

HOW DNA WORKS

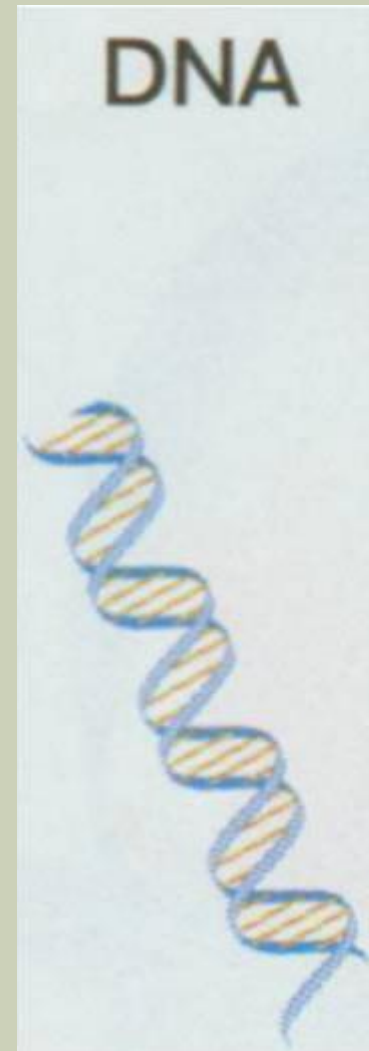
Pg. 136-141

Breaking the
genetic code...

DNA= YOU CAN READ IT LIKE A BOOK

- Goes from one end to the other
- One direction only
- A, T, G, C = alphabet for DNA code
- Comes in groups of three

↑
codon



**3 MINUTE
BONUS ACTIVITY!**

**MAKE AS MANY
COMBINATIONS OF THE
NUCLEOTIDE BASE
PAIRS AS YOU CAN.**

A, T, G, C

WHAT IS THE COMPLEMENT?

AACTACGGT



WHAT IS THE COMPLEMENT?

- Now try this one:
 - TTCATGCCT

- Notice anything about this one?

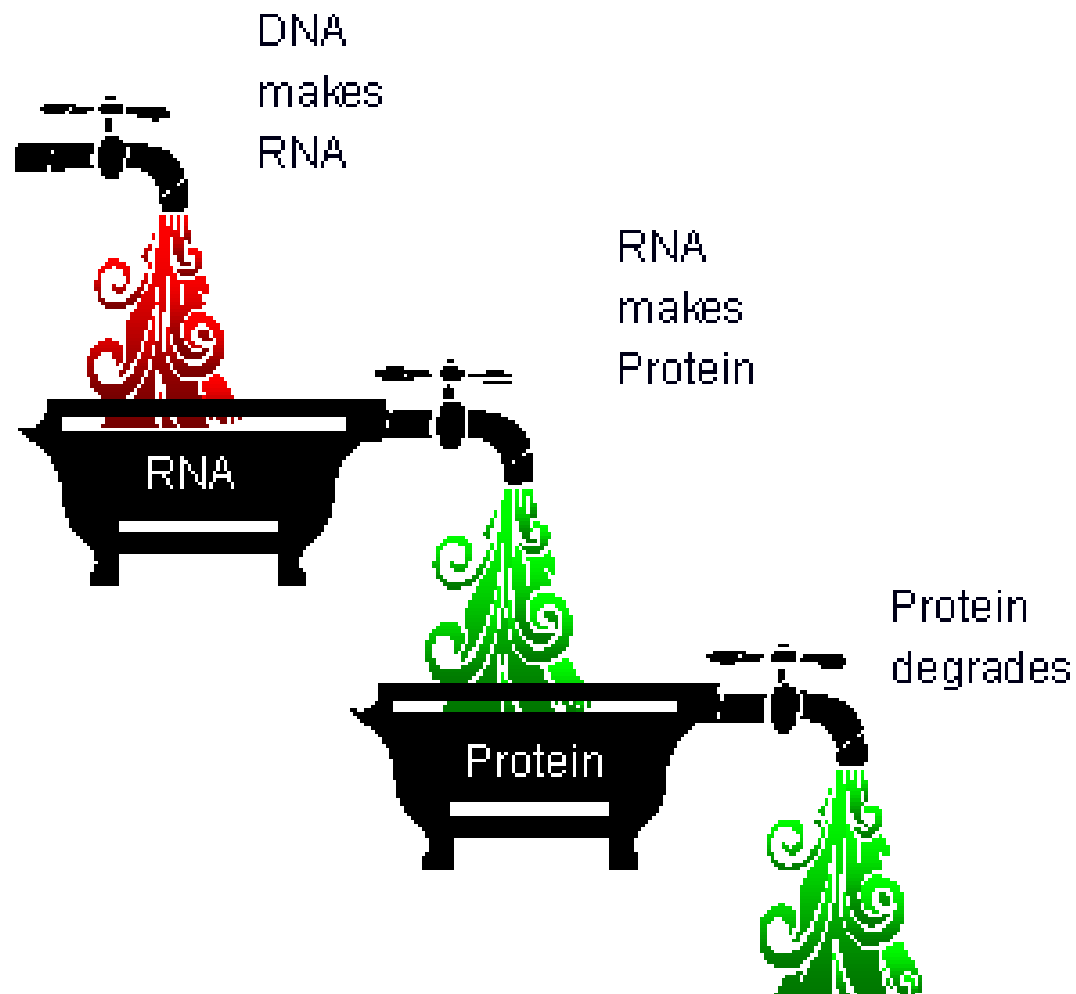
- Found throughout cells
- Chemical messengers
- Determine traits
 - height
 - hair color
 - shape
 - size
 - textures
- Amino acids make proteins
 - 22 amino acids
 - Codes= specific amino acids



