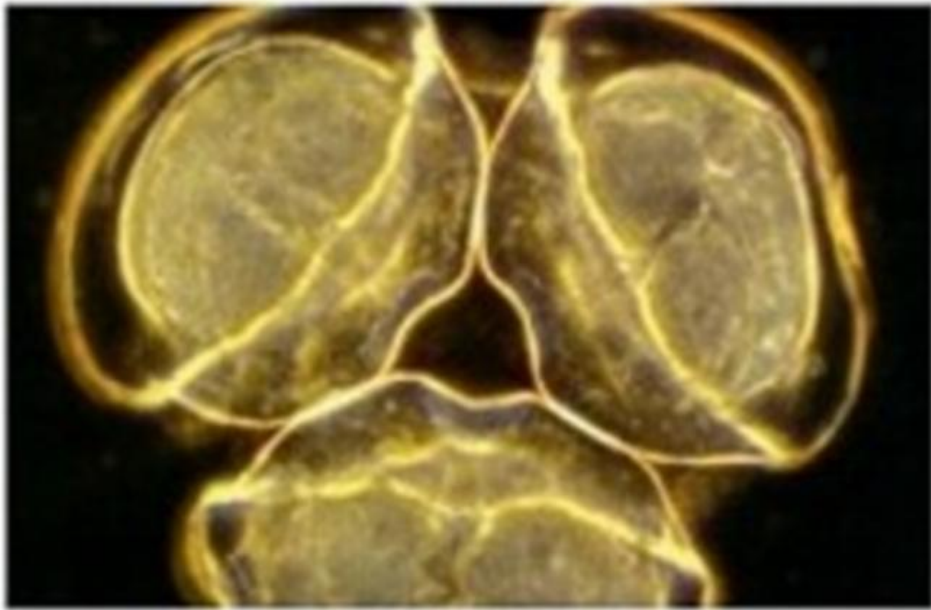
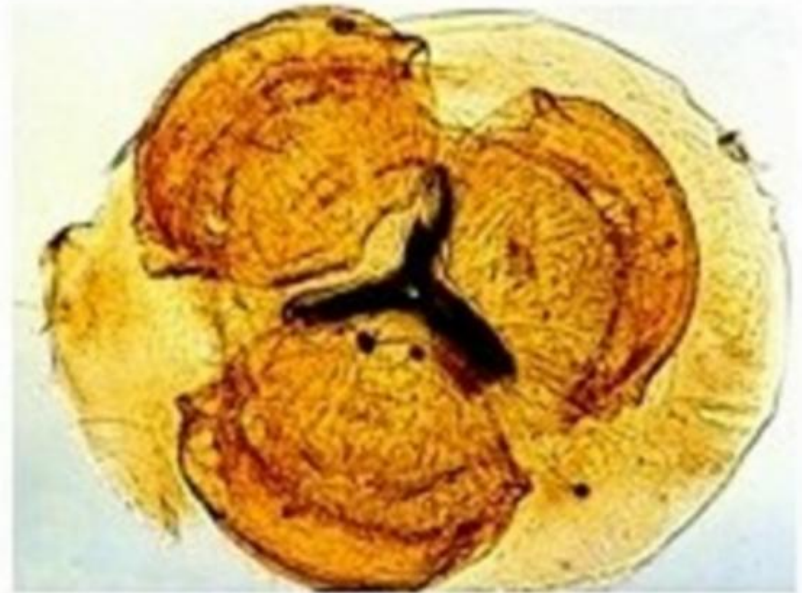


# MORPHOLOGY

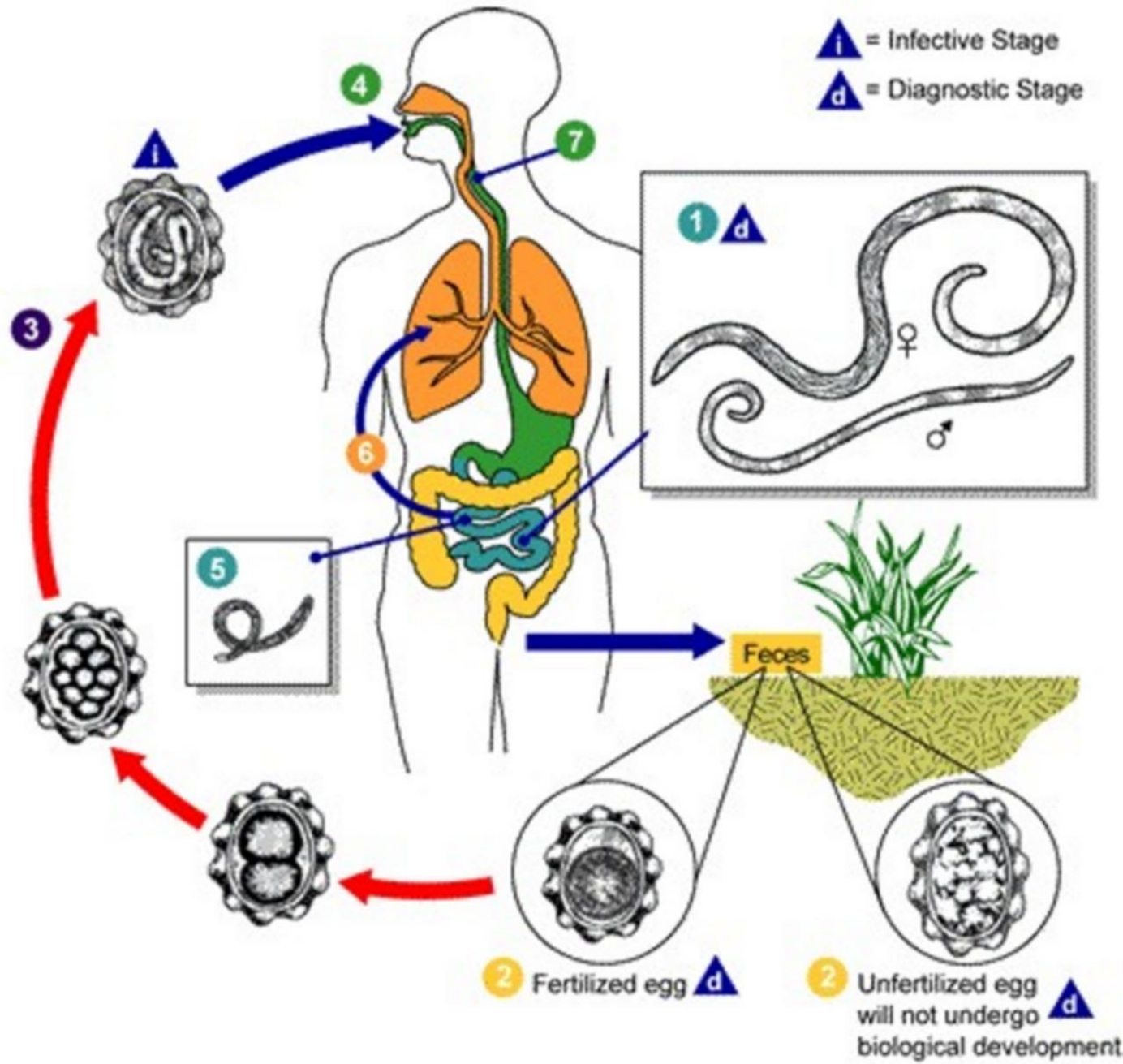
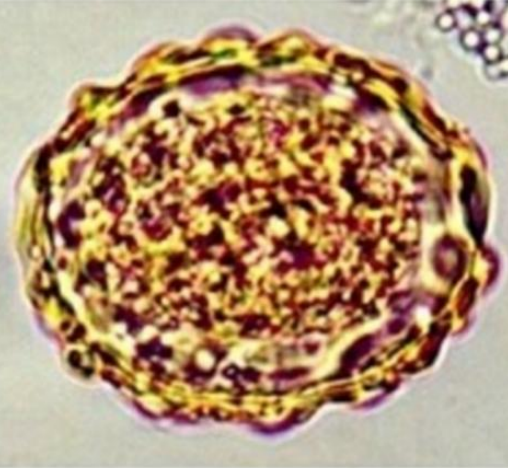
Dorsal lip



