

Cell Biology – GCSE Biology Paper 1

1. No.5

0 5

The protist that causes malaria is passed from one person to another person by mosquitos.

0 5 . 1

What term describes an organism that passes a pathogen from one person to another person?

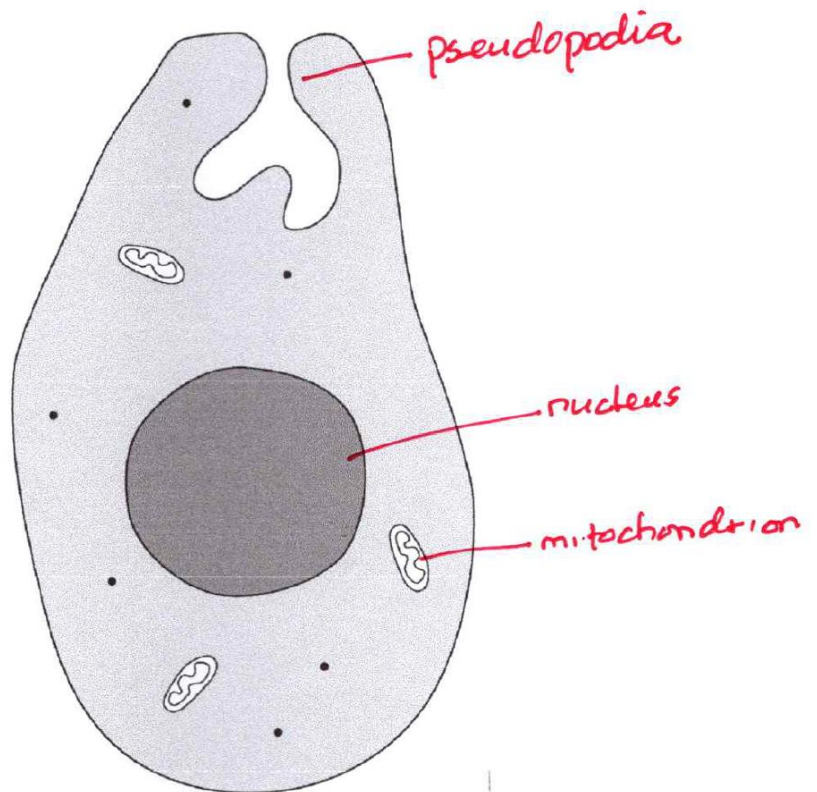
[1 mark]

vector

0 5 . 2

Figure 7 shows the malarial protist.

Figure 7



The malarial protist is a eukaryotic cell.

Describe **three** ways the structure of the malarial protist is different from the structure of a prokaryotic cell.

Do **not** refer to size in your answer.

[3 marks]

- 1 It has mitochondria that is not in prokaryotes
- 2 It has a nucleus that lacks in prokaryotes.
- 3 It does not have plasmid. The prokaryotes have circular DNA (plasmid) but eukaryotes have DNA inside the nucleus.

0 5 . 3

During one stage of malaria infection, the malarial protists enter red blood cells and cause them to burst.

Explain why the bursting of red blood cells causes tiredness.

[2 marks]

Bursting of red blood cells reduce the amount of oxygen transported to body tissues. This in turn reduce rate of aerobic respiration so that less energy is produced by the cells of the body.

0 5 . 4

The malarial protist reproduces sexually and asexually during a life cycle.

Complete **Table 3** to give **three** differences between sexual reproduction and asexual reproduction.

[3 marks]

One difference has been completed for you.

Table 3

	Sexual reproduction	Asexual reproduction
	Involves two parents	Involves one parent
1	Involves fertilisation	No fertilisation is involved
2	Slower	faster
3	There is genetic variation	There is no genetic variation

0 5 . 5

One drug for treating malaria prevents mitosis occurring in the malarial protist.

The drug stops the synthesis of new DNA bases in the cell.

Suggest how the drug prevents mitosis occurring.

[1 mark]

DNA replication cannot occur because
the drug blocks production of bases.

05.6

Describe the process of cell division by mitosis.

[3 marks]

After DNA replication, one set of chromosomes is pulled to each end of the cell. Then nucleus and cytoplasm divide to form two cells.

0 5 . 7

Different types of disease may interact.

Scientists studied the incidence of malaria infections in children:

- with disorder **S**
- without disorder **S**.

The incidence of malaria in children with disorder **S** was calculated as a percentage of the incidence in children without disorder **S**.

Table 4 shows the results.

Table 4

Age in years	Calculated percentage (%) incidence of malaria in children with disorder S
2 to < 4	69
4 to < 6	63
6 to < 8	50
8 to 10	45
> 10	73

Describe what the results in **Table 4** show about the interaction between disorder **S** and malaria.

[2 marks]

Having disorder **S** reduces chances of getting malaria.
 As age increases, a lower percentage of children with disorder **S** get malaria until age 10, then percentage increases.