

Name \_\_\_\_\_

**Reproductive System**

Reproductive System Matching

- |                          |  |
|--------------------------|--|
| <u>F</u> Uterus          | a. Location of egg development   |
| <u>D</u> Testosterone    | b. The unity of egg and sperm resulting in a complete set of DNA       |
| <u>H</u> Estrogen        | c. Transports genetic material   |
| <u>J</u> Fallopian Tubes | d. Hormone that regulates cycle in human males produced in the testes  |
| <u>A</u> Ovaries         | e. Its effects can alter genetic information in sperm/eggs             |
| <u>I</u> Testes          | f. Site of embryonic/fetal development                                 |
| <u>B</u> Fertilization   | g. Permits the passage of nutrients and oxygen between mother and baby |
| <u>C</u> Sperm Tail      | h. Hormone produced in the ovaries that regulates cycles in females    |
| <u>E</u> Radiation       | i. Site of sperm production  |
| <u>G</u> Placenta        | j. Site of fertilization   |

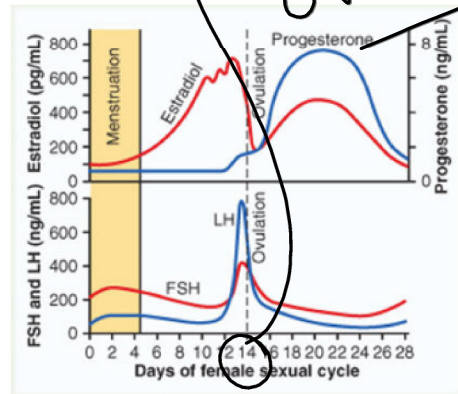
testes / ovaries

Exchange

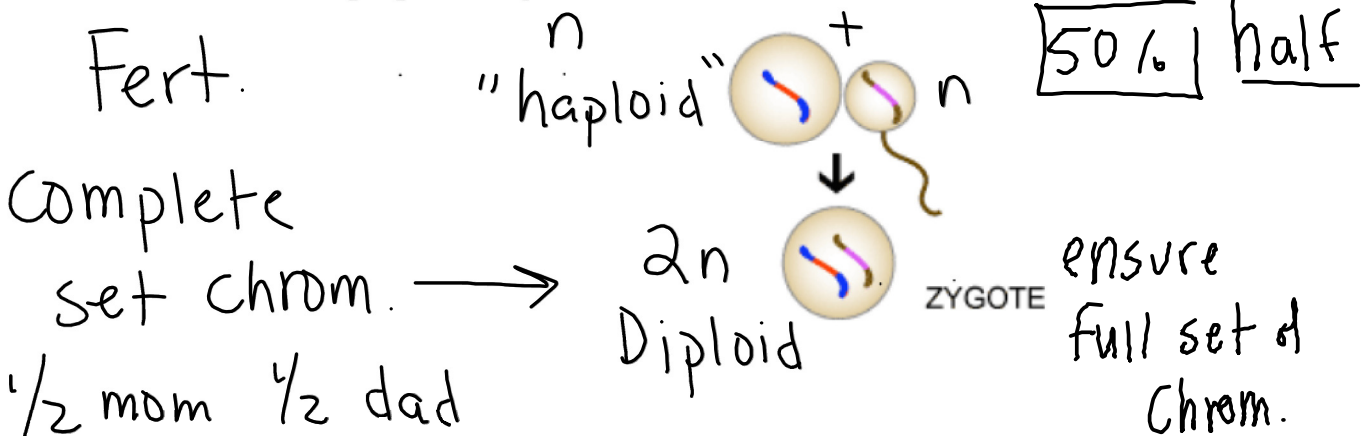
Day 14  
Ovulation

Explain what is going on in this chart

hormone cycle in females



Describe what is going on in this picture.



# Testes - Vas def.

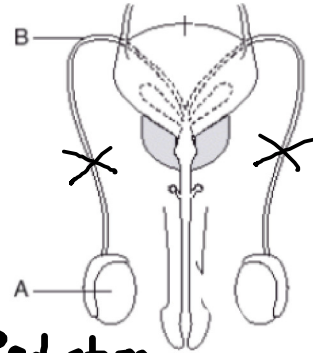
Label A and B in the diagram below.

What happens if B is blocked or cut?

Sperm cannot leave

What is that called?

