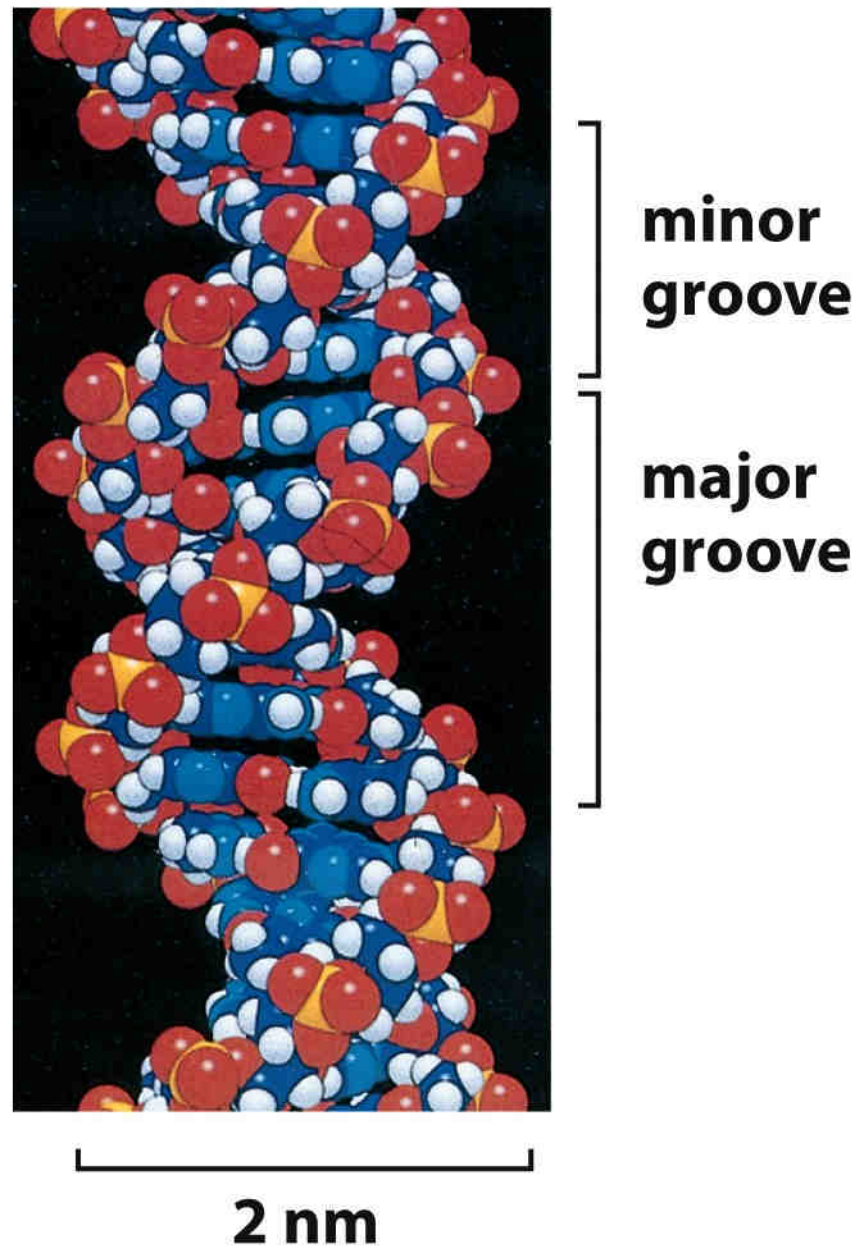
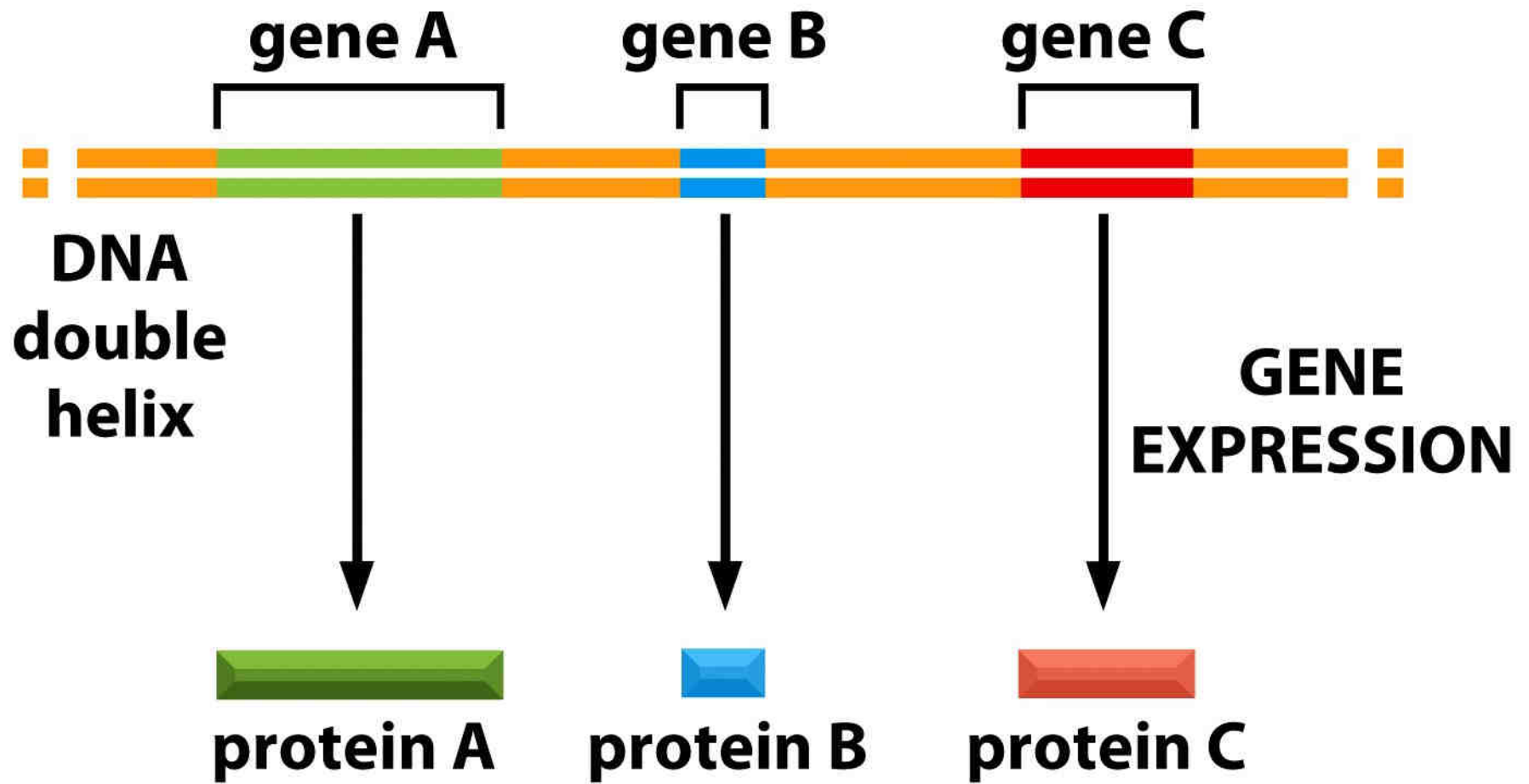


Figure 5-6 *Essential Cell Biology* (© Garland Science 2010)





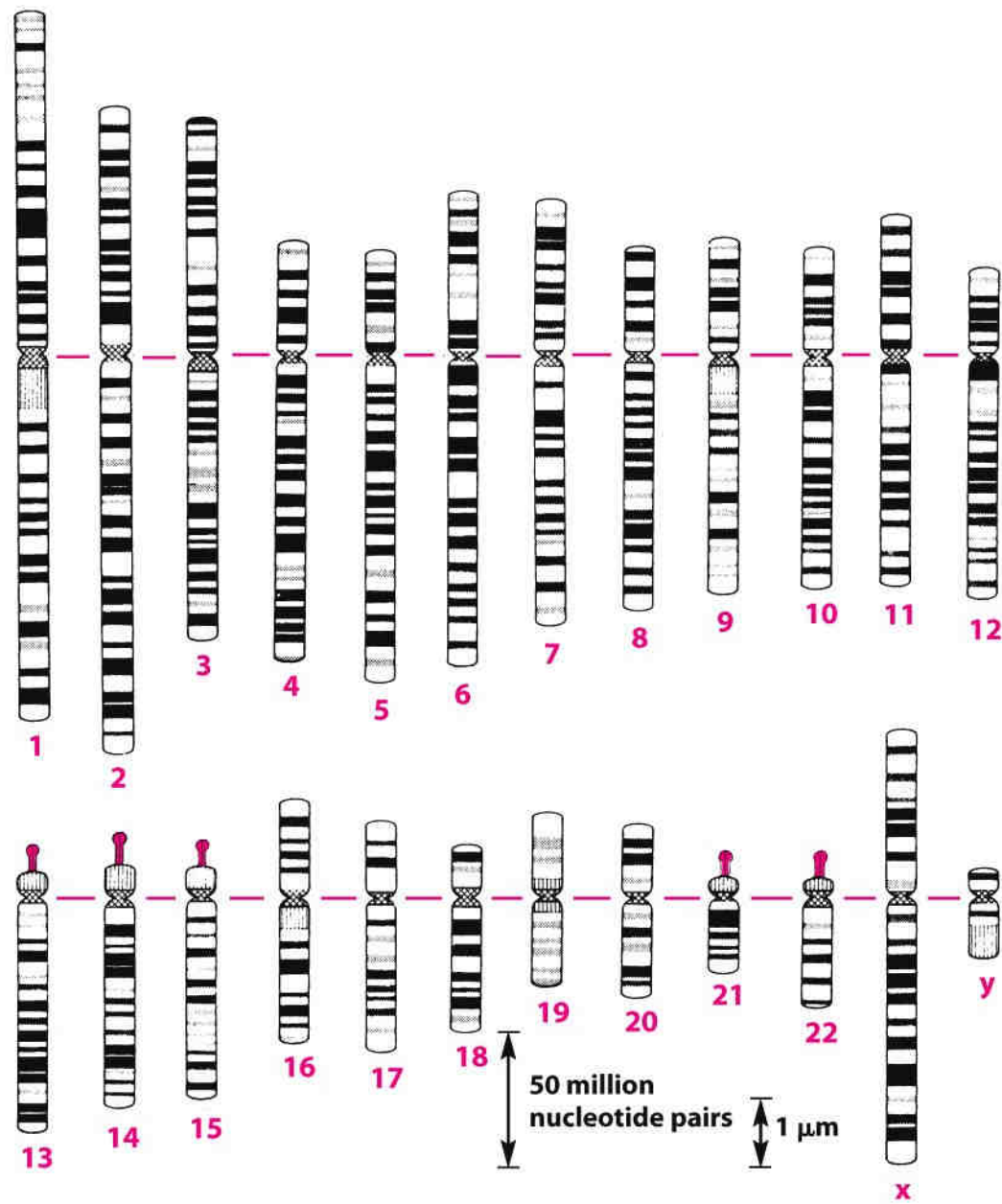
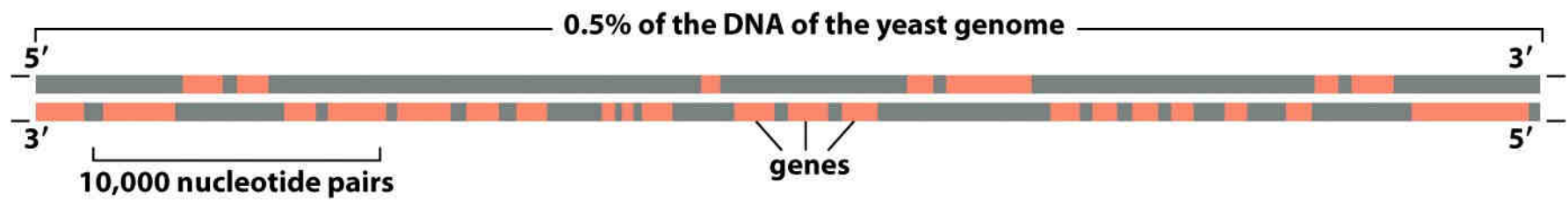
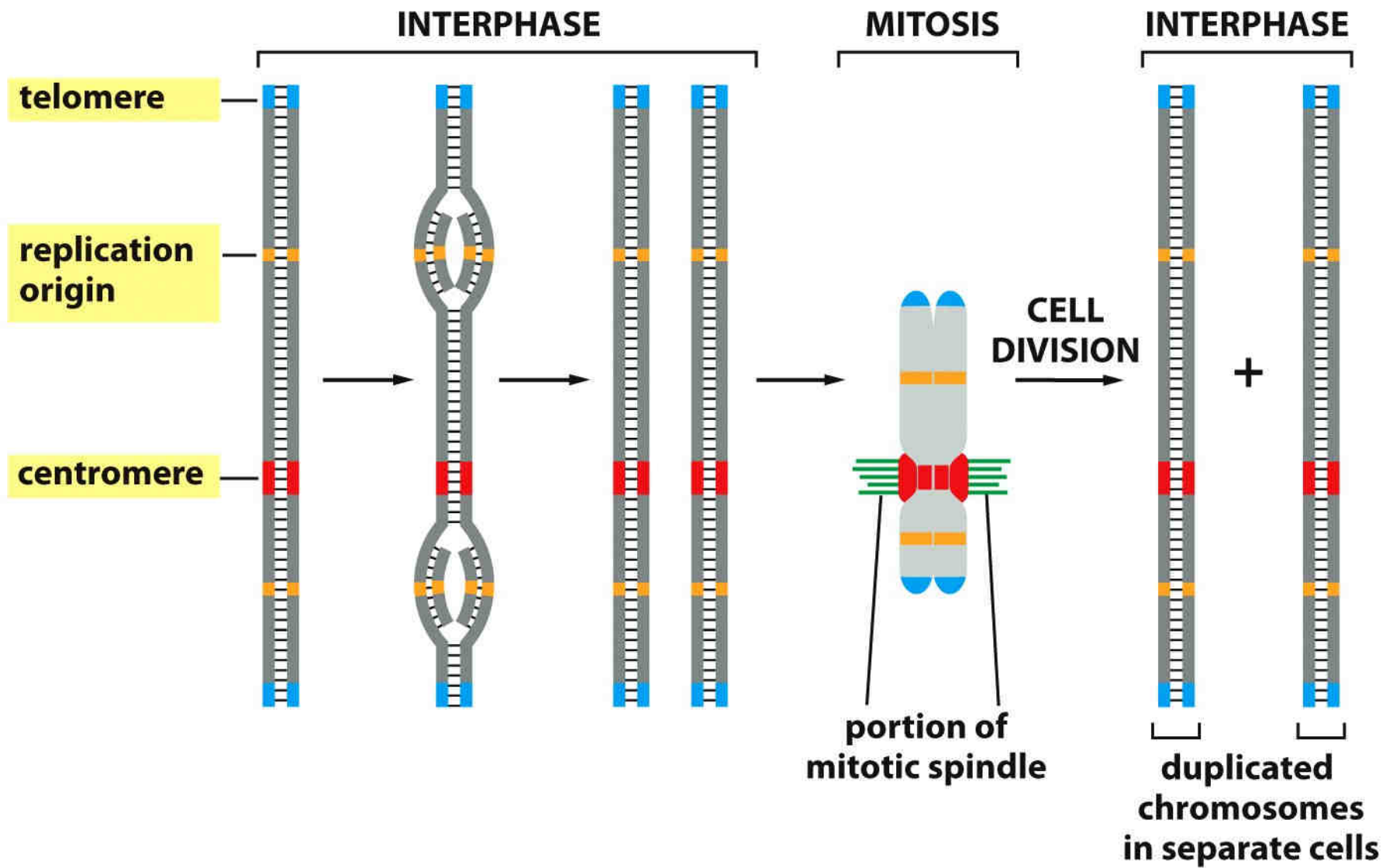


Figure 5-11 *Essential Cell Biology* (© Garland Science 2010)







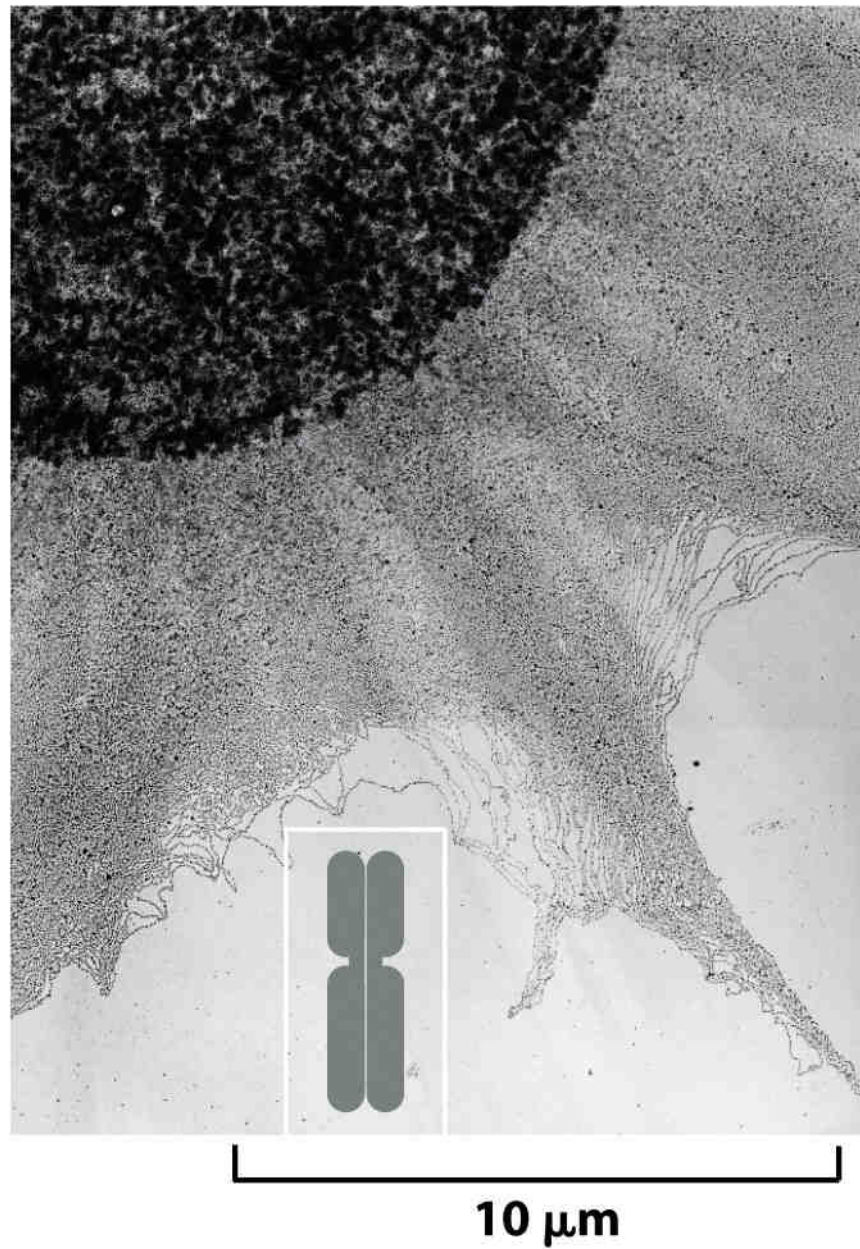
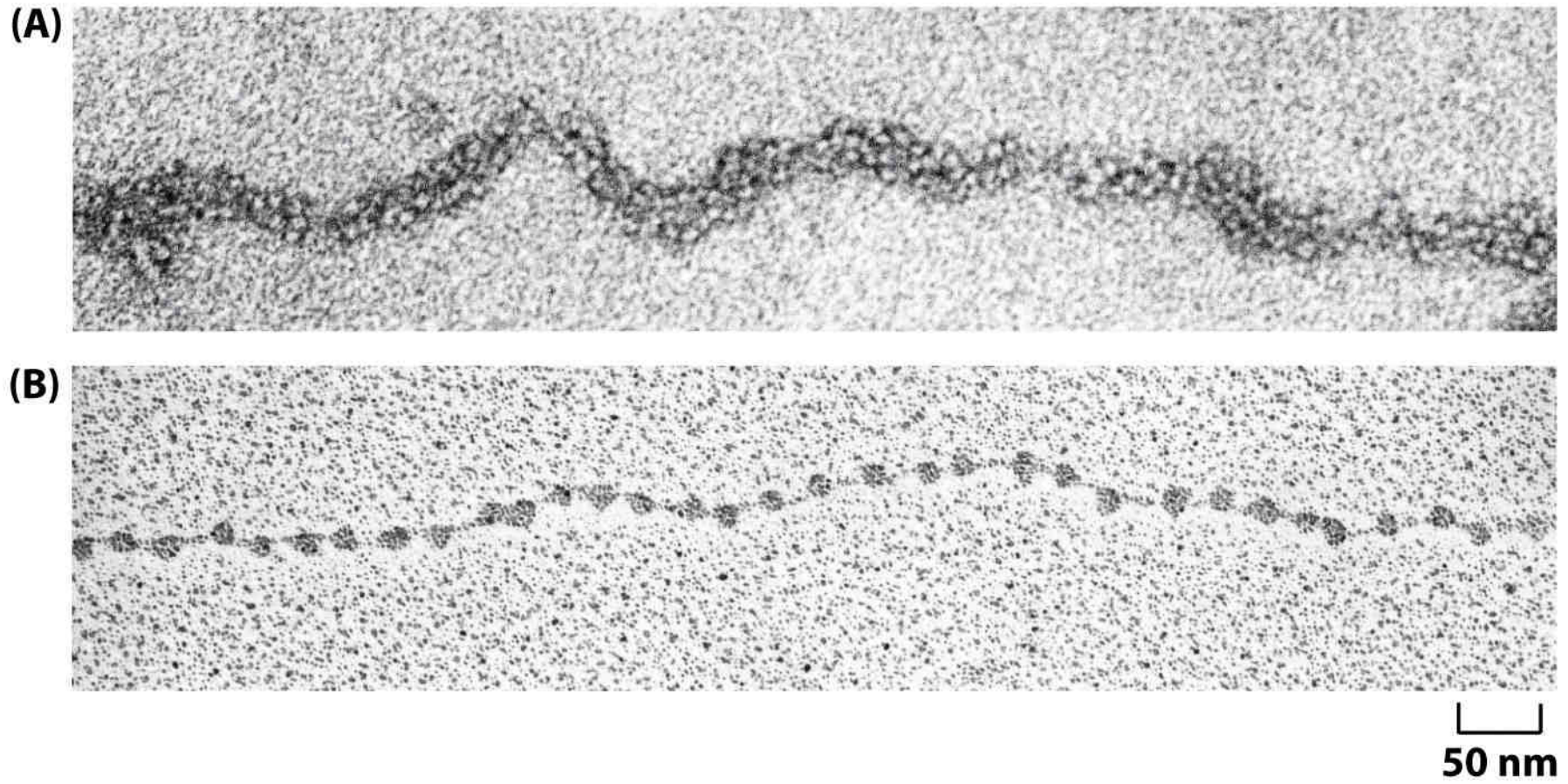
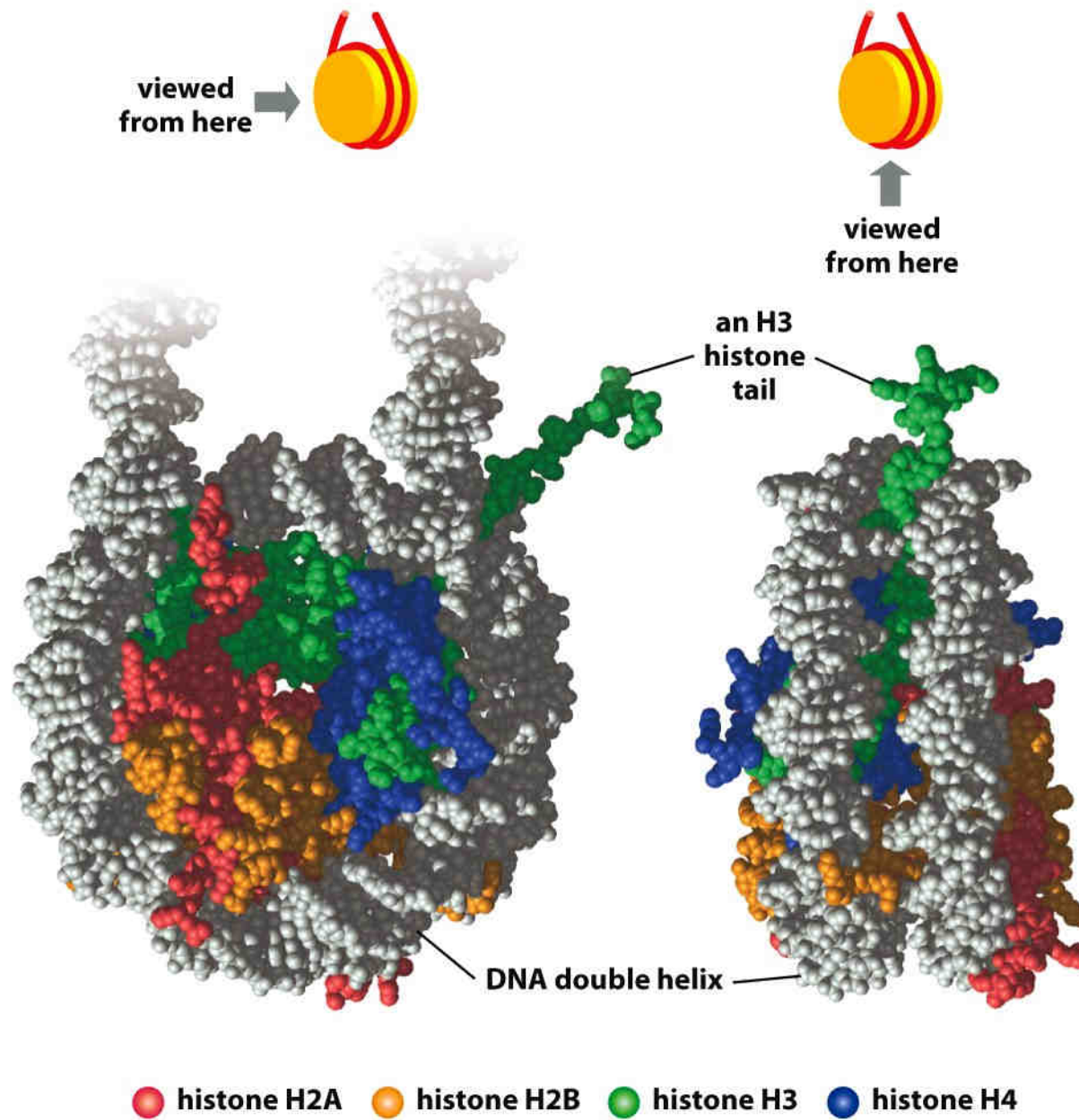
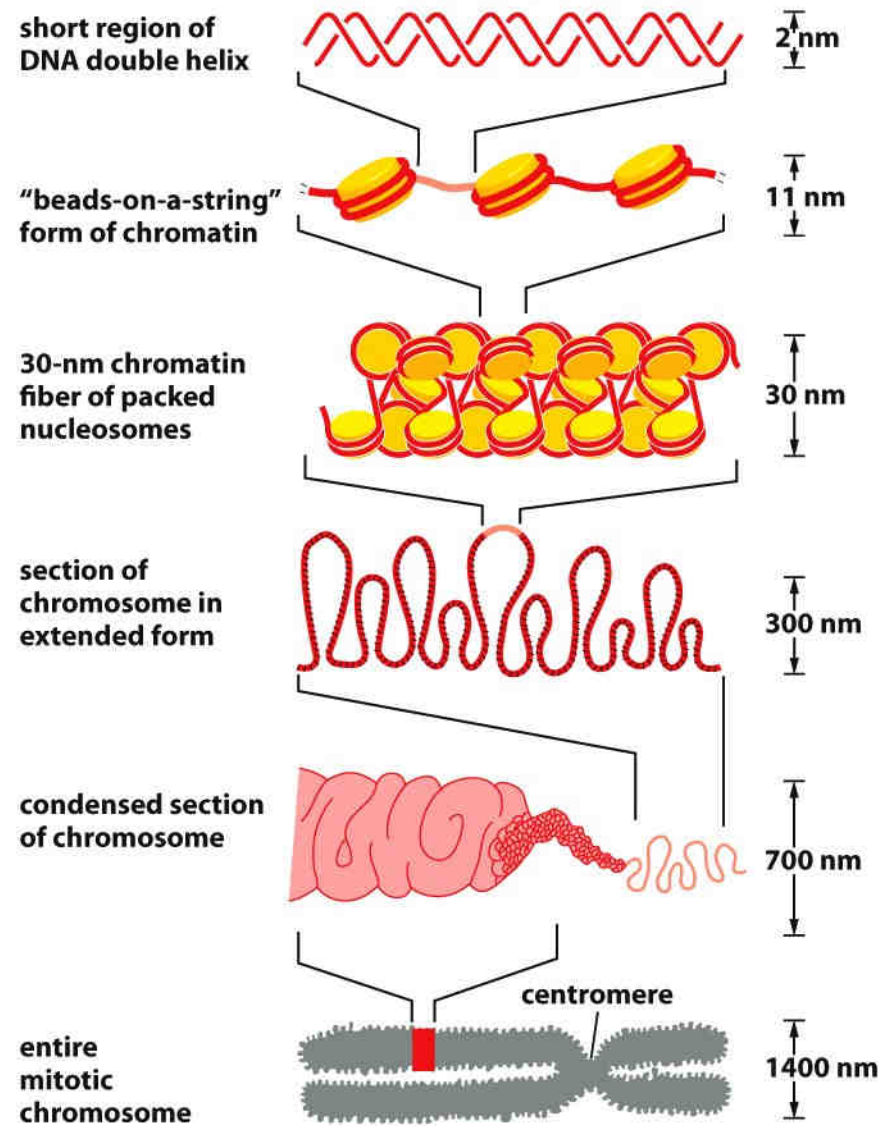


Figure 5-20 *Essential Cell Biology* (© Garland Science 2010)

