Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_

**LAB: #5 Gram Stains**

**Purpose:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Data & Observations:**

* Bacteria are ALWAYS viewed under Oil Immersion.
* Use COLORED pencils
* Now that we are only observing bacteria, your drawings do not need to show the relative size compared to the field of view. INSTEAD, draw the bacteria **large enough** to clearly show **color & morphology & arrangement**

|  |  |  |
| --- | --- | --- |
| *Staph* | *Bacillus* | *E. coli* |
| Morphology:  Arrangement:  Color:  Gram Reaction: | Morphology:  Arrangement:  Color:  Gram Reaction: | Morphology:  Arrangement:  Color:  Gram Reaction: |

1. Did your gram stain results match the expected results listed below? Explain using the color expected vs. the color you saw.
   1. Staph should be GP
   2. Bacillus should be GP
   3. E. coli should be GN
2. Old Gram-positive cells frequently stain gram-negative. Explain why.
3. Explain 3 other possible common errors that cause gram stains to appear the opposite of expected. Use your notes and the last step of the procedure for common errors.
4. Explain the purpose of the iodine step and how it works.
5. List the chemicals, in order, of the Gram Stain procedure. Fill in the color that would be observed microscopically after each step (red, purple, clear, etc.)

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Chemical | Appearance (color) | |
| Gram-positive cells | Gram-negative cells |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |

1. Differentiation of GP & GN:
   * After which step in the table above after the GP & GN cells already differentiated?
   * If GP & GN are already differentiated, why continue the procedure?

**Critical Thinking**

1. You stain a sample of a **pure** culture of bacteria and observe a field or red and purple cocci. Adjacent cells were not always the same color. What do you conclude? Explain.
   * (NOTE – a pure culture means there are NO contaminants and that there is only 1 type of bacteria present.)
2. A Gram stain shows a field of red rods and purple cocci. What do you conclude? Explain.
3. Since you can’t identify bacteria from a Gram stain, why might a physician perform a Gram stain on a sample before prescribing an antibiotic?
4. If you Gram stained human cells, what color would they appear? Why?