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Transcription

Chapter 26

Your email address (grossoehmen2@mailbox.winthrop.edu) was recorded when you submitted this form.

What are the three major types of RNA in a prokaryote?

mRNA, tRNA, rRNA

Match each type or RNA with its function.

	translation	delivery of amino acids to ribosomes	inactivation of mRNA	Transcriptional control	RNA splicing	methylation of rRNA
snoRNA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
siRNA	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
miRNA	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
snRNA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
tRNA	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
rRNA	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	translation	delivery of amino acids to ribosomes	inactivation of mRNA	Transcriptional control	RNA splicing	methylation of rRNA
lincRNA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

What enzyme catalyzes RNA synthesis?

RNA polymerase

What's a transcription bubble?

the part of dsDNA that is pulled apart into single strands so that the coding strand can enter the active site of RNAP

Which DNA strand codes for RNA synthesis? Select both correct answers.

- sense
- antisense
- coding
- noncoding

What is an operon?

A region of genes under the control of a promoter - transcribed together

What is the role of the -10 and -35 elements?

initiation of transcription by binding to the sigma factor

Which subunit of RNAP specifically recognizes the promoter?

- alpha
- beta
- delta
- sigma

Organisms typically have only one sigma factor.

- True
- False

Why does abortive initiation occur?

Stress that is built up as the RNA polymerization begins - the sigma factor has not released, so the noncoding strand is locked into place; however, the coding strand has been advanced leaving extra ssDNA that needs to go somewhere. It is "scrunched" into a small pocket - this is the stress that causes abortive initiation.

What rate does transcription occur in E. coli?

- 1-5 nt/s
- 5-10 nt/s
- 20-50 nt/s
- 50-100 nt/s
- Other:

What is the role of the Rho Factor in transcription?

termination

Match each eukaryotic RNAP with it's role

	rRNA synthesis	mRNA synthesis	5S rRNA, tRNA, other small RNA synthesis
RNAP 3	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
RNAP 1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
RNAP 2	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Consider Figure 26-14. What do you think the 2 roles of Mg²⁺ ions are in the active site.

orient that NTP in the correct orientation and activate the 3' hydroxyl to be a nucleophile

Eukaryotic promoters contain only -10 and -35 elements.

- True

- False

RNAP1, RNAP2, and RNAP3 recognize the same promoters.

- True
 False

Eukaryotes rely on many transcription factors. Several of these recognize and bind to the TATA box. Identify these from the factors listed below.

- TFIIF
 TFIIA
 TFIIIB
 TBP
 TFIID
 TFIIH
 TFIIE
 TAF

What does the "TF" stand for in most of the options in the previous question.

Transcription Factor

Eukaryotes synthesize mRNA molecules that need to be processed prior to function. These "pre-mRNA" contain two types of sequences - introns and exons. Which of these sequences end up as part of the functional mRNA?

- introns
 exons

What is the process called that cuts out the introns and fuses the exons together?

splicing

What type of specialized RNA is involved in splicing? Select all that apply.

- rRNA
 tRNA
 siRNA

- miRNA
- lincRNA
- snRNA
- snoRNA

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