Subventral lips

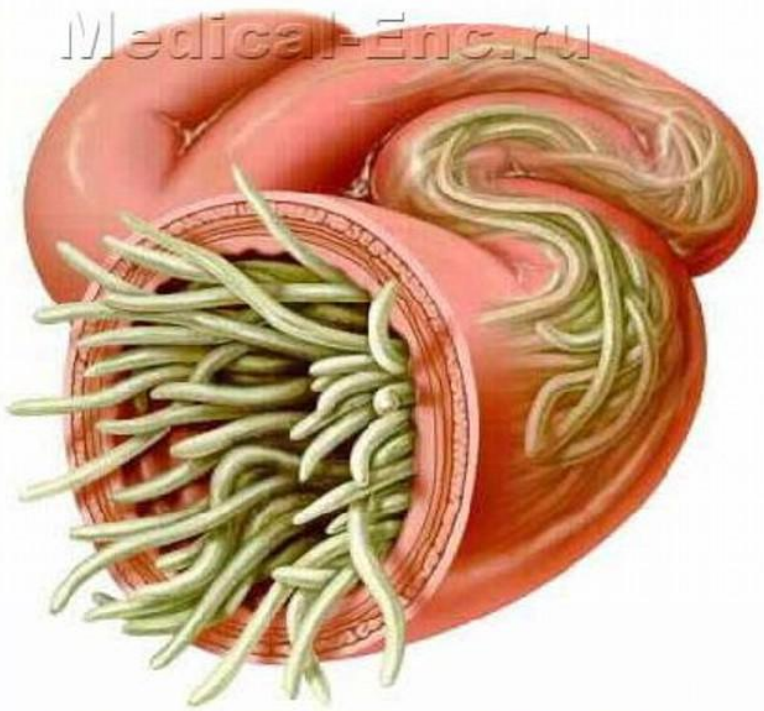


# Ascaris lumbricoides life cycle

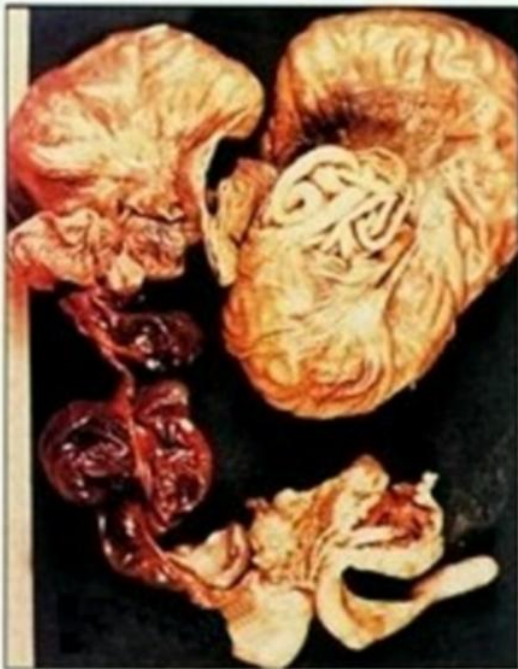




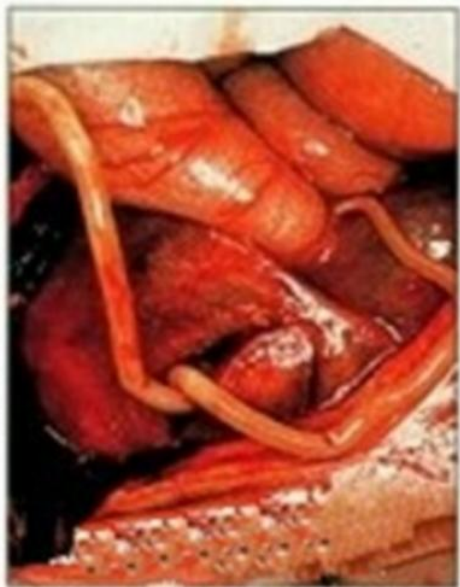
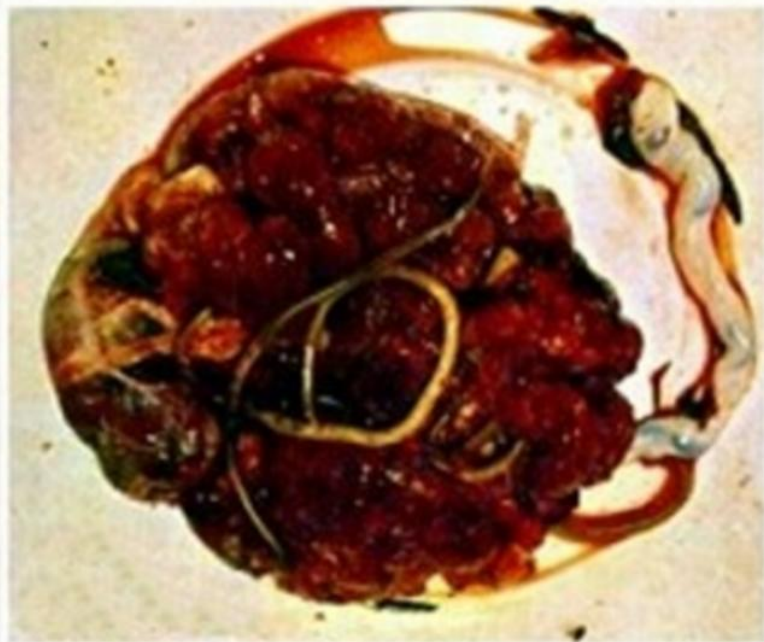
Medical-Enc.ru



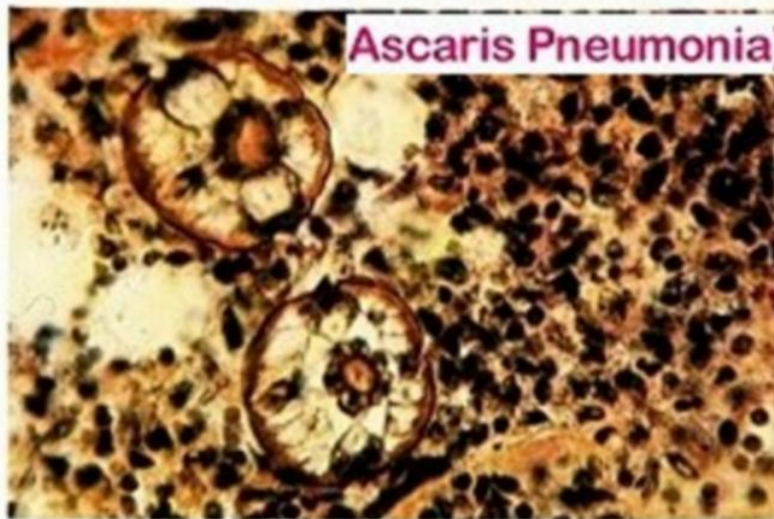




Obstruction due to roundworms

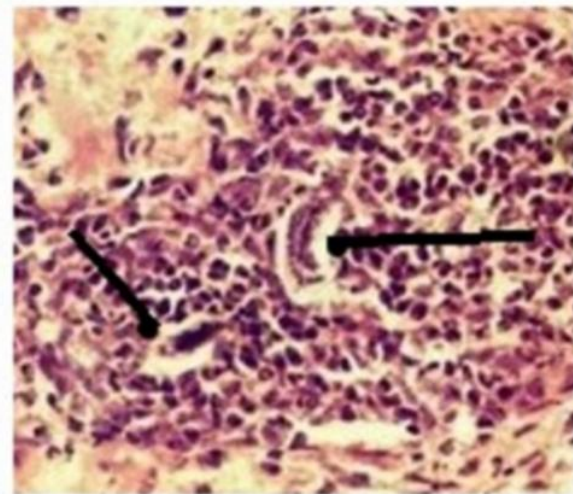


Adult roundworms migrating in liver



Ascaris Pneumonia

3rd stage larvae of Ascaris in the lungs.



