

Comparison of Mitosis and Meiosis

	MITOSIS	MEIOSIS
Name of cell produced	SOMATIC (body)	GAMETES (sperm and egg)
Purpose	Growth & Maintenance	Reproduction
# chromosomes	46 (same as original cell) DIPLOID	23 (half the original cell) HAPLOID
# new cells produced	2	4

MITOSIS: 2 Diploid nuclei are produced from one Diploid nucleus

MEIOSIS: 4 Haploid nuclei are produced from one Diploid nucleus

******* the fusion of haploid gametes to form a diploid zygote(fertilization), which then develops to produce a mature, multicellular adult, is the key feature of Sexual Reproduction

MEIOSIS

- The process by which HAPLOID nuclei are formed from DIPLOID nuclei>> results in the production of HAPLOID GAMETES(sperm and egg)
- Occurs in the reproductive tissue in the Gonads

THE FUSION OF HAPLOID GAMETES TO FORM A DIPLOID ZYGOTE(FERTILIZATION), WHICH THEN DEVELOPS TO PRODUCE A MATURE, MULTI-CELLULAR ADULT, IS THE KEY FEATURE OF SEXUAL REPRODUCTION.

- Meiosis also occurs in plants, multi-cellular algae, fungi, and some unicellular organisms
- In some, it results in the production of HAPLOID SPORES instead of a gamete

SPORE: a small, reproductive cell that can develop into a HAPLOID ORGANISM!!!
(we'll go into the life cycle of plants later in the year)

******* Meiosis always involves TWO divisions:**

MEIOSIS I

and

MEIOSIS II

Prophase I

Metaphase I

Anaphase I

Telophase I

Prophase II

Metaphase II

Anaphase II

Telophase II

PROPHASE I

- The major difference between Prophase I and the Prophase seen in Mitosis is that the homologous chromosomes are paired

METAPHASE I

- "TETRADS" consisting of homologous pairs of chromosomes LINE UP at the "Equator"
- This PAIRING does not occur in mitosis

ANAPHASE I

- The CENTROMERES do not divide
- The SISTER CHROMATIDS do not separate
- One of each pair goes to a "pole" and the sister chromatids stay attached

**ANAPHASE I SEPARATES THE HOMOLOGUES OF EACH
HOMOLOGOUS PAIR, NOT THE SISTER CHROMATIDS OF
INDIVIDUAL CHROMOSOMES**