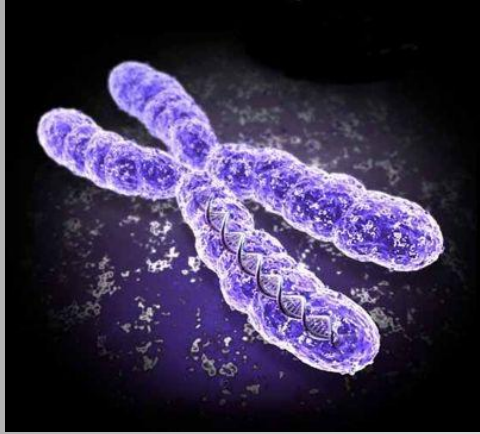
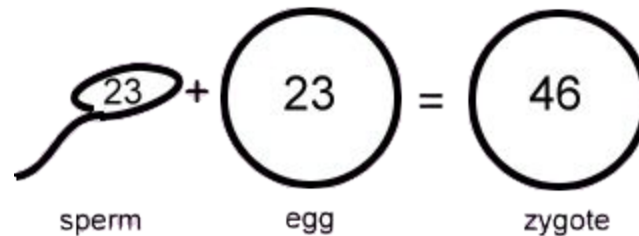




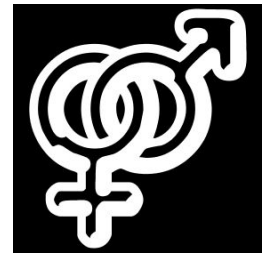
MEIOSIS

MEIOSIS

- Cell division-produces **GAMETES**, with **HALF** the number of **CHROMOSOMES**.
- **DIPLOID** → **HAPLOID**
- Meiosis is **SEXUAL** reproduction.
- **TWO** divisions (**MEIOSIS I** and **MEIOSIS II**).



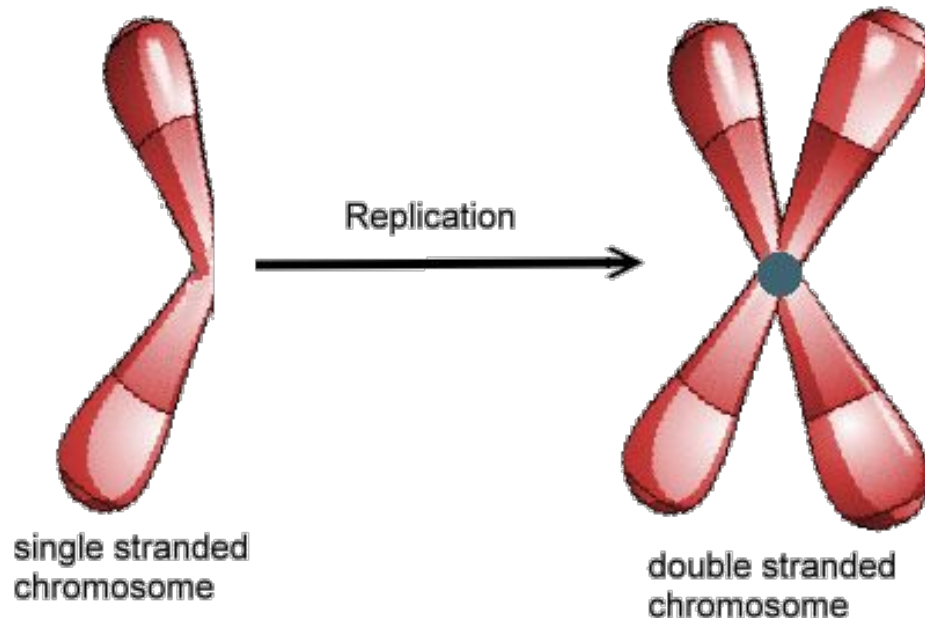
MEIOSIS



- Sex cells divide to produce **GAMETES** (sperm or egg).
- Gametes have **HALF** the # of chromosomes.
- Occurs only in testes or ovaries
- **Male:** - sperm
- **Female:** - egg or ova

INTERPHASE

- CHROMOSOMES replicate
- Each duplicated chromosome consists of two identical **SISTER CHROMATIDS** attached at their **CENTROMERES**.
- Nucleus and nucleolus **visible**



MEIOSIS I (FOUR PHASES)

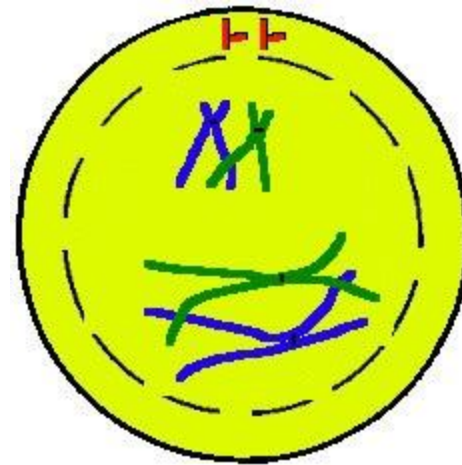
- **Cell division** that reduces the chromosome number by one-half.
- **Four phases:**

