Filarial Worms

Slender thread-like worms transmitted by the bite of mosquitoes.
They occur as adults and embryos (microfilariae) in the vertebrate hosts.
In some species, the microfilariae retain their egg membranes 'sheathed' microfilariae.
In contrast, others rupture their egg membranes and come out as 'unsheathed' microfilariae.

Wuchereria bancrofti Lymph filaria

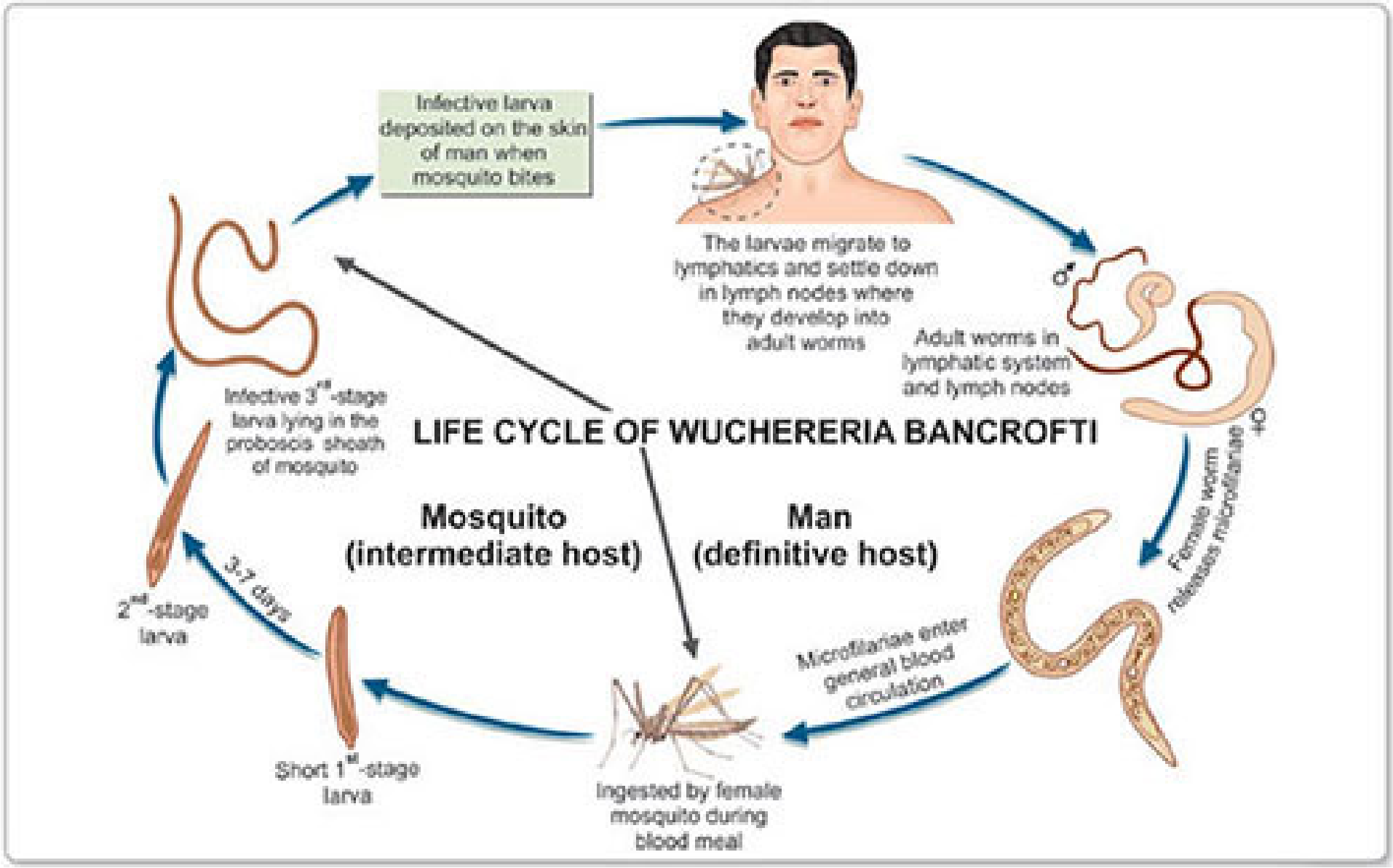
Morphology


The adults are whitish, translucent, thread-like worms with smooth cuticle and tapering ends.

The female is larger than the male.
The female worm is viviparous and directly liberates sheathed microfilariae into lymph.
Males and females remain coiled together.
The adult worms live for 10 to 15 years or more.

The microfilaria has a colorless appearance.
It is actively motile and can move forwards and backwards within the sheath.

Life cycle



Wuchereria bancrofti passes its life cycle in 2 hosts.

Definitive host: Man. No animal host or reservoir is known.

Intermediate host: Female *Culex* spp. mosquito.
Infective form: Third-stage filariform larva.
Mode of transmission: by the bite of mosquito carrying filariform larva.
Habitat: The adult worms reside in the lymphatic system.
The microfilariae are found in blood.
Microfilariae do not multiply or develop in the human body.
If they are not taken up by a female vector mosquito, they die.
The mosquito feeds on a carrier, the microfilariae are taken in with the blood meal.
They penetrate the stomach wall and migrate to the thoracic muscles where they develop.
During two weeks it develops its internal structures and becomes the third stage filariform larva (actively motile).
It enters the proboscis of the mosquito.

When a mosquito feeds on a person, the larvae get deposited, on the skin near the puncture site.

The larvae enter through the puncture wound or penetrate the skin by themselves.
After penetrating the skin, the third-stage larvae enter the lymphatic vessels and are carried to abdominal or inguinal lymph nodes, to develop into adults.
They become sexually mature in about 6 months and mate.
The gravid female worm releases large numbers of microfilariae.
Finally, they pass to the peripheral circulation.

Pathogenicity

Cause Lymphatic filariasis disease.
Manifestations are caused by the adult worms blocking lymph nodes and vessels, either mechanically or due to allergic reactions to worm antigens and secretions.
The worms inside lymph nodes and vessels may cause granuloma formation and calcification.
Elephantiasis: painful, disfiguring swelling of the legs and genital organs.

It is a classic sign of late-stage disease.

Lab diagnosis:

Microscopy: detecting microfilariae in thin and thick blood smears.

(Blood smear should be collected during night time).

Eosinophilia in blood.

Elisa test.

PCR: to detect worm DNA in blood.

Ultrasonography: detecting the distinctive movement of worms which creates a noise called "**filarial dance sign**".