DNA and Genetics Unit

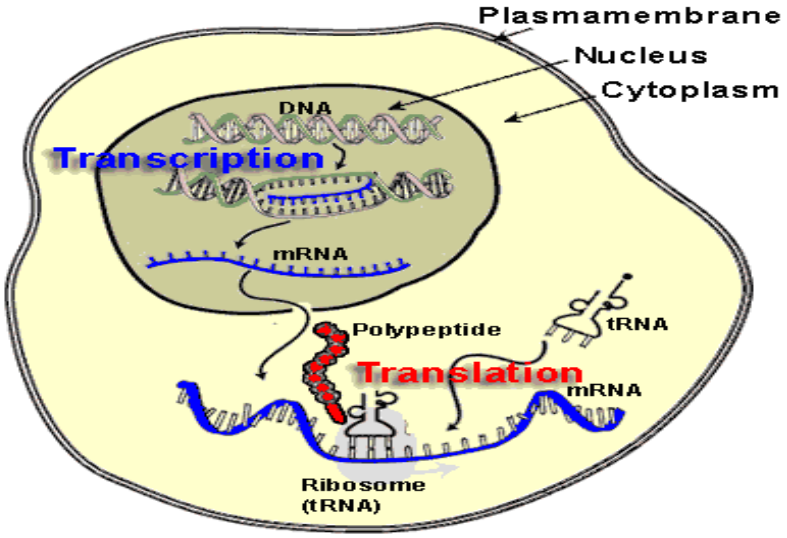
Name:

Due:

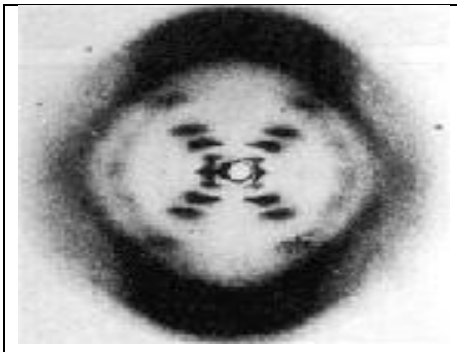
Please draw, name, and correctly label a DNA molecule. Do the same for RNA in the box next door.

DNA	mRNA
DNA stands for_____	

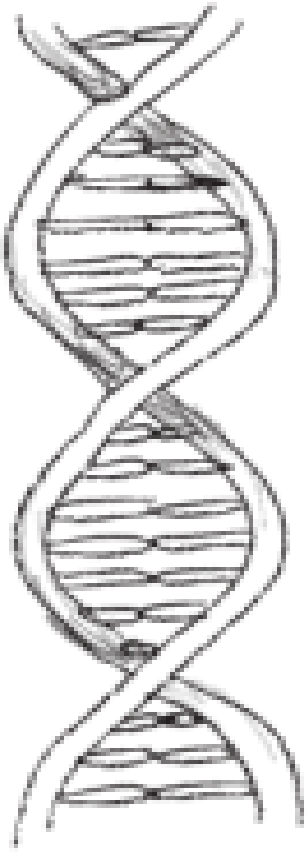
Please describe the role of DNA in determining a cell's make up. Use the picture below to help you.



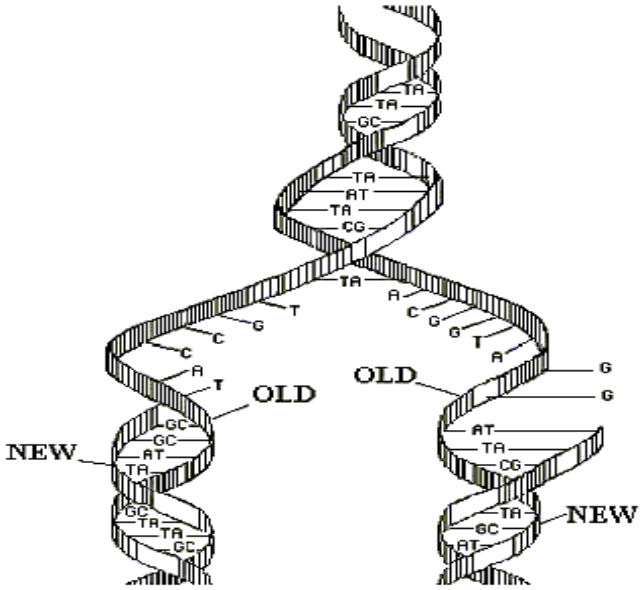
Please provide some insight to the photos below. Who or what are they? How are they connected?



Please complete the double helix below by drawing in some nucleotides. Make sure the right nitrogen base goes with its partner. How does it go again?