Prophase I

Metaphase I

Anaphase I

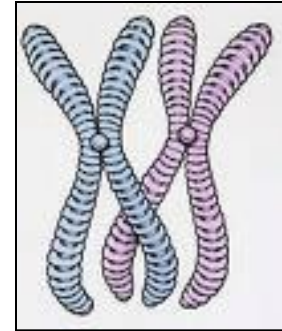
Telophase I



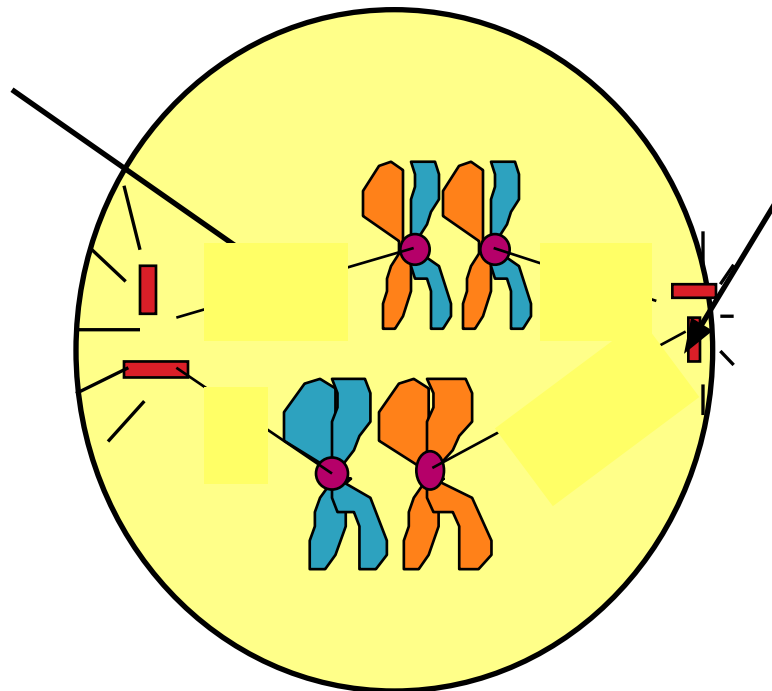
Prophase I

PROPHASE I

- **Chromosomes** condense
- **Homologous chromosomes** come together
- **Crossing over** occurs

