MUTATIONS – what happens when something goes wrong.

Here is an example of some mutations in DNA…..

A

DNA - A T C G C T A G CAN YOU FIND THE MISTAKE

 T A G G G A T C

Mistake A: one base is wrong………A G is paired with a G.

* This is called a POINT mutation because it is only 1 base wrong.
* What will be the outcome? Maybe nothing, maybe death…we will get more involved later

B

DNA - A T C C T A G CAN YOU FIND THE MISTAKE

 T A G G G A T C

Mistake B: there is a missing base. Nothing is paired with G.

* This is called a deletion. Because a base has been deleted.
* This is also called a frame-shift mutation. Very BAD.

C

DNA - A T C G C T A G CAN YOU FIND THE MISTAKE

 T A G T G A G A T C

Mistake C: There is too many bases.

* This is called an insertion. Because bases were added.
* This is also a frameshift mutation. Very BAD.

What makes some mistakes worse than others?

Here is why. Use the chart to write the chain of amino acids coded for.



mRNA - AUG UUG CCG CCA GAU

* This has no mutations and the amino acid list below is a normal working protein

MET LEU PRO PRO ASP

Scenario ---point mutation

mRNA -- AUG UUG CCC CCA GAU

* Notice a C is there instead of G
* The new chain of amino acids will look like this

MET LEU PRO PRO ASP

Is there a difference? NO

Scenario ---- deletion

mRNA -- AUG UU CCG CCA GAU

* Notice the G in the second codon is missing
* NOW every 3 letters will be read…….like this

AUG UUC CGC CAG AU

* The chain will be……….

MET PHE ARG GLN

There is only one amino acid the same because it is “read” 3 letters at time so it changed everything. (insertions and deletions both cause this shift in the reading)