# Unit 23 · Plasmodium vivax

WORKSHEET

Full marks 35

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

## 1 Key words [4]

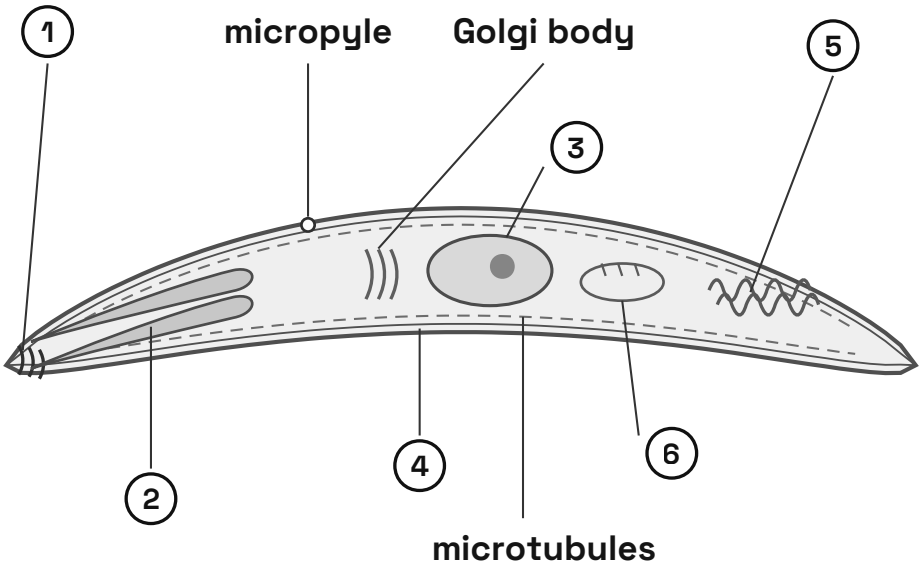
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

| | | | | | | |
|---|---|---|---|---|---|---|
| *Culex* | **digenetic** | **exflagellation** | **hemozoin** | **hypnozoites** | **ookinete** | **schizogony** |
| **sporozoite** | **trophozoite** | **vector** | | | | |

*Plasmodium vivax* needs two hosts to complete its life cycle, so it is called a _____ parasite. The female *Anopheles*, which carries the parasite from an infected person to a healthy one, is its _____. The stage that a mosquito injects into a person with its saliva is the _____. Asexual multiple fission, in which the nucleus divides many times and the cytoplasm then splits round each nucleus, is _____. The parasite packs the poisonous heme of hemoglobin into harmless crystals called _____. In *P. vivax* some sporozoites rest in liver cells as _____ and cause relapses months later. In the mosquito's stomach a microgametocyte throws out eight male gametes; this is _____. The motile, worm-like cell into which the zygote lengthens is the _____.

## 2 Label the diagram [3]

The diagram shows a sporozoite of *Plasmodium* as the electron microscope shows it. Write the names of the parts 1 to 6. Each carries 0.5 mark.




**1.** _____ **2.** _____

**3.** _____ **4.** _____

**5.** _____ **6.** _____

## 3 Multiple choice [5]

Choose the correct option for each of the following questions.

**i.** Which of the following is the carrier (vector) of *Plasmodium*? [1]

**a.** male *Anopheles*
**b.** male *Culex*
**c.** female *Culex*
**d.** female *Anopheles*

**ii.** Where does the pre-erythrocytic phase of *Plasmodium* take place? [1]

**a.** white blood cells
**b.** plasma
**c.** red blood cells
**d.** liver cells

**iii.** In malaria, which event of erythrocytic schizogony is directly related to the periodic fever and chills? [1]

**a.** invasion of RBCs by merozoites
**b.** digestion of hemoglobin by the parasite
**c.** bursting of RBCs and release of merozoites with hemozoin
**d.** formation of gametocytes

**iv.** Which of the following is the diploid stage in the life cycle of *Plasmodium*? [1]

**a.** trophozoite
**b.** sporozoite
**c.** zygote
**d.** merozoite

**v.** Which of the following is the correct sequence in the sexual cycle of *Plasmodium*? [1]

**a.** sporozoite – gametocytes – zygote – ookinete – oocyst
**b.** oocyst – sporozoite – gametocytes – zygote – ookinete
**c.** gametocytes – zygote – ookinete – oocyst – sporozoite
**d.** ookinete – oocyst – sporozoite – gametocytes – zygote

## 4 Very short answers [3]

Write very short answers to the following questions.

**a.** Why is the female *Anopheles*, not the human, called the primary (definitive) host of *Plasmodium*? [1]

**b.** What is the pre-patent period? How long is it in *P. vivax*? [1]

**c.** Why does a female *Anopheles* inject saliva before she sucks blood? [1]

## 5 Short answers [9]

Write short answers to the following questions.

**a.** Swarnim said that a spherical, mature, adult and vacuolated form of *Plasmodium* is a sporozoite. Is he right? Give a reason. **[2]**

**b.** Why is *P. vivax* malaria called tertian malaria? **[2]**

**c.** A patient was cured of *vivax* malaria with chloroquine, but fell ill again four months later without being bitten again. Explain why, and how this can be prevented. **[2]**

**d.** Write any three differences between *Plasmodium vivax* and *Plasmodium falciparum*. **[3]**

## 6 Long answers [8]

Write long answers to the following questions.

**a.** What is erythrocytic schizogony? Describe its stages in the life cycle of *Plasmodium*. [4]

**b.** Describe the sexual phase of *Plasmodium vivax* in the female *Anopheles*, from sucking up blood to sporozoites in the salivary glands. [4]

## 7 Think [3]

A family in a mountain village, at about 2,500 m, worries about catching malaria from local mosquitoes. A family in a Terai village worries more. Using the life cycle of *Plasmodium*, explain who is right to worry more, and suggest two measures for the village.

## 8 Activity: Malaria at the health post (Activity 8.4)

(not marked)

Visit a nearby health post or hospital, or ask a health worker, and fill in the table.

| Question | What you found |
|---|---|
| How is malaria tested there? | |
| How long does the test take? | |
| Is the test or treatment free? | |
| How many malaria cases came this year? | |
| Where were they caught (in Nepal or abroad)? | |

How can a case caught abroad start malaria again in Nepal?