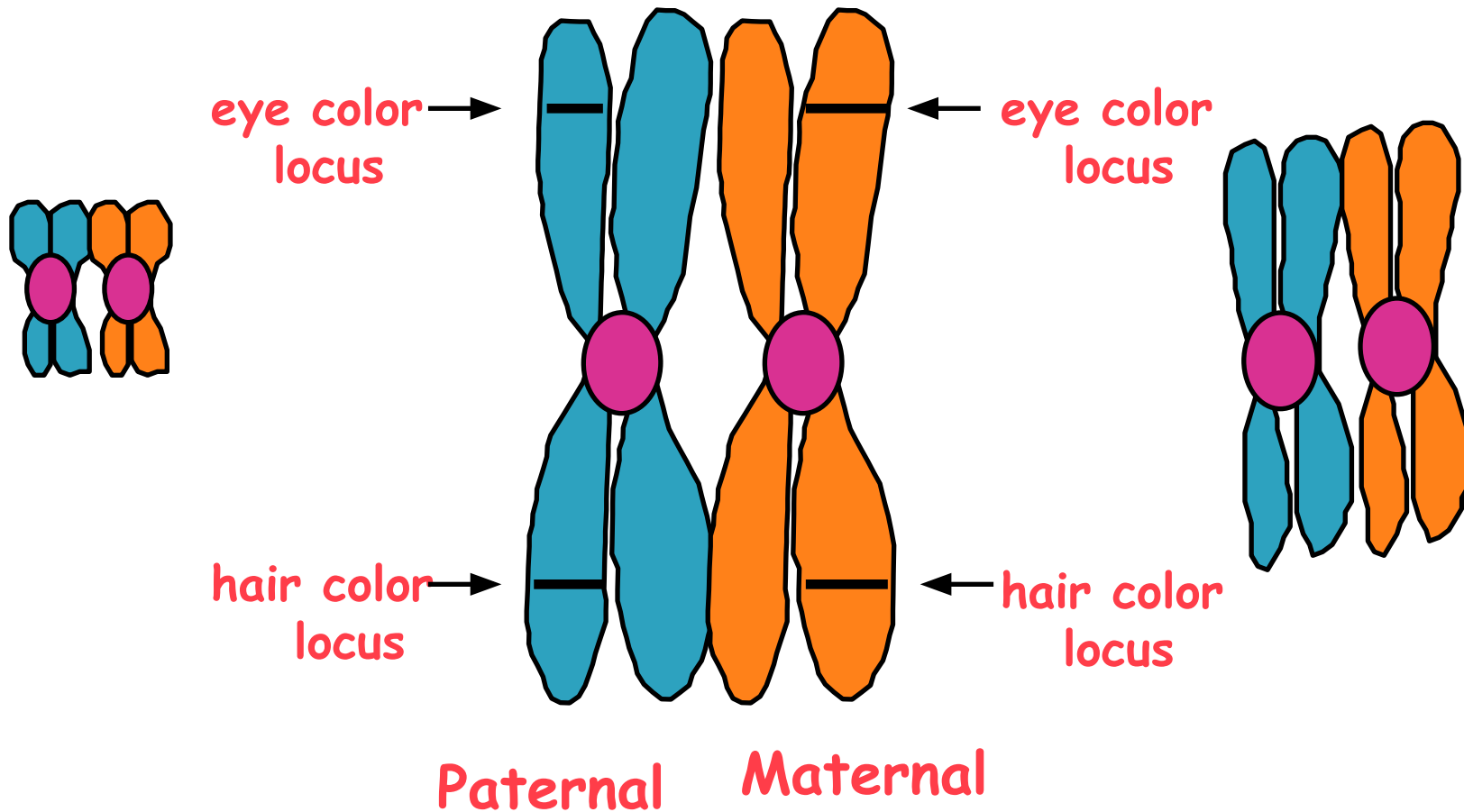


spindle fiber



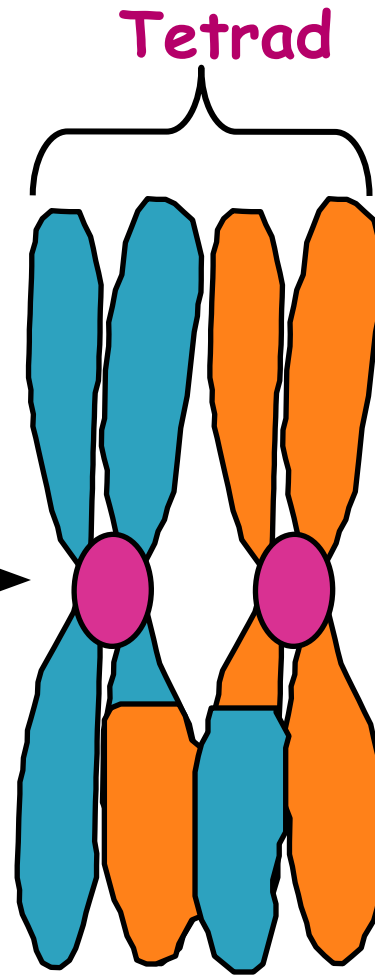
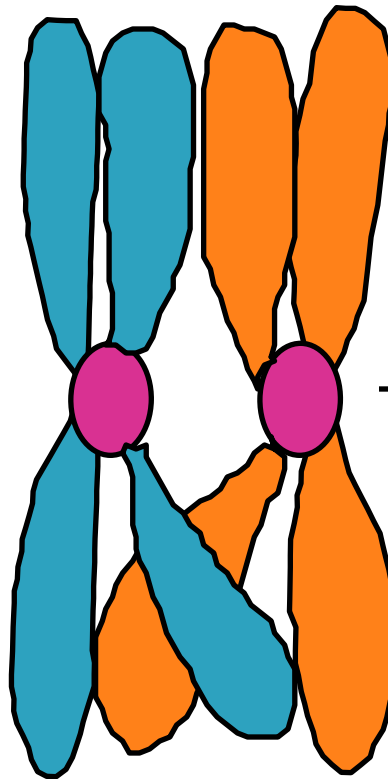
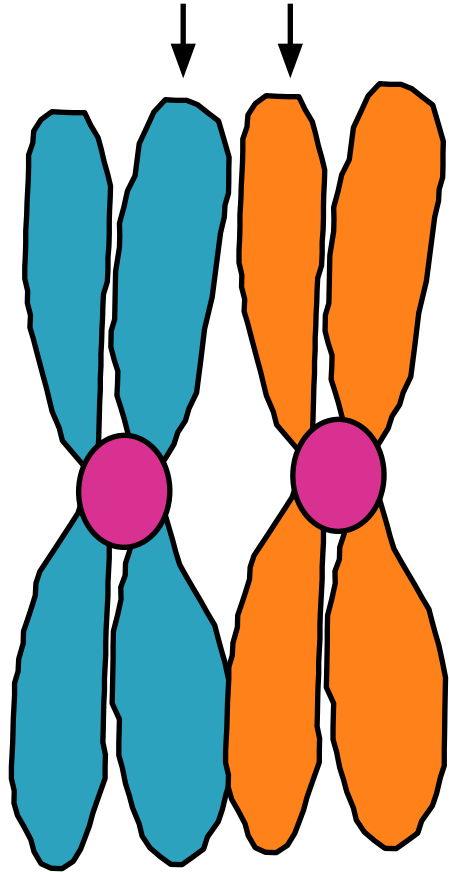
centrioles