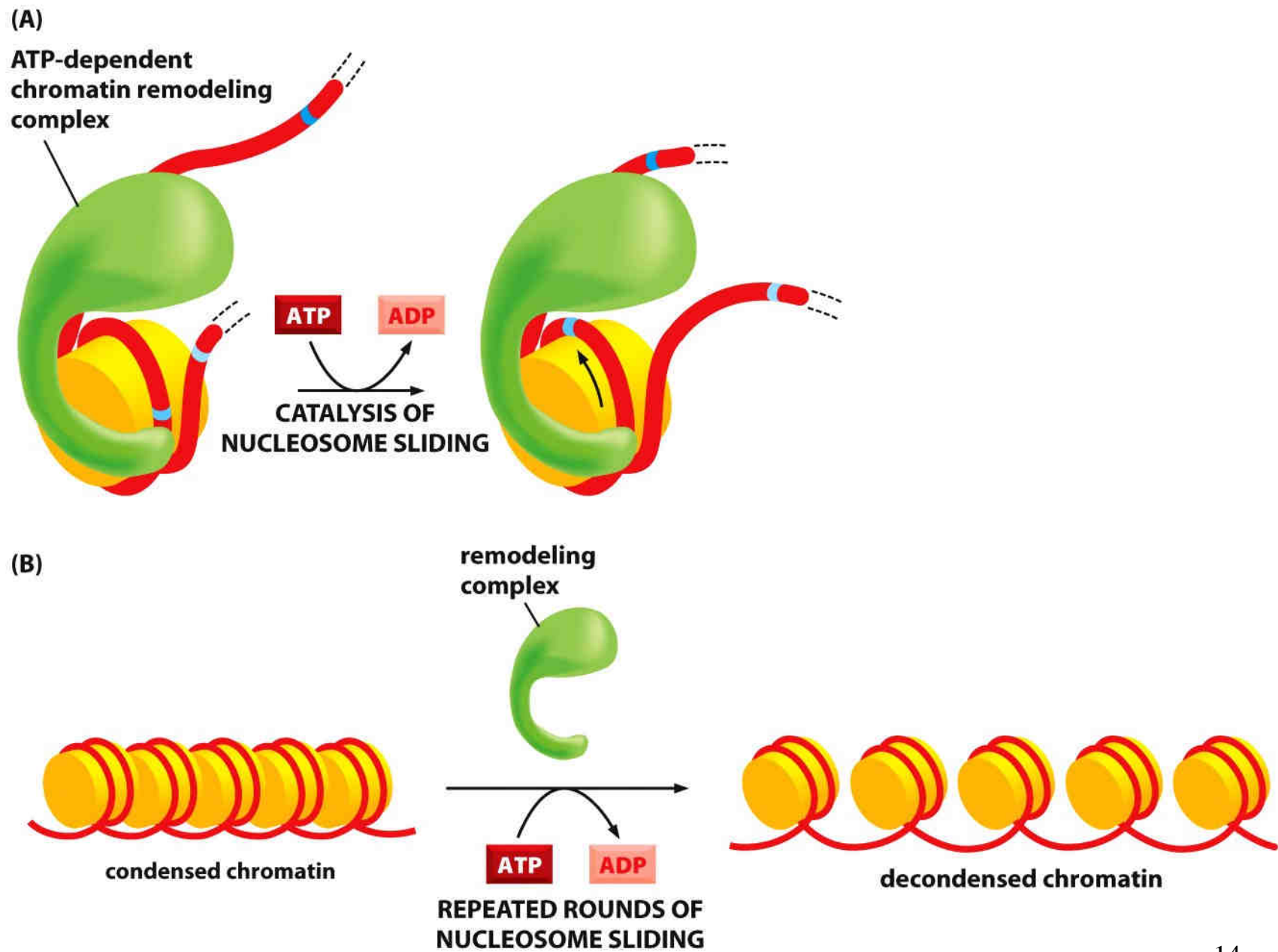


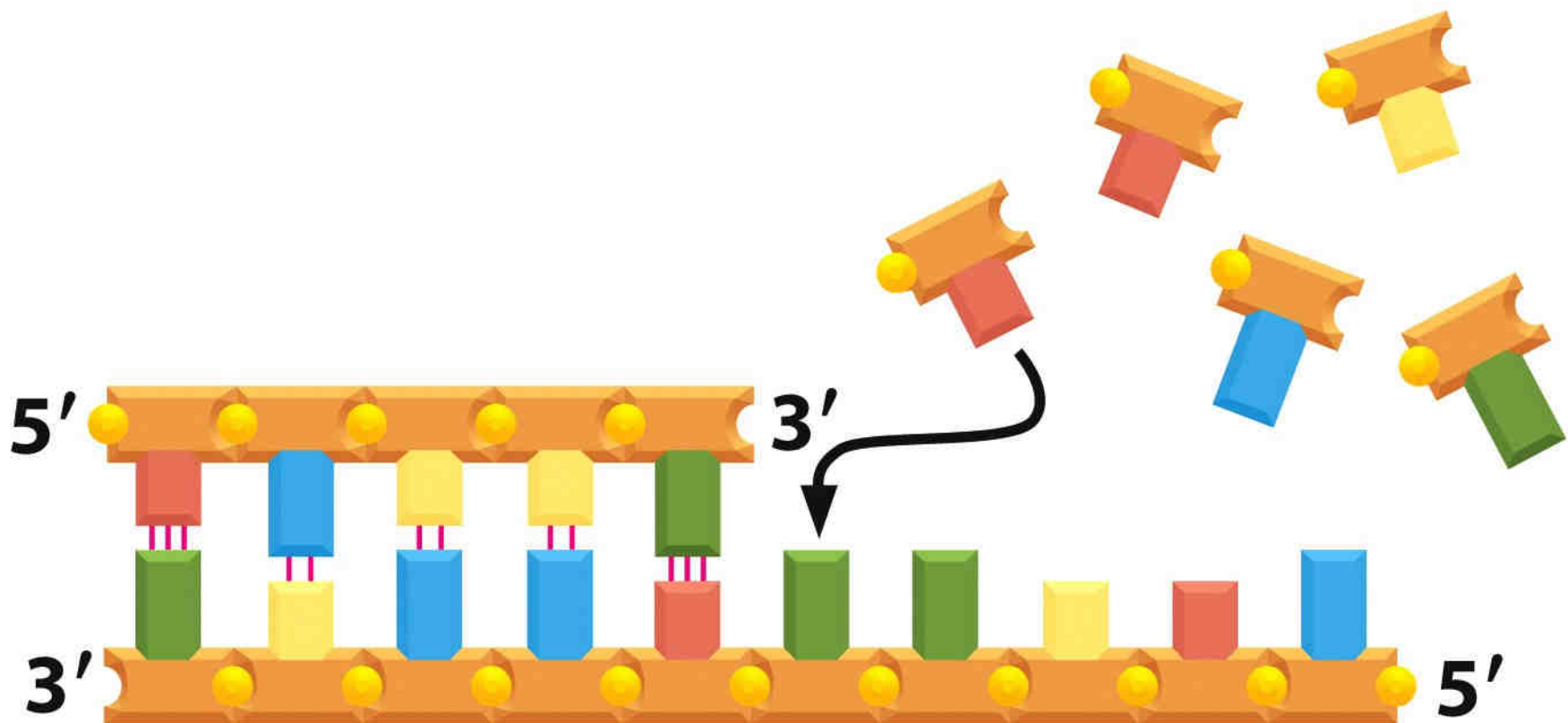


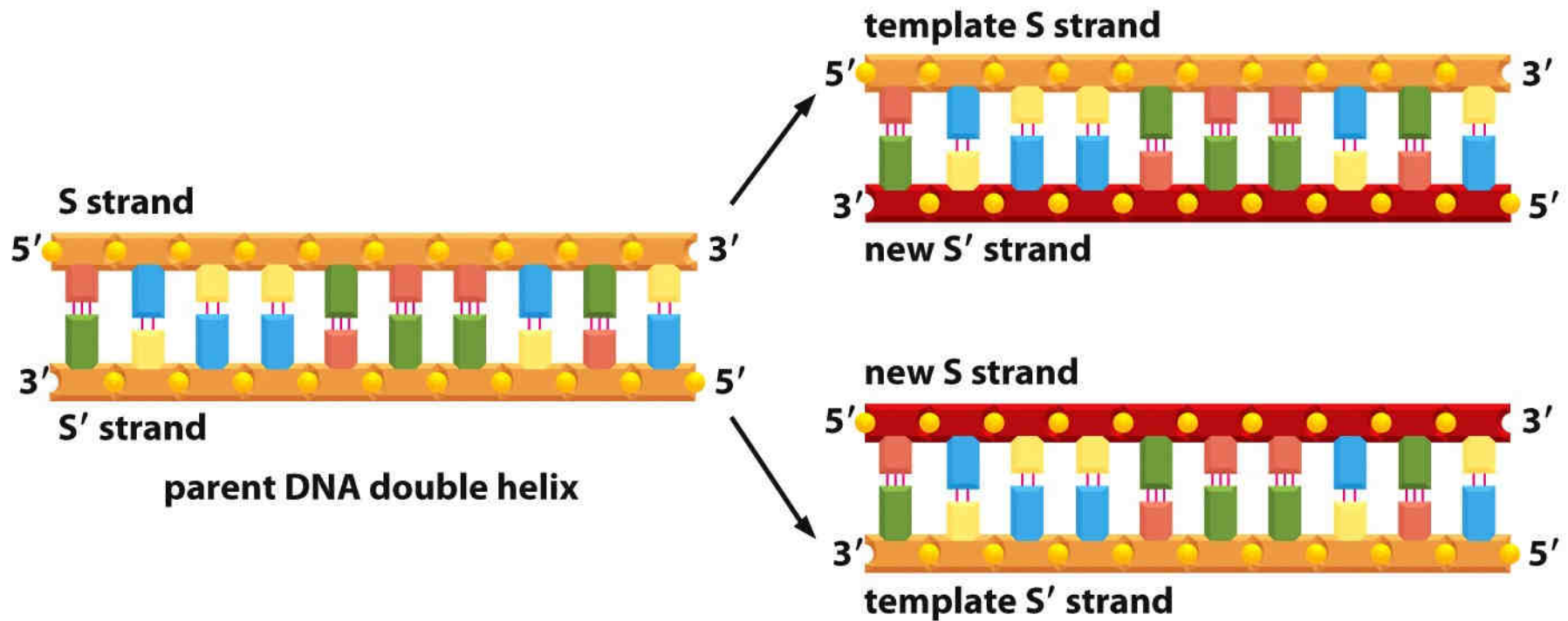




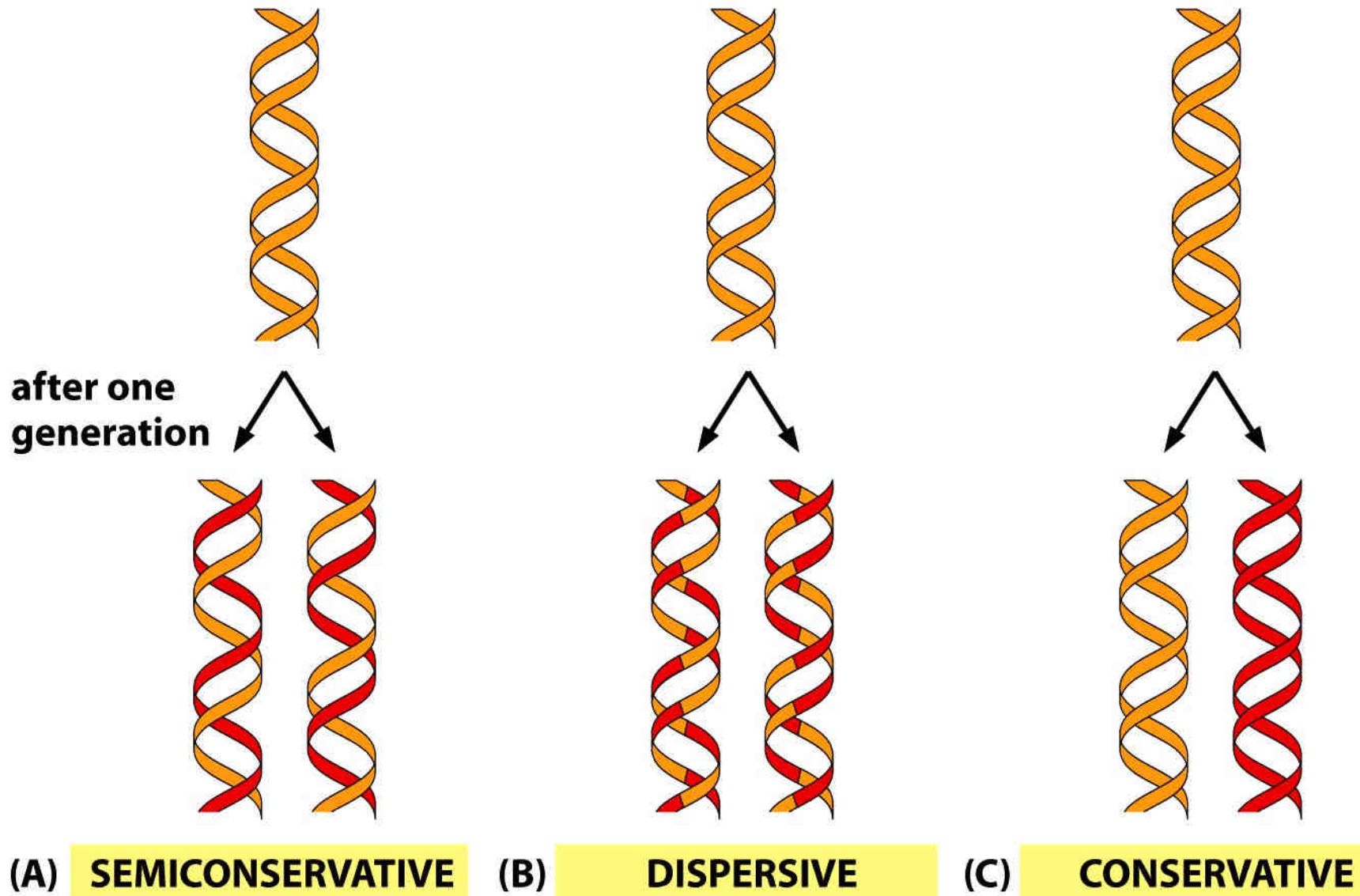
**NET RESULT: EACH DNA MOLECULE HAS BEEN PACKAGED INTO A MITOTIC CHROMOSOME THAT IS 10,000-FOLD SHORTER THAN ITS EXTENDED LENGTH**

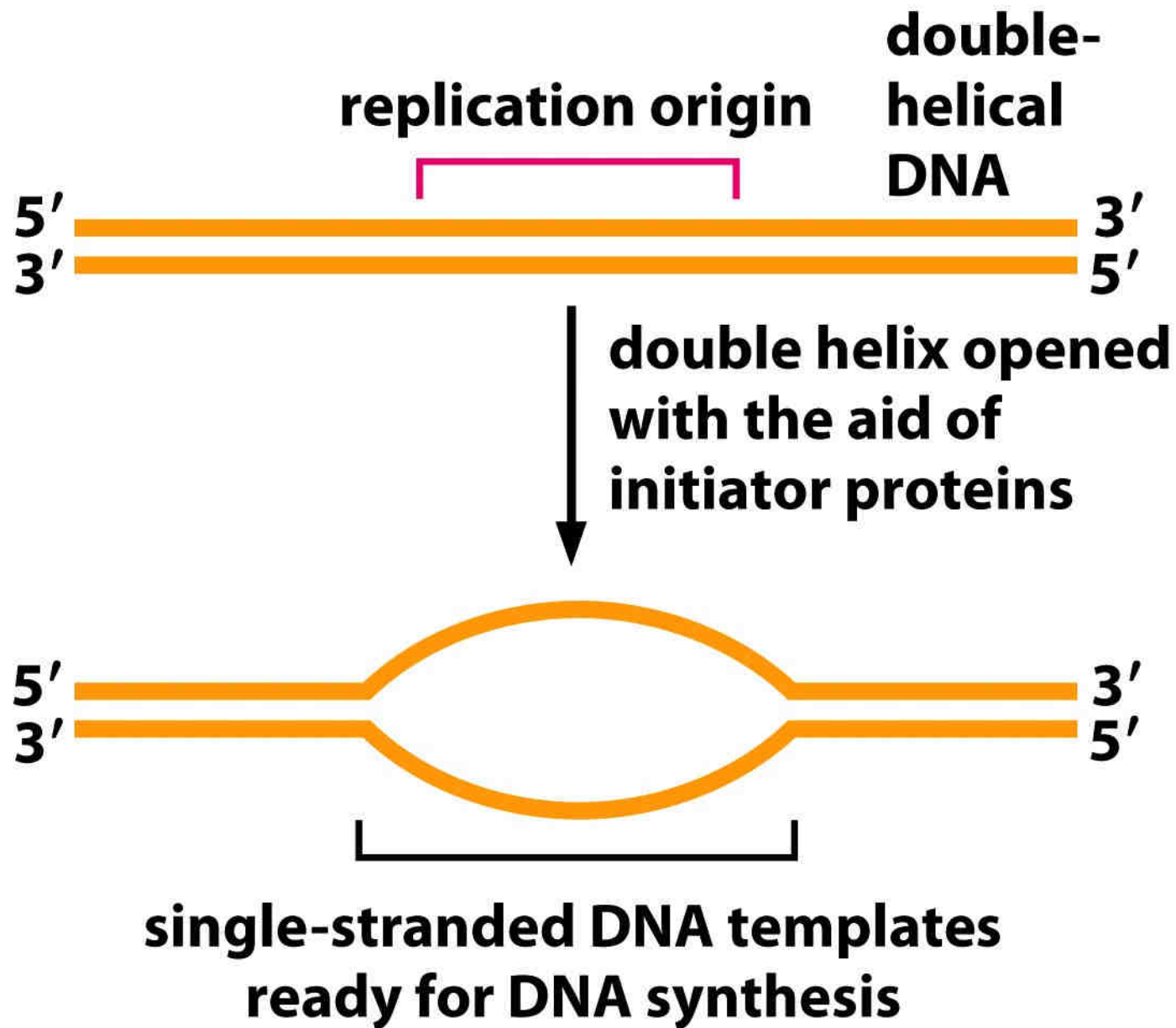


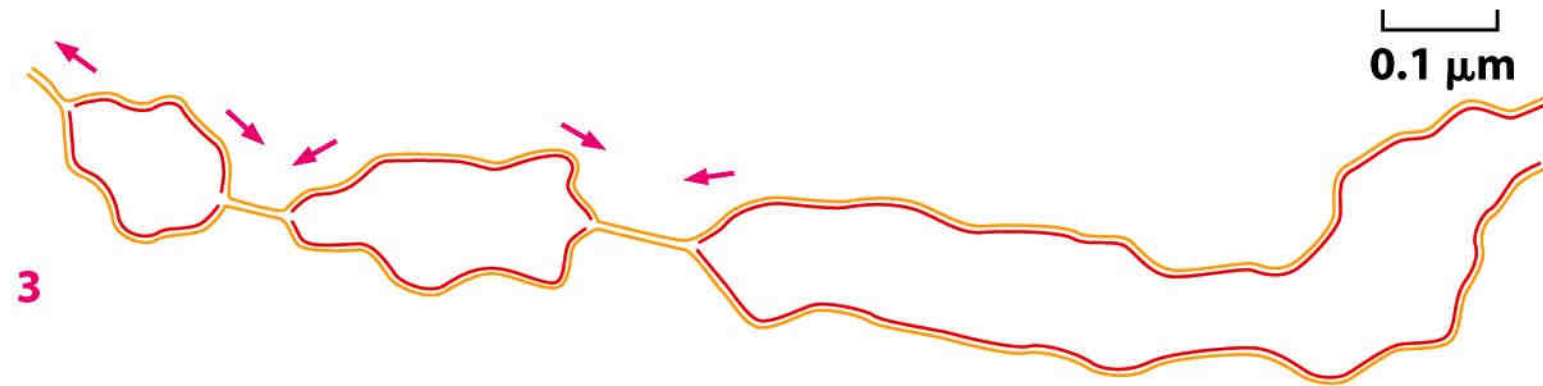
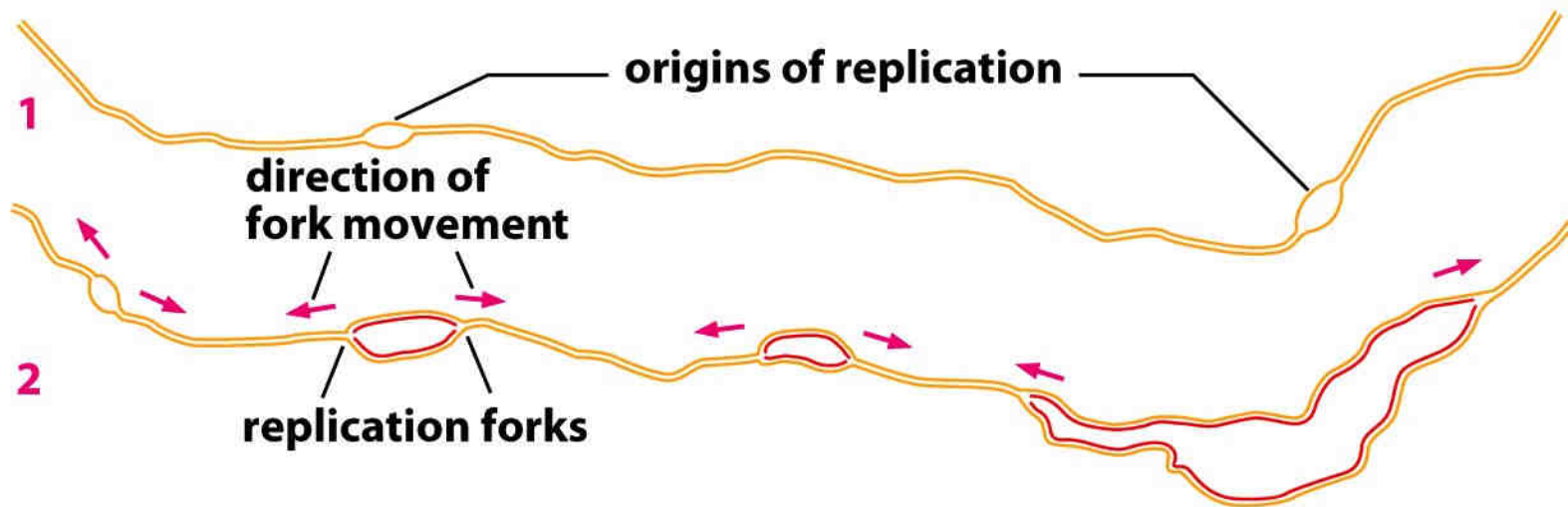












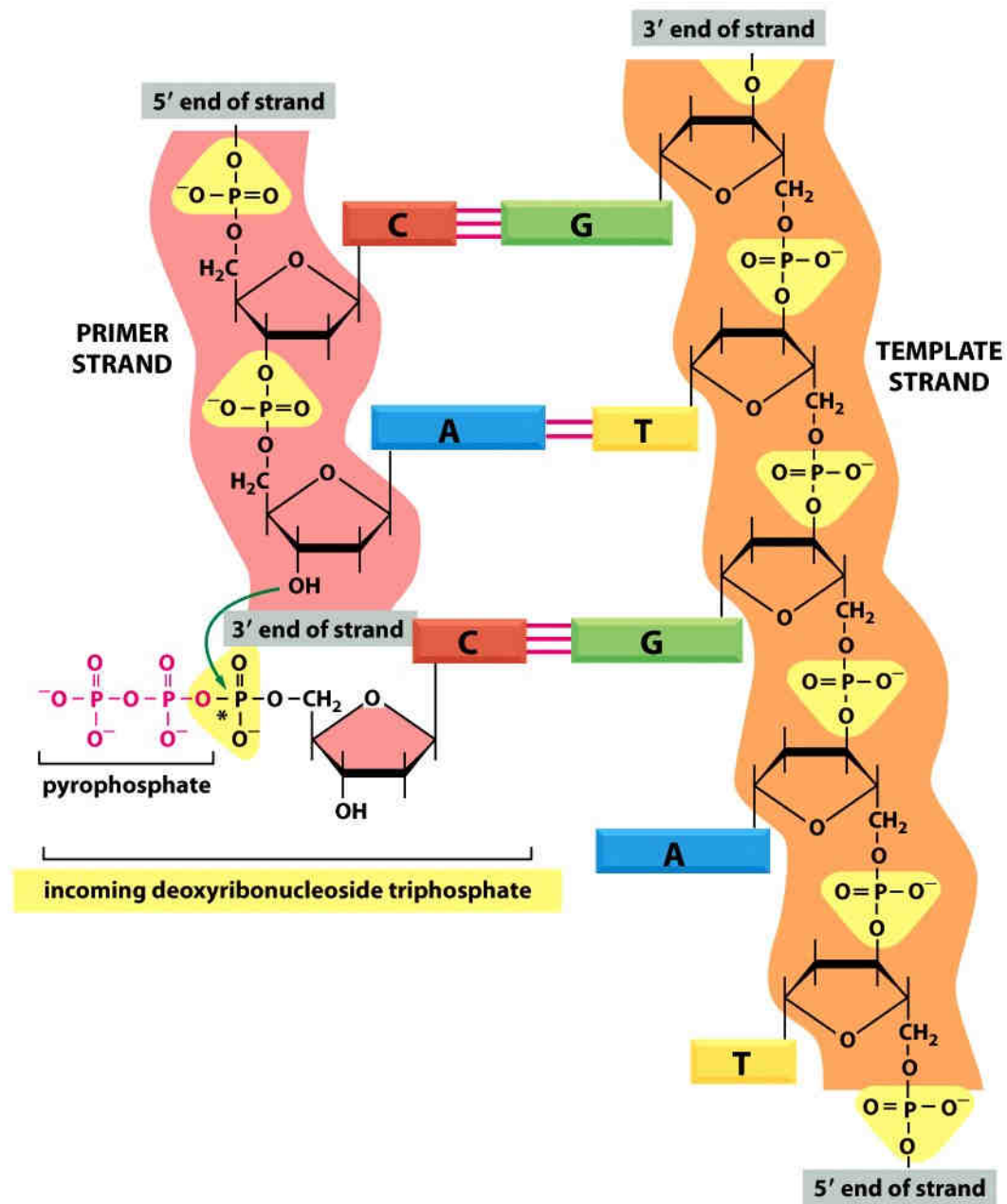
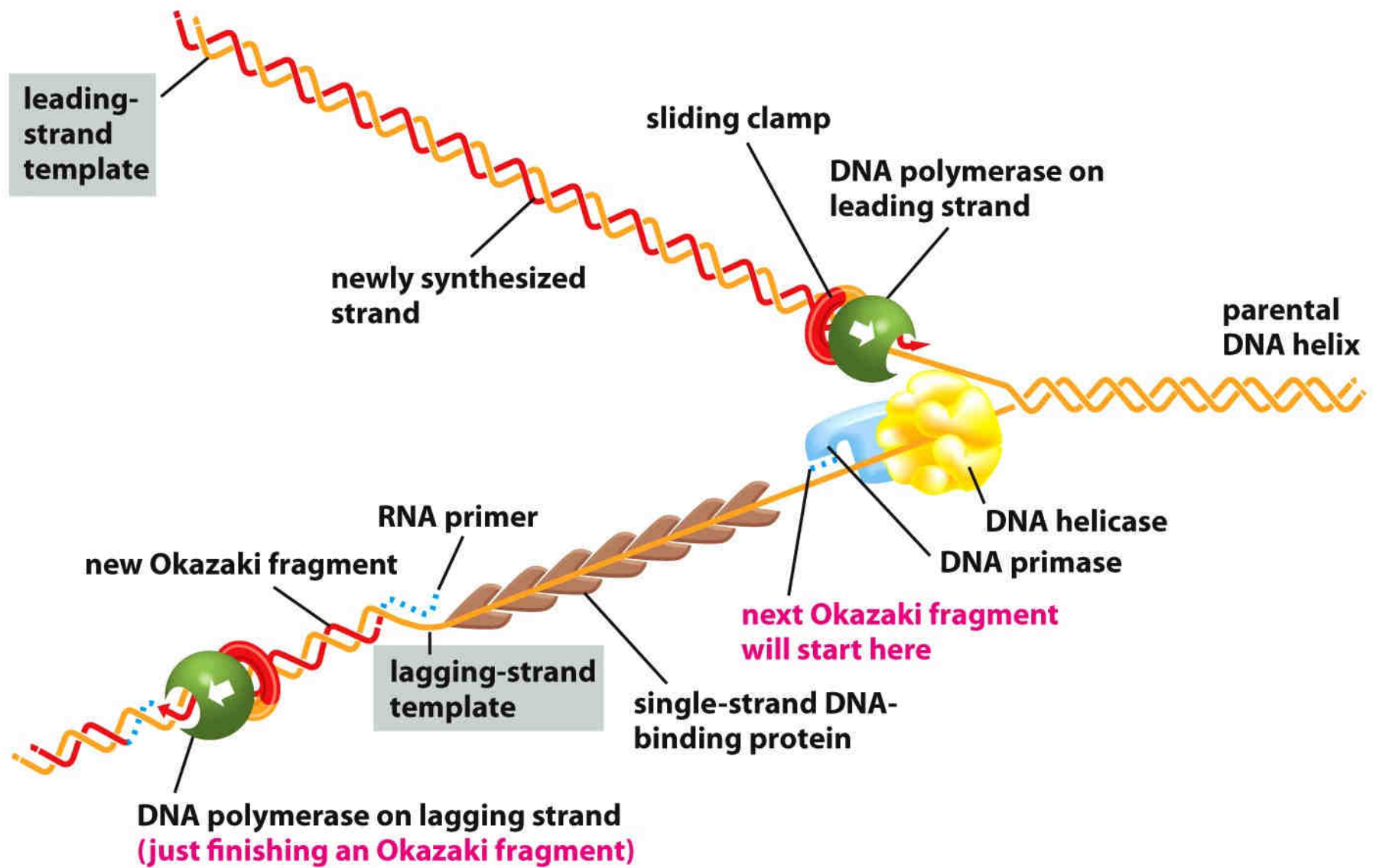
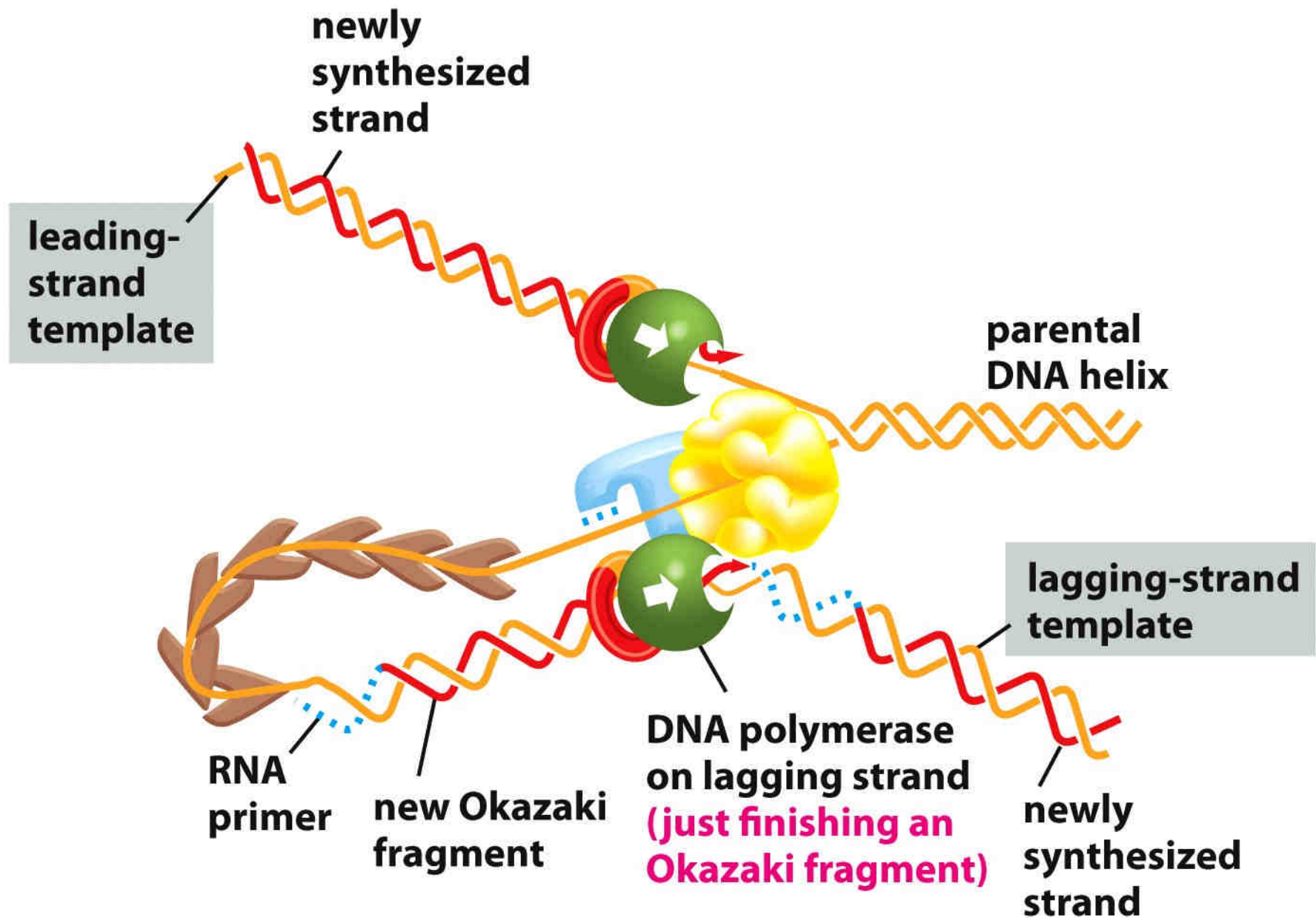
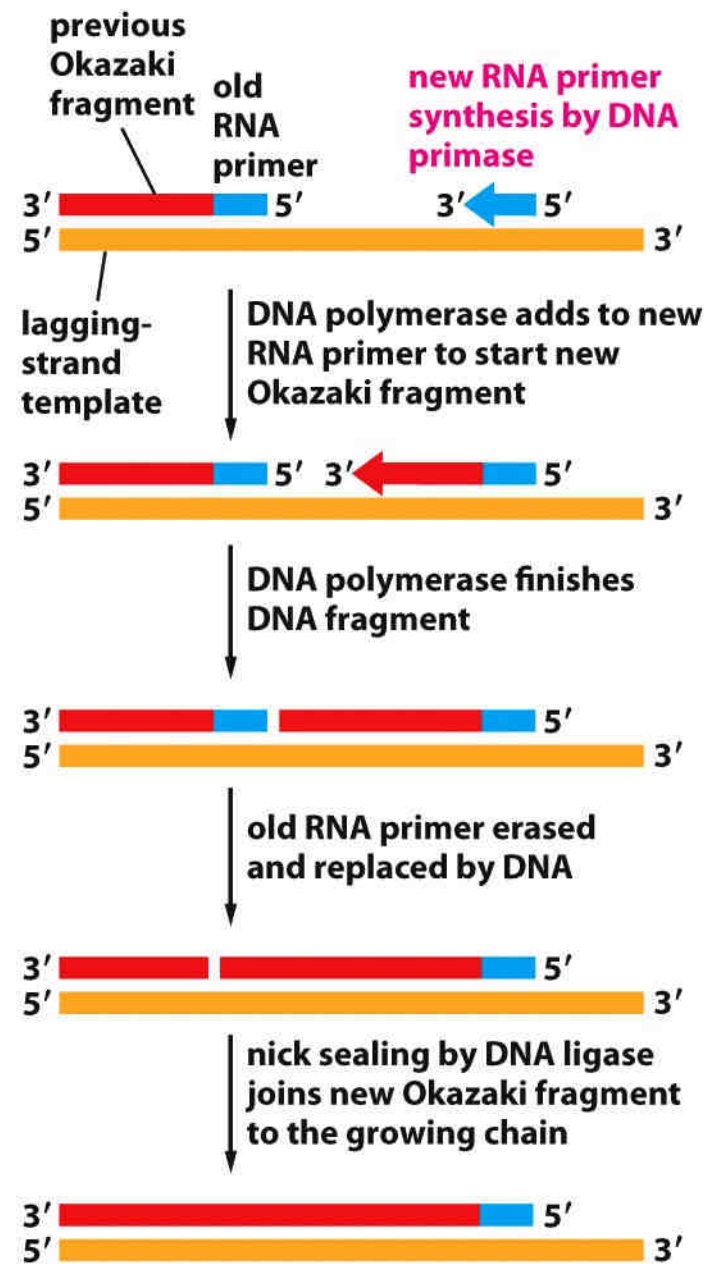


