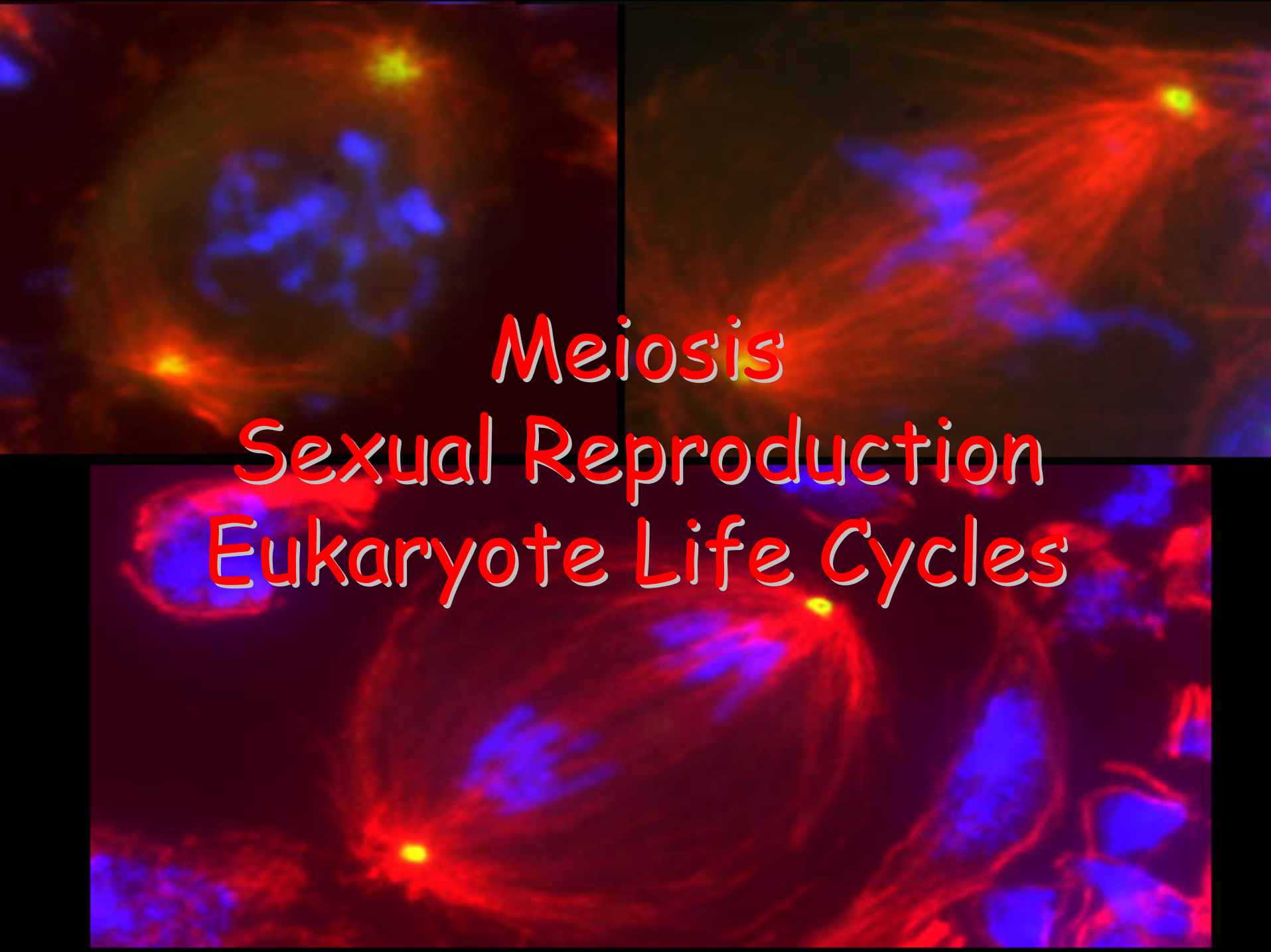
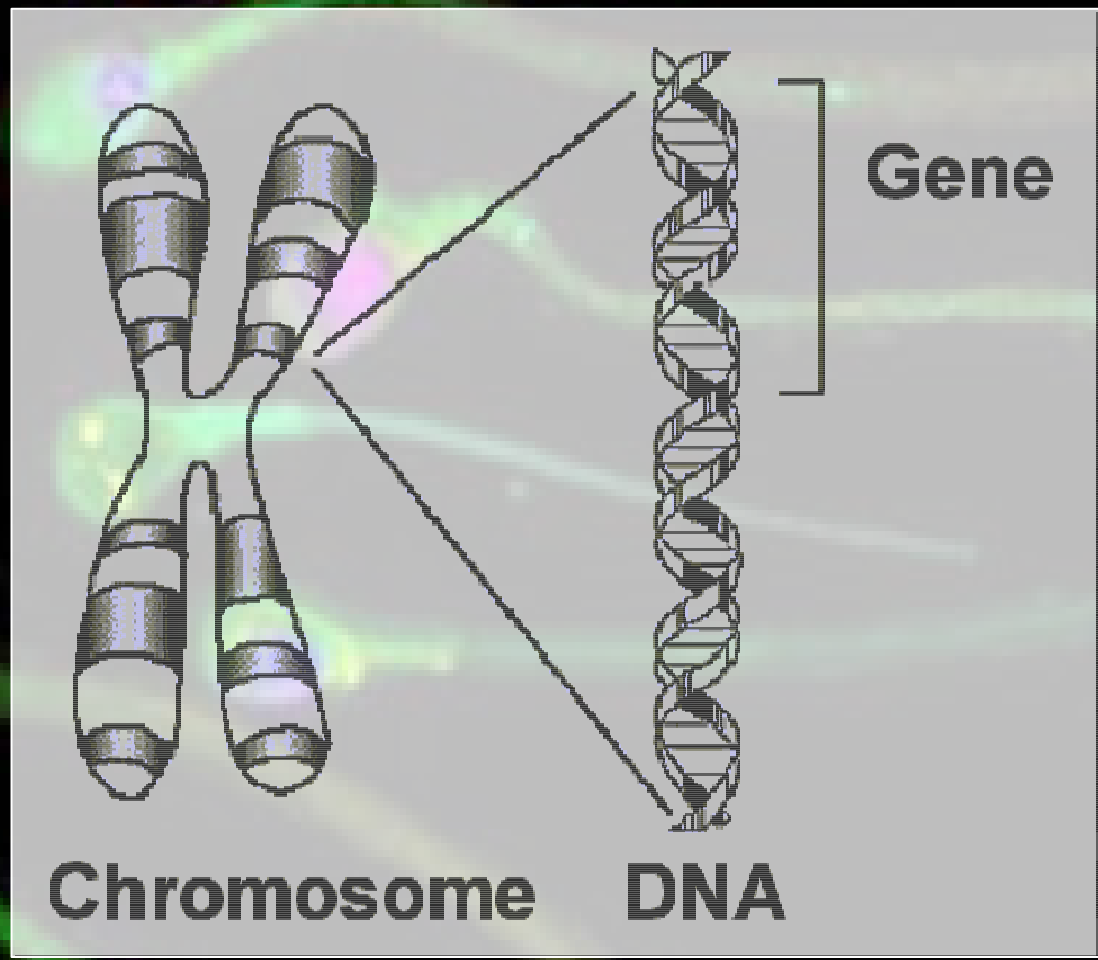
