

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	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

Each of the following DNA samples was taken from volunteer snorks. The DNA was then transcribed to its complimentary 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 is a stop codon and signifies the end of a gene. The genes are in order from gene 1 to gene 9. Your teacher may assign you one or all of the samples to analyze. Use the codon chart in your text or print one from the web: [codon chart](#)

Snicker Snork

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

Snuffle Snork

AUG | GUA UCU AAA | GUU CCU ACU GAA AAG | CUU CUC CUC CCC | GUU GCG GCU | CAU CAC |

| GUA UUU UAU | GUA AUU CUU CUG CCC ACA | GUU GAC GAC GCA | UUC UCG GGU | AGA UAU UGU | UAA

Snapple Snork

AUG | GUC AGC CUU | GUU CCC ACA GAA AAA | CUC UUA AGU GCG | GUU GCG GCU | CAC AUU |

| UCU CCC GUA | GAU AUU CCC CCC CCC ACC | GAU GAC GAC GCA | UUC UUU GGG | CGC CGG GAC | UAA

Snoopy Snork

AUG | GUA UCC CUC | UAC CCC GAG GAA AAA | UUA UUA CUG CCC | GCU GUU GUA | CAU AUU |

| UCU CCC GUA | GAU AUU CUU CUG CCC ACA | GUU GAU GAU GCC | UUU UCU GGU | CGC CGU GAC | UAA

		Seconed Position									
		U		C		A		G			
		code	Amino Acid	code	Amino Acid	code	Amino Acid	code	Amino Acid		
First Position	U	UUU	phe	UCU	ser	UAU	tyr	UGU	cys	U	
		UUC		UCC		UAC		UGC		C	
		UUA	leu	UCA		UAA	STOP	UGA	STOP	A	
		UUG		UCG		UAG	STOP	UGG	trp	G	
	C	CUU	leu	CCU	pro	CAU	his	CGU	arg	U	
		CUC		CCC		CAC		CGC		C	
		CUA		CCA		CAA	gln	CGA		A	
		CUG		CCG		CAG		CGG		G	
	A	AUU	ile	ACU	thr	AAU	asn	AGU	ser	U	
		AUC		ACC		AAC		AGC		C	
		AUA		ACA		AAA	lys	AGA	arg	A	
		AUG	met	ACG		AAG		AGG		G	
	G	GUU	val	GCU	ala	GAU	asp	GGU	gly	U	
		GUC		GCC		GAC		GGC		C	
		GUA		GCA		GAA	glu	GGA		A	
		GUG		GCG		GAG		GGG		G	
		Third Position									