Cough with bloody sputum

*Ascaris lumbricoides*



Fertile



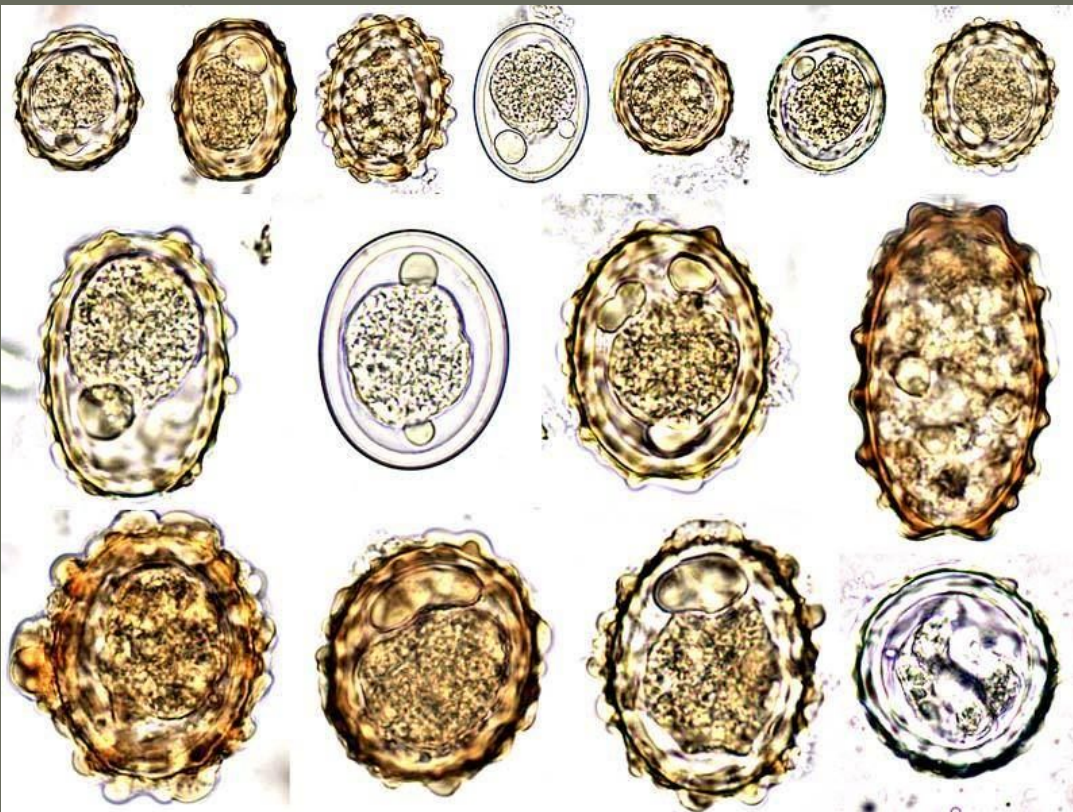
Decorticated



Embryonated

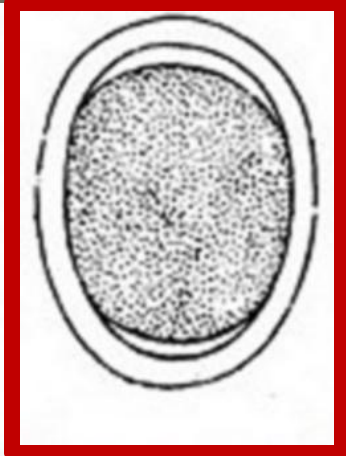


Unfertilized



40×90 mcm

# The egg

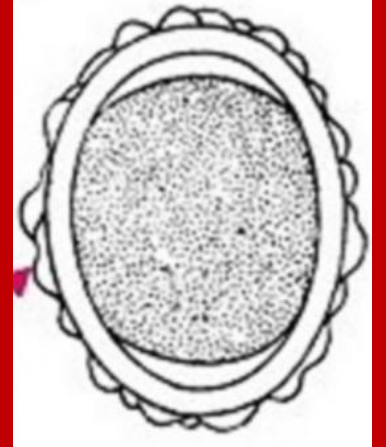


inner shell

45 x 75 mcm



fertilized



albuminoidal covering

Invasive stage



# DIAGNOSIS

## X - ray



Round worms outlined by radiopaque dye in the stomach



Ascaris in small intestine (Courtesy Dr. Herman Zakas, Mercy Hospital, Valley City, ND.)



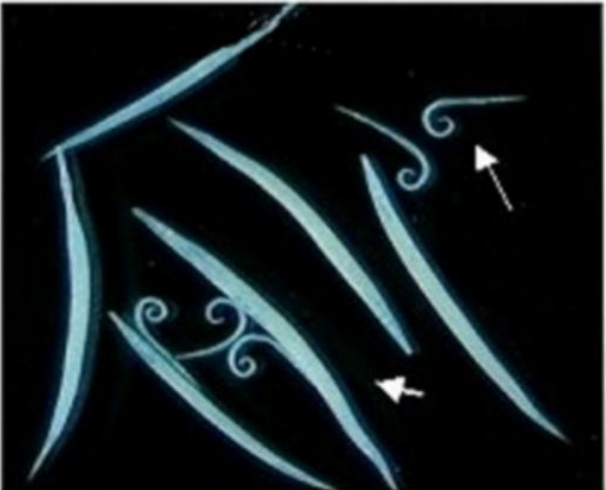
Barium meal X-ray examination  
Ascaris lumbricoides in the lumen of the intestine

**Острица детская**  
***(Enterobius vermicularis)***

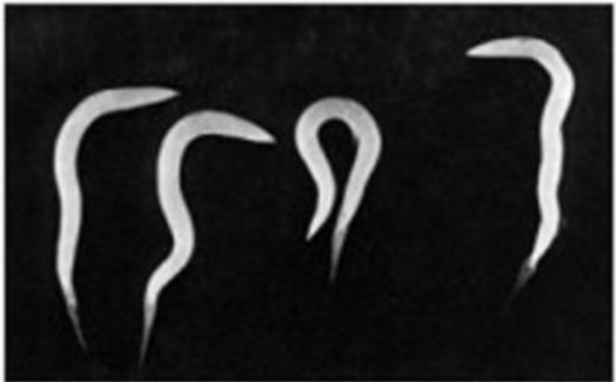
*Enterobius vermicularis* 8 - 13 × 0.3 - 0.5mm



