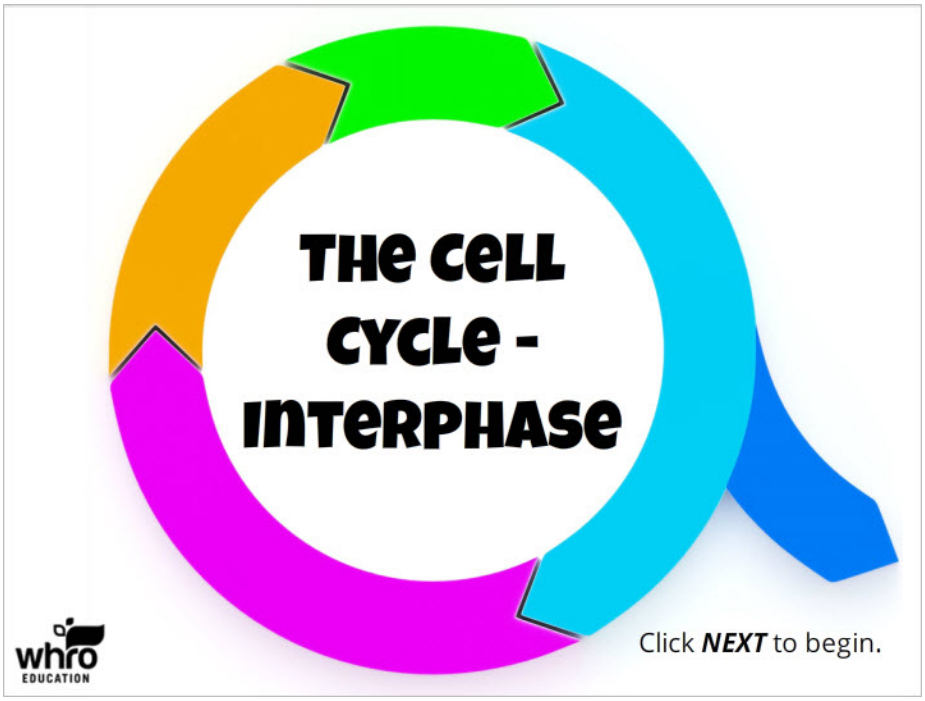
# Module 4: Cell Biology - Growth and Reproduction

## Topic 1 Content: The Cell Cycle - Interphase Notes

### Introduction




The Cell Cycle - Interphase. Click ***NEXT*** to begin.

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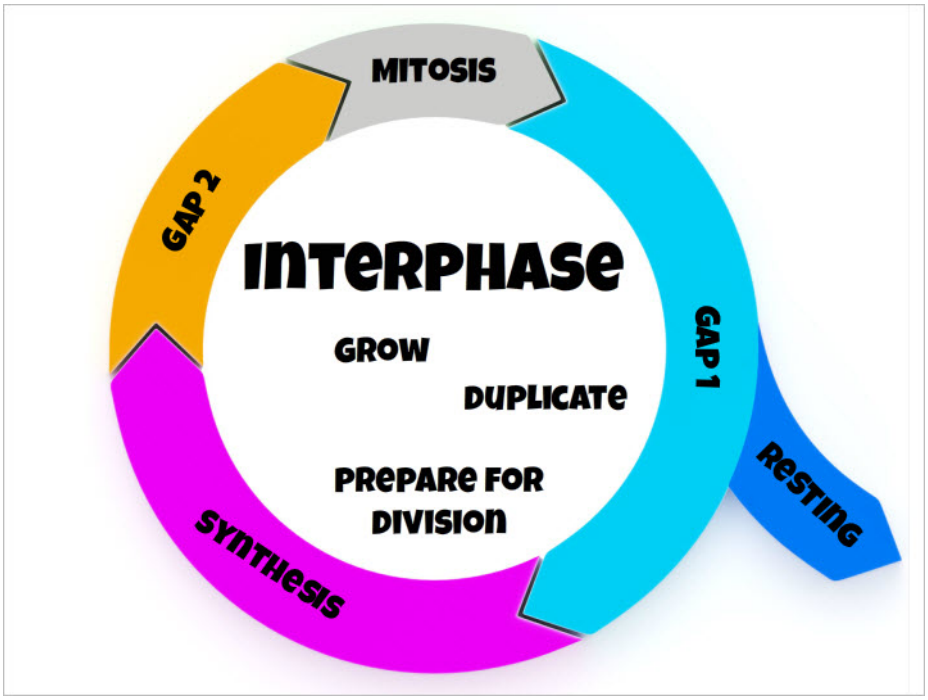


