PARASITE & HOST RELATIONSHIP

1- Parasite & types.
2-host & types.
3- Sources of parasitic infection.
4-Portal of entry of parasites.
5-Relations between organisms
6-Classification of parasites.

PARASITE: Is an organism which lives on or within another organism called a host at whose expense it obtains food and protection.

**TYPES OF PARASITES**

<table>
<thead>
<tr>
<th>Obligatory</th>
<th>Facultative</th>
<th>Accidental</th>
<th>Temporary</th>
<th>Caprozoic (spurious)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those organisms that can not exist without a host e.g. <em>Malaria</em> and <em>Oxyuris</em>.</td>
<td>Those organisms that can either live freely in soil or water or as parasites in hosts when unfavorable environmental conditions occur.</td>
<td>Free living organisms which enter human body by mistake e.g. <em>Larvae</em> of flies.</td>
<td>Visits host from one time to another for feeding.</td>
<td>Are stages of parasites which when swallowed pass through the intestine in feces without causing infection.</td>
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<table>
<thead>
<tr>
<th>Ectoparasite</th>
<th>Endoparasite</th>
<th>Specific parasite</th>
<th>Opportunistic</th>
</tr>
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<tbody>
<tr>
<td>Which live on the outside of the host e.g. <em>Pediculus</em>.</td>
<td>Live within the body e.g. <em>Ancylostoma</em>.</td>
<td>which affects only one species of host</td>
<td>Infection which may become very acute in ill or immunocompromised persons but in normal (immunocompetent) persons the infection remains either mild or asymptomatic. AIDS patients and drug addicts.</td>
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**DEFINITIVE HOST (DH):**
Harbors the adult or sexual stages of the Parasite

**INTERMEDIATE HOST (IH):**
Harbors part or all larval or asexual stages of the Parasite

**PARATENTIC (TRANSPORT) HOST:**
Harbors the parasites in an arrested state of development.

**AMPLIFIER HOST:**
Is an intermediate host.

**VECTOR:**
Is an arthropod host transmits parasites from one host to another e.g. fleas vector of *Yersenia pestis* from rodents to man.

**RESERVOIR HOST:**
Animals harbor sexual or adult stages thus serves as source of infection for other susceptible hosts.

**ZOONOSIS**
Diseases are transmitted from animals to man.

**Anthroponosis:** parasitic infections are mainly found in man as enterobiasis and trichomoniasis.

**Classification of zoonotic diseases**

I. According to the source of infection:
A) **Feral or sylvatic zoonosis:** the source of infection is a wild animal, in African trypanosomiasis.
B) **Domestic zoonosis:** parasitic diseases transmitted from domesticated animals as in hydatid disease.

II. According to the method of transmission:
1. **Direct zoonosis**: infection is directly transmitted from the reservoir host to man as in trichinosis. animal→man
2. **Metazoonosis**: infection is transmitted from the reservoir host to man via an arthropods as in leishmaniasia.
3. **Saprozooonosis**: infection is transmitted via a non-animal source as the soil and water as in Fasciola.
### Relations between organisms

<table>
<thead>
<tr>
<th>Parasitism</th>
<th>Commensalism</th>
<th>Symbiosis</th>
<th>Mutualism</th>
<th>Phoresis</th>
</tr>
</thead>
<tbody>
<tr>
<td>one of the two organisms (parasite) benefits, as it gains protection &amp; nutrition on the expense of the other (host) that suffers from such association (Schistosoma).</td>
<td>in which both organisms live together and the commensal organism benefits without causing harm to the other (Entamoeba coli).</td>
<td>In which both organisms benefit from the association and can not exist independently.</td>
<td>Relationship beneficial to both associates.</td>
<td>in which the phoront is usually the smaller organism and is mechanically carried by the large host</td>
</tr>
</tbody>
</table>

### Sources of parasitic infection:
1. Contaminated soil with human excreta.
2. Contaminated water may contain viable cysts of parasitic **amaebae**, 
3. Food
   - Infected under-cooked meat
   - Fresh water fish constitute the source for fish
   - Raw vegetables contaminated with human excreta from polluted soil
4. Domestic animals:  
5. Infected persons are (contiguous parasites).
6. Infected blood sucking insects e.g. **Malaria**, **Filaria**, **Trypanosomes & Leishmania**.

### Portal of entry into the body.
- The mouth cysts of intestinal protozoa and eggs of helminthes.  
- Skin penetration: through blood sucking arthropodes as in Malaria.  
- Inhalation or air-born
- Transplacental (congenital) as in Toxoplasmosis.  
- Sexual : Trichomonas vaginalis.  
- Along nerve sheath .  
- After organ and tissue transplantation, malaria and toxosplasma can be transmitted

### Medical Parasitology includes three main subjects

<table>
<thead>
<tr>
<th>Helminthology</th>
<th>Entomology</th>
<th>Protozoology</th>
</tr>
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### Trematode parasites (flukes)

I. Hepatic or liver flukes; characterized by:
   - **Fasciola gigantica** (1) Flat, leaf like.  
   - **Fasciola hepatica** (2) Hermaphrodite except Sch.  

II. Intestinal flukes.  

III. Blood flukes, (3) Body is one segment.  
(4) Blind intestinal caeca.  
(5) Require snail I.H.

### HEPATIC LIVER FLUKE

<table>
<thead>
<tr>
<th>Size</th>
<th>Fasciola Gigantica (large liver fluke)</th>
<th>Fasciola Hepatica (sheep liver fluke)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior cephalic cone</td>
<td>Large 3 - 7 cm</td>
<td>Small 1-3 cm</td>
</tr>
<tr>
<td>Lateral sides</td>
<td>small</td>
<td>big</td>
</tr>
<tr>
<td>Ventral sucker</td>
<td>Parallel</td>
<td>Converging</td>
</tr>
<tr>
<td>Medial intestinal caeca</td>
<td>Bigger</td>
<td>Equal to oral sucker</td>
</tr>
<tr>
<td>Snail IH</td>
<td>Egypt : Lymnea cailliaudi</td>
<td>Europe: Lymnea truncatula</td>
</tr>
<tr>
<td>RH</td>
<td>Herbivorous animals (cattles &amp; buffaloes)</td>
<td>Sheep</td>
</tr>
<tr>
<td>Distribution</td>
<td>Egypt, Africa &amp; Far East</td>
<td>Europe ( sheep raising country)</td>
</tr>
</tbody>
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