Female  
8-13 x 0.3-0.5 mm



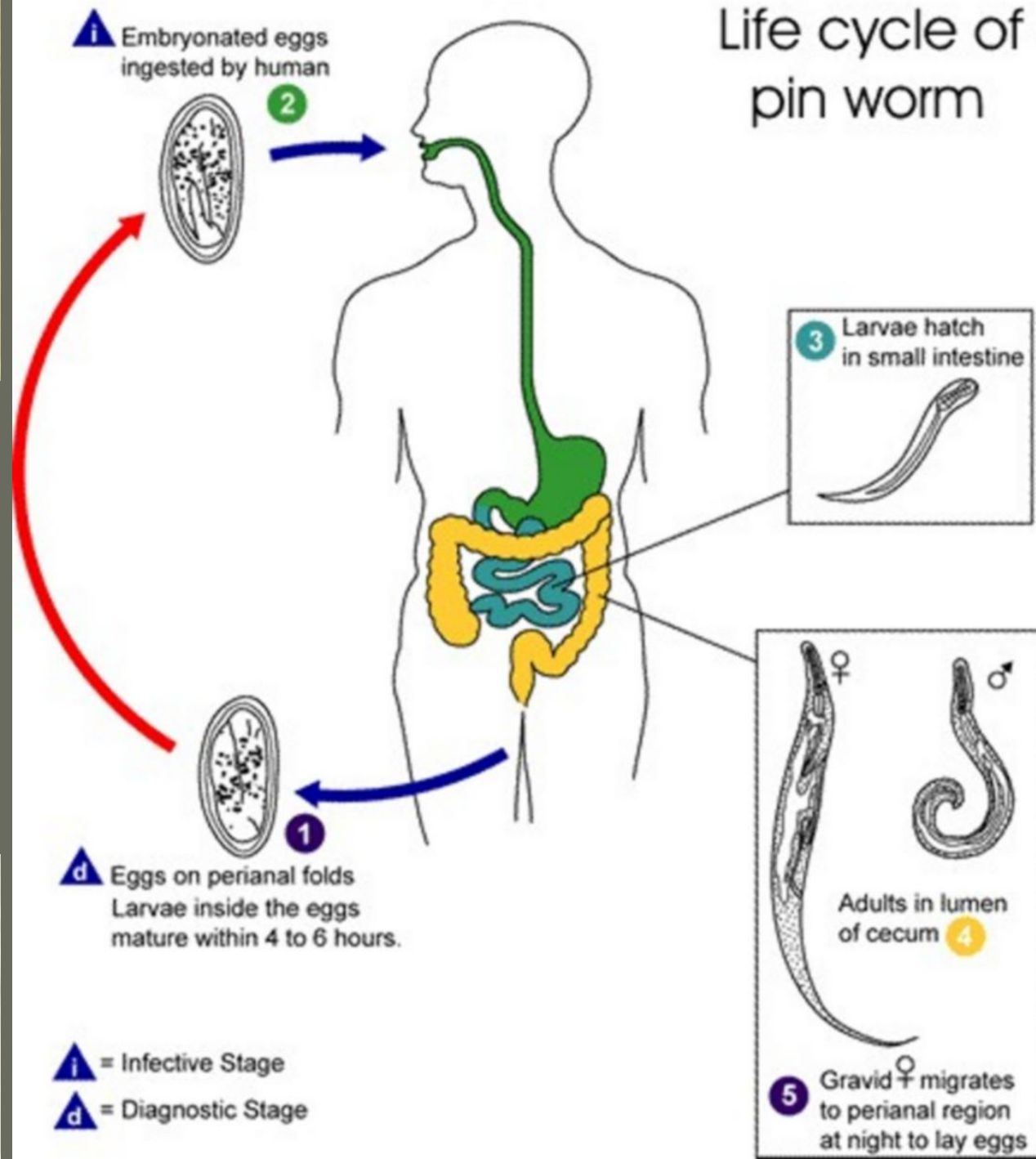
*Enterobius vermicularis*



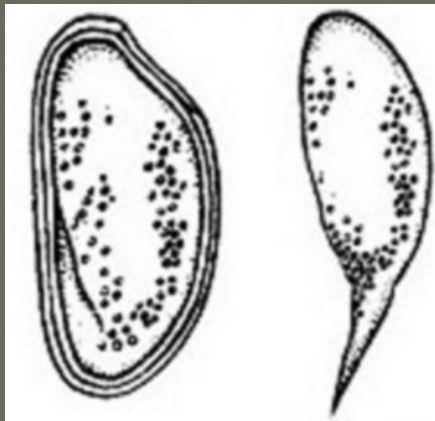
*Enterobius vermicularis* adult female worms. (Courtesy: The Louisiana State University School of Medicine.)

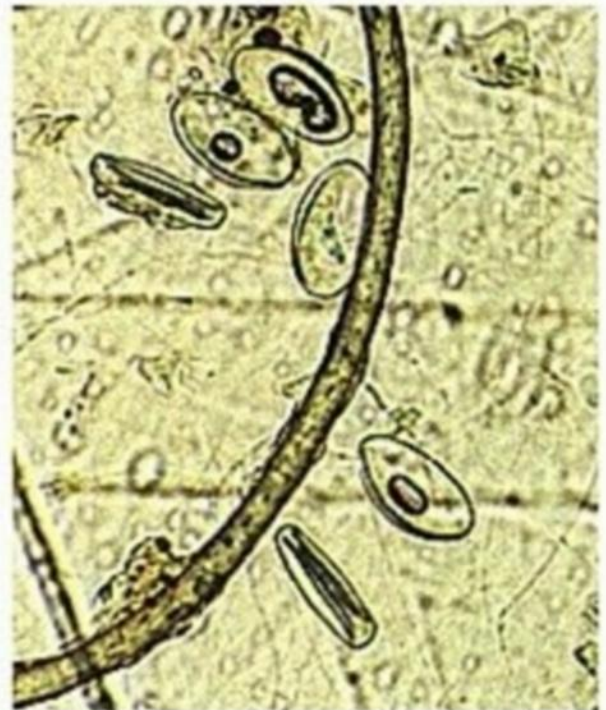
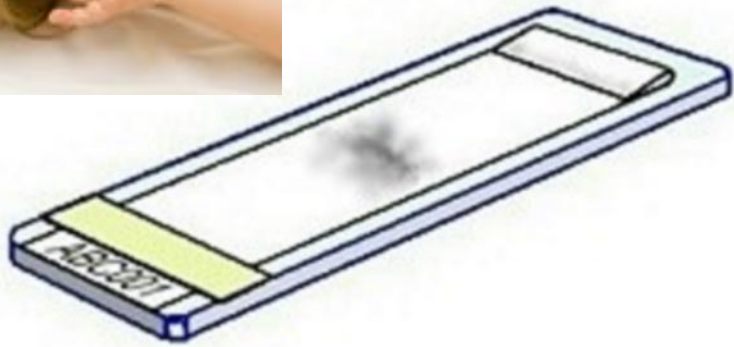


# Life cycle of pin worm



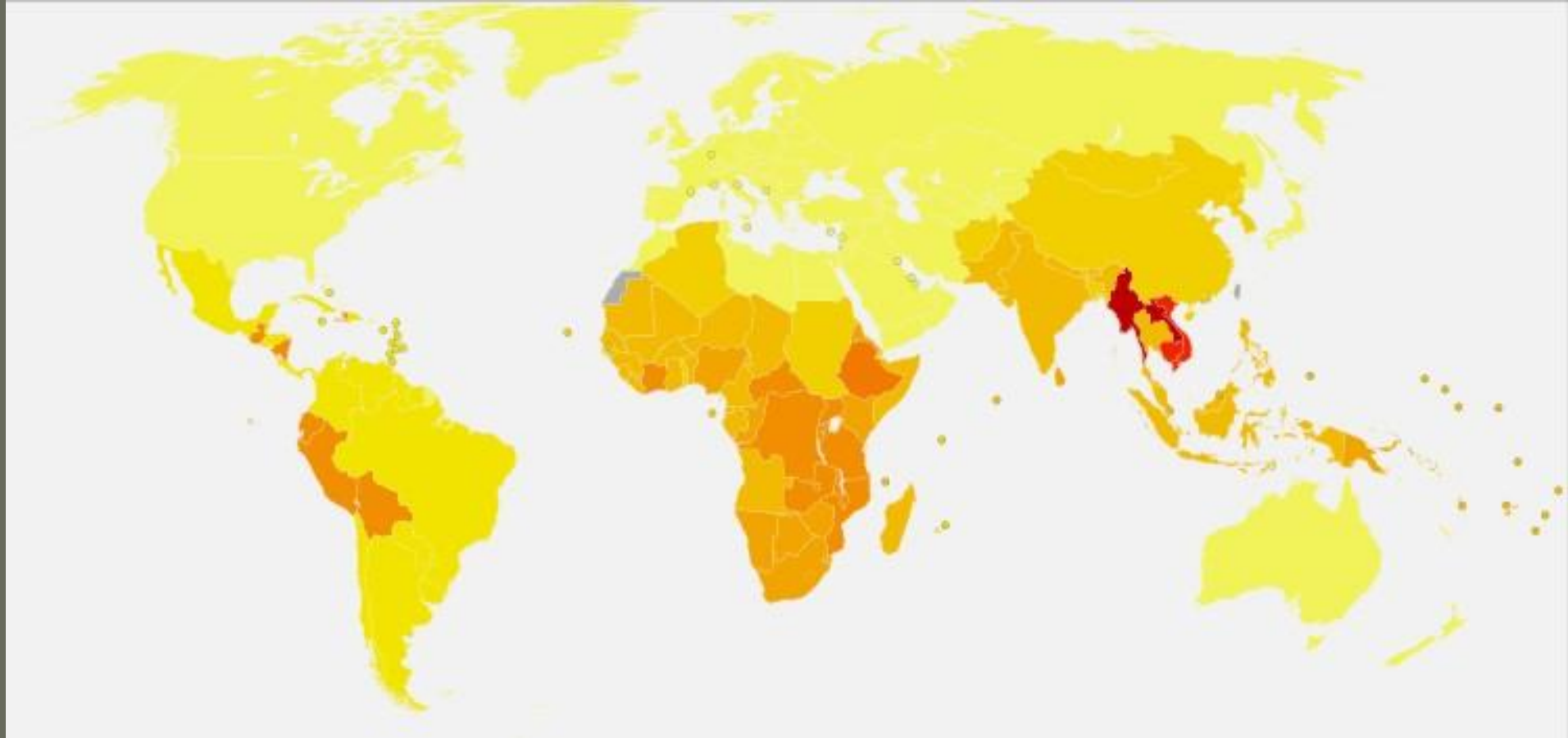
Asymmetric-shaped Tadpole stage larvae







**Власоглав**  
**(Trichuris trichiura=**  
**Trichocephalus trichiurus)**



Worms can live up to 5 years, up to 20,000 eggs per day.

Light infestations (<100 worms) are frequently asymptomatic.

