

Name☺: \_\_\_\_\_

Date: \_\_\_\_\_

Science 7

Period: \_\_\_\_\_

## **DNA, RNA, and SNORKS!**

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 eight 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.

Genes	Amino Acid Sequence	Description
Gene 1 - body covering	met-val - ser - leu	hairless
	met-val - ser - lys	hairy
Gene 2 - body style	met-tyr - pro - glu - glu - lys	plump
	met-val - pro - thr - glu - lys	skinny
Gene 3 - legs	met-leu - leu - leu - pro	3 legged
	met-leu - leu - ser - ala	2 legged
Gene 4 - head shape	met-ala - val - val	round head
	met-val - ala - ala	square head
Gene 5 - tails	met-his - ile	tail
	met-his - his	no tail
Gene 6 - body pigment	met-ser - pro - val	blue pigment (hair/skin)
	met-val - phe - tyr	red pigment (hair/skin)
Gene 7 - eyes	met-asp - ile - leu - leu - pro - thre	small square eyes
	met-asp - ile - pro - pro - pro - thre	large round eyes
Gene 8 - mouth	met-val - asp - asp - ala	circular mouth
	met-asp - asp - asp - ala	rectangular mouth
Gene 9 - ears	met-phe - ser - gly	pointed standing-up ears
	met-phe - phe - gly	rounded floppy ears
Gene 10 - arms	met-arg - tyr - cys - lys	long spaghetti like arms
	met-arg - arg - asp - thre	short stumpy arms

Each of the following DNA samples was taken from volunteer Snorks. The DNA was then transcribed to its complementary RNA strand. Your job is to analyze the RNA sample and determine the phenotype (how the organism looks) based on the sequence. Remember that AUG is a start codon, and it signifies the beginning of each gene. UAA, UGA, UAG are stop codons and signify the end of a gene. The genes are in order from gene 1 to gene 9. Use your codon chart.

### *Snicker Snork*

Gene 1: AUG | GUC AGC AAA | UAA  
Gene 2: AUG | UAC CCC GAA GAG AAA | UAA  
Gene 3: AUG | CUC UUA AGU GCG | UAA  
Gene 4: AUG | GCU GUU GUG | UGA  
Gene 5: AUG | CAU CAU | UGA  
Gene 6: AUG | GUU UUU UAC | UGA  
Gene 7: AUG | GAU AUC UUA CUG CCC ACC | UAG  
Gene 8: AUG | GAC GAC GAU GCC | UAG  
Gene 9: AUG | UUU UCU GGG | UAG  
Gene10: AUG | AGA UAU UGU AAA | UAA

### *Snuffle Snork*

Gene 1: AUG | GUA UCU AAA | UAA  
Gene 2: AUG | GUU CCU ACU GAA AAG | UAA  
Gene 3: AUG | CUU CUC CUC CCC | UAA  
Gene 4: AUG GUU GCG GCU | UGA  
Gene 5: AUG CAU CAC | UGA  
Gene 6: AUG | GUA UUU UAU | UGA  
Gene 7: AUG GAU AUU CUU CUG CCC ACA | UAG  
Gene 8: AUG GUU GAC GAC GCA | UAG  
Gene 9: AUG UUC UCG GGU | UAG  
Gene 10: AUG AGA UAU UGU AAA | UAA

### *Snapple Snork*

Gene 1: AUG | GUC AGC CUU | UAA  
Gene 2: AUG | GUU CCC ACA GAA AAA | UAA  
Gene 3: AUG | CUC UUA AGU GCG | UAA  
Gene 4: AUG | GUU GCG GCU | UGA  
Gene 5: AUG | CAC AUU | UGA  
Gene 6: AUG | UCU CCC GUA | UGA  
Gene 7: AUG | GAU AUU CCC CCC CCC ACC | UAG  
Gene 8: AUG | GAU GAC GAC GCA | UAG  
Gene 9: AUG | UUC UUU GGG | UAG  
Gene 10: AUG | CGC CGG GAC ACA | UAA

### *Snoopy Snork*

Gene1: AUG | GUA UCC CUC | UAA  
Gene2: AUG | UAC CCC GAG GAA AAA | UAA  
Gene3: AUG | UUA UUA CUG CCC | UAA  
Gene4: AUG | GCU GUU GUA | UGA  
Gene5: AUG | CAU AUU | UGA  
Gene6: AUG | UCU CCC GUA | UGA  
Gene7: AUG | GAU AUU CUU CUG CCC ACA | UAG  
Gene8: AUG | GUU GAU GAU GCC | UAG  
Gene9: AUG | UUU UCU GGU | UAG  
Gene10: AUG | CGC CGU GAC ACA | UAA

