



**Pakistan School**  
Kingdom of Bahrain



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# BIOLOGY

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# Ch. 2. Solving The Biological Problem

▣ Topic.      **Study of Malaria**

- **An Example of Biological Method**

(page.23,24,25,26)

# Introduction

## ▣ What is Malaria?

Malaria is a serious disease caused by a parasite called **Plasmodium** that commonly infects a certain type of mosquito (**Anopheles** a female mosquito) which feeds on humans. People who get malaria are typically very sick with high fever, shaking chills and flu-like illness.

# Objectives

- ▣ At the end of this lesson students will be able to
- ▣ Describe the steps involved in biological method taking malaria as an example.



# **STUDY OF MALARIA- AN EXAMPLE OF BIOLOGICAL METHOD**



✖ We know that **malaria** is a common disease in many countries including **Pakistan**.

1. Cause
2. Transmission

# HISTORY

- ✖ Ancient time (**more than 2000 years ago**) physicians were familiar with **malaria**.
- ✖ “A disease of **chills** and **fever** with recurring attacks.”

## OBSERVATIONS

....





# OBSERVATIONS

- ▣ Disease was more common among people
- ▣ living in **low, marshy areas**.



- ▣ It was thought that the stagnant water of marshes poisoned the air and as a result of breathing in this **"bad air"** people got malaria.
- ▣ **this belief led to the name of this disease.**

# MALARIA

ITALIAN.....

- **"mala"** ➡ Bad
- **"aria"** ➡ Air





- For further clarification of the **o b s e r v a t i o n** ,
- some volunteers drank stagnant water from the marshes. They did not developed malaria.



# MEDICINE FOR TREATING MALARIA

- 17 century when **America** was discovered, many plants from **America** were sent back to **Europe** to be used as medicines.







The bark of a tree known as **QUINA-QUINA** was very suitable for curing fevers.

**cinchona**

**Cinchona bark  
was found to be  
excellent for  
treating malaria**







**Quina-quina**



**Cinchona**

We now know the reason: **cinchona bark contains quinine that is effective in treating the disease.**

- ▣ 200 years later, it was found that some disease are caused by tiny living organisms.



Cause of malaria---  
**biological problem**



# Cause of malaria

- In 1878, **LAVERAN** begin to search for the "cause" of malaria.



**PLASMODIUM**



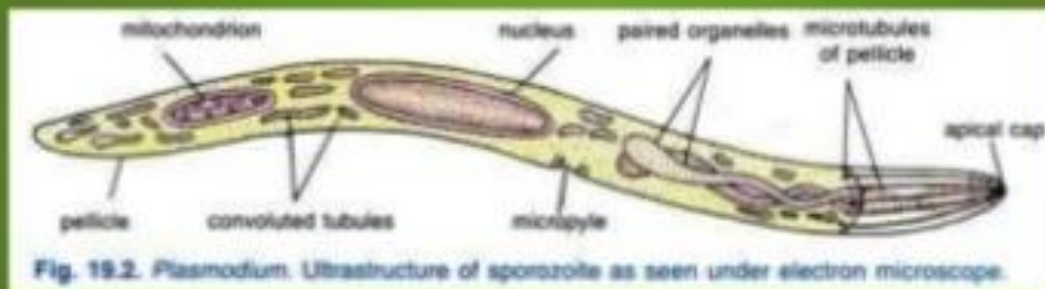
# Observations (19 century)

- ❑ **Malaria and marshy areas have some relation.**
- ❑ **Quinine** is an effective drug for treating malaria.
- ❑ **Drinking the water of marshes does not cause malaria.**



# HYPOTHESIS

- The hypothesis made in this case was...  
“Plasmodium is the cause of malaria”



# DEDUCTION

□ **IF** plasmodium is the cause of malaria,  
**THEN** all person ill with malaria should have  
plasmodium **in their** blood.





# EXPERIMENT

100 malarial patients

100/100



The period between the entry of parasite in host and the appearance of symptoms.

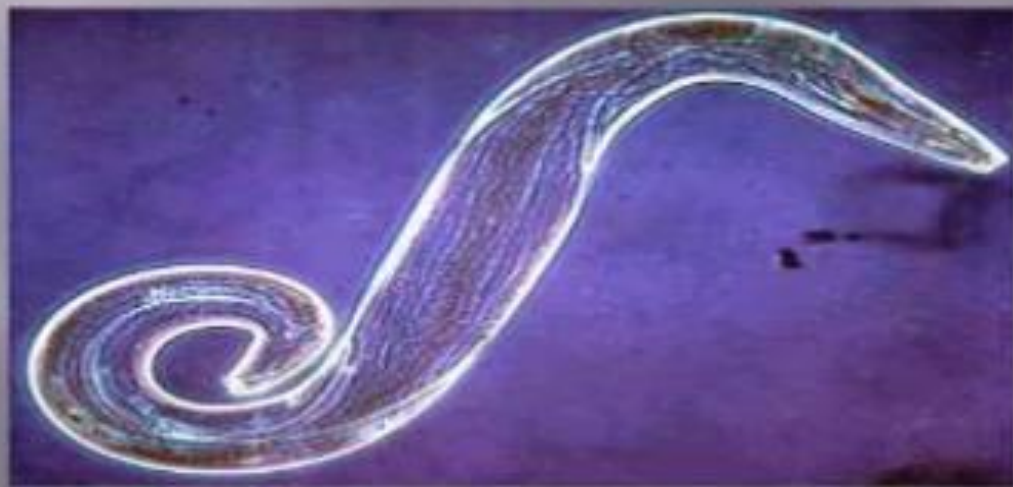
100 h

07/100 (**incubation period**)



# Result

- ▣ **Plasmodium is the cause of malaria.**



# Activity. 1.

- Give short answers of the following.
  - i. Define malaria.
  - ii. Which organism causes the malaria?
  - iii. Who was Laveran?

## Activity.2.

- ▣ Choose the correct option.
- ▣ Plasmodium is a
  - a. Bacteria      b. Virus      c. Fungi      d. None of these.



# Closure

- ▣ Today we have discussed the topic-----  
-----.
- ▣ We know that mosquitoes transmit -----  
and spread -----.
- ▣ -----is an effective drug for treating  
malaria.

# Home Work

- ▣ How is malaria spread? Explain with reference to the plasmodium life cycle.
- ▣ What is “ control” in experiments?

THE END