

Feeding Relationships

Learning Intentions

To understand the feeding relationships between organisms:

- parasite/host
- predator/prey
- of mutual benefit (mutualism)

Symbiosis

- is the close and often long-term interactions between different biological organisms.
- This term encompasses a variety of interactions involving close species contact:
 - Parasitism e.g. tapeworm
 - Mutualism e.g. lichen
 - Commensalism e.g. Crustaceans living in sea anemones
 - See page 305 for other examples



Parasite/Host

Parasites: What are they?

An organism that lives in or on another organism (host) and benefits by deriving nutrients at the hosts expense.

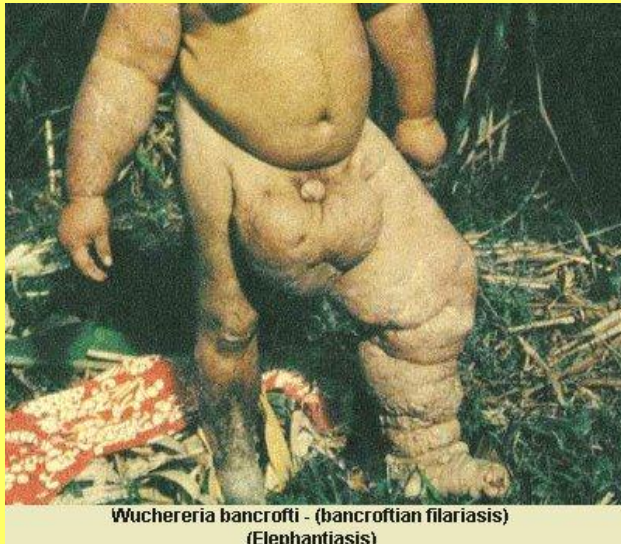


Fig1. Occurs in the presence of microscopic thread-like worms called *Wuchereria bancrofti* but the disease is a result of several factors i.e. Immune response and types of infections that occur.



Fig. 2 Tapeworms use human hosts to survive.

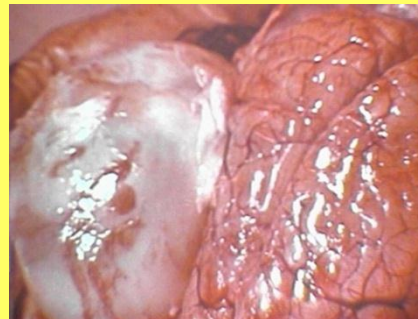
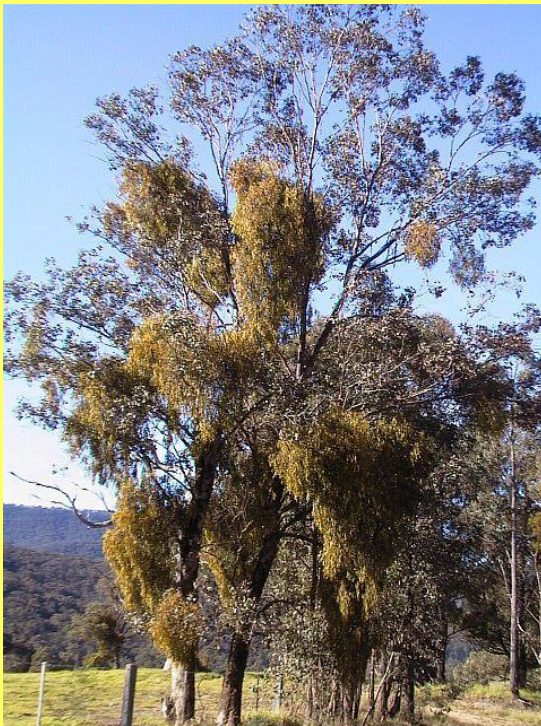


