From the Teacher:
McKay
Enh Biology, Acad
Period 4
Assignment week2-3

Distance learning 2020 wk 2-3

Exploring how DNA's genes influence physical characteristics (phenotype)

Reminder for how students need to do headers
From the Student:
Student Name
Teacher Name
Name of class
Period #
Assignment #

Wk2:Day 1 (turn in by 5/8/20): Gather Background information on how DNA's genes influence physical characteristics (phenotype) by storing the information on how to build specific proteins

a. Either Read p 177-180 from your textbook
b. OR watch the first 4 Amoeba sister's YouTube videos in their DNA, RNA, Protein synthesis compilation compilation
https://www.youtube.com/watch?v=8m6hHRlKwxY&list=PLwL0Myd7Dk1HK8gH2XIafNgQJD1dMX2aW

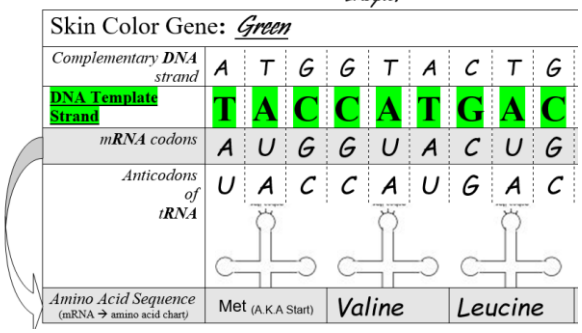
Wk2: Day 2 (turn in by 5/8/20) Think back to what you already knew about DNA and how gene's in DNA influence an organism's physical characteristics, how genes are passed from parent to offspring, mutations, gene expression -turning genes on and off different types of cells, etcetera. Now think about what you read/ watched yesterday.

- Write 1-2 thoughtful paragraphs about what you now understand about DNA etc., what still confuses, and what new questions you have.

Day 3-10 Creative project

Directions:

Wk2:Day 3 Finding patterns Question & Answer (turn in by 5/8/20)



A. What are the nucleotide base pairing rules (pattern) between DNA Template strand and its complementary DNA strand?
B. What are the nucleotide base pairing rules (pattern) between DNA Template strand and its mRNA codons strand?
C. What are the nucleotide base pairing rules (pattern) between mRNA codons strand and its tRNA anticodons strand?
D. Look up Valine (Val) on pg 180 fig. 10.11 of the text. There are 4 different mRNA codon sequences that code for Valine. They are - GUU, GUC, _____, & _____.
E. When determining the protein's Amino Acid sequence remember to look up the three letter _____ codon, not the tRNA anticodon.
F. What do you think the purpose of the arrow is on the image above?
G. What connections can you make between wk2-day 1&2's assignment and this finding patterns assignment?

Design a Dragon

You work for BioDesigns, a company in the 22st century that specializes in producing mythological animals.

Wk2: Days 4&5 (refer to pattern finding day 3 for example) (turn in by 5/8/20)

1. Decide what your dragon will look like. Select one item from each category. See options below.
2. Record the nucleotide sequence of the **DNA Template strand**.
3. Find the ***complementary DNA strand***.
4. Find the correct sequence of ***mRNA.***
5. Find the correct ***tRNA anticodon*** (challenge)
6. Using the genetic code find the correct ***amino acid sequence***

(College prep table on pg 209; Enhanced bio table on pg 180) or →

Codons Found in Messenger RNA

First Base	Second Base U	Second Base C	Second Base A	Second Base G	Third Base
U	Phe	Ser	Tyr	Cys	U
	Phe	Ser	Tyr	Cys	C
	Leu	Ser	Stop	Stop	A
	Leu	Ser	Stop	Trp	G
C	Leu	Pro	His	Arg	U
	Leu	Pro	His	Arg	C
	Leu	Pro	Gln	Arg	A
	Leu	Pro	Gln	Arg	G
A	Ile	Thr	Asn	Ser	U
	Ile	Thr	Asn	Ser	C
	Ile	Thr	Lys	Arg	A
	Met	Thr	Lys	Arg	G
G	Val	Ala	Asp	Gly	U
	Val	Ala	Asp	Gly	C
	Val	Ala	Glu	Gly	A
	Val	Ala	Glu	Gly	G

WK3: Days1-3 (turn in by 5/15/20)

1. **Draw and color your dragon on white paper to show off its LABELED PHENOTYPES (traits) based on its genes.**
2. **Write an Advertisement for your dragon drawing**
   a. **Be creative: Why should someone buy this dragon? How much does it cost? Any warnings? Etc.**
   b. **Be informative about the Biodesign's Biotech methods – Explain the basic connections between genes, protein synthesis and the dragon's ultimate phenotypes (physical aperance)**
   c. **Be brief (no more than 100 words)**

Wk3- Days4: (turn in by 5/15/20) Read pg 187-top of 189 (and if you like you may also watch Ameoba sisters Mutations (Updated) https://www.youtube.com/watch?v=vl6Vlf2thvI&list=PLwL0Myd7Dk1HK8gH2XIafNgQJD1dMX2aW&index=6

Wk3- Days5: (turn in by 5/15/20)

Write a 1-2 paragraph reflection explaining what you learned from the dragon project, the connections you made with the readings and how the different gene options would not exist without mutation, and what questions you still have about DNA's genes etc.

