**CELL CYCLE & MITOSIS**

3 main phases in the cell cycle

1. **Interphase** is normal cell function and \_\_\_\_\_\_\_\_\_\_\_\_\_

**Split into 3 parts:**

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
4. **Mitosis** is the division of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. **Cytokinesis** is the division of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**End result**: 2 new, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells are produced.

**INTERPHASE**

|  |  |
| --- | --- |
| A picture containing diagram  Description automatically generated**Chart, pie chart  Description automatically generated***(see fig 5.5 from text re: replication)* | * Nucleus is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and bounded by the nuclear membrane.
* Outside of the nucleus are two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Their function is to organize the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They will begin to move apart as spindle microtubules

grow out of them.**G1 – 1st Gap** * Cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and makes the proteins and molecules necessary for the cell to function.
* Some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ begin to **duplicate**.

**S – synthesis** * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of DNA occurs.
* The DNA molecule \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the help of an enzyme.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the bases on the original DNA.
* **Two** new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DNA molecules are produced.
* The chromosomes have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and appear as a jumbled mass of fibers.
* They have \_\_\_\_\_\_\_\_ yet condensed.

**G2 – 2nd Gap** * Cell continues to \_\_\_\_\_\_\_\_\_\_\_ and make materials such as proteins
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which contains the replicated DNA, is in its loosely coiled form
* Remaining organelles (such as mitochondria and chloroplasts) are
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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ***Now the cell is ready to divide!***

**MITOSIS**

The \_\_\_\_\_\_\_\_\_\_\_- stage of the cell cycle where the nuclear contents \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_ daughter nuclei are formed.

As the nucleus prepares to divide, replicated DNA in interphase joins to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, joined by a centromere.

**PMAT**

**EARLY PROPHASE**

|  |  |
| --- | --- |
|  | * The chromosomes coil and thicken and become \_\_\_\_\_\_\_\_\_\_\_\_ from one another. The chromosomes are now visible.
* The nucleolus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The chromosomes are doubled throughout their length.
* The centrioles separate and start moving to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ends of the cell. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ made of microtubules begins to form.
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**LATE PROPHASE**

|  |  |
| --- | --- |
|  | * The nuclear membrane ­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ move to the opposite poles, completing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (microtubules form spindle)
* The chromosomes attach to the spindle fibres at their \_\_\_\_\_\_\_\_\_\_\_\_\_
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**METAPHASE**

|  |  |
| --- | --- |
|  | * Each chromosome is connected to a spindle fiber at its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are now at opposite sides of the cell.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fibers will push and pull the chromosomes.
* The chromosomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at the center of the cell.
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**ANAPHASE**

|  |  |
| --- | --- |
|  | * The microtubules begin to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and this pulls the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ apart to opposite sides of the cell
* Once they separate, each sister chromatid is considered to be a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* By the end of anaphase, the two ends of the cell have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sets of chromosomes.
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**TELOPHASE**

|  |  |
| --- | --- |
|  | * One \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ set of chromosomes is now at each pole of the cell
* Spindle fibres begin to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms around each set of chromosomes
* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ appears within each nucleus
* Now there are \_\_\_\_\_\_\_\_\_ nuclei in one cell, and the cell is ready to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**CYTOKINESIS**

* The final stage in the cell cycle, and happens in conjunction with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The \_\_\_\_\_\_\_ nuclei are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into \_\_\_\_\_\_\_ daughter cells
* These new cells are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the original parent cell