**``Q1🧪 LS U1L1 – 5-Day Science Lesson Plan**

**Unit Title:** Cells and Organization in Organisms  
**Lesson Focus:** Understanding similarities in cell structure across different organisms (onion and frog)  
**NGSS Performance Expectations:**

* **MS-LS1-1**: Conduct an investigation to provide evidence that living things are made of cells
* **MS-LS1-2**: Develop and use a model to describe cell structure and function

**🔬 Day 1 – Can You Explain the Phenomenon?**

**Objective:** Introduce the anchoring phenomenon and spark curiosity using images of onion and frog cells.

**Anticipatory Set**

* Display side-by-side photos of a frog and onion and their cells.
* Prompt: *“What could these very different organisms have in common at the cellular level?”*

**Direct Instruction (I Do)**

* TELL: Students describe what they already know about cells (individual writing or Think-Pair-Share).
* COLLABORATE: Students brainstorm questions about the cells in small groups (Driving Question Board).

**Guided Practice (We Do)**

* DRIVING QUESTION: Introduce: *“What similarities between the frog and the onion can we observe by studying their cells?”*
* ANALYZE: Students sort brainstormed questions into those relevant to the driving question vs. unrelated but interesting (Propose Your Own Path options).

**Independent Practice (You Do)**

* Students write down one question from the board that they’re most interested in answering and why.

**Closure**

* If time allows: Begin Exploration 1 reading from the eBook (overview of cell theory and living vs. nonliving).

**🔬 Day 2 – Exploration 1 + Hands-On Lab: Observe Cells with a Microscope**

**Objective:** Distinguish between living and nonliving things by observing cells under a microscope.

**Anticipatory Set**

* Review cell theory from Day 1.
* Quick discussion: *What tools do scientists use to determine if something is living?*

**Direct Instruction (I Do)**

* Explain how microscopes reveal cellular structure.
* Review cell theory: all living things are made of cells; cells come from existing cells.

**Guided Practice (We Do)**

* **Hands-On Lab: Observe Cells with a Microscope**
  + Samples: Onion skin, celery, yeast, hair, tissue paper, sand, water
  + Tools: Slides, droppers, microscopes at 100x and 400x
  + Build and use a data table to record observations

**Independent Practice (You Do)**

* Students reflect: Which items were made of cells? Which were not?

**Closure**

* Discuss how microscopes support the cell theory.
* Preview: Tomorrow we’ll investigate how different cell types have different structures.

**🔬 Day 3 – Exploration 2: Comparing Cell Structures**

**Objective:** Analyze how different structures in eukaryotic and prokaryotic cells support specific functions.

**Anticipatory Set**

* *What do you remember about the onion and frog cells from yesterday?*

**Direct Instruction (I Do)**

* Explain the difference between prokaryotic and eukaryotic cells.
* Introduce organelles: nucleus, mitochondria, chloroplasts, etc.

**Guided Practice (We Do)**

* Use labeled diagrams to identify and compare plant vs. animal cells.
* Read and annotate eBook Exploration 2 section.
* Answer embedded questions (e.g., structure-function matching, explain photosynthesis and energy usage differences).

**Independent Practice (You Do)**

* GATHER DATA: What kind of cells do onion and frog have? (Eukaryotic—with nuclei)

**Closure**

* Formative Check: Quick written response or poll: *Is a frog cell more like an onion cell or a bacterium?*

**🔬 Day 4 – Exploration 3 + Hands-On Lab: Modeling the Cell Membrane**

**Objective:** Model how the cell membrane controls what enters and exits a cell.

**Anticipatory Set**

* Recap: What structures do all cells share? What makes plant and animal cells different?

**Direct Instruction (I Do)**

* Explain function of the cell membrane and its importance to survival.

**Guided Practice (We Do)**

* **Modeling the Cell Membrane Lab**
  + Create a physical model using sand, water, pebbles, and various filtering materials.
  + Goal: Create a barrier that mimics selective permeability.
  + Discuss: What materials passed through? What didn’t?

**Independent Practice (You Do)**

* Students sketch their model and explain what it represents.

**Closure**

* Connect model to real cell membranes and diffusion.

**🧠 Day 5 – Lesson Self-Check (Yellow Section)**

**Objective:** Consolidate learning and answer the driving question using claims, evidence, and reasoning (CER).

**Anticipatory Set**

* Quick review: 3 things all cells have in common.

**Direct Instruction (I Do)**

* Reflect: How did your understanding of cells change?
* Model CER response structure: Claim, Evidence, Reasoning.

**Guided Practice (We Do)**

* Walk through one CER as a class using onion/frog data.

**Independent Practice (You Do)**

* Complete the Lesson Self-Check (TAG Yellow Section)
* Final CER Writing Prompt:
  + **Claim**: Frogs and onions are similar at the cellular level because...
  + **Evidence**: Data from labs and explorations
  + **Reasoning**: Why this evidence supports the claim

**Closure**

* Optional creative choice: Draw a comic or write a story/song using key vocab (cell membrane, chloroplast, mitochondria, nucleus, organelle, cell wall)