

Protein Synthesis Class Worksheet

1- Answer questions A-H using the lead DNA strand below

GAGTAATAATGAACCGAAI — **Lead DNA**

- A- Complimentary strand: **CTC ATT ATT ACT TGG CIT**
 B- mRNA strand: **CUC AUU AUU ACU UGG CUU**
 C- tRNA strand: **GAG UAA UAA UGA ACC GAA**
 D- AA produced: **Leu-Ile-Ile-Thr-Trp-Leu**

E- Is it possible to change the codon ^{mRNA} CUC and still keep the same AA?

Yes because there are 6 codons that produce "LEU"

F- What would happen if a 'T' is added before the first nucleotide?

all the codons change = different AA = different protein

G- Where could you add a nucleotide and not change any of the sequence given?

AT the end of the sequence

2- Determining when peptide bonds should be used

Remember mRNA start is AUG and ends are UAA UAG UGA

A- What occurs to AA before the start codon and after end codon?

mRNA: UCU GCU AUG AAU UCA UAG GUU CCC

AA: Ser Ala Start Asn Ser Stop Val Pro

6 free codons **3 free codons**

B- What occurs if many AA given with no start codon, but an end codon is given?

mRNA: UCU UGC UGU UAA UCU CUU AUG GCG

AA: Ser — Cys — Cys — Stop Ser Leu Start — Ala

C- What occurs if you have 2 or more start codons in the sequence?

mRNA: AUG CCC GGG CCC AUG CCC GGG AUG UGA

AA: Start — Pro — Gly — Pro — Start — Pro — Gly — Start — Stop