

Unit 2.1.4 — Protozoa

Introduction

Protozoa are unicellular eukaryotic organisms that belong to kingdom Protista. They are microscopic organisms commonly found in water, moist soil, and inside living organisms.

Protozoa are called animal-like protists because many of them move actively and feed on organic materials.

Characteristics of Protozoa

Major characteristics of protozoa include:

- Unicellular eukaryotic organisms
- Possess a true nucleus
- Mostly microscopic
- Lack cell walls
- Move using pseudopodia, cilia, or flagella
- Reproduce mainly asexually

Some protozoa live freely while others are parasitic.

Structure of Protozoa

Protozoa contain different cellular structures such as:

- Cell membrane
- Cytoplasm
- Nucleus
- Contractile vacuole
- Food vacuole
- Locomotory structures

Their structures help in movement, feeding, excretion, and reproduction.

Classification of Protozoa

Protozoa are classified based on their mode of movement.

1. Rhizopoda – move using pseudopodia

Example: Amoeba

2. Ciliates – move using cilia

Example: Paramecium

3. Flagellates – move using flagella

Example: Euglena

4. Sporozoans – non-motile parasites

Example: Plasmodium

Nutrition in Protozoa

Most protozoa are heterotrophic and obtain food by ingesting organic particles or microorganisms.

Some protozoa, such as Euglena, can perform photosynthesis under light conditions and behave like autotrophs.

Movement in Protozoa

Protozoa use different locomotory organs:

- Pseudopodia in Amoeba
- Cilia in Paramecium
- Flagella in Euglena

Movement helps them search for food and escape harmful conditions.

Reproduction in Protozoa

Protozoa reproduce mainly asexually through binary fission. Some protozoa also reproduce sexually under unfavorable conditions.

Reproduction allows rapid increase in population size.

Importance of Protozoa

Protozoa are important because:

- They help maintain ecological balance

- Serve as food for aquatic organisms
- Participate in decomposition
- Used in scientific research

Certain protozoa contribute to nutrient recycling in ecosystems.

Harmful Effects of Protozoa

Some protozoa cause diseases in humans and animals.

Examples:

- Malaria caused by Plasmodium
- Amoebic dysentery caused by Entamoeba
- Sleeping sickness caused by Trypanosoma

Parasitic protozoa may spread through contaminated water, food, or insect vectors.

Prevention and Control

Protozoan diseases can be prevented through:

- Proper sanitation
- Safe drinking water
- Controlling insect vectors
- Personal hygiene
- Early medical treatment

Public health education helps reduce protozoan infections.

Economic and Ecological Importance

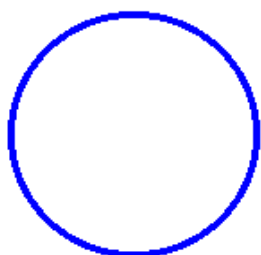
Protozoa contribute to food chains and nutrient cycling. Some are used in laboratories for biological research and environmental studies.

Although certain protozoa are harmful, many species are beneficial in ecosystems.

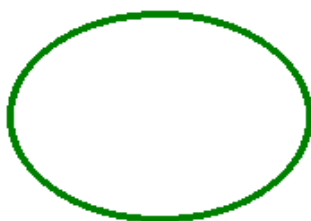
Conclusion

Protozoa are important unicellular eukaryotic organisms found in diverse habitats. They have both beneficial and harmful effects and play significant roles in ecosystems and human health.

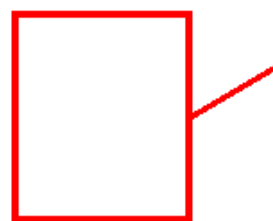
Illustration of Major Protozoa



Amoeba



Paramecium



Euglena

Chapter Summary

Protozoa are unicellular eukaryotic organisms belonging to kingdom Protista. They move using pseudopodia, cilia, or flagella and reproduce mainly through binary fission. Protozoa play important ecological roles, although some species cause diseases.

Key Term	Meaning
Protozoa	Unicellular eukaryotic protists
Pseudopodia	Temporary projections for movement
Cilia	Hair-like structures used for movement
Flagella	Whip-like locomotory structures
Binary Fission	Asexual reproduction process

Review Questions and Answers

1. What are protozoa?

Protozoa are unicellular eukaryotic organisms belonging to kingdom Protista.

2. Mention major characteristics of protozoa.

They are unicellular, eukaryotic, microscopic, and move using locomotory structures.

3. How are protozoa classified?

Protozoa are classified based on movement into rhizopods, ciliates, flagellates, and sporozoans.

4. What are pseudopodia?

Pseudopodia are temporary cytoplasmic projections used for movement and feeding.

5. Mention diseases caused by protozoa.

Malaria, amoebic dysentery, and sleeping sickness are caused by protozoa.

6. Explain the importance of protozoa.

Protozoa help nutrient recycling, ecological balance, and food chains.

7. How can protozoan diseases be prevented?

Through sanitation, safe water, vector control, and personal hygiene.