Vasectomy



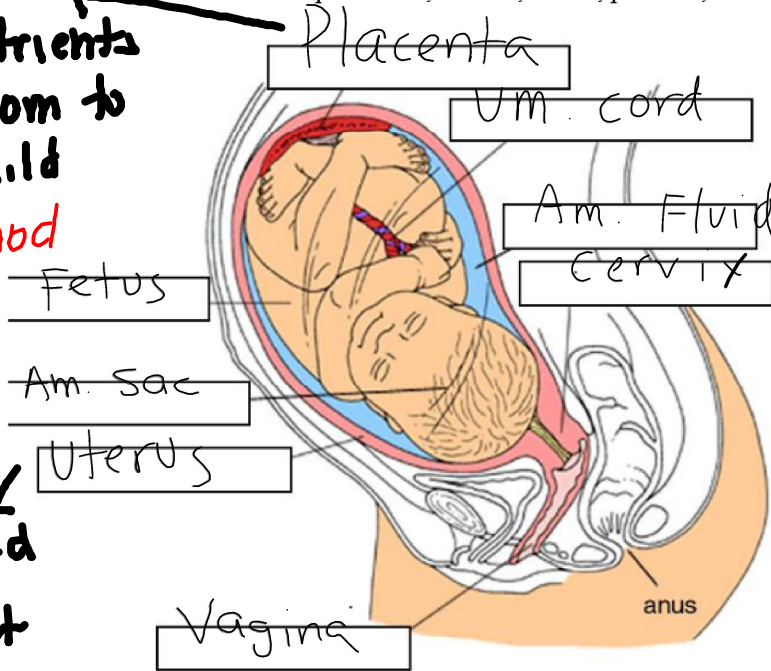
Radiation can alter gen info

Label the fallopian tubes, ovaries, uterus, placenta, birth canal (vagina), and umbilical cord

passage of nutrients from mom to child

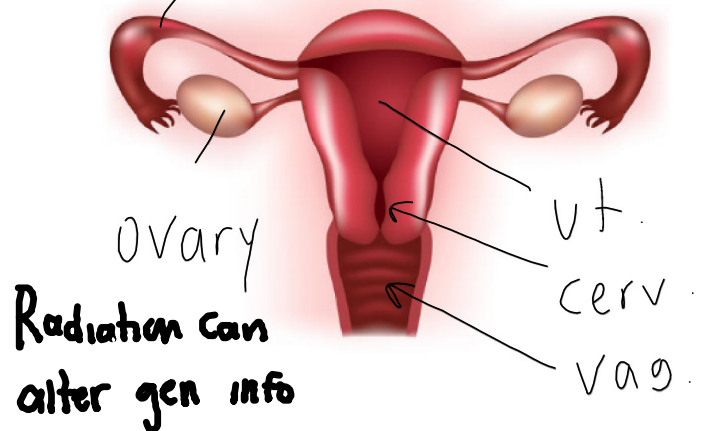
No blood mixes

Surround + protect embryo



Site of Fert

Fall. tube



Radiation can alter gen info

Mitosis and Meiosis

2 exact copies  
 ↗

What is this process called?

mitosis - growth/repair

What can be said about the chromosome number of each daughter cell as compared to the parent cell?

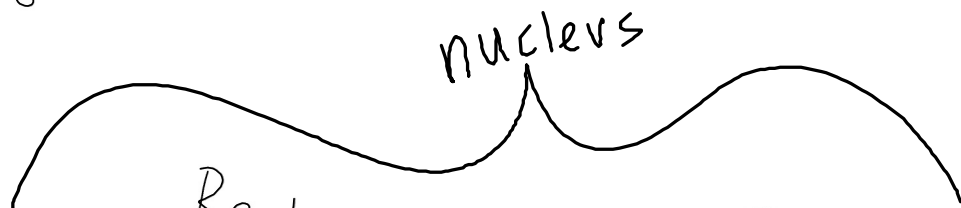
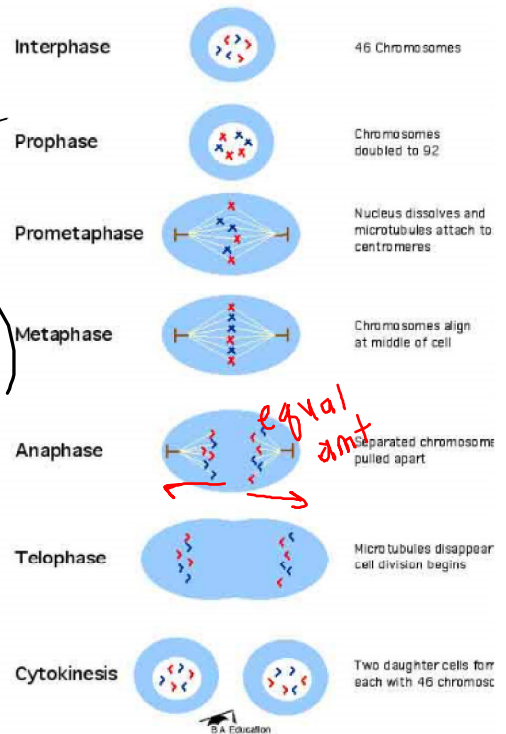
Chrom # equal (same genes)

