


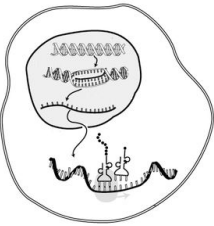
1.7 Human Albinism at the Molecular Level

Name: _____ Hr: ____

Albinism is a group of inherited disorders that results in little or no production of the protein pigment melanin, which determines the color of the skin, hair and eyes. There are different types of albinism. One common type is called Oculocutaneous albinism (OCA) and involves the eyes, hair and skin. Individuals with OCA type 1A have an inactive tyrosinase protein. Tyrosinase is the enzyme that synthesizes melanin. If tyrosinase is inactive, the Melanocyte cells in the skin, hair, and eyes do not have melanin in their vesicles.

Adapted from - NIH <https://rarediseases.info.nih.gov/diseases/5768/albinism>



Organisms	Humans with normal skin pigmentation.					Humans with Albino trait (OCA1 type albinism)					
Cells How do cells influence the observable trait? 											
Molecules What do you think is happening on the molecular level? 	Protein	Are these two proteins the likely to be the same shape? Why or why not?									
	Is the amino acid Hydrophilic?										
	Amino Acids										
	RNA										
DNA	TAC	TAA	TGC	CGG	ACT	TAC	TAA	TTC	CGG	ACT	

Hydrophobic (water fearing) Amino Acids	Hydrophilic (water loving) Amino Acids
Gather on the inside of the protein away from water.	Gather on the outside of the protein forming hydrogen bonds with water
Alanine (Ala) Isoleucine (Ile) Leucine (Leu) Methionine (Met) Phenylalanine (Phe) Valine (Val) Proline (Pro)	Glutamine (Glu) Asparagine (Asn) Histidine (His) Serine (Ser) Threonine (Thr) Tyrosine (Tyr) Cysteine (Cys) Tryptophan (Trp)

		Second letter					
		U	C	A	G		
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	U C A G	
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	U C A G	
	A	AUU } AUC } Ile AUA } AUG Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G	
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G	
						Third letter	