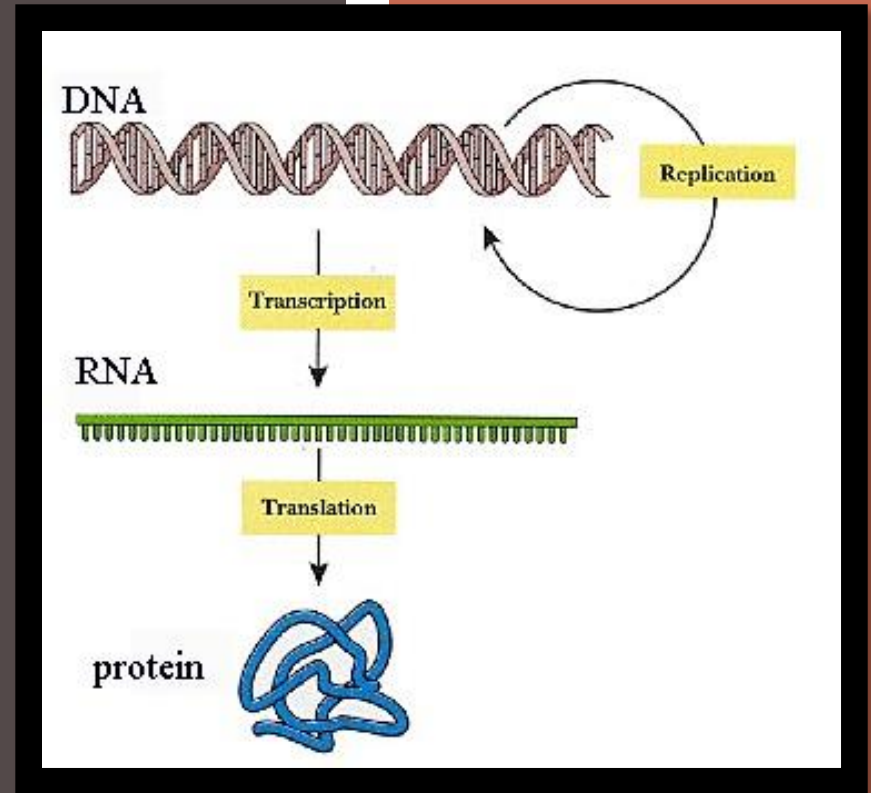
#1

PROTEINS

Really tiny
VIPs of the
body

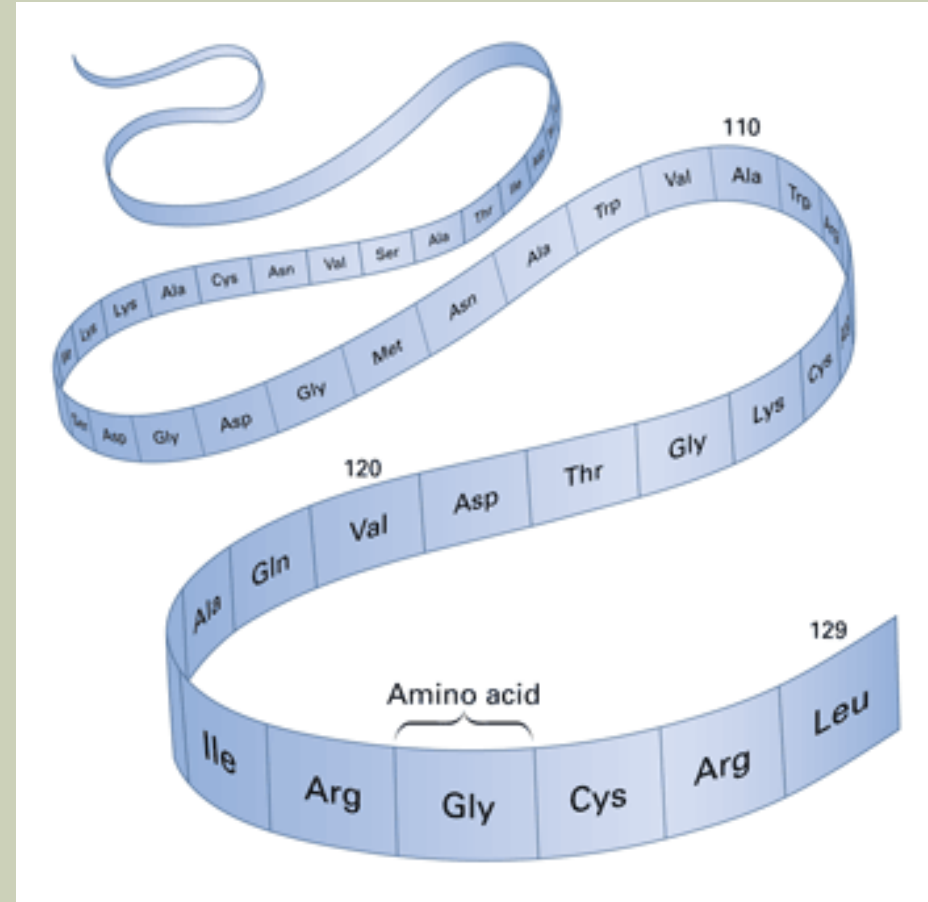


Protein levels depend on how fast proteins are made and destroyed.



AMINO ACID CHAIN

- Look at the picture at the bottom of page 137 in your books...
- The DNA codes tell the ribosome which amino acid it should make



MUTATIONS

GENERAL MUTATIONS

#4, 5



- A change in the order of bases in DNA
- Can cause diseases
 - i.e. sickle cell anemia
- Repair enzymes patrol DNA for errors/fix them

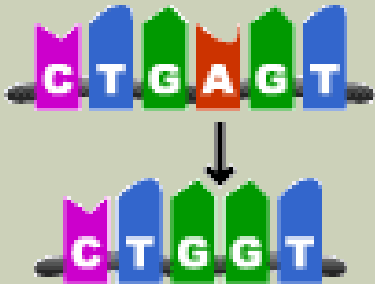
DNA changes...

What happens?

