# TERM 1: WEEK 9 – 10 (30th March – 10th April)

# Strand 2: Genetics

## Sub-strand 2.1 Mendelian Inheritance

### Lesson Activity 2.1

**The specific learning outcomes (SLO) targeted in this activity are provided below:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Specific Learning Outcomes:** Students are able to  | **Skill level** | **SLO code**  | **Achieved****(Yes / No)** |
| Explain how genotype is linked to phenotype | 3 | Bio2.1.3.1  |  |
| Define segregation, independent assortment, crossing over, incomplete dominance, codominance, multiple allele, sex-linked genes | 1 | Bio2.1.1.1 |  |
| Determine which phenotypes are dominant and which are recessive from given genetic cross results | 2 | Bio2.1.2.2 |  |
| Define the terms: dominant and recessive alleles, heterozygous, homozygous, multiple alleles, genotype, phenotype | 1 | Bio2.1.1.2 |  |
| Describe Mendelian characteristics using the terms dominant and recessive alleles, heterozygous, homozygous, multiple alleles, genotype, and phenotype | 2 | Bio2.1.2.3 |  |
| Describe the features of the following phenomena: complete dominance, incomplete dominance, and codominance | 2 | Bio2.1.2.4 |  |
| Discuss examples of complete dominance, incomplete dominance and codominance | 4 | Bio2.1.4.1 |  |
| Distinguish between monohybrid crosses from dihybrid crosses | 3 | Bio2.1.3.2 |  |
| Evaluate a punnet square to determine the characteristics of offsprings of a genetic cross | 4 | Bio2.1.4.2 |  |

**Instructions:**

1. Read Chapter 8 – Genetic variation, pages 76 – 78 only (independent assortment, segregation, crossing over)
2. Read Chapter 9 – Monohybrid inheritance, pages 81 – 92
3. Read Chapter 10 – Dihybrid inheritance, pages 93 – 100
4. If you have access to the internet, refer to Central School’s website: [www.centralschool.edu.vu](http://www.centralschool.edu.vu), Year 12 Biology folder Term 1 Week 8 – 9, to watch videos on mendelian inheritance and access other resources.
5. Answer the following questions.
6. Define the following terms:
7. Segregation:

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1. Independent assortment

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1. Crossing over

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1. Incomplete dominance

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1. Codominance

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1. Multiple allele

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1. Sex-linked genes

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1. Dominant allele

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1. Recessive allele

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1. Heterozygous

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1. Homozygous

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1. Multiple alleles

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1. Genotype

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1. Phenotype

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1. Describe Mendelian characteristics using the following terms:
2. dominant alleles

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1. recessive alleles

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1. heterozygous

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1. homozygous

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1. multiple alleles

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1. genotype

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1. phenotype

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1. Describe the features of the following phenomena:

1. Complete dominance

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1. Incomplete dominance

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1. Codominance

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1. Explain the differences between monohybrid crosses and dihybrid crosses.

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1. Discuss examples of complete dominance, incomplete dominance, and co-dominance.

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1. A non-barking female dog (bb) was mated to a barker dog (BB). The proportion of their puppies were – 3 barkers : 1 non-barking.

Determine the :

1. dominant phenotype :

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1. recessive phenotype :

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1. Explain the relationship between genotype and phenotype.

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1. In mice, the allele for black hair colour (B) is dominant to that for brown (b) ; the allele for short hair (H) is dominant to that for long hair (h). A male pure breeding for short black hair was mated with a female pure breeding for long brown hair.

Using a punnett square, determine the characteristics of the offsprings. Your answer must include the followings :

* Genotypes of the parents
* Punnett square
* Genotypes of the offsprings
* Phenotypes of the offsprings

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