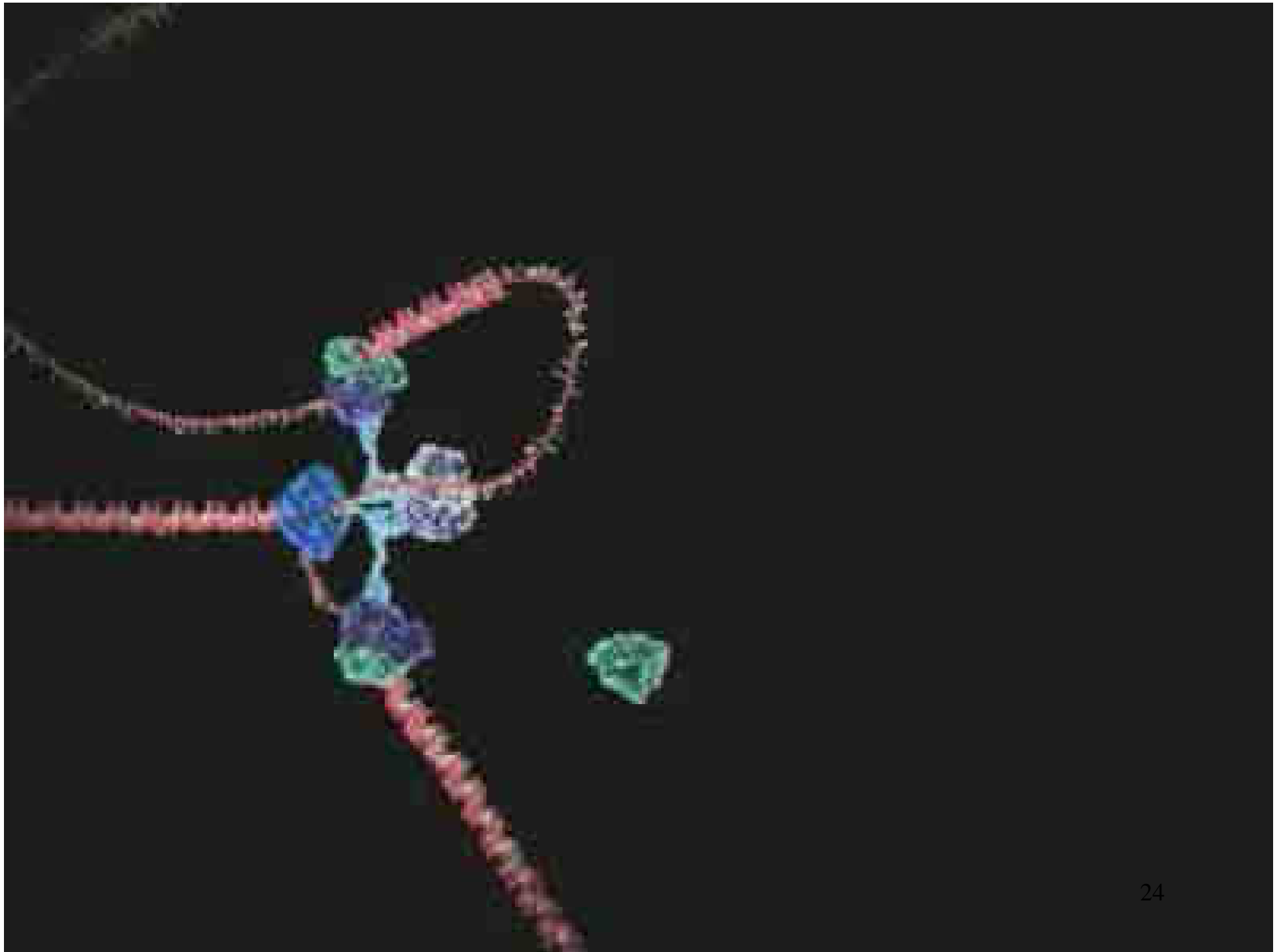
Figure 6-10 *Essential Cell Biology* (© Garland Science 2010)



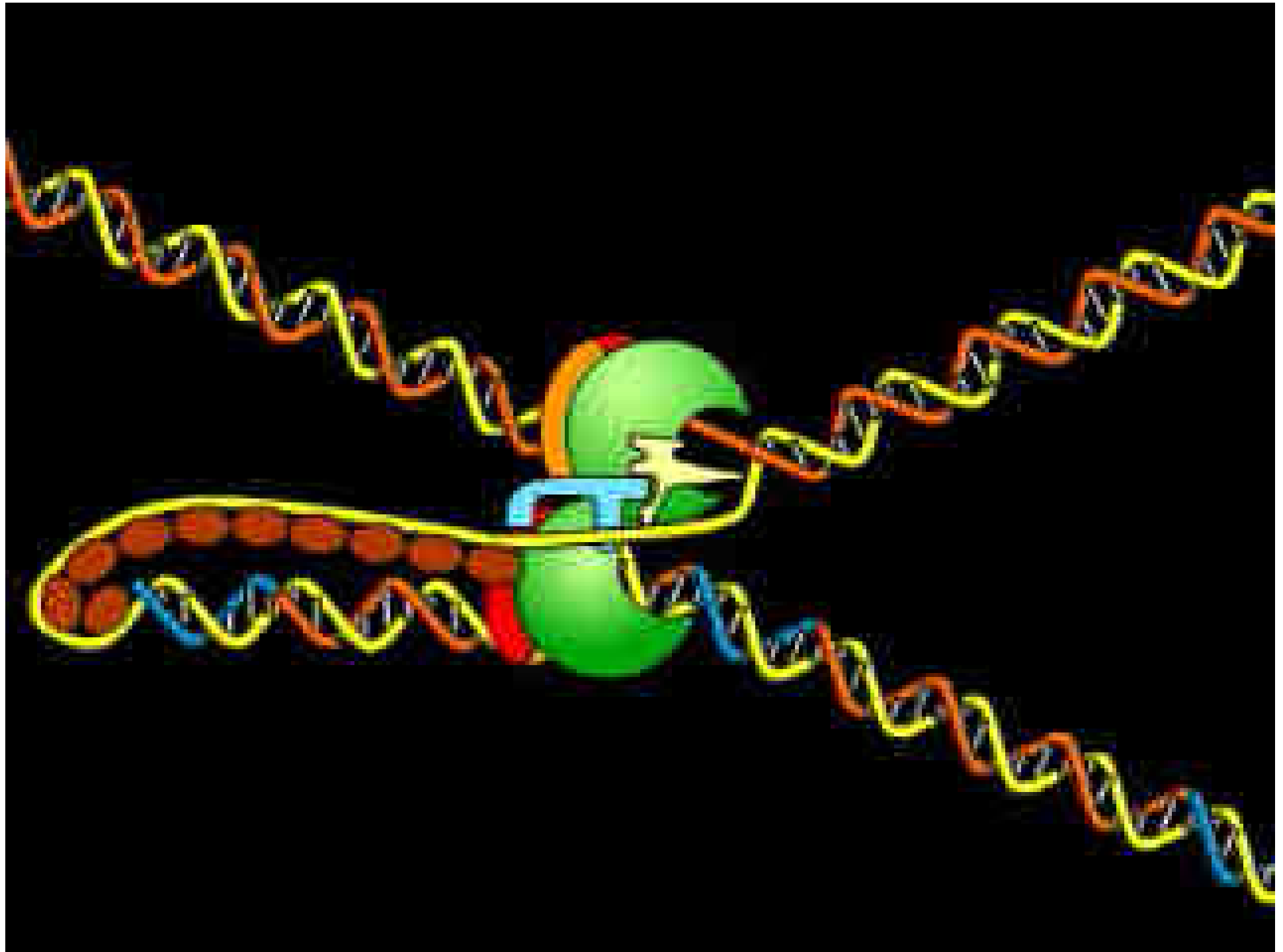












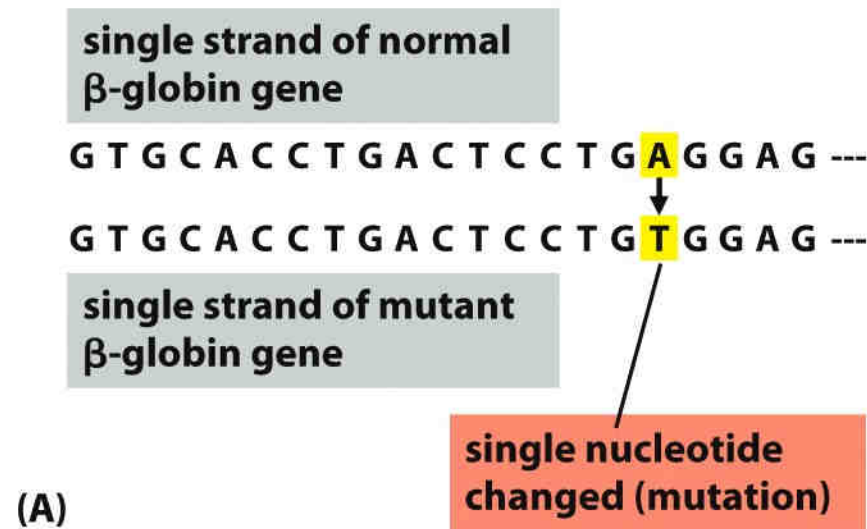
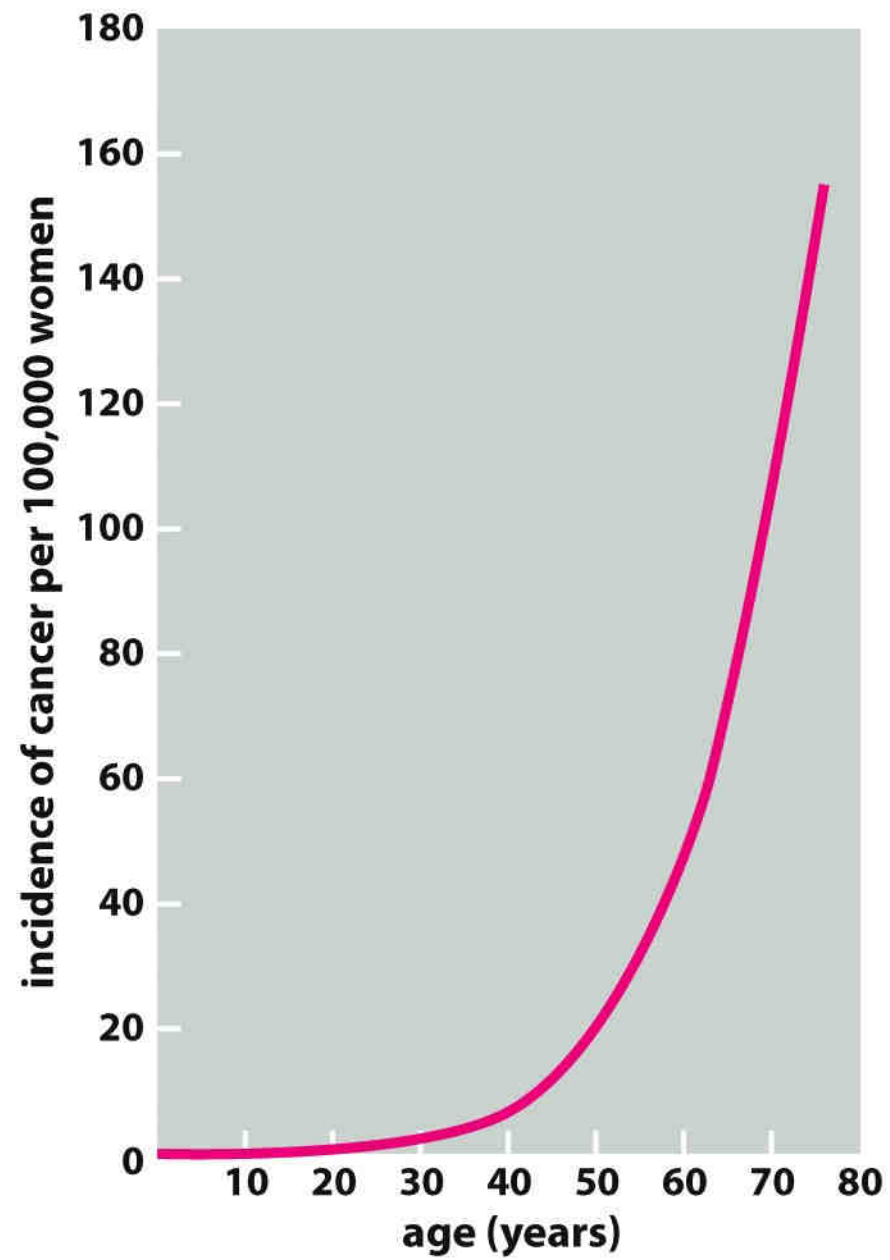
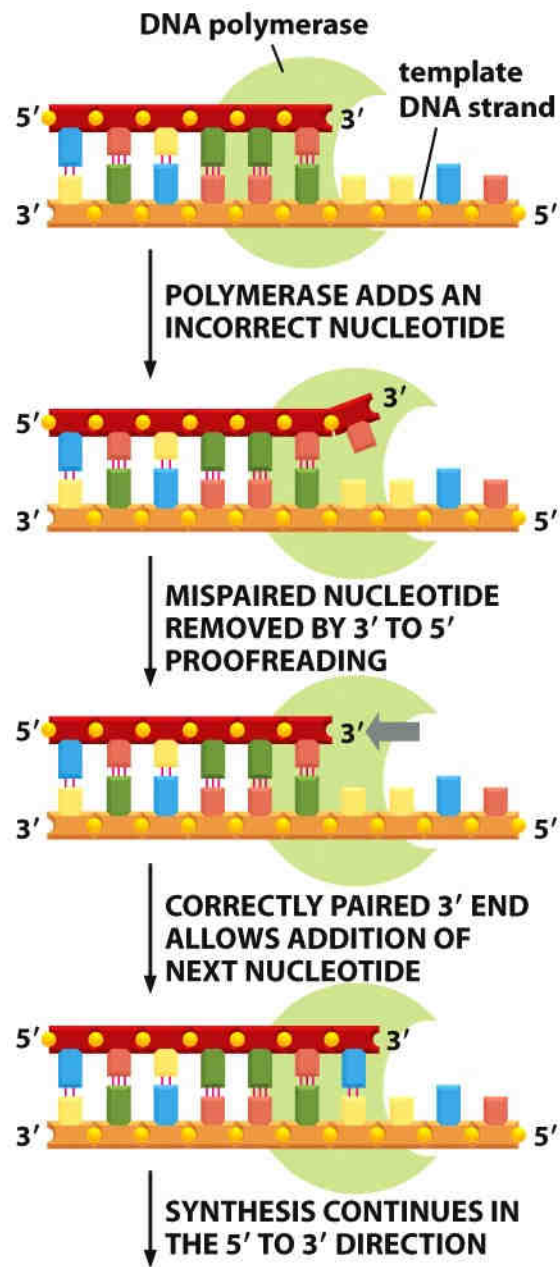


Figure 6-19 *Essential Cell Biology* (© Garland Science 2010)





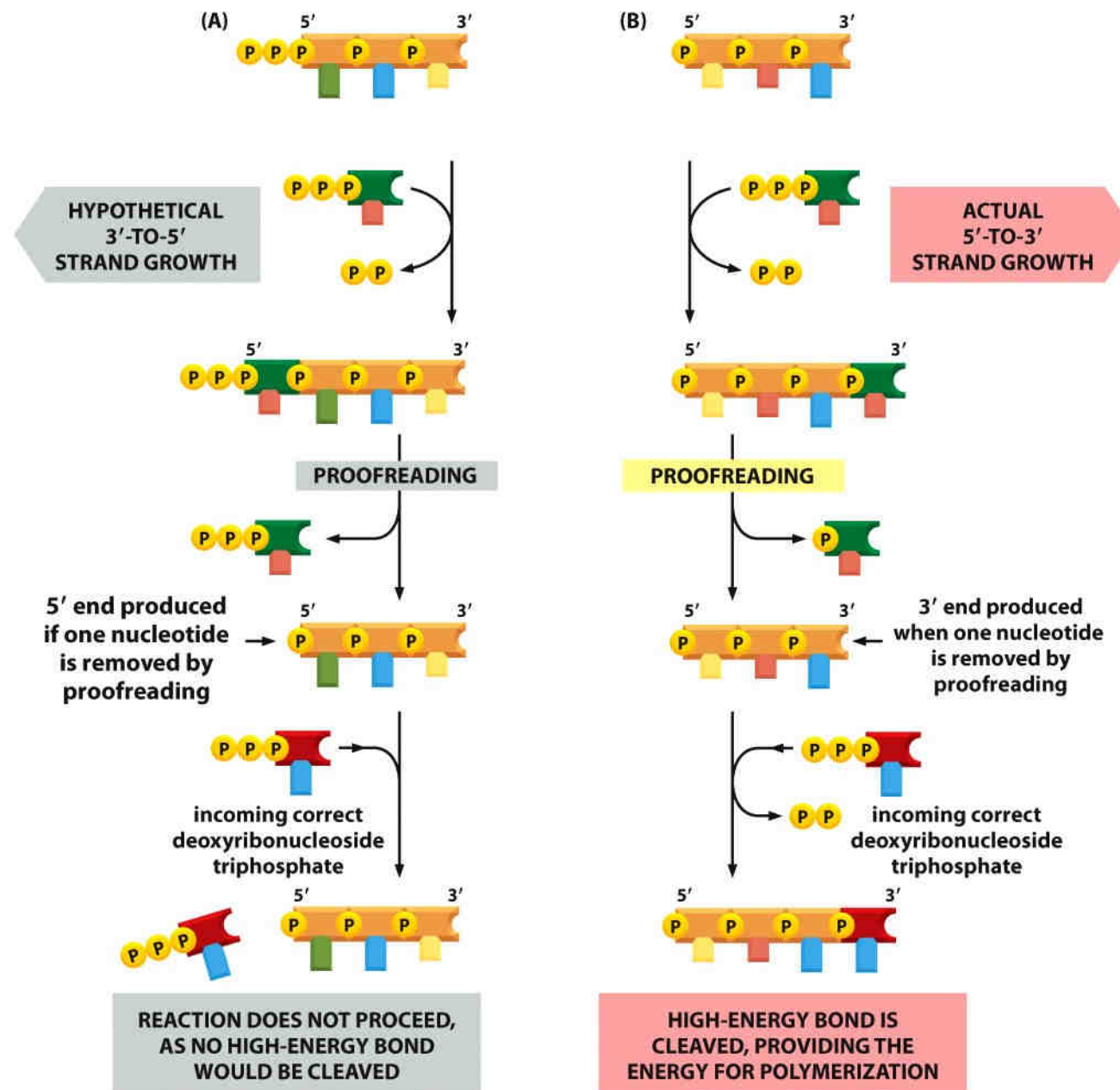
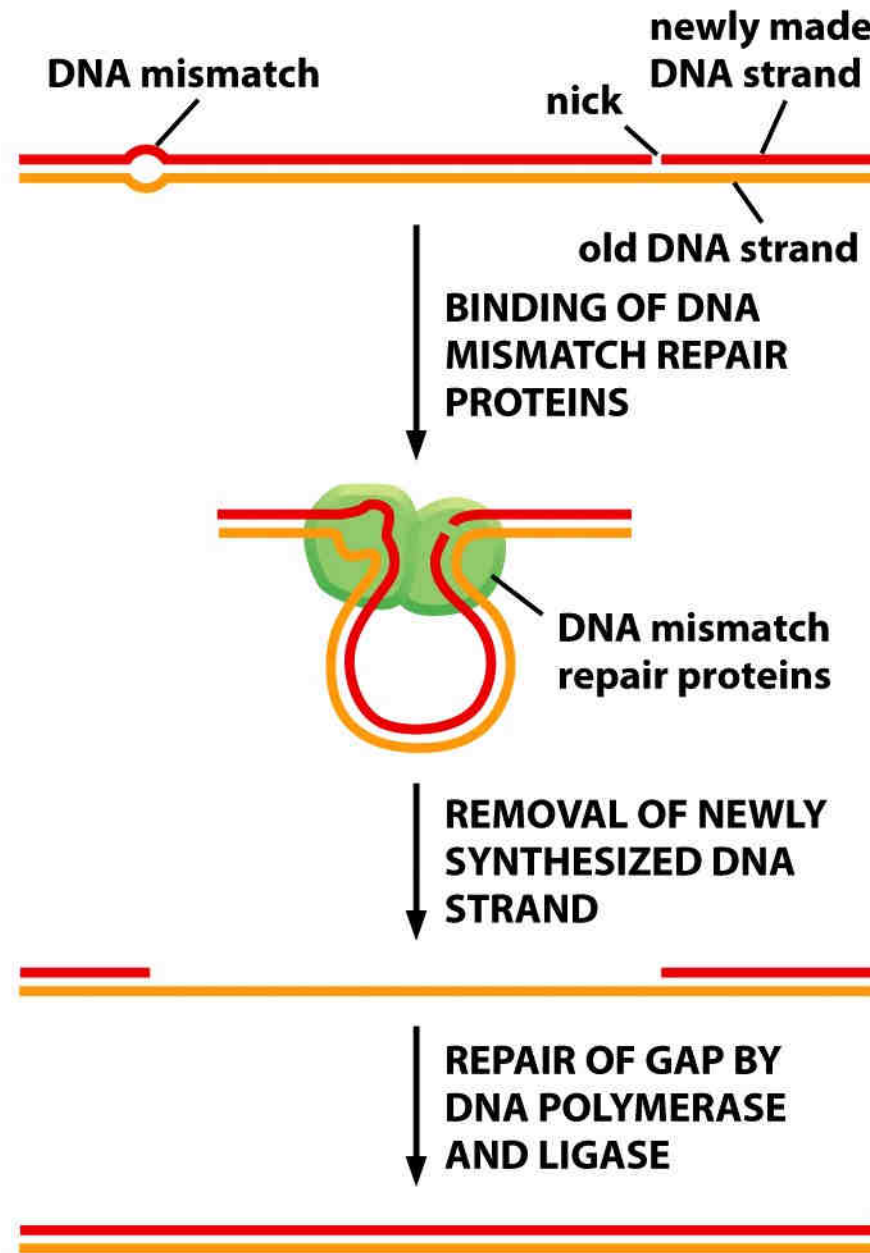
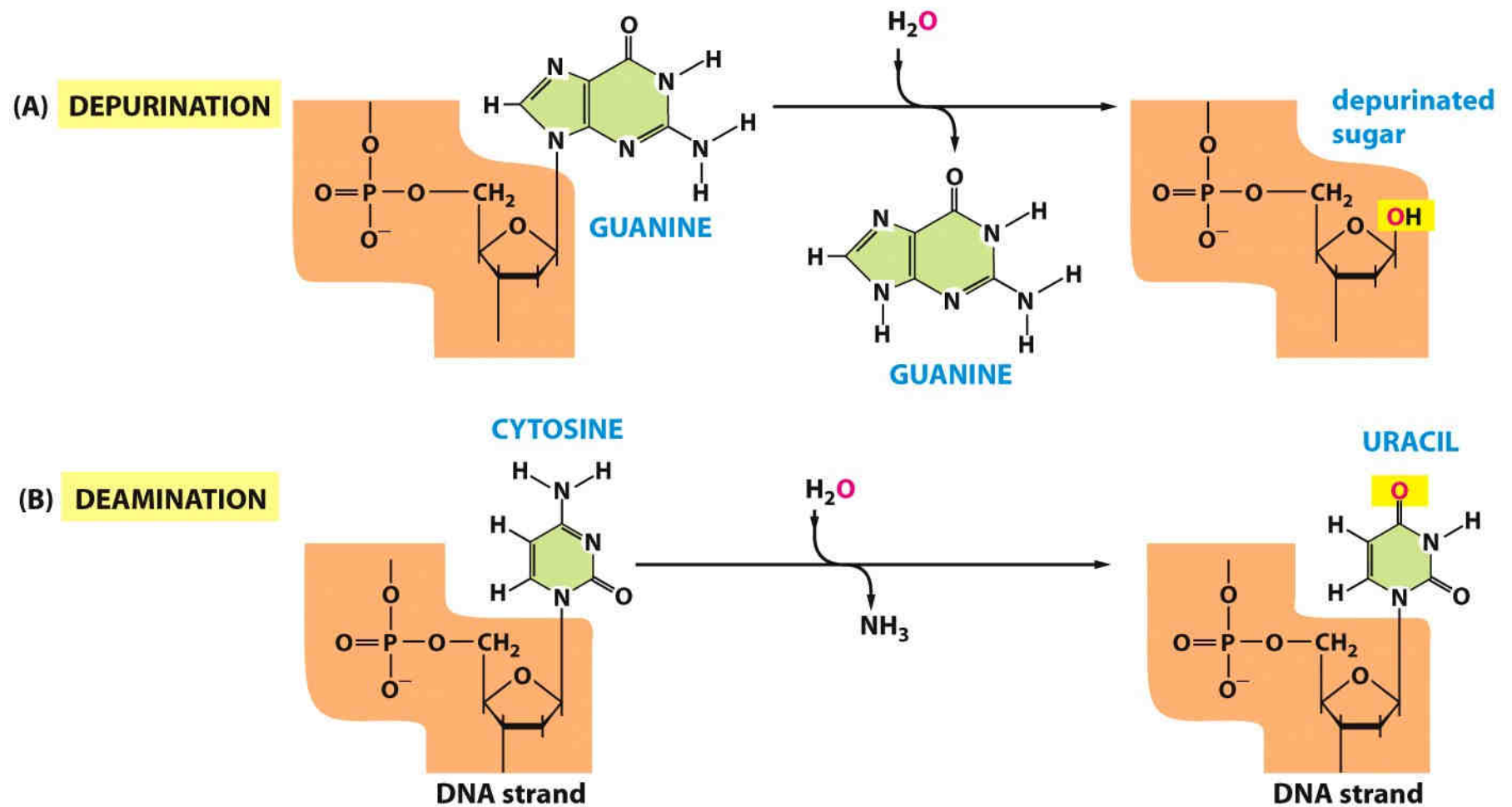
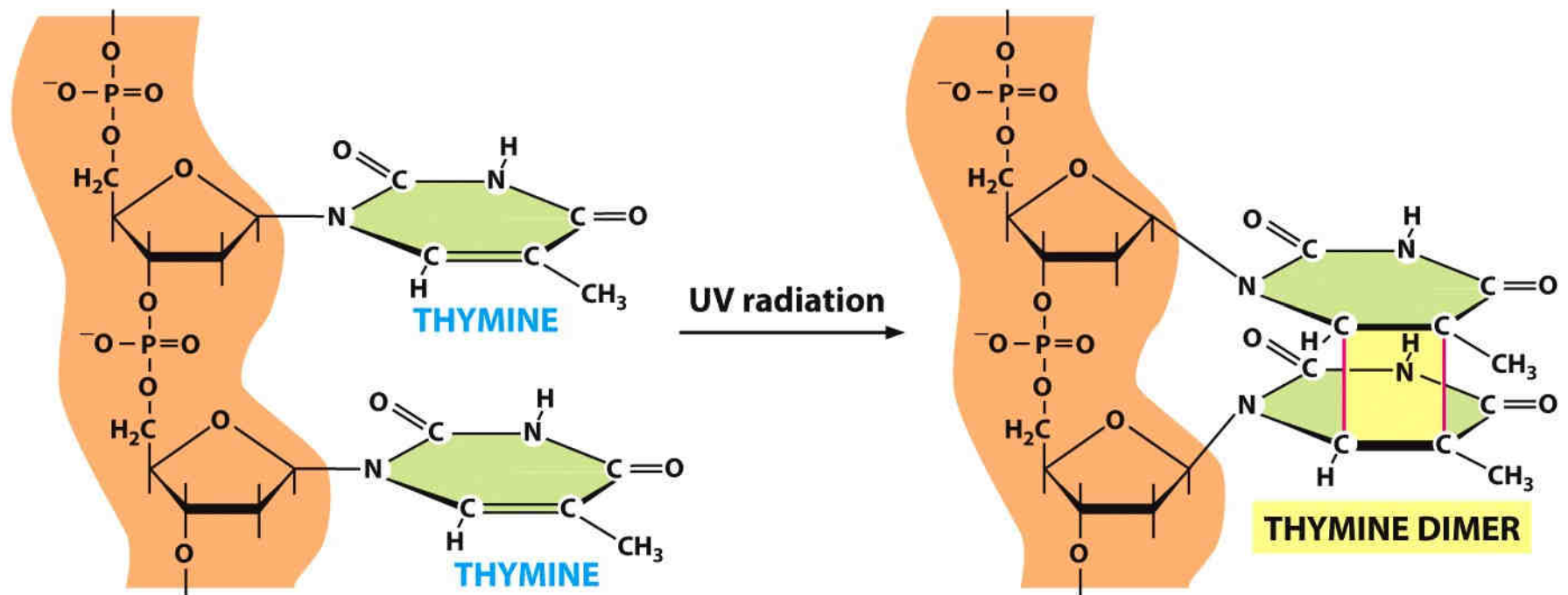


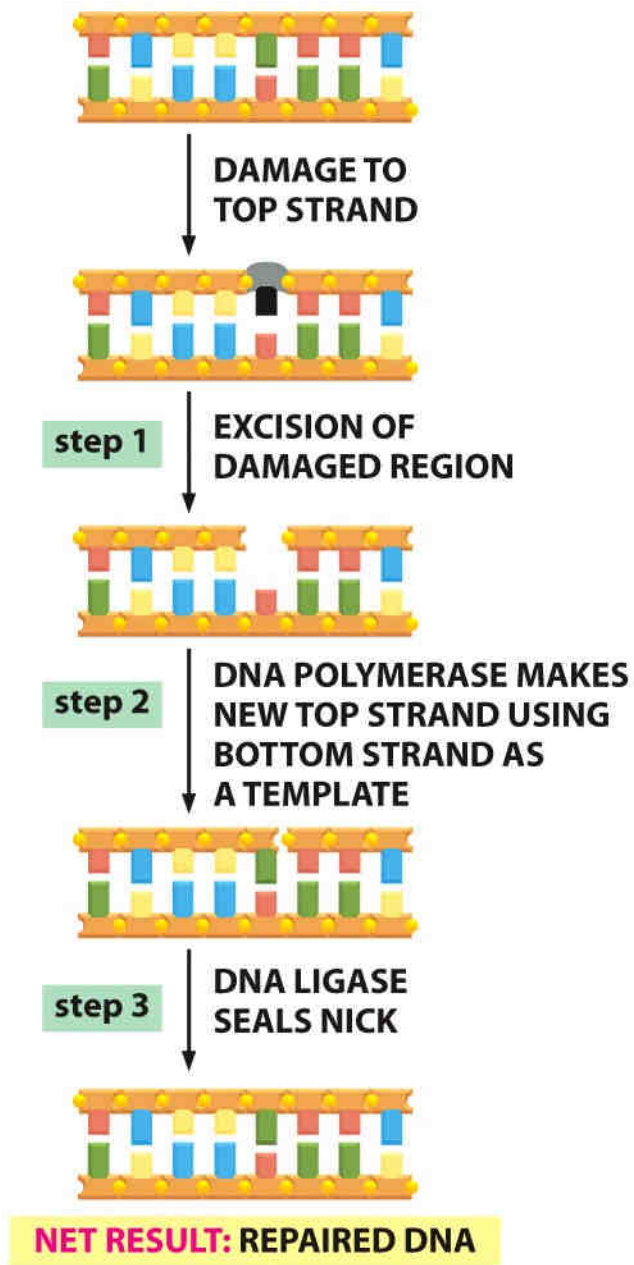
Figure 6-15 *Essential Cell Biology* (© Garland Science 2010)