Fig. 3 Cyst in brain caused by a parasite

Example in the plant world



Mistletoe

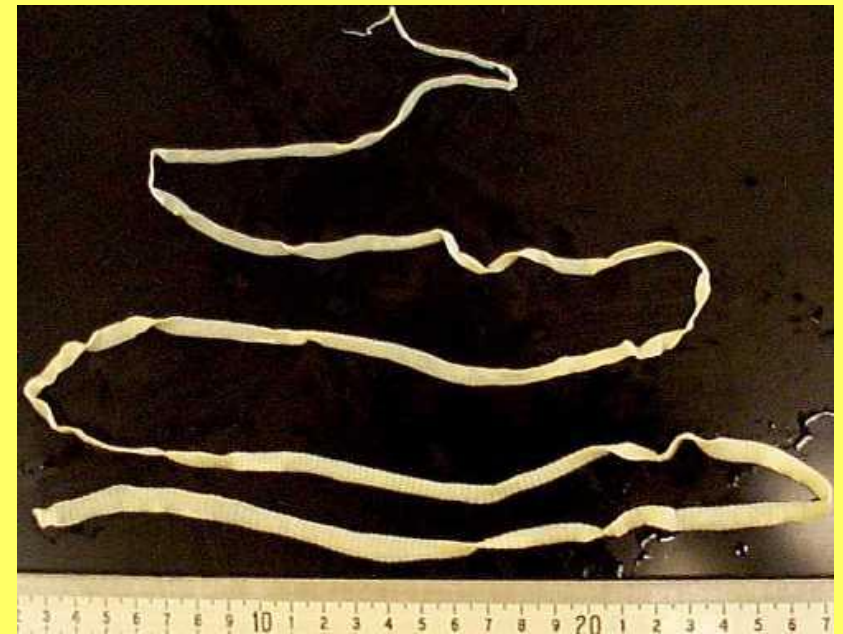
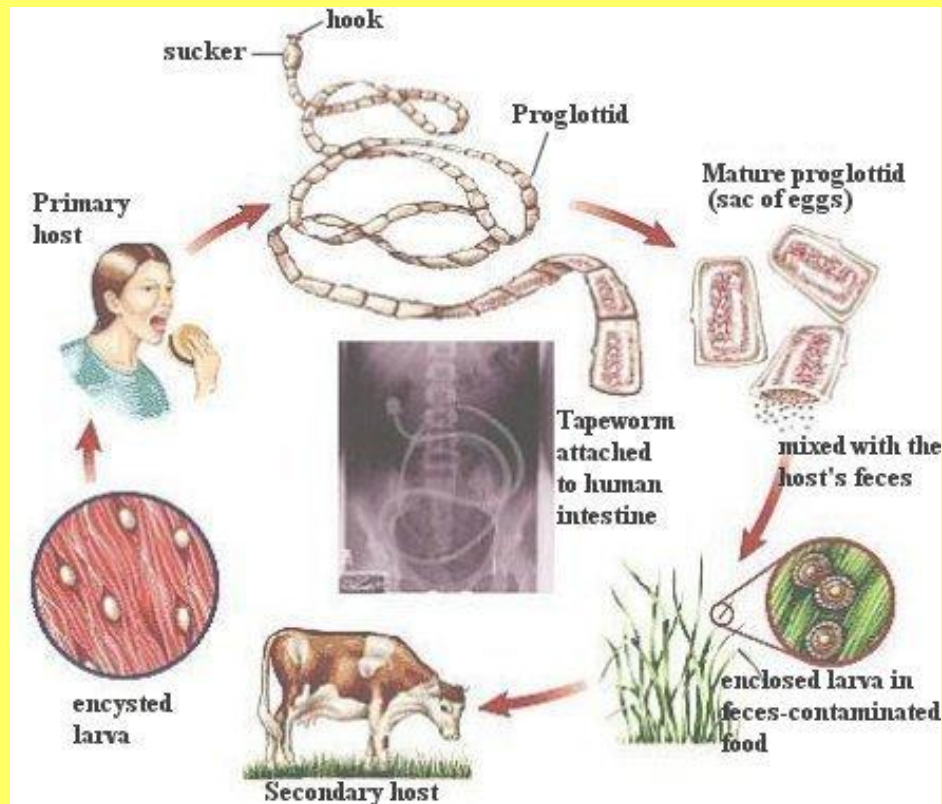


Mistletoe grows attached to and within branches of trees.

