

# Science Journal #1

Answer **2** of the following questions:

- Why do you think there has been no significant changes made to combat the climate crisis?
- Are you concerned about climate change? Why or why not?
- Do you feel that you can make a difference? Why or why not?

# **BACK TO MEIOSIS**

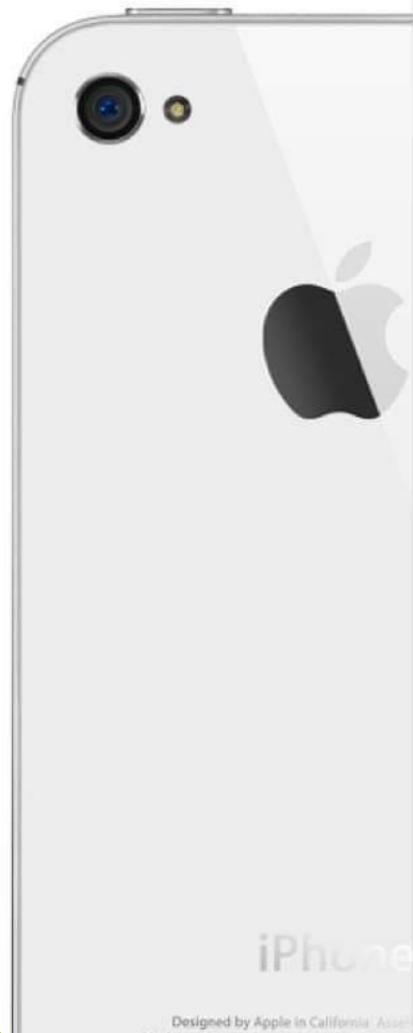
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# Steps of Meiosis

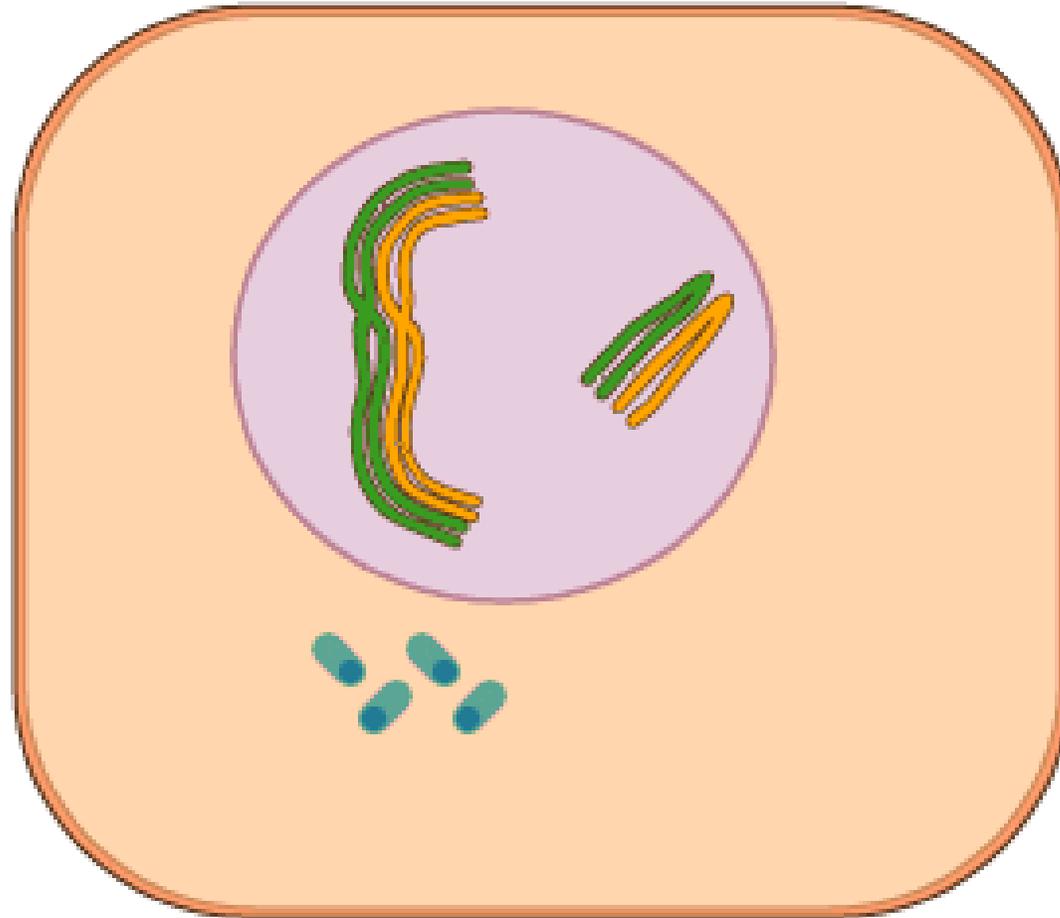
1. DNA unravels
2. DNA duplicates
3. DNA condenses into chromosomes
4. Homologous chromosomes pair up and swap sections of DNA
5. Cell splits into two diploid cells with homologous pairs
6. Each of these cells then splits again
7. Nuclear membrane forms

