**The SNORK Family**

How does DNA determine the traits of an organism?

Introduction:

In this simulation, you will examine the DNA sequence of a fictitious organism- the snork. Snorks were discovered on the planet Dee Enae in a distant solar system. Snorks only have one chromosome with ten genes on it. Your job is to analyze the genes of its DNA and determine what traits the organism has and then sketch the organism (you can be creative here).

For simplicity, the gene sequences are much smaller than “real” gene sequences found in living organisms. Each gene has two versions that result in a different trait being expressed in the snork.

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| **Genes** | **Amino Acid Sequence** | **Description** |
| Gene 1- body covering | Val- ser- leu  Val-ser-lys | Hairless  Hairy |
| Gene 2- body style | Tyr-pro-glu-glu-lys  Val-pro-thr-pro-lys | Plump  Skinny |
| Gene 3-legs | Leu-leu-leu-pro  Leu-leu-ser-ala | 3 legged  2 legged |
| Gene 4- head shape | Ala-val-val  Val-ala-ala | Round head  Square head |
| Gene 5- tails | His-iso  His-his | Tail  No tail |
| Gene 6- body pigment | Ser-pro-val  Val-phe-tyr | Blue pigment(hair/skin)  Red pigment (hair/skin) |
| Gene 7-eyes | Asp-iso-leu-leu-pro-thre  Asp-iso-pro-pro-pro-thre | Small slanted eyes  Large round eyes |
| Gene 8- mouth  Gene 9- ears  Gene 10-arms | Val-asp-asp-ala  Asp-asp-asp-ala  Phe-ser-hist  Phe-phe-hist  Arg-tyr-cys-lys  Arg-arg-asp-thre | Circular mouth  Rectangular mouth  Pointed standing-up ears  Rounded floppy ears  Long spaghetti like arms  Short stumpy arms |

Each of the following DNA samples were taken from volunteer snorks. Your job is to analyze each DNA sample and determine the phenotype (how the organism looks) based on the sequence. The genes are in order from gene 1 to gene 9. Once you have successfully determined each Snork’s phenotype, create a family picture of the happy Snorks.

**Snicker Snork** -DNA

TAC I CAG TCG TTT I ATG GGG GTT GTC TTT I GAG AAT TCA CGC I CGA CAA CAC I GTA GTA I CAA AAA ATG I TTA TAG AAT GAC GGG TGG I TTA TTG TTA CGG I AAA AGA GTG I TCT TCC TTA TGG I ATT

**Snuffle Snork**-DNA

TAC I CAT AGA TTT I CAA GGA TGA GGT TTC I GAA GAG GAG GGG I CAA CGC CGA I GTA GTG I CAT AAA ATA I TTA TAA GAA GAC GGG TGT I TTA TTA TTA CGT I AAG AGC GTG I GCA ATA ACG TTT I ATT

**Snapple Snork**-DNA

TAC I CAG TCG TTT I ATG GGG GTT GTC TTT I GAG AAT TCA CGC I CAA CGC CGA I GTG TAA I AGA GGG CAT I TTA TAA GAG GAG GGG TGG I CAA TTA TTA CGT I AAG AAA GTA I GCA ATA ACG TTT I ATT

**Snoopy Snork**-DNA

TAC I CAT AGG GAG I ATG GGG GTT GTC TTT I AAT GAG GAC GGG I CAC CGT CGA I GTA TAA I AGA GGG CAT I TTG TAA GAA GAC GGG TGT I TTA TTG TTA CGG I AAA AAG GTG I TCT TCC TTA TGG I ATT