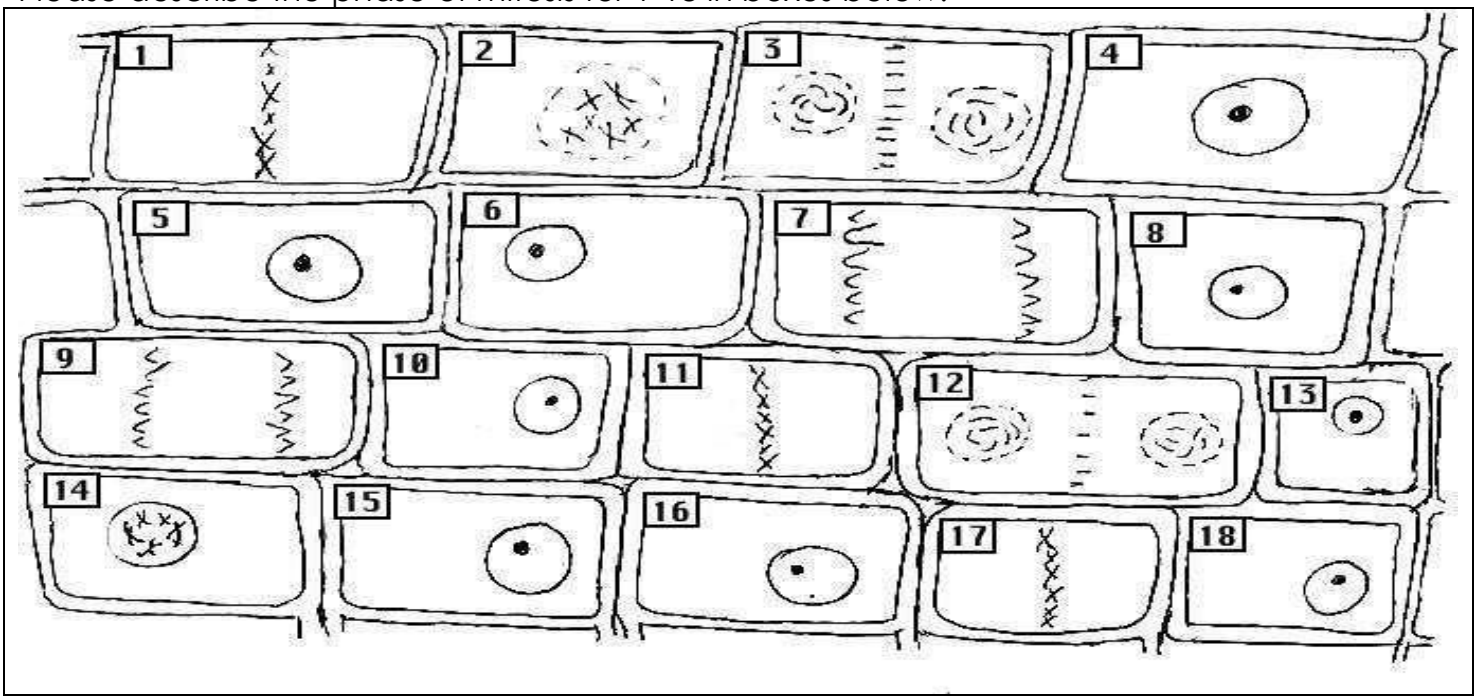
Please describe the picture below. What do you know about it?



Please use the blank template below to show a cell go through all the phases of mitosis. Please label the phases as well as show with illustrations what is happening.

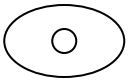
What is this a cartoon of? Please label its parts. How many do humans usually have in their cells? What about their sex cells?

Please describe the phase of mitosis for 1-18 in boxes below.

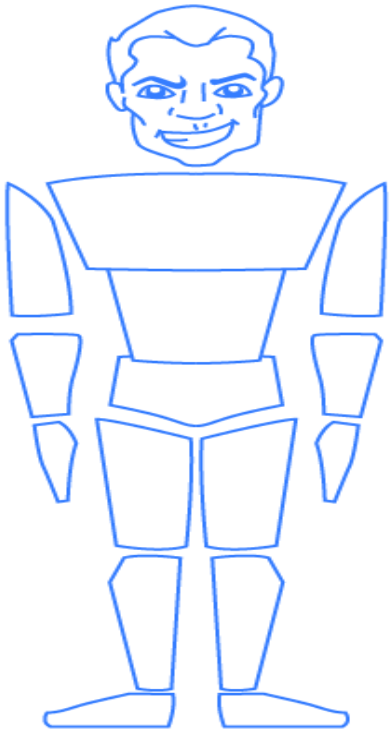


1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18

What is cancer? Please demonstrate with the cell below.

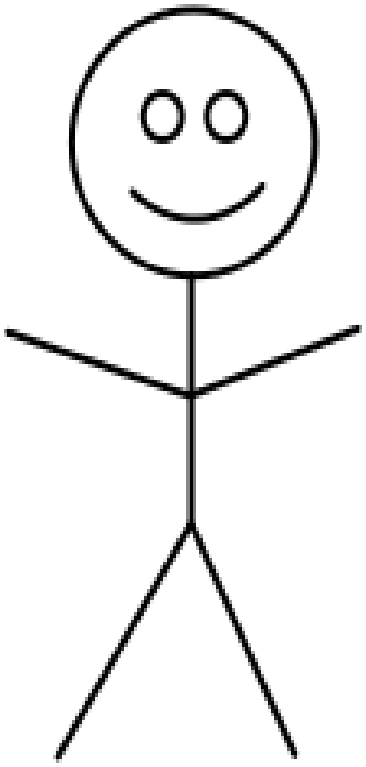


Please decorate the person below with accessories and poor habits that may increase his chances of getting cancer.