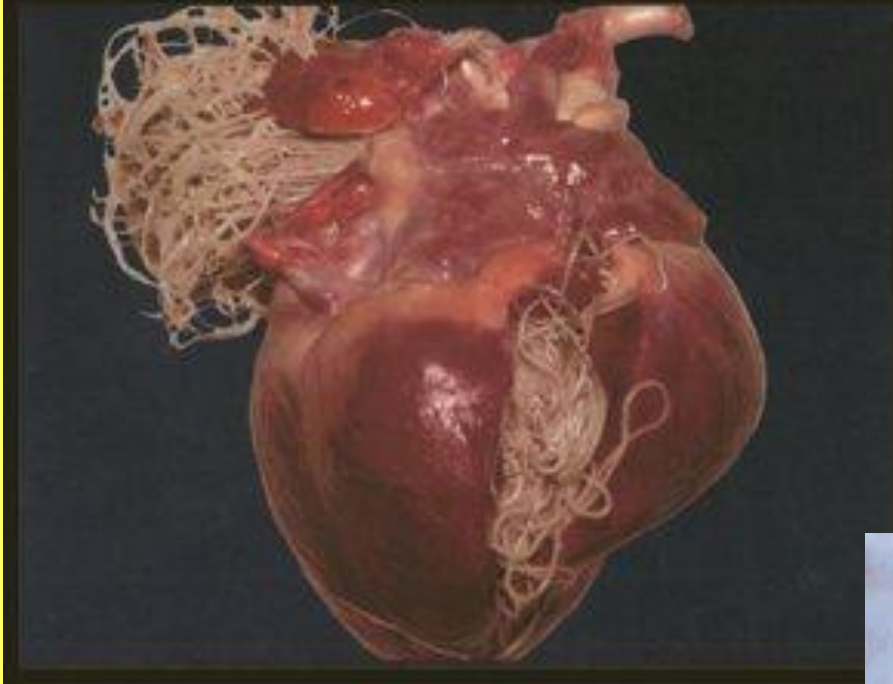
Examples in the animal world

Animals - Tapeworms, liver flukes, heartworms, certain wasps...