Why is anaphase so important in this process?

ensure that each daughter cell gets = #'s chrom.

How would the chromosome number of the daughter cells compare to the parent cell if this was meiosis?

daug = 1/2 ↖



in nucleus

S phase of Interphase

Mitosis  
 "cytokinesis"

plants - cell plate

animal = cleavage furrow

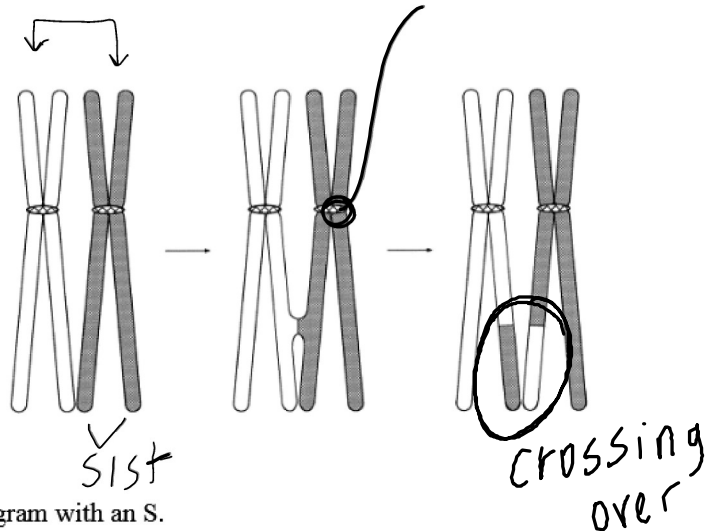
(Same Size)  
hom. Chrom  
Centromere

What is going on in this diagram?  
CROSSING OVER  
What is the result of this procedure?



genetic diversity

Why is it important in the survival of a species?  
always a little diff.



- Label the sister chromatids in the first diagram with an S.
- Label the homologous chromosomes in the last diagram with a  $\longleftrightarrow$

How is the chromosome number different between mitosis and meiosis?

ex same as parent

$\frac{1}{2}$  parents

Use the diagram to the right to answer the following questions.

- Where does each take place?

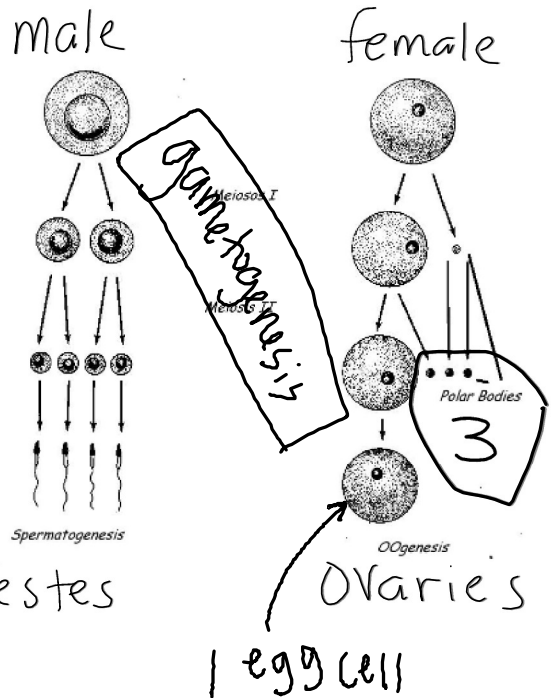
How are they similar?  
prod 4 total cells  
each  $\frac{1}{2}$  parent

- How are they different?

Male = 4 functional Fem cell  
Testes

Zillions | a month

Transports genetic materials  
"info"



Genetic Disorders

NOT for point mutations

What is this a picture of?