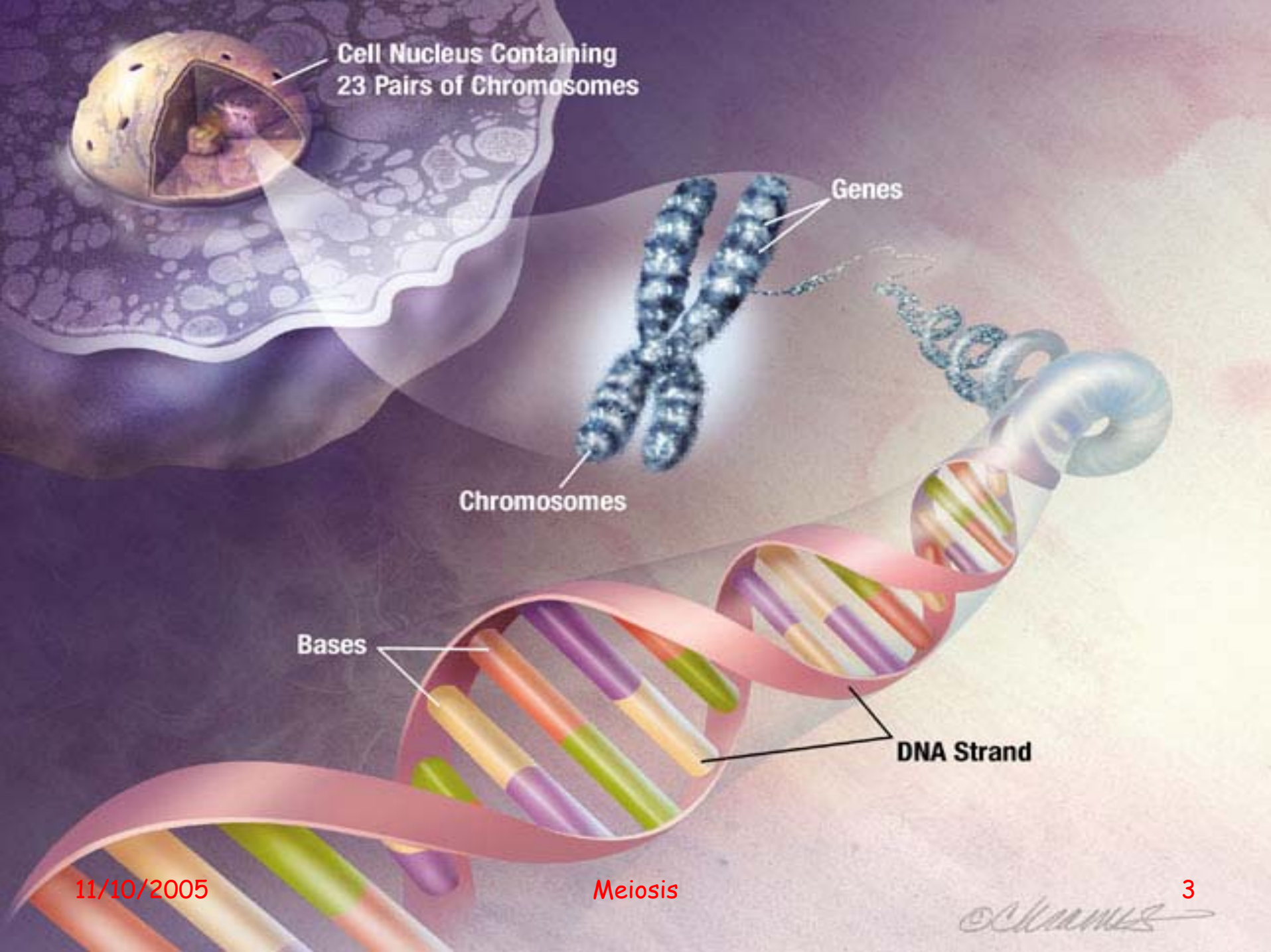


