

20/20

Name: Andres P.

Period: 1

### Simulating Protein Synthesis

#### Gene Data Table:

Gene A	Skin Color
DNA=	CCT - GCG - AAA
mRNA=	<del>BGA</del> - CGC - UUU
Amino Acids=	Gly - Arg - Phe
Trait =	Yellow Skin

Gene B	Hair Color
DNA=	TAG - TAG - GAT
mRNA=	AUC - AUC - CUA
Amino Acids=	ile - ile - Leu
Trait =	Black Hair

Gene C	Snorkel
DNA=	AAA - TTG
mRNA=	UUU - AAC
Amino Acids=	Phe - Asn
Trait =	3 Snorkel

Gene D	Eyes
DNA=	GGG - ATA - CTC
mRNA=	CCC - UAU - GAG
Amino Acids=	Pro - Tyr - Glu
Trait =	1 Eye

Gene E	Demeanor
DNA=	TGG - CTC - ATA
mRNA=	ACC - GAG - UAU
Amino Acids=	Thr - Glu - Tyr
Trait =	Nice

Gene F	Legs
DNA=	TCG - TTT
mRNA=	AGC - AAA
Amino Acids=	Ser - Lys
Trait =	4 Legs

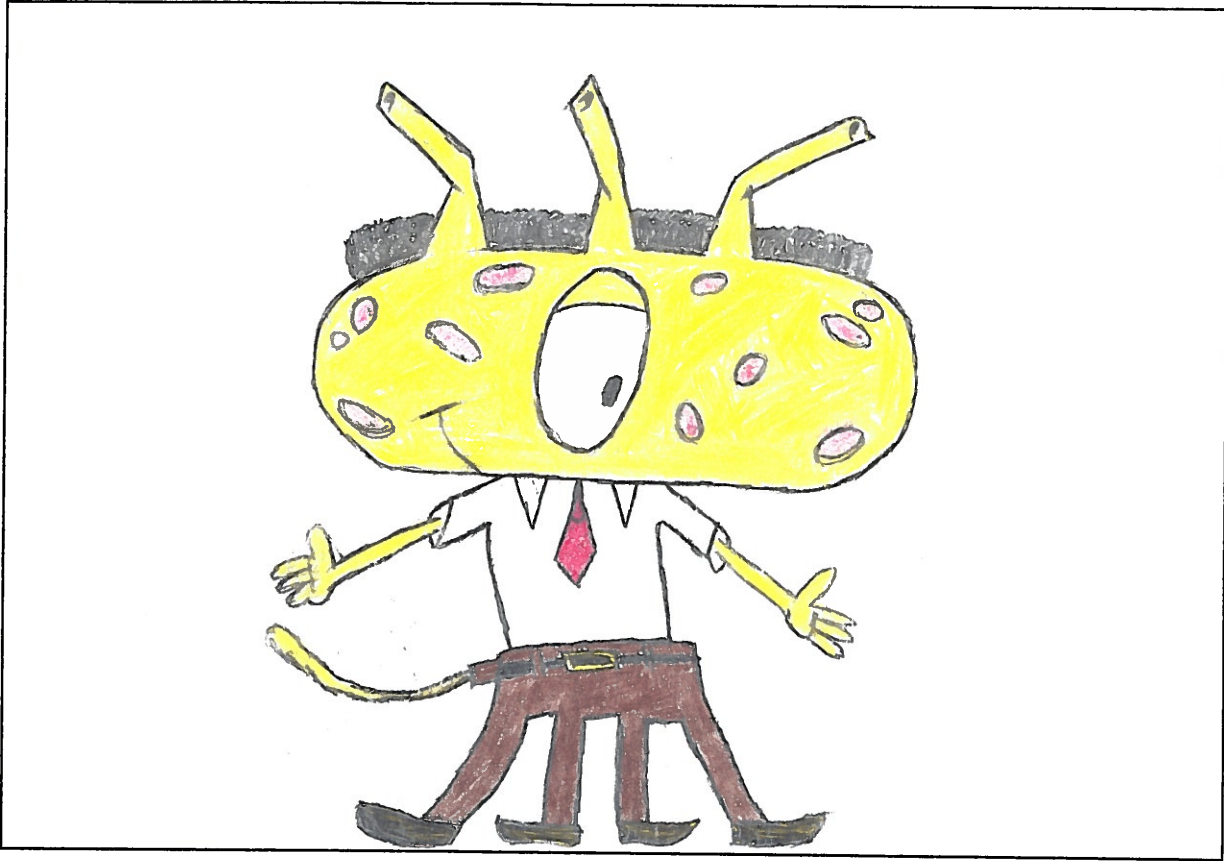
Gene G	Polka Dots
DNA=	CCA - TCC - TTT - GGG
mRNA=	GGU - AGG - AAA - CCG
Amino Acids=	Gly - Arg - Lys - Pro
Trait =	Pink Polka Dots