A Karyotype

This process will allow you to see abnormalities in:

chrom # and chrom. shape

Is this a male or female?

male (xy)

What genetic disorder does this person have?

Down Syndrome 3 21's



What caused this person to have this or any other disorder resulting from an abnormal number of chromosomes?

non-disjunction during meiosis

Describe an amniocentesis and what it can be used for?

A needle is inserted and amniotic fluid is removed and analyzed - Test for genetic disorders

Briefly describe the following:

Cystic Fibrosis- Autosomal recessive. Can be passed down - Failure to produce enzyme that breaks down mucous in the lungs

Sickle Cell Anemia- Autosomal recessive - can be passed down - Hemoglobin has the wrong shape + so do the red blood cells

Hemophilia- X-linked recessive - can be passed down - A problem with blood clotting factors

Down Syndrome- Caused by non-disjunction. Extra chrom. 21 - intellectual disabilities

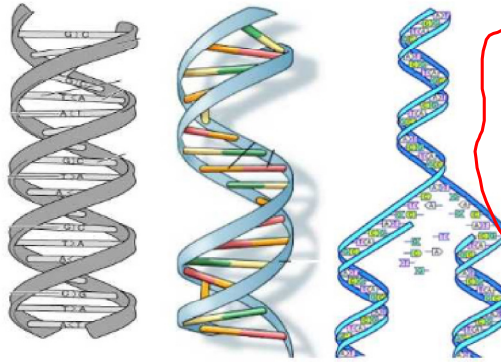
XXY Klinefelters - non disjunction. A male with an extra X chrom. Sterile with some female Char.

XO Turner's - non disjunction - A female with only 1 X-chrom - Sterile w/ growth/hormone/heart issues

⊛ Color Blindness = X-linked Rec

DNA and DNA Replication

both sexually + asexually rep organisms



Not in virus

What can be said about this molecule? Double stranded - found in the nucleus - pass down genetic info - Heridity Template

What is the molecule on the right doing? Where does this process take place?

Replication - Done in the nucleus

What can a change in the base sequence of the DNA cause?

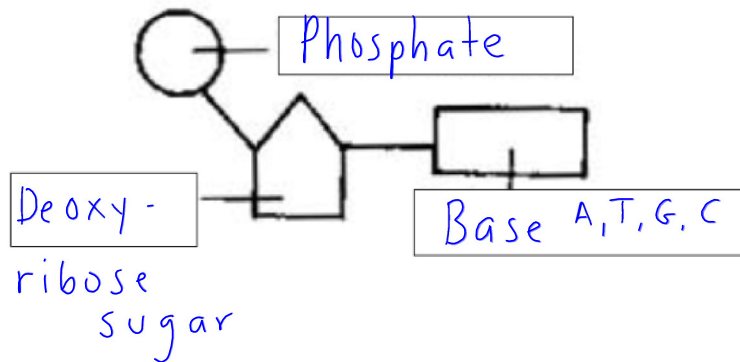
mutation either environmental or inherited

What two men get the credit for discovering the structure of DNA?

Watson + Crick  
Double-Helix

(Rosalind Franklin ~> X-ray diffraction)

On the following diagram, label the phosphate group, the deoxyribose sugar and the base.



A nucleotide  
part of a nucleic acid

If you have an original sequence below, fill in the complementary bases.

ATTGCCTATTC

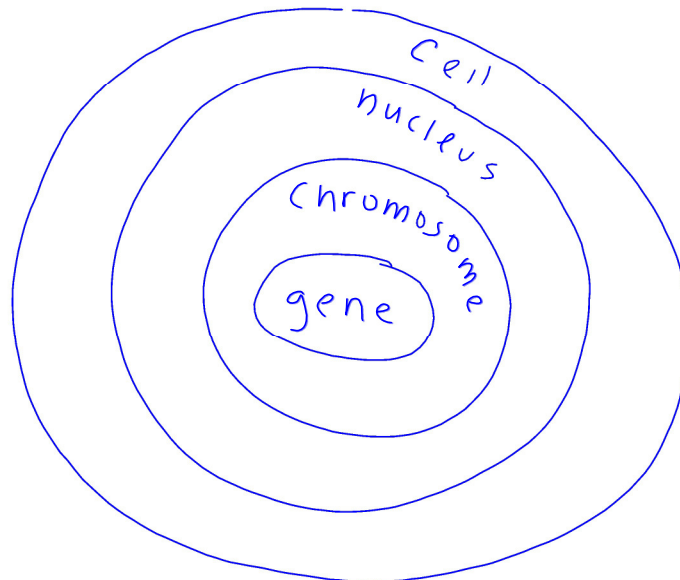
CIRCLE the deletion, SQUARE the insertion and TRIANGLE the substitution.

