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

**LAB: #7 Structural Stains**

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

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**Data & Observations:**

* Bacteria are ALWAYS viewed under Oil Immersion. Use **COLORED** pencils
* Draw the bacteria **large enough** to clearly show **color & morphology & arrangement**
* NOTE – we are NOT doing a gram stain, so GP & GN are not appropriate terms for this lab.

|  |  |  |
| --- | --- | --- |
| **Capsule Stain**  At your desk | **Flagella Stain**  *Proteus vulgaris* | **Flagella Stain**  *Spirillum volutans* |
| **Morphology:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Flagellar arrangement: \_\_\_\_\_\_\_\_\_\_** | **Flagellar arrangement:\_\_\_\_\_\_\_\_\_\_\_** |
| **Endospore Stain**  *Clostridium tetani*  At your desk | **Endospore Stain**  *Bacillus anthracis*  (Anthrax) | **Endospore Stain**  *Bacillus subtilis* |
| **Endospore position\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  \*\*Label both vegetative cells & endospores | **Endospore position\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  \*\***Draw BOTH eukaryotic lung cells AND bacilli**  \*\*Label both vegetative cells & endospores | **Endospore position\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  \*\*Label both vegetative cells & endospores |

**Questions:**

1. Both *Clostridium* and *Bacillus* species are capable of making endospores. Based on that information alone, what are the expected Gram reactions AND morphology for both?
2. Of what advantage to *Clostridium* and *Bacillus* is an endospore?
3. An endospore stain is made of *Bacillus* species after 24 hours of incubation and after 5 days. How would you expect the stains to differ in appearance? Explain why.
4. In simple stains, endospores are usually seen as clear spots in the bacteria. Why is it important that an endospore stain be used rather than just a simple stain?
5. Sketch each of the following flagellar arrangements:
   1. Monotrichous
   2. Lophotrichous
   3. Amphitrichous
   4. Peritrichous
6. Flagella
   1. Of what morphology are most bacteria that possess flagella?
   2. What morphology usually does not have flagella?
7. How does a capsule contribute to pathogenicity?
8. Describe/draw the microscopic appearance of **encapsulated** *Streptococcus* if stained with **safranin** and **nigrosin.**
   * Include appropriate morphology, arrangement, and the location of 3 colors that would be observed.
9. During an **endospore** stain, a smear is covered with **safranin and heated**. Then it is decolorized and counterstained with **nigrosin**.
   * Include appropriate morphology and the location of 3 colors that would be observed.