HOMOLOGOUS CHROMOSOMES



GENETIC RECOMBINATION

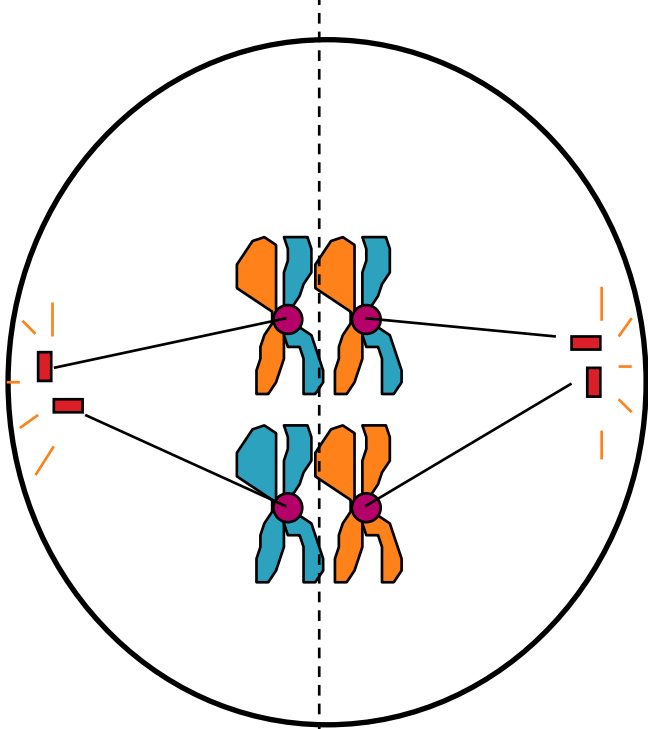
nonsister chromatids



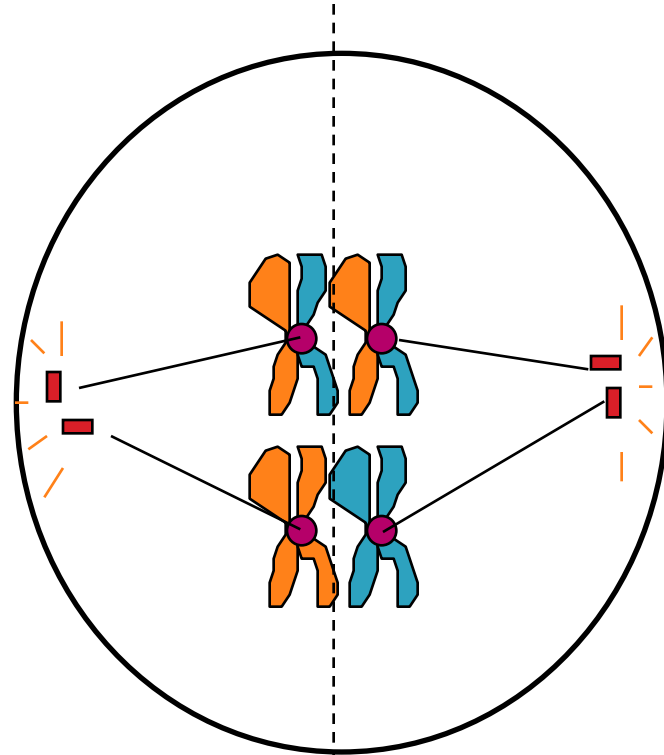
variation

METAPHASE I

- Homologous pairs align on the **equator**.
- **Independent assortment** occurs - chromosomes separate randomly



