

**NAME:** \_\_\_\_\_

## **SNORK**

### **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. Your job is to analyze the mRNA and determine what traits the organism has.

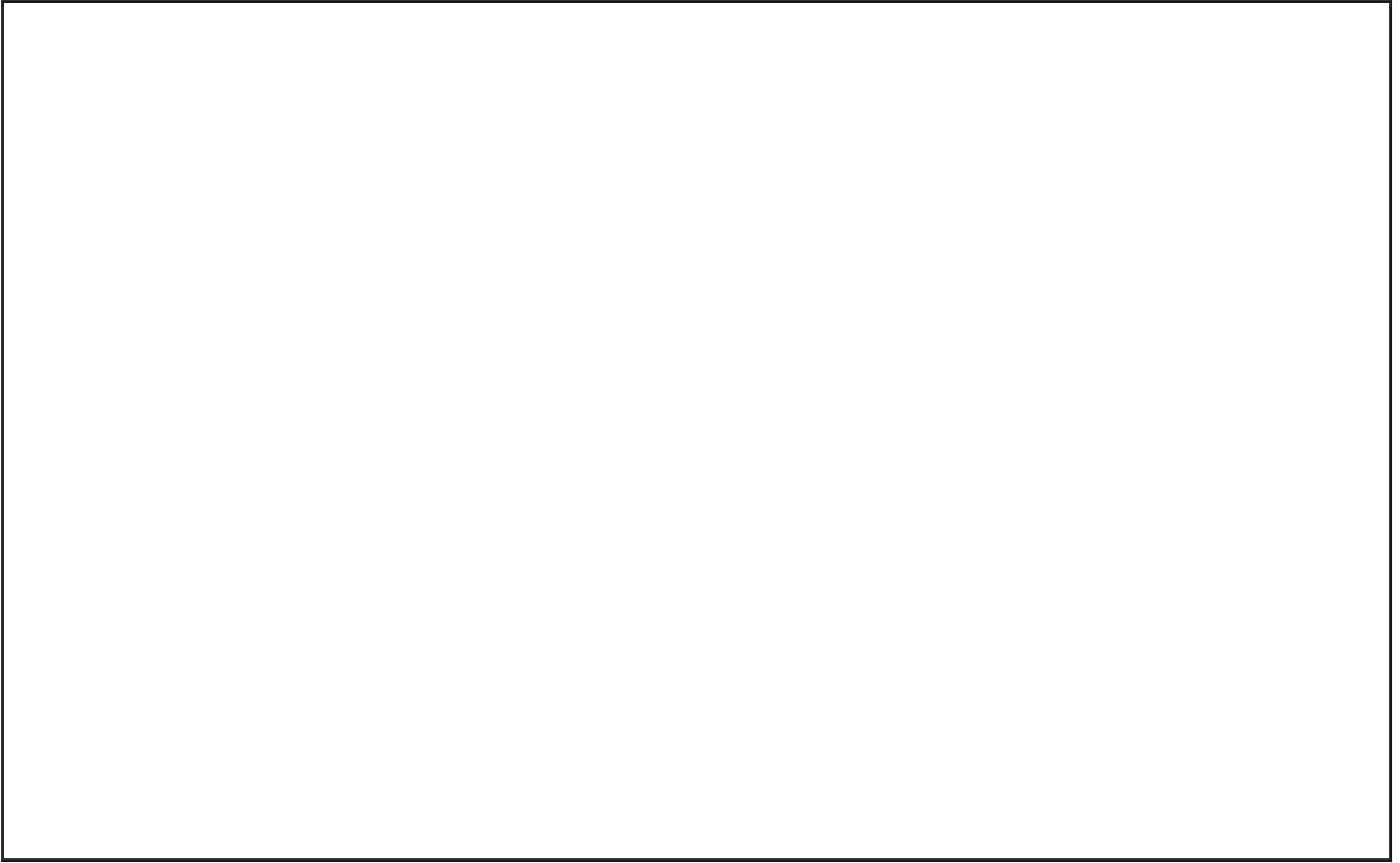
Genes	Amino Acid Sequence	Description
Gene 1 - body covering	val - ser - leu	hairless
	val - ser - lys	hairy
Gene 2 - body style	tyr - pro - glu - glu - lys	plump
	val - pro - thr - glu - lys	skinny
Gene 3 - legs	leu - leu - leu - pro	3 legged
	leu - leu - ser - ala	2 legged
Gene 4 - head shape	ala -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

### **Observations and Analysis of Snork DNA**

You are given a chromosome from a Snork with the following sequence. Your job is to determine the sequence of amino acids for your specimen. Write the complimentary mRNA, tRNA, the amino acid (A.A.) sequence it codes for and the related trait in the chart below. You will need the help of a codon chart (pg 307) to determine the amino acid.

DNA	
mRNA	AUG   GUC AGC AAA   UAC CCC GAA GAG AAA   CUC UUA AGU GCG   GCU GUU GUG   CAU CAU   GUU UUU UAC     GAU AUC UUA CUG CCC ACC   GAC GAC GAU GCC   UUU UCU GGG   AGA UAU UGU   UAA
tRNA	
A.A.	
Trait	

Draw your Snork in the space below. Be creative!



## Mutations

In each of the following DNA sequences, you will use the mRNA and amino acid sequences to identify the mutation that occurred and the effects of each, if any. Look and analyze carefully!

**Original DNA Sequence:** T A C A C C T T G G C G A C G A C T

**mRNA Sequence:** \_\_\_\_\_

**Amino Acid Sequence:** \_\_\_\_\_

**Mutated DNA Sequence :** T A C A T C T T G G C G A C G A C T

What's the mRNA sequence? (Circle the change) \_\_\_\_\_

What will be the amino acid sequence? \_\_\_\_\_

Will there likely be effects? \_\_\_\_\_

Using the amino acid chart, analyze the information below, and determine the effect of the mutation on the protein.

**Original mRNA:** AUG UCA GGA AAU UAA

**Original protein:** Start- serine-glycine-aspar-stop

**Mutated mRNA:** AGG UCA GGA AAU UAA

**Mutated protein:** \_\_\_\_\_

Where do mutations occur? Think big and small.

Are all mutations harmful?

Can mutations be corrected? If so how? If not what happens? If both, explain both.