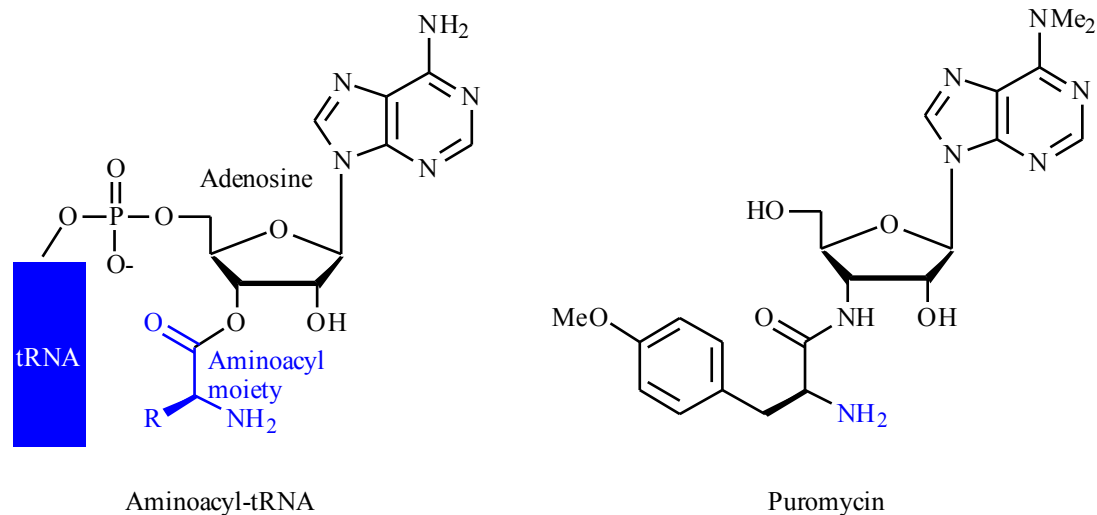
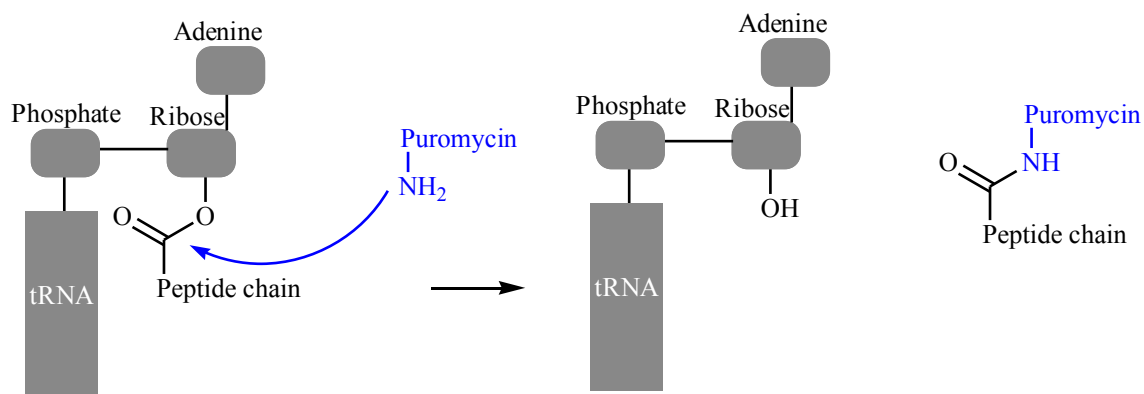