OR

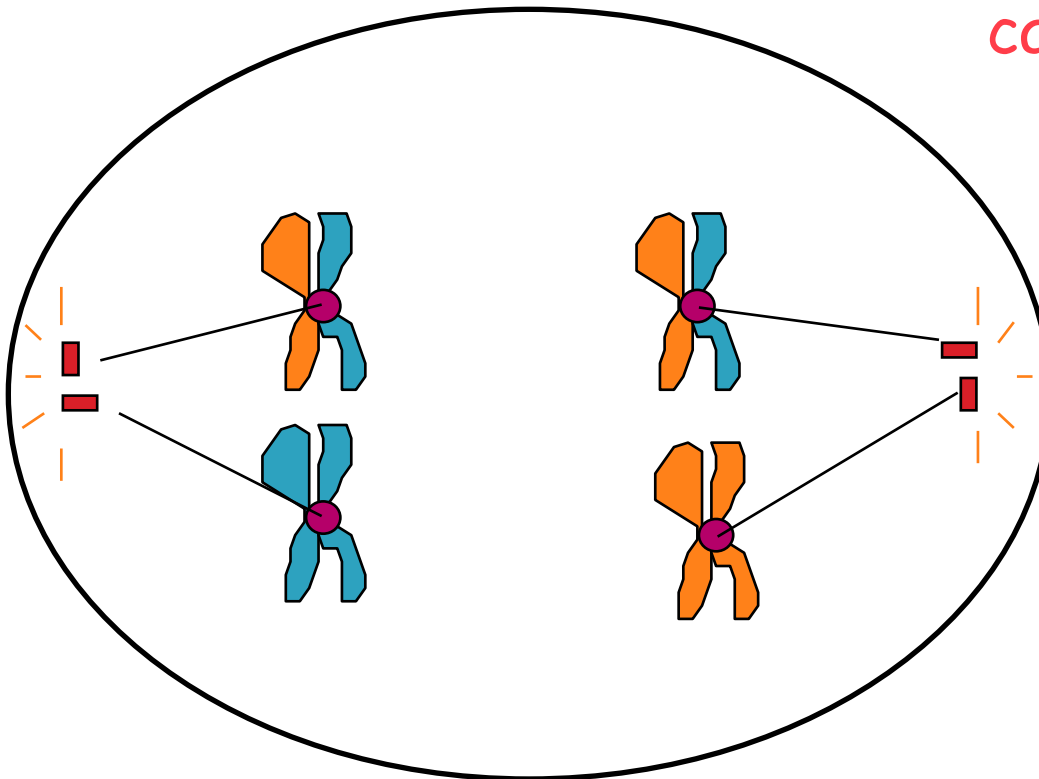


Homologous chromosomes line up at the equator

ANAPHASE I

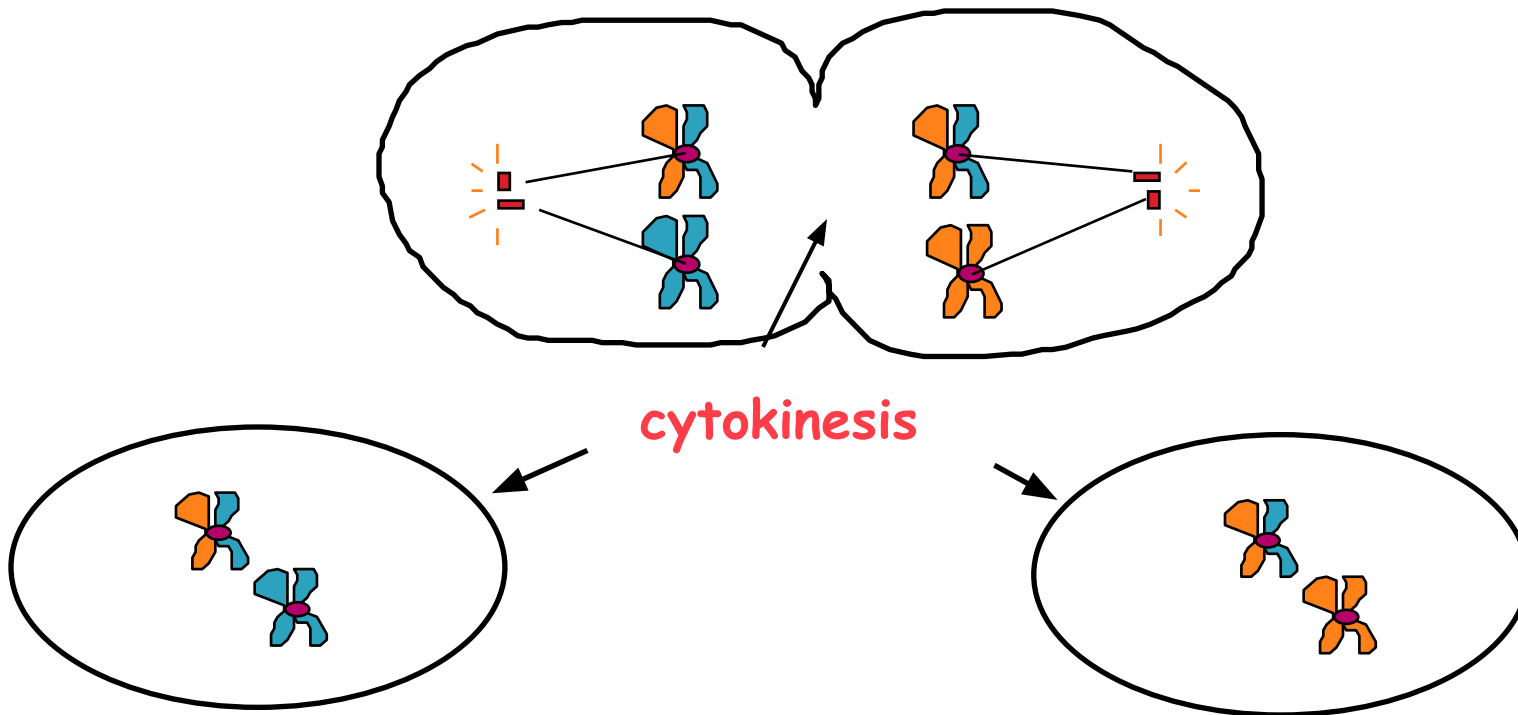
- **Homologous chromosomes** separate and move towards the poles.
- **Sister chromatids** remain attached at their centromeres.

