

### Student learning outcome (SLO):

<ul style="list-style-type: none"> <li>• Define cell and its structure.</li> <li>• Explain the role of chromosomes in cell division</li> <li>• Define cell division, its phases and types.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the process mitosis.</li> <li>• Explain the different stages of meiosis.</li> <li>• Draw a table to differentiate between mitosis and meiosis.</li> </ul>
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### Overview:

The main purpose of this lesson is help students how cells replicate for growth and repair. It introduces concepts like mitosis and meiosis, crucial for development and reproduction. This knowledge forms the basis for comprehending biological processes and inheritance.



### Introduction:

Lead the students in learning about,

**'Cell Division'.**

**'Mitosis and Meiosis'**

Video of the lecture can be shown to the students as well.

<a href="https://youtu.be/XKZhcYetvsc?si=lpFK89Fz09vapAT6">https://youtu.be/XKZhcYetvsc?si=lpFK89Fz09vapAT6</a>	
<a href="https://youtu.be/yRLQKZzFb68?si=435razF4pXY3VHJp">https://youtu.be/yRLQKZzFb68?si=435razF4pXY3VHJp</a>	

### Keywords:

Cell division, mitosis, meiosis, chromosomes, cell cycle, DNA replication, cytokinesis, karyokinesis, genetic variation, crossing over, tetrad, bivalent

### Material

- Onion
- Microscope slides
- Cover slips
- Microscope
- Iodine solution
- Tweezers
- Razor blade or scalpel
- Water dropper
- Paper towels

### Activity: Onion cell division observation

- Peel a thin, translucent layer from the inner surface of an onion.
- Use tweezers and a razor blade to carefully cut a small square of the onion epidermis
- Place the onion epidermis on the slide of microscope
- Add a drop of iodine solution to the onion cells
- Gently lower a cover slip onto the stain and onion cells to create a slide
- Place the prepared slides on the microscope stage
- Use the microscope to observe the onion cells at different magnifications
- Focus on the cells and look for structures such as nucleus and cell walls
- Observe any cells that appear to be in different stages of the cell cycle

### Essential questions:

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What is cell division, and why is it important for living organisms?
2. Name the two types of cell division.
3. What is the purpose of mitosis in cell cycle?
4. How chromosomes are related to cell division?
5. What is DNA replication?
6. Where does the DNA replication occur in the cell cycle?
7. Why is cell division essential for the repair of tissues in the body?
8. How does cell division play a role in the continuity of life through reproduction?