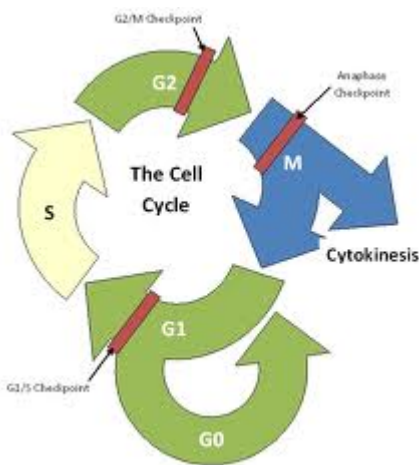


# Check Point In Cell Cycle

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## What is the Checkpoint?

The cell cycle continuous with many defined sequence of events and these pot events depend upon the proper completion of previous events. To distribute the complete and error free [replicas](#) of the genome to the next generation is the main aim of these events.



To control and check this dependency, all cells are provided with the checkpoints

which are the set at different stages of the cell cycle. Sometimes the cells may have DNA damages and it should be repaired immediately. For this the cells activate the DNA damage checkpoint which stops or arrests the cell cycle.

## Classification of check points

There are 3 DNA damage checkpoints have been proved according to the cell cycle stages.

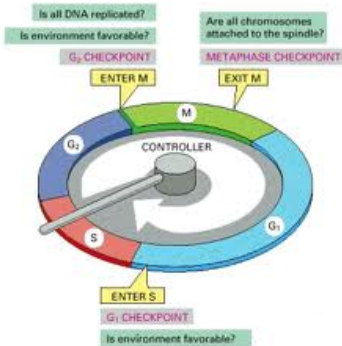
They are

1. G1/S (G1) checkpoint
2. intra-S phase checkpoint
3. G2/M checkpoint.

Upon perturbation of DNA replication by drugs that interfere with DNA synthesis, DNA lesions, or obstacles on DNA, cells activate DNA replication checkpoint that arrests cell cycle at G2/M transition until DNA replication is complete.

Some more checkpoints have also been identified named as [Spindle checkpoint](#) and Morphogenesis checkpoint.

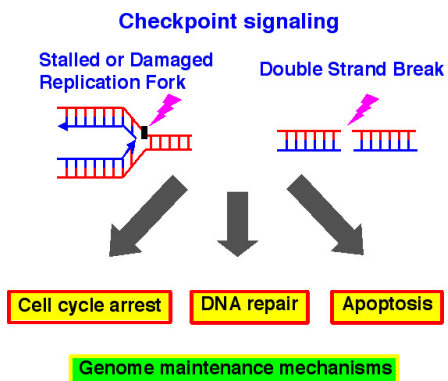
The spindle checkpoint arrests cell cycle at Mitosis (M) phase until all chromosomes are aligned on spindle. It is very crucial for equal distribution of chromosomes.



Abnormality of [cytoskeleton](#) and arrests of cell cycle at G<sub>2</sub>/M transition are done by

Morphogenesis checkpoint.

## Check Point Signaling



The main events of the cell cycle are the DNA replication and chromosome distribution. The major job of cell is to copy the exact copy of chromosome by the process of Mitosis and separate them as daughter Cells. The checkpoints are surveillance mechanism and quality control of the genome to maintain genomic integrity.

If sometimes problems may happen and it affects the process of cell cycle by checkpoint failure. It may cause gene mutations and wrong genomic arrangements which results with the instability of genes. This [Genetic instability](#) is a major factor for the defects of Birth and it influences many diseases during its development process. For example: Cancer. That's why the checkpoint studies takes an important role in the genome maintenance and they helps to find out the birth defects and helps in the cancer biology researches.

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## Reference Links:

- [http://en.wikipedia.org/wiki/Cell\\_cycle\\_checkpoint](http://en.wikipedia.org/wiki/Cell_cycle_checkpoint)
- <http://www.youtube.com/watch?v=1EB8q9aR8Hk>
- [http://www.cellsalive.com/cell\\_cycle.htm](http://www.cellsalive.com/cell_cycle.htm)
- <http://www.ncbi.nlm.nih.gov/books/NBK21719/>

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