Nondisjunction
can occur



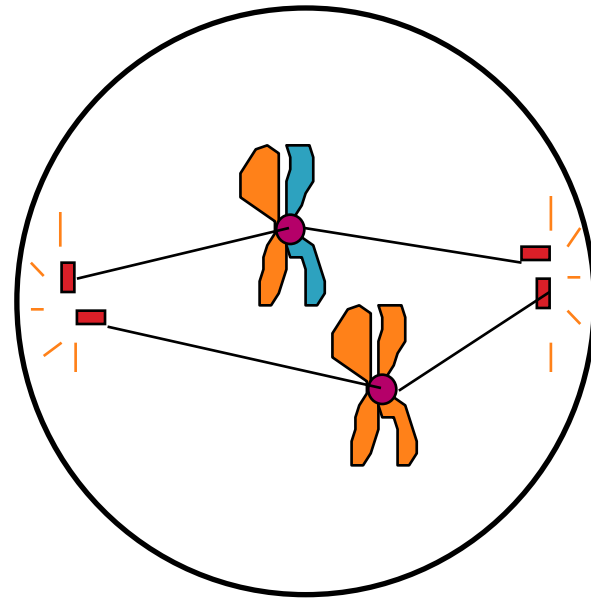
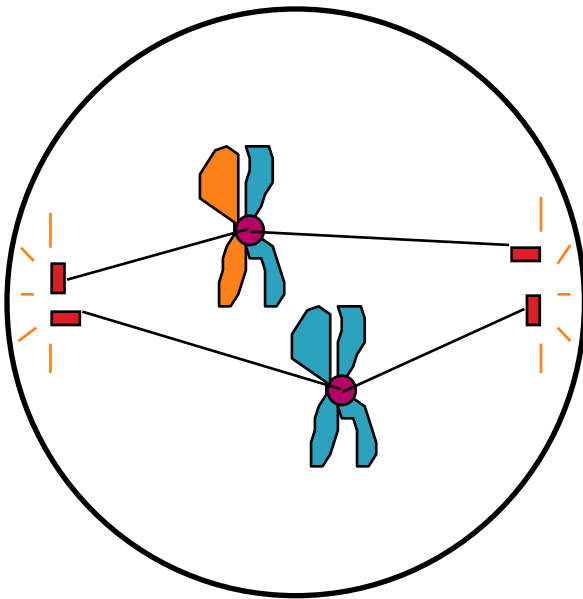
TELOPHASE I

- Each cell now has a haploid set of chromosomes.
- **Cytokinesis** occurs and two haploid daughter cells are formed.



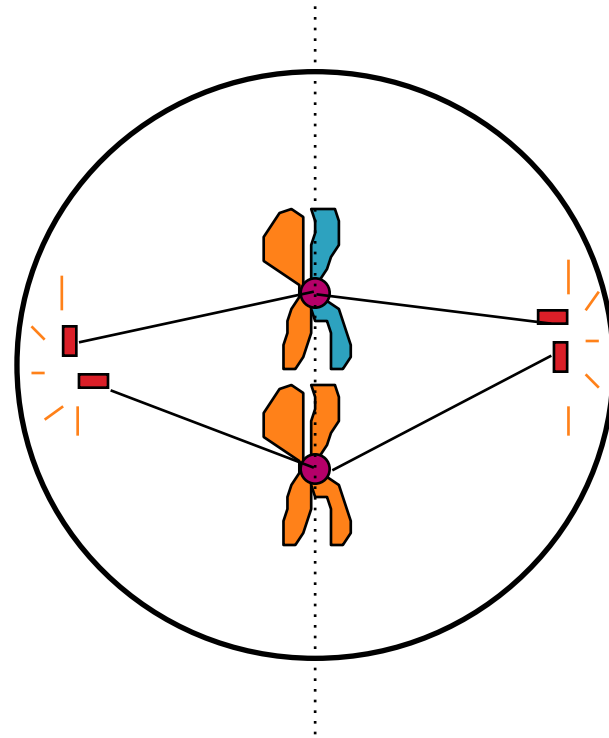
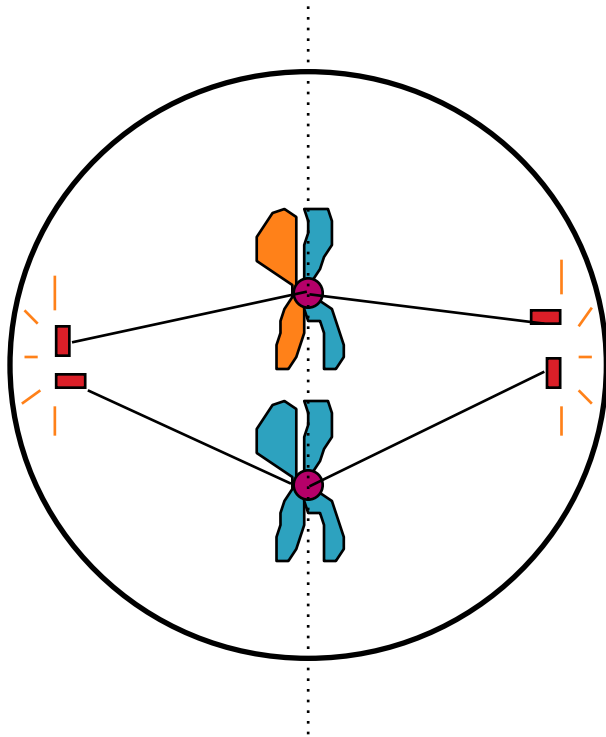
PROPHASE II