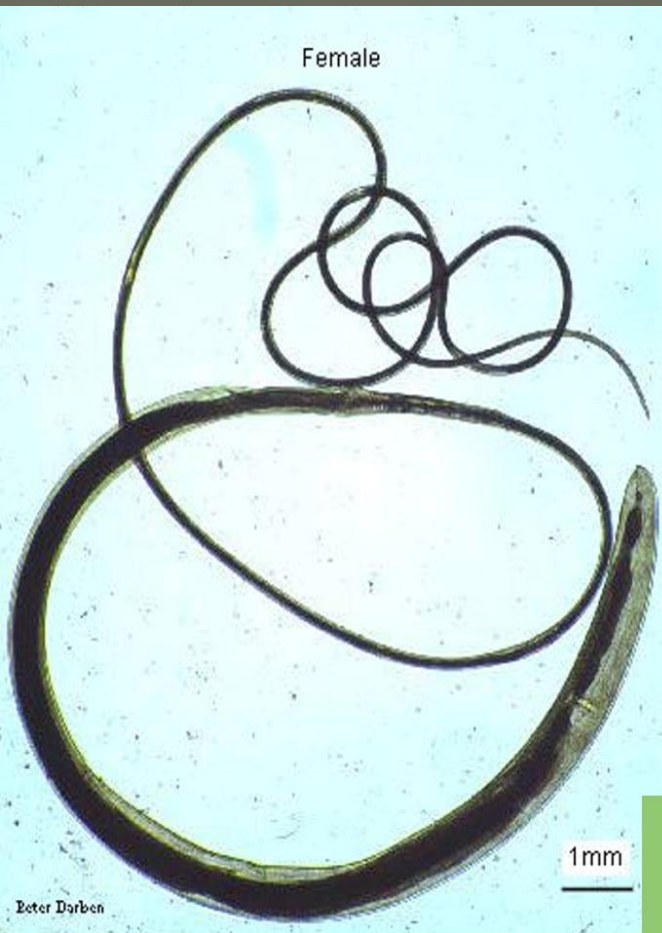
Heavy infestations may have bloody **diarrhea**.

Long-standing **blood loss** may lead to iron-deficiency **anemia**.

**Rectal prolapse** is possible in severe cases.

**Vitamin A** deficiency may also result due to infection.

Mechanical damage to the mucosa may occur as well as toxic or inflammatory damage to the intestines of the host.



*(Trichuris trichiura)*

# Whipworm

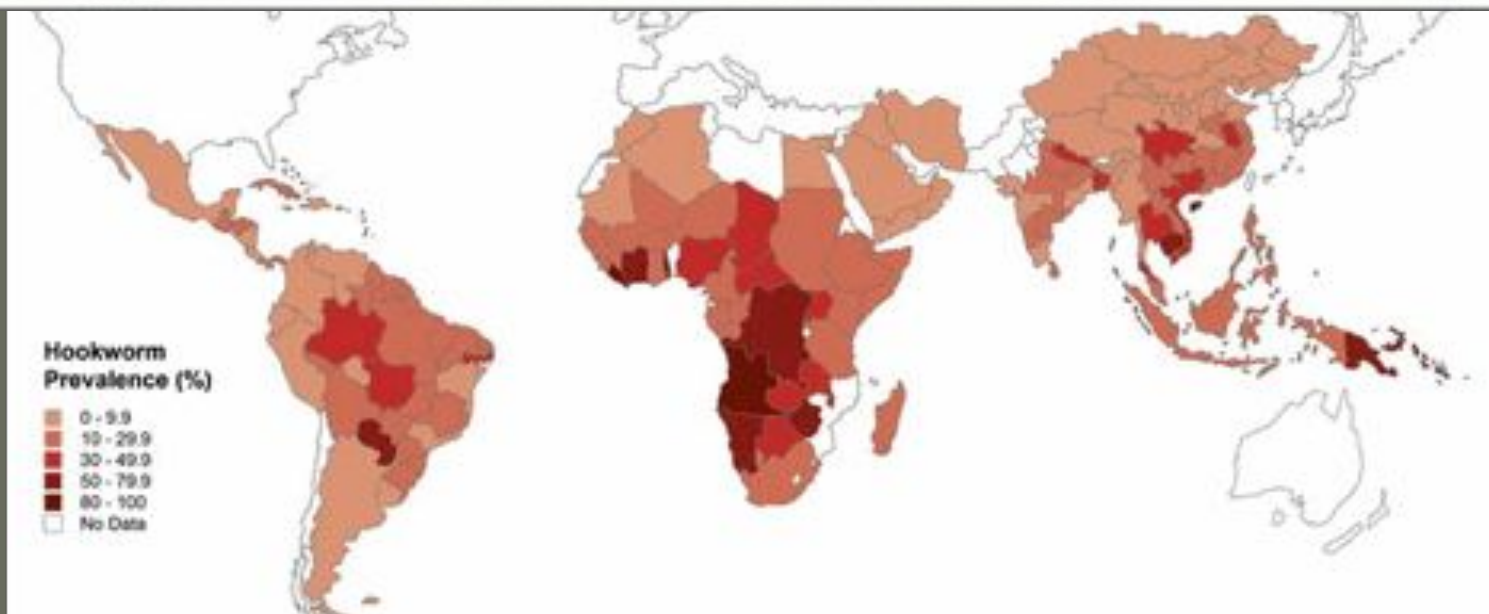


**Анкилостомиды:**

**Кривоголовка**  
***(Ancylostoma duodenale)***

**и**

**Некатор**  
***(Necator americanus)***





# Ancylostoma



# Necator



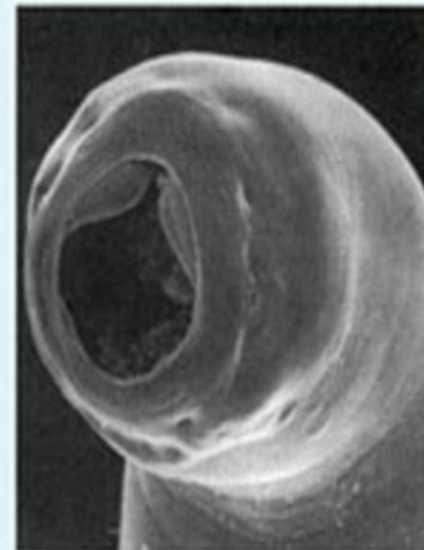
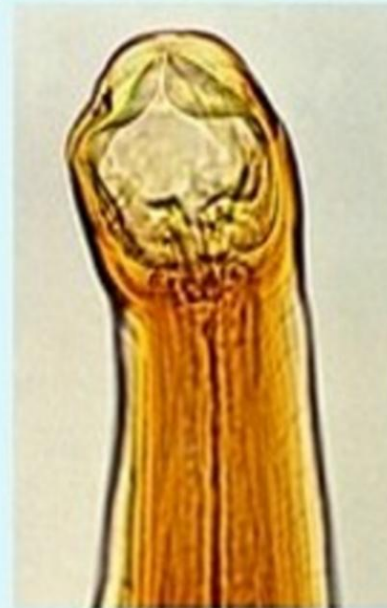
# Cutting plates, teeth

## Ancylostoma duodenale



*Ancylostoma duodenale* mouth parts showing teeth

## Necator americanus

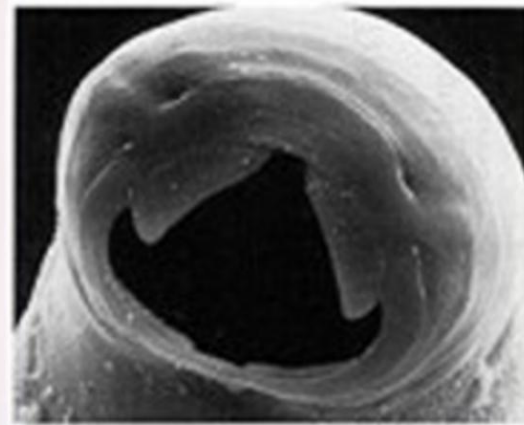
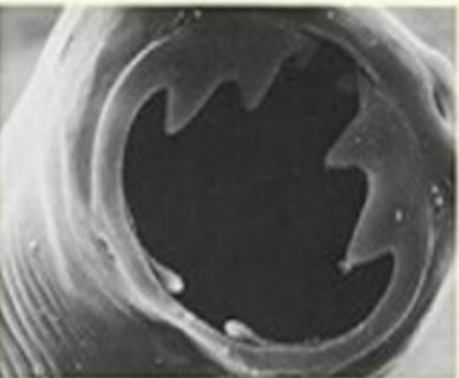


