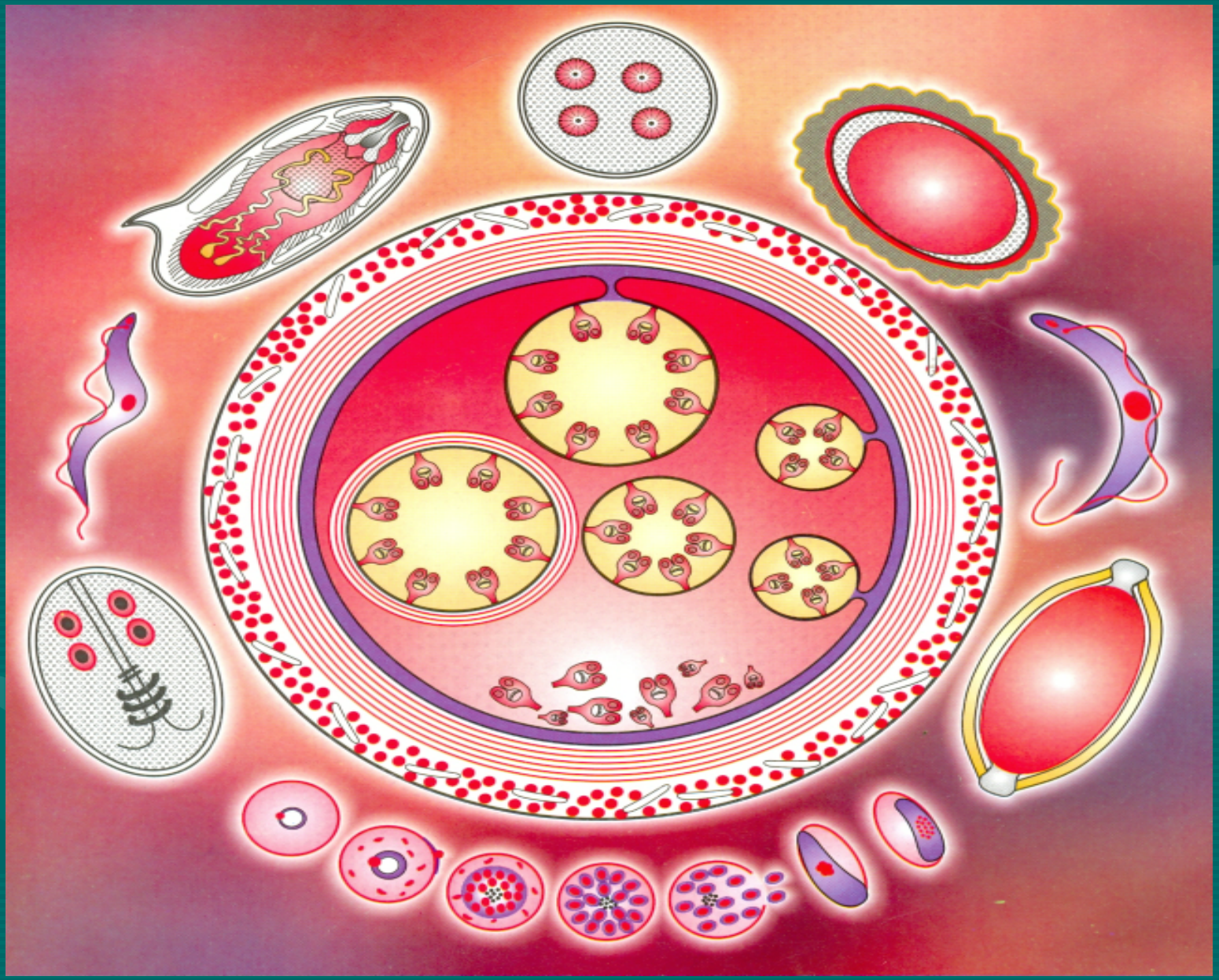
DR. ABDUR REHMAN

LECTURER/DEMONSTRATOR

AN INTRODUCTION TO MEDICAL PARASITOLOGY



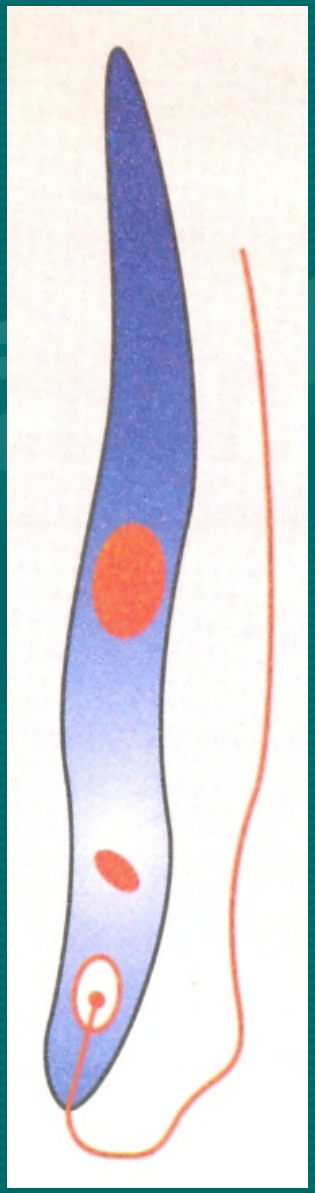
LEARNING OUTCOMES

After completing this course you should be able to:

- Classify important parasites
- State the meaning of commonly – used terms
- Describe how parasitic infections affect communities in various societies and that knowledge of their life cycle is necessary for effective prevention and control
- Discuss the
- epidemiology
- basic life cycle
- clinical presentation
- management
- control of some medically important parasitic

WHY STUDY PARASITOLOGY

- Parasitic diseases continue to be common causes of morbidity and mortality in Humans and animals
- One of the top killers of people are parasitic diseases
- The world health Organization estimates that parasites cause nearly 20 percent of all infectious diseases



HISTORY OF HUMAN PARASITOLOGY

- During our relatively short history on Earth, humans have acquired an amazing number of parasites, about 300 species of helminth worms and over 70 species of protozoa
- Many of these are rare and accidental parasites, but we still harbor about 90 relatively common species, of which a small proportion cause some of the most important diseases in the world

EPIDEMIOLOGY

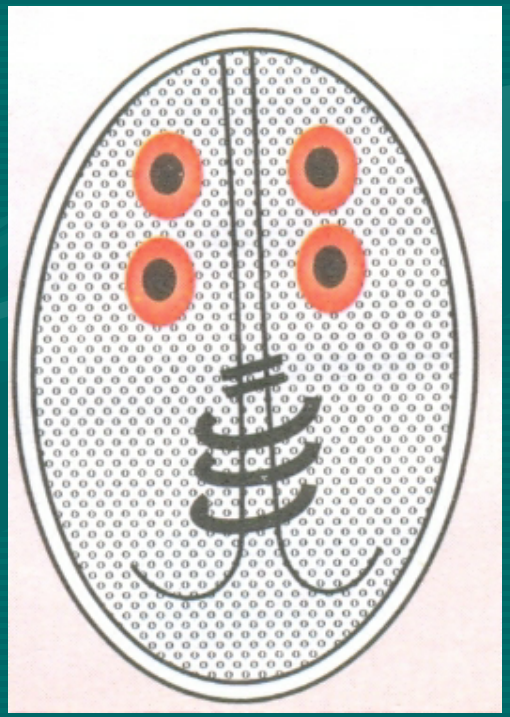
- Although parasitic infections occur globally the majority occur in tropical regions, where there is
- poverty,
- Poor sanitation and personal hygiene.
- Lack of access to safe drinking water
- Often entire communities may be infected with multiple different organisms which remain untreated because treatment is neither accessible nor affordable

EPIDEMIOLOGY CONT..

- Effective prevention and control requires “mass intervention strategies” and intense community education. Examples include:
- General improved sanitation: pit latrines, fresh water wells, piped water
- Vector control: insecticide impregnated bed nets, spraying of houses with residual insecticides, drainage, landfill
- Mass screening and drug administration programmers which may need to be repeated at regular intervals

MEDICAL PARASITOLOGY

- Deals with the parasites which
- Infect man
- Diseases they produce
- Response generated by man against them
- Diagnosis
- Prevention

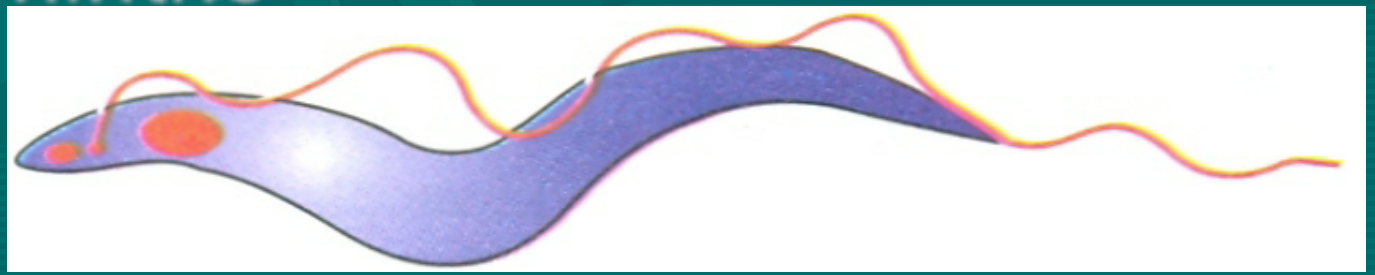


PARASITE

- "A living organism that acquires some of its basic nutritional requirements & shelter through its intimate contact with another living organism"