Gene H	Tail
DNA=	CCA - TTT - TTG
mRNA=	GGU - AAA - AAC
Amino Acids=	Gly - Lys - Asn
Trait =	Tail

Gene I	Arms
DNA=	TTA - TGC
mRNA=	AAU - ACG
Amino Acids=	Asn - Thr
Trait =	2 arms

9/9

Draw your Snork here:



Questions:

1. What are proteins made up of?

Amino acids

2. Where are proteins made? (name the cell organelle)?

Ribosomes

3. Define TRANSCRIPTION. Where does TRANSCRIPTION take place?

the process by which genetic information represented by a sequence of DNA nucleotides is copied into newly synthesized molecules of RNA.

4. What is the function of mRNA?

An intermediate message that is translated to form a protein.

5. What is a codon?

A three nucleotide sequence that codes for an amino acid.

6. What is the base pair rule for Transcription (DNA → mRNA)?

7. Define TRANSLATION. Where does TRANSLATION take place?

The process that converts, or translates, an mRNA message into a polypeptide.

8. What is the function of tRNA?

Brings amino acids from the cytoplasm to a ribosome to help make the growing protein.

20/20

Simulating Protein Synthesis

Gene Data Table:

Gene A	Skin Color
DNA=	CCT - GCG - ACG
mRNA=	GGA - CGC - UGC
Amino Acids=	Gly - Arg - Cys
Trait =	Blue skin

Gene B	Hair Color
DNA=	TAG - TAG - TTA
mRNA=	AUC - AUC - AAU
Amino Acids=	Ile - Ile - Asn
Trait =	Orange Hair

Gene C	Snorkel
DNA=	AAA - TTT
mRNA=	UUU - AAA
Amino Acids=	Phe - Lys
Trait =	1 Snorkel

Gene D	Eyes
DNA=	GGG - GGU - ATA
mRNA=	CCC - CCA - UAU
Amino Acids=	Pro - Pro - Tyr
Trait =	6 eyes

Gene E	Demeanor
DNA=	TGC - CCA - ATA
mRNA=	ACG - GGU - UAU
Amino Acids=	Thr - Gly - Tyr
Trait =	mean

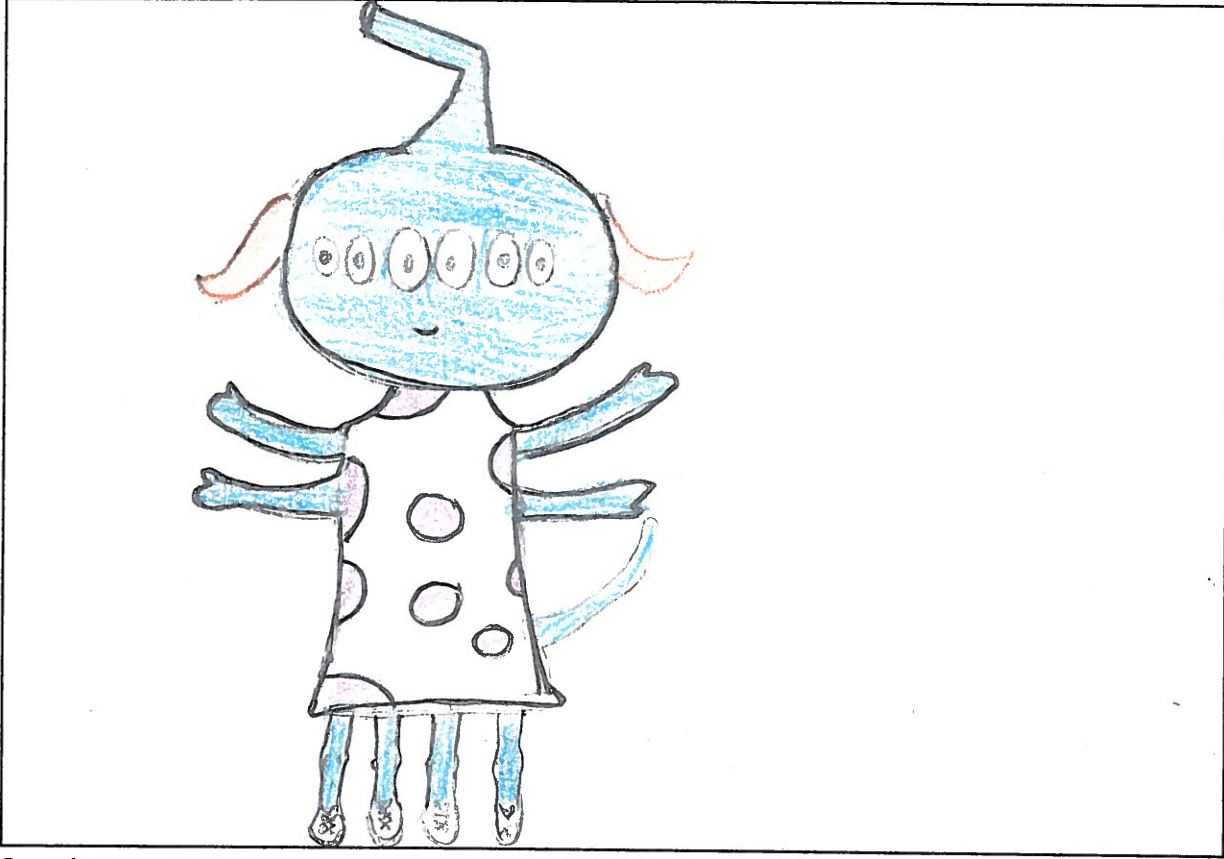
Gene F	Legs
DNA=	TCG - TTT
mRNA=	AGC - AAA
Amino Acids=	Ser - Lys
Trait =	4 legs

