NUCLEAR DIVISION

**PURPOSE**: division of the nucleus to produce 2 new daughter cells that are identical to the parent cell

- **PHASES INCLUDE**: INTERPHASE, MITOSIS (prophase, metaphase, anaphase, telophase), CYTOKINESIS

1. **INTERPHASE**
   - growth stage in preparation for mitosis & cytokinesis
   - cell increases in size
   - DNA (chromatin) copied
   - proteins & new organelles synthesized (copies are made)

2. **MITOSIS**
   - **PROPHASE** – nuclear membrane dismantles around chromatid pairs
     - chromatin condense into chromatid pairs
     - centrioles (centrosomes) start to move to opposite sides of the cell
     - spindle fibers form
   
   - **METAPHASE** – chromatid pairs line up in the Middle
     - centrioles now on opposite sides of the cell
     - spindle fibers attach to centromere on both sides of each chromatid pair

   - **ANAPHASE** – chromatid pairs split up & move to opposite sides of the cell
     - chromatid pairs split & become individual chromosomes
     - spindle fibers move individual chromosomes towards opposite sides of the cell

   - **TELOPHASE** – nuclear membrane reassembles around individual chromosomes
     - individual chromosomes now on opposite sides of the cell
     - individual chromosomes stretch out & become less visible (resembling chromatin)
     - nuclear membrane reassembles around each group of individual chromosomes

3. **CYTOKINESIS**
   - cytoplasm pinches around individual chromosomes (chromatin) & new organelles
   - forms 2 new cells that are identical to the parent cell (clones)

**CHROMATIN**
- stretched out DNA
- nonvisible
- unorganized
- CANNOT count individual strands

**CHROMOSOME**
- DNA with a specific, identifiable structure
- CAN see "some" (visible)
- CAN count

**CHROMATID PAIR**
- chromosome with a copy of itself attached using a centromere
- ALWAYS IN PAIRS

**DIPLOID**
- 2 alleles for a particular gene (2 sets of instructions)
- example: DD or dd or Dd

**HAPLOID**
- 1 allele for a particular gene (1 set of instructions)
- example: D or d

**GENE**
- chemical factor on DNA that determines a specific trait
- example:

**ALLELE**
- different forms (version) of a gene
- specific - capital/ lowercase

What is the difference between cell division in plant cells vs. animal cells?