S3 Bio Genetics Learning Outcome Checklist

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| Activity | -/+/\* | By the end of this unit you should know…. |
| Variation |  | * The differences between individuals in a population is called **variation** * Each way that individuals in a population vary is called a **characteristic.** * The particular version of a characteristic seen in an individual is described as their **phenotype**. * Characteristics can show **discrete** variation or **continuous** variation * Characteristics that fall into **separate categories** show discrete variation. * Characteristics that show a **wide range of values** are described as continuous variation. * You should be able to give several **examples** of each type of variation |
| DNA |  | * The genetic material of a cell is found in the **nucleus,** on thread like structures called **chromosomes.** * Chromosomes are made of long strands of **DNA.** * A **gene** is a section of DNA on a chromosome * Genes contain the **instructions that control** **characteristics**. * Each species has a **characteristic number** of chromosomes. * **Gel electrophoresis** is a technique that can be used in DNA profiling |
| Genes |  | * Genes are **inherited** from parents * A **gamete** is a sex cell * Each gamete contains **one set of genes** on its chromosomes * Each organism receives **two copies** of each gene (one from the gamete of each parent) * **Alleles** are different versions of a gene that contain different instructions for a characteristic * The particular version of a characteristic seen in an individual is described as their **phenotype**. * The **genotype** of an organism is the alleles it has for a characteristic. * A **dominant** allele will mask the effect of a recessive allele * A **recessive** allele will only be shown in the phenotype if two copies of it are inherited * If the two alleles an organism inherits are identical it is said to be **homozygous** for that characteristic. * If the two alleles an organism inherits are different it is said to be **heterozygous** for that characteristic. |
| Monohybrid inheritance |  | * A **Punnet** **square** is a grid that shows the possible combinations of alleles that can result at fertilisation. * **P** is the parents in a genetic cross * **F1** is the first generation of offspring in a genetic cross * **F2** is the second generation of offspring in a genetic cross * **Predicted** **ratio** is the proportion of each type of phenotype expected as the result of a genetic cross * **Actual ratio is** the proportion of each phenotype in the real offspring of a genetic cross * A **pedigree chart** is a diagram that displays the phenotypes of individuals in several generations of a family. |
| Sex determination |  | * The sex chromosome found in both males and females is the **X chromosome** * The sex chromosome found only in males is the **Y chromosome** * **XX** = female in humans, **XY** = male in humans |
| Karyotypes |  | * A **karyotype** shows a picture of the chromosomes in one cell of a species * **Downs syndrome** is a genetic disorder where there is an extra copy of chromosome 21. |