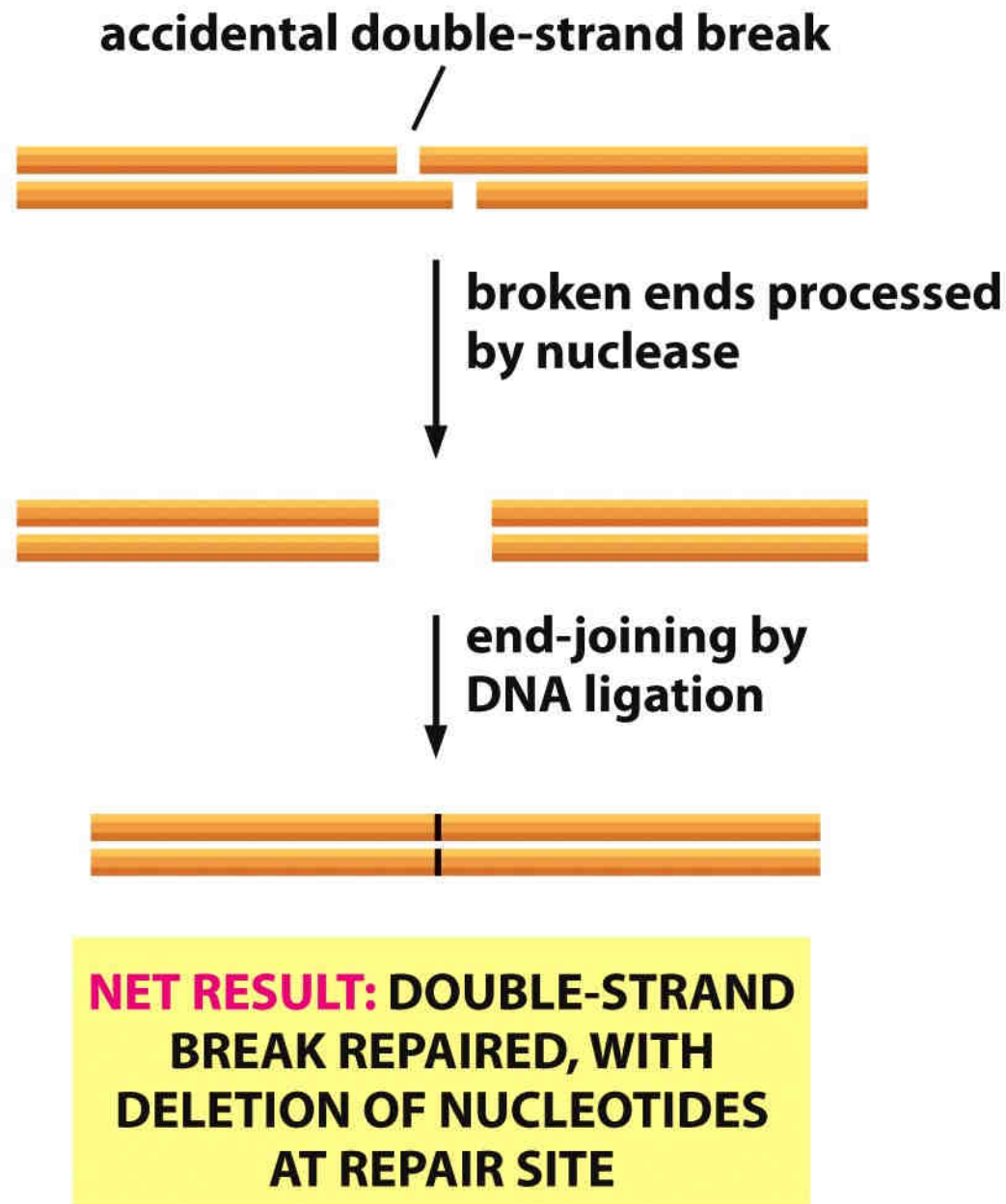


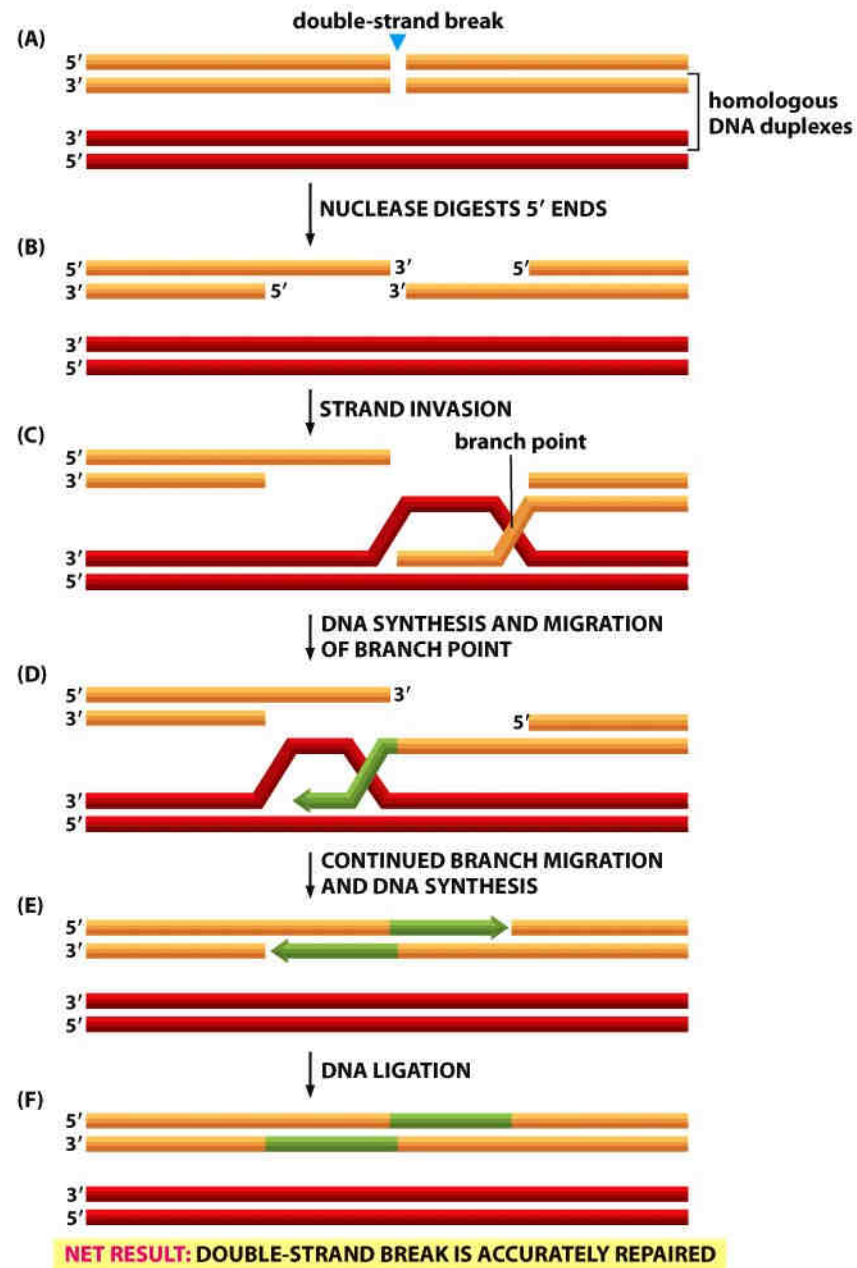


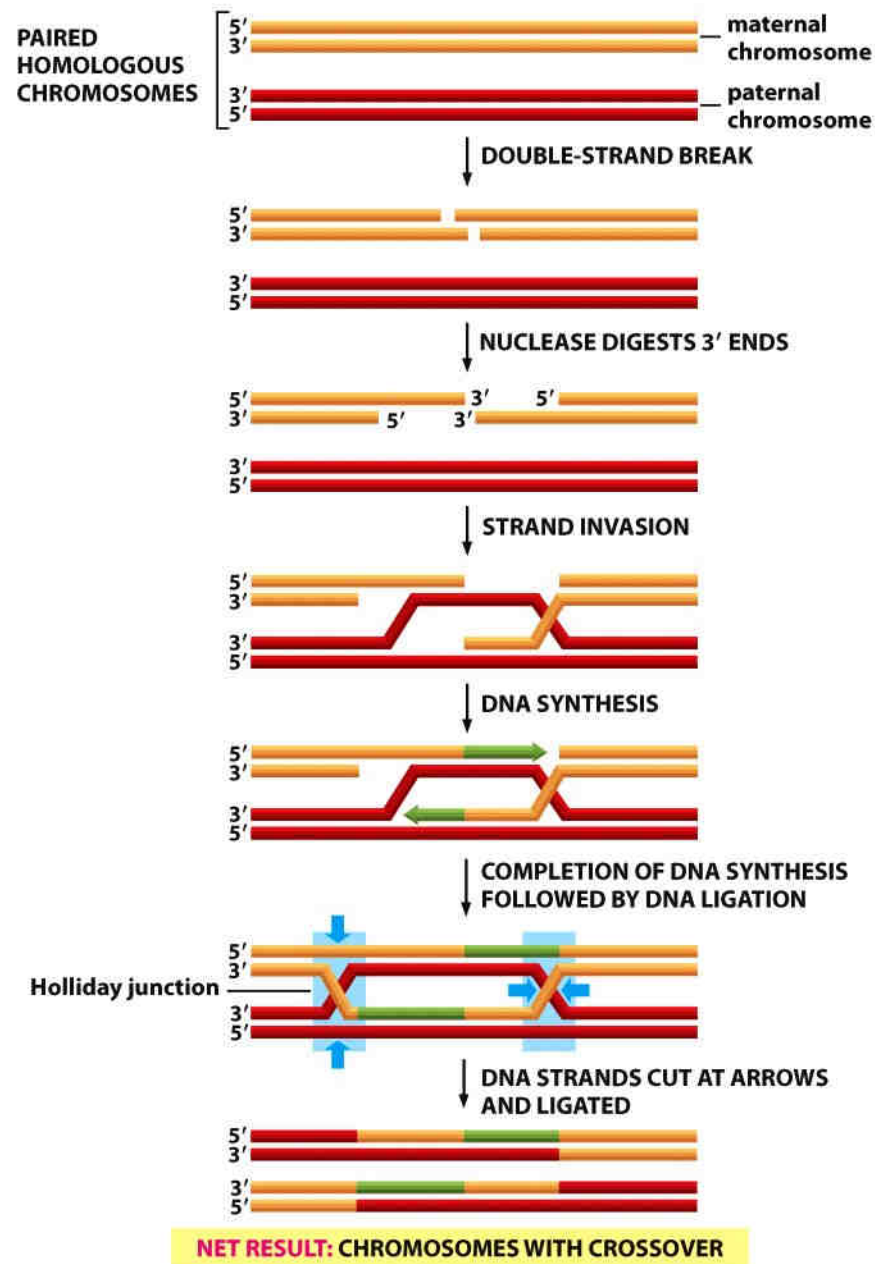


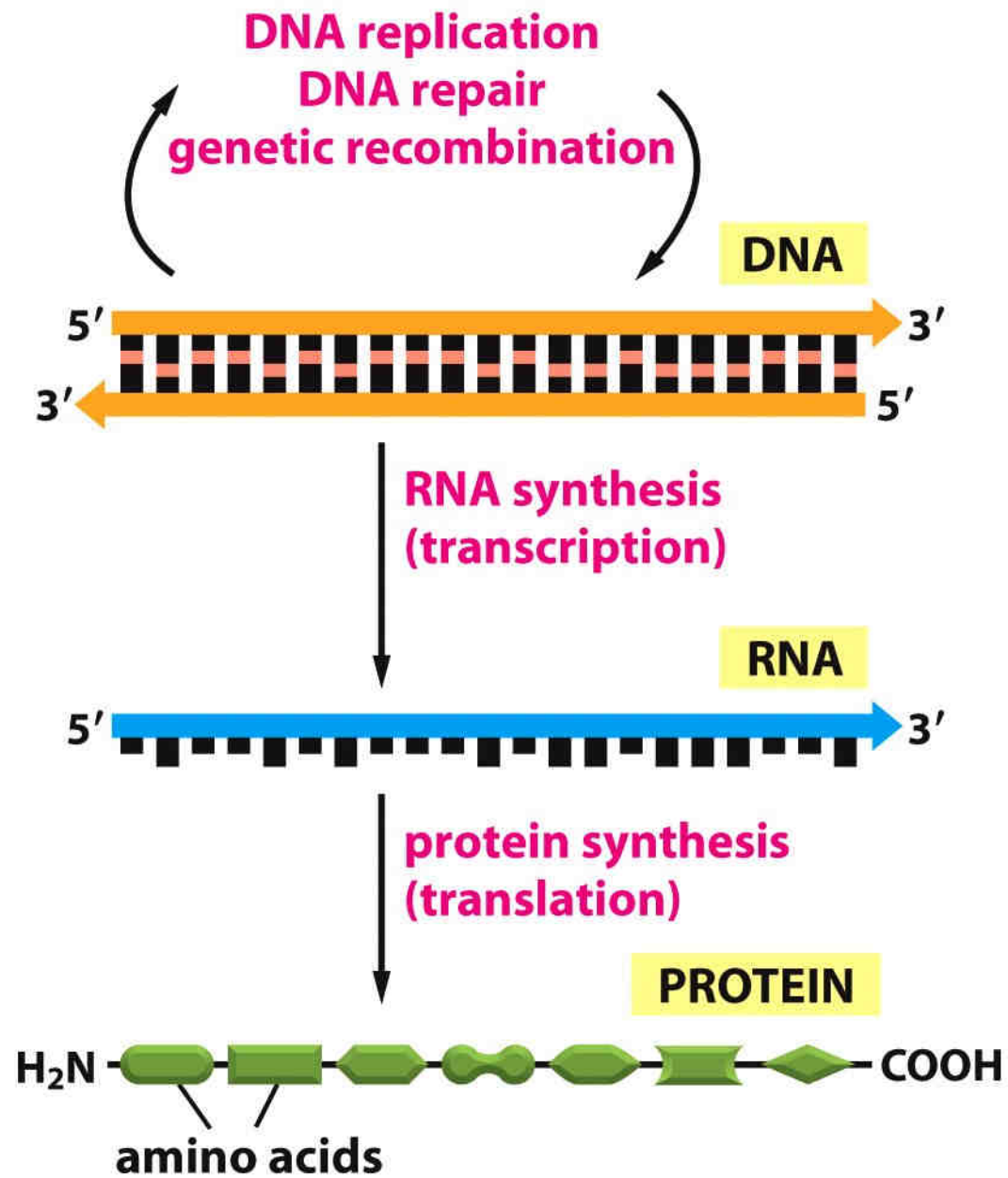


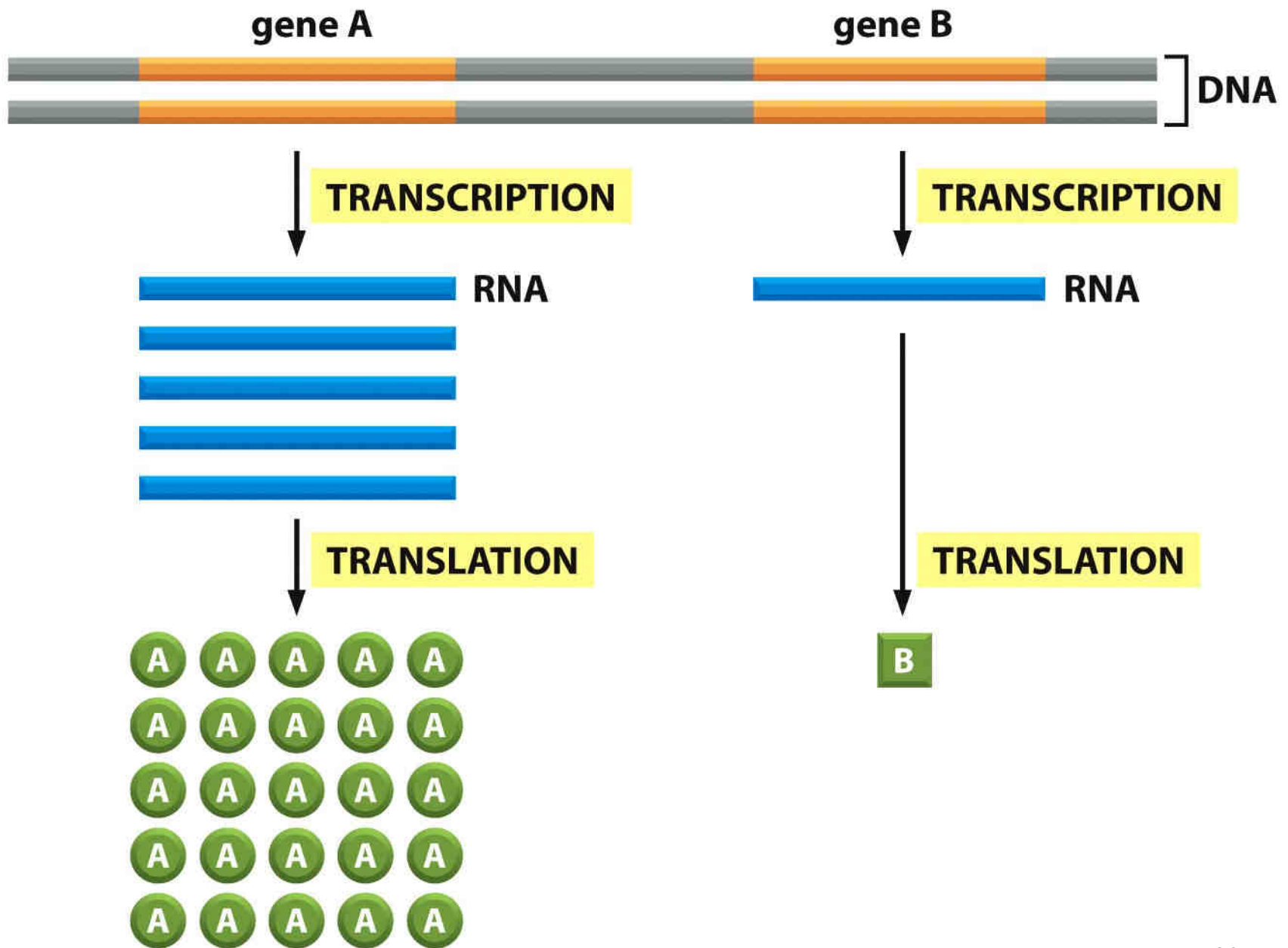




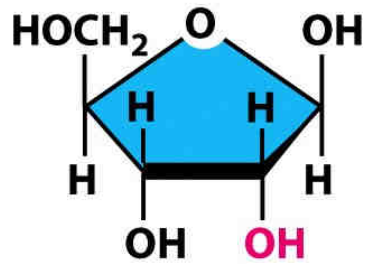






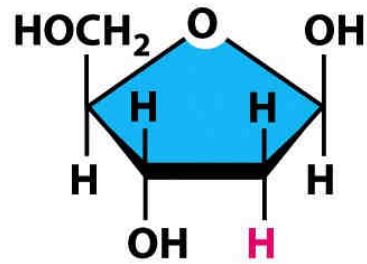


(A)



**ribose**

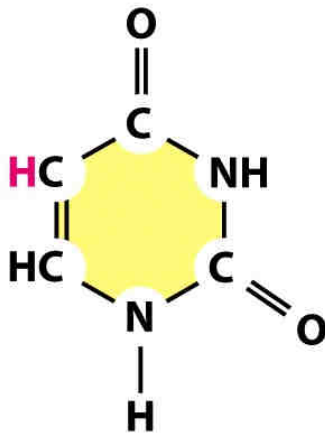
used in ribonucleic acid (RNA)



**deoxyribose**

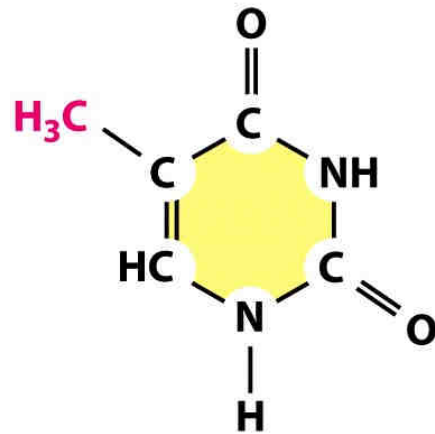
used in deoxyribonucleic acid (DNA)

(B)



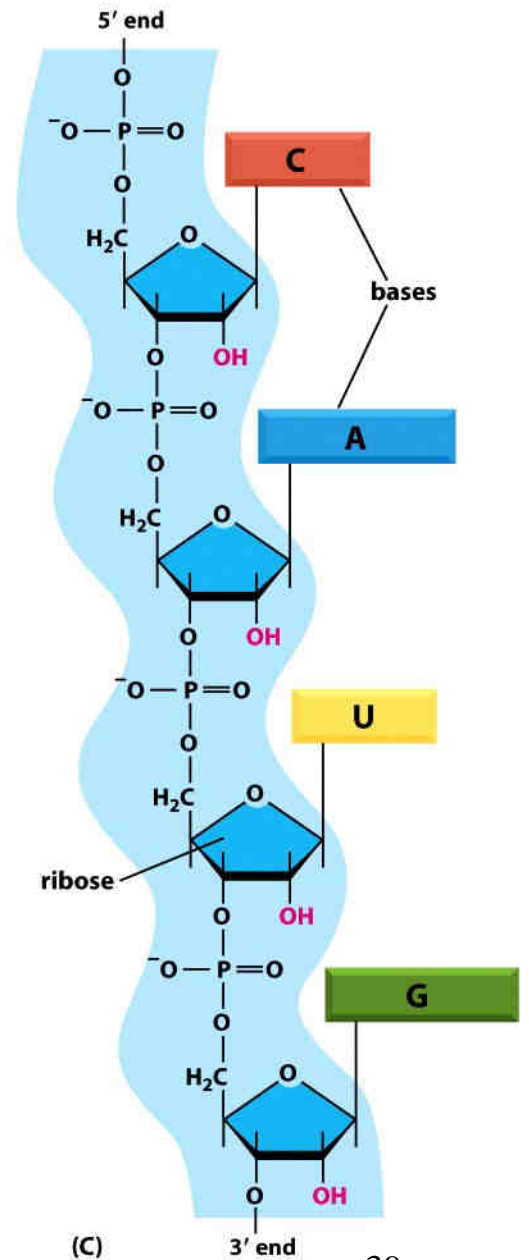
**uracil**

used in RNA



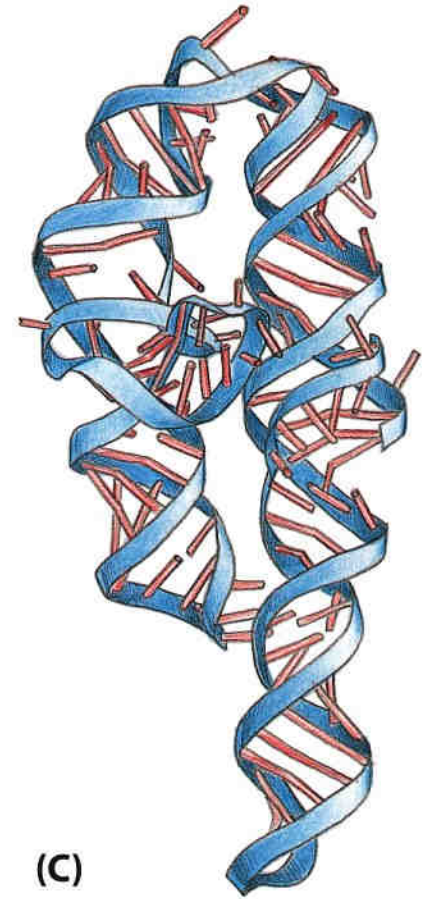
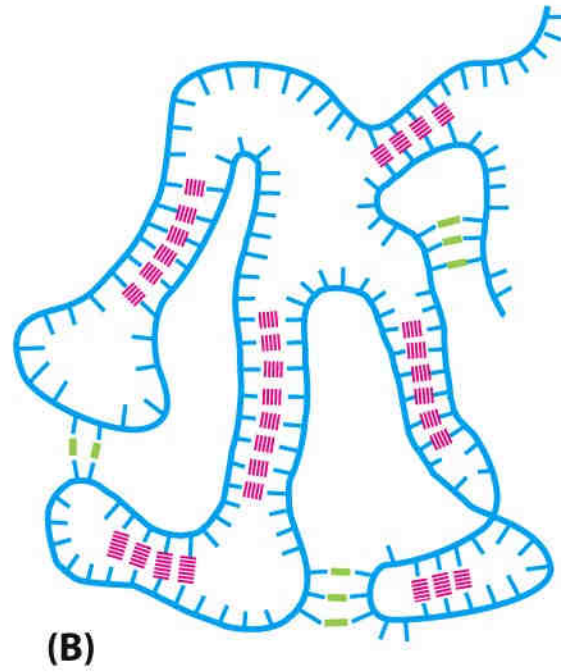
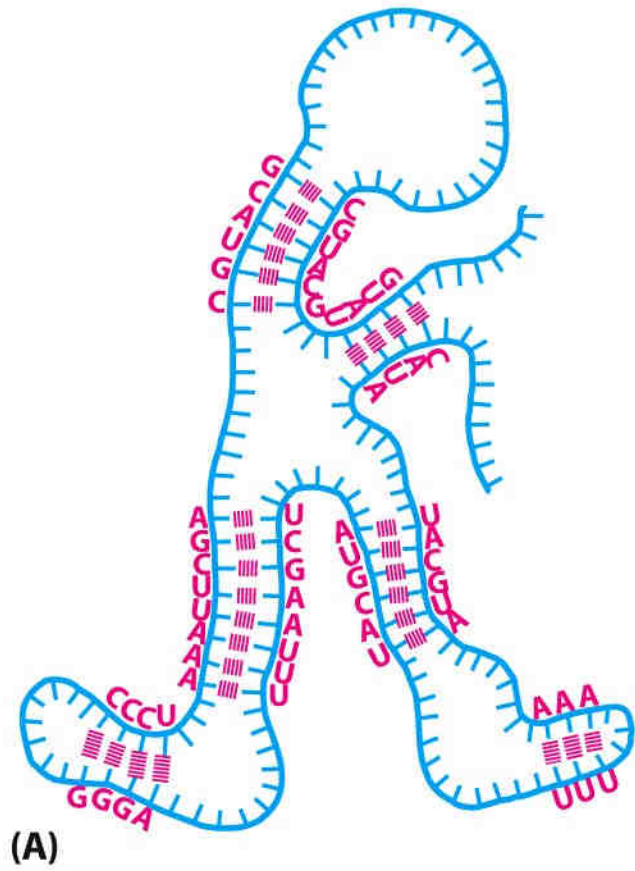
**thymine**

used in DNA



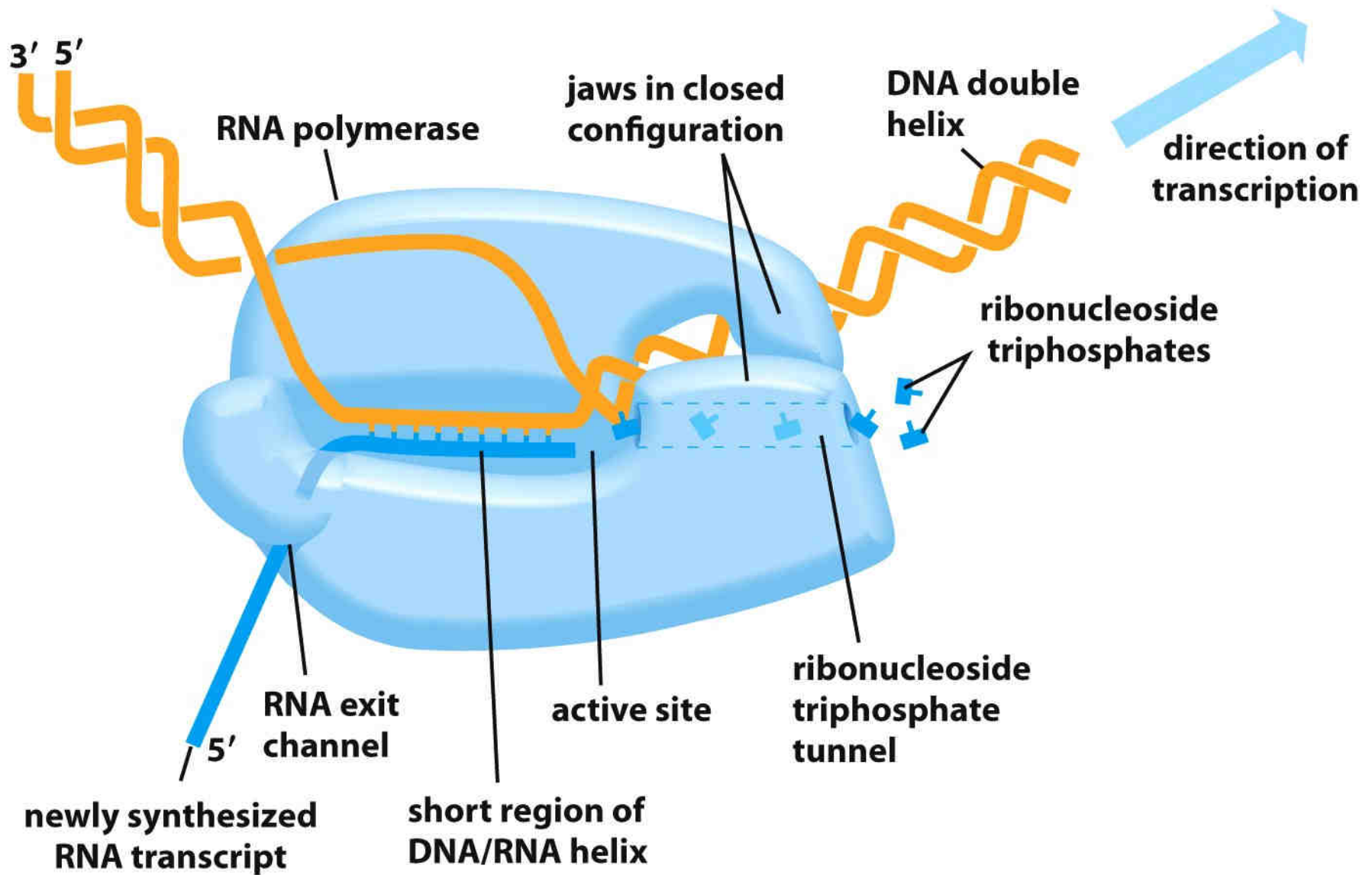
(C)

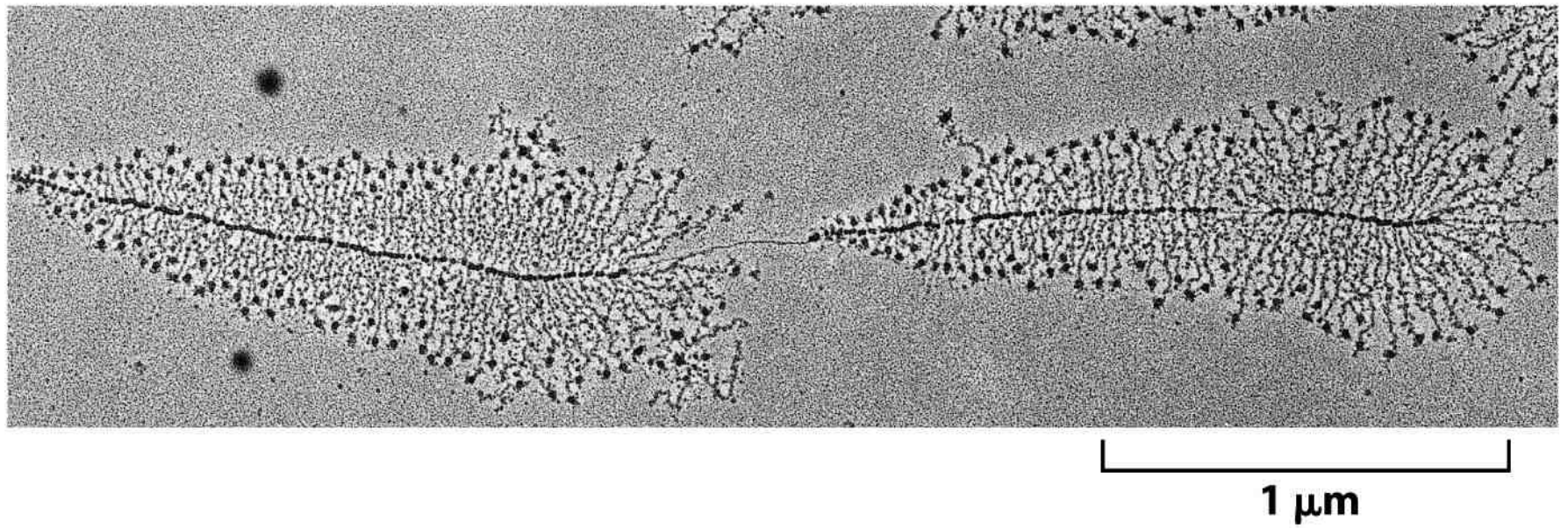






<b>TABLE 7-1 TYPES OF RNA PRODUCED IN CELLS</b>	
<b>TYPE OF RNA</b>	<b>FUNCTION</b>
<b>mRNAs</b>	<b>code for proteins</b>
<b>rRNAs</b>	<b>form the core of the ribosome and catalyze protein synthesis</b>
<b>miRNAs</b>	<b>regulate gene expression</b>
<b>tRNAs</b>	<b>serve as adaptors between mRNA and amino acids during protein synthesis</b>
<b>Other small RNAs</b>	<b>used in RNA splicing, telomere maintenance, and many other processes</b>





