ASCARIS LUMBRICOIDES

A.lumbricoides (Roundworm)

INTRODUCTION :

- Worldwide distribution.
- Tropical and subtropical regions, and areas with inadequate sanitation
- Definitive host : ***Man***
- No Intermediate host
- Largest nematode – 15 – 35 c.m

2

HABITAT :

- S.I – In jejunnum

MORPHOLOGY :

ADULTWORM -

- Cylindrical, tapering anteriorly
- Pinkish cream body
- Three finely toothed lips – 1-dorsal, 2-ventral
- Toxic fluid - ***ASCARON***

MALE – 15-30 cm

- Ejaculatory duct and a pair of copulatory spicules

FEMALE – 25-40 cm

- Vulvar waist – anterior and middle one third of the body
- Lays app. 2,00,000 eggs / day

- An adult *Ascaris lumbricoides* worm. tapered ends; length 15 to 35 cm (the females tend to be the larger ones).

EGGS :

- Fertilized and Unfertilized eggs

Fertilized eggs : 60-75 x 40-50 um

- Bile stained
- Inner lipoidal layer, thick transparent middle layer, outermost albuminoid layer if lost called *decorticated* eggs
- Unsegmented ovam with crescentic area
- Float in saturated salt solution

Unfertilized eggs : 90 x 55 um

- Inner lipoidal layer is absent, small atrophied ovam within an irregular coating of albumin
- Heaviest of all the helminthic eggs
- Do not float on saturated salt solution
- Life span – 1 year

