

Mutations: The Effect on Phenotype
Worksheet 2 Transcription and Translation

Transcribe each of the following two DNA sequences (nucleotides 142 to 171 of each PTC taste receptor sequence) into RNA. Then, use the provided amino acid table to translate the RNA into an amino acid sequence.

"TR"	DNA	GTC	GGT	GAC	TCG	TTG	TCA	CTA	ACA	CAC	GAC
	RNA										
	AA										

"NT"	DNA	GTC	CGT	GAC	TCG	TTG	TCA	CTA	ACA	CAC	GAC
	RNA										
	AA										

Transcribe each of the following DNA codons from each PTC taste receptor into RNA. Then, use the amino acid table to translate the RNA into an amino acid.

Nucleotide position 785				Nucleotide position 886			
"TR"	DNA	CGA		"TR"	DNA	CAG	
	RNA				RNA		
	AA				AA		

"NT"	DNA	CAA		"NT"	DNA	TAG	
	RNA				RNA		
	AA				AA		

How many differences are found in the amino acid sequences of "TR" and "NT"? _____

How could these differences affect the function of the protein? _____

How can we test if TR and NT differ in their ability to taste PTC? _____

Why would it be beneficial to have the ability to taste PTC? _____

Could it be harmful to not be able to taste PTC? Why? _____

Could it be beneficial to not taste PTC? _____