- An improvement
- No change
- Harmful change

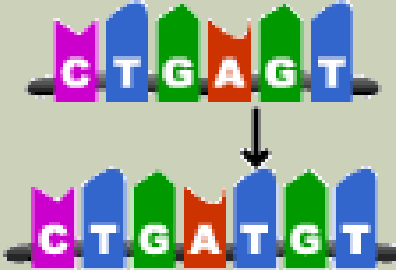
- If it happens in sex cells, the mutation can be passed on

MUTATIONS



Deletion

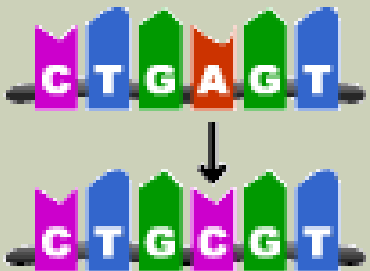
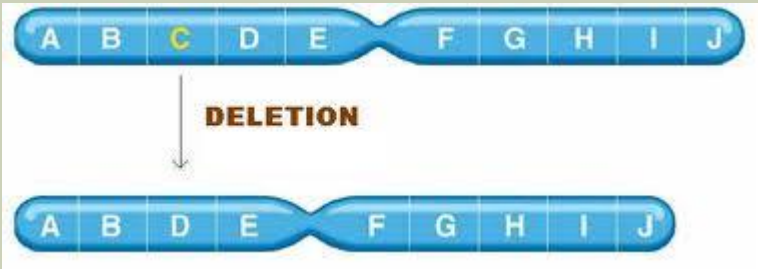
- A base is left out



Insertion

- Extra base is added

Insertion



Substitution

- Incorrect base replaces a correct base
- Most common

Point mutation

Types of Mutations

Normal gene

AS THE MAN SAW THE DOG HIT THE CAN END IT IS

Point mutation

AS THE MAN SAW THE DO**T** HIT THE CAN END IT IS

Deletion

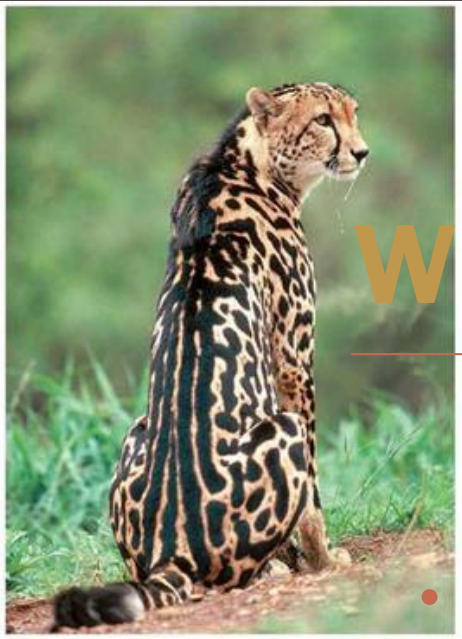
AS THE MAN SAW THE ~~HIT~~ THE CAN END IT IS