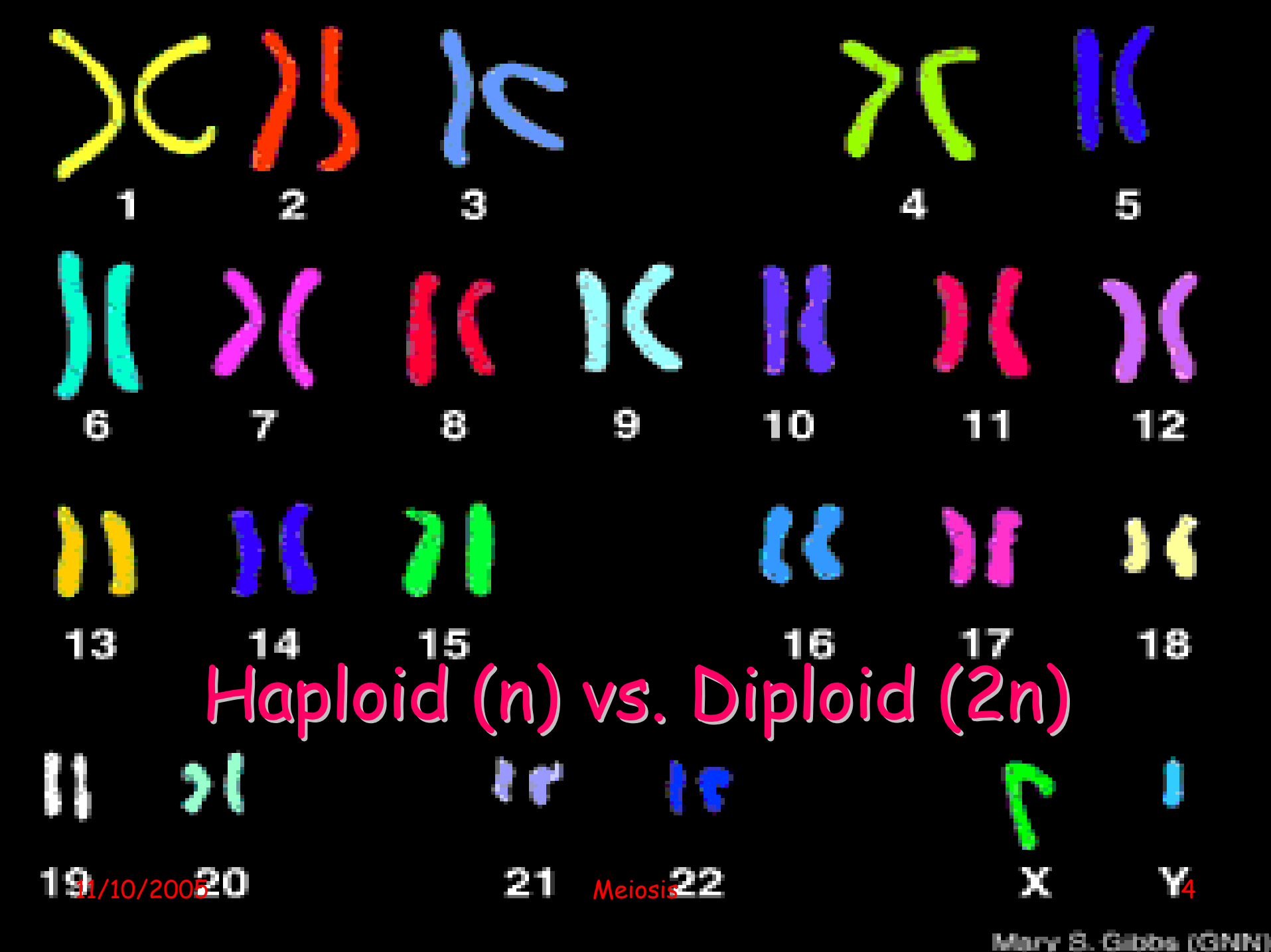
Meiosis
Sexual Reproduction
Eukaryote Life Cycles

