



GirlsGotSTEAM One-Day Workshop: Cell Cookies

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| Program: | Cell Cookies |
| Age Range: | 10-13 |
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| Description: | Let's look at the things that make up organisms: CELLS! Guide your students through this workshop to learn about prokaryotic and eukaryotic cells and treat them to fun cookie activities! |

NOTE TO INSTRUCTOR: This lesson plan is an OUTLINE - use it as you will to execute your one day workshop. Feel free to add and remove material as needed. Attached is a PowerPoint and a packet (SciNotebook) for your student to complete. The SciNotebook includes material that should be taught and explained throughout the day.

The PowerPoint will include pictures, additional information, and instructions. It **SHOULD NOT** be the primary resource to run the workshop. Please refer to the lesson plans for detailed instructions. If you have any questions, comments, or concerns about any information in this workshop, please email girlsgotsteamorl@gmail.com

| Time | Objective | Component |
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| Block 1: Introduction | Students should be introduced to the concept of a cell and their functions in various organisms as well as the difference between Eukaryotic and Prokaryotic cells. | Activity 1: Introduction Activity 2: Exploring Prokaryotes and Eukaryotes Activity 3: Prokaryotic vs Eukaryotic Cells |
| Block 2: Learn and Build | Students should use their creativity and design skills to construct an edible cell of their choice (prokaryotic or eukaryotic). | Activity 1: SciNotebook Activity Activity 2: Build Cell Cookies! |
| Block 3: Compare and Reflect | Students should end by reflecting on the workshop, ensuring their understand the difference between prokaryotic and eukaryotic cells | Activity 1: Discussion Activity 2: Review Activity 3: SciNotebook Wrap Up |



Materials for Cell Cookies

NOTE TO INSTRUCTOR: This is a DESIGN project. The materials listed below are suggestions. Once again, feel free to remove or add materials as needed.

Colored Pencils or Markers • Sugar Cookies • Frosting • Paper Plates
Various Candy (represent organelles: M&Ms, gummy worms, sprinkles
AirHeads Xtremes, jelly beans, gumdrops)

Block 1: Introduction

• Activity 1: Introduction

- In order to understand prokaryotic and eukaryotic cells, students need to learn basic information about a cell.
 - Prokaryotes: have “naked” and circular DNA. There is no nucleus or membrane-bound organelles. They reproduce through a process called binary fission (asexual reproduction).
 - Eukaryotes: linear and protein-bound DNA. There is a nucleus and membrane-bound organelles. They reproduce through mitosis and meiosis.
- Refer to the PowerPoint for this activity and have students complete the 5 cell adjectives activity in the SciNotebook

• Activity 2: Exploring Prokaryotes and Eukaryotes

- All organisms are classified as either a prokaryote (organisms made up of prokaryotic cells) or a eukaryote (organisms made up of eukaryotic cells). In order to better understand the difference between these two categorizations, students will examine different prokaryotes and eukaryotes.
- Display the various images of prokaryotes/eukaryotes (refer to PowerPoint) and ask students to identify any differences they may see in them. Try to keep students engaged by asking follow up questions to their responses and have them jot down their responses in their SciNotebook
- After allowing students to think for themselves, refer to the PowerPoint while explaining the differences between prokaryotes and eukaryotes. Make sure students are given enough time to answer guiding questions in their SciNotebook as well.

• Activity 3: Prokaryotic vs Eukaryotic Cells

- Now that the students have learned the basic information, refer to the PowerPoint as you talk through the differences between prokaryotic and eukaryotic Cells. Keep in mind that students should be actively filling out the Functions Table and diagrams in the Sci Notebook during this time.
- While doing this, ask students guiding questions and encourage students to ask questions.

Block 2: Learn and Build

• Activity 1: SciNotebook Activity

- Before students begin building their cell cookies, emphasize the importance of creating a diagram first. Show students the ‘Diagrams are Useful’ slide in the PowerPoint as you



explain the usefulness and efficiency of creating a diagram in any engineering/design project.

- Allow students to choose to make either a prokaryotic or eukaryotic cell, and have them complete the table and draw and color their cell in their SciNotebook. Make sure students refer back to their diagrams and table when drawing their cells.
- Tell students that they can choose from a variety of candies to represent various organelles in their cells. Emphasize, however, that the candies the students choose shouldn't be picked randomly. In fact, each candy should resemble some aspect of each organelle. For example, a round organelle, could be represented by an M&M.

• **Activity 2: Build Cell Cookies!**

- Now it's time to build cell cookies with candy! Place out all the materials and give each student one sugar cookie. The icing can be spread on the cookie for a smooth surface to place candies on. Encourage the students to think creatively as they are choosing the candies to represent each organelle.
- As you move throughout the room, ask the students about the type of cell cookie and what each candy represents and why.
- After everyone is complete, you may also set up a walking gallery so that students are able to view other students' cells and learn from them.

Block 3: Compare and Reflect

• **Activity 1: Discussion**

- Have students form groups of 2-4 people (make sure some students made prokaryotic and some made eukaryotic). Have the students share their models with each other and explain what each candy represents and why. Make sure all the students are getting an opportunity to speak and that the discussion is fun and interactive.

• **Activity 2: Review**

- Instructors should reiterate the key learning points of this workshop by asking the students questions (students can eat their cookies if they wish):
 - What are some differences between prokaryotic cells and eukaryotic cells?
 - What are some eukaryotic organisms? Why?
 - Why are cells important?
 - What are some organelles and their functions?

• **Activity 3: SciNotebook Wrap Up**

- Since the workshop has come to an end, please ensure that all SciNotebooks are completed.

We hope your students will enjoy creating their own Cell Cookies and learning about cells! Thank you so much for using GirlsGotSTEAM's resources for your workshop - our team would be beyond happy to provide you with more free and enjoyable lesson plans in the future! For any questions, comments or concerns, please email girlsgotsteamorl@gmail.com or DM us @girlsgotsteam on Instagram!