BLAST: Protein to Disease							
Names:							
Group:							
	Connect the dotsDNA to DISEASE						
	aterial that organisms inherit from their parents, but have you ever thought about what exactly this DNA is a set of instructions for life? How is the information in our DNA/genes used by our bodies? And what used properly?						
Materials (per group) DNA sequence Computer with an internet connection							
Procedure 1. Obtain your DNA sequence from y	our teacher.						
2. Convert your DNA sequence into a complementary mRNA sequence. EXAMPLE: DNA: TACGGCTAG							
mRNA:	AUGCCGAUC						
Your DNA sequence:							
mRNA sequence:							
3. Determine the codons. EXAMPLE: mRNA:	AUGCCGAUC						
Codons:	AUG CCG AUC						

Co	dons:					
	 4. Translate the codon sequence into an amino sequence. Use the chart provided. Codons: AUG CCG AUC ↓ Amino Acids: Methionine Proline Isoleucine 					
An	ino Acid Sequence:					
5.	Write out the one-letter abbreviations for the amino acids in the sequence. Use the chart provided.					
6.	Go to http://www.ncbi.nlm.nih.gov/BLAST/ and choose Protein-Protein BLAST (top of the second column).					
7.	Enter the one-letter abbreviations for your amino acid sequence in the SEARCH box – be sure to enter them in the correct order!					
8.	. Click on the "BLAST" button.					
9.	At the next page, click on the "FORMAT" button. It may take a few minutes to process your sequence.					

BLAST: Protein to Disease

BLAST: Protein to Disease

	At the next page, scroll down to the list of proteins that matched your sequence. Choose one that matches one on the list of possible proteins was given to you.
11.	The protein our DNA sequence encodes is (should be in the list provided):
	Now go to https://ghr.nlm.nih.gov/gene with the name of your protein to find out the disease your protein is involved in. Use either the abet list or the search box.
12.	This protein is involved in the following disease:
3.	Write a brief paragraph explaining the disease caused by this protein or a mutation in this protein.
14.	List 3 things you learned in this activity (either technical concepts, such as using the computer or scientific concepts).
	(1)
	(2)
	(3)

AMINO ACID CHARTS AND PROTEIN NAMES

Possible proteins
Presenilin 2
Synuclein
Laforin
Leptin
BRCA 2
Dystrophin
Apolipoprotein E

Second letter

		U		С		Α		G		
		UUU	Phenyl- alanine	UCU		UAU	Tyrosine	UGU UGC	Cysteine	U C
	U	UUA UUG	Leucine	UCA UCG	Serine	UAA UAG	Stop codon Stop codon	UGA	Stop codon Tryptophan	A G
5	с	CUU	ccu	Proline	CAU	Histidine	CGU CGC	Arainina	U C	
2		CUA		CCA CCG	Frome	CAA CAG	Glutamine	CGA CGG	Arginine	A G
3	А	AUU	C Isoleucine	ACU ACC ACA ACG	Threonine	AAU	Asparagine	AGU AGC	Serine	U C
-		AUA	Methionine; initiation codon			AAA AAG	Lysine	AGA AGG	Arginine	A G
	G	GUC GUA Valine G	GCU	Alanine	GAU GAC	Aspartic acid	GGU GGC	Glycine	U C	
			GCA GCG		GAA GAG	Glutamic acid	GGA GGG	diyene	A G	

AMINO ACID	abbreviation		
Alanine	A		
Arginine	R		
Asparagine	N		
Aspartic acid	D		
Cysteine	C		
Glutamine	Q		
Glutamic acid	E		
Glycine	G		
Histidine	H		
Isoleucine	I		
Leucine	L		
Lysine	K		
Methionine	M		
Phenylalanine	F		
Proline	P		
Serine	S		
Threonine	T		
Tryptophan	W		
Tyrosine	Y		
Valine	V		