Some basics…

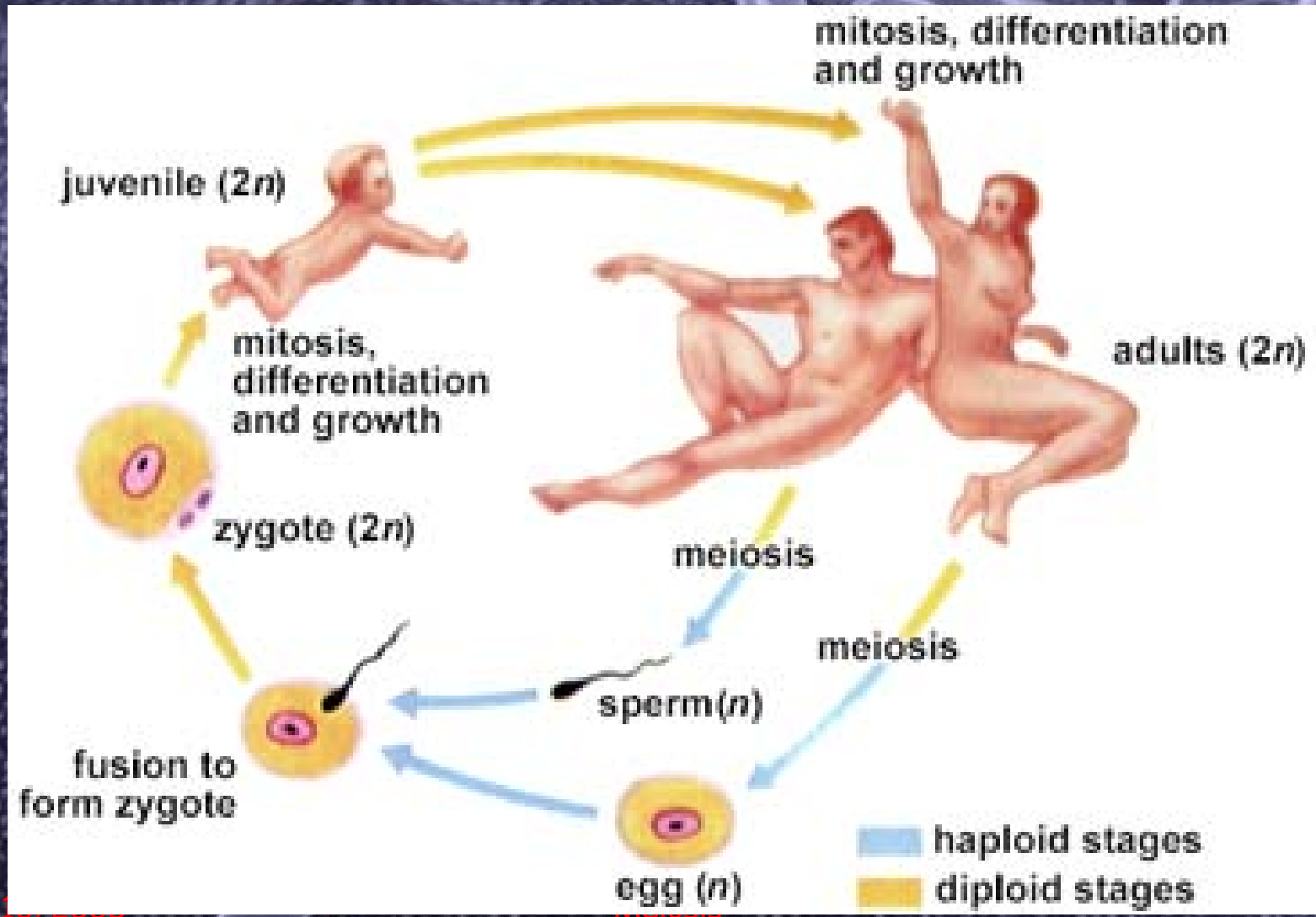
- Genes
- DNA
- Chromosomes
- Gametes



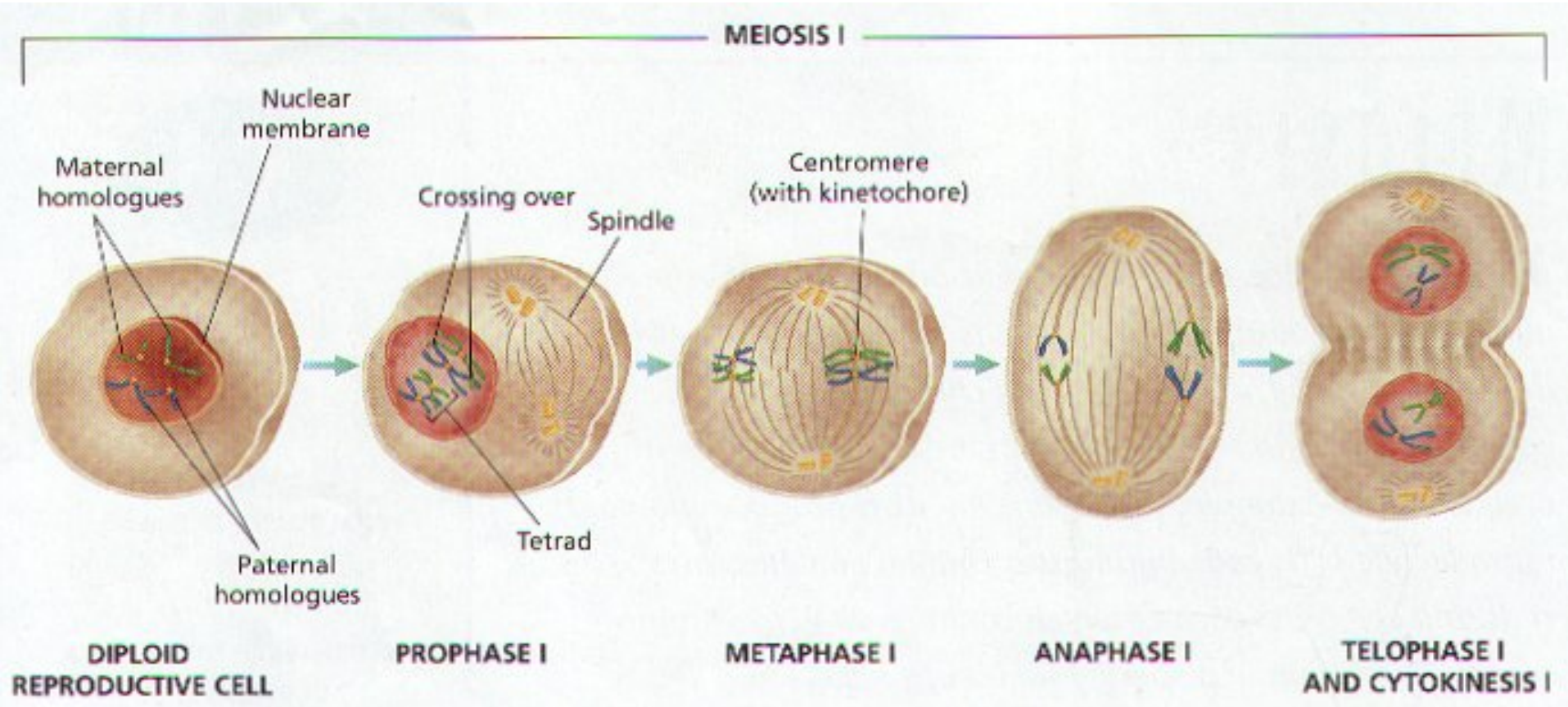

Cell Nucleus Containing
23 Pairs of Chromosomes
Genes
Chromosomes
Bases
DNA Strand


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
X
Y
Haploid (n) vs. Diploid (2n)
Mary S. Gibbs [GNN]