Insertion

AS THE MAN SAW THE **FAT** DOG HIT THE CAN END IT IS

Frame Shift

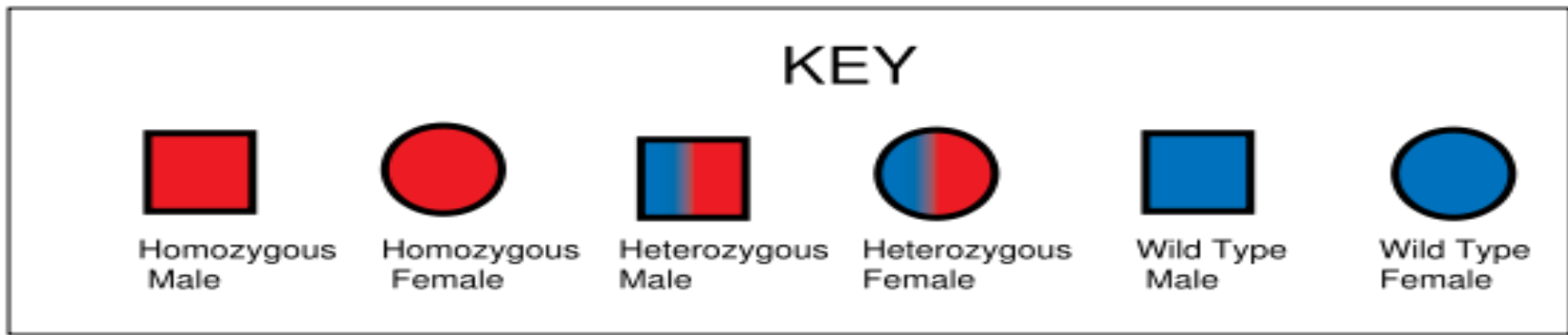
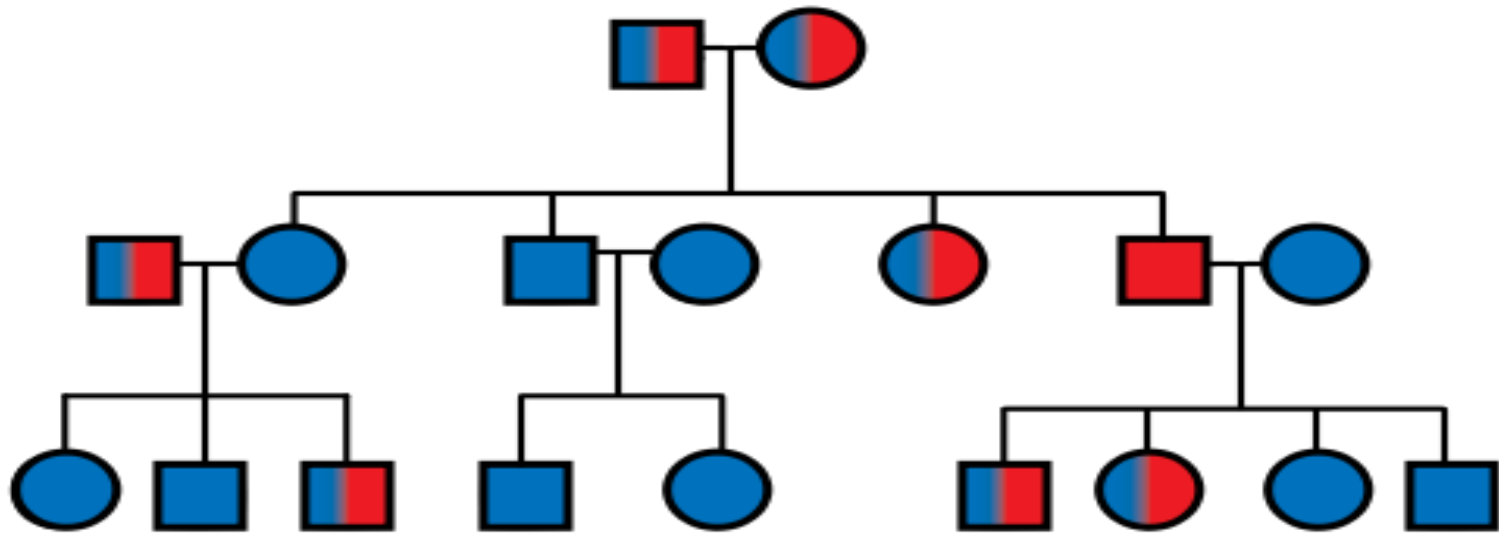
AS THE MAN SAW THE ~~HIT~~ **OGH** ITT HEC ANE ND ITI S



WHAT CAUSES MUTATIONS?