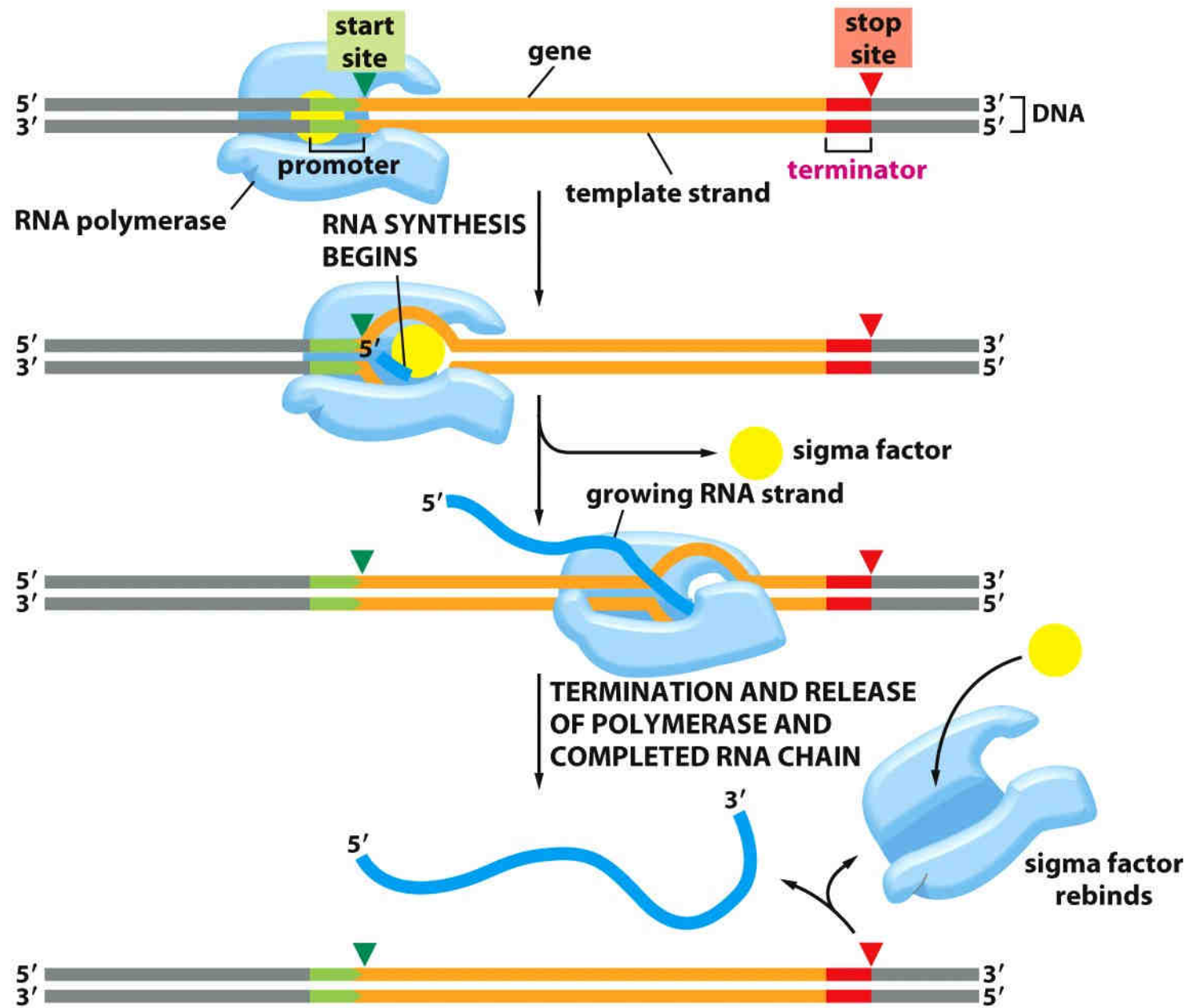
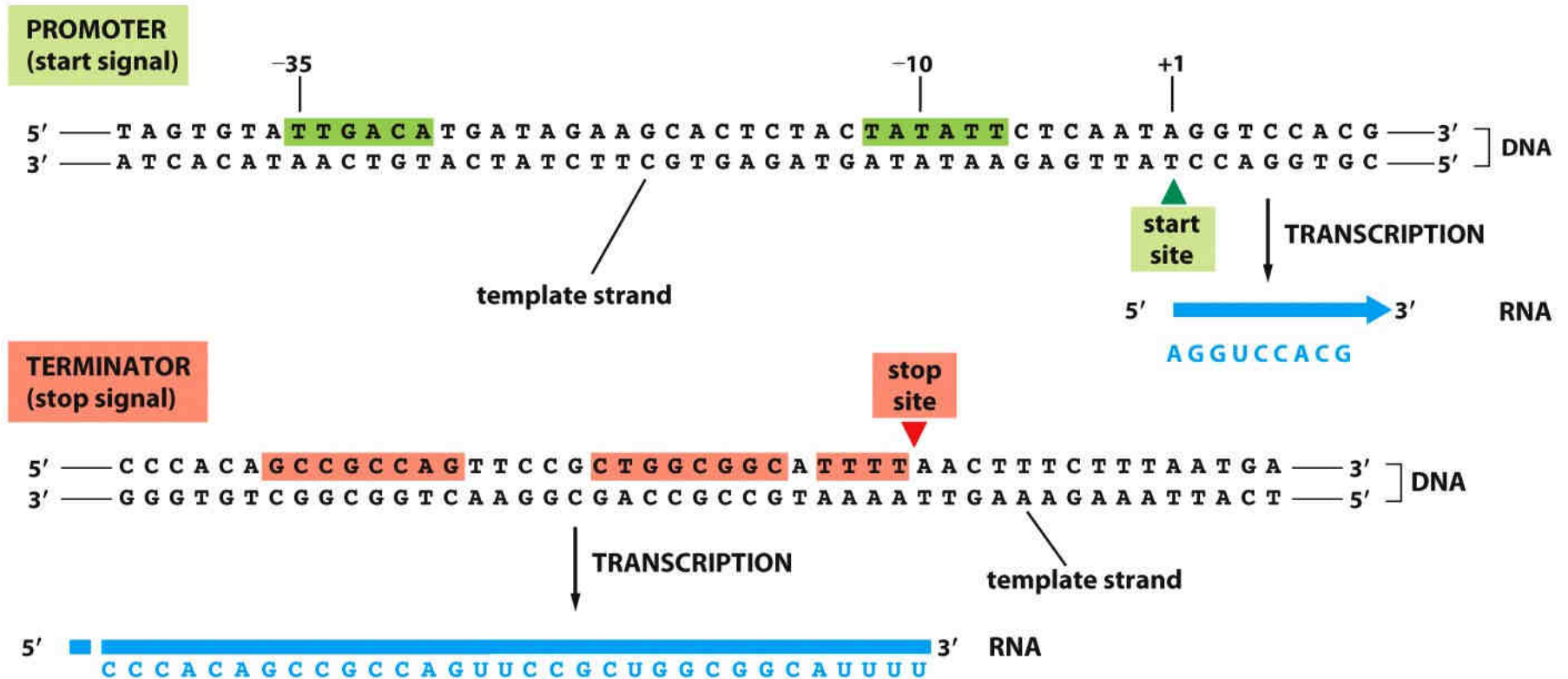
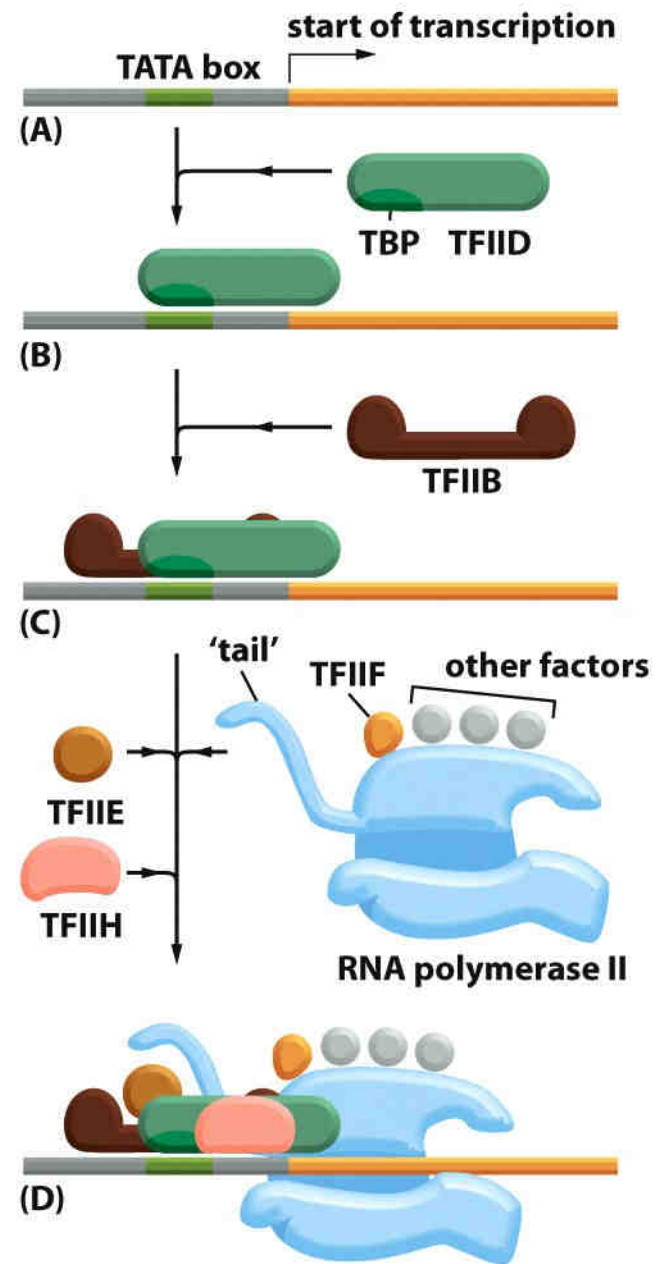
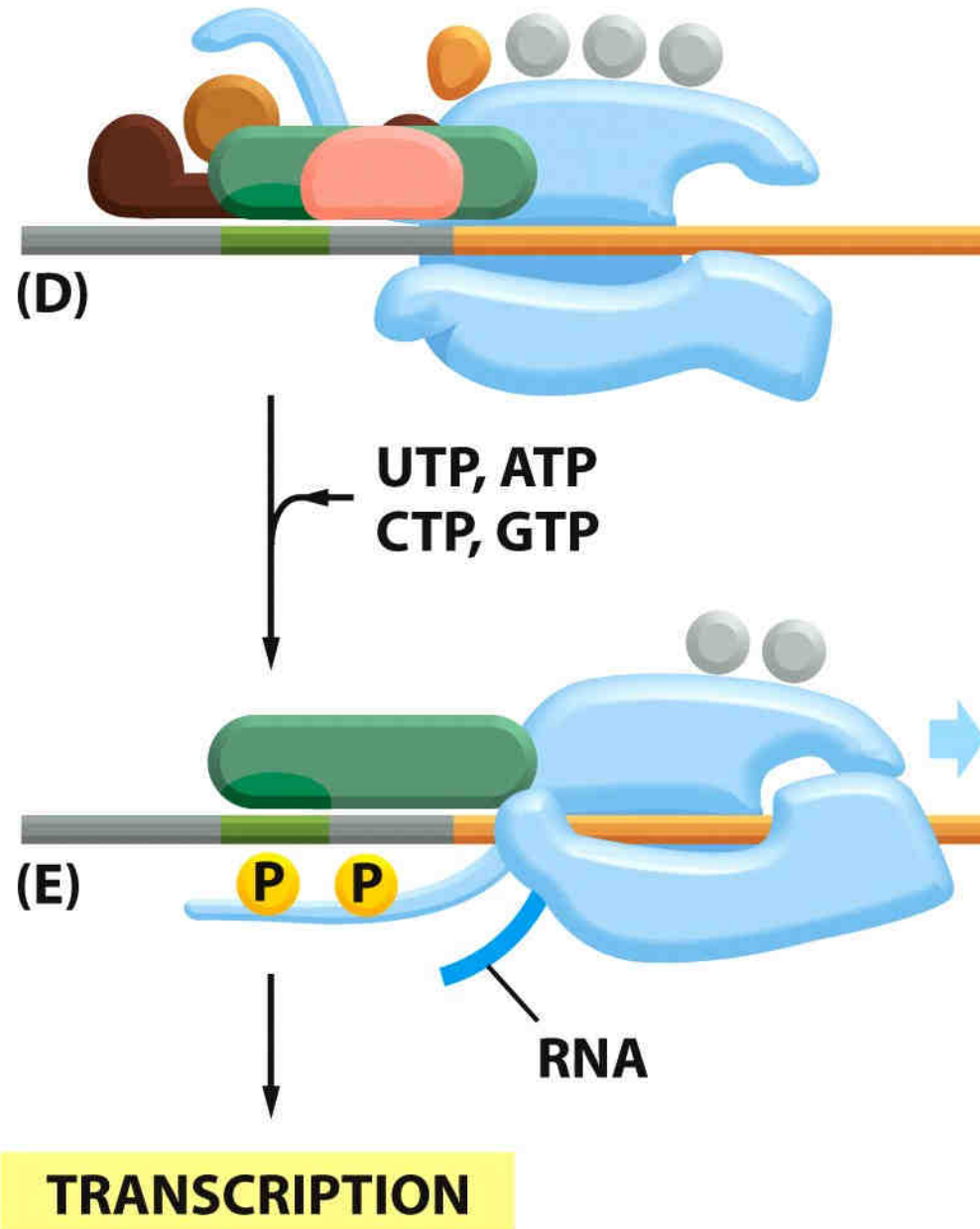


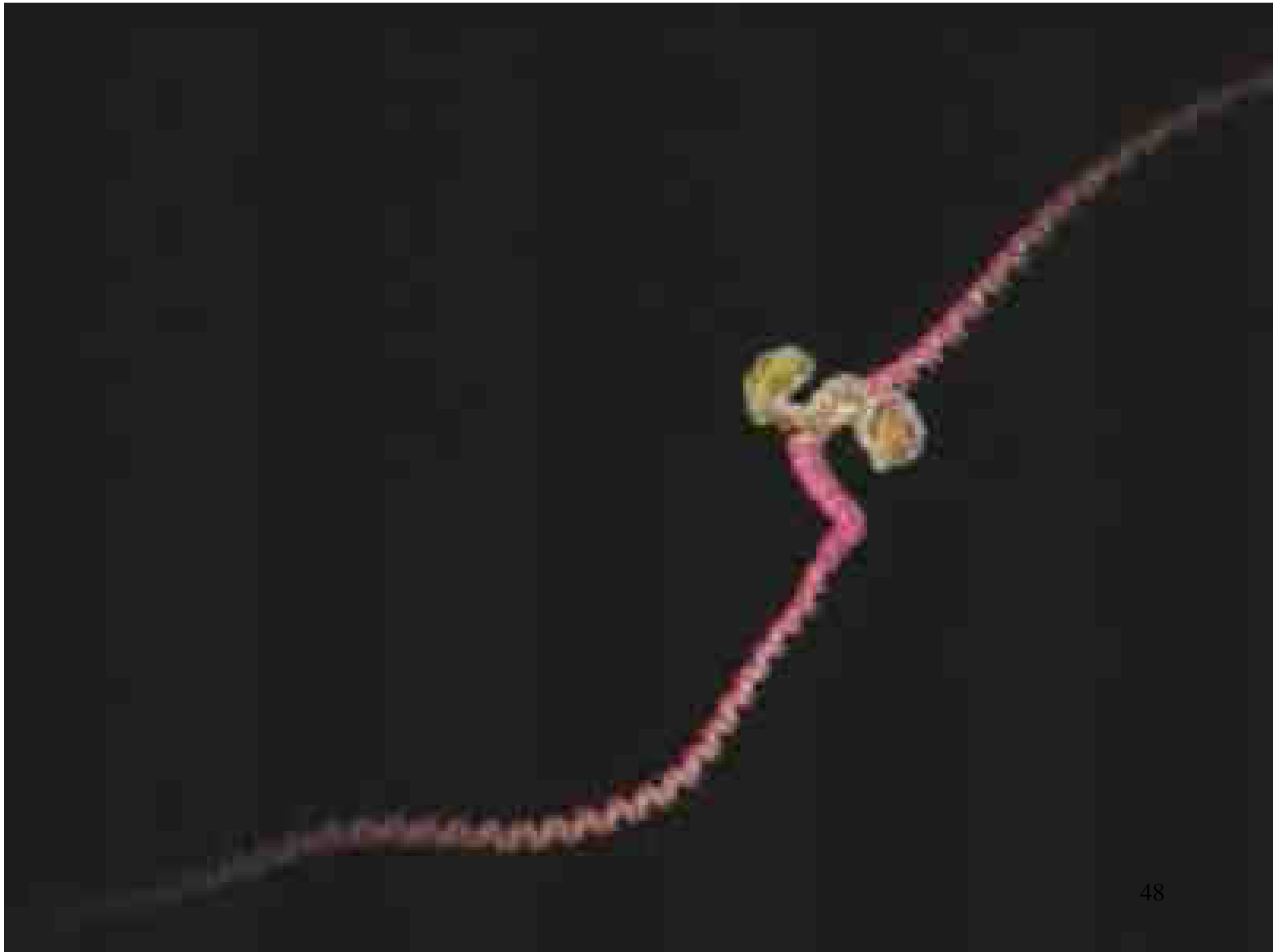
Figure 7-9 *Essential Cell Biology* (© Garland Science 2010)