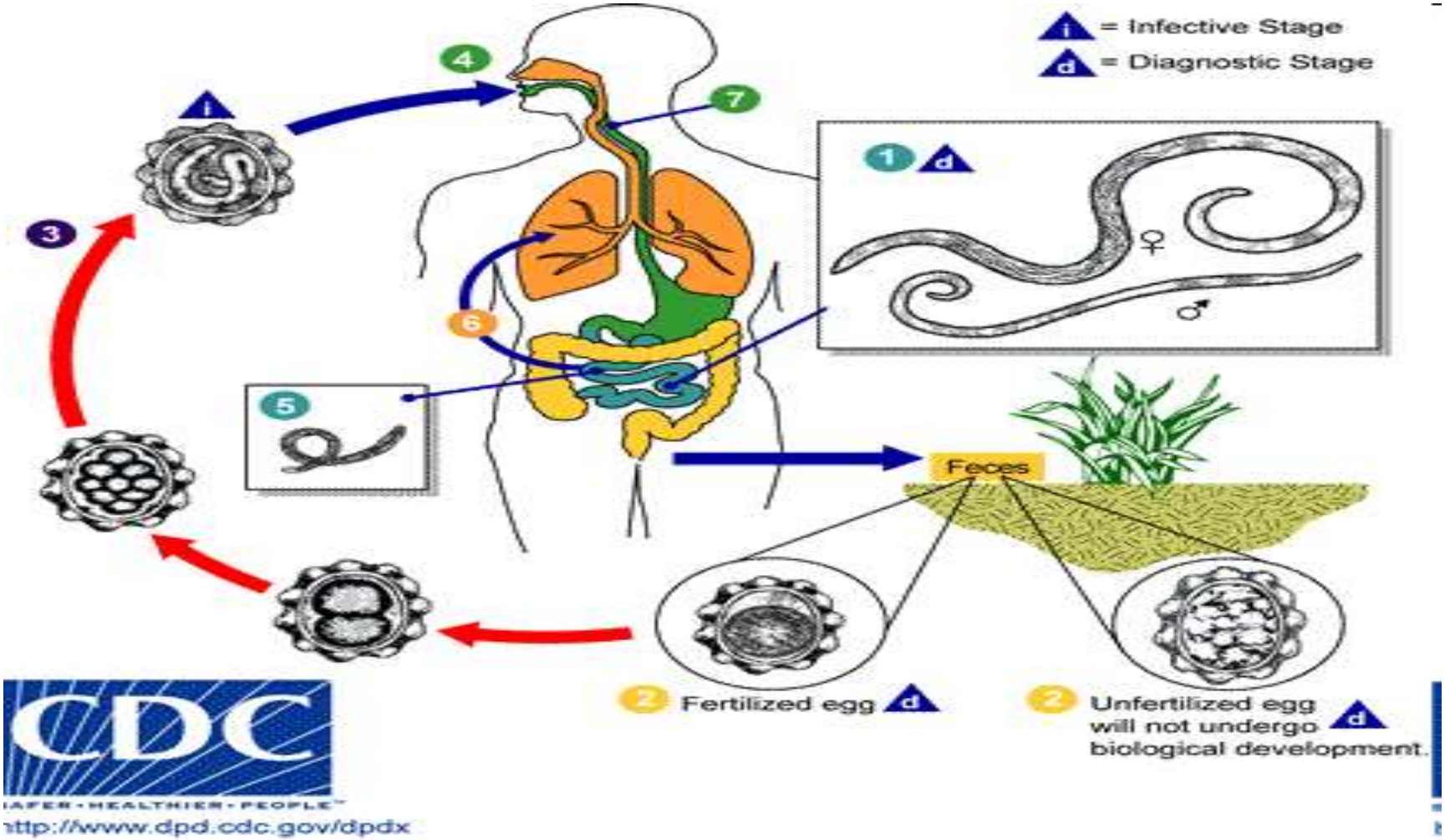
unfertilized egg

60 - 90 µm in length

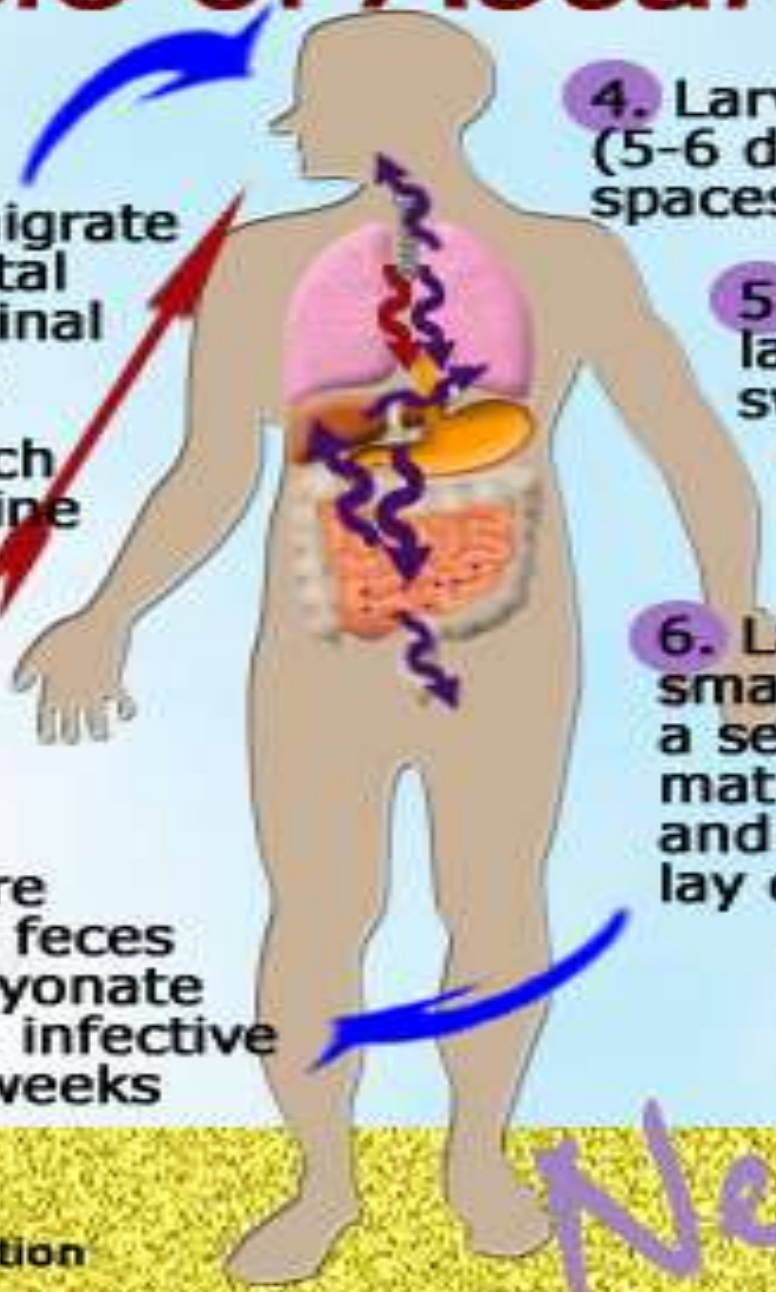
fertilized egg

45 to 75 µm in length

LIFE CYCLE


i = Infective Stage
d = Diagnostic Stage
1 d
2 Fertilized egg d
2 Unfertilized egg will not undergo biological development. d
Feces
http://www.dpd.cdc.gov/dpdx