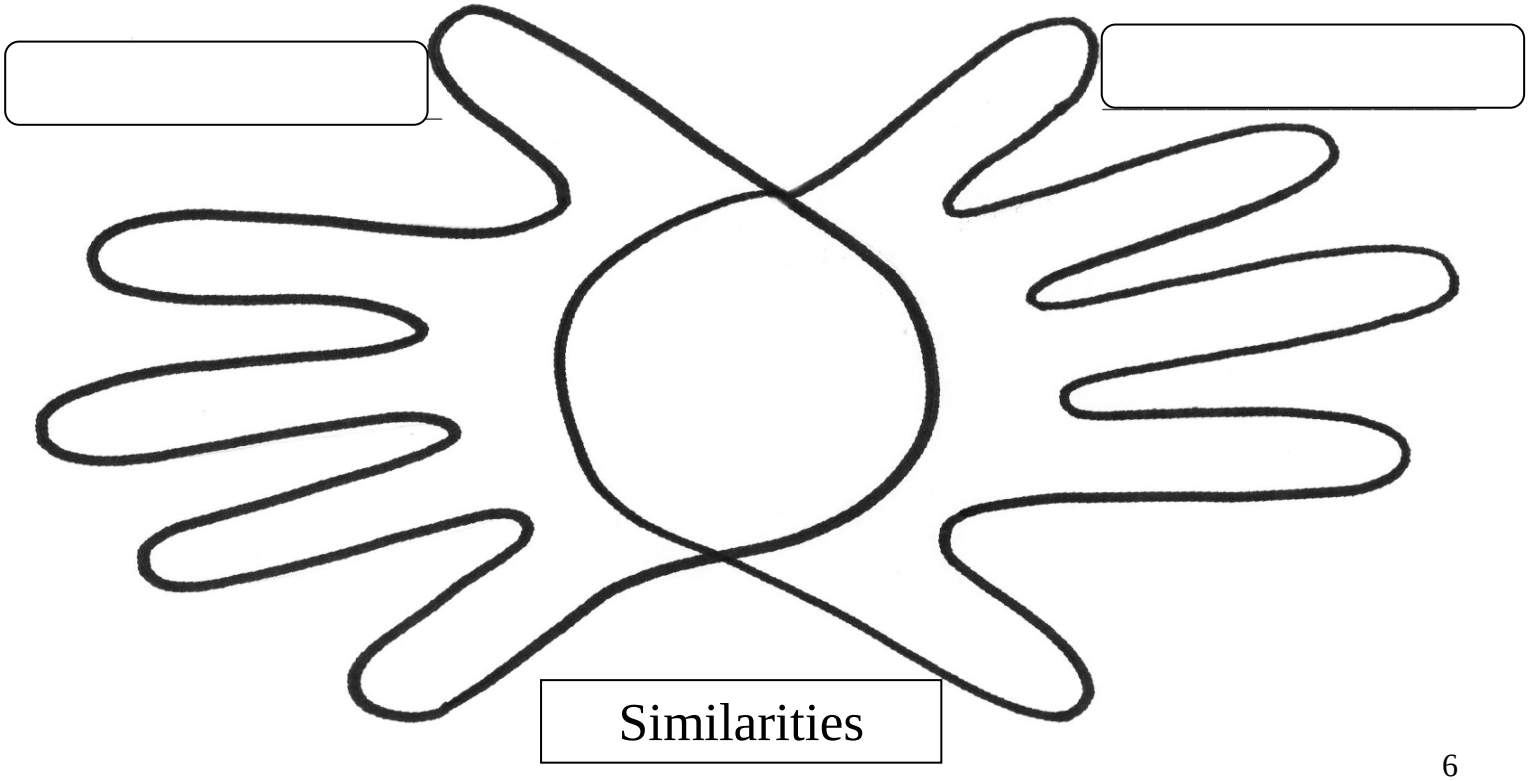


What are some of the chemicals in these? Do most people know this? If so, then why do they smoke?

Please decorate the stick figure below with some of the health and other effects that smoking can give you.



What are some similarities and differences between mitosis and meiosis? Use the Venn Diagram below to assist you.



Please sketch in the appropriate images for each phase of meiosis. Label the phase if blocked out. Don't forget to address the two questions at the bottom.

Prophase I

Metaphase I

Telophase I

Cytokinesis

Metaphase II

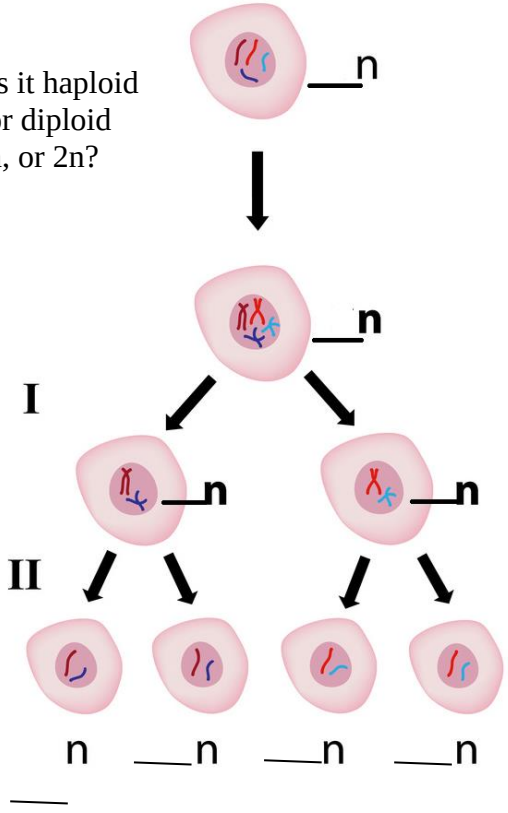
Anaphase II

II

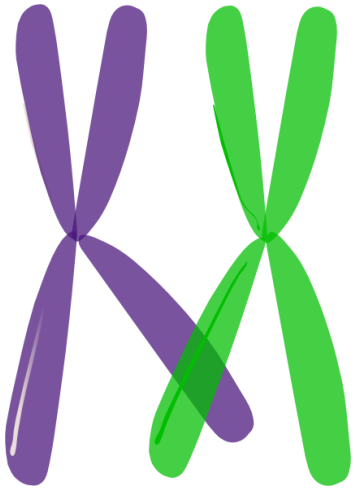
& Cytokinesis

Sperm

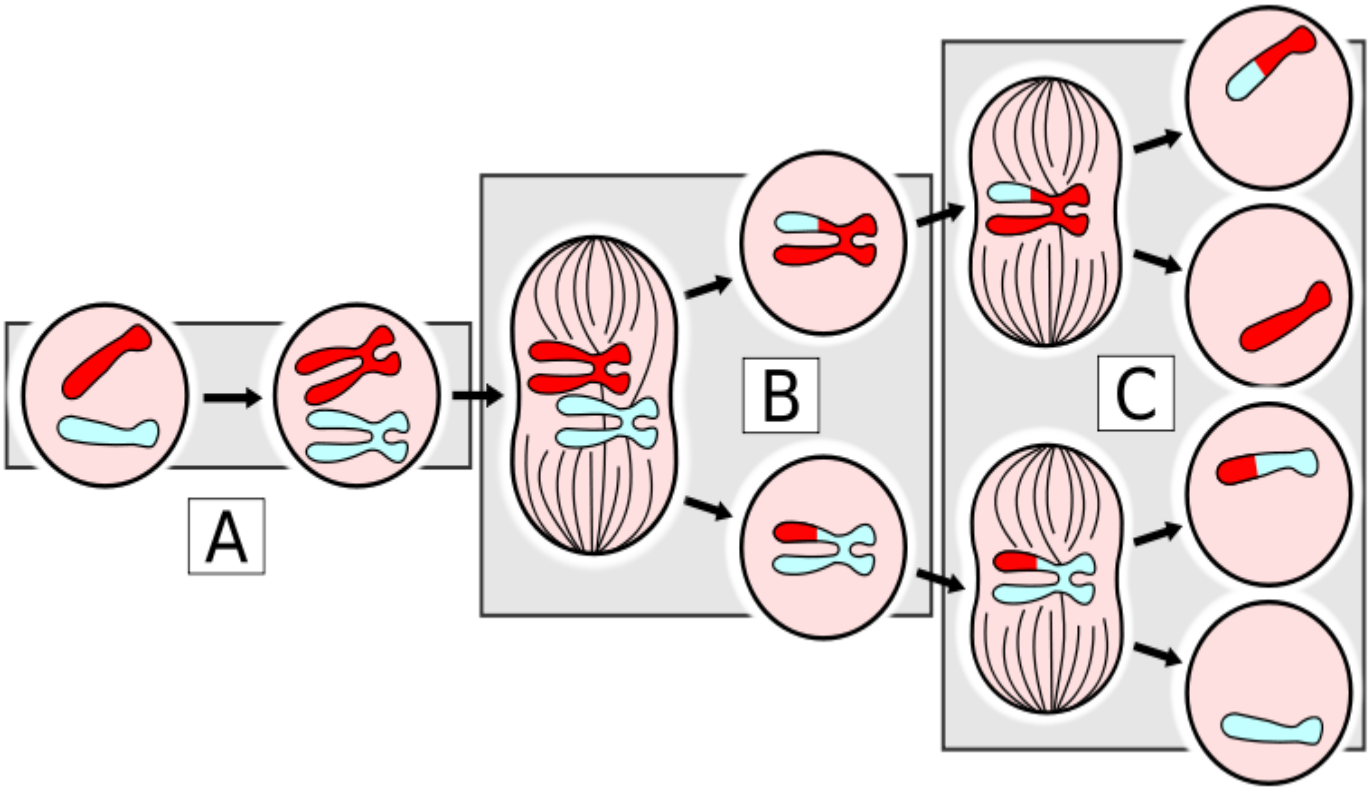
Is it haploid or diploid n, or 2n?



