

# THE LIVING CELL



GRADES 3 - 5

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## SNC - Plant Farley LESSON PLAN

**Lesson Title:** The Living Cell

**Lesson Description:** Students construct a giant cell by decorating their classroom. They then turn themselves into the organelles of the cell by dressing as a particular organelle and describing their functions. This reinforces the concept that organelles are living parts of cells. This activity is designed to be a fun activity to reinforce concepts regarding cells that have been previously introduced.

**Grade Level:** 3-5 (modify as needed for each grade level)

**Subject Area(s):** Biology

**Objectives:** Students will:

- gain an understanding of the concept of cells and organelles.
- become cognizant of the diversity of cell types.
- work together to make a giant model of an animal cell.
- gain an understanding of the appearance and function of major cellular organelles.
- engage in individual research.
- analyze data and communicate findings to others.

**Materials:**

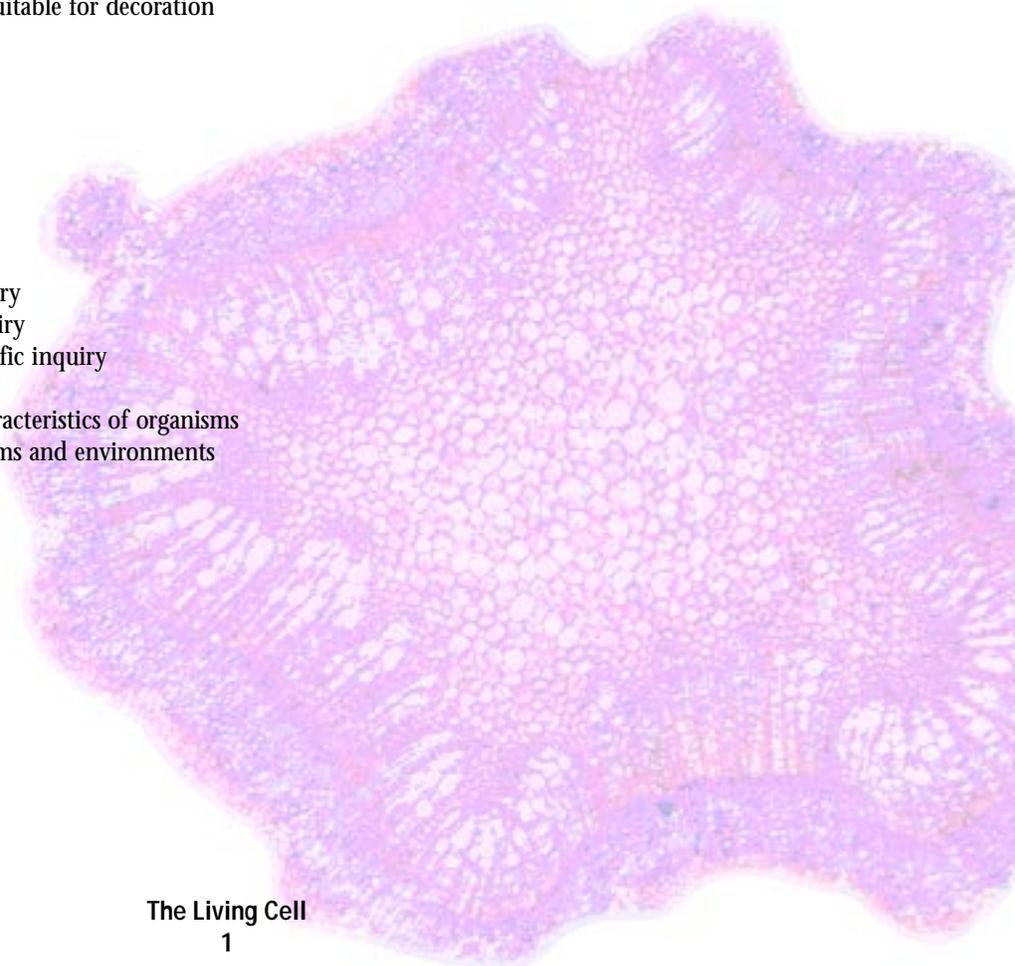
- clear shower curtains or heavy plastic sheeting
- string or cord
- construction paper or other material suitable for decoration
- screws or small nails
- costumes (supplied by students)
- pencils
- reference materials
- activity sheets
- duct tape