When cells grow large, they do not function effectively. As cells grow large, they divide to produce more healthy cells for an organism. The growth and division of cells is called the cell cycle. In this interactivity, you will explore the first part of the cell cycle, which is interphase. During interphase, cells grow, duplicate DNA, and prepare for division. Interphase is divided into phases: Gap 1 (G1), Resting (G0), Synthesis (S), and Gap 2 (G2). Click ***Gap 1*** to being your exploration. You will not learn about the last phase of the cell cycle, mitosis in this interactivity.

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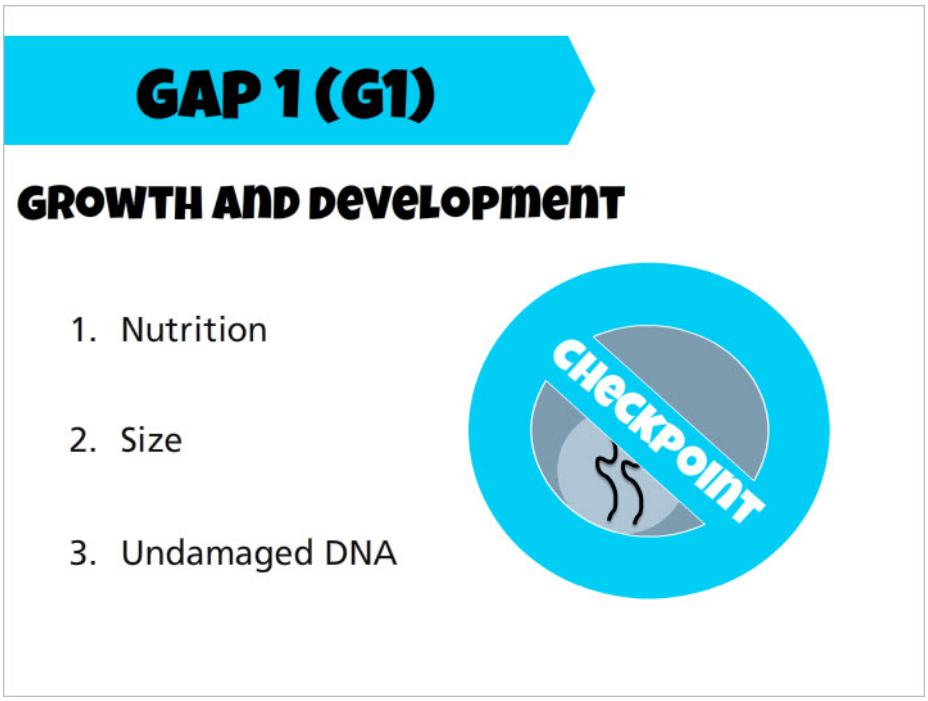
**Gap 1 (G1)**




The Gap 1 phase begins immediately after a cell divides. During the G1 phase, the cell spends a lot of time and energy on growing and carrying out its normal functions. It takes in food, water, and other nutrients to help maintain a high metabolism while building and repairing organelles, as well as synthesizing proteins, enzymes, and other cell structures it will need in the next phases.

Before a cell moves to the next phase, it must pass a critical checkpoint. Only cells that have the proper nutrition, adequate size, and undamaged DNA will travel to synthesis.

