

## BIOLOGICAL FRAMEWORKS FOR ENGINEERS

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### Session #3 [nm: Information Handling and the Genetic Code]

#### General Objectives:

- ✓ Review central dogma of molecular biology and DNA basics
- ✓ Discuss replication, transcription, and translation and clarify information handling in cells
- ✓ Discuss the possibilities of genetic coding and rationale

#### Central Framework:

- ✓ Genetic information stored in DNA, codes for the synthesis of trillions of proteins using a safe, redundant mechanism.

#### Interactive Activity:

- ✓ Discussion on information handling parallels between a computer and a cell; worksheet examining the genetic code and sequencing.

#### Session Outline:

#### I. Replication, Transcription, and Translation in Detail

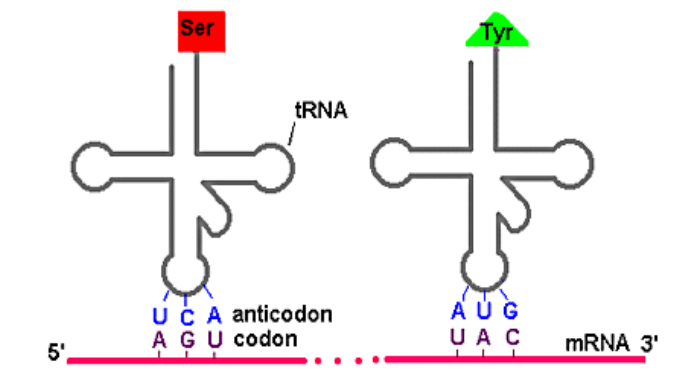
##### A. Central dogma of molecular biology

##### B. Replication

##### C. Transcription

D. Translation

II. The Genetic Code



		2nd base in codon					
		U	C	A	G		
1st base in codon	U	Phe Phe Leu Leu	Ser Ser Ser Ser	Tyr Tyr STOP STOP	Cys Cys STOP Trp	U C A G	3rd base in codon
	C	Leu Leu Leu Leu	Pro Pro Pro Pro	His His Gln Gln	Arg Arg Arg Arg	U C A G	
	A	Ile Ile Ile Met	Thr Thr Thr Thr	Asn Asn Lys Lys	Ser Ser Arg Arg	U C A G	
	G	Val Val Val Val	Ala Ala Ala Ala	Asp Asp Glu Glu	Gly Gly Gly Gly	U C A G	

The Genetic Code