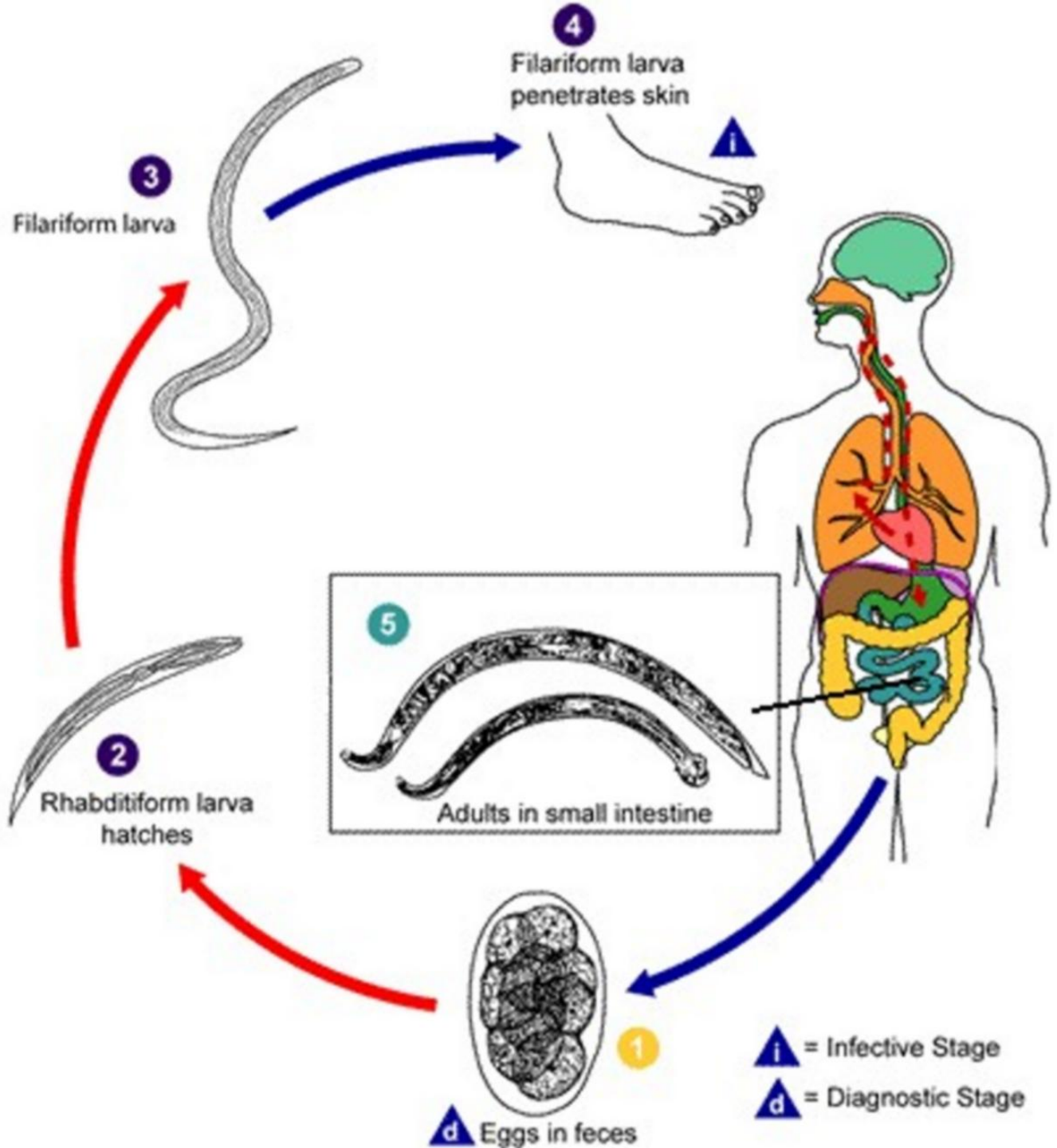
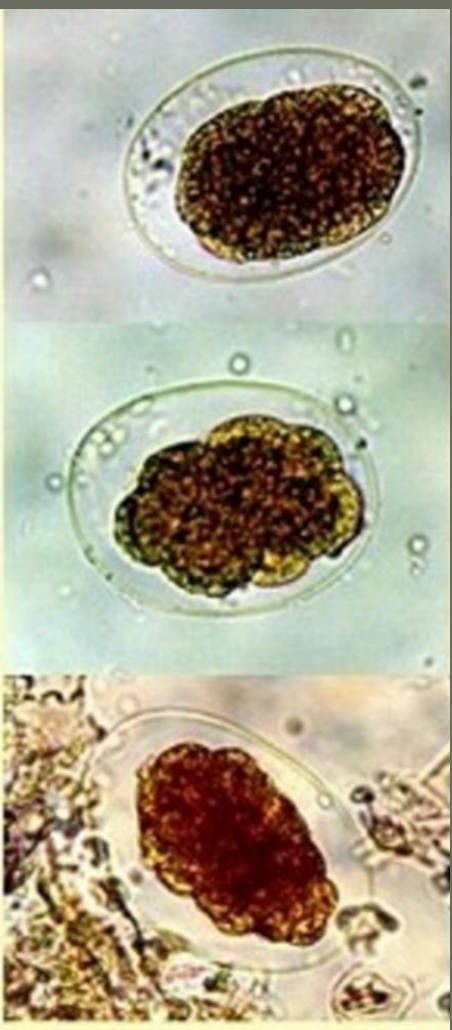
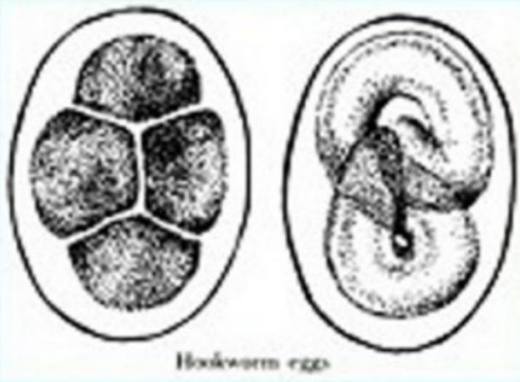
*Necator americanus* adults: frontal view of head  
400x Photomicrographs by Zane Price

## Ancylostoma braziliense Ancylostoma ceylanicum



## Ancylostoma caninum



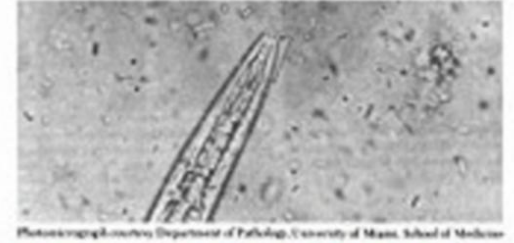
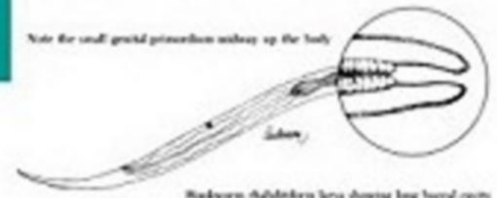


# Larvae

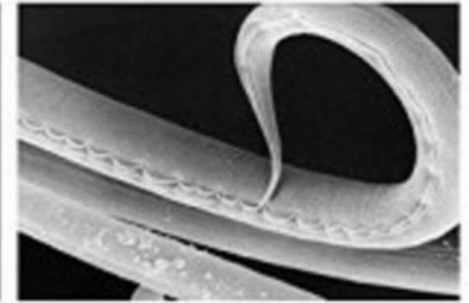
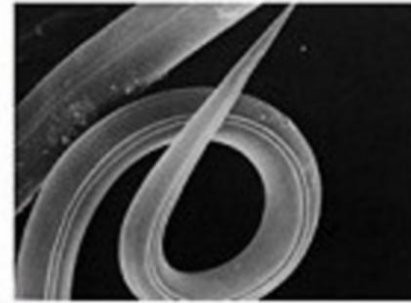
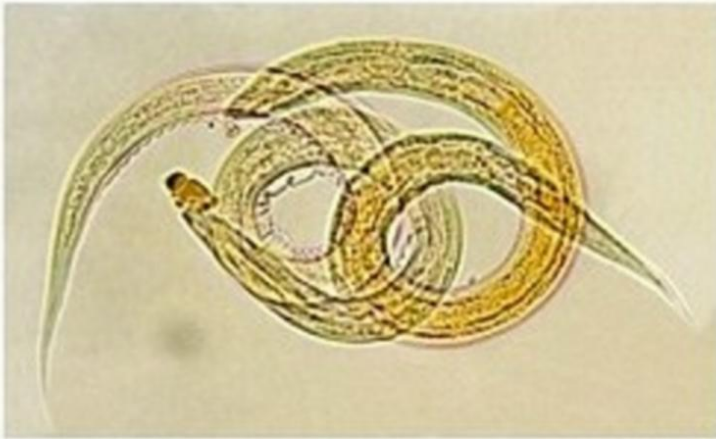
● 28-30°C (23°C~33°C)