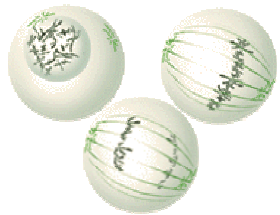
Sexual Life Cycle

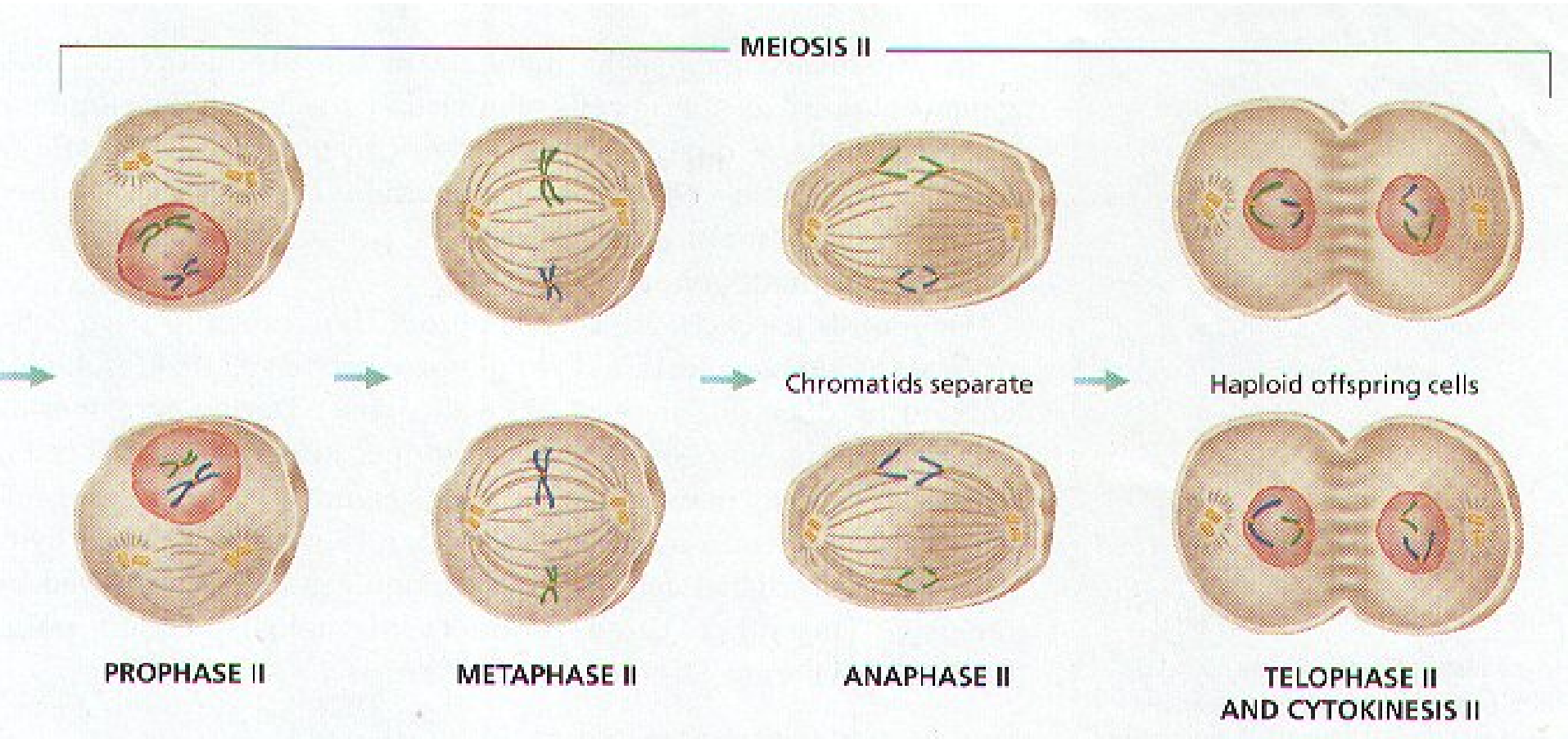


Meiosis I

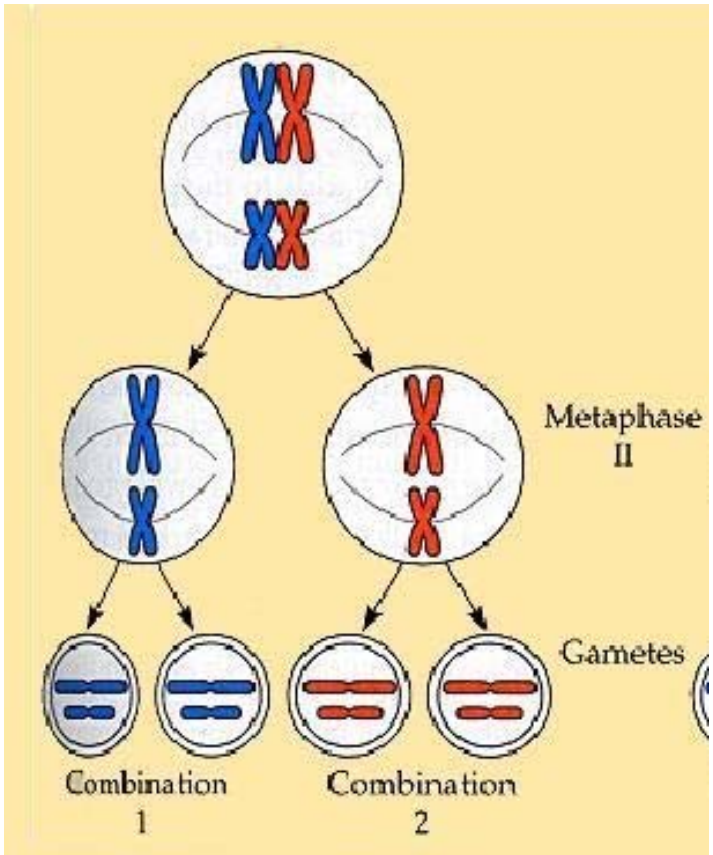

MEIOSIS I
Nuclear membrane
Maternal homologues
Crossing over
Spindle
Centromere (with kinetochore)
Tetrad
Paternal homologues
DIPLOID REPRODUCTIVE CELL
PROPHASE I