- Spindle forms
- (like Mitosis except with two cells)



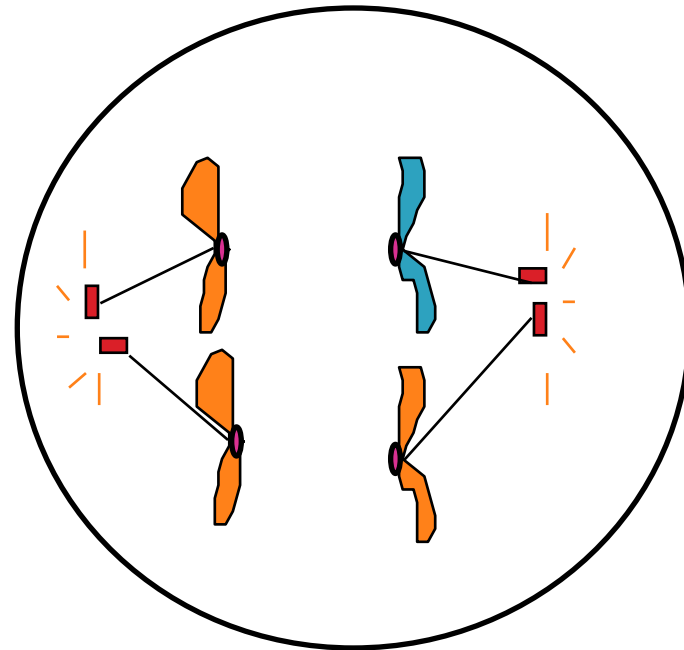
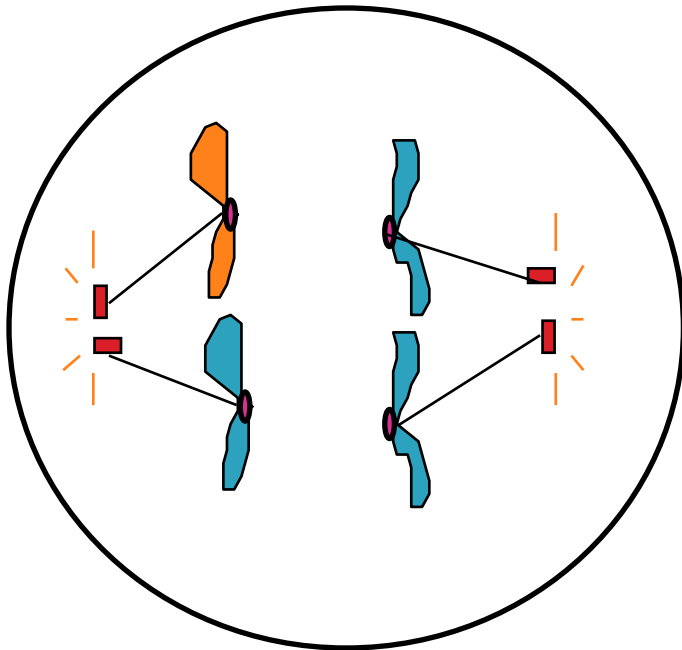
METAPHASE II