**Correlations (NSES):**

- Content Standard A - Science as Inquiry
  - develop abilities to do scientific inquiry
  - develop understandings about scientific inquiry
- Content Standard C - Life Science
  - develop an understanding of the characteristics of organisms
  - develop an understanding of organisms and environments

**Curriculum Integration:**

- Environmental Science
- Art Education



### Process Skills:

- Observation
- Comparison
- Collection of data
- Measurement
- Research
- Inference
- Investigation/experimentation
- Interpretation of data
- Analysis of data
- Description of findings
- Communication of ideas

### Background Information:

- Main ideas
  - Principles related to cell structure such as:
    - nuclei
    - common external structures such as flagella and cilia
    - special properties such as movement, photosynthesis, etc.
    - various major organelles
    - diversity of cellular morphology (shape)
  - Concept of diversity among microlife
  - Basic concepts related to unicellularity vs. multicellularity
  - Characteristics of individual organelles
  - Functions of organelles
  - Functions of cells
- Secondary ideas
  - Cell specialization

### Teacher Activities:

- Assemble/organize all materials needed for activity. You may wish to collect several items to represent cytoplasmic inclusions within the cell. Items such as styrofoam balls, paper discs, tinsel streamers, etc. These can hang from the ceiling by string at different levels. Do not use thin plastic bags to represent the cell membrane because they may present a suffocation hazard.
- Decide whether you want to use the entire room as a cell or only a portion of the room.
- Put the screws (or nails) in the wall ahead of time. When you place the screws, make sure they are well above the heads of your tallest students. If you don't want holes in your walls you can use self-adhesive hooks that are available at a hardware store.
- Obtain several references so that students will have pictures/illustrations of cells and organelles.
- Present background material to students. Explain to them that the classroom is going to be turned into a giant model of a cell.
  - The shower curtains (or plastic sheets) will be the cell membrane.
  - They will dress up as the individual cellular organelles. They are to research the structure and functions of the organelles they represent and give an oral report about that organelle on the day of the project.
  - If you so desire, you the teacher can dress up as the nucleus of the cell because it is the "director of all cellular activities".
  - If you wish, you can have some parents join in and assist you with the activities. (For example, somebody will have to be able to reach string or cord to attach the shower curtain or plastic sheeting. You may also want a parent to come and videotape the activities or at least take lots of pictures.)
- Explain the project well in advance so that the students will have time to make their costumes. You will need to make assignments as to what organelle each student will portray at this time. It is OK for several students to represent the same organelle. Do not allow students to portray cytoplasmic inclusions as these structures are non-living parts of the cell.
- Ask students to give their individual reports and model their costumes. Be sure to give other students an opportunity to ask questions.
- After all students have modeled their costumes and given their reports on which organelle they represent, review major concepts of the lesson.
- You may wish to invite other classes in to view your cell model, complete with living organelles!

**Student Activities:**

- Listen to background information given by teacher.
- Obtain all materials needed to complete the exercise.
  - Decorate the room to be a giant cell.
- Research organelles.
  - Devise a costume to represent a particular organelle.
- Write a report on an assigned organelle and present the report in class on the day of the event.
- Listen to the reports of other students.
- Participate in post-activity discussion.

**Evaluation:**

- Oral reports
- Direct observation

**Extension/Enrichment:**

- Have students look at cells with microscopes.
- Have students attempt to identify new organelles.
- Invite a biologist to speak to the class about cells.
- Conduct a “cell hunt” on the Internet/WWW.
- Have the students make models of cells by using clay, play dough or other materials.

**Safety Considerations:**

- Do not use thin plastic bags to portray cell membranes as they may present a suffocation hazard.