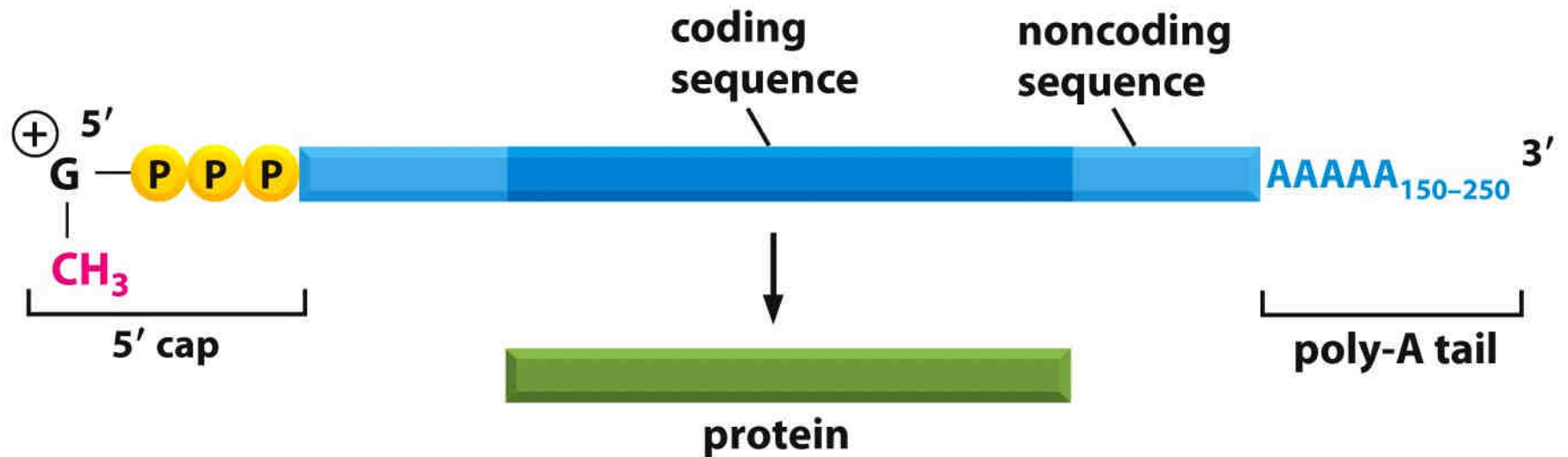


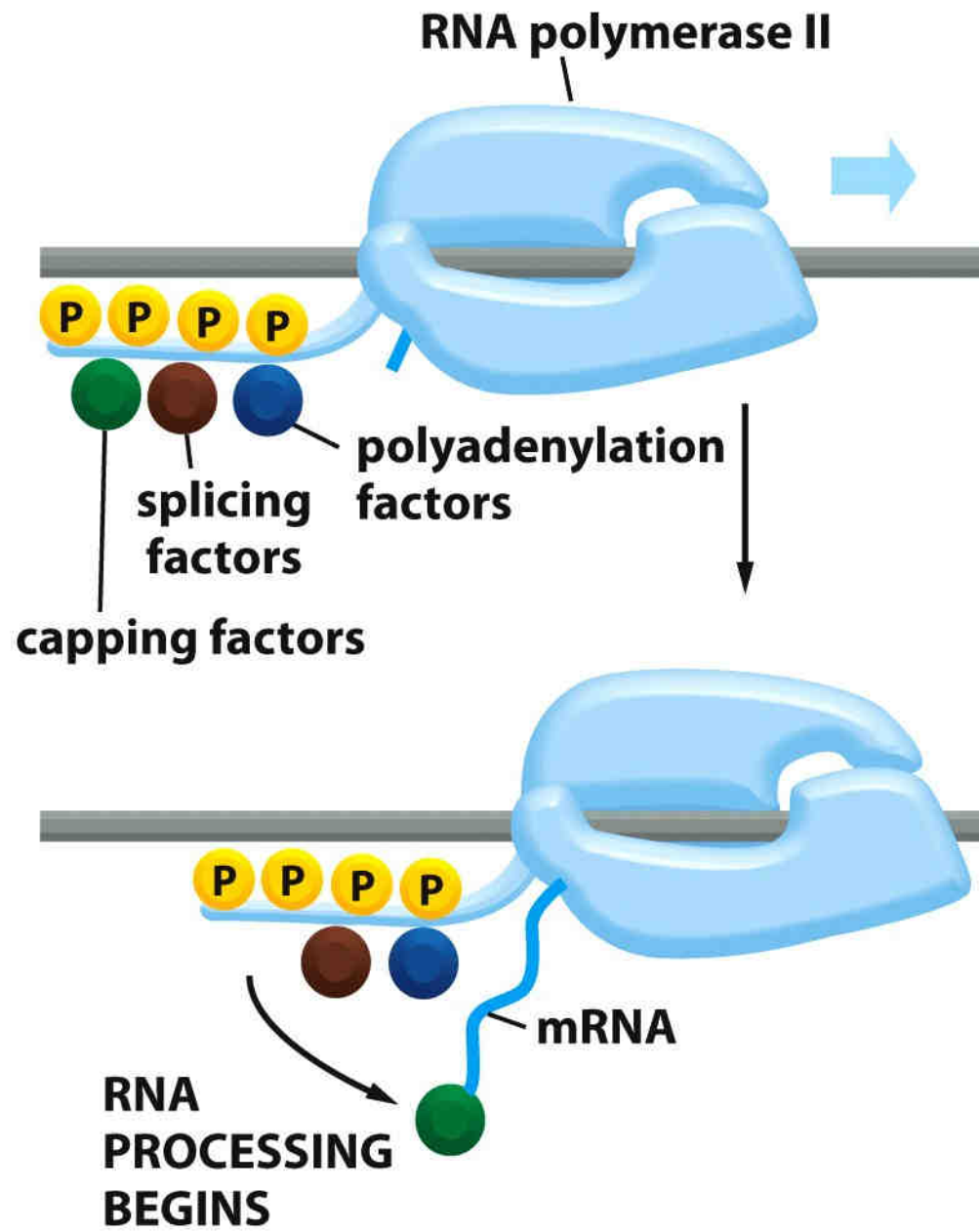


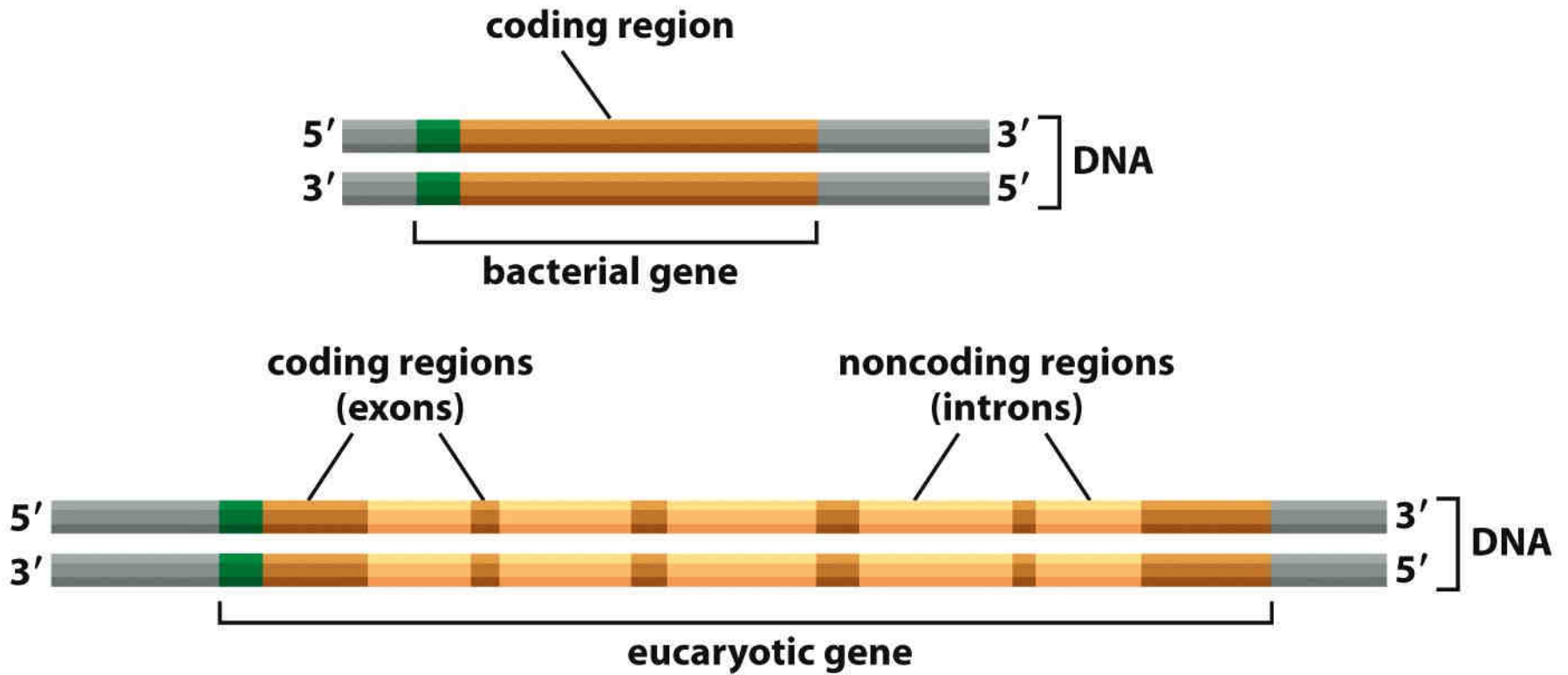




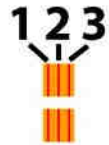
## RNA capping and polyadenylation







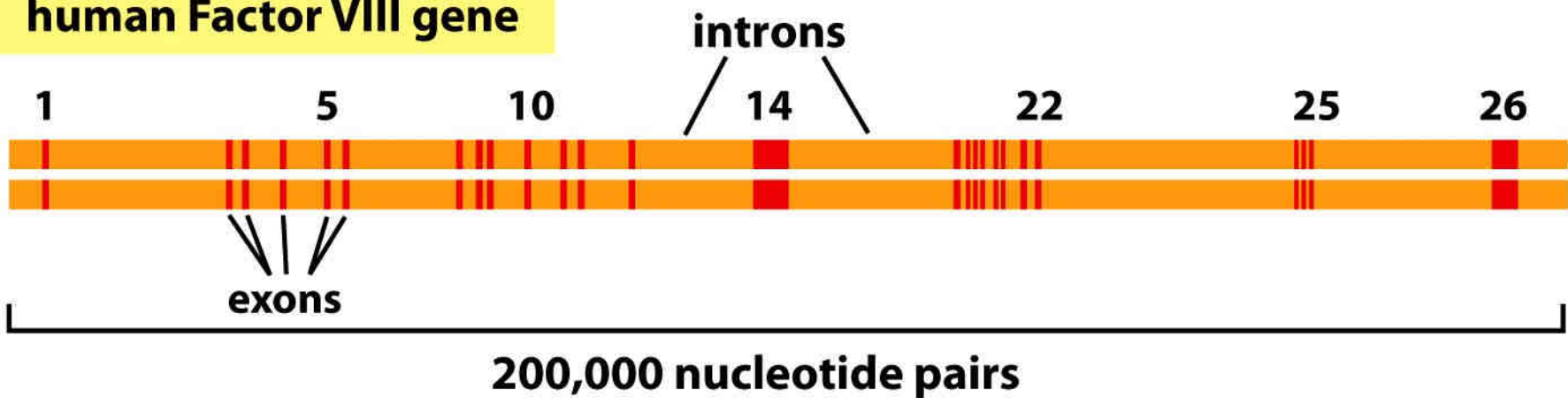
### human $\beta$ -globin gene



2000

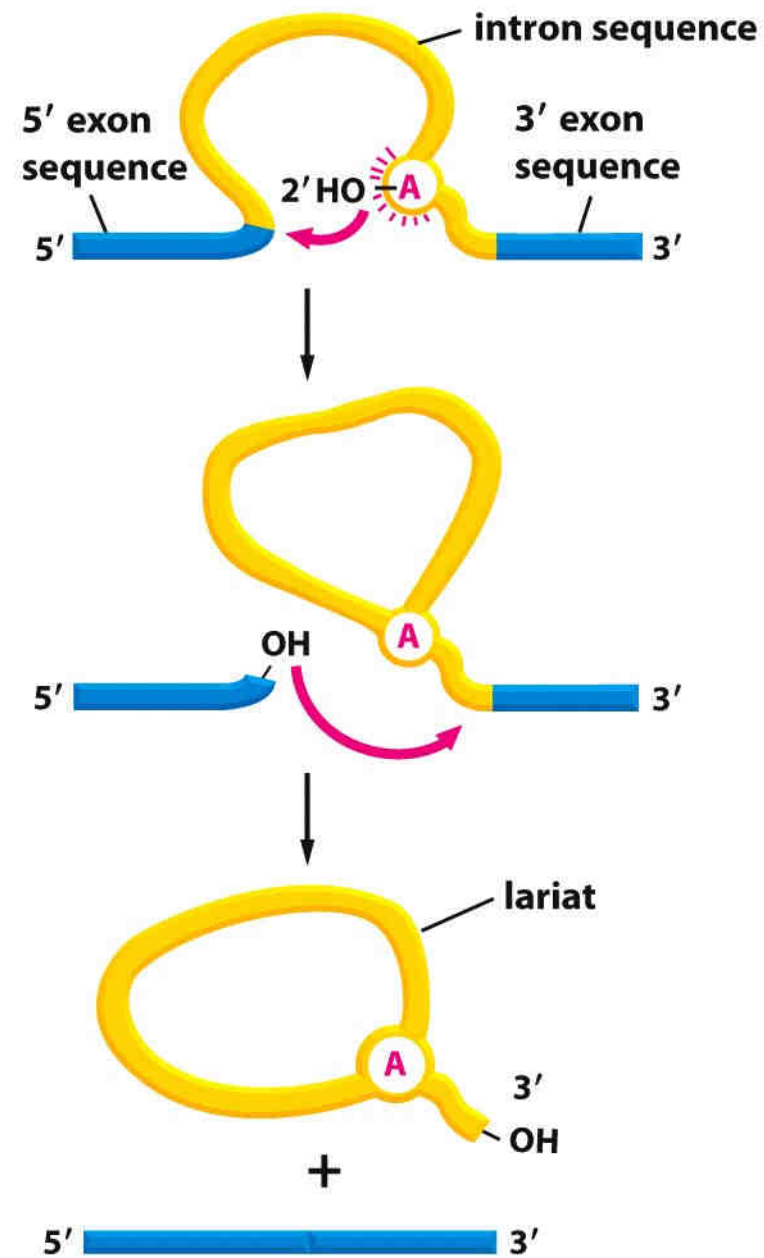
(A) nucleotide pairs

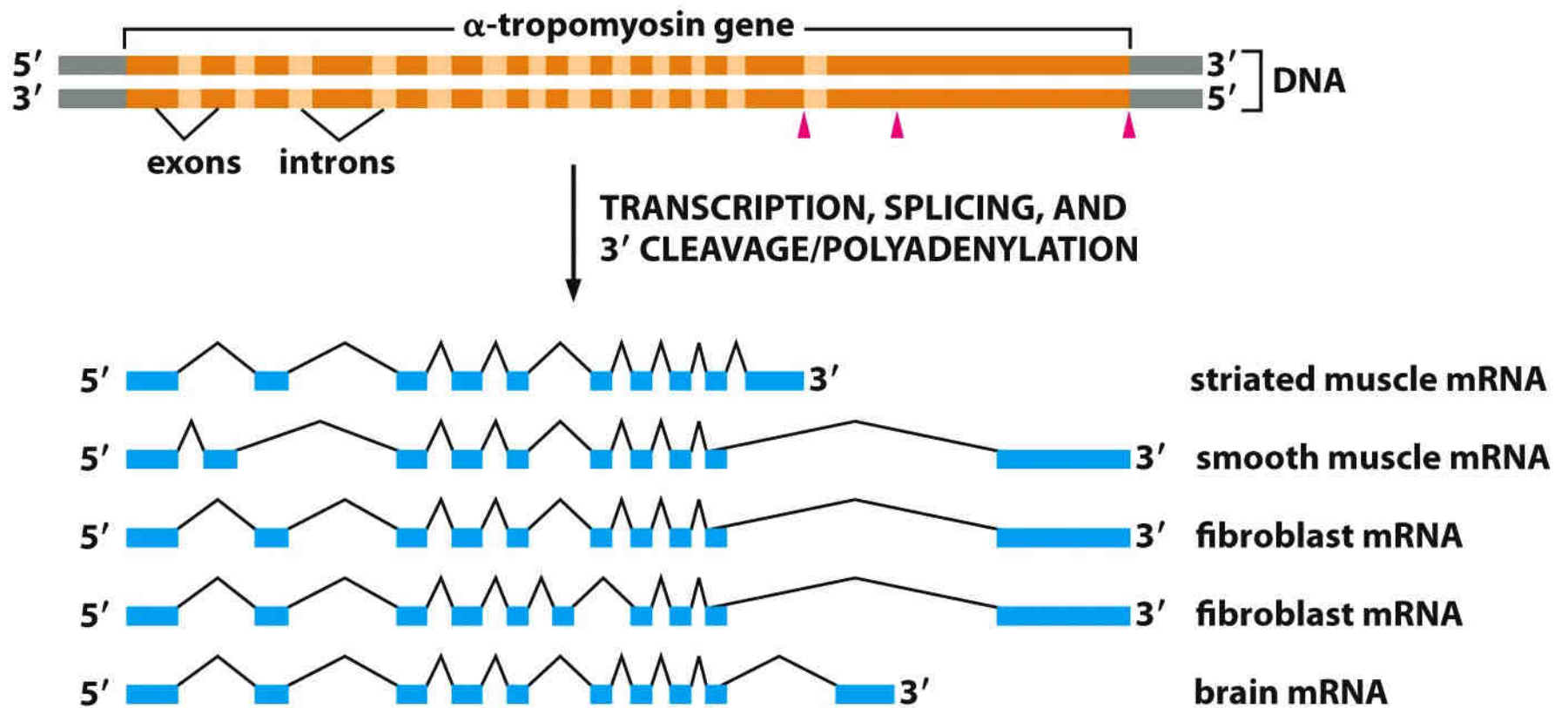
### human Factor VIII gene

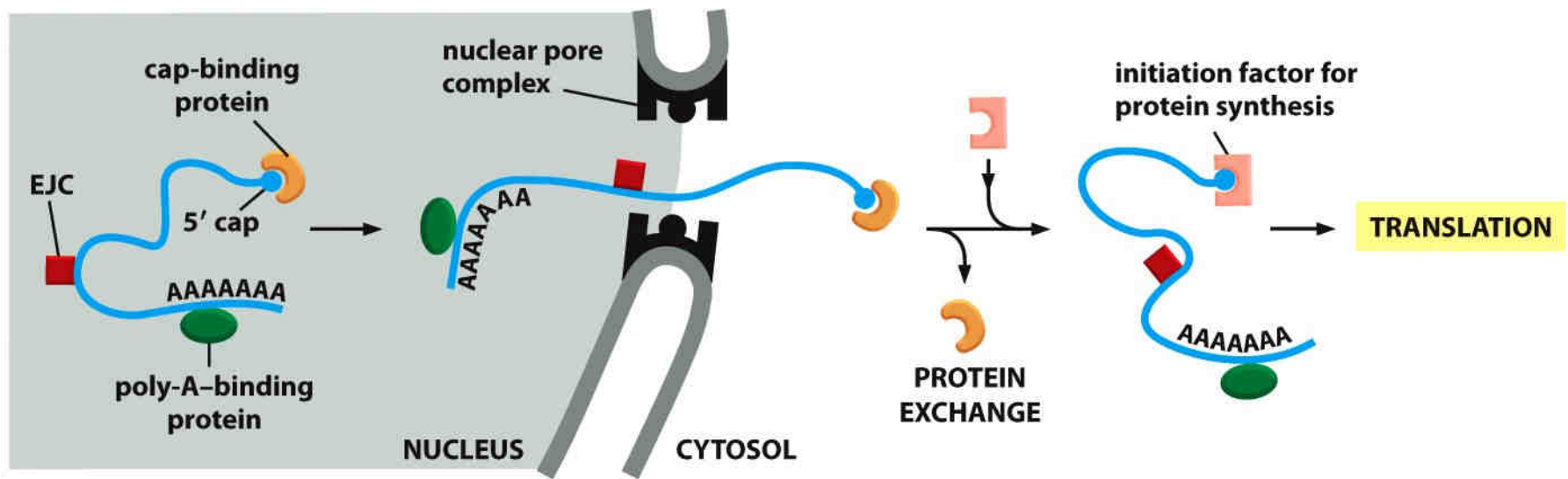


(B)