Options for wk2- day 4-5:

Skin Color Gene	DNA Template Strand
Green (partial example in day 3):	T A C C A T G A C C G G
Red:	T A C C A A C A T C G C
Black:	T A C C A G A A C C G T
Yellow:	T A C C A C C A T C A A

Scale Location Gene	DNA Template Strand
On the Head Only:	T A C G G A C G C C G T
On the Head and Tail:	T A C G G G A G A C G G
From the Head to Tail:	T A C C C A C G T C G C
On the Tail Only:	T A C C C G G G T C G G

Dragon Breath Gene	DNA Template Strand
Fire Breathing:	T A C G T A G C T C C C
Acid Spewing:	T A C G T G G T T C C A
Just Bad Breath:	T A C G T G G T A C C T

Wing Size Gene	DNA Template Strand
Large:	T A C A A A G G G A T A
Medium:	T A C A A G A T A A T G
Vestigial (useless/tiny):	T A C A T A G G T A T A
No Wings:	T A C T T G G G T A T G

Pigmentation Gene	DNA Template Strand
Spotted:	T A C A C A A C C C T G
Striped:	T A C C A A A C C C T A
Albino:	T A C A C G A C C T T G
Solid color:	T A C A C G A C C G T G

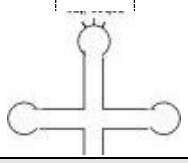
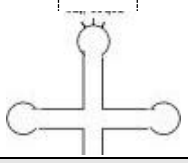
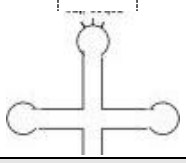
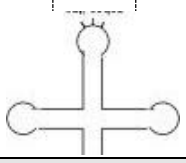
Behavior Gene	DNA Template Strand
Wily and Cunning:	T A C G T G C T T C C C
Pleasant:	T A C C A C C T C C C C
Evil and Conniving:	T A C G T A T G T C C T
Very Dumb Dragon:	T A C C C G A C G C C G

WK2 -days 4&5 worksheet below. If you are turning in online work, you do Not need to print the worksheet, you can fill in the document, delete all the directions stuff above, then save your work be sure to include your name as part of the file name OR do it on binder paper/ graph paper and turn in a picture

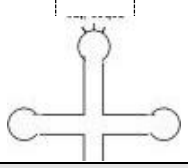
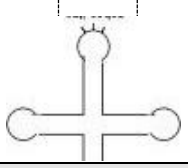
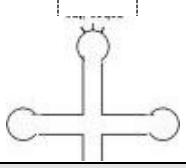
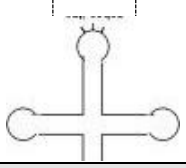
Student's Name: _____ Teacher: _____Period: _____

Design a Dragon Data sheet *wk2- day 4-5 (turn in by 5/8/20)*

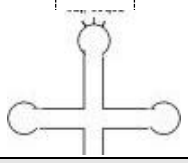
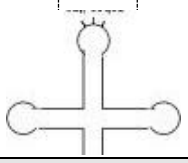
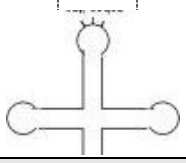
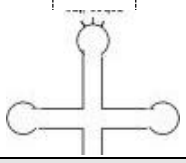
Skin Color Gene: _____

*Complementary **DNA** strand*											
DNA Template Strand	**T**	**A**	**C**								
*m**RNA** codons*	A	U	G								
*Anticodons of t**RNA***											
Amino Acid Sequence (mRNA → amino acid chart)	Met (A.K.A Start)										

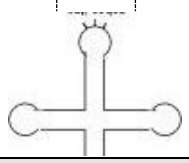
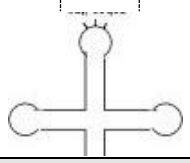
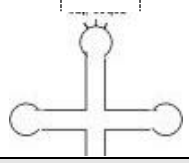
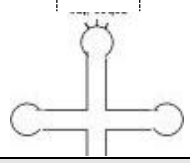
Scale location Gene: _____

*Complementary **DNA** strand*											
DNA Template Strand	**T**	**A**	**C**								
*m**RNA** codons*	A	U	G								
*Anticodons of t**RNA***											
Amino Acid Sequence (mRNA → amino acid chart)											

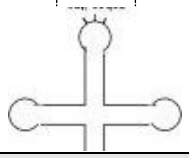
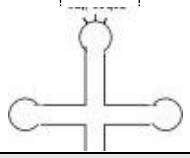
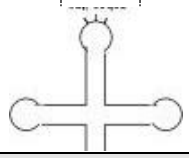
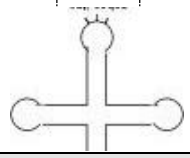
Dragon Breath Gene: _____

*Complementary **DNA** strand*											
DNA Template Strand	**T**	**A**	**C**								
*m**RNA** codons*	A	U	G								
*Anticodons of t**RNA***											
Amino Acid Sequence (mRNA → amino acid chart))											

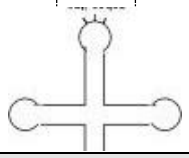
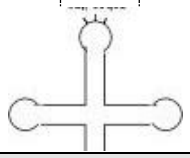
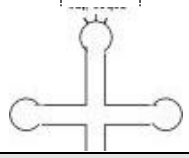
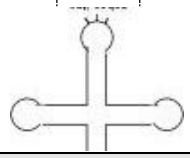
Wing Size Gene: _____

*Complementary **DNA** strand*				
DNA Template Strand				
*m**RNA** codons*				
*Anticodons of t**RNA***				
Amino Acid Sequence (mRNA → amino acid chart)				

Pigmentation Gene: _____

*Complementary **DNA** strand*				
DNA Template Strand				
*m**RNA** codons*				
*Anticodons of t**RNA***				
Amino Acid Sequence (mRNA → amino acid chart)				

Behavior Gene: _____

*Complementary **DNA** strand*				
DNA Template Strand				
*m**RNA** codons*				
*Anticodons of t**RNA***				
Amino Acid Sequence (mRNA → amino acid chart)				