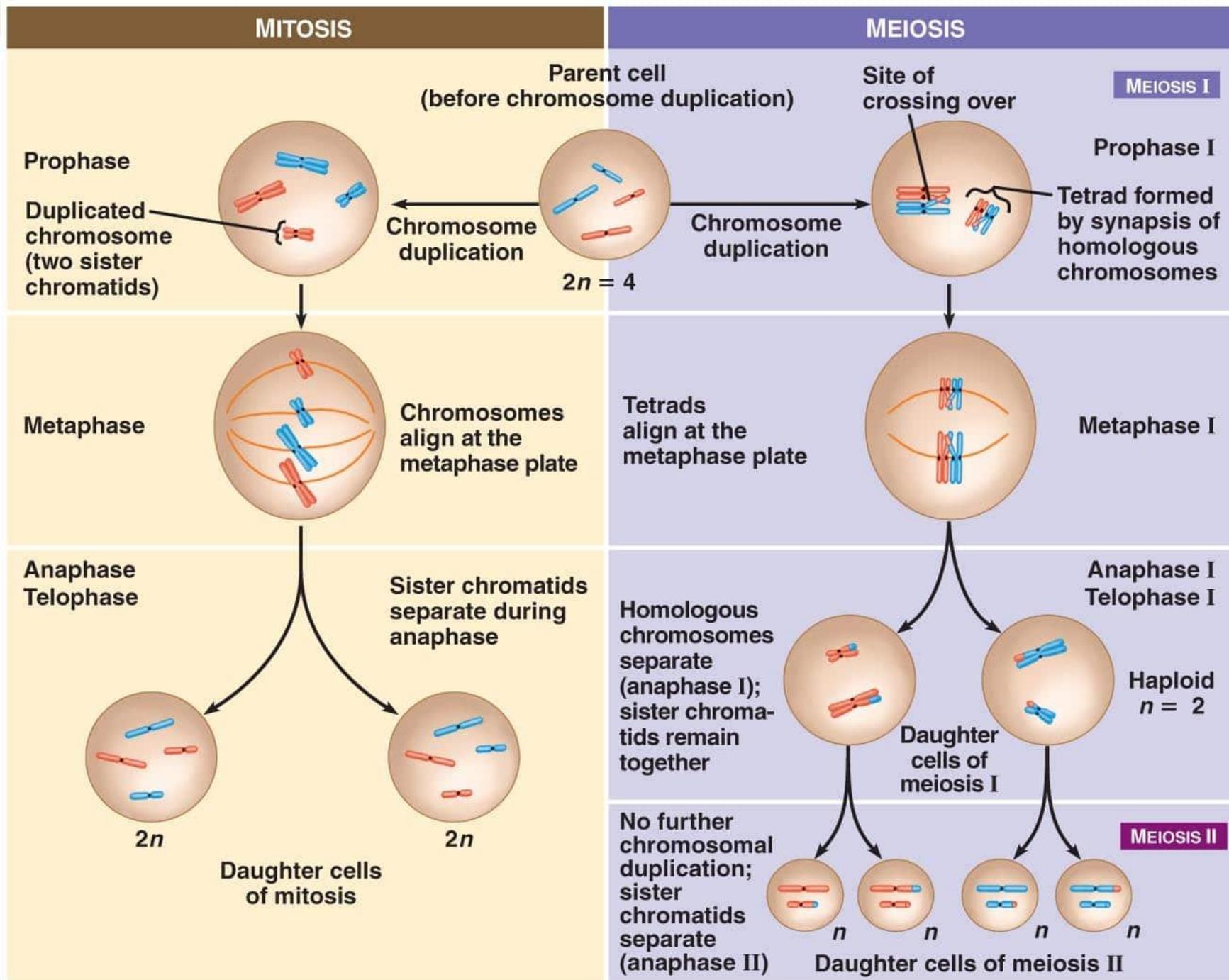
Go from 1 diploid cell to  
4 haploid cells  
These are the gametes (sperm or  
ova)

