Science 10 – Biology Unit Plan

1st Semester 2017/18

Name: _____   Teacher: Miss Neubauer

Big Idea: Genes are the foundation for the diversity of living things.

Knowledge Targets *"What do I need to know?"*		
Knowledge Targets *"What do I need to know?"*	1. I can <u>define</u> the following terms as they relate to our unit:	

Adaptation	**Extinction**	**Natural Selection**
Adaptive Radiation	**Gene**	**Nucleus**
Artificial Selection	**Genetics**	**Phenotype**
Carcinogen	**Genotype**	**Polyculture**
Cell	**Incomplete Dominance**	**Punnett Square**
Chromosome	**Monoculture**	**Selection Pressure**
Co-dominance	**Mutagen**	**Selective Breeding**
Complete Dominance	**Mutation**	**Sex-linked Inheritance**

2.	I know what is meant by the term <u>describe</u> and can apply it to scientific topics.
3.	I can <u>explain</u> what **DNA** is and how it relates to **cells**.
4.	I know that cells contain a nucleus. I can <u>state</u> what important "stuff" the **nucleus** contains.
5.	I can <u>state</u> what important "stuff" **chromosomes** and **genes** contain.
6.	I can <u>name</u> the "Father of Modern Genetics" and <u>explain</u> why he received this title including what he noticed when he carried out his experiments.
7.	I can <u>define</u> the two types of traits. I can give an example of each.
8.	I can <u>state</u> **positive**, **negative**, and **neutral** impacts of **mutations**.
9.	I can <u>list</u> **mutagens** and **carcinogens**.
10.	I can give an <u>example</u> of **adaptive radiation**.
11.	I can give <u>examples</u> of **selection pressure** including **adaptation**, **extinction**, and **invasive species**.
12.	I can give <u>examples</u> of **artificial selection** in agriculture including **monoculture** and **polyculture**.

	13.	I can give <u>examples</u> of artificial selection in the breeding of plants and animals.
	14.	I can give <u>examples</u> of the applications of genetics including genomics, GMOs, gene therapy, cloning, stem cells, reproductive technology, species, population and ecosystems, forensics, and genetic engineering.
Reasoning Targets *"What can I do with what I know?"*	15.	I can <u>explain</u> how DNA results in biodiversity.
	16.	I can <u>explain</u> how the structure of DNA is related to the function of DNA.
	17.	I can <u>determine</u> if characteristics are genetically inherited.
	18.	I can <u>apply</u> the laws of genetics to offspring.
	19.	I can <u>explain</u> how many traits an offspring (from sexual reproduction) gets from each parent.
	20.	I can <u>explain</u> how selective breeding helped people understand the rules of genetics.
Skill Targets *"What can I demonstrate?"*	21.	I can <u>gather</u> genetic data to study certain traits.
	22.	I can <u>use</u> a **Punnett Square** to solve genetics problems.
	23.	I can <u>calculate</u> the probability of offspring having specific genetic traits.
	24.	I can <u>use</u> knowledge of scientific concepts to draw conclusions that are consistent with evidence.
	25.	I can consider the changes in knowledge over time as tools and technologies have developed.
	26.	I can consider social ethical, and environmental implications of the findings.
	27.	I can critically <u>analyze</u> the validity of information in secondary sources and evaluate the approaches used to solve problems.
	28.	I can <u>communicate</u> scientific ideas, claims, information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations.
Product Targets *"What can I make or do to show my learning?"*	29.	I can <u>create</u> a game or activity to help other students learn about heredity.
	30.	I can <u>debate</u> the pros and cons of applications of genetics including ethical considerations (health, environmental, social, and political implications of modern genetics).

Assessments

Project Based Learning:

There will be one project in this unit. How does genetic engineering affect your life?

You will need to examine the social, economic, political, and historical implications. Your research will be presented to the class the week of 2 – 6 October 2017.

Assignment	Target / Goal	Your Score	Met Target?
Cell Model			
DNA Discovery Timeline			