

How does DNA determine the traits of an Ice Cream Sundae?

Purpose is to examine the DNA sequence of an ice cream sundae. Ice Cream Sundaes only have one chromosome with 10 genes on it.

Procedure:

You must analyze the genes of its DNA to determine what traits the sundae has and then create a model of your ice cream sundae. These genes must be assembled in order 😊

1. Transcribe your DNA sequence into a mRNA sequence (do not forget to break your sequence into codon segments).
2. Use a genetic code chart to translate your mRNA codons into amino acids.
3. Use the amino acid sequence to determine what trait (phenotype) each gene will express for your ice cream sundae.
4. After completing step 3 – ask your teacher to verify the accuracy of your ice cream sundae gene expression.

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 on a sundae.

Genes	Amino Acid Sequence	Description
Gene 1 – ice cream type	MET-VAL- SER- LEU-STOP	Chocolate
	MET-VAL- SER- LYS-STOP	Vanilla
Gene 2 – ice cream type	MET-TYR – PRO- GLU- GLU- LYS-STOP	Fudge Swirl
	MET-VAL- PRO- THR- GLN- LYS-STOP	Neopolitan
Gene 3 –	MET-LEU- LEU- LEU- PRO-STOP	M&M’s
	MET-LEU- LEU- SER- ALA-STOP	Chocolate Chips
Gene 4 –	MET-ALA- VAL- VAL-STOP	Redi-Whip
	MET-VAL- ALA- ALA-STOP	Marshmallows
Gene 5 –	MET-HIS – ILE-STOP	Twix
	METH-HIS- HIS-STOP	Kit Kat
Gene 6 –	MET-SER- PRO- VAL-STOP	Chocolate Syrup
	MET-VAL- PHE- TYR-STOP	Caramel Syrup
Gene 7 –	MET-ASN- ILE- LEU- LEU- PRO-THR-STOP	Oreos
	MET-ASN- ILE- PRO- PRO- PRO-THR-STOP	Jelly Beans
Gene 8 –	MET-VAL- ASN- ASN- ALA-STOP	Snickers Bites
	MET-ASN- ASN- ASN- ALA-STOP	Reeses Pieces
Gene 9 –	MET-PHE- SER- GLY-STOP	Round Sprinkles
	MET-PHE- PHE- GLY-STOP	Shaped (not round) Sprinkles
Gene 10 –	MET-ARG- TYR- CYS- LYS-STOP	Cherry
	MET-ARG- ARG- ASN- THR-STOP	Strawberry