



FIGURE 12.8. Tautomers and mutations. (A) Base pairing of the *enol* tautomer of guanine with thymine. (B) Mutation generated by tautomeric shifts in the bases of DNA. In (a), parental DNA is shown. In (b), DNA replication is proceeding on both strands. A guanine in one parental strand (arrow) undergoes a tautomeric shift to its rare *enol* form (G*). This leads to a T being placed opposite it, rather than a C. In (c), the first-generation progeny are shown. The G* has shifted back to a normal G. However, there is now a mismatched G-T base pair in the DNA. This can be repaired by mismatch repair (see main text). If it is not repaired, this will become fixed as a mutation when the DNA is replicated again because an A will be placed opposite the T. In (d), the DNA sequences in this region are shown after another round of replication has occurred.

12.8B, redrawn from Gardner E.J. et al., *Principles of Genetics*, 5e, © 1984 John Wiley & Sons