What is this event?



Please describe A, B, and C. How do these events create genetic variability (differences)?
Word Bank to help you with research: Meiosis II, Meiosis I, DNA Replication



A:_____

_____

_____

_____

B:_____

_____

_____

_____

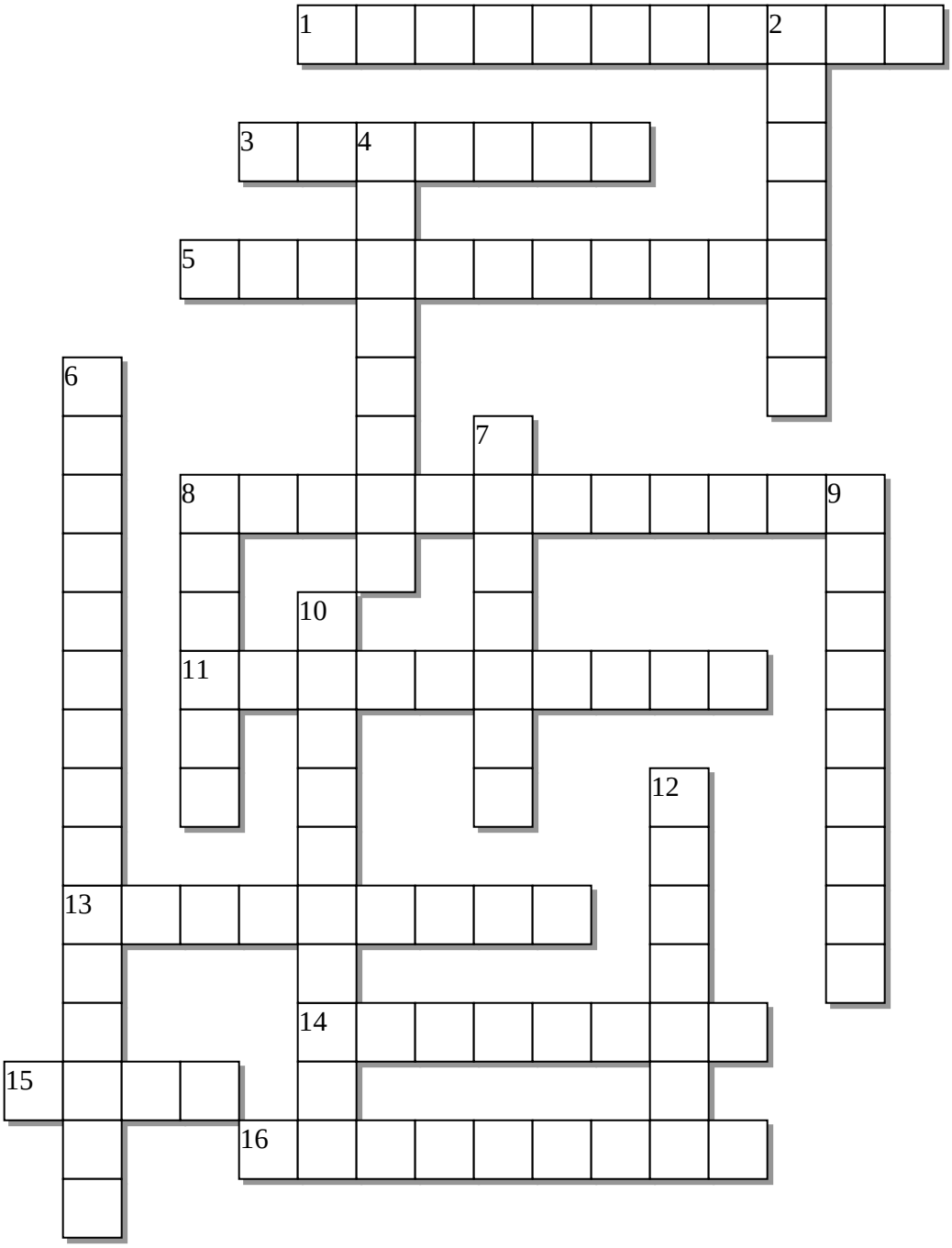
C:_____

_____

_____

_____

Mitosis and Meiosis Crossword



Across:

1 - These are not visible in the cell during interphase

3 - An Egg has 23 chromosomes. Is it haploid or diploid?

5 - This is when the cell breaks into two

8 - This term describes when genetic segments

Down:

2 - This is the name for when one cell divides into two.