● Рабдитовидная личинка

● Филяриевидная личинка



Rhabditi-form 275 x 16 μ



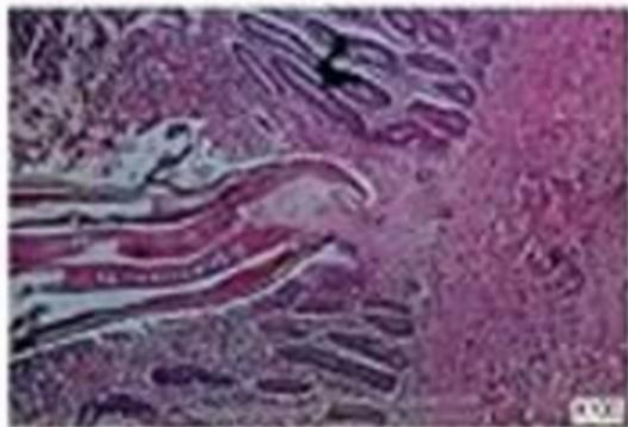
Filaria-form larvae or ensheathed larvae

Infective stage

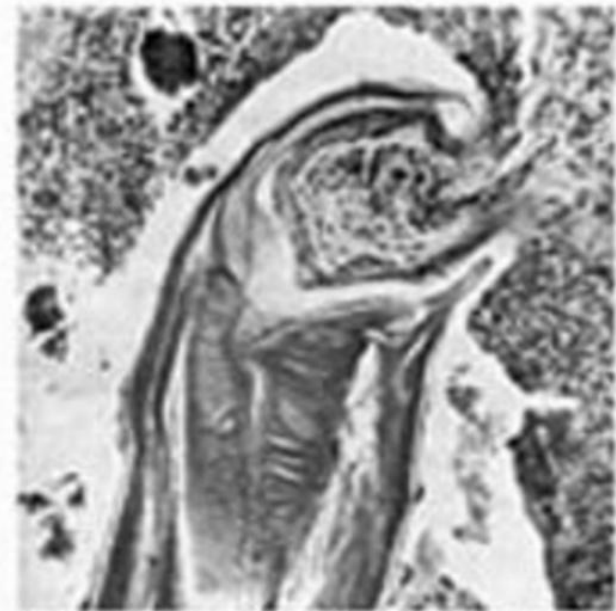
1:2

0.6 - 0.7 mm

# PATHOLOGY



Section of a hookworm attached to the mucous membrane. The section has gone through the buccal capsule and shows the host tissues which are sucked in by the muscular oesophagus. H and E.



Longitudinal section through hookworm attached to intestinal mucosa. (From US Army Museum collection.)



Adult hookworm *in situ*



Adult *Ancylostoma caninum* in human ileum through a fibre optic endoscope.

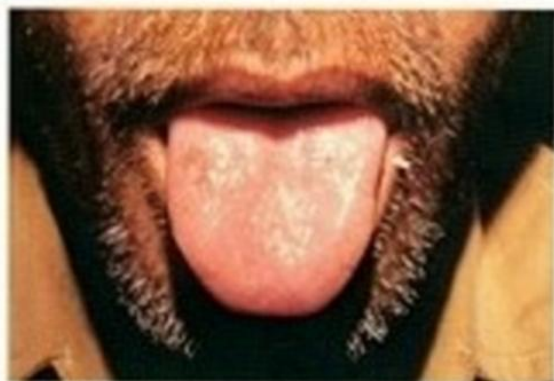


A hookworm attached to the mucous membrane. In this case *A. caninum*. Note the large haemorrhagic area around the site of attachment.

Haemorrhagic  
area

# SYMPTOMATOLOGY

- Ground itch : Itching and burning followed by edema
- Erythema papular eruption and vesicle
- Bronchial pneumonitis(Hookworm Pneumonia)
- Atrophic glossitis



Atrophic glossitis in a patient with severe microcytic hypochromic anaemia due to heavy hookworm infection. The tongue is smooth and lacks papillae.

- Nail deformities



Severe hookworm anaemia in the same patient showing nail deformities. Koilonychia. In this condition, the nails become thin and concave with raised edges.



Clinical picture of gross hookworm disease



Hookworm anaemia



Blood film from a patient with hookworm anaemia the iron- deficiency type

# CUTANEOUS *L*ARVA *M*IGRANS

## CREEPING ERUPTION



Cutaneous larva migrans.



cutaneous larva migrans



Cutaneous larva migrans on the buttock of a child.

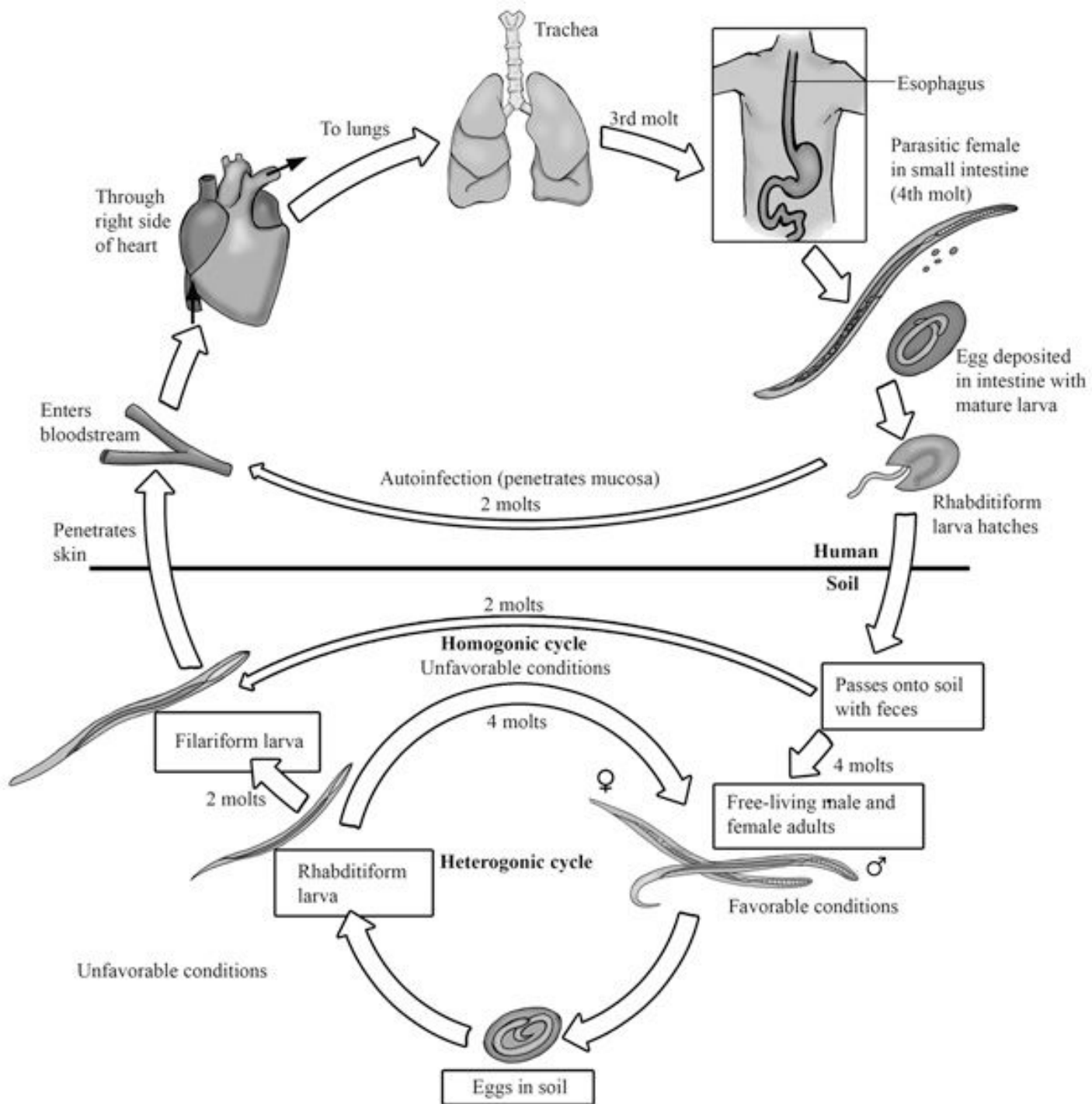


**'Creeping eruption' due to larvae of dog hookworms** (e.g. *A. braziliense*, *A. caninum*, *A. ceylanicum*) typical serpiginous tracks