Beef Tapeworm Life Cycle



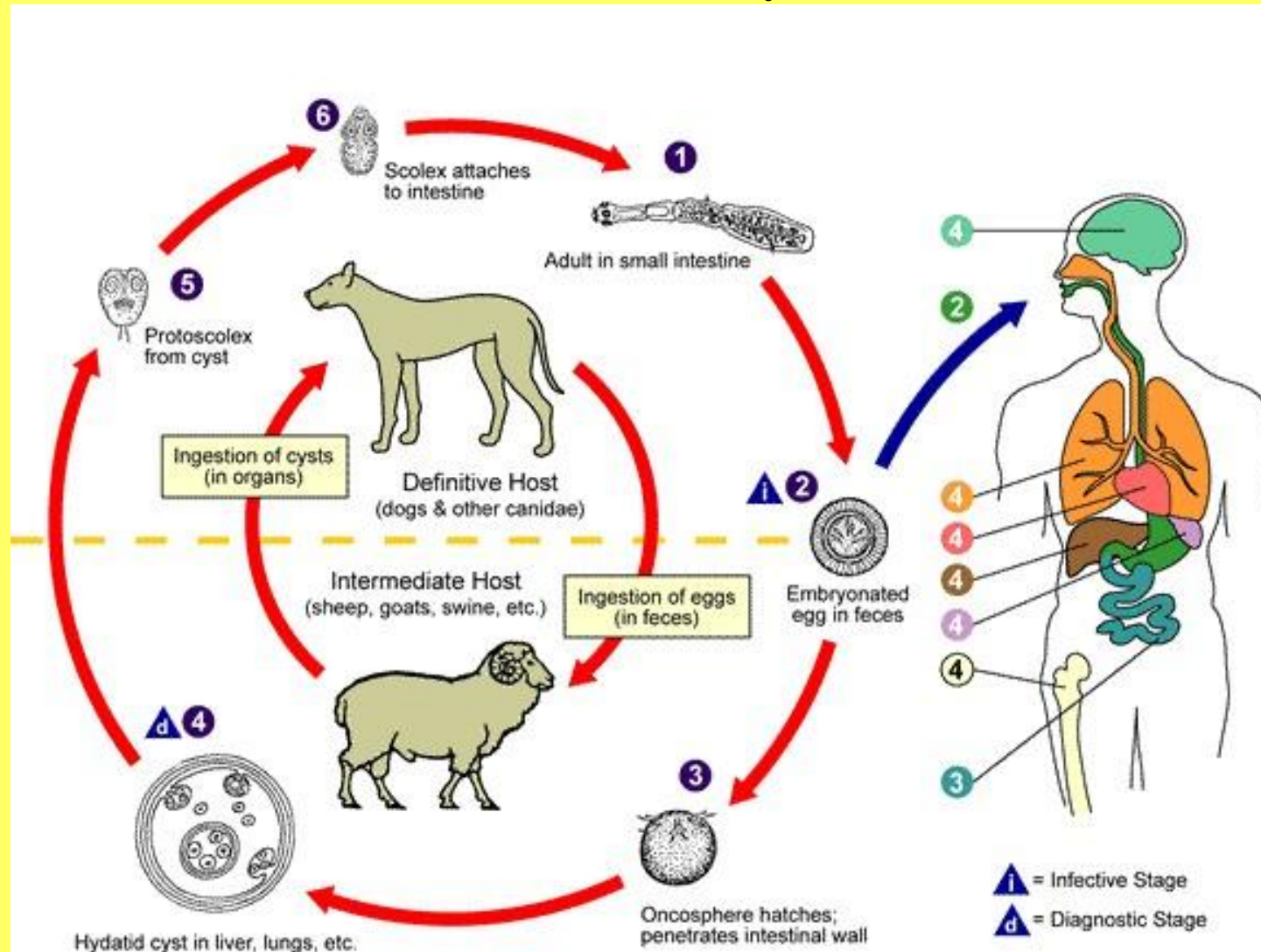
HEARTWORMS



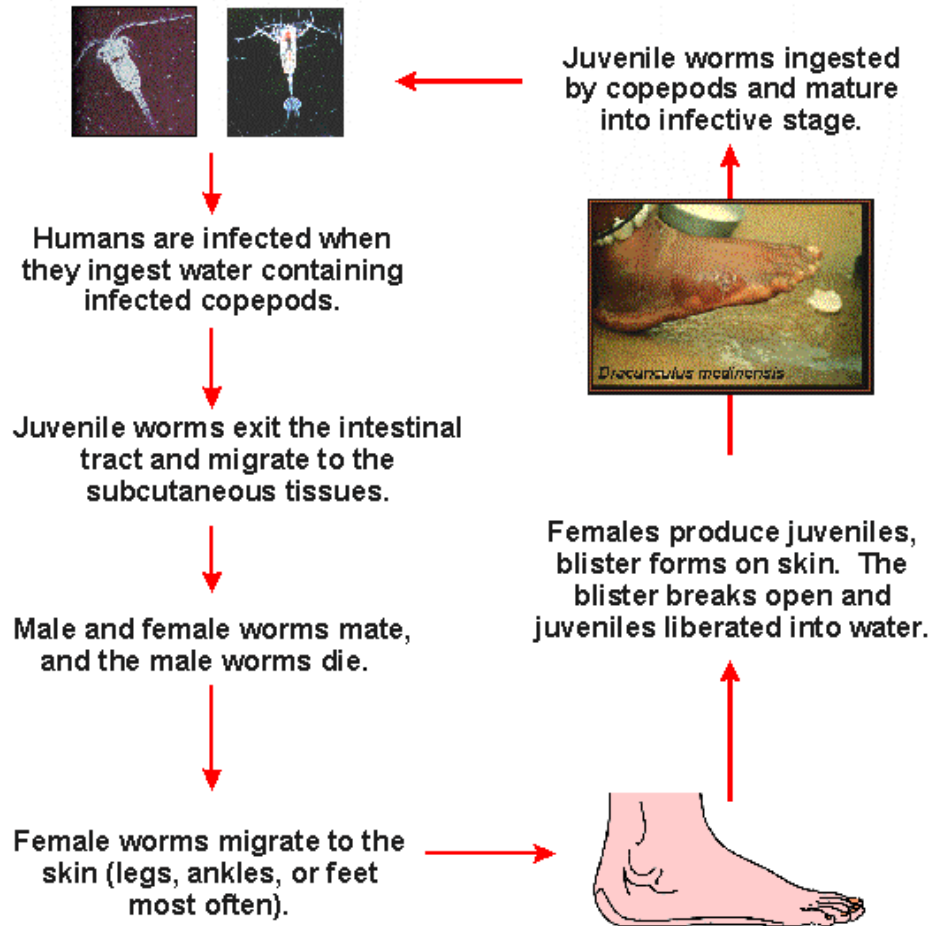
Parasite: Adult
Echinococcus