ATTGCC△GATTC      ATTGC<sup>Ⓢ</sup>TATTC      ATTGCCTATTC<sup>□</sup>

Sub - a G instead of a T      deletion      insertion

What do these this picture represent?

Draw the relationship between a cell, nucleus, chromosome and a gene.



**Protein Synthesis and RNA**

Where does the transfer of genetic material take place between the DNA and the RNA?

nucleus

What is that process called?

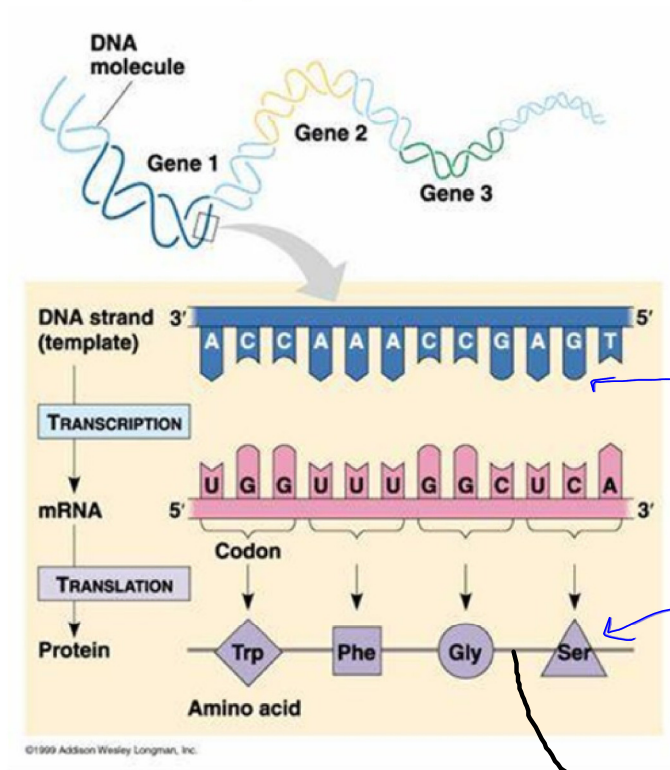
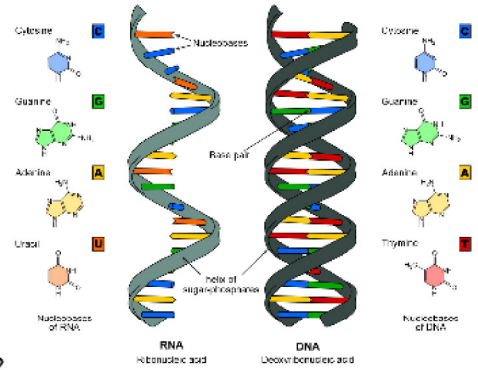
Transcription

What is the relationship between cells, DNA and the protein?

The DNA codes for proteins within a cell

What happens if there is a mutation (error) in the DNA in this process?