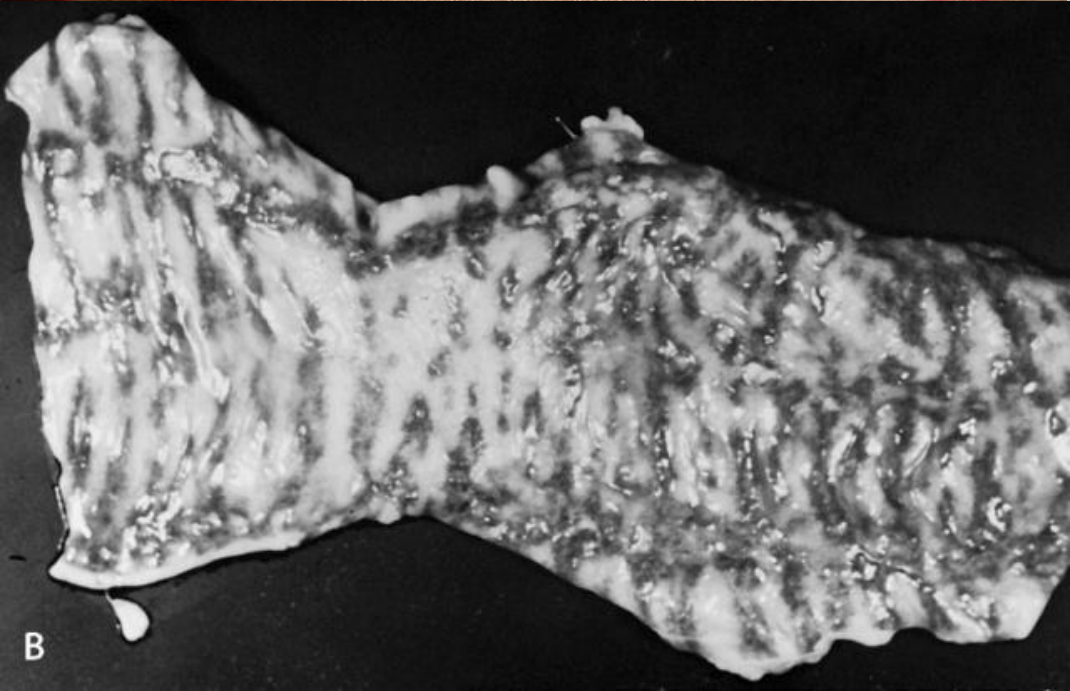
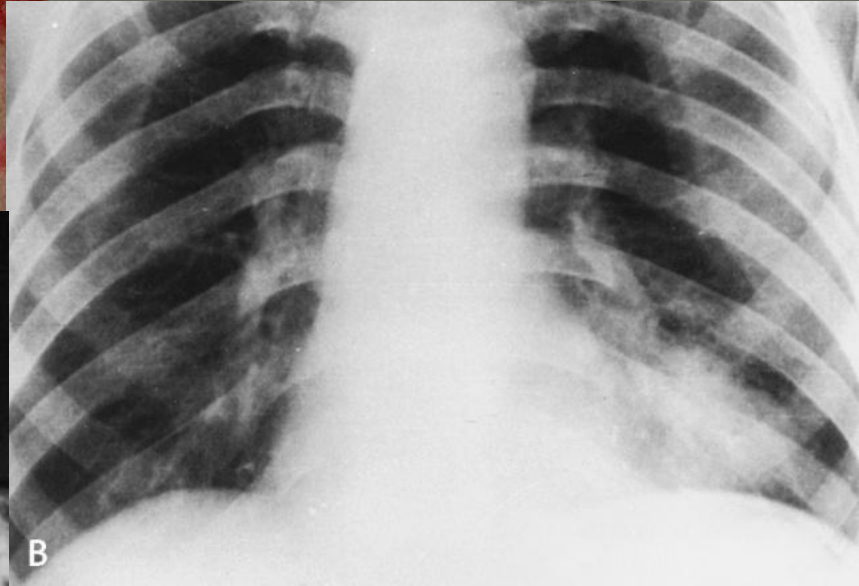
# Угрица кишечная (*Strongyloides stercoralis*)





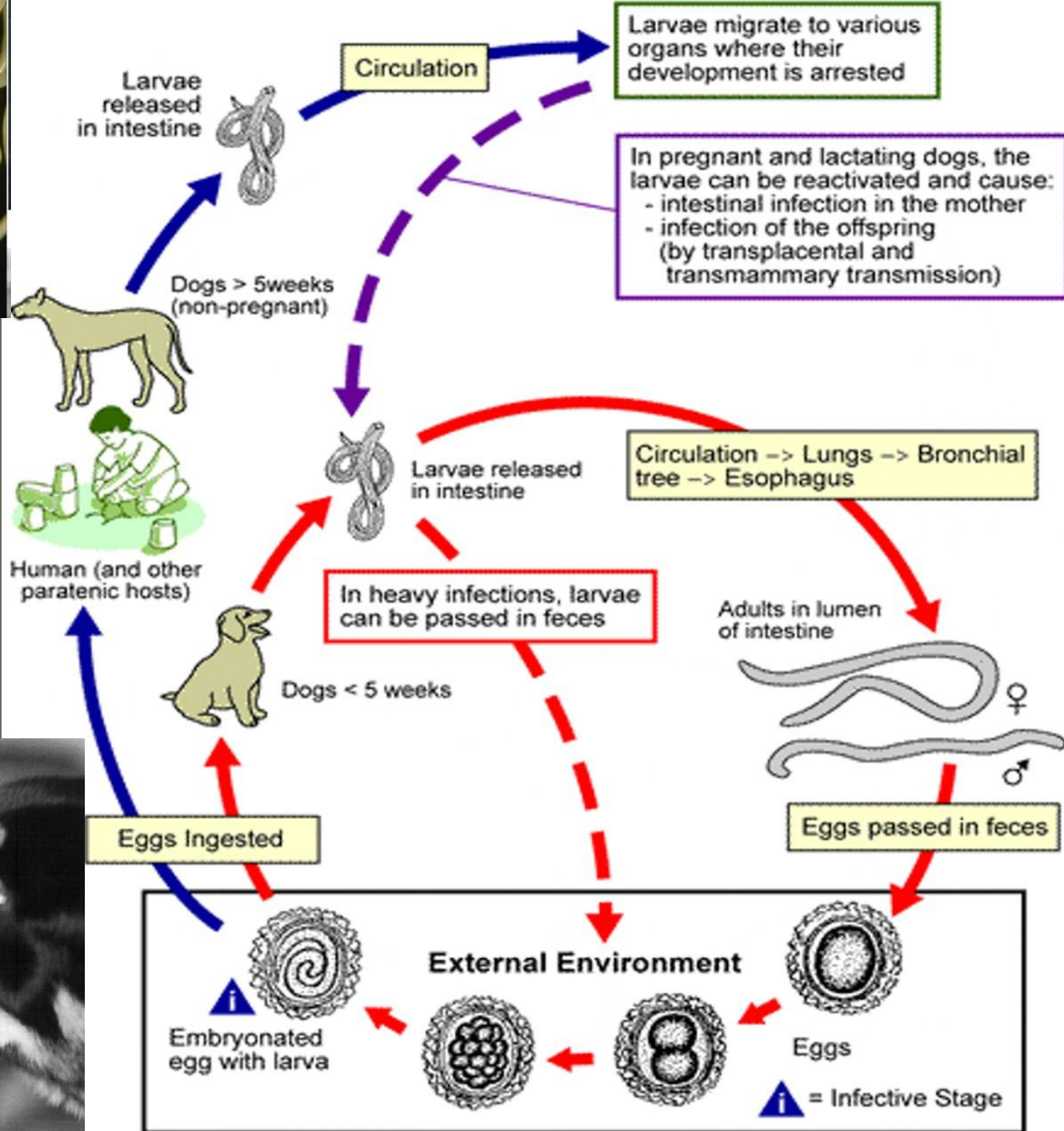
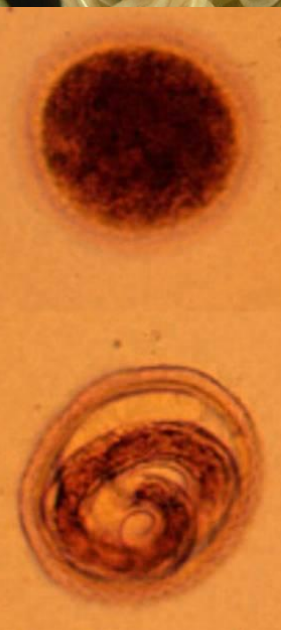


# **STRONGYLOIDE LARVA UNDER HUMAN SKIN**



B

**Токсокара**  
**(Toxocara canis)**





# NEMATODES

Scale:

0 24 48  $\mu m$



*Enterobius vermicularis*



*Ascaris lumbricoides*  
fertile



*Ascaris lumbricoides*  
infertile



Hookworm