Echinococcus Life Cycle



Life Cycle of *Dracunculus medinensis*



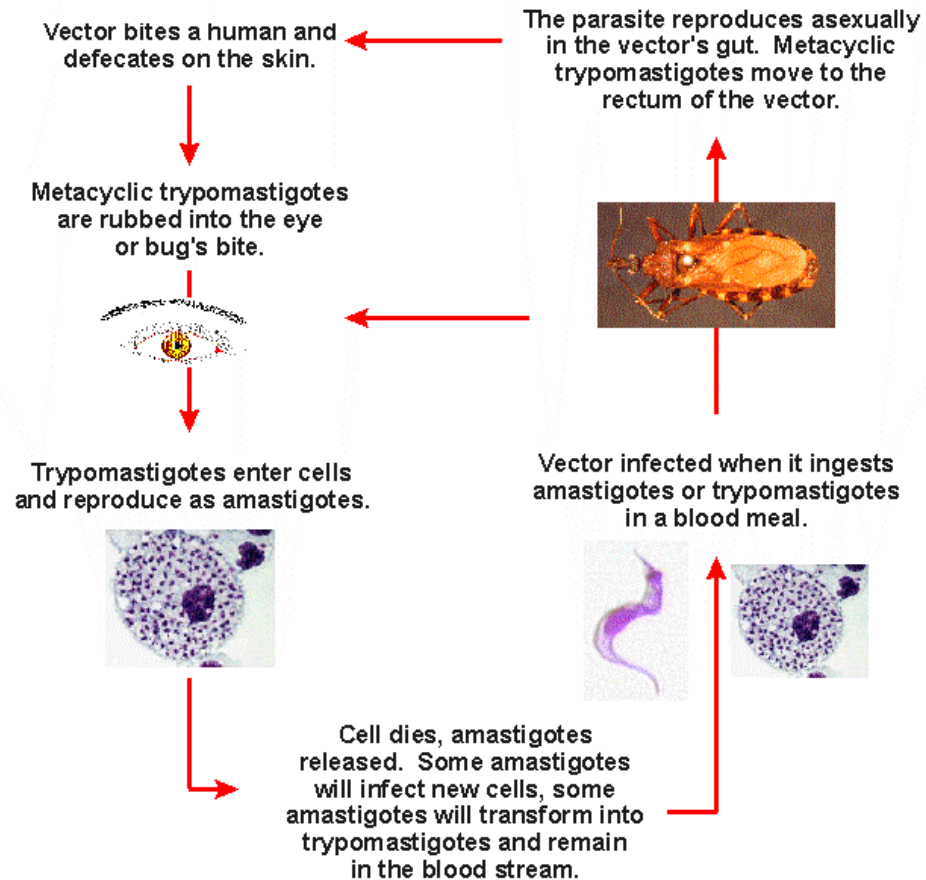
Adult Guinea Worm