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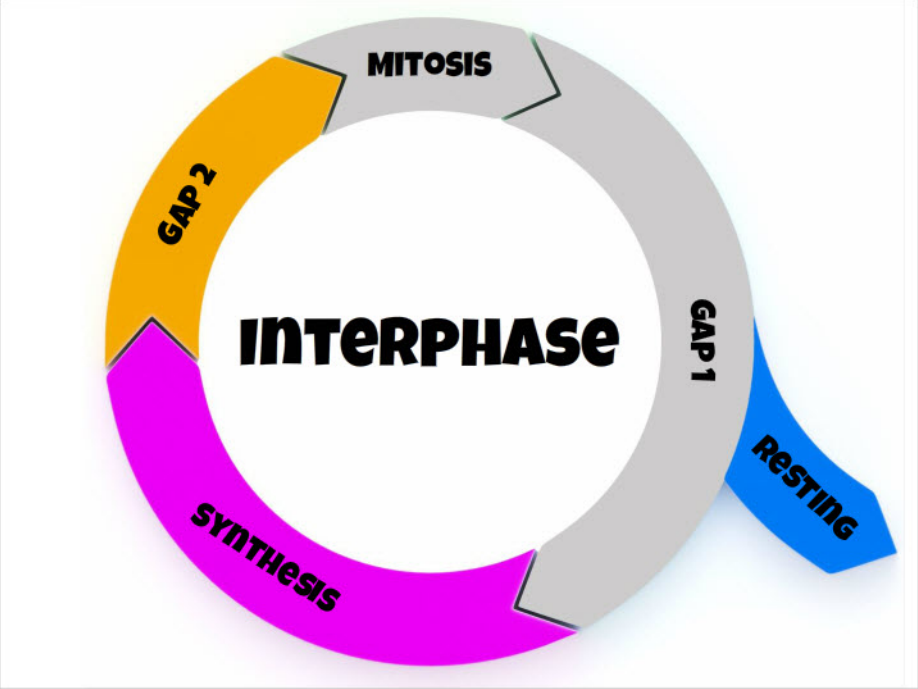
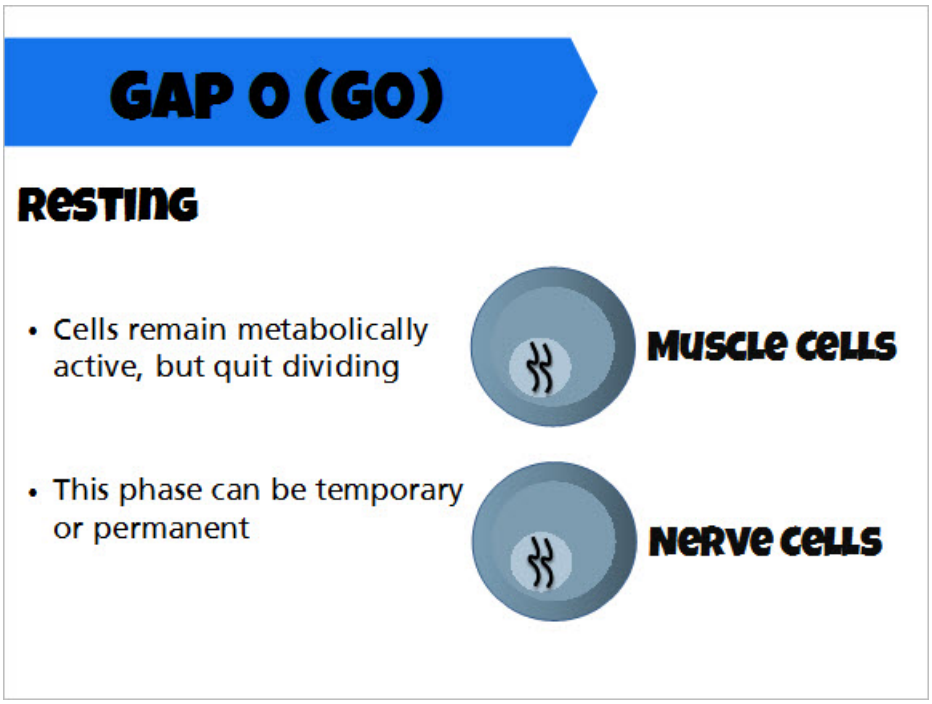



Now that you have learned about Gap 1, click ***Resting*** to learn about the G0 phase.

## Resting (G0)




Some cells, like muscle cells and nerve cells, exit the cell cycle during the G1 phase. These cells do not divide again and enter Gap 0 (G0). This phase is commonly referred to as Resting. A cell that enters the resting phase will remain metabolically active, but will quit dividing. This stage can be either temporary or permanent.