METAPHASE I
ANAPHASE I
TELOPHASE I AND CYTOKINESIS I

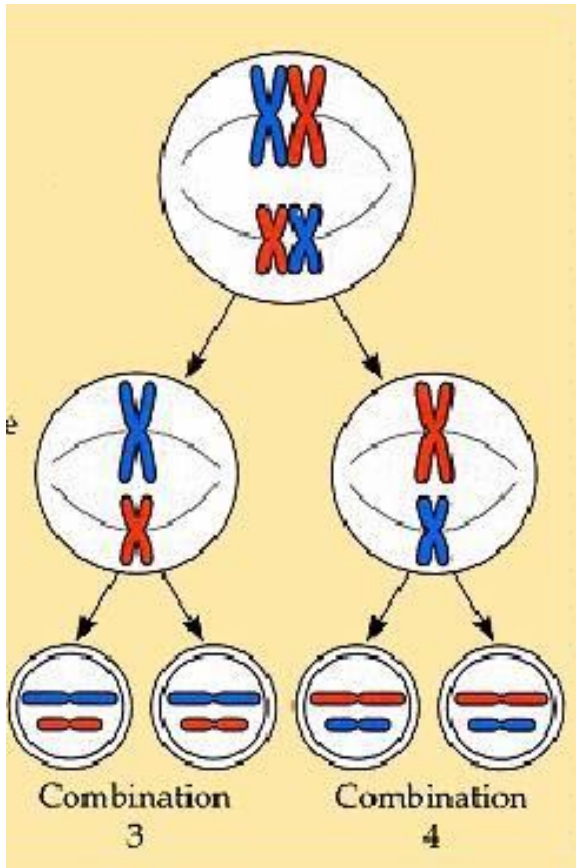
Meiosis II




MEIOSIS II
Chromatids separate
Haploid offspring cells
PROPHASE II
METAPHASE II
ANAPHASE II
TELOPHASE II
AND CYTOKINESIS II

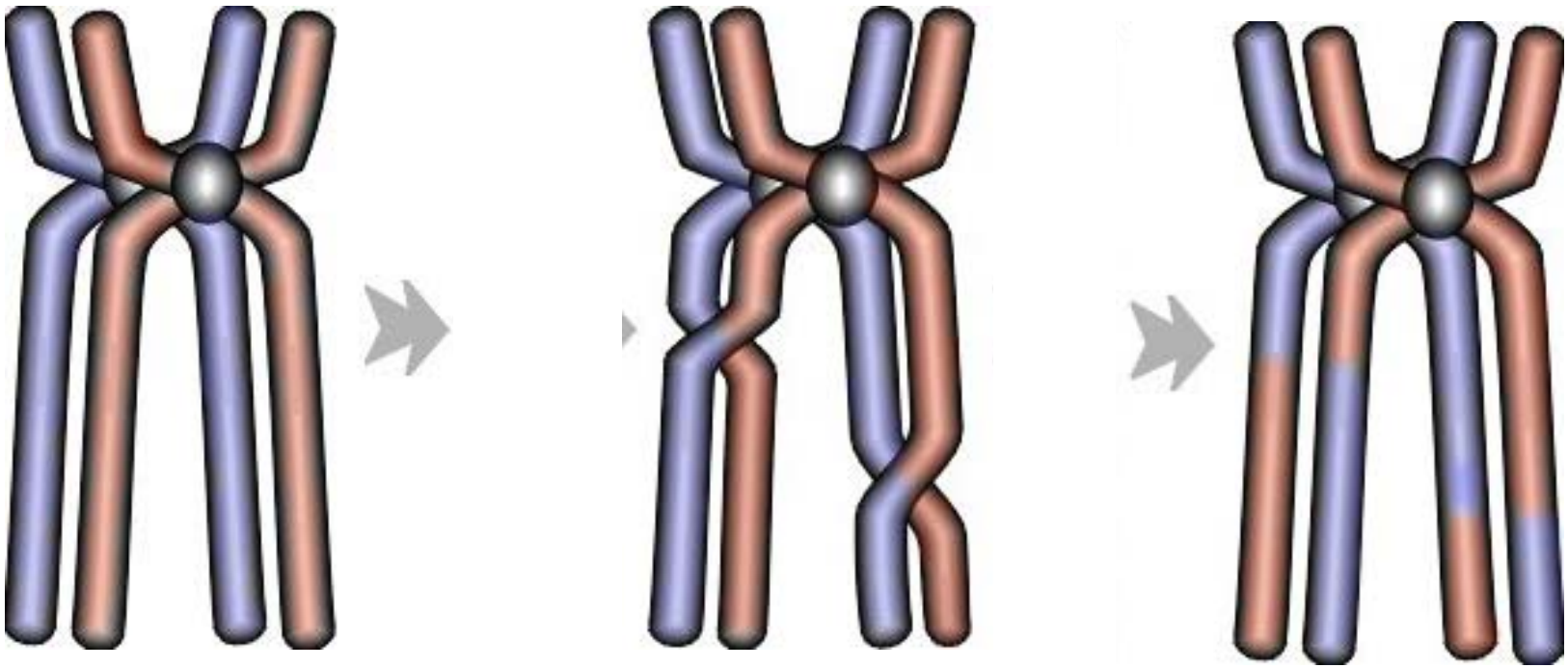
Genetic Variation
Independent Assortment



