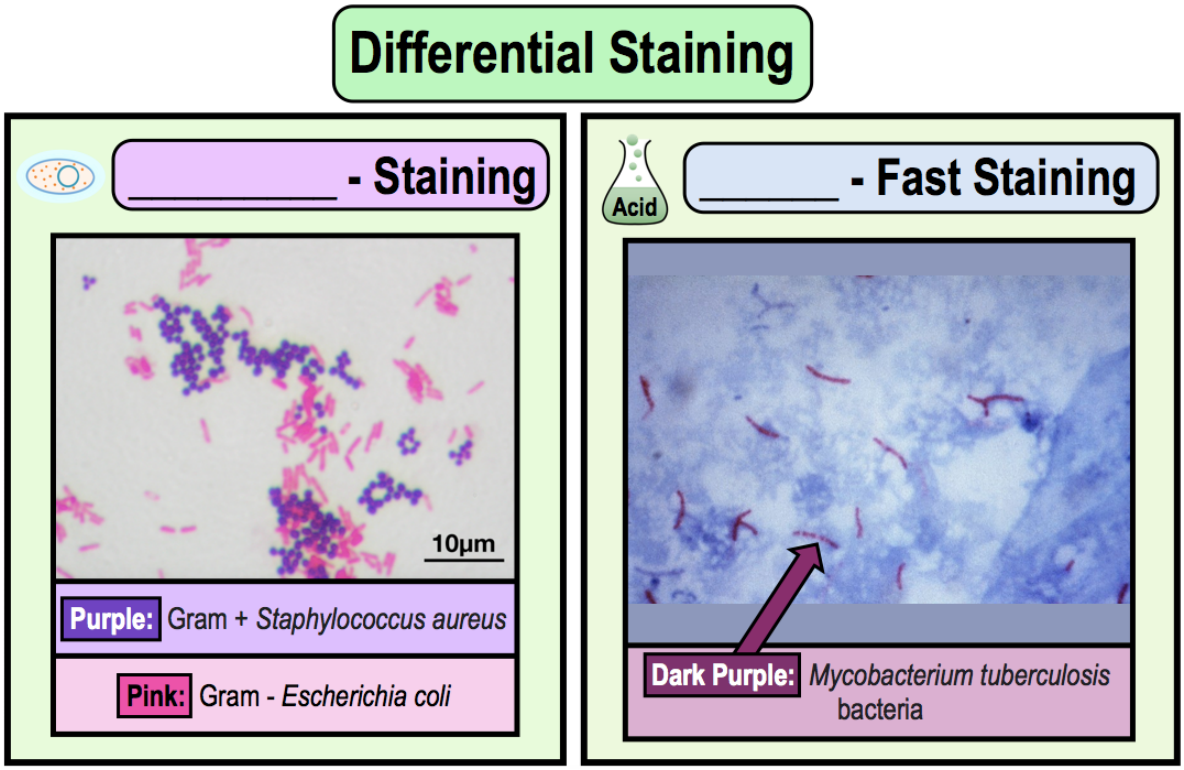
CONCEPT: DIFFERENTIAL STAINING

- _____ **Staining**: uses multiple dyes to distinguish/*differentiate* different groups of bacteria.
  - □ Two most common examples are _____ stain & _____-*fast* stain.
  - □ **Gram-Stain**: differentiates bacteria based on differences in the cell _____ (gram-positive vs gram-negative).
  - □ **Acid-Fast Stain**: identifies acid-fast bacteria with a _____ material (mycolic acid) in their cell walls.

EXAMPLE: Types of differential staining.



PRACTICE: A scientist is examining more than one species of bacteria under a microscope at the same time. The scientist decides to differentiate the bacterial cells based on their cell wall/cell envelope structure. Which staining technique should she use?

a) Gram-staining.
b) Basic staining.
c) Envelope staining.
d) None of the above.

PRACTICE: A scientist has a sample containing a variety of different bacteria species. She wishes to identify which bacteria in her sample are of the genus Mycobacterium. Mycobacterium have a wax-like, nearly impermeable cell wall which contains mycolic acid. Which type of staining technique should the scientist use to identify the Mycobacterium?

a) Basic staining.
b) Gram-staining.
c) Mycolic staining.
d) Acid-fast staining.