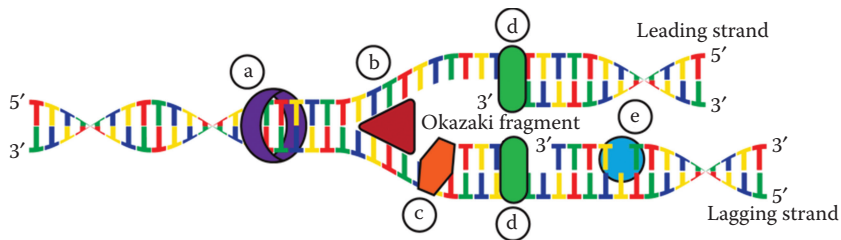
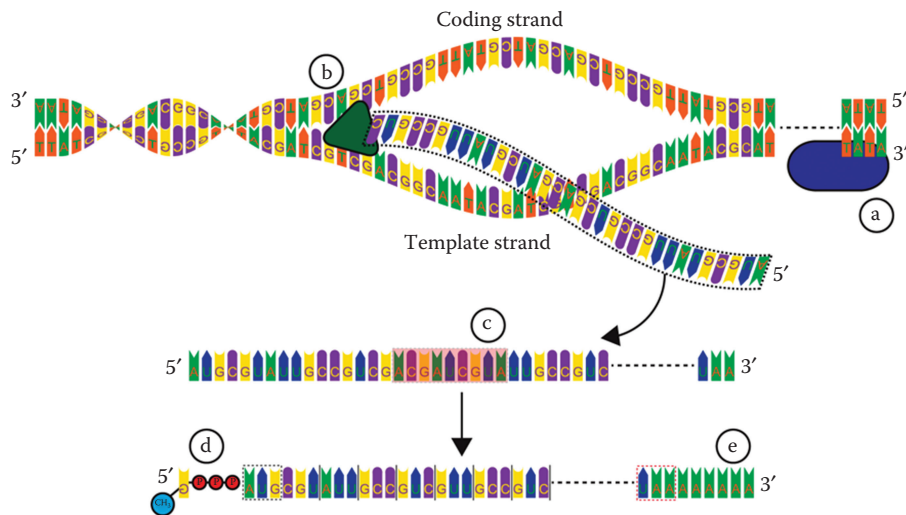


		Second letter				
		U	C	A	G	
First letter	U	UUU ] Phe	UCU ]	UAU ] Tyr	UGU ] Cys	U
		UUC ]	UCC ] Ser	UAC ]	UGC ]	C
		UUA ] Leu	UCA ]	UAA Stop	UGA Stop	A
		UUG ]	UCG ]	UAG Stop	UGG Trp	G
	C	CUU ]	CCU ]	CAU ] His	CGU ]	U
		CUC ] Leu	CCC ] Pro	CAC ]	CGC ] Arg	C
		CUA ]	CCA ]	CAA ] Gln	CGA ]	A
		CUG ]	CCG ]	CAG ]	CGG ]	G
	A	AUU ]	ACU ]	AAU ] Asn	AGU ] Ser	U
		AUC ] Ile	ACC ] Thr	AAC ]	AGC ]	C
		AUA ]	ACA ]	AAA ] Lys	AGA ] Arg	A
		AUG Met	ACG ]	AAG ]	AGG ]	G
	G	GUU ]	GCU ]	GAU ] Asp	GGU ]	U
		GUC ] Val	GCC ] Ala	GAC ]	GGC ] Gly	C
		GUA ]	GCA ]	GAA ] Glu	GGA ]	A
		GUG ]	GCG ]	GAG ]	GGG ]	G

