Create your own mutant Assignment Name: _____

Procedure:

- You are provided with DNA sequences (genes) that account for various proteins
- Transcribe and translate each of the sequences into the amino acids
- Grab a mutation for each of the genes and carry out the mutation.
- Explain the type of mutations that have occurred and why.
- After you have translated the *mutated* sequences into amino acids, go to the **Proteins sheet** and look for your protein produced
- Write out the proteins that were produced and the effects
- Finally draw or sketch out your mutant on a **separate piece of paper!**

DNA Sequences of each Protein

Eye Colour Protein

DNA sequence

5’ TAC GGG CCC TTT TTT GCG ACT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Skin Colour Pigment Protein

DNA sequence

5’ TAC TGC GCT AAC AAA CTA ACT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Hair Colour Protein

DNA sequence

5’ TAC TCA TCT GTC ACT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Intelligence Protein

DNA sequence

5’ TAC TCT GTC TTA CTA ATT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Myostatin Protein

DNA sequence

5’ TAC GCT TAA AGC CGA ACT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Skin Texture Protein

DNA sequence

5’ TAC TAA ATG GTT TCA ACT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Hair on Body protein

DNA sequence

5’ TAC GCT TCA TTA TTC CTA ACT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

X Factor Protein

DNA sequence

5’ TAC TGC GTA CGT CAG ATT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Wings Production Protein

DNA sequence

5’ TAC CCT CCG AAT AAT AAC ATT 3’

mRNA sequence

Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Limbs Production Proteins

DNA sequence

5’ TAC GTC CTG CAG GGT TTC ATT 3’

mRNA sequence

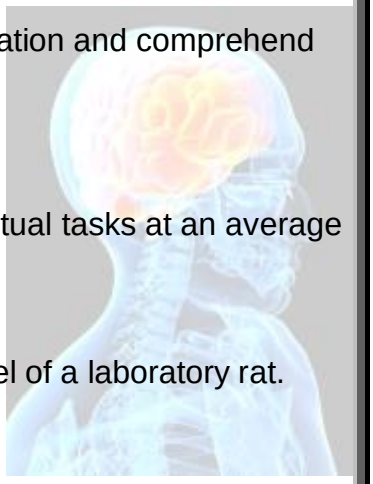
Amino Acid Sequence

What type of mutation and where?

What does this mutation cause or result in?

Proteins sheet

Intelligence Protein



High intelligence protein – This protein allows the creature to absorb information and comprehend new concepts fast. It can also allow the creature to perform telekinesis.

Met Arg Glu Asn Asp Stop

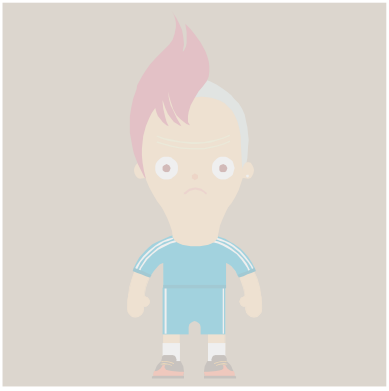
Medium intelligence protein – The creature with this protein perform intellectual tasks at an average level. Cannot perform telekinesis.

Met Arg His Asn Asp Stop

Low intelligence protein – The creature with this protein functions at the level of a laboratory rat.

Met Arg Gln Ser Asp Stop

Hair Colour



Red Hair Colour – This protein gives rise to flaming red hair colour

Met Ser Ser Gln Stop

Black Hair Colour – This protein gives rise to candid black hair colour

Met Val Asp Ser ~~~

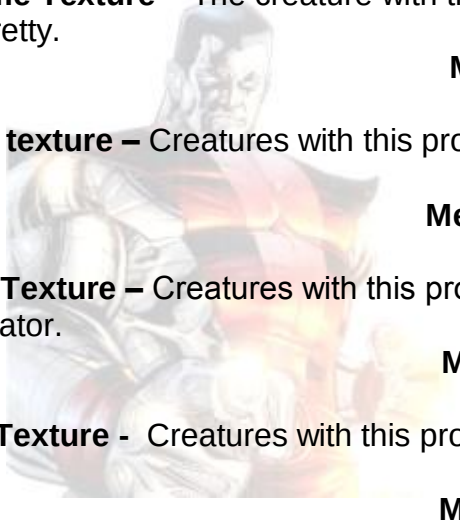
Blue hair colour – This protein gives rise to blazing blue hair colour

Met Ser Arg Stop Stop

Green Hair Colour – This protein gives rise to shady green hair colour

Met Ser Gln Thr Val

Skin Texture



Chrome Texture – The creature with this protein will have chrome as their skin. Yes they are shiny and pretty.

Met Ile Tyr Gln Ser Stop

Glass texture – Creatures with this protein will have glass as their skin cells. Yes they are brittle!

Met Thr Ile Phe Thr Lys Val

Metal Texture – Creatures with this protein will have metallic skin… yes they are like T-1000 from terminator.

Met Ser Tyr Gln Ser Stop

Lead Texture - Creatures with this protein will have lead as their skin. What do you think lead can do?

Met Ile Stop Gln Ser Stop

Myostatin Protein

The expression of this gene will produce the myostatin protein. This protein will *limit* muscle growth so muscles are not grown out of control. What will happen if your amino acid sequence is not affected? And what if it is affected?

Mutation 1 – Met Arg Ile Ser Ala Stop

Mutation 2 – Met Arg Ile Stop Ala Stop

Hair on Body

Hairy Mutation – Creature with this mutation will be incredibly hairy.

Met Arg Ser Asn Val Leu Arg Ile

Hairless mutation – Creature with this mutation will not have hair**.**

Met Arg Ser Asn Lys Asp Stop

Swirl mutation – Creature with this mutation will have hair that appear in swirls

Met Arg Ser Lys Asp Stop

X-Factor

These mutations give the creature the 'X' factor.

Regeneration protein – This protein will enable the creature to regenerate.

Met Thr Asp Ala Val Stop

Morph Protein – This mutated protein will allow the creature to morph by the special abilities of the protein.

Met Met Gln Ser

Camouflage Protein - This protein allows the creature to be camouflaged to its surroundings.

Met Thr His Val Val Stop

Eye Colour

Brown eye colour pigment

Met Pro Gly Lys Lys Lys Arg Stop

White eye colour pigment

Met Pro Gly Lys Thr Leu

Green eye colour pigment

Met Arg Gly Lys Lys Arg Stop

Red eye colour pigment

Met Arg Ala Lys Lys Arg Stop

Skin Colour

Blue skin cell pigment

Met Thr Arg Leu Pro Leu Ser

Green skin cell pigment

Met Thr Arg Leu Glu Stop

Red skin cell pigment

Met Ser Arg Leu Phe Glu Stop

Wings

These mutations will determine if your creature has wings or not.

This mutation will generate two additional wings

Met Ala Tyr Tyr Cys

This mutation will generate 4 additional wings

Met Gly Ala Ala Tyr Tyr Cys

Limbs

Mutations in this gene will give rise to extra limbs (quantity is up to you).

Mutation 1

Met Glu Ser Gln Ser

Mutation 2

Met Glu Asp Val Pro Lys Stop