

Review 18

Hereditary Factors:

- ☒ Where are they? IN NUCLEUS OF CELL**
- ☒ What are they? NUCLEIC ACID (DNA)**
- ☒ How do they work? TRANSCRIPTION & TRANSLATION**
- ☒ How do they get passed on? MITOTIC OR MEIOTIC CELL DIVISIONS**

Cell Cycle

alternation of

INTERPHASE (accumulation and growth)

G₁ = time from beg. of Interphase to beg. of DNA replication

S = time during which DNA is replicated

G₂ = time from end of DNA replication to beg. of M-phase

M-PHASE (division of nucleus and cell)

Mitosis results in two nuclei, each with identical DNA content

Meiosis results in four nuclei, each with 1/2 the original DNA and genetically dissimilar

Division of cytoplasm = CYTOKINESIS

via CLEAVAGE FURROW in animals & CELL PLATE in plants

for cell division to occur, need to have:

- mechanism for copying the DNA (replication)**
- mechanism to move chromosomes to opposite ends of cell (= spindle apparatus, composed of spindle fibers)**
- mechanism to divide cytoplasm (cytokinesis)**

DNA in the eukaryotic cell

alternates between CHROMATIN and CHROMOSOMES, depending on whether a cell is dividing or not

→ chromatin during interphase (very strung out)

about 1/2 DNA; 1/2 proteins associated with packaging the DNA & regulating gene activity

→ chromosomes during division (very condensed)

replicated chromosome = two sister chromatids held together by a centromere

Stages of the Cell Cycle:

Interphase

M-phase (Prophase (late Prophase = Prometaphase) →

Metaphase → Anaphase → Telophase)

IPMAT