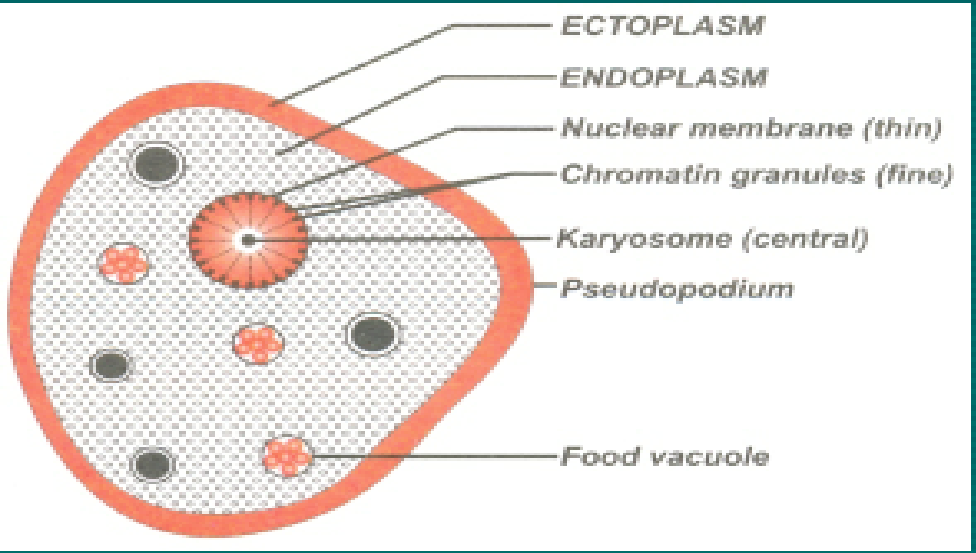
- **TYPES OF PARASITE**:

1. **MICROPARASITE:**
- Viruses, bacteria & protozoa
2. **MACROPARASITE:**
- Helminths



ON THE BASIS OF LOCATION

1. **ECTOPARASITE:**
- Lives outside on the surface of the body of host
- Infestation
- Lice
2. **ENDOPARASITE:**
- Lives inside the body of host e.g. in the blood tissues, body cavities, digestive tract & other organs.
- Infection
- Protozoa & helminth



HOST

- "The organism in, or on which the parasite lives and causes harm"

TYPES OF HOST

1. **Definitive Host:** "The organism in which the adult or sexually mature stage of the parasite lives"
2. **Intermediate Host:** "The organism in which the parasite lives during a period of its development only" Harbours the larval stages
3. **Paratenic host:** In which larval stage of a parasite survives but does not develop further
4. **Reservoir :** Host serving as a source of infection for others

ZOONOSIS

- A parasitic disease in which an animal is normally the host – but which also infects man

VECTOR

A living carrier (e.g. an arthropod) that transports a pathogenic organism from an infected to a non – infected host. A typical example is the female anopheles mosquito that transmits malaria

- **Biological vector:**

Essential to the parasites life cycle

- **Mechanical vector:**

Carries parasite on or in (just passing through)

HOST- PARASITE RELATIONSHIPS

1. **SYMBIOSIS:** (Both benefit)
   - both are so dependent upon each other that one cannot live without the help of other
   - & none of the partners suffers any harm from the association
2. **COMMENSALISM:** (Latin sharing a table)
   - only commensal is deriving the benefit, without causing injury to its hosts
   - A commensal is capable of leading an independent life
3. **PARASITISM:**
   - parasite derives benefit & host always suffers some injury
   - host at the same time, offers some resistance to

SOURCES OF INFECTION

1. **Contaminated Soil & water**
   - Ascaris Lumbricoides
   - Trichuris Trichura
   - Necator Americanus
2. **Freshwater fishes**
   - Diphyllobothrium Latum
   - Clonorchis Sinensis
3. **Crab & Crayfishes**
   - Paragonimus Westermani
4. **Raw or undercooked Pork**
   - Trichinella Spiralis
   - Tinea Solium
5. **Raw or undercooked Beef**
   - Tinea Saginata
   - Toxoplasma Gondii

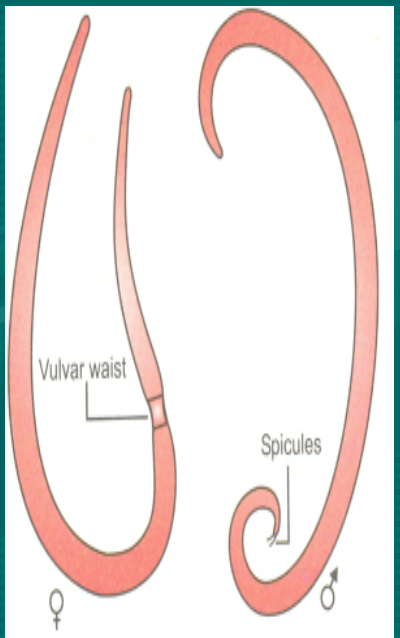


Fig. 11.12. Adult worms of *Ascaris lumbricoides*.