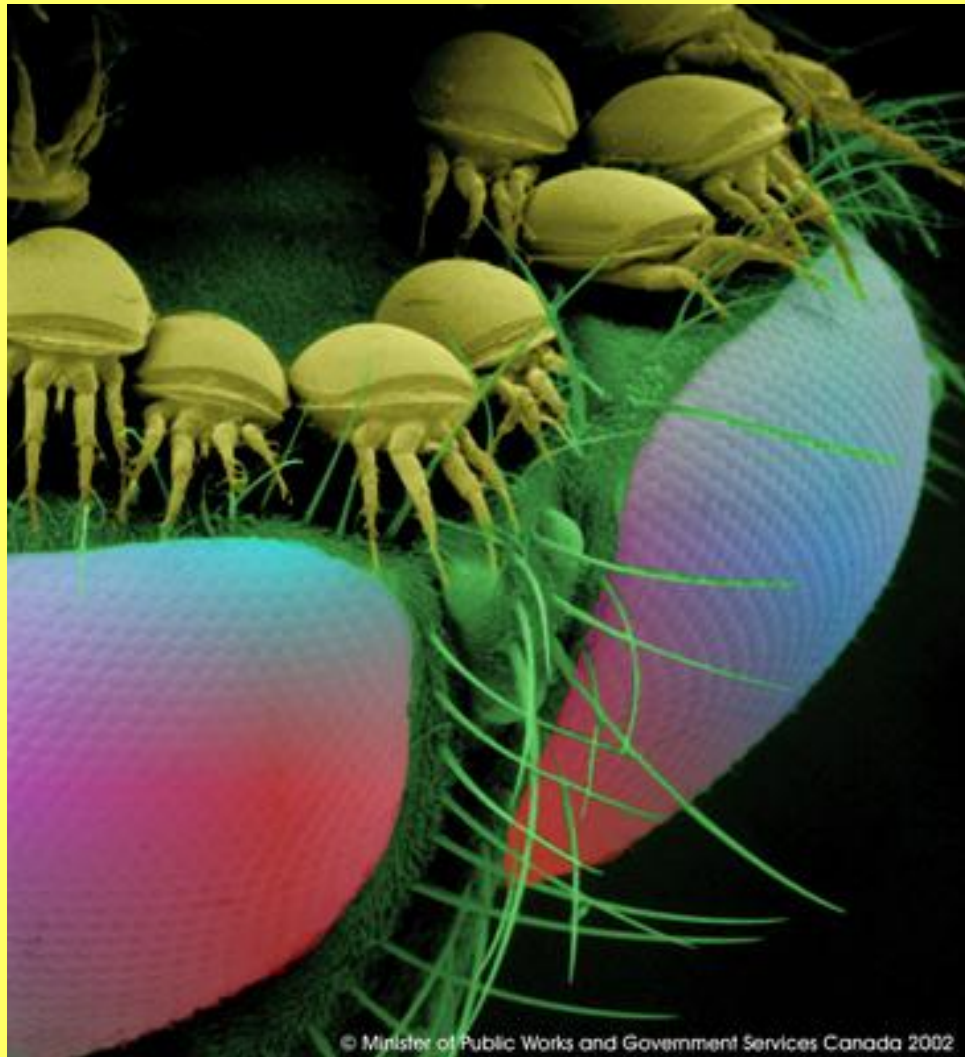
<http://www.youtube.com/watch?v=8FYgQFSrZDE>



THE LIFE CYCLE OF *TRYPANOSOMA CRUZI* (AMERICAN TRYPANOSOMIASIS OR CHAGAS' DISEASE)