Gene G	Polka Dots
DNA=	CCA - TCC - TTT - GGG
mRNA=	GGU - ACC - AAA - CCC
Amino Acids=	Gly - Arg - Lys - Pro
Trait =	Pink Polka Dots

Gene H	Tail
DNA=	CCA - TTT - TTG
mRNA=	GGU - AAA - AAC
Amino Acids=	Gly - Lys - Asn
Trait =	Tail

Gene I	Arms
DNA=	TTA - GGT
mRNA=	AAU - CCA
Amino Acids=	Asn - Pro
Trait =	4 arms

Draw your Snork here:



3/3

Questions:

1. What are proteins made up of?  
a bunch of amino acids.
2. Where are proteins made? (name the cell organelle)?  
They are made in the cytoplasm
3. Define TRANSCRIPTION. Where does TRANSCRIPTION take place?  
process of copying a nucleotide sequence of DNA to form a complementary strand of mRNA  
NUCLEUS
4. What is the function of mRNA?  
form of RNA that carries genetic information from the nucleus to the cytoplasm
5. What is a codon?  
a sequence of three nucleotides that codes for one amino acid
6. What is the base pair rule for Transcription (DNA → mRNA)?  
A = U
7. Define TRANSLATION. Where does TRANSLATION take place?  
process by which mRNA is decoded, - place in cytoplasm
8. What is the function of tRNA?  
form of RNA that brings amino acids to ribosomes during synthesis

8/8

20/20

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DNA=	CCT - GCG - ACG
mRNA=	GGA - CGC - UGC
Amino Acids=	Gly - Arg - Cys
Trait =	Blue skin

Gene B	Hair Color
DNA=	TAG - TAG - TTA
mRNA=	AUC - AUC - AAU
Amino Acids=	Ile - Ile - Asn
Trait =	Orange hair

Gene C	Snorkel
DNA=	AAA - TTT
mRNA=	UUU - AAA
Amino Acids=	Phe - Lys
Trait =	1 snorkel

Gene D	Eyes
DNA=	GGG - GGU - ATA
mRNA=	CCC - CCA - UAU
Amino Acids=	Pro - Pro - Tyr
Trait =	6 eyes

Gene E	Demeanor
DNA=	TGC - CCA - ATA
mRNA=	ACG - GGU - UAU
Amino Acids=	Thr - Gly - Tyr
Trait =	mean

