

**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.

<b>"TR"</b>	<b>DNA</b>	GTC	GGT	GAC	TCG	TTG	TCA	CTA	ACA	CAC	GAC
	<b>RNA</b>										
	<b>AA</b>										

<b>"NT"</b>	<b>DNA</b>	GTC	CGT	GAC	TCG	TTG	TCA	CTA	ACA	CAC	GAC
	<b>RNA</b>										
	<b>AA</b>										

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.

<b>Nucleotide position 785</b>				<b>Nucleotide position 886</b>			
<b>"TR"</b>	<b>DNA</b>	CGA		<b>"TR"</b>	<b>DNA</b>	CAG	
	<b>RNA</b>				<b>RNA</b>		
	<b>AA</b>				<b>AA</b>		

<b>"NT"</b>	<b>DNA</b>	CAA		<b>"NT"</b>	<b>DNA</b>	TAG	
	<b>RNA</b>				<b>RNA</b>		
	<b>AA</b>				<b>AA</b>		

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? \_\_\_\_\_