- Chromosomes (not homologous chromosomes) line up at equator



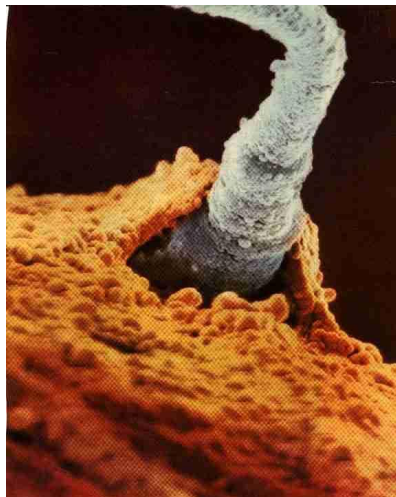
ANAPHASE II

- **SISTER CHROMATIDS** separate
- **Nondisjunction** can occur



TELOPHASE II

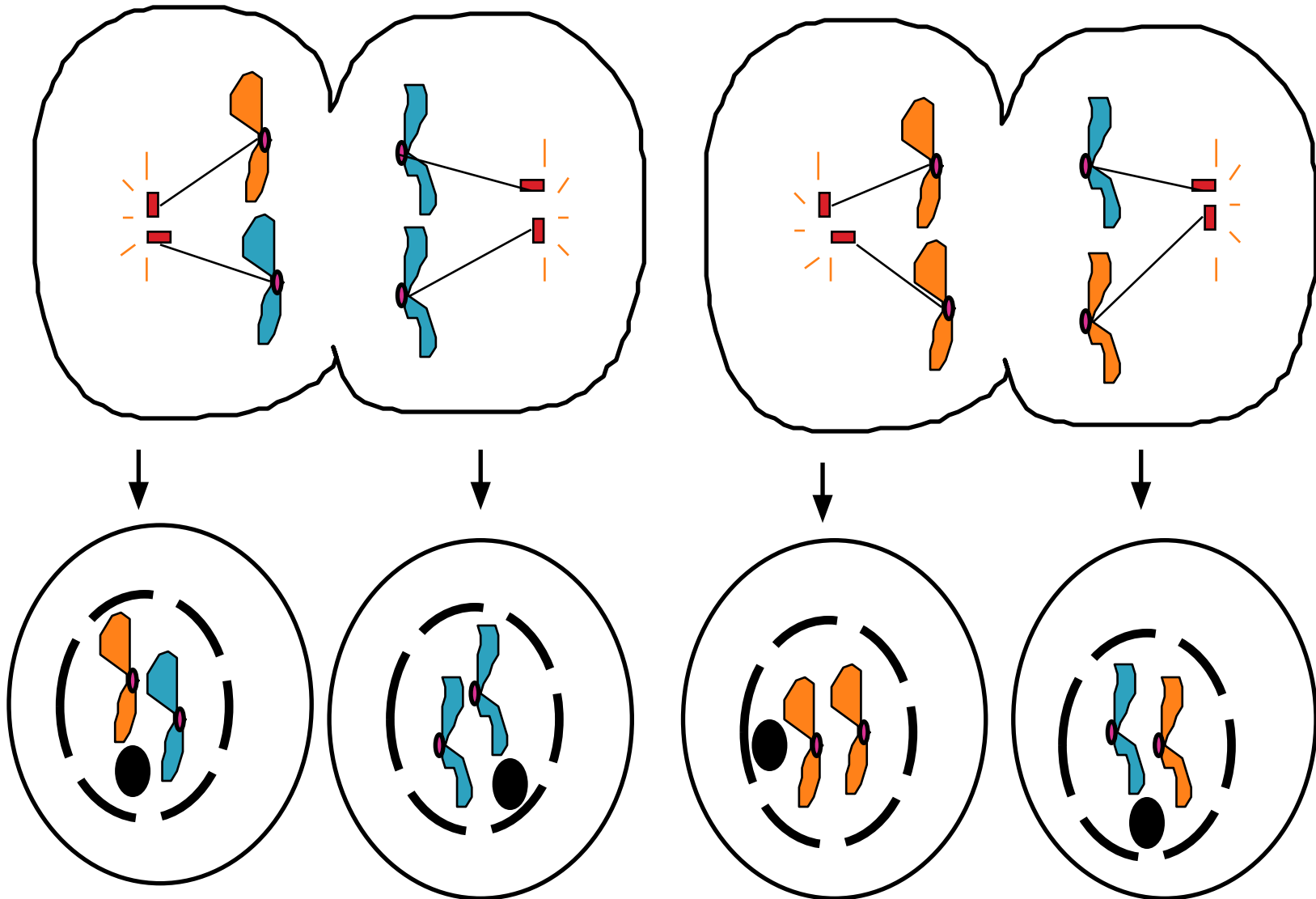
- **Nuclear membrane** reforms, spindle fibers disappear
- **CYTOKINESIS** occurs.
- **FOUR HAPLOID DAUGHTER** cells are produced.=**GAMETES** (egg and sperm)



Sperm cell
fertilizes egg to
form zygote



TELOPHASE II



MEIOSIS

- Four haploid daughter cells produced
- Each daughter cell has half the chromosomes of the parent
- 2 sets of cell division involved

MITOSIS

VS

MEIOSIS

Attack of
the clones!



@AmoebaSisters