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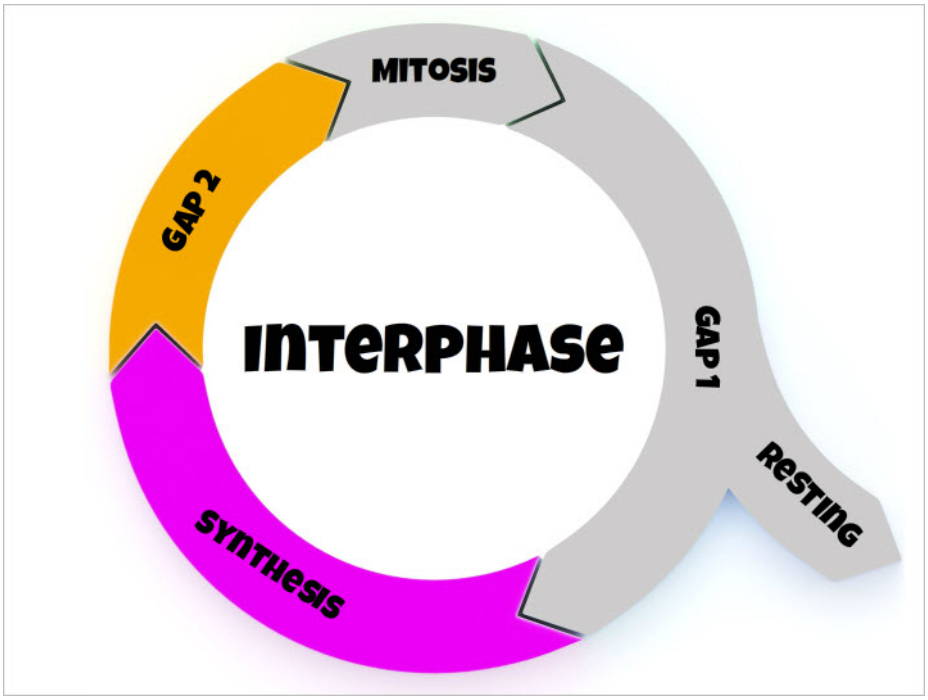
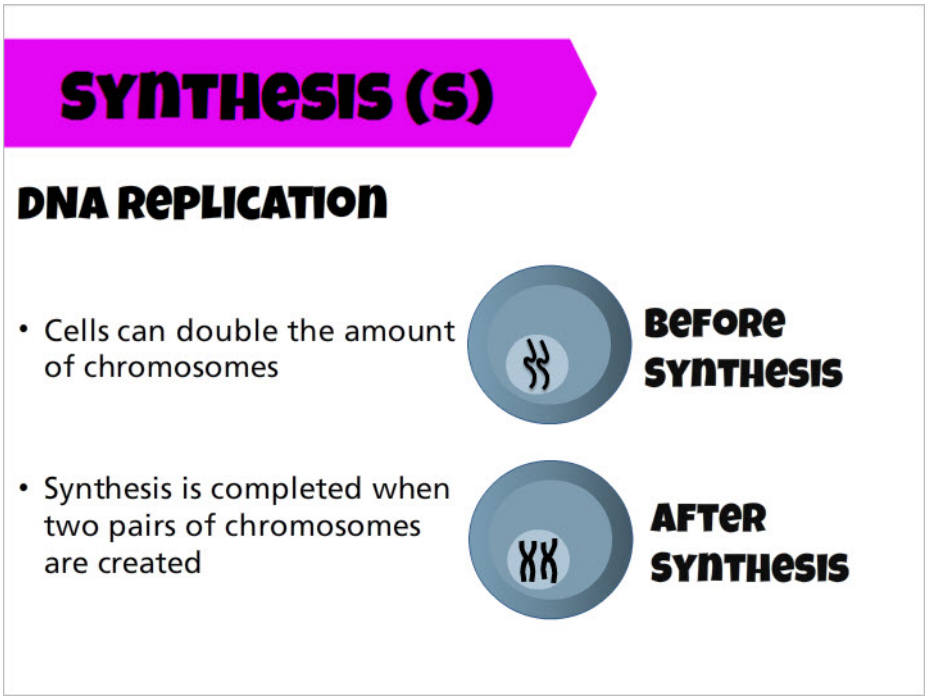



Now that you have learned about Resting, click ***Synthesis*** to learn about the S phase.

## Synthesis (S)




Most cell types enter the synthesis phase after G1. During the S phase, the cell doubles its compliment of chromosomes in a process called DNA replication. By the end of synthesis, the cell's nucleus contains two complete sets of chromosomes, which contain the DNA.