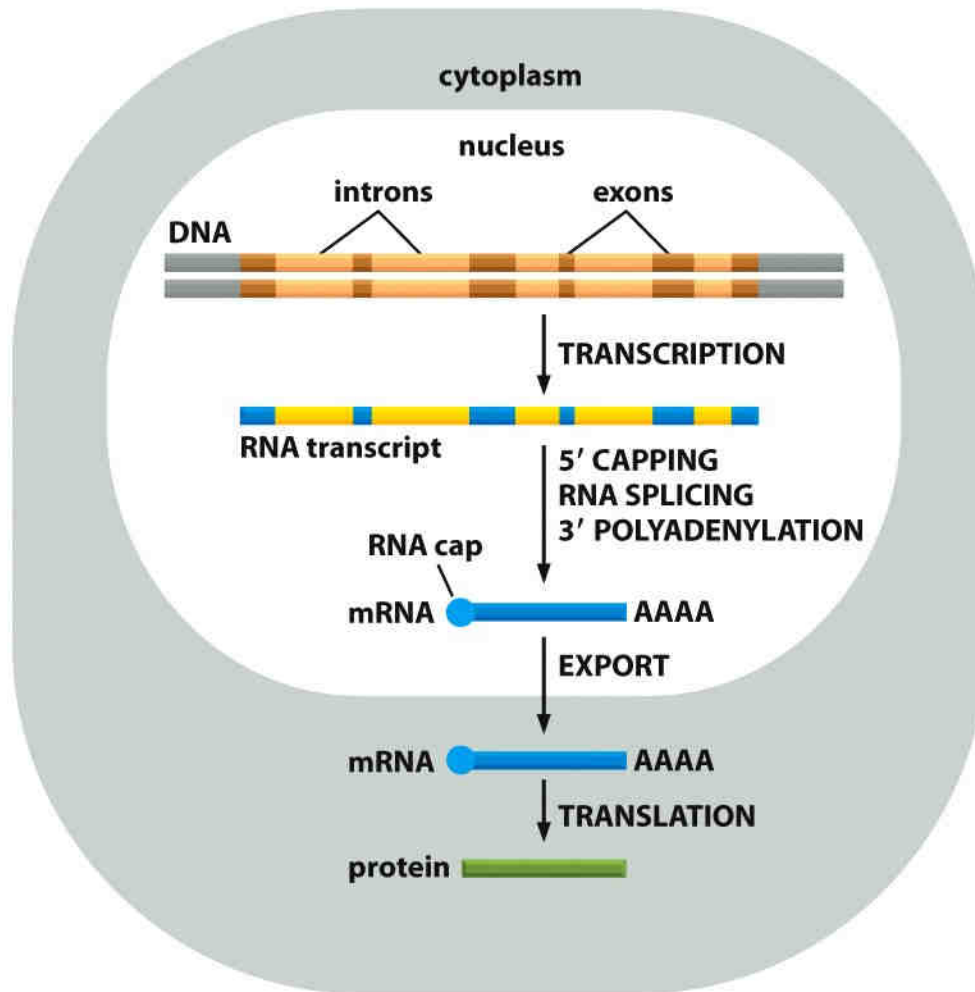




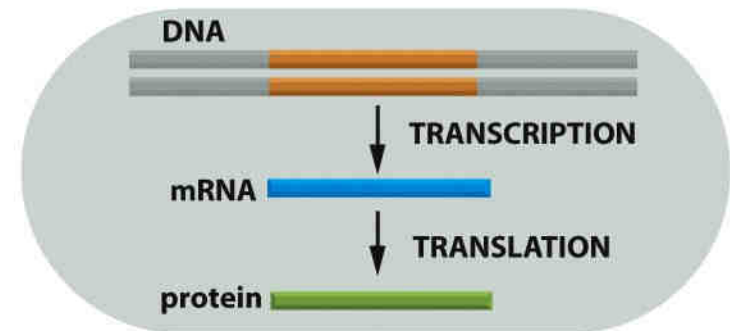




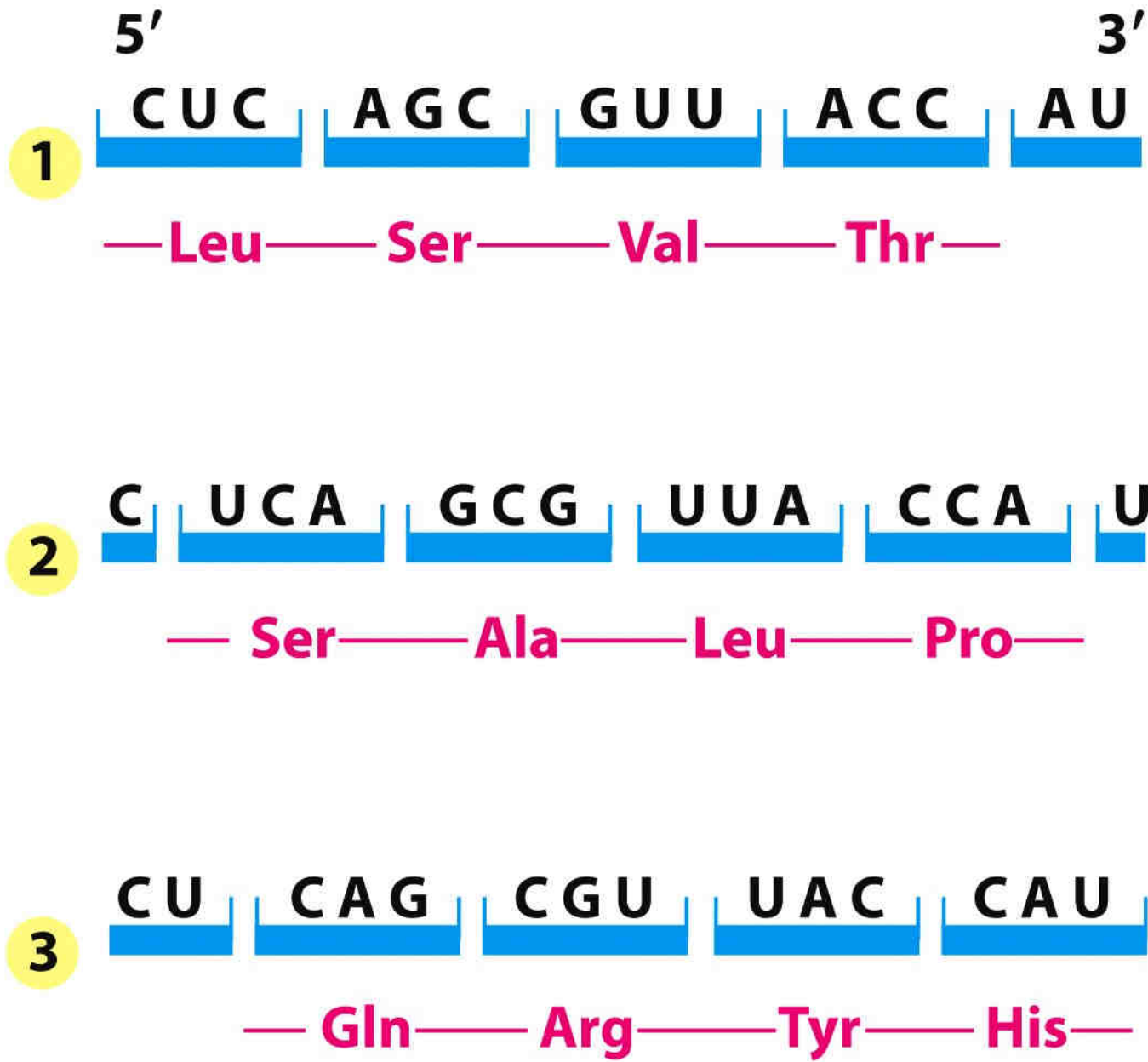
(A) **EUCARYOTES**



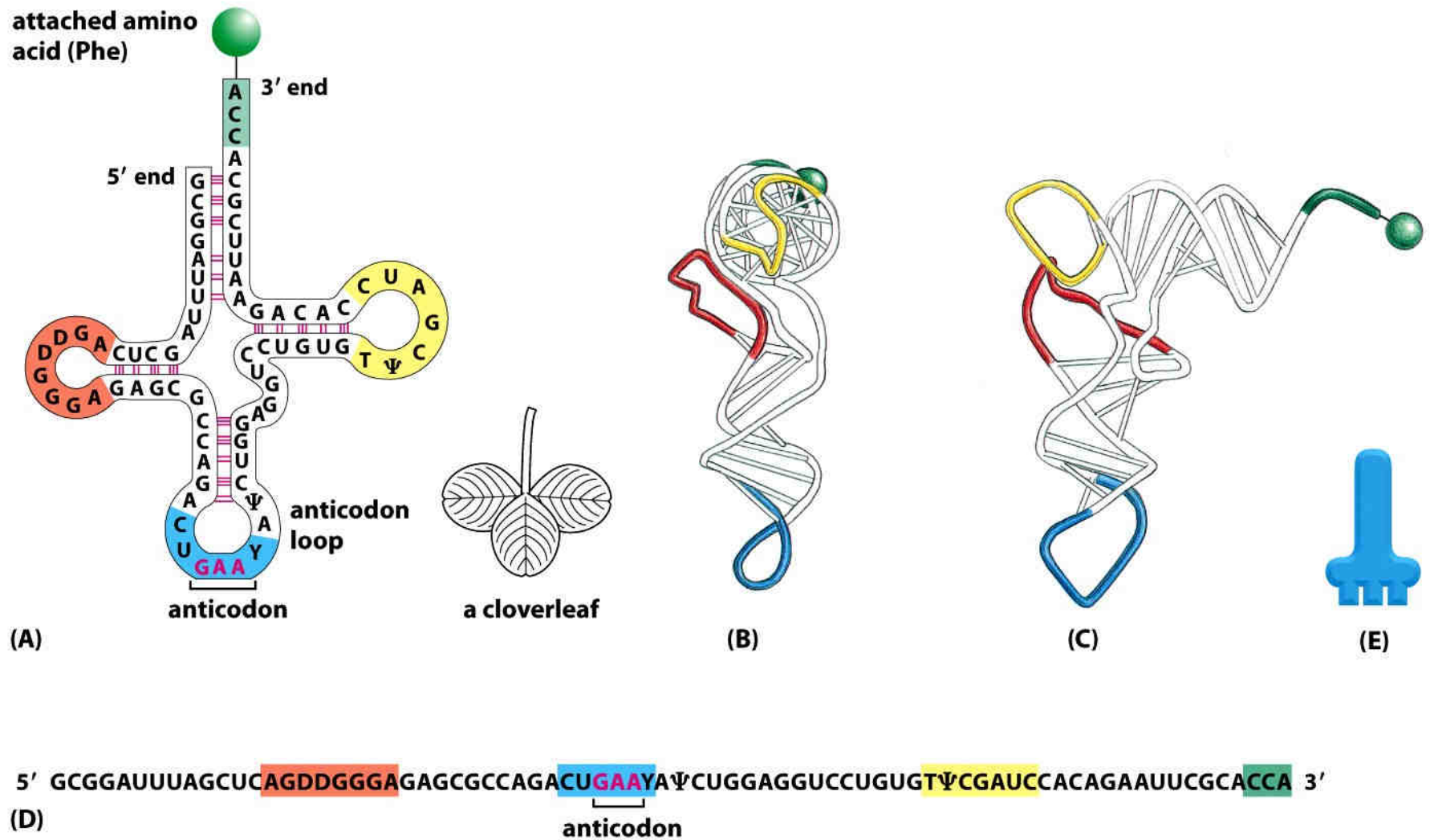
(B) **PROCARYOTES**

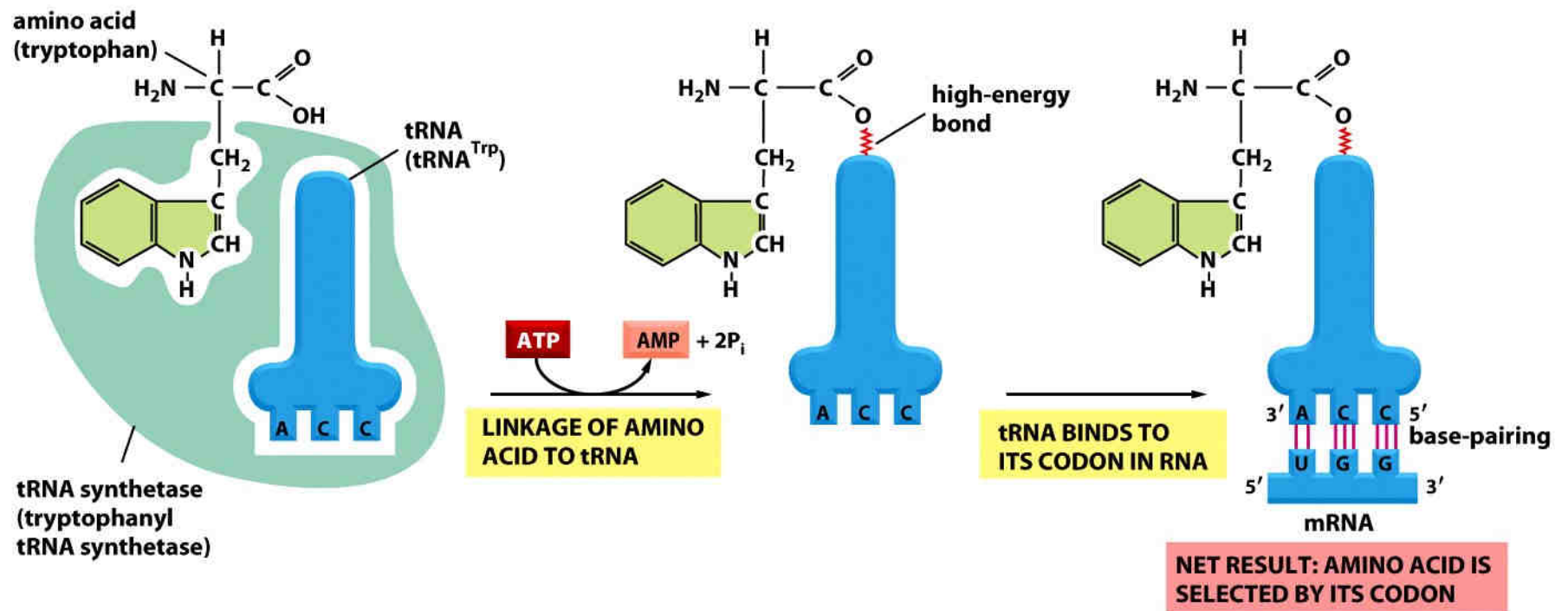


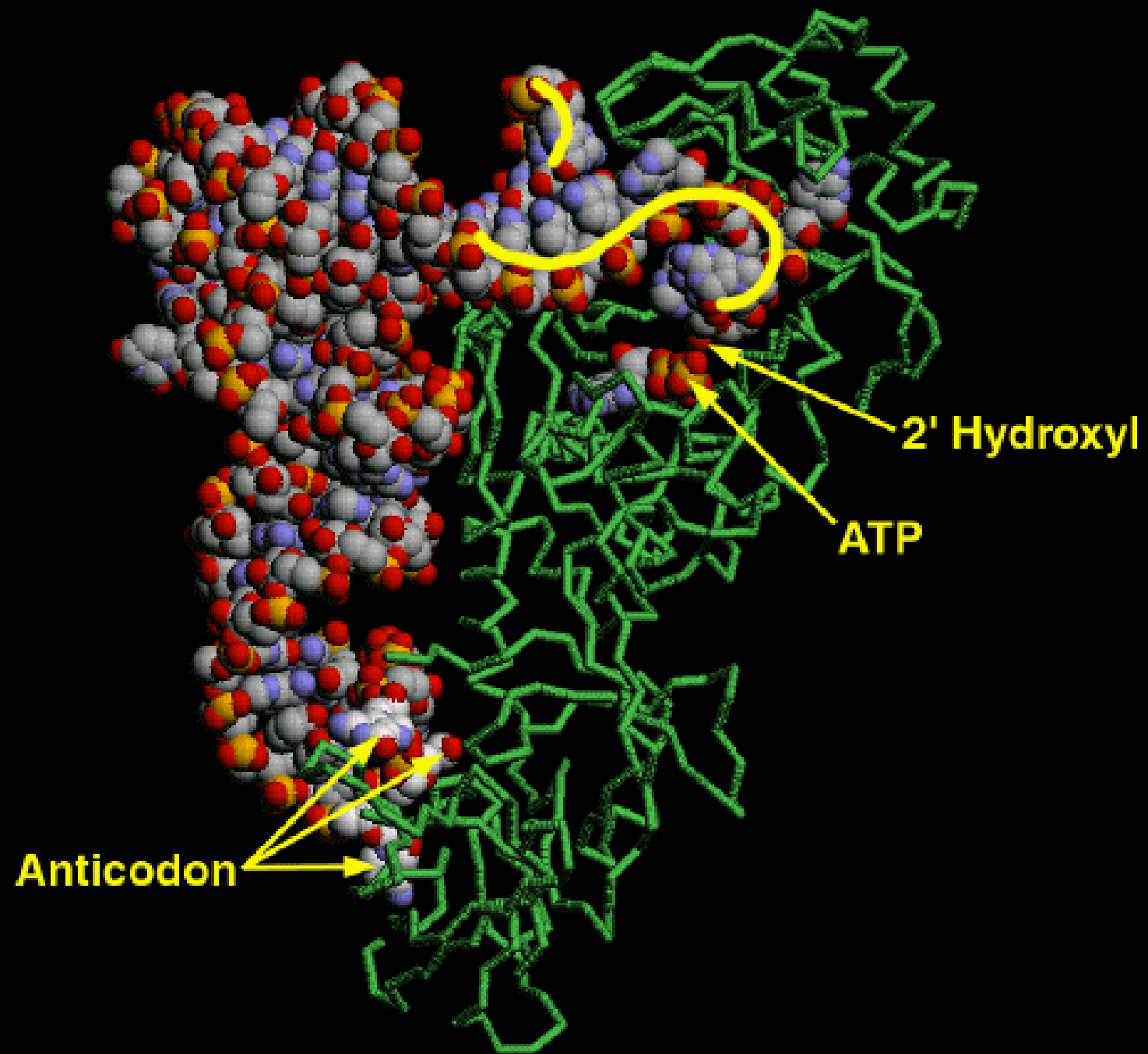


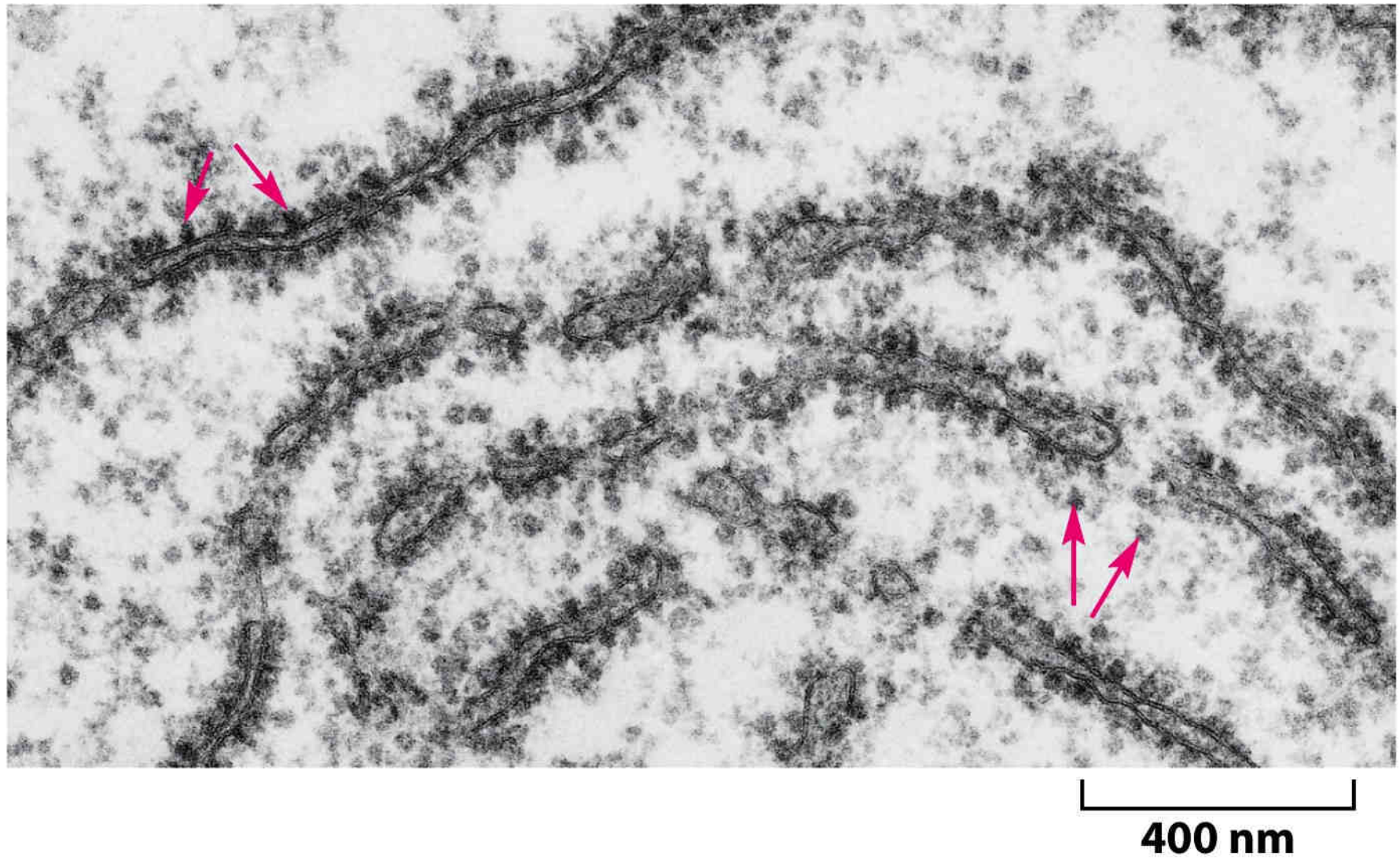


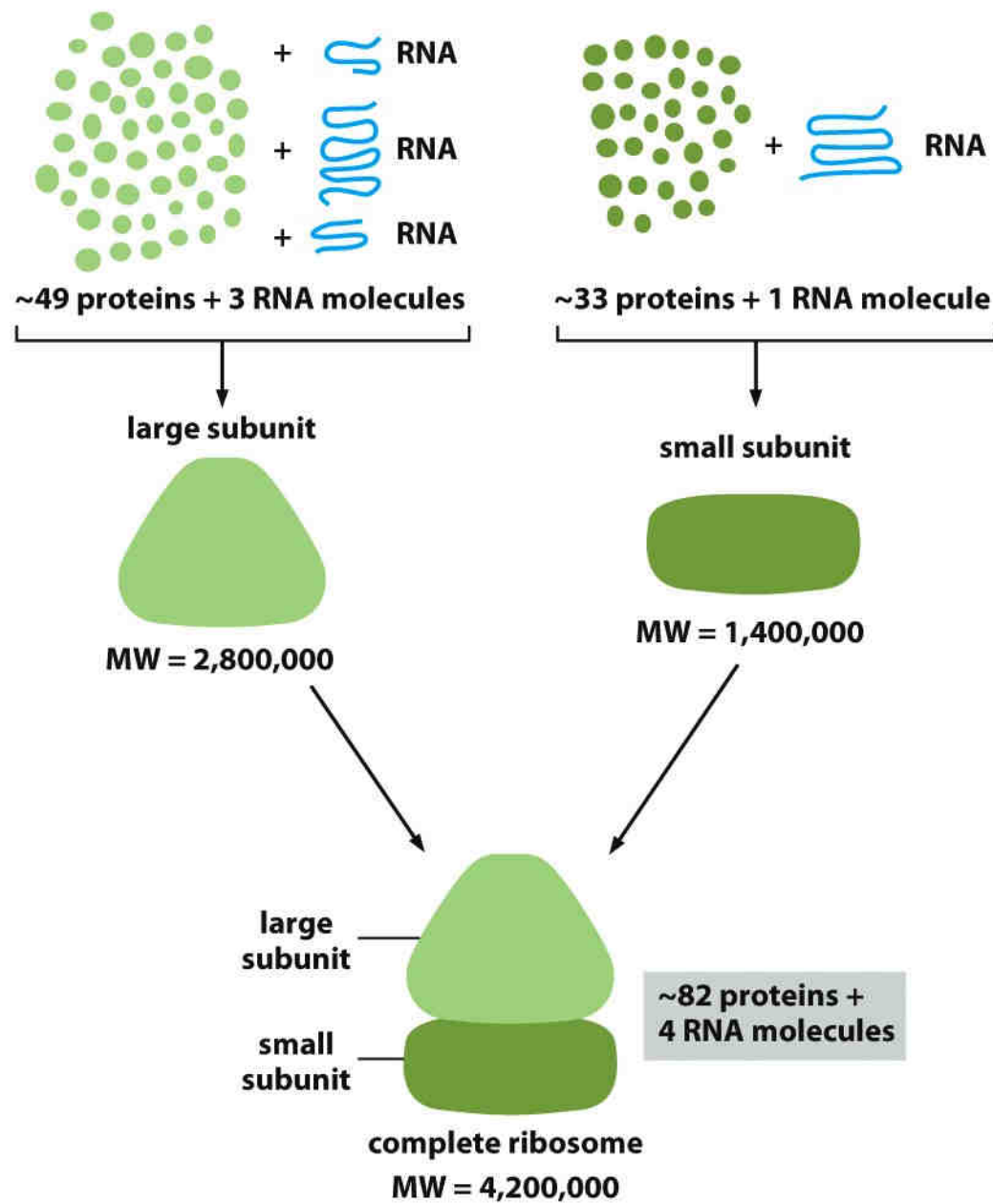




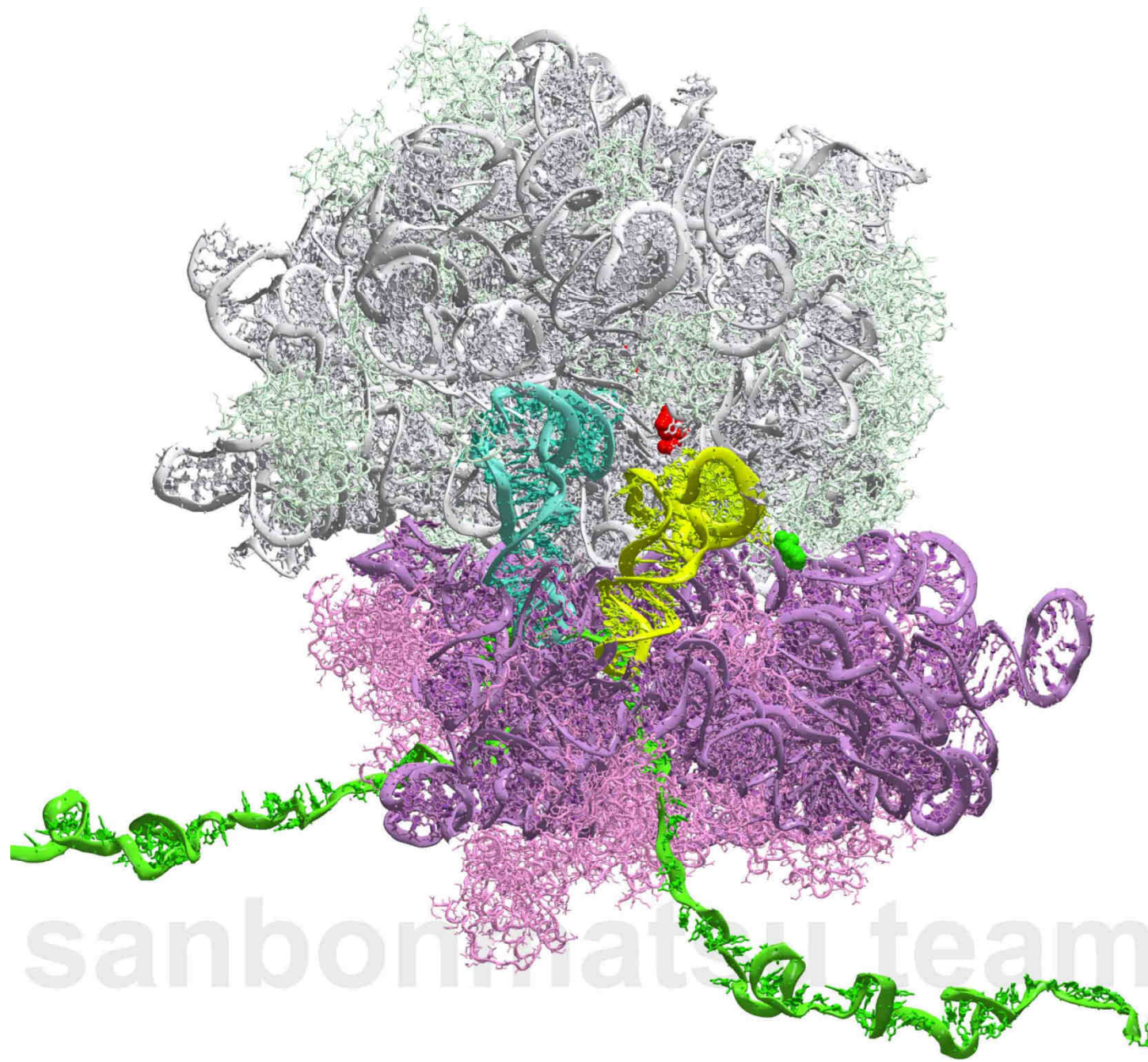




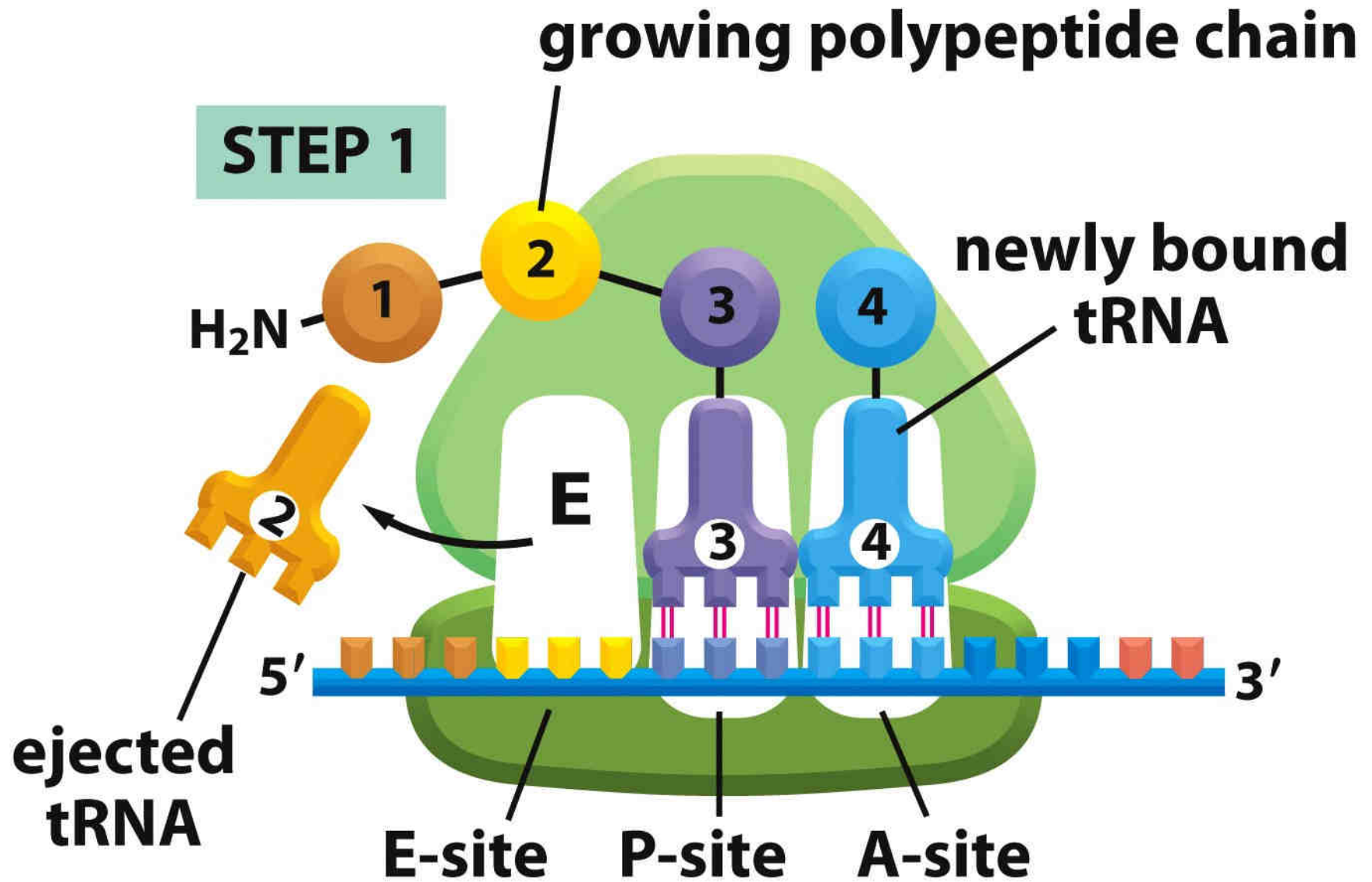


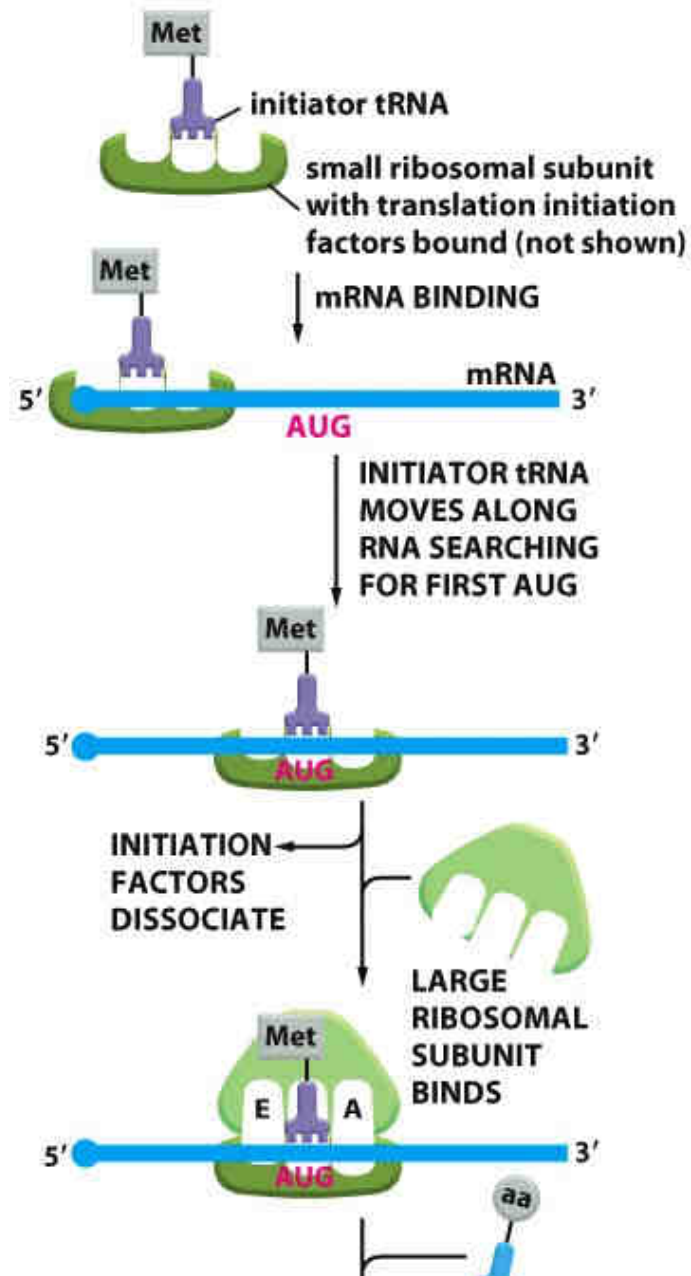


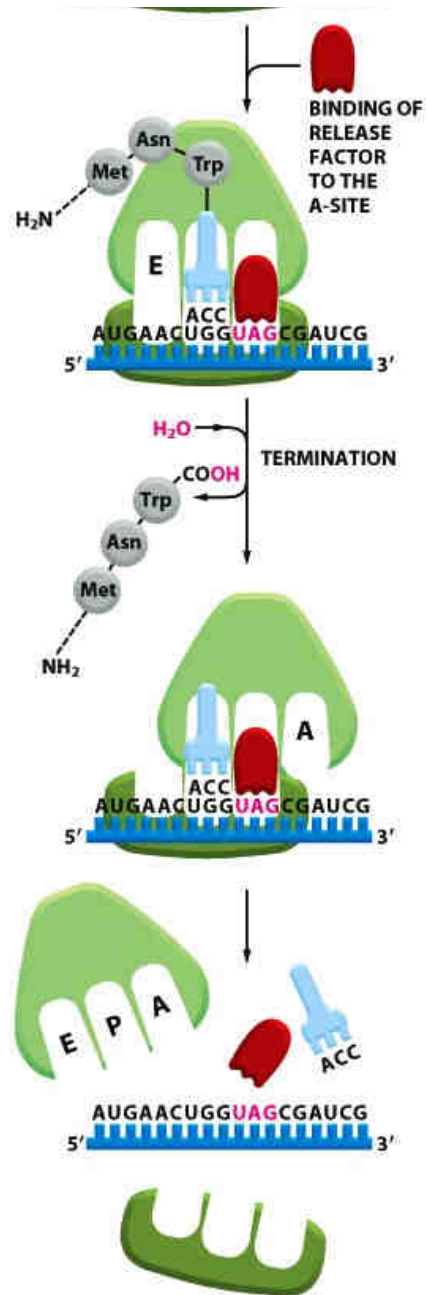




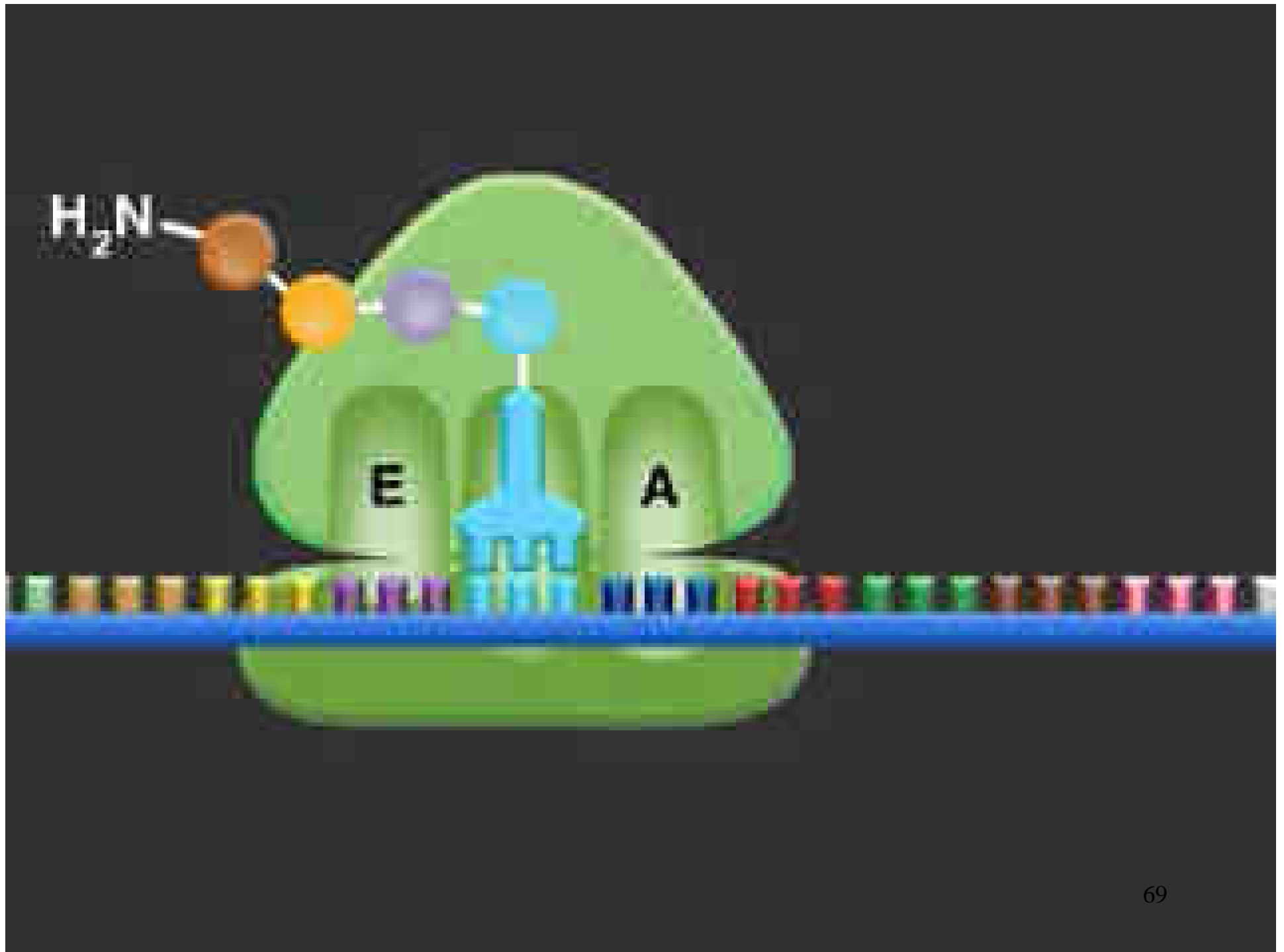












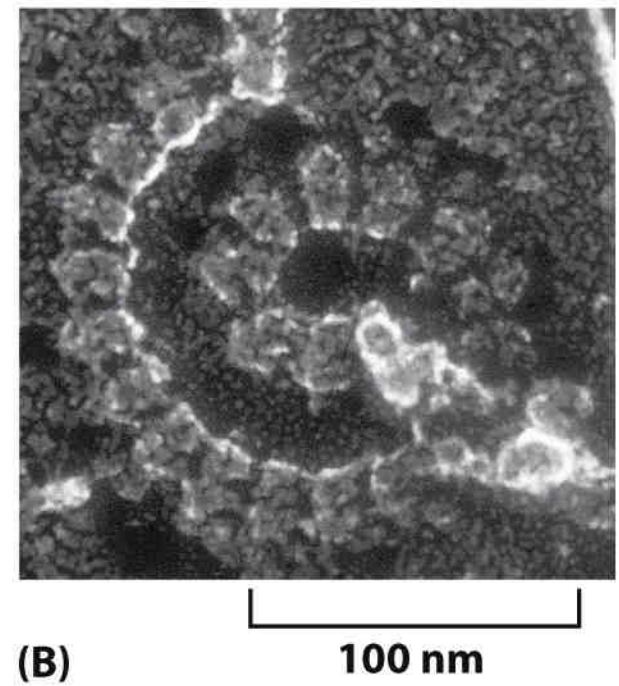
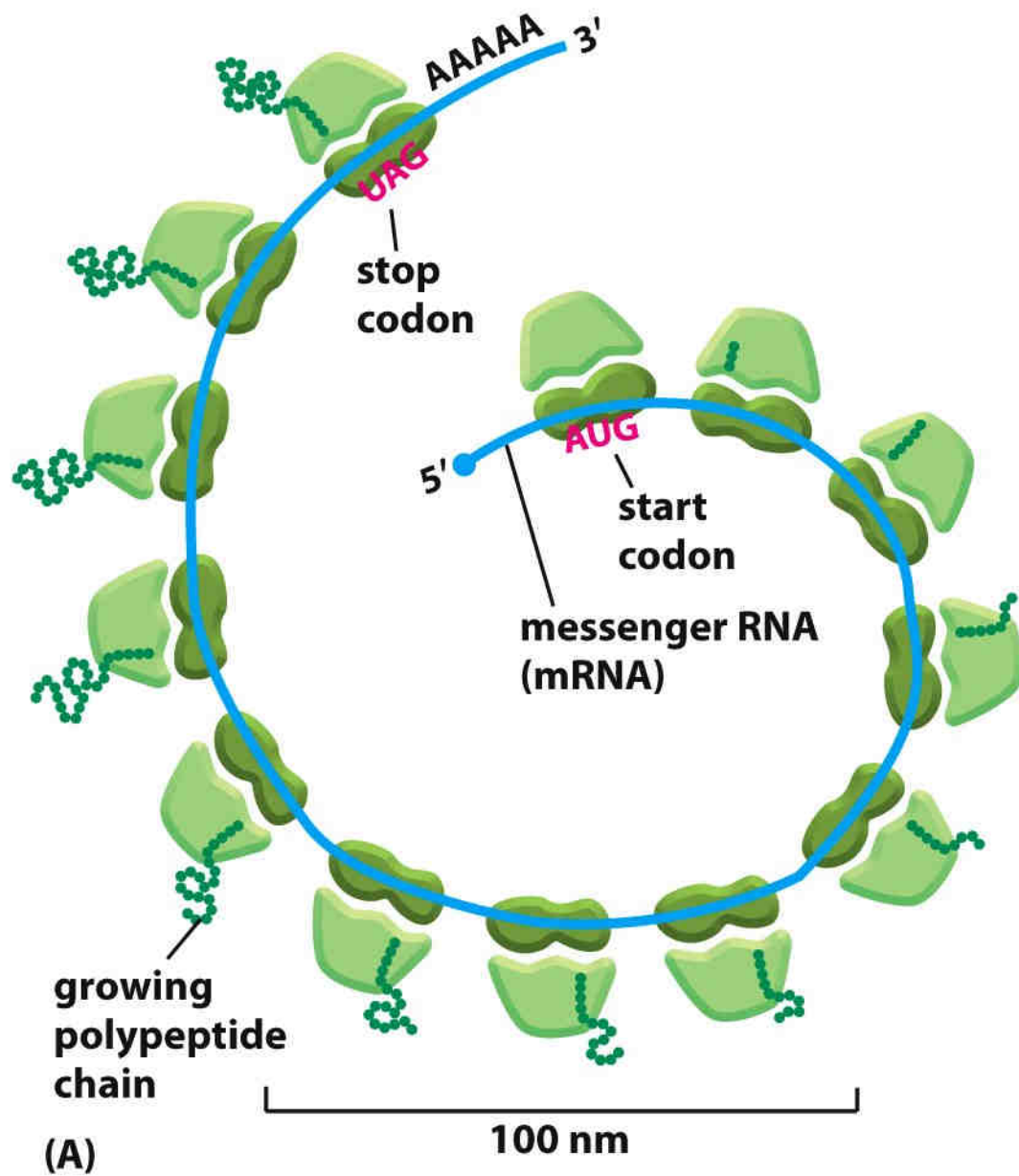
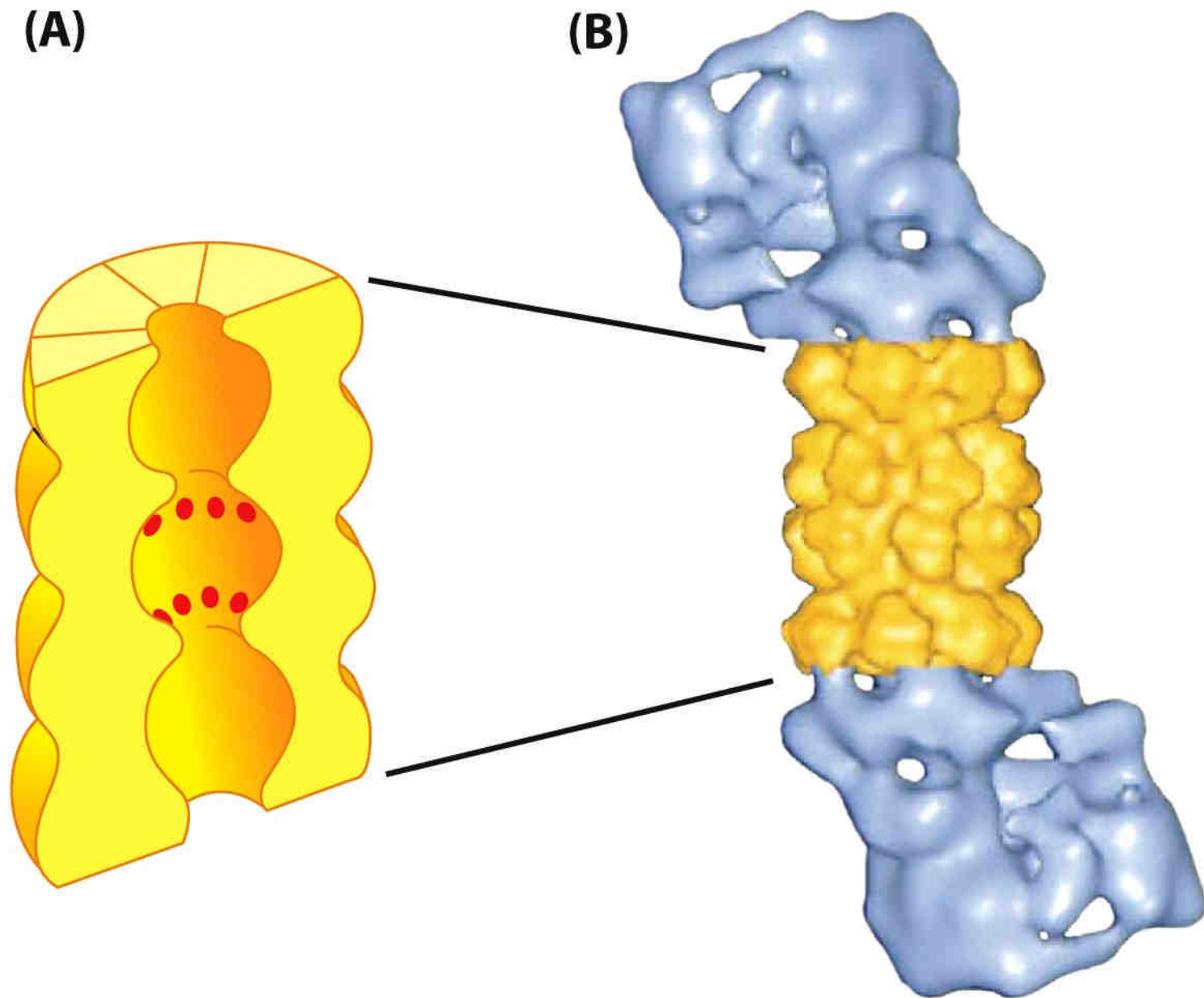


Figure 7-38 *Essential Cell Biology* (© Garland Science 2010)





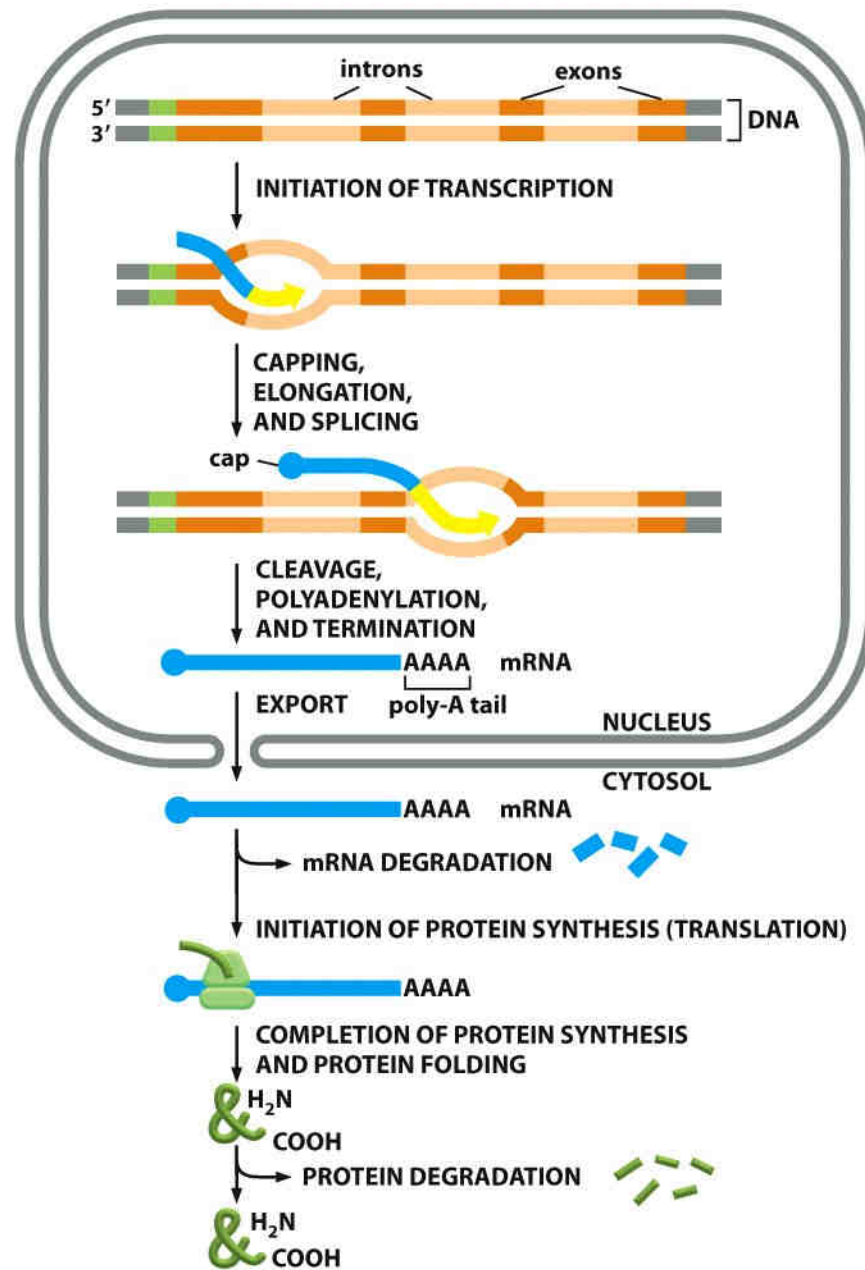
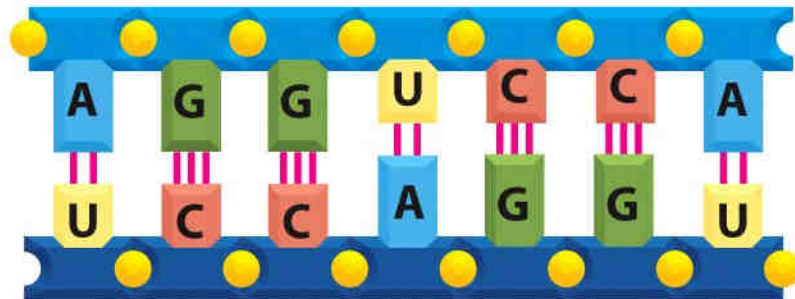


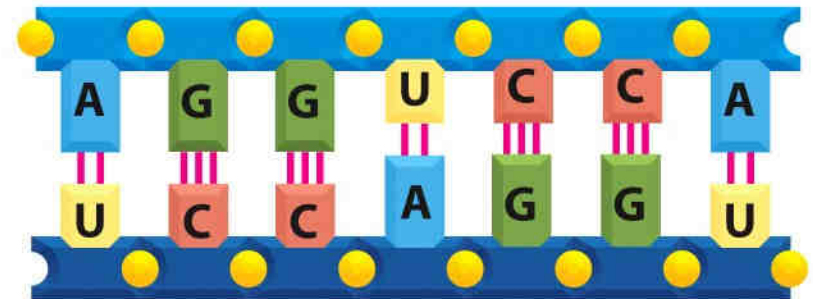
Figure 7-40 *Essential Cell Biology* (© Garland Science 2010)