# STAGES OF MITOSIS



# Meiosis





Why is it important that sex cells  
only have  $\frac{1}{2}$  the number of  
chromosomes?

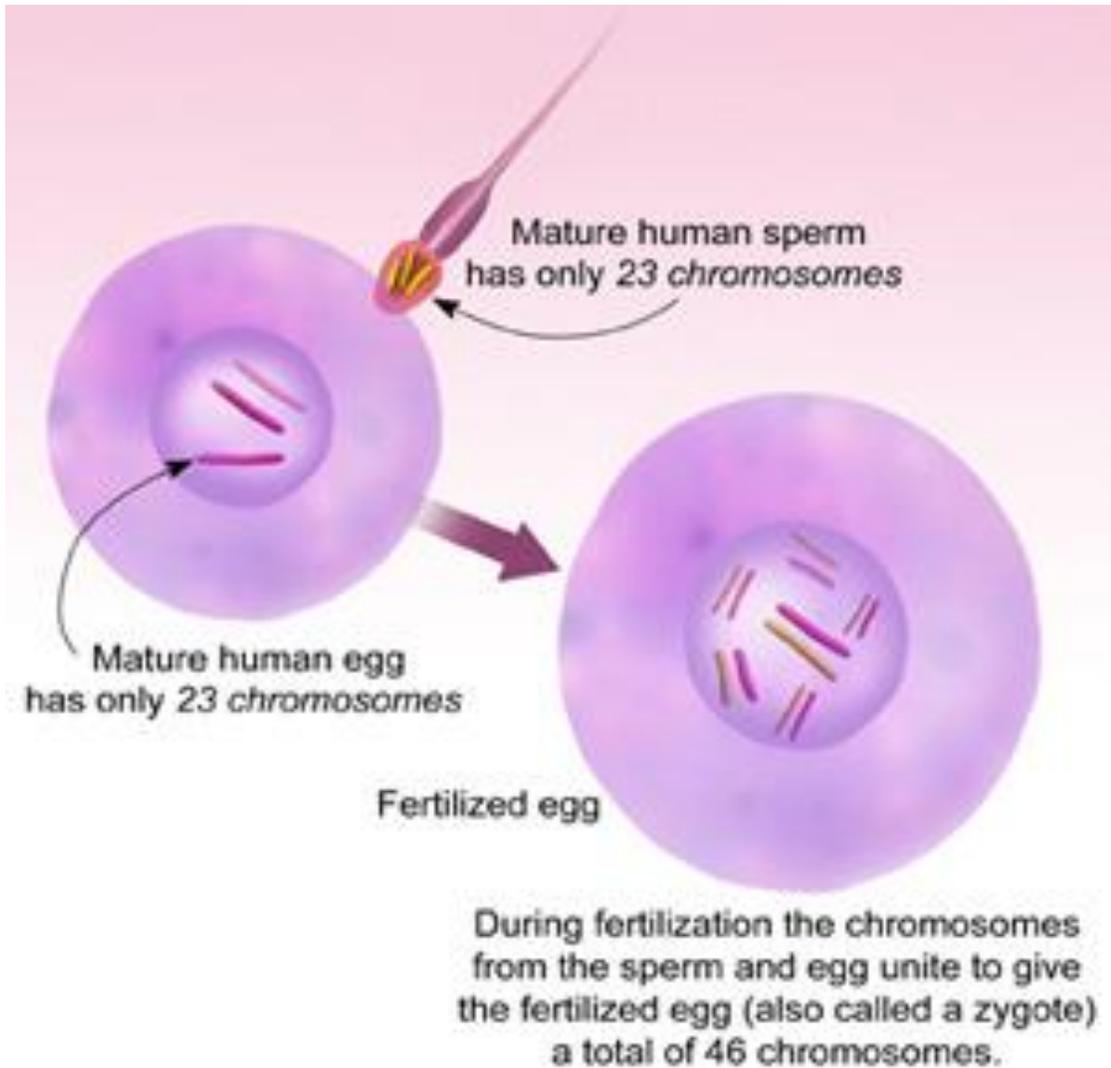
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# Meiosis and Fertilization

