

Transcription Chapter 7A

I. Nucleic Acids

- A. Differences
- B. Gene
 - 1. coding region
- C. Transcription
- D. Template
- E. RNA structure
 - 1. hairpins
 - 2. stem-loop

II. Process Overview

- A. Transcript
 - 1. +1
 - 2. downstream
 - 3. upstream
- B. Error rate

III. Types of RNA

IV. Transcription and Gene Structure

- A. General transcription
 - 1. initiation
 - a. transcription bubble
 - 2. strand elongation
 - a. pyrophosphate
 - b. stable
 - 3. termination
- B. Amplification
- C. Prokaryotic transcription
 - 1. RNA polymerase
 - a. sigma factor
 - 2. promoter
 - 3. operon
 - 4. terminator
- D. Eukaryotic transcription
 - 1. promoter
 - 2. RNA polymerases
 - 3. enhancers
 - 4. general transcription factors
 - a. TFIID
 - b. TFIIH

V. RNA Processing

- A. Prokaryotic
 - 1. polycistronic
- B. Eukaryotic
 - 1. monocistronic
 - 2. RNA cap
 - a. process
 - 3. polyadenylation
 - a. poly(A) polymerase
 - b. poly(A) tail

4. splicing
 - a. introns & exons
 - b. spliceosome
 - 1) snRNAs
 - 2) snRNPs
 - c. process
 - 1) lariat structure
 - d. alternative splicing
5. export
 - a. export proteins

VI. RNA degradation

- A. Half life
- B. Pathways of mRNA degradation
- C. Additional control
 1. miRNAs
 2. siRNAs
 3. half life control