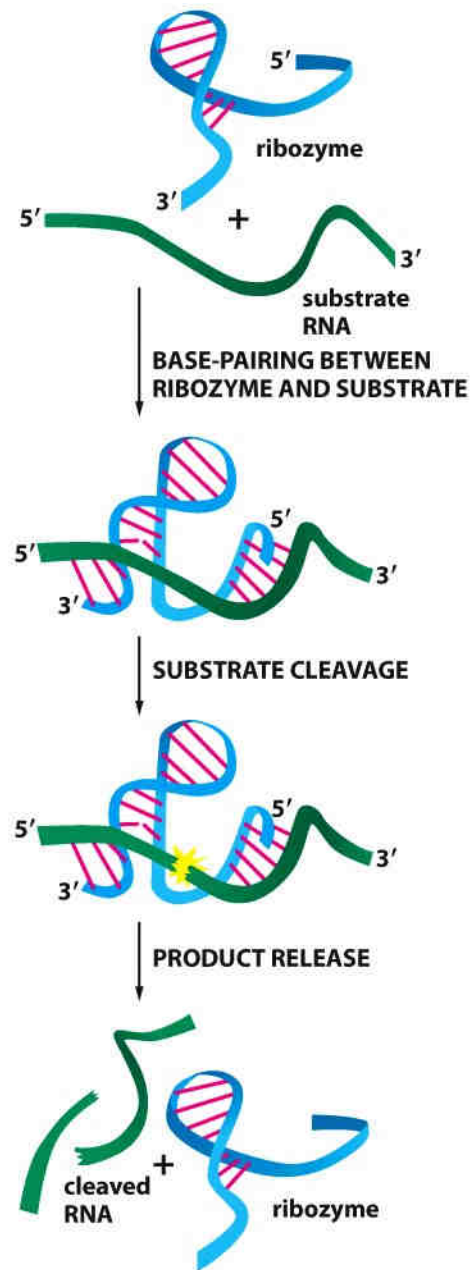


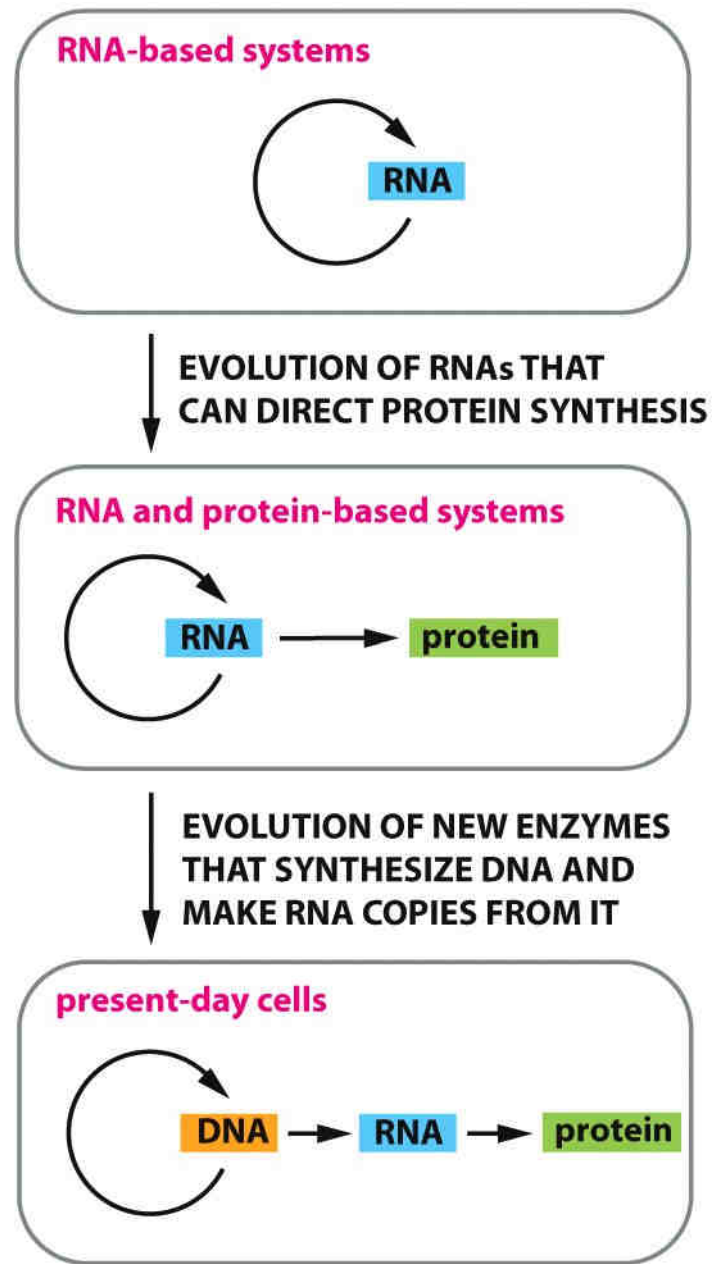
**ORIGINAL SEQUENCE  
SERVES AS A TEMPLATE  
FOR COMPLEMENTARY  
SEQUENCE**

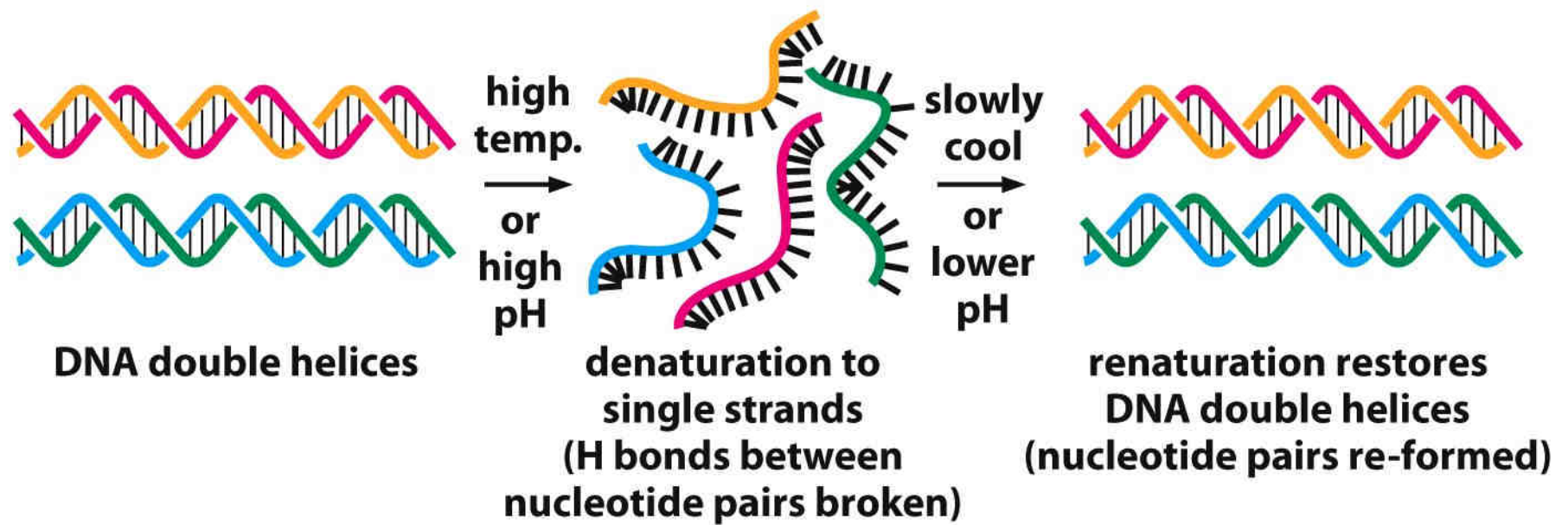


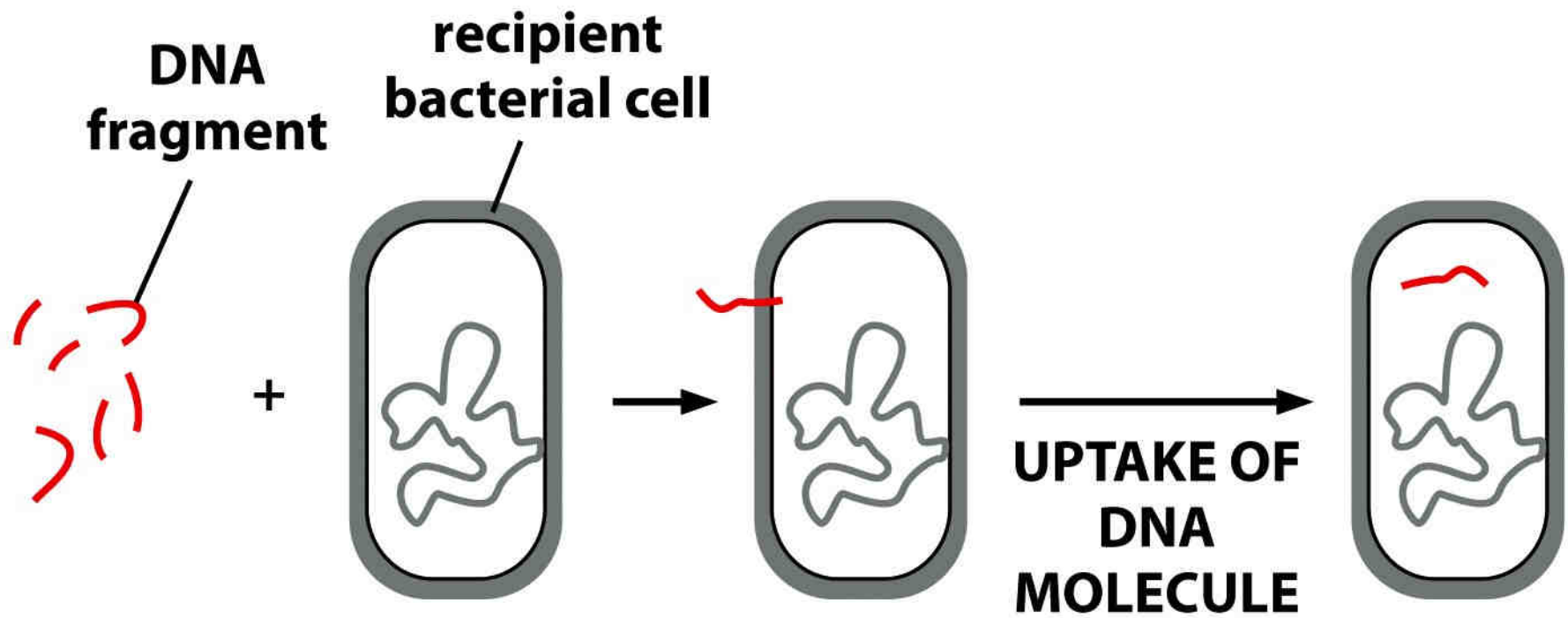
**COMPLEMENTARY  
SEQUENCE SERVES AS  
A TEMPLATE FOR  
ORIGINAL SEQUENCE**











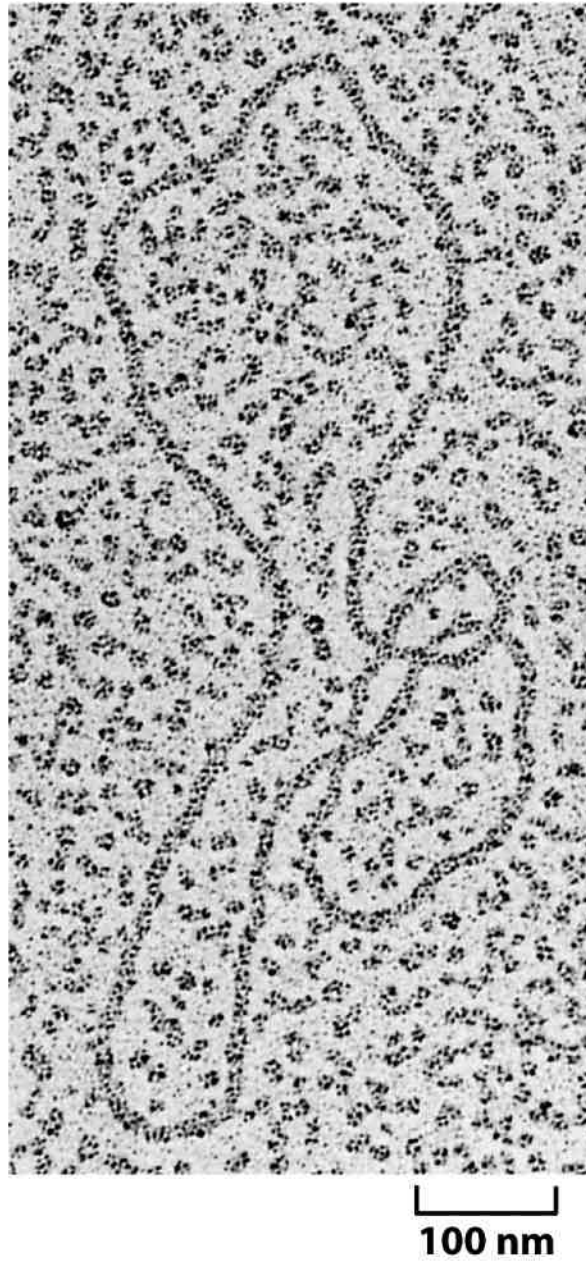
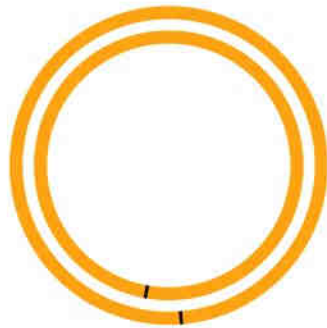


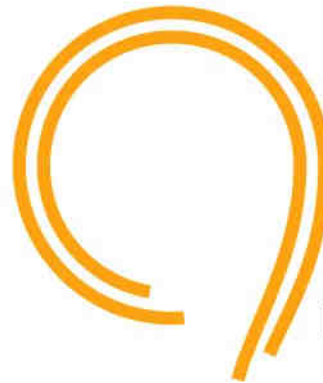
Figure 10-8 *Essential Cell Biology* (© Garland Science 2010)



**circular  
double-stranded  
plasmid DNA  
(cloning vector)**



**CLEAVAGE WITH  
RESTRICTION  
NUCLEASE**

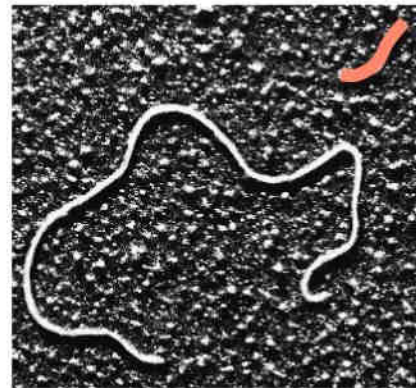
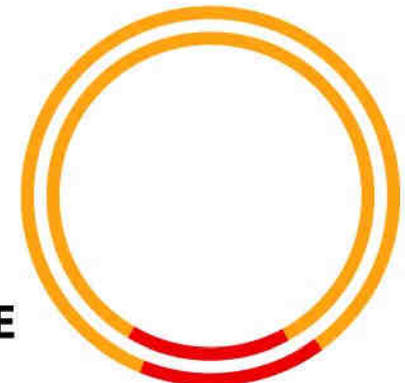


**DNA fragment  
to be cloned**

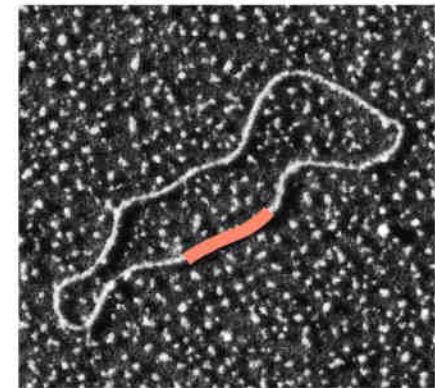


**COVALENT  
LINKAGE  
BY DNA LIGASE**

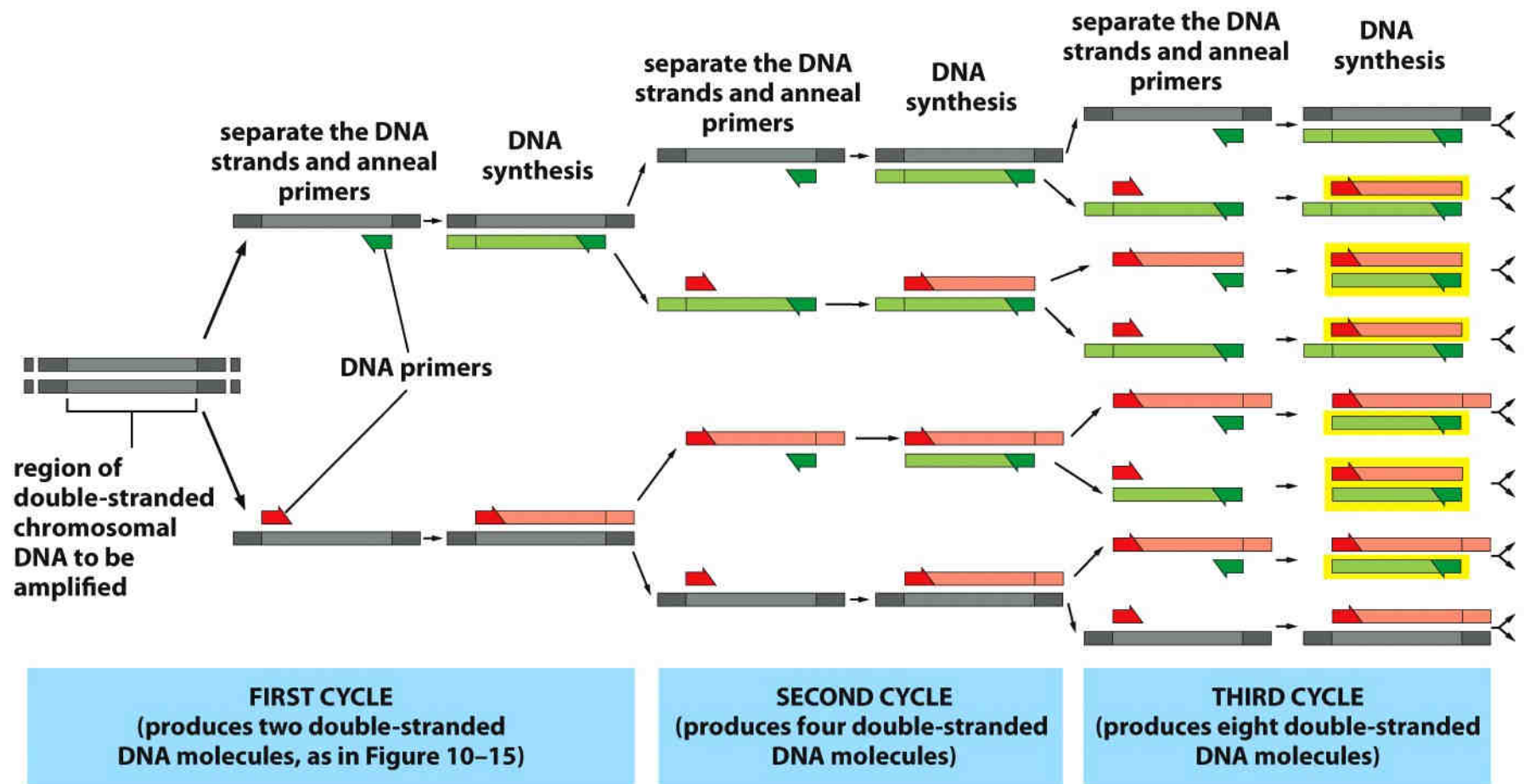
**recombinant DNA**



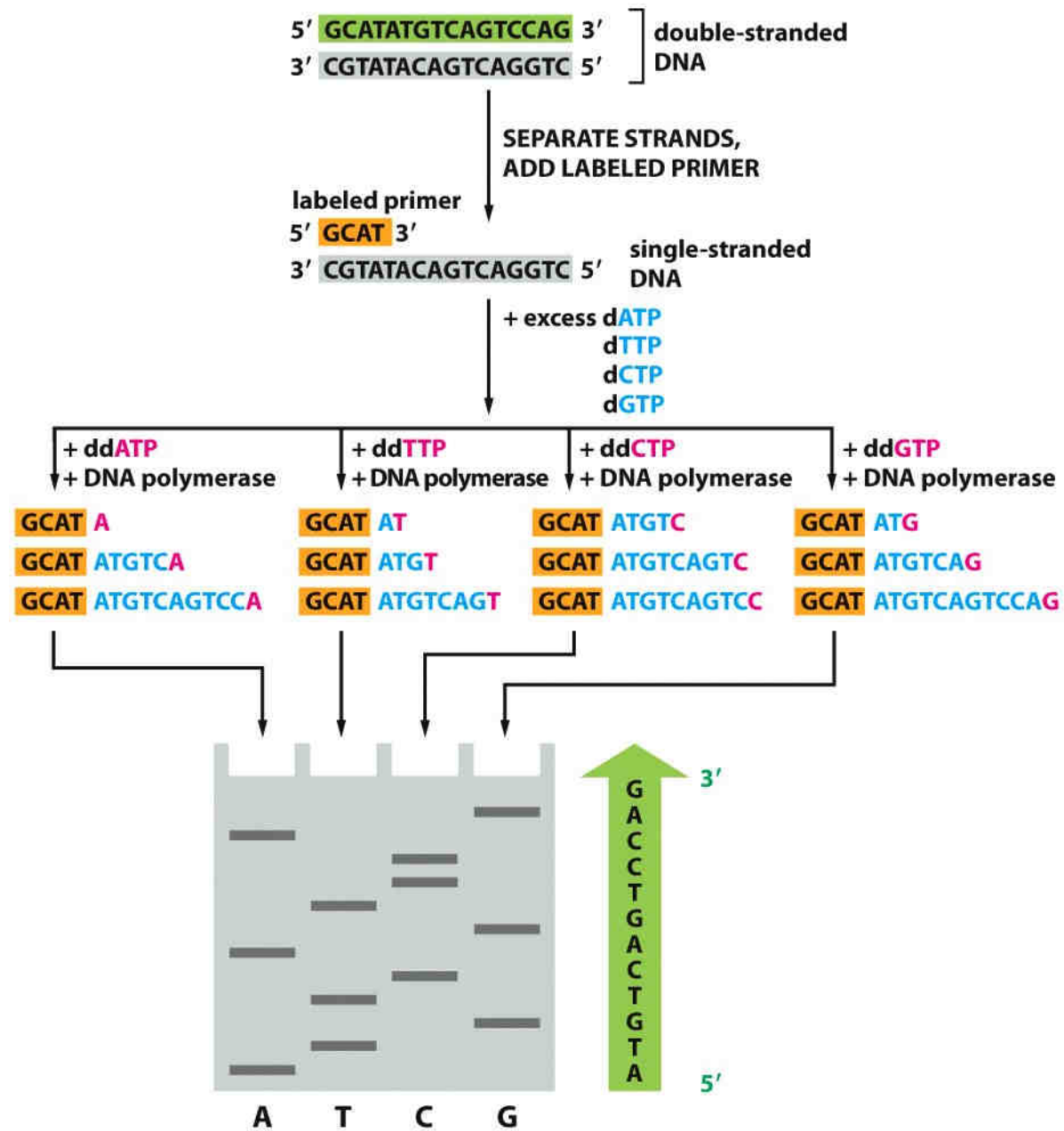
**200 nm**



**200 nm**







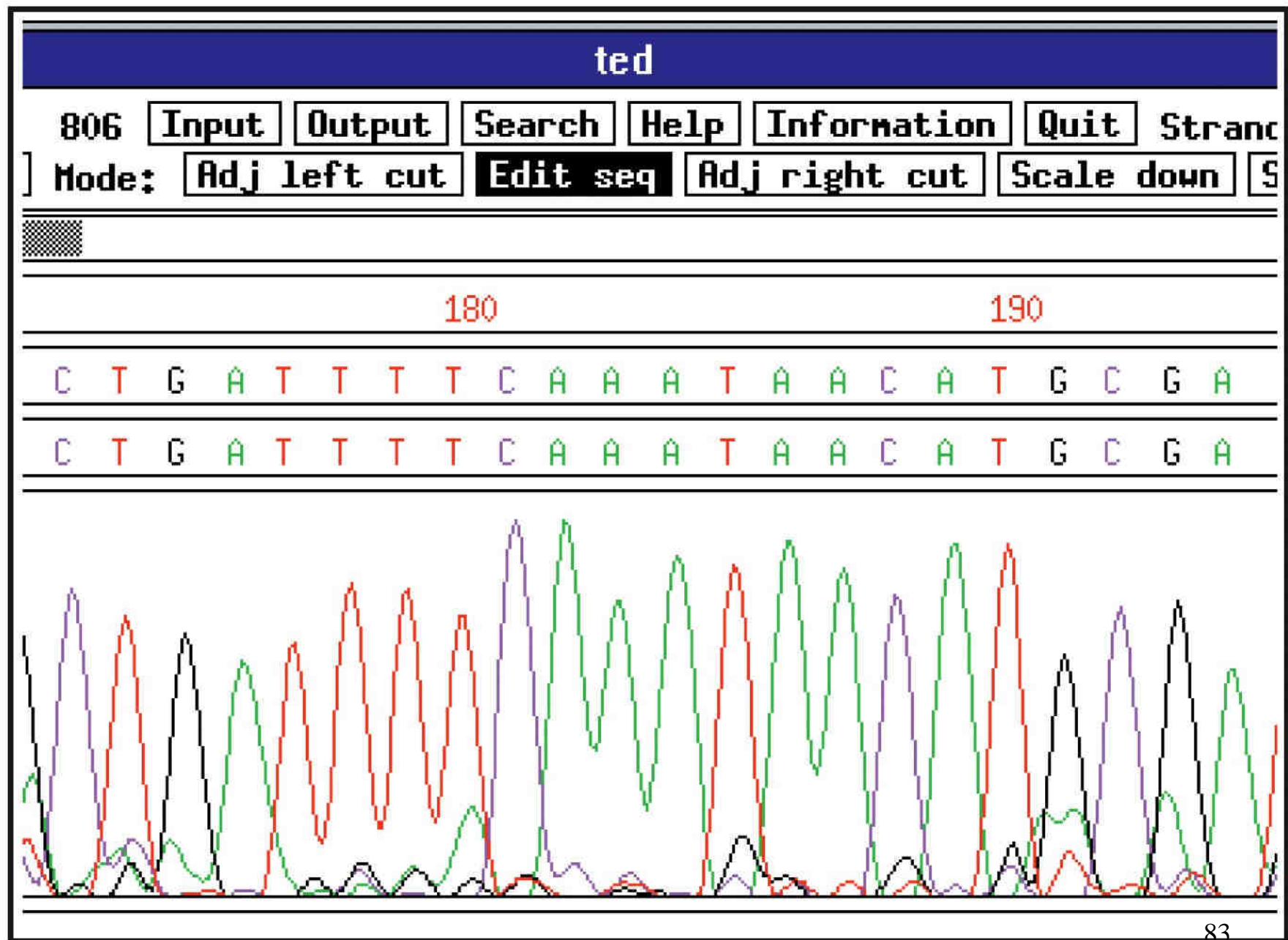
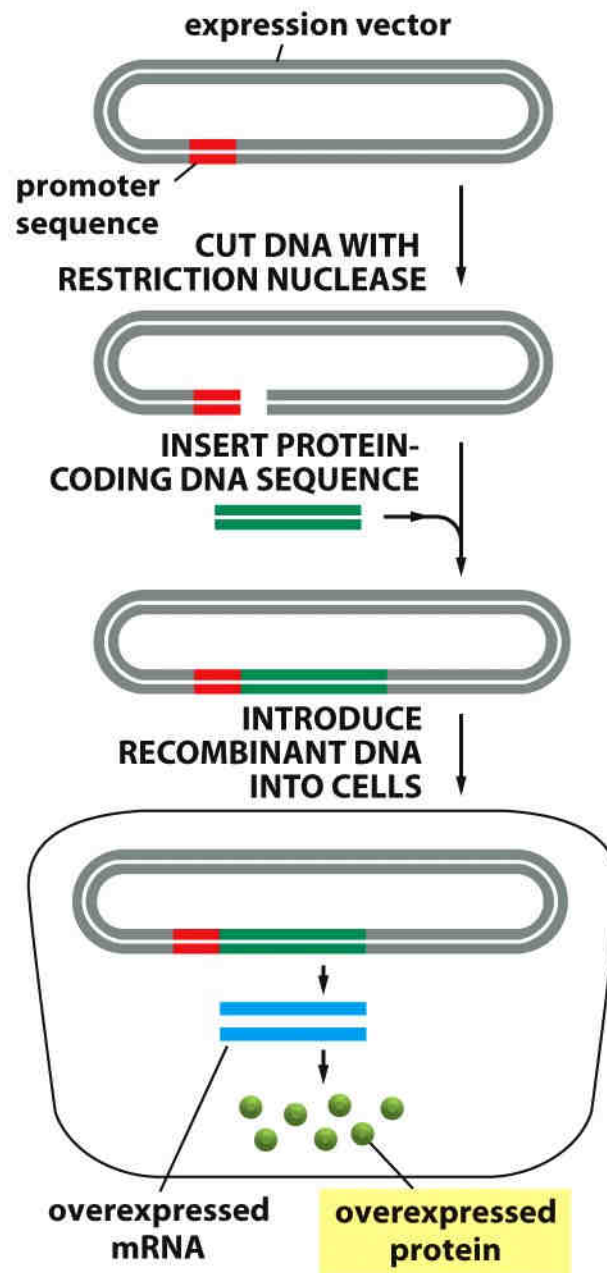
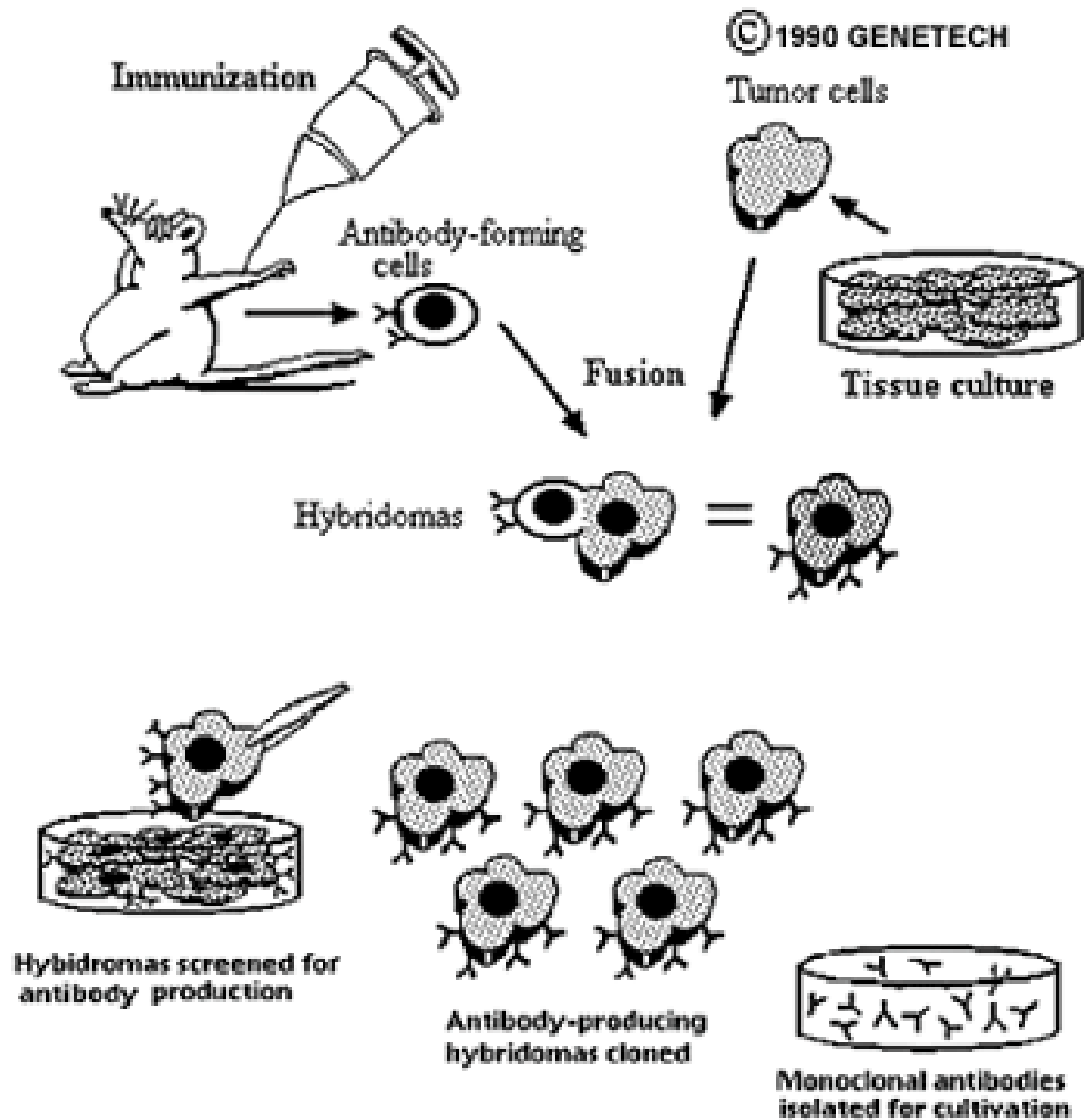
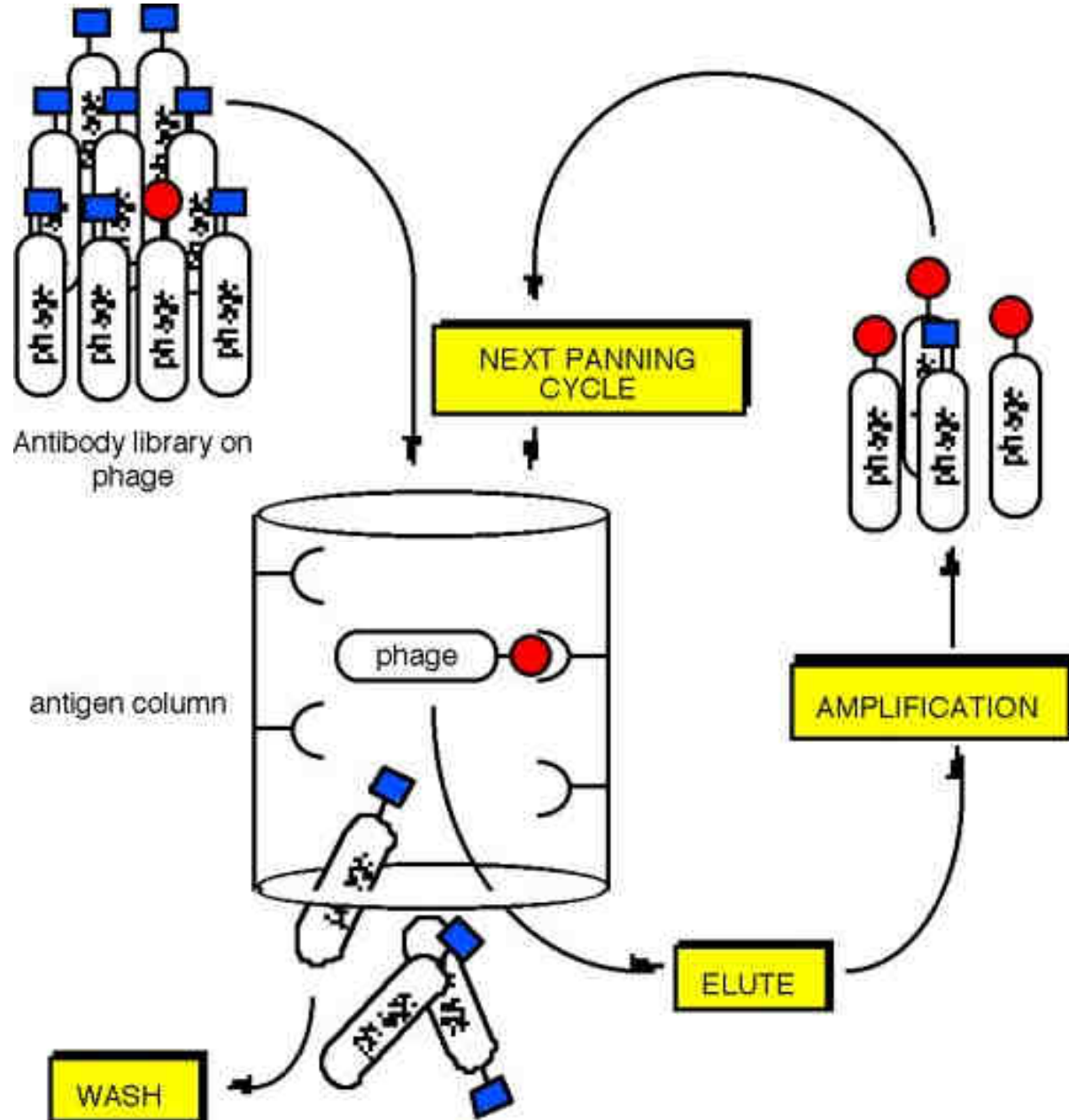


Figure 10-22 *Essential Cell Biology* (© Garland Science 2010)









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