

## Assignments for Gram Staining

### Discussion:

1. What is the primary purpose of the Gram stain in microbiology?
2. Name the four main reagents used in the Gram staining procedure and describe the role of each.
3. What structural difference between Gram-positive and Gram-negative bacteria causes them to stain differently?
4. What color do Gram-positive bacteria appear under a microscope after Gram staining? What about Gram-negative bacteria?
5. Provide an example of one Gram-positive and one Gram-negative pathogen relevant to nursing practice and explain the type of infections they typically cause.

### Multiple Choice Questions: Gram Staining

What is the main purpose of the Gram stain?

- A) To determine bacterial motility
- B) To identify viral infections
- C) To differentiate bacteria by cell wall structure
- D) Measuring bacterial growth rate

Correct Answer: C

Which of the following is the correct order of reagents used in Gram staining?

- A) Crystal violet, iodine, alcohol, safranin
- B) Safranin, crystal violet, alcohol, iodine
- C) Alcohol, iodine, safranin, crystal violet
- D) Iodine, alcohol, crystal violet, safranin

Correct Answer: A

Gram-positive bacteria appear what color after staining?

- A) Green
- B) Blue
- C) Pink
- D) Purple

Correct Answer: D

What component of the bacterial cell wall retains the crystal violet-iodine complex in Gram-positive bacteria?

- A) Outer membrane
- B) Lipopolysaccharide layer
- C) Peptidoglycan layer
- D) Capsule

Correct Answer: C

Which reagent acts as the decolorizer in the Gram stain process?

- A) Crystal violet
- B) Iodine
- C) Alcohol or acetone
- D) Safranin

Correct Answer: C

What color do Gram-negative bacteria appear under the microscope after Gram staining?

- A) Purple
- B) Blue
- C) Pink or red
- D) Orange

Correct Answer: C

Why is over-decolorization during Gram staining problematic?

- A) It enhances color visibility
- B) It may cause Gram-positive bacteria to appear Gram-negative
- C) It prevents bacterial growth
- D) It sterilizes the sample

Correct Answer: B

Which of the following bacteria is Gram-positive?

- A) Escherichia coli
- B) Neisseria meningitidis
- C) Staphylococcus aureus
- D) Pseudomonas aeruginosa

Correct Answer: C

How can Gram stain results assist in selecting initial antibiotic therapy?

- A) By identifying bacterial size
- B) By detecting resistance genes
- C) By distinguishing bacterial cell wall types
- D) By confirming viral infections

Correct Answer: C

Which of the following can cause incorrect Gram stain results?

- A) Using fresh cultures
- B) Proper heat fixing
- C) Overheating the slide
- D) Clean microscope slides

Correct Answer: C