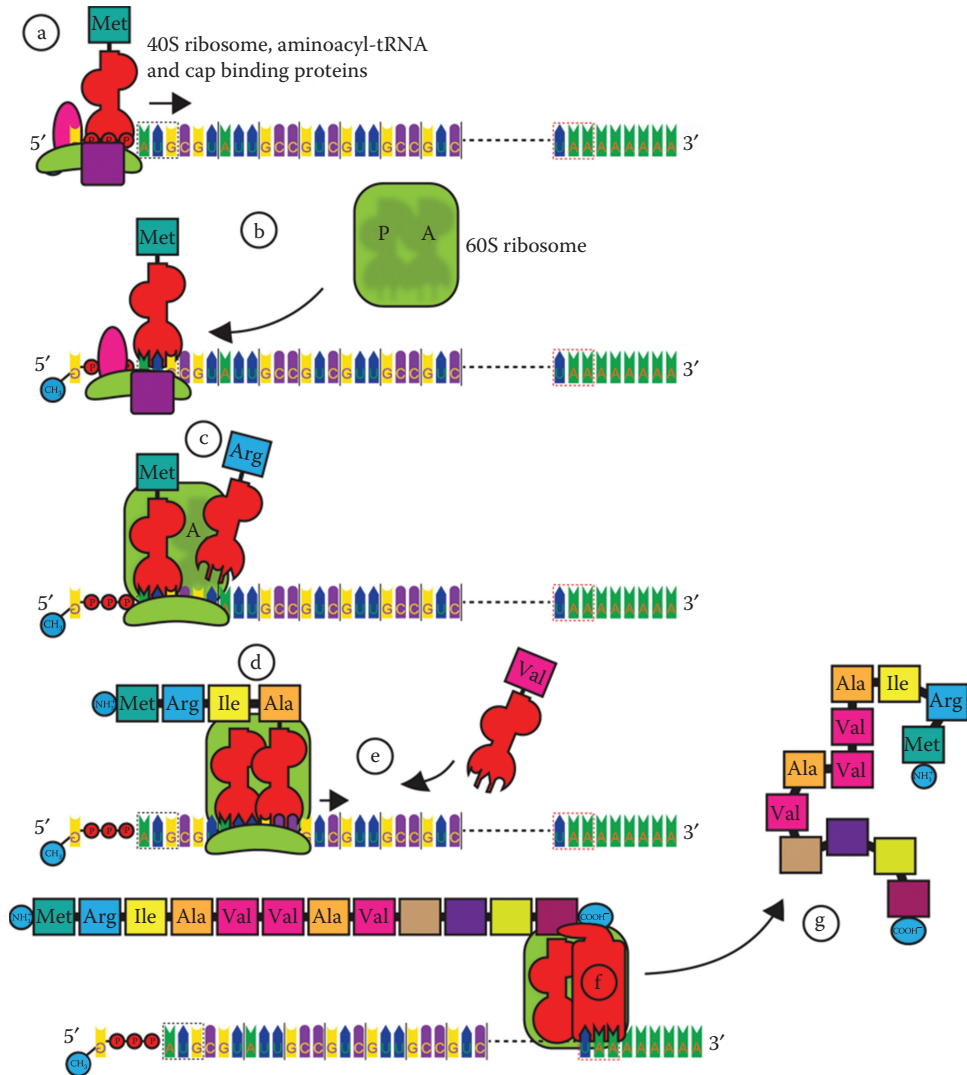
**Figure 2.1** The genetic code converts information stored in DNA to function proteins through mRNA. Above is a table detailing the amino acids corresponding to the nucleotide sequences present in mRNA.



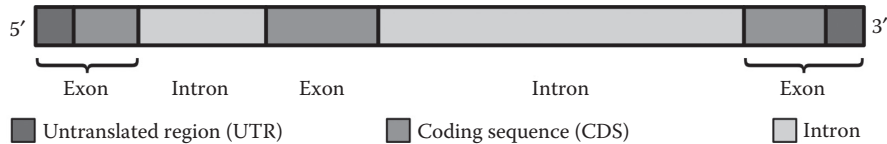
**Figure 2.2** DNA replication begins with topoisomerase unwinding the double helix (a), followed by helicase splitting the DNA into single strands (b), then DNA primase generates a single RNA primer (c), and DNA polymerase binds to the RNA primer and generates complementary strands (termed Okazaki fragments) (d), finally, the Okazaki fragments are joined together by DNA ligase (e).



**Figure 2.3** The process of DNA transcription begins with transcription factor binding (a), then RNA polymerase generates a complementary RNA sequence (b), and finally concludes with posttranslational modifications (c–e).



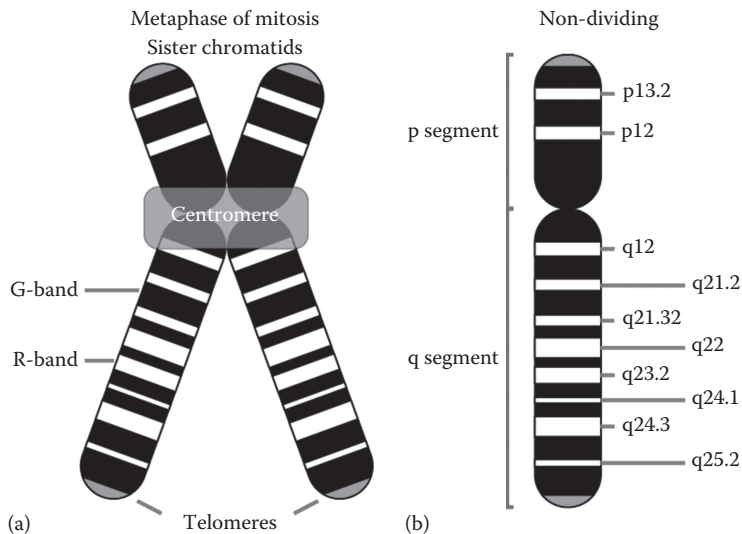
**Figure 2.