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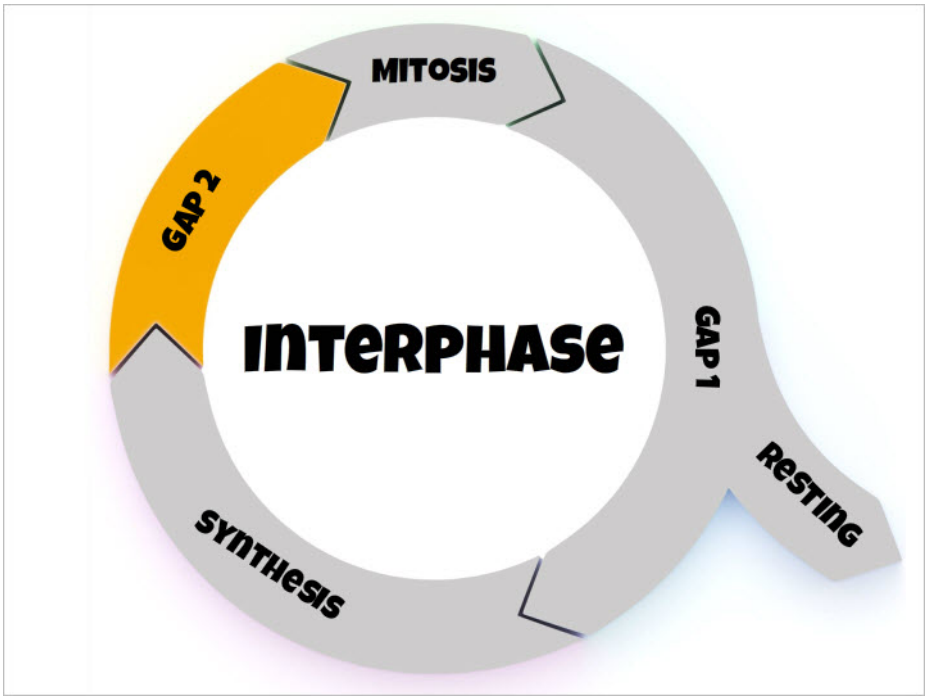
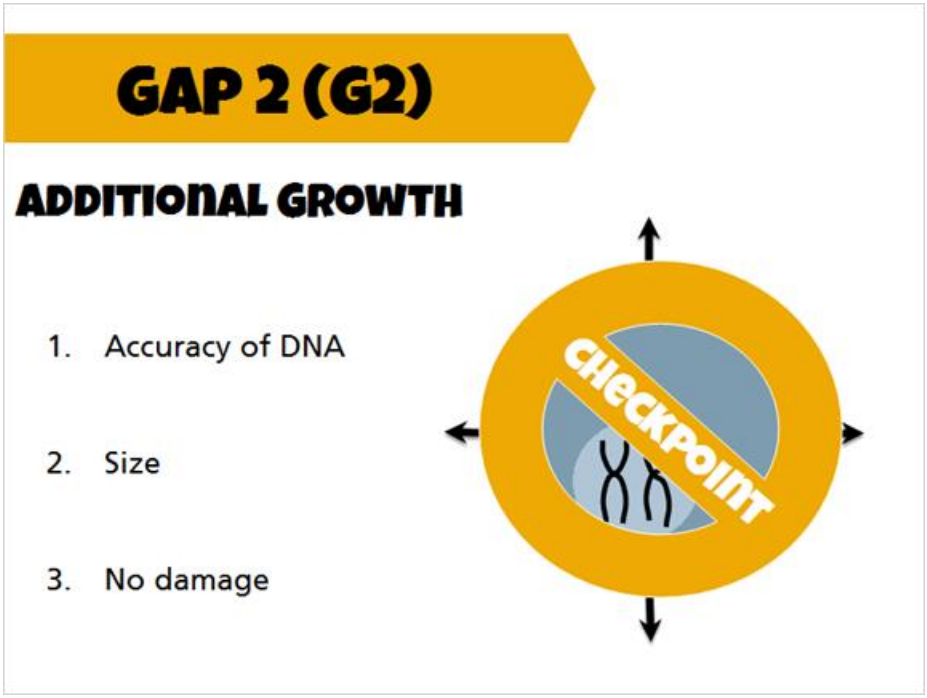



Now that you have learned about Synthesis, click ***Gap 2*** to learn about the G2 phase.

## Gap 2 (G2)




In the G2 phase, the cell experiences a period of rapid growth. During this phase, the cell creates extra cytoplasm and other structures in preparation for mitosis. This phase includes another important checkpoint. The cell conducts a series of vital checks on the accuracy of its DNA, while making sure the cell is an adequate size and contains no damage.