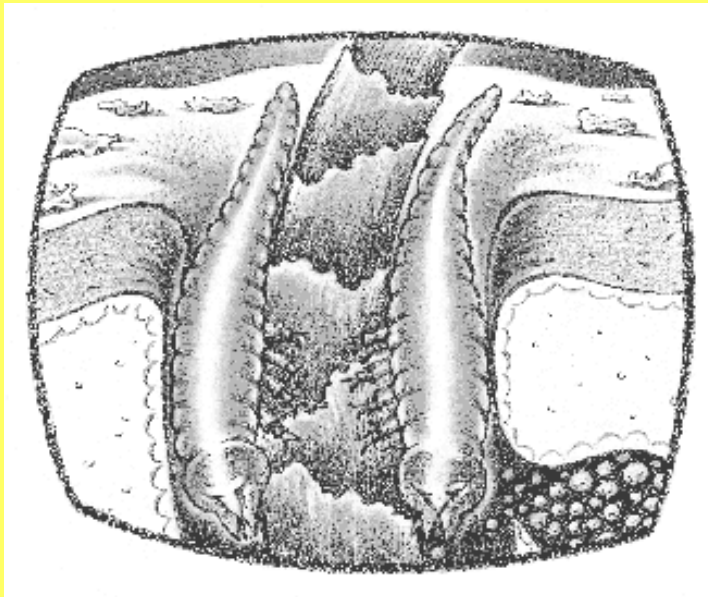
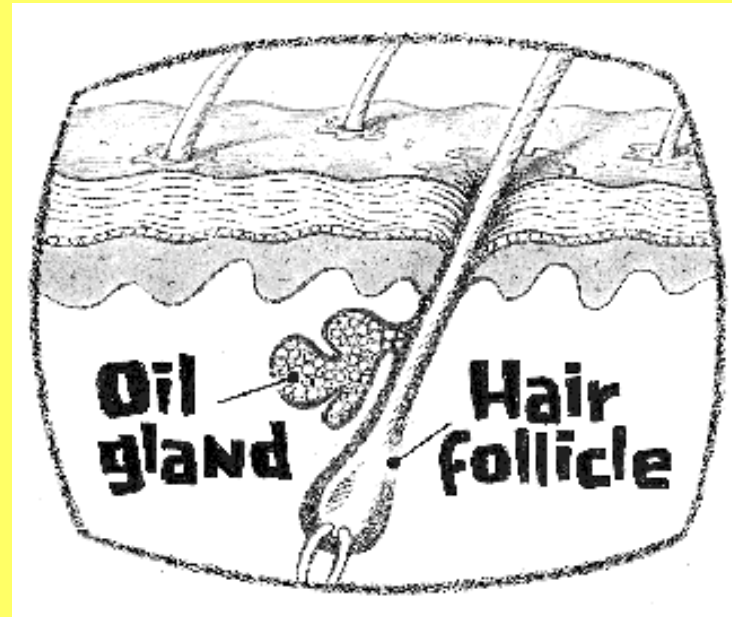
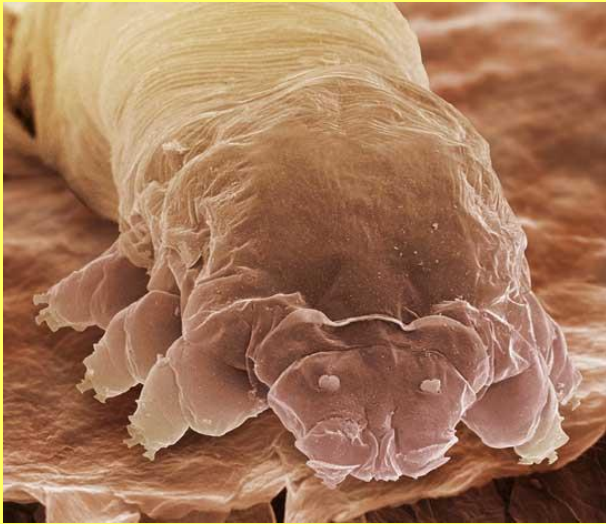


Mites on a Fly



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Follicle Mite



Mutualism

Mutualism

This is a relationship between two different species where both benefit.

Some Examples.....



A **fly agaric mushroom** (*Amanita muscaria*) and a cone of **Eastern White Pine** are side by side on a New Hampshire forest floor in October. The pine and fungus form a partnership in which underground filaments of the fungus invade the roots of the pine, and both provide essential nutrients to each other.



Tiny fig wasps reproduce inside unripe figs and can be seen if the fig is cut open at the right stage. These wasps and fig trees are "obligate mutualists," meaning that they cannot reproduce without each other.



A remarkable 3-way mutualism appears to have evolved between an ant, a butterfly caterpillar, and an acacia in the American southwest. The caterpillars have nectar organs which the ants drink from, and the acacia tolerates the feeding caterpillars. The ants appear to provide some protection for both plant and caterpillar.

Photo by: Rufus Cook

Mutualism. The symbiotic relationship between the clown fish (*Amphiprion percula*) and the sea anemone (*Radianthus*). The fish receives protection from predators and the anemone receives scraps of leftover food from the fish.



Mistletoe and Mistletoe Bird



Lichen



A “colony” of both algae and fungus living together. The fungus provides rooted structural protection, including a base on which the algae grows attached to a tree, rock... In return the algae supplies the fungus with nutrients such as glucose from photosynthesis and oxygen from respiration.

Commensalism

a relation between individuals of two species in which one species obtains food or other benefits from the other without either harming or benefiting the latter. (This kind of relation can be contrasted with mutualism, in which both species benefit.)

Barnacles



Barnacles are highly sedentary crustaceans that must attach themselves permanently to a hard substrate such as rock, shell, whales...When they attach to a shell of a scallop for example, barnacles benefit by having a place to stay leaving the scallop presumably unaffected.

Orchids and Trees



Predator/Prey

Predator-Prey



Predator - animals that feed on other organisms for food. Many predators hunt and kill their prey.

Prey – the organism being hunted and eaten

Examples: lion preying on a buffalo, mantis eating a bee, baleen whale feeding on thousands of microscopic plankton.

Biozone

- Mutualism Page 332
- Predator-prey Interactions Page 339
- Predator-prey Strategies – page 340