

# Distinguishing Pathogenic Organisms

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## OBJECTIVE/RATIONALE

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Infectious diseases are caused by different types of microorganisms. It is important to know and be able to identify the types of organisms in order to correctly diagnose and treat disease. The student will categorize selected pathogenic organisms by microscopic examination of prepared slides.

TEKS 121.15 2B, 5A

TAKS ELA 1, 4  
Science 1, 2

National Science Education Standards A9-12; C9-12; F9-12; G9-12  
National Health Care Skills Standards .01, .07

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## KEY POINTS

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- I. Microbes - Many kinds of organisms cause diseases in humans. Most pathogenic organisms are microscopic or just barely visible to the unaided eye. Microscopic organisms are called *microbes* and include:
  1. viruses
  2. bacteria
    - a. coccus- spherical-shaped (ex: *Streptococcus*)
    - b. bacillus- rod-shaped (ex: *Clostridium*)
    - c. spirillum- spiral-shaped (ex: *Vibrio*)
    - d. small- (ex: *Chlamydia*)
  3. fungi
    - a. yeast
    - b. mold
  4. protozoa
    - a. amoeba
    - b. flagellates
    - c. ciliates
    - d. sporozoa
- II. Larger organisms
  1. nematodes- the roundworms
  2. platyhelminthes- flatworms and flukes
  3. arthropods- mites, ticks, lice, and fleas
- II. Vectors
  1. mites
  2. ticks
  3. lice

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## ACTIVITIES

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I. Complete the Identification of **Pathogenic Organisms Laboratory Investigation**.

*\*Teacher Note\**

*Microscopes can be set up displaying unlabelled slides of all or some of the pathogenic organisms. Students rotate through the microscopes, categorizing the specimens in a laboratory practical examination.*

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## MATERIALS/RESOURCES

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Prepared slides of pathogenic organisms

Possible specimens for study:

1. *Neissera gonorrhoea*
2. *Staphylococcus aureus*
3. *Clostridium tetani*
4. *Escherichia coli*
5. *Entamoeba histolytica*
6. *Plasmodium vivax*
7. *Leishmania donovani*
8. *Taenia*
9. *Ascaris lumbricoides*
10. *Trichinella spiralis*
11. *Culex sp.*

Microscopes

Gloves

Laboratory coat or apron

Goggles

Biohazard containers

Surface disinfectant

Paper towels

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## ASSESSMENT

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**Laboratory Investigation Rubric**

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## ACCOMMODATIONS

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For reinforcement, the student will review and repeat the laboratory investigation.

For enrichment, the student will prepare a case study over a selected pathogenic organism.

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## REFLECTIONS

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# Pathogenic Organisms Laboratory Investigation

**Purpose:**

In this laboratory, students will categorize selected pathogenic organisms by microscopic examination of prepared slides.

**Background:****Materials:**

Prepared slides of pathogenic organisms

Possible specimens for study:

12. *Neissera gonorrhoea*
13. *Staphylococcus aureus*
14. *Clostridium tetani*
15. *Escherichia coli*
16. *Entamoeba histolytica*
17. *Plasmodium vivax*
18. *Leishmania donovani*
19. *Taenia*
20. *Ascaris lumbricoides*
21. *Trichinella spiralis*
22. *Culex sp.*

Microscopes

Gloves

Laboratory coat or apron

Goggles

Biohazard containers

Surface disinfectant

Paper towels

**Procedure:**

1. Wash hands and put on gloves and goggles.
2. Assemble equipment and materials.
3. Prepare work area.
4. Examine prepared slides of pathogenic organisms, identifying key characteristics of the specimen.
5. Draw and label observations.
6. Clean work area with surface disinfectant. Remove goggles and gloves and wash hands.

**Data:**

Draw and label observations.

**Conclusion:**

1. Categorize the observed pathogenic organisms.

2.. List disorders/diseases caused by the organism on each slide.