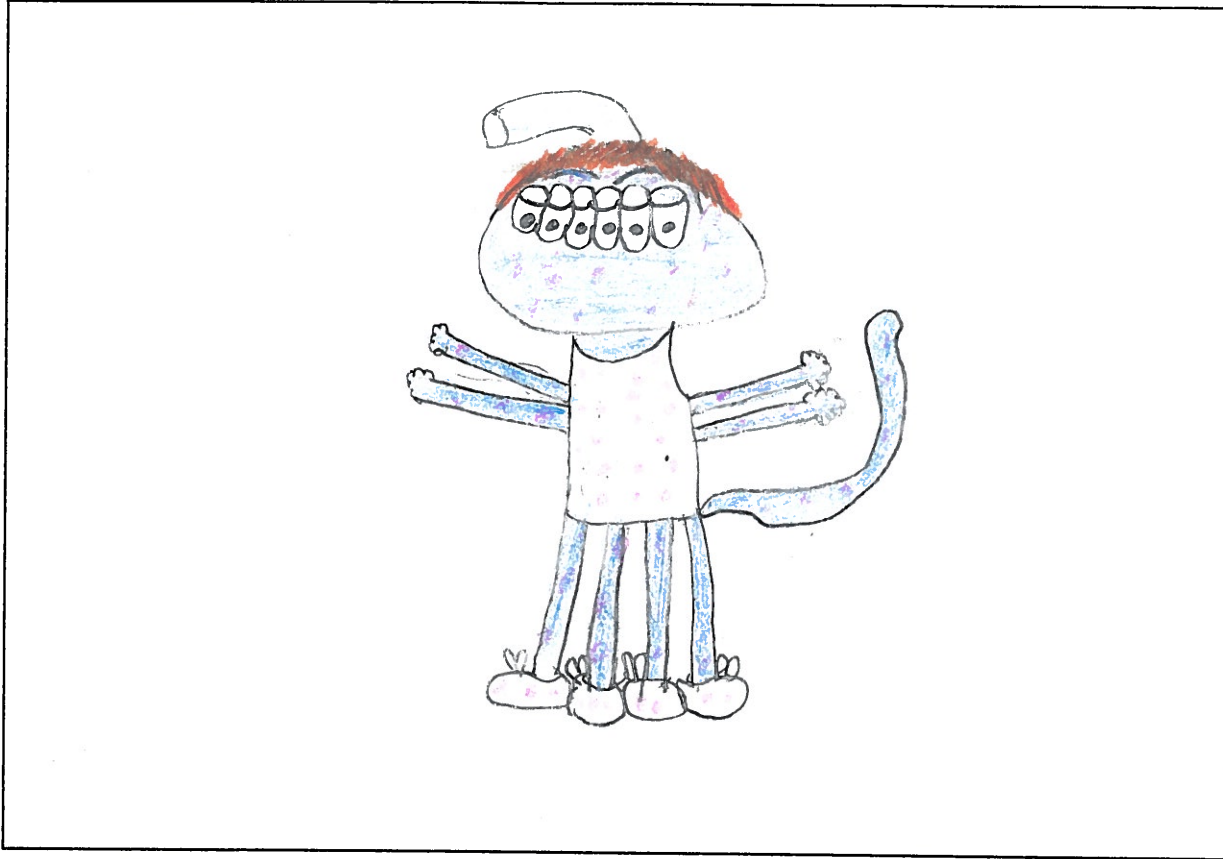
Gene F	Legs
DNA=	TCG - TTT
mRNA=	AGC - AAA
Amino Acids=	Ser - Lys
Trait =	4 legs

Gene G	Polka Dots
DNA=	CCA - TCC - TTT - GGG
mRNA=	GGU - AGG - AAA - CCC
Amino Acids=	Gly - Arg - Lys - Pro
Trait =	pink polka dots

Gene H	Tail
DNA=	CCA - TTT - TTG
mRNA=	GGU - AAA - AAC
Amino Acids=	Gly - Lys - Asn
Trait =	tail

Gene I	Arms
DNA=	TTA - GGT
mRNA=	AAU - CCA
Amino Acids=	Asn - Pro
Trait =	4 arms

Draw your Snork here:



3/3

Questions:

1. What are proteins made up of?  
proteins are a bunch of amino acids
2. Where are proteins made? (name the cell organelle)?  
mRNA, rRNA, tRNA
3. Define TRANSCRIPTION. Where does TRANSCRIPTION take place?  
transcription converts a DNA message into an intermediate molecule. It takes place
4. What is the function of mRNA?  
is an intermediate message that is translated to form protein.
5. What is a codon? is a three-nucleotide sequence that codes for an amino acid.
6. What is the base pair rule for Transcription (DNA -> mRNA)?  
The base rule is RNA polymerases.
7. Define TRANSLATION. Where does TRANSLATION take place?  
is the process that converts, or translates, an mRNA message into a polypeptide. It takes place in the polypeptide.
8. What is the function of tRNA?  
It brings amino acids from the cytoplasm to a ribosome to help make the growing protein.

8/8