- Meiosis prevents DNA from doubling with every generation.
- During fertilization millions of spermatozoa (n) encounter the ovum (n).

# Meiosis and Fertilization

- Only one sperm will be able to penetrate the ovum and combine the male genetic info (n) with that of the female (n) to produce a zygote (2n).
- From there, mitosis results in the development of an embryo (the first steps to a baby)



From there, the zygote will undergo many repetitions of mitosis in order to grow!

# GENETIC DIVERSITY

Why is it important that crossing-over occurs during meiosis?

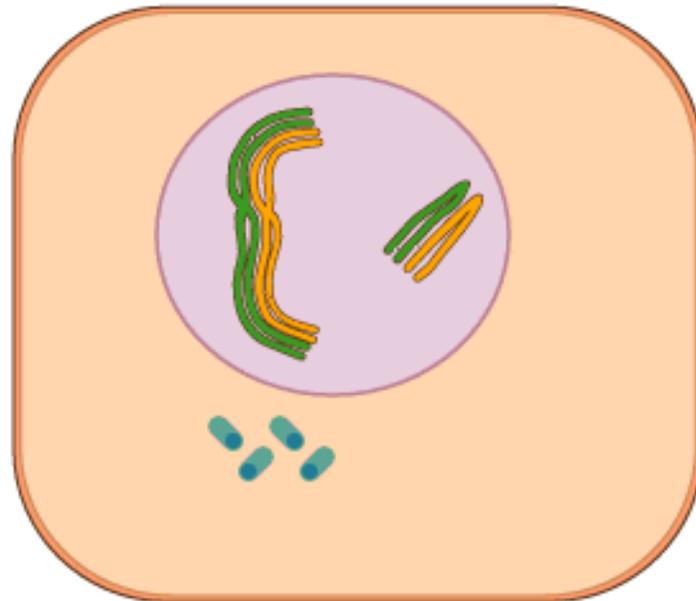
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# Genetic Diversity

- **Genetic diversity:**
  - is the variation of genes among the individuals of the same species.
  - Prevents extinction of a species
    - Ex: not all susceptible to the same diseases, etc

# Factors that Contribute to Genetic Diversity

- **Genetic recombination: similar chromosomes exchange parts of their genes** during the beginning of meiosis



# Factors that Contribute to Genetic Diversity

- **Genetic mutation: where random changes happen in the bases of DNA (A,C,T,G).**
- This can be caused by UV rays, X rays or cigarette smoke.





# Factors that Contribute to Genetic Diversity

- **Population mixing: where individuals from different populations breed**



What comes next....?

- Single-celled organisms can perform all the basic functions to survive.
- Multi-celled organisms being more complex require cells to specialize and work together to perform these same functions.

# What comes next....?

- These cells are grouped into:
  - Tissues
  - Organs
  - Organ Systems
  - Organism

What comes next...?

- **Tissue:** a group of similar cells that work together to carry out a particular function
- **Organ:** several different tissues that work together to carry out a particular function

What comes next...?

- **System:** multiple organs that are linked together
- **Organism:** all the different systems