The cell will transcribe the wrong mRNA and make the wrong protein



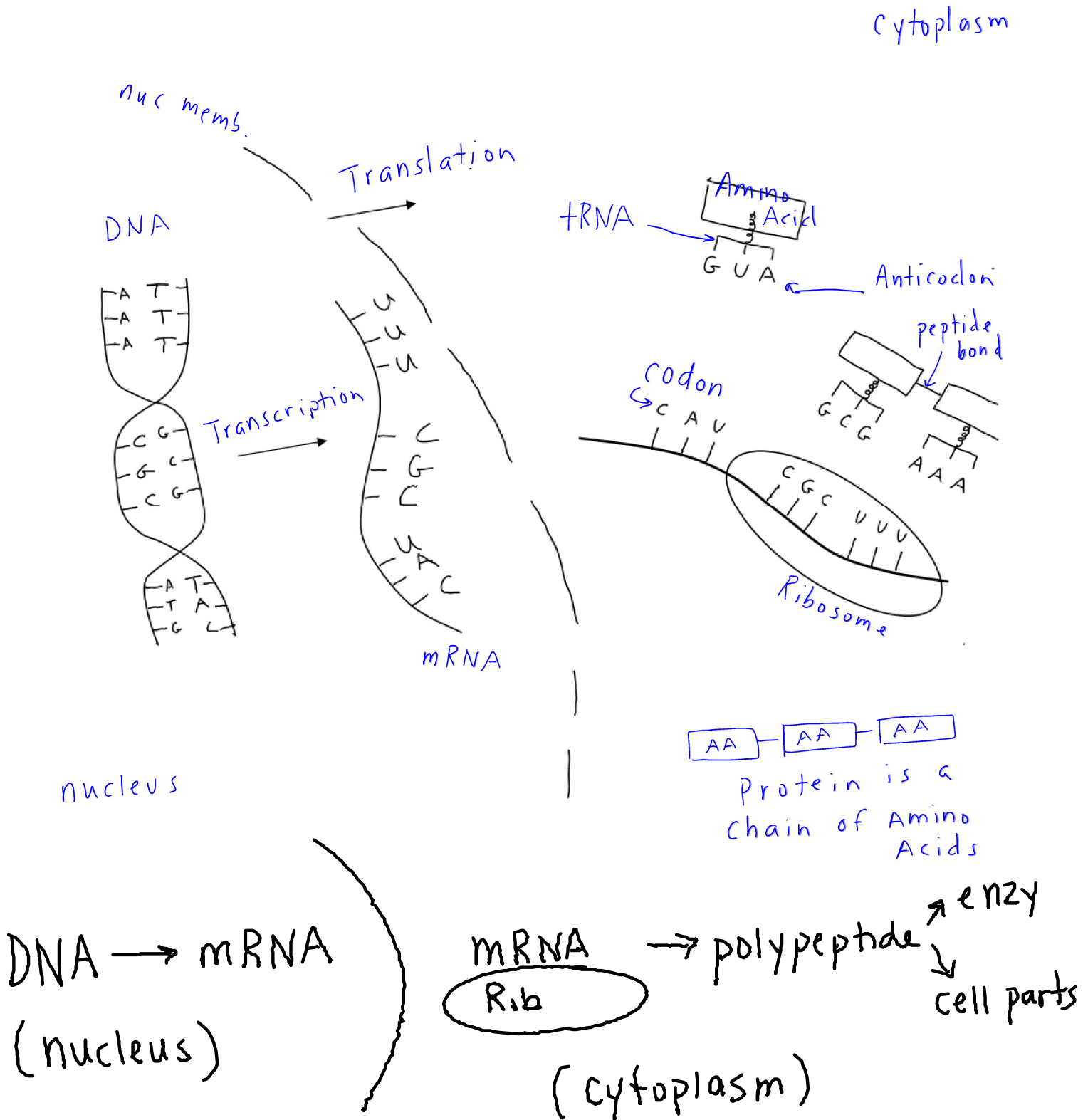
A mistake here can lead to a mistake

peptide bond



Label the following in this diagram:

DNA, Protein, mRNA, Amino Acid, Peptide Bond, tRNA, Cytoplasm, Nucleus, Ribosome, Transcription, Translation and Nuclear Membrane



**Mendelian Genetics**

What was Greggor Mendel known for? Following traits on pea plants

Why was what he did so amazing? He had No knowledge of chromosomes

If a given trait has two alleles that are alike (AA) it is said to be homozygous "pure". If the traits are different (Aa), they are said to be heterozygous "hybrid".

If a mother has brown hair and brown eyes and a father has blond hair and blue eyes, what could explain their child having brown hair and blue eyes?

This is an example of Independent Assortment

List the ways we can write out blood types. Circle the one that shows codominance.

$I^A I^A$  } Type A      $I^B I^B$  } Type B      $ii$  = Type O      $I^A I^B$  (circled)  
 $I^A i$  }      $I^B i$  } B  
 Codominant Type AB

**Punnet Square Practice**

- In peas tallness is dominant over shortness. If a homozygous short plant is crossed with a heterozygous tall plant, what are the projected outcomes?

	T	t	
+	T+	t+	
+	T+	t+	

50% Tall     2 : 2  
50% Short     Tt : tt

- In red snapper heads, sharp teeth are dominant over dull teeth. If two heterozygous sharp teeth red snappers mated, what percentage of their young will have sharp teeth?

	S	s	
S	SS	Ss	
s	Ss	ss	

75% sharp  
25% dull  
1 : 2 : 1  
SS : Ss : ss