

What Almost Killed Jane Doe?

Background

In September, 2016, a 5-year-old girl living in the Church Hill neighborhood of Richmond, VA, reported with her dad to the Bon Secours Richmond Community Hospital complaining of high fever, chills, and an extensive rash all over her body. Suspecting that the patient was suffering from some kind of infection, doctors took blood samples from her to try and identify the cause of her symptoms.

The patient remained at the hospital for 10 days with an extremely high fever and painful rash, but she was able to check out of the hospital, appearing completely healthy, on September 17, 2016. Her illness was never confidently diagnosed and remains a mystery.

Purpose of This Lab



We have obtained cultures of a foreign organism that was discovered in very low numbers in the blood of the patient. Doctors suspect, but are not completely sure, that this organism was the cause of the patient's illness.

Our job as pathologists is to observe the organism carefully using microscopes in order to classify and identify it. A positive identification will help diagnose Jane Doe's mystery illness. In other words, we are trying to answer the question, "**What type of cell (eukaryote or prokaryote; eubacteria, protist, plant, fungus, or animal) is the mystery organism?**"

Safety

We will be working with live organisms today, so it will be important to keep hands away from your face and wash them after the lab (especially before eating anything). No eating in the classroom.



Materials and Procedure

In addition to **compound light microscopes**, you may use any of the following materials in order to make your identification:

- **Prepared slides:**
 - cheek (animal) cells,
 - onion root tip (plant) cells,
 - paramecium (protists)
 - euglena (protists)
 - bacteria smear (prokaryote, eubacteria)
- **Wet mounts slides** (glass slides, plastic coverslips, water, and/or methyl cellulose*)
 - yeast (fungus)
 - anacharis (plant)
 - paramecium (protists)*
 - euglena (protists)*
 - bacterial culture (prokaryote, from the Life's Origins Lab)
 - **The mystery culture**

Before you begin making observations, you must have your written plan approved by the teacher.

Name _____ Block _____ Date _____

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Getting Started

You need to decide what type of data (observations) you will collect.

- What types of observations can you make to identify differences and similarities in different types of cells?
- How will you record these observations reliably and organize your data?

Then, you need to decide how you will analyze this data.

- How will you define or describe different types of cells (for example, what makes a prokaryotic cell different than a eukaryotic cell)?

List the specimens (at least 3 + the mystery organism) that you intend to observe.

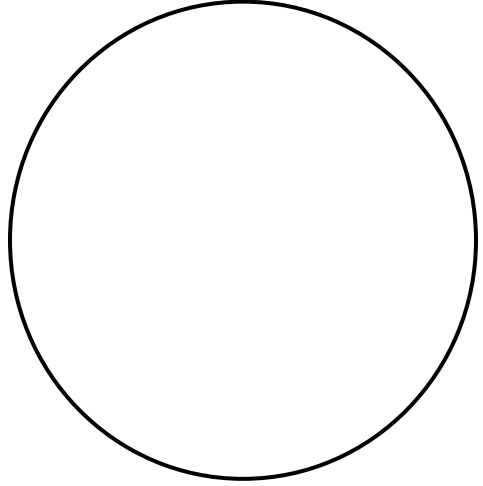
Describe what patterns, cell structures, cell characteristics, and/or behaviors you will be looking for (at least 6).

Describe how you will interpret any possible observations (at least 3). For example, "If I observe membrane-bound organelles, then the organism is a eukaryote."

Microscopic Observations – Use 100x or 400x magnifications. Do not settle for 40x. If you need more, do so, on a separate sheet of paper.

Sample Name _____
Magnification (Eyepiece x Objective)

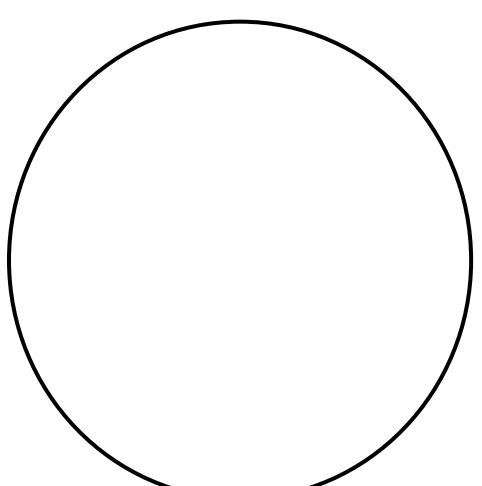
10 x = _____



Key observations _____

Sample Name _____
Magnification (Eyepiece x Objective)

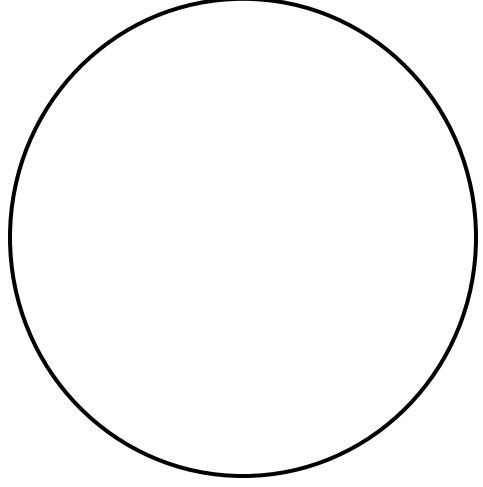
10 x = _____



Key observations _____

Sample Name _____
Magnification (Eyepiece x Objective)

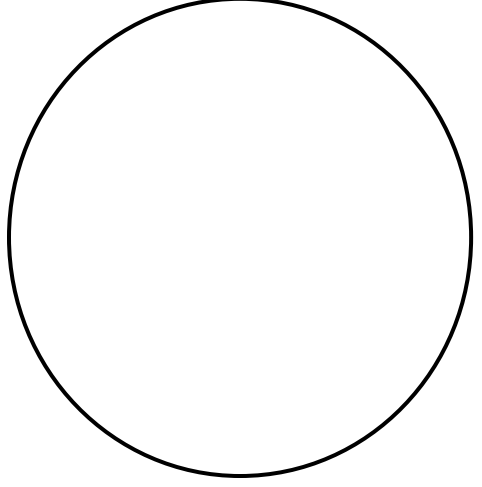
10 x = _____



Key observations _____

Sample Name _____
Magnification (Eyepiece x Objective)

10 x = _____



Key observations _____

Conclusion – Complete the CER Framework below in order to form your argument.

- Optional extra credit: *Rewrite* your conclusion in paragraph form on a separate sheet.

Guiding Question – Restate the question we are trying to answer.

Claim – State the answer to the question above, based on your observations.

Evidence – Summarize and describe, with key details, the observations you made that helped you answer the guiding question.

Reasoning – Explain *why* your observations support your claim. Include important scientific concepts you have learned in class.

Analysis Questions – If you need more room, continue your answers on a separate sheet.

1. Do you still have any uncertainty about your claim? In other words, are you completely sure that your claim is correct? **Explain** why or why not using scientific concepts.

2. **Describe** at least one additional observation or experiment you would like to perform to further support your claim. **Explain** why this observation or experiment would help justify your claim.

3. **Explain** how your scientific work today could help doctors do their job in the future.