Life cycle of *Ascaris spp.*

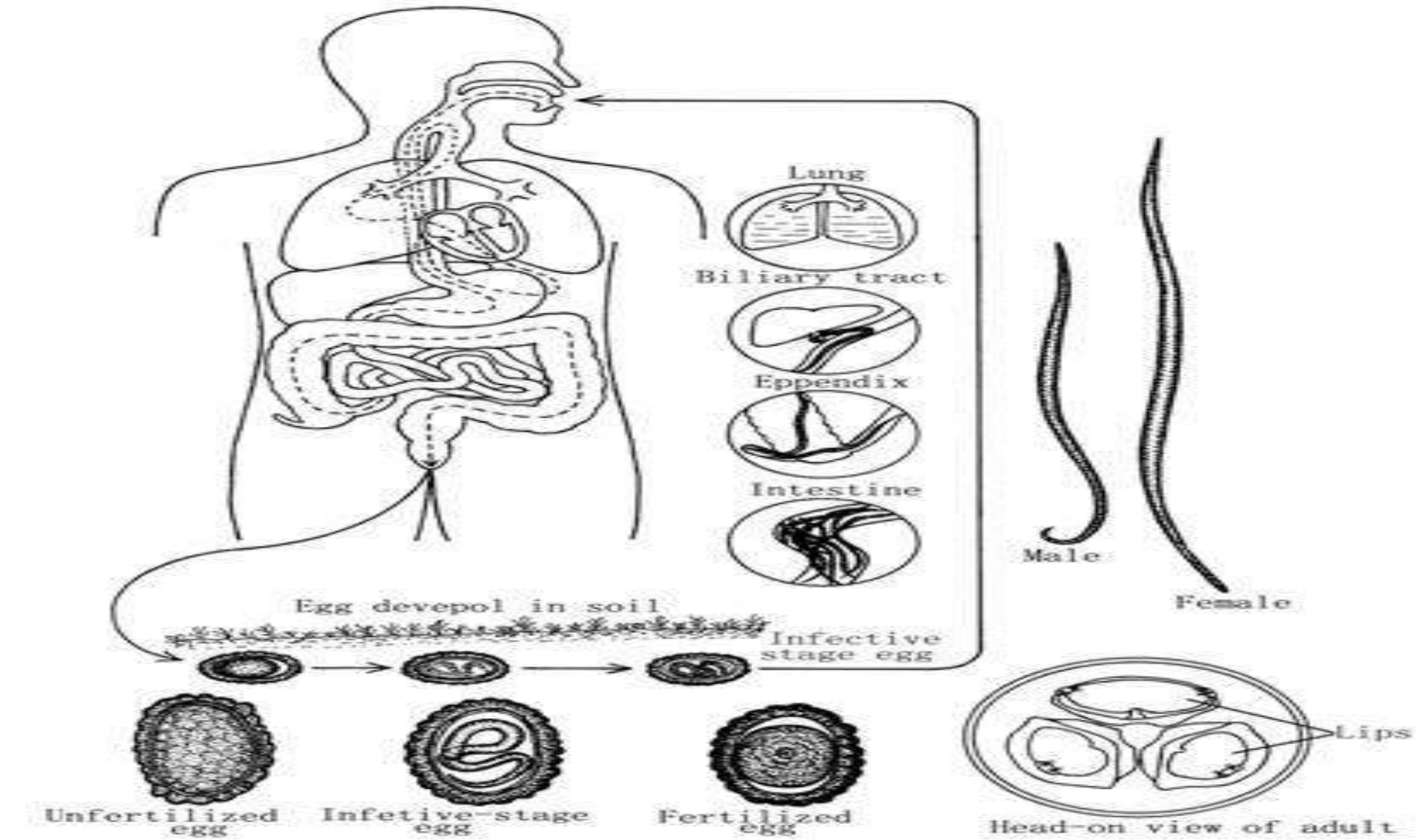


1. Infective eggs are swallowed
2. Eggs reach small intestine and hatch
3. L3 larvae migrate to hepatic portal through intestinal wall (1-2 dpi)
4. Larvae enter lungs (5-6 dpi) and alveolar spaces causing cough
5. Coughed-up larvae are swallowed
6. Larvae reach small intestine for a second time, mature (50-55 dpi) and adult worms lay eggs
7. Eggs are passed in feces and embryonate becoming infective in a few weeks

dpi – days post-infection

Nemrose

PATHOGENICITY



PATHOGENICITY

ADULT WORM :

- Nausea and vomiting
- Intestinal obstruction
- Toxication - body fluid – ***Ascaron***
- Malnutrition and Nightblindness due to Vitamin A deficiency

RESTLESS WANDERERS :

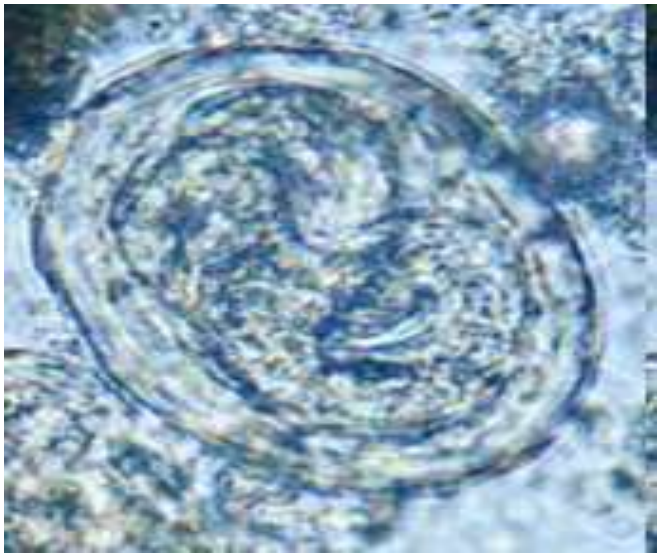
- Insinuate themselves into any aperture
- May crawl out of mouth or naris
- Oropharynx --- eustachian tube --- penetrate to the middle ear --- through tympanic membrane to external auditory meatus

- Enter into trachea – respiratory obstruction
- Appendix – appendicitis
- Bile duct – obstructive jaundice
