**POPULATION GENETICS CALCULATIONS**

* **TONGUE ROLLING – The ability to curl up your tongue into a U-Shape.**



* **A population of 20 humans were sampled. The population was asked to roll their tongue, also, each individual was asked to give a DNA sample for analysis.**
* **For tongue shape muscle control – there is one gene with two different alleles.**
* **Allele U (dominant) – has the DNA base sequencing : ATA GGC CCT ATT GCC**

**Allele u (recessive) – has the DNA base sequencing: ATA GTT CCT ATG GGC**

**Here are the Genotypes for the 20 individuals that were sampled:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **UU** | **Uu** | **UU** | **Uu** | **UU** |
| **uu** | **UU** | **Uu** | **Uu** | **uu** |
| **Uu** | **Uu** | **Uu** | **UU** | **UU** |
| **Uu** | **UU** | **Uu** | **uu** | **Uu** |

**For the above population answer the following questions:**

1. **A) List the two possible PHENOTYPES in the population:**

**B) List the three possible GENOTYPES in the population:**

**C) List the two possible ALLELES in the population:**

1. **Calculate the "PHENOTYPIC RATIO". – In other words, what percentage of the population can roll their tongues vs what percentage of the population cannot roll their tongues?**
2. **Tongue Rolling Percentage :**
3. **Non-Rolling Percentage:**
4. **Calculate the "GENOTYPIC RATIO" – In other words, what percentage of the population are "UU", vs what percentage of the population are "Uu", versus what percentage of the population are "uu"?**
5. **Percentage of population that are "UU":**
6. **Percentage of population that are "Uu":**
7. **Percentage of population that are "uu":**
8. **Calculate the "ALLELIC FREQUENCY" – In other words, what percentage of the alleles in the population are "U" vs what percentage of the alleles in the population are "u"?**
9. **Frequency of "U" allele in population:**
10. **Frequency of "u" allele in population:**