Cell Cycle & Mitosis Guided Notes

**Why Would a Cell Divide?**

Surface area for exchange not \_\_\_\_\_\_\_\_\_\_\_\_ enough to support cell’s \_\_\_\_\_\_\_\_\_\_\_\_\_.

Solution: divide in \_\_\_\_\_!

**When Would a Cell Divide?**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Stages of the Cell Cycle**

2 stages = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (growth & replication of DNA) & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ phase (division of cell into 2 daughter cells)

Cell spends about \_\_\_\_\_\_\_ of the time in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Interphase**

Divided into \_\_\_\_ phases:

\_\_\_\_\_\_\_\_ (1st gap) = small cell is absorbing nutrients, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & doing its job (i.e. making proteins)

\_\_\_\_\_\_\_\_ (synthesis) = cell is continuing to grow & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its DNA (i.e. chromosomes) in preparation for making \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cells during mitosis

\_\_\_\_\_\_\_\_ (2nd gap) = cell keeps \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & doing its job (i.e. making proteins); it grows too big…solution = divide in 2

**Mitosis: A Closer Look**

Prior to entering the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ phase, the cell has just come out of interphase

Replicated \_\_\_\_\_\_\_\_\_\_\_ during S (synthesis)

2 complete sets of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that must be distributed equally between 2 cells = mitosis

**The Mitotic Phase**

Equal distribution of \_\_\_\_ sets of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (DNA) into \_\_\_\_\_ identical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

Divided into 4 stages of Mitosis:

1. Prophase 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. Telophase

Plus… \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Prophase**

Chromatin \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ visible chromosomes

Appear as sister chromatids held together by centromere

Nuclear membrane \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The centrioles migrate to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ poles & \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ form between them

**Metaphase**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ line-up on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate

Centromeres are attached to spindle fibers

**Anaphase**

Centromeres \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Spindle fibers contract

Result = \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are pulled away from one another towards the poles

**Telophase**

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reach the poles

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ form around the 2 new \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Cytokinesis**

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distributed equally between the 2 new cells

In animals, a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ furrow forms from outside in

In plants, a \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms from inside out

**What Happens After Mitosis?**

The cell returns to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & Chromosomes uncoil back into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The cycle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ itself over & over…

**The Guarantee**

The product of mitosis is \_\_\_\_\_\_ \_\_\_\_\_\_\_\_.

The daughter cells are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to each other & to the mother cell

**The Daughter Cells**

In humans, the 2 daughter cells will have \_\_\_\_\_\_\_ chromosomes (23 pairs)

1 chromosome originally from \_\_\_\_\_\_\_\_\_ & 1 from \_\_\_\_\_\_\_\_

Each chromosome is said to have the \_\_\_\_\_\_\_\_\_\_\_ gene sequence

**Somatic cells**, or \_\_\_\_\_\_\_\_\_\_\_\_\_ cells duplicate to repair damage or replace dying cells

Certain single celled organisms use mitosis as a form of **\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**The Beauty of Asexual Reproduction**

Mitosis is a form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reproduction

New individuals are produced by 1 parent & thus, are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to their parent

**Cell Division Control**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_controls all cell activities including cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Some cells \_\_\_\_\_\_\_\_\_\_ their ability to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ their \_\_\_\_\_\_\_\_\_\_\_\_ of cell division – the DNA of these cells has become damaged or changed (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

These super-dividing cells form masses called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_ tumors are \_\_\_\_\_\_\_ cancerous – these cells do not spread to other parts of the body

Malignant tumors are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_– these cells break loose and can invade and \_\_\_\_\_\_\_\_\_\_\_\_\_ healthy tissue in other parts of the body (called metastasis)

**Asexual vs. Sexual Reproduction**

Asexual Reproduction

Requires only \_\_\_\_\_\_\_\_\_\_ parent

Offspring have 100% the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as the parent.

* + In other words, the offspring are exact “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” of the parent.
  + Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms reproduce this way. (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)