- Pancreatic duct – acute haemorrhagic pancreatitis

MIGRATING LARVA :

Loeffler's syndrome - **Fever, cough, dyspnea, hemoptysis, eosinophilic pneumonitis**

- **Hypersensitivity reaction**
- **Eosinophilia**



Embryonated egg with Rhabditiform larva – infective form

VISCERAL LARVA MIGRANS

- By the eggs of nematodes of animals
- **Toxocara canis (dog roundworm)**
- **T. cati (cat roundworm)**
- Larvae --- in S.I --- liver --- lungs --- trachea --- oesophagus --- S.I.
- **IN HUMAN – NOT CONVERT INTO ADULT WORM**
- Where ever larvae settle – attacked by phagocytic cells – formation of granulomatous lesion – progress is arrested.

VISCERAL LARVA MIGRANS :

- Increased eosinophilia (15-80%)
- Hepatomegaly
- Pneumonitis
- Hypergammaglobulinaemia and fever
- May invade the eye – ocular larva migrans

LABORATORY DIAGNOSIS

DEMONSTRATION OF ADULT WORMS :

- Worm may pass through mouth, anus, nose
- Barium meal – in S.I

DEMONSTRATION OF LARVAE :

- In sputum during stage of migration

DEMONSTRATION OF EGGS :

- M/E and conc. methods

SERODIAGNOSIS :

- IHA, IFA,

DLC : Eosinophilia