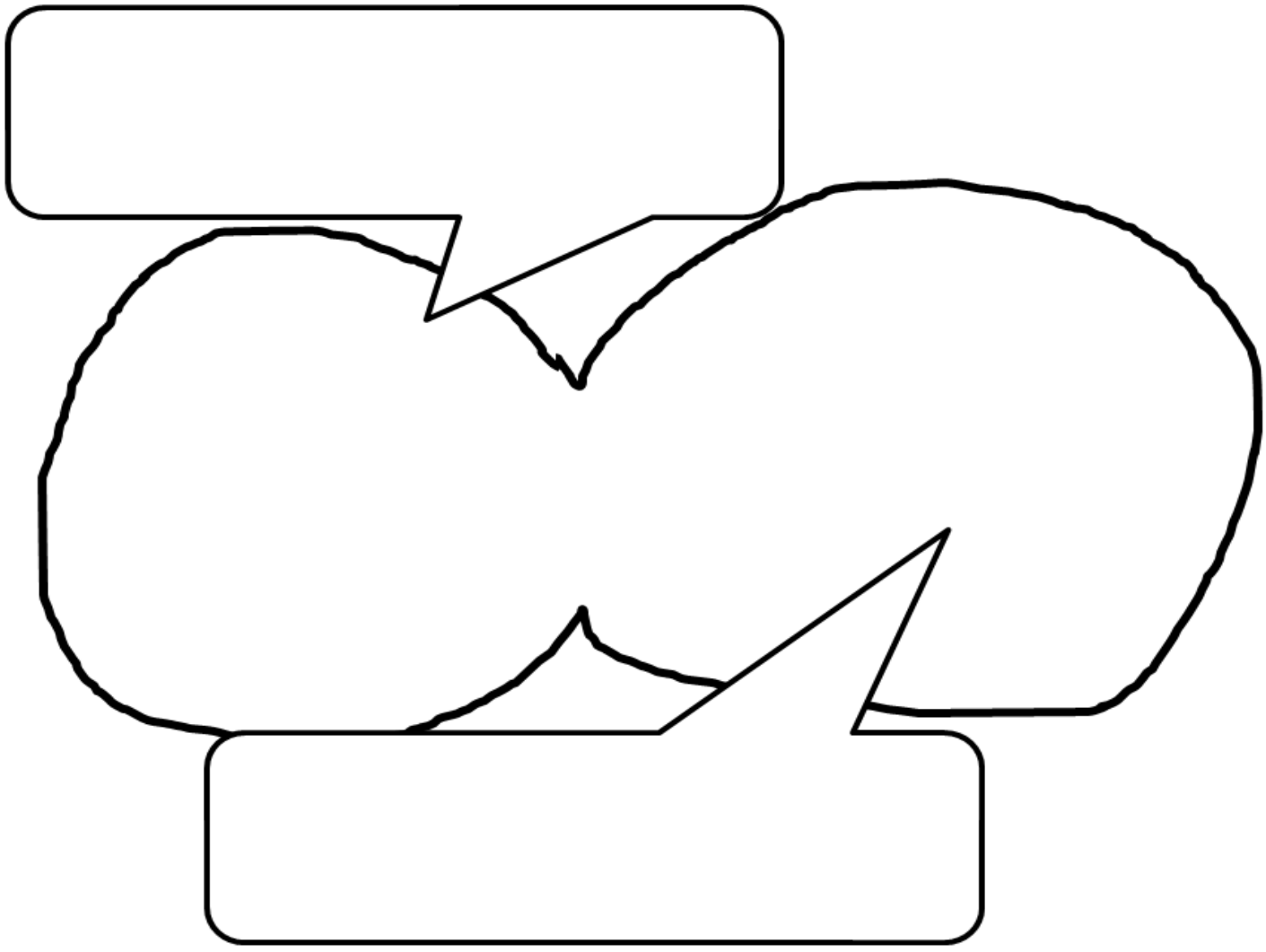
4 - Chromatin draws together to create chromosomes during this phase of mitosis

6 - This membrane breaks down during prophase.

of information are swapped when the chromosomes are next to each other.
11 - Spindle fibers and microtubules attach to chromosome at the_____
13 - Chromosomes line up on equator of the cell during this phase of mitosis.
14 - Chromosomes get split at centromere
15 - Meiosis results in _____ the number of chromosomes
16 - Nuclear membrane begins to form during this phase

7 - When a sperm an egg meet (46 chromosomes) . Is the cell haploid or diploid?
8 - This uncontrolled, unregulated cell growth and reproduction
9 - A _____ in the amount of genetic material occurs in Meiosis
10 - This phase of cellular division is most of the cells life.
12 - This is cell division that produces reproductive cells

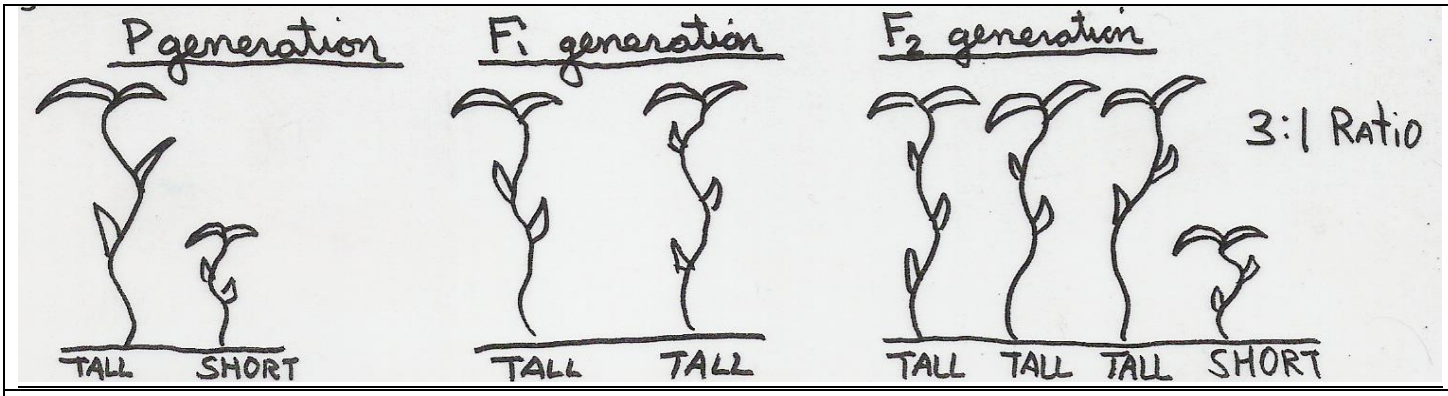
Make up something funny or interesting about two cells that are completing mitosis (telophase). Use the speak out boxes below and draw in some cell content.