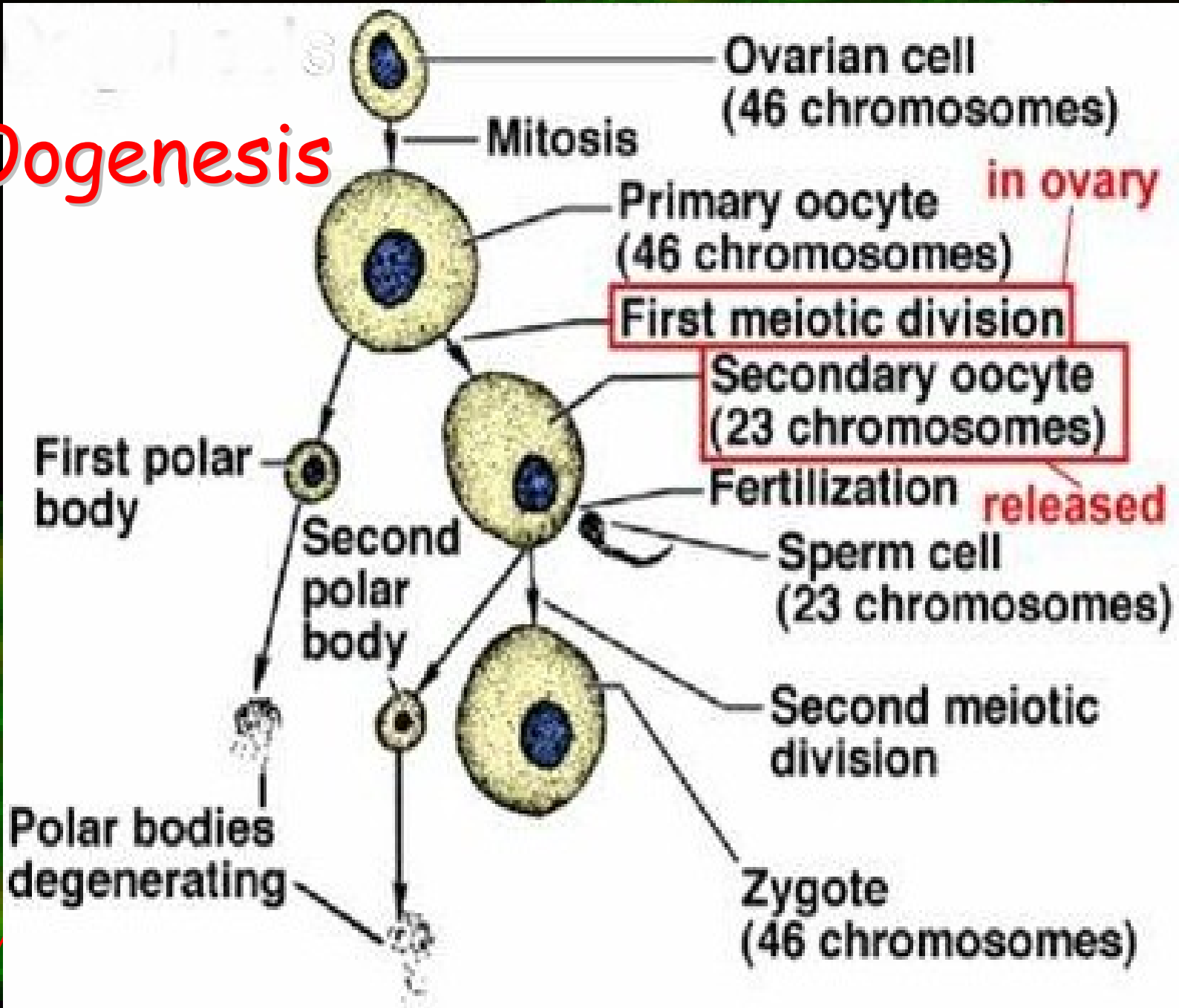


Genetic Variation

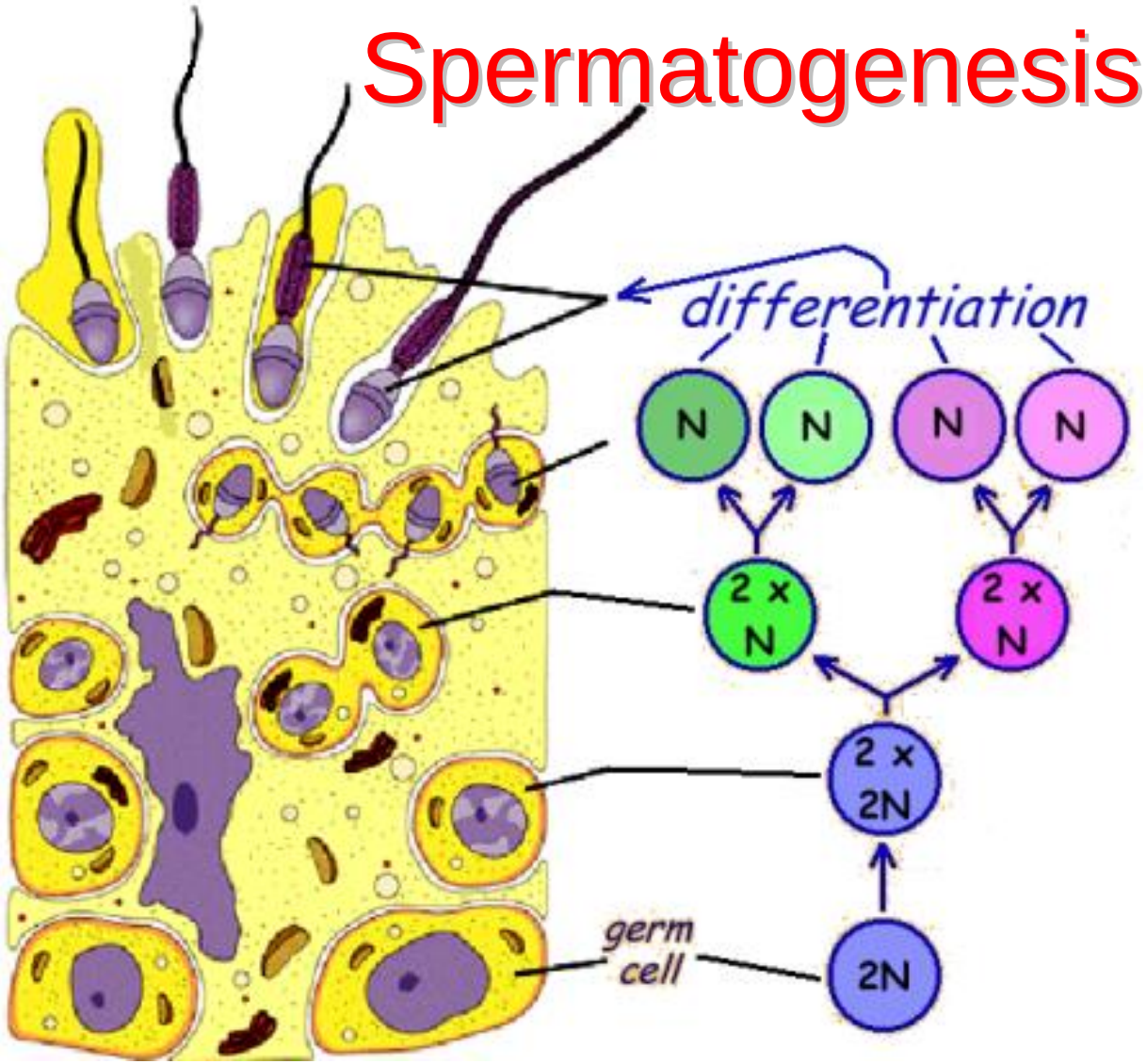
Crossing Over



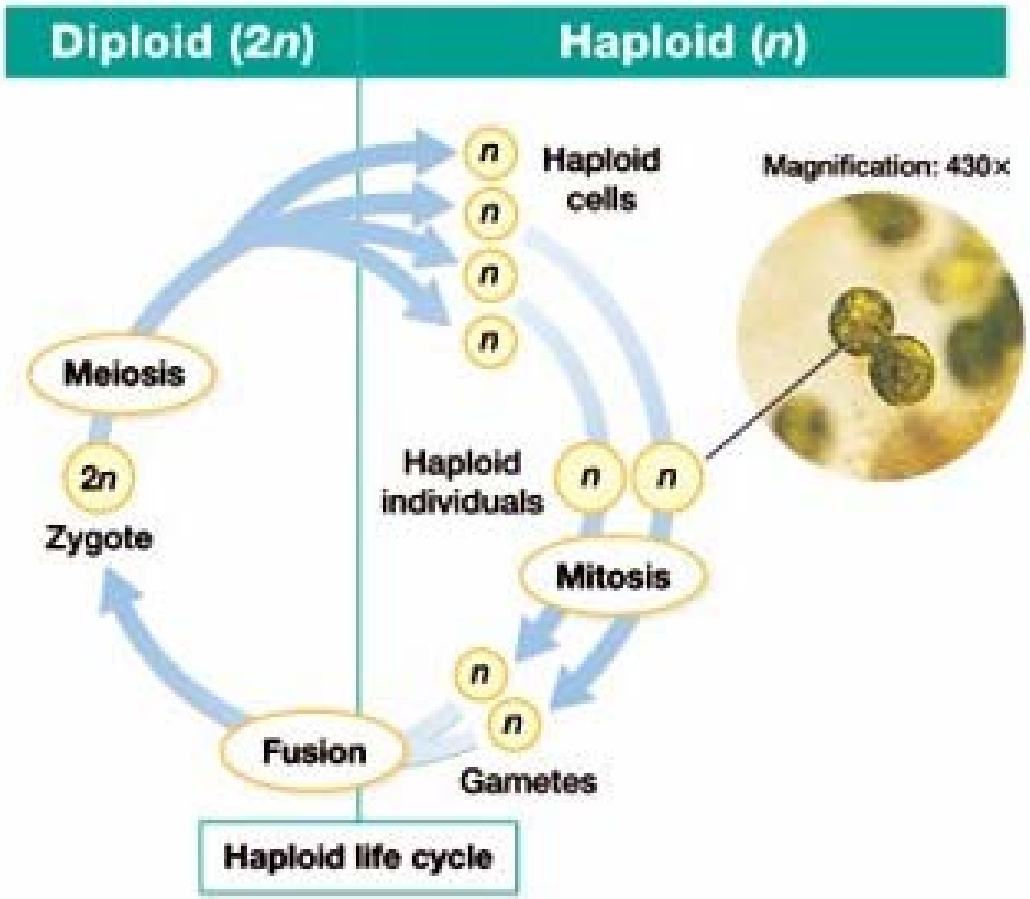
Oogenesis


Ovarian cell
(46 chromosomes)
Mitosis
Primary oocyte
(46 chromosomes)
in ovary
First meiotic division
Secondary oocyte
(23 chromosomes)
First polar
body
Fertilization
released
Second
polar
body
Sperm cell
(23 chromosomes)
Second meiotic
division
Polar bodies
degenerating
Zygote
(46 chromosomes)

