

Name:

Lab 5: Differential Staining

Learning Objectives:

- Explain the principle of differential staining
- Apply differential staining to identify bacteria

Differential stain uses two or more stains to specifically stain certain structures or cellular components which cannot be easily stained with a single stain. Differential staining principles are based upon the specific chemical nature and composition of cellular components and their interactions with the stains. The results are observed using different stains and staining procedures. Differential staining often becomes the basis of identification of the bacteria.

In this lab, we will learn about four separate staining procedures.

- Gram Staining
- Endospore Staining
- Acid-fast Staining
- Capsule Staining (Special Staining)

Exercise 1: Gram Staining

Gram staining is used to identify cells based on the differences of the cell wall. While some bacteria may contain a thick layer of peptidoglycan forming a rigid cell wall (Gram positive), other bacteria have a very thin layer of peptidoglycan sandwiched between two phospholipid bilayers (Gram negative).