Please write at least a three paragraph essay about Gregor Mendel and his research with pea plants and early genetics. In your essay, you need to correctly use the following words so that their meaning is understood.

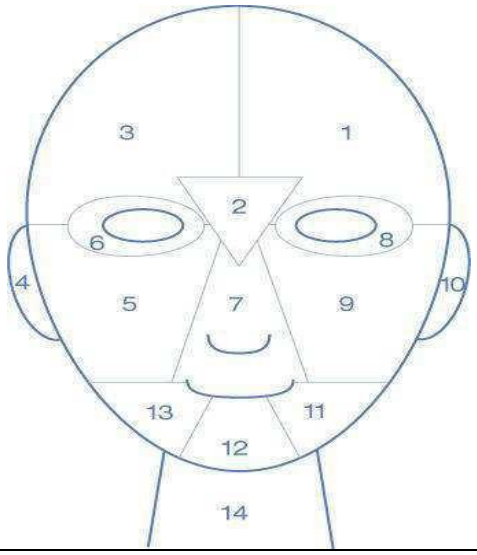
●Sexual Reproduction ●Hereditary ●Traits ●Purebred ●Phenotype
● Genotype ●Dominant allele ●Recessive allele • genes • Probability

Seed		Flower	Pod		Stem	
Form	Cotyledons	Color	Form	Color	Place	Size
						
Grey & Round	Yellow	White	Full	Yellow	Axial pods, Flowers along	Long (6-7ft)
						
White & Wrinkled	Green	Violet	Constricted	Green	Terminal pods, Flowers top	Short (-1ft)
1	2	3	4	5	6	7



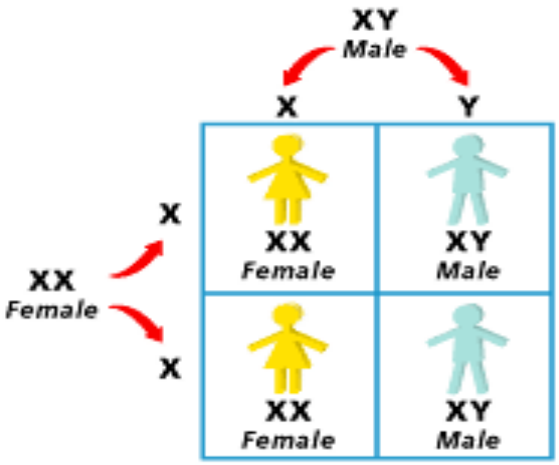
Please describe the importance of the diagram above. What is so significant when comparing the F_1 and F_2 generation?

Please create a self portrait below using some of the genetic phenotypes that we have learned.



Please use the diagram on the right to describe which gender controls the sex of the child in humans. Please respond on the lines below.

_____
_____
_____
_____
_____
_____
_____



Fill out the Punnett Square below and describe the probable outcomes.

1.) Two heterozygous parents.
(Brown is dominant) (Blue is recessive)
BB-Brown eyes
Bb-Brown eyes
bb-Blue eyes

What is the probability of brown eyes (Phenotypic)?_____

What is the Genotypic Ratio? ___: ___

2.) One heterozygous parent and one homozygous recessive parent.
(Brown is dominant) (Blue is recessive)
BB-Brown eyes
Bb-Brown eyes
bb-Blue eyes

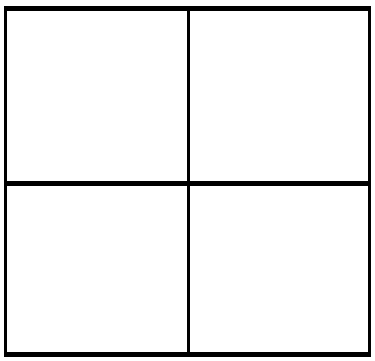
What is the probability of brown eyes?_____

What is the Genotypic Ratio? ___: ___

3.) One homozygous dominant parent, and one homozygous recessive.
(Brown is dominant) (Blue is recessive)
BB-Brown eyes
Bb-Brown eyes
bb-Blue eyes

What is the probability of brown eyes?_____

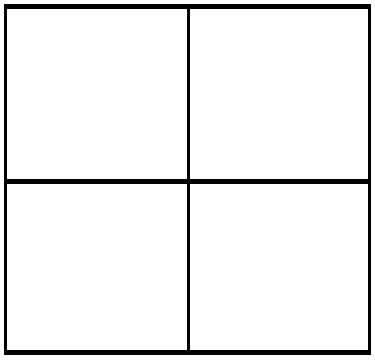
What is the Genotypic Ratio? ___: ___



4.)Two homozygous recessive parents.
(Brown is dominant) (Blue is recessive)
BB-Brown eyes
Bb-Brown eyes
bb-Blue eyes

What is the probability of brown eyes?_____

What is the Genotypic Ratio? ___: ___



Please complete the dihybrid cross below and record the probability of the outcomes in the ratio part at the bottom.