Answers to end-of-chapter questions

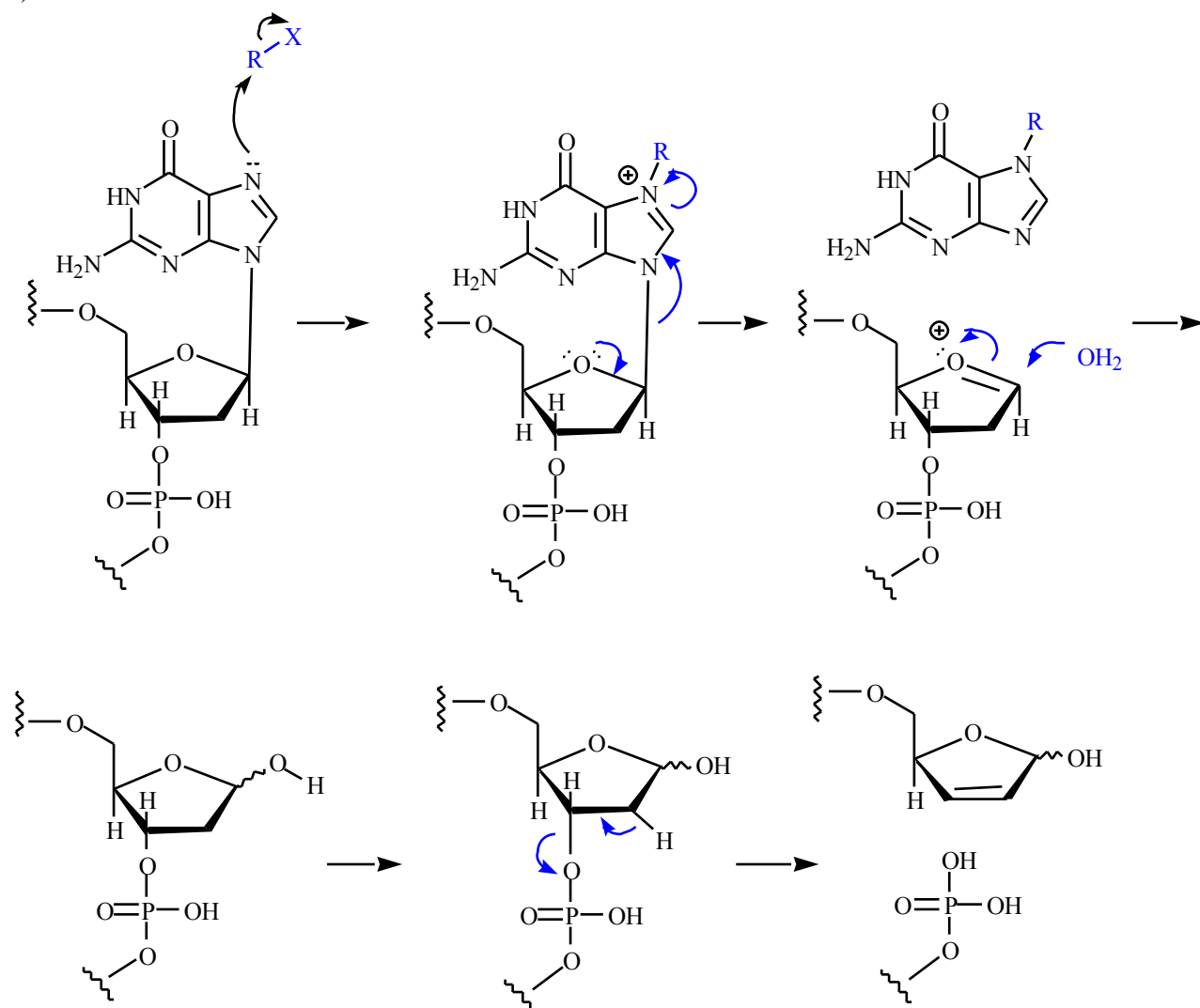
1) Puromycin mimics the aminoacyl terminus of an aminoacyl-tRNA molecule. Aminoacyl-tRNA is the molecule which brings an amino acid to the ribosome such that it can be added to the growing protein chain (section 6.2.2).



Because puromycin resembles the aminoacyl and adenosine moieties of aminoacyl-tRNA, it is able to enter the A site of the ribosome. By doing so, it prevents aminoacyl-tRNA molecules from binding. It has the amino group required for the transfer reaction and so the peptide chain is transferred from tRNA in the P binding site to puromycin in the A binding site. Puromycin departs the ribosome carrying a stunted protein along with it.



2)



3) This structure is called zidovudine and is an important agent used in the treatment of AIDS (section 20.7.3.1). It is an analogue of deoxythymidine where the sugar 3'-hydroxyl group has been replaced by an azido group. Like aciclovir (section 9.5), it can act as a chain terminator once it has been converted to a triphosphate. It is mistaken for a normal building block in DNA synthesis, and the presence of a thymine ring allows it to base pair to adenine. The sugar unit has an azide substituent at the 3' position instead of an alcohol group, and so the nucleic acid chain cannot be extended any further.

4)

