Plasmodium – Life cycle

(Part -2)

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Plasmodium –Lifecycle

Four Stages of Plasmodium Lifecycle

- ***Pre-erythrocytic cycle***
- ***Exo-erythrocytic cycle***
- Erythrocytic cycle
- Sexual cycle

Plasmodium –Lifecycle

Pre-erythrocytic Cycle

- Infective stage of plasmodium to human is sporozoite
- Sporozoite is found in the salivary gland of female anopheles mosquitoes
- During a blood meal, a malaria infected female anopheles mosquito inoculates sporozoites into blood stream of the human host.

Plasmodium –Lifecycle

Structure of Sporozoite

- The body of sporozoite is sickle shaped and is covered externally by an elastic firm pellicle having longitudinally arranged contractile microtubules .
- These microtubules help in the gliding movement of the sporozoites.
- Its interior has an apical cup which is made up of three or more concentric rings

Plasmodium –Lifecycle

Structure of Sporozoite (contd..)

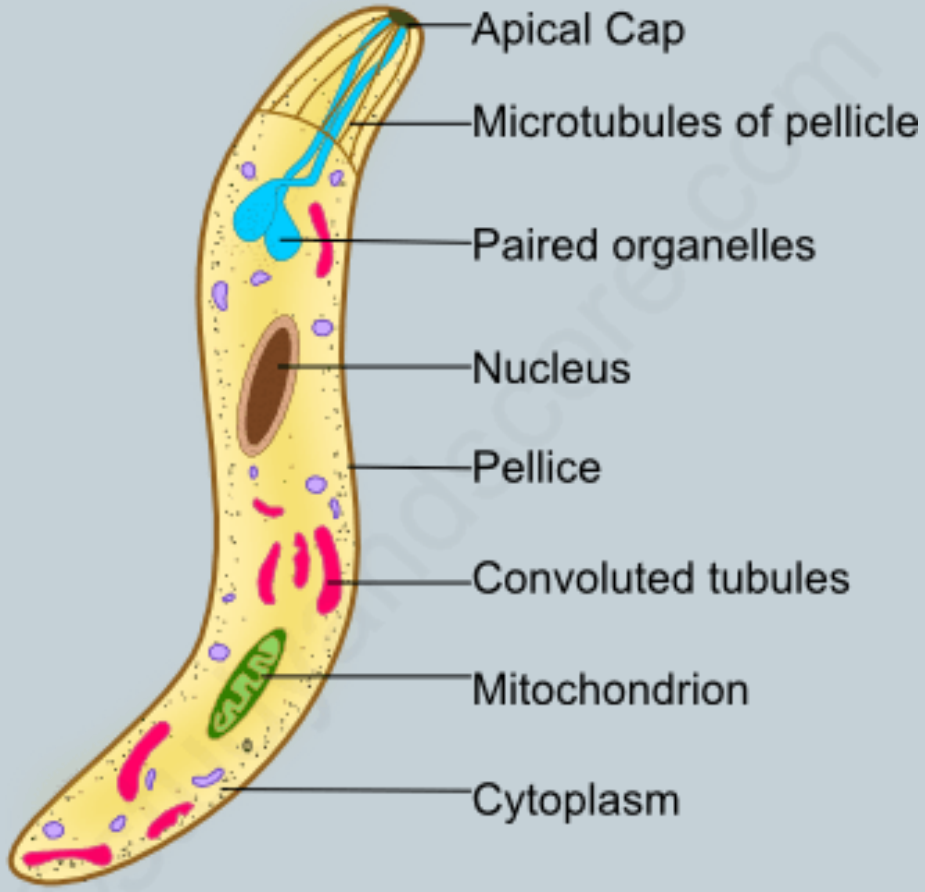
- A pair of elongated reservoir like secretory organelles open into the apical cup
- These organelles secrete some secretions which help in penetration into the liver cells
- Nucleus is single having a nucleolus in its center

Plasmodium –Lifecycle

Structure of Sporozoite (contd..)

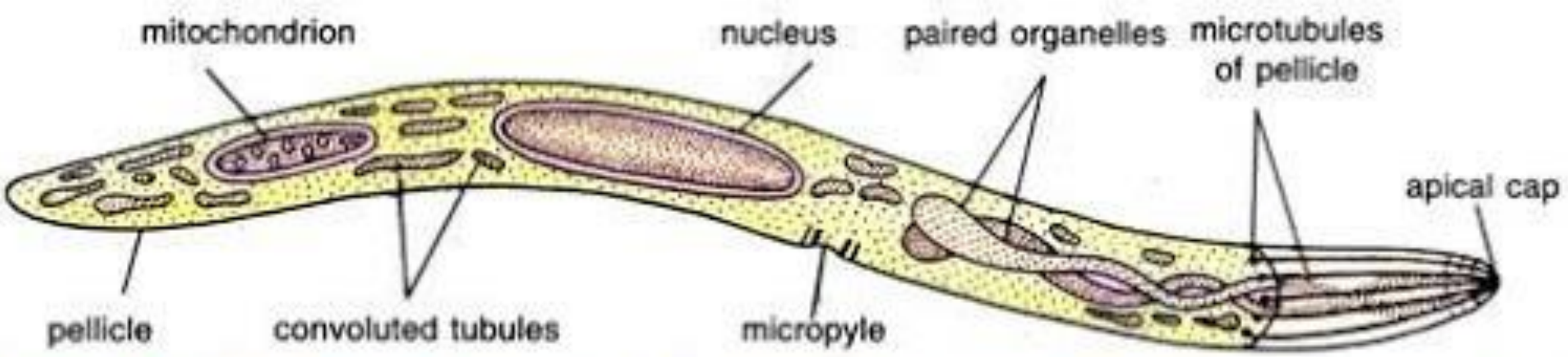
- There is a single mitochondrion and a large number of convoluted tubules are present
- Micropyle is present

Structure of Sporozoite



STRUCTURE OF SPOROZOITE

Ultrastructure of Sporozoite



Plasmodium. Ultrastructure of sporozoite as seen under electron microscope.

Plasmodium –Lifecycle

Pre-erythrocytic Cycle .. Contd..

- Sporozoites infect lever cells and mature into the schizonts, which ruptures and release merozoites. Each schizonts produces around 12000 merozoites.
- Newly produced merozoites go to lever sinusoids, from where they invade fresh lever cells or Red Blood Corpuscles (RBC)

Plasmodium –Lifecycle

Exo -erythrocytic Cycle

- The merozoites enter fresh lever cells, and the cycle is repeated
- The merozoites entering the fresh lever cells carry on exo-erythrocytic schizogony and as a result, each schizont produces about 1000 exo-erythrocytic merozoites

Plasmodium –Lifecycle

Exo -erythrocytic Cycle.. *Contd..*

- This may be repeated several times and each time new lever cells are infected
- All these succeeding schizogonic divisions are called exo-erythrocytic schizogony.

Thank You