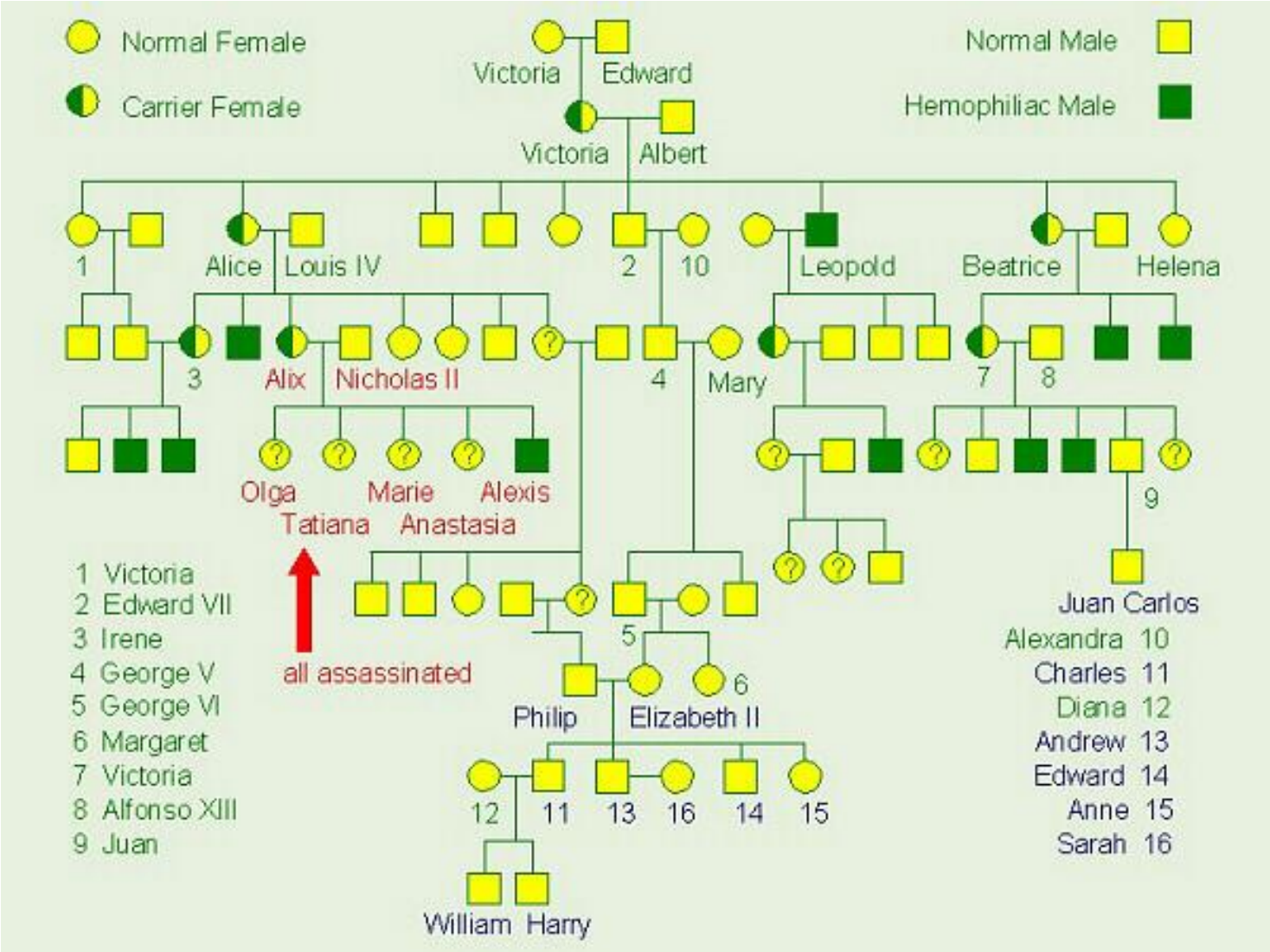
- **Mutagen**= anything that causes a mutation
- High-energy radiation
 - X rays
 - Ultraviolet radiation
- Asbestos
- Chemicals in cigarette smoke





PEDIGREES

Tracing genes through families



PEDIGREES

Tracing genes through families

#7

GENETIC ENGINEERING

vs.
Selective
Breeding