Spermatogenesis



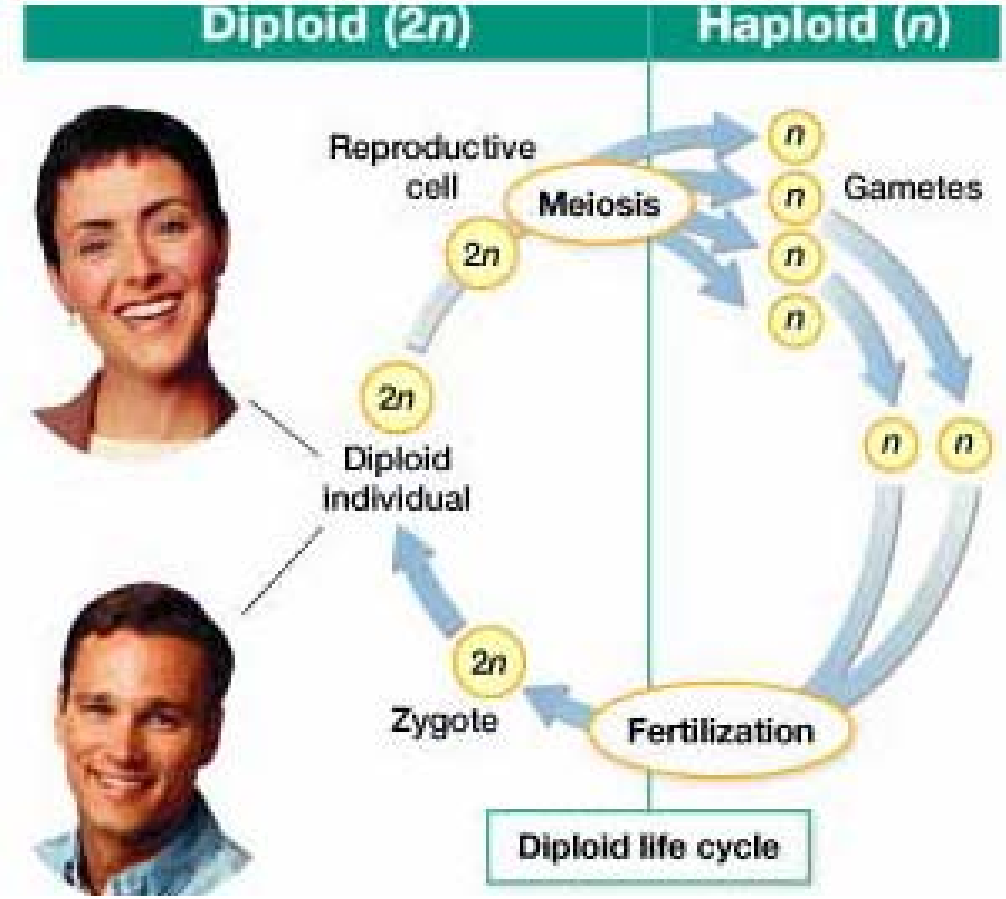
Eukaryote Life Cycles



Chlamydomonas
A green algae

Haploid stages dominate

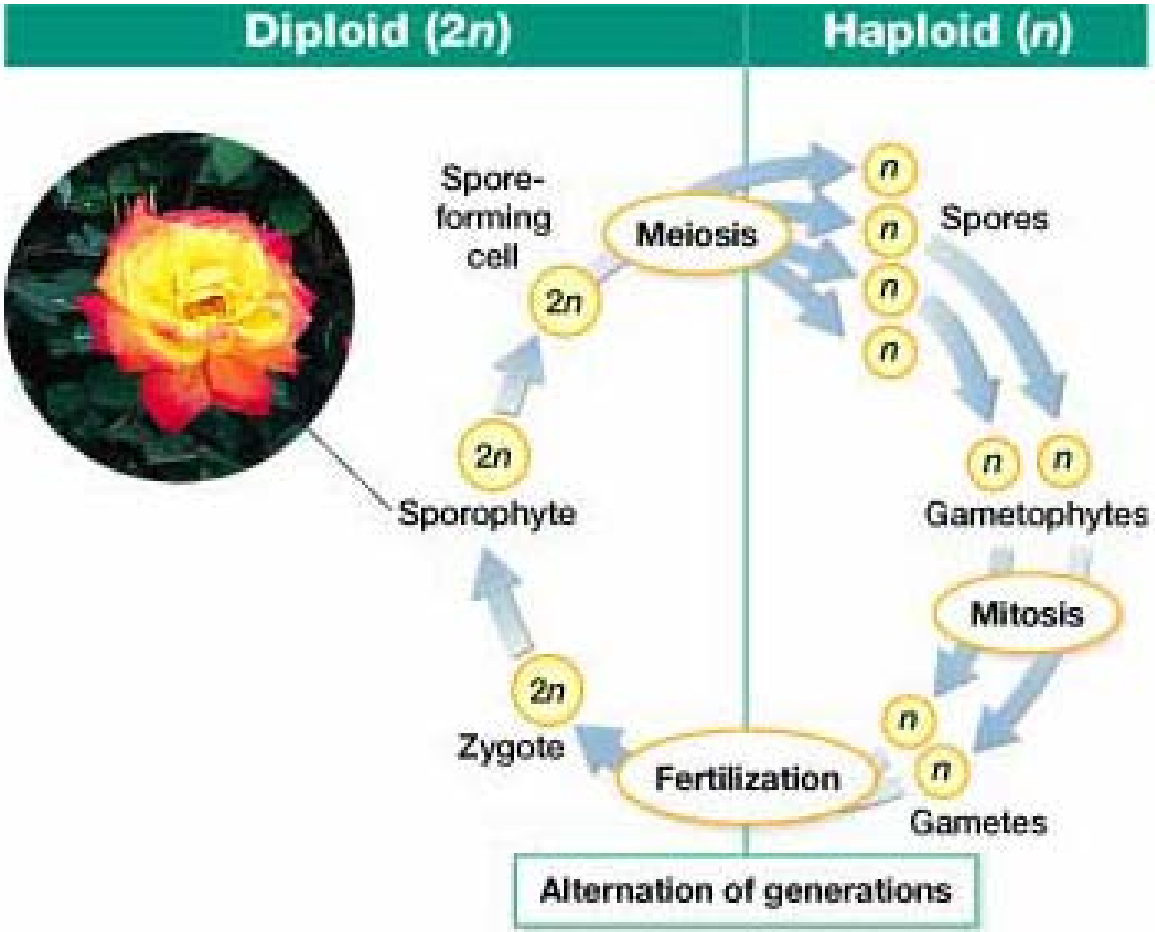
Eukaryote Life Cycles



Vertebrate animals

Diploid stage dominates

Eukaryote Life Cycles



Alternation of Generations

Many algae

All land plants

Mosses: gametophyte dominant

Ferns, Conifers, Flowering Plants: sporophyte dominant

Parthenogenesis

Whiptail lizard

References

- http://www.emc.maricopa.edu/faculty/farabee/BIOBK/humanlifecyc.jpg
- http://www.stanford.edu/group/Urchin/GIFS/crossover.jpg
- http://io.uwinnipeg.ca/~simmons/meiosis/sld018.htm
- http://www.accessexcellence.org/RC/VL/GG/hapDIP.html
- http://distance.stcc.edu/AandP/AP/AP2pages/reprod/spermato.htm
- http://distance.stcc.edu/AandP/AP/AP2pages/reprod/oogenesi.htm
- http://www.henniker.org.uk/html/rendered2.htm
- http://www.luc.edu/depts/biology/dev/spersem.jpg
- http://www.alzheimers.org/unraveling/images/large/DNA-HIGH.jpg