Heterozygous X Heterozygous

Heterozygous parent (PpSs)

Heterozygous parent (PpSs)	PS	Ps	pS	ps
PS			PpSS	
Ps				
pS				
ps				

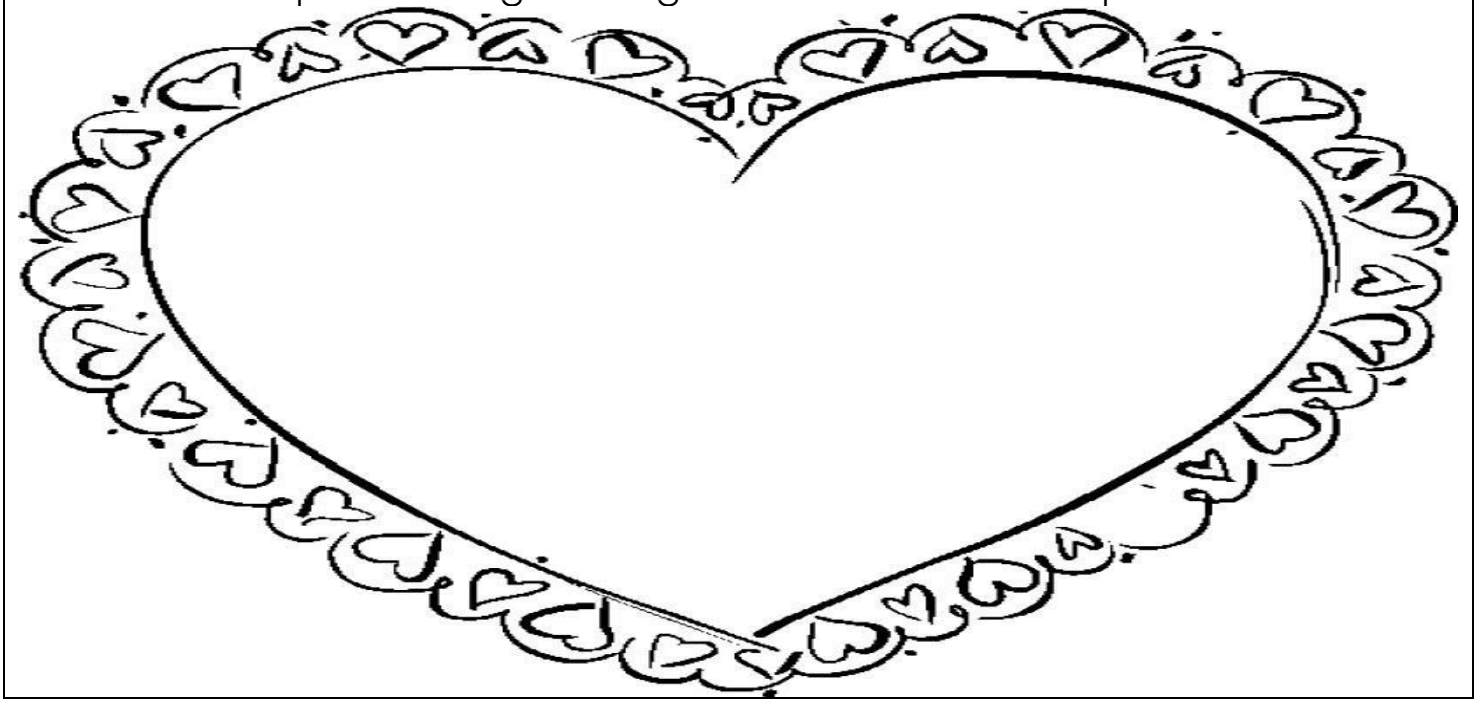
P – Purple
p- White

S – Smooth
s - wrinkled

Phenotype: Purple Smooth _____ _____ _____

Ratio: _____ : _____ : _____ : _____

Please reflect upon learning about genetic disorders in the space below.



Please list some of the bio-ethics involved in human cloning and stem cell research in the boxes below.

Embryonic Stem Cells	Human and Animal Cloning

G_____ M_____ O_____'s

+ | −

GATTACA

Name:

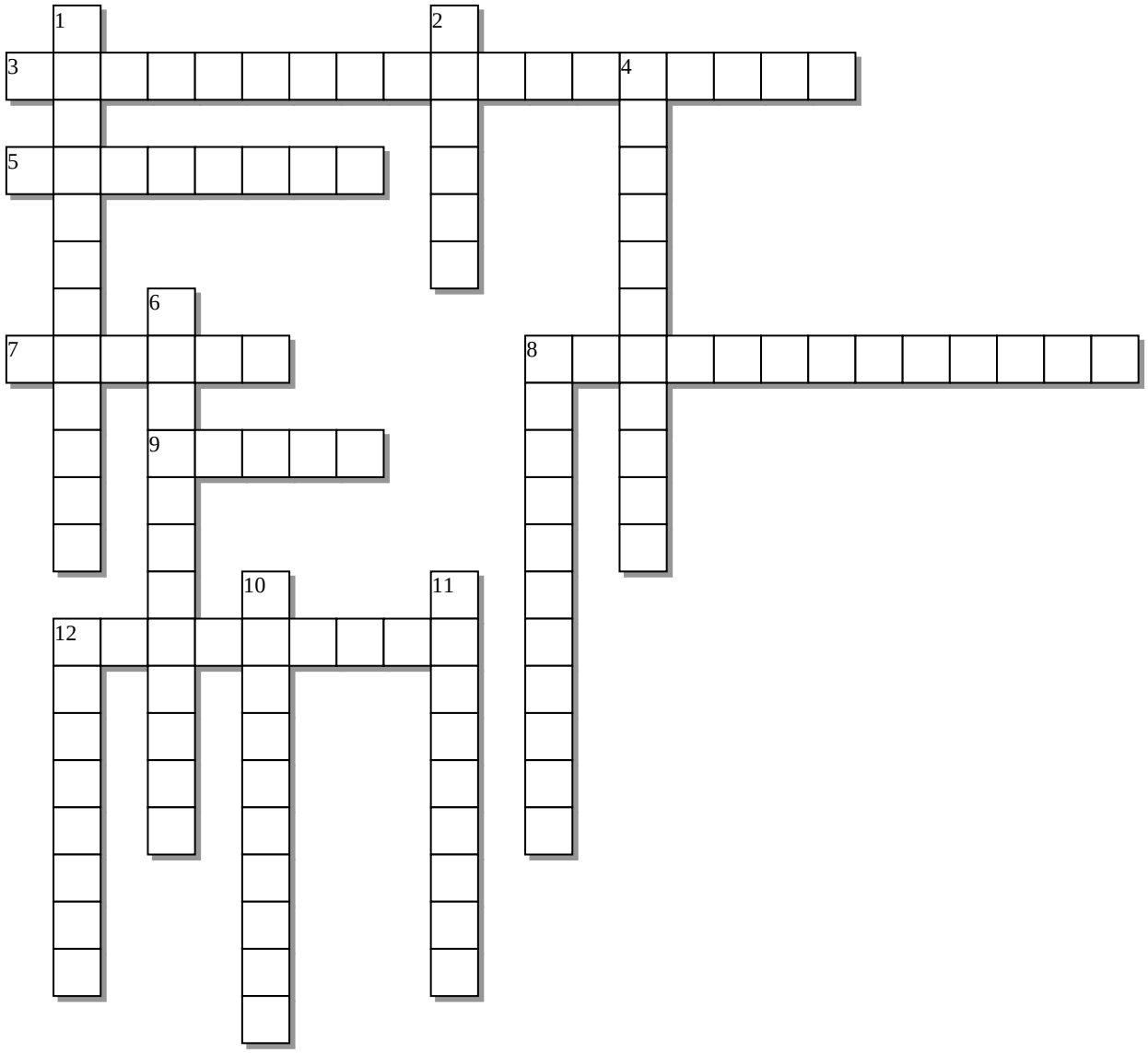
Due:

This worksheet is worth a class investigation grade and should be completed upon the conclusion of the film. Please put the same amount of effort into this assignment as Antoine/Gerome put into following his dream.

What were some of the negative impacts that faced Vincent (Gerome) (Ethan Hawke) because of his DNA/and being considered an Invalid? • • ●How was DNA used to discriminate in the movie? •	Describe his work ethic. Make sure to list specific examples from the movie? How hard must he work to overcome the problems facing him? How does his work ethic compare to your own?
What were some ways that DNA was collected? What does GATTACA stand for?	What do you feel was the message in the movie GATTACA?

Please color and label the next page using your notes and deductive reasoning

Genetics Crossword Puzzle

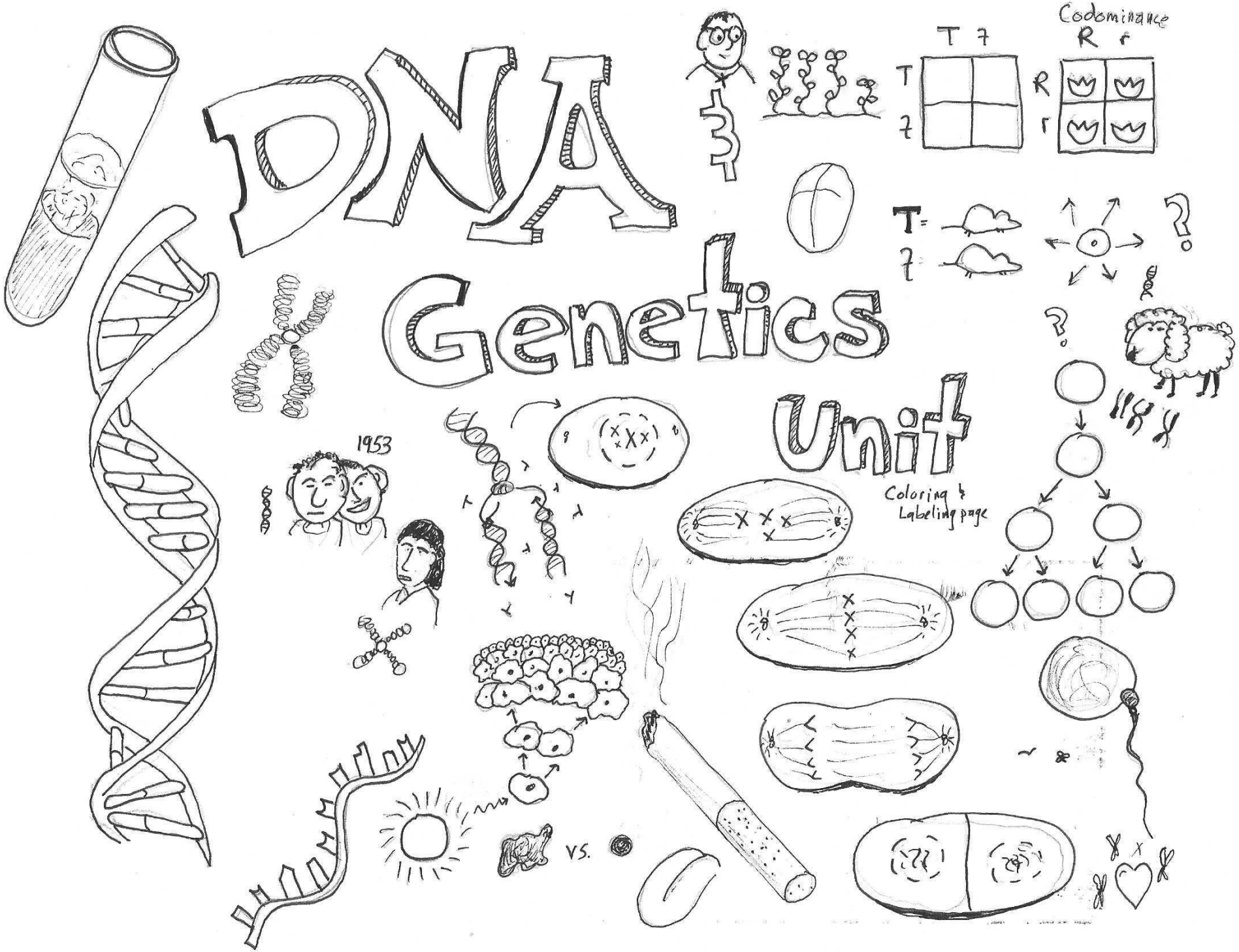


Across:

3 - This is the term for when a female contributes one factor, while the male contributes the other factor.
5 - _____ is the passing of traits from parents to offspring
7 - This is the name for an organism with two different alleles.
8 - A diagram that is used to predict the outcome of a particular cross
9 - The factors that control traits are called _____.
12 - This is an organism's physical appearance or its visible traits.

Down:

1 - Term that describes two different alleles
2 - Different characteristics are called _____
4 - A relationship among alleles where both alleles contribute to the phenotype of the heterozygote.
6 - Priest in Vienna, The Father of Modern Genetics
8 - This is the likelihood that a particular event will occur.
10 - Term that describes two identical alleles
11 - This type of allele is covered up when the dominant allele is with it.
12 - These always produce offspring with the same trait as the parent.


DNA
Genetics
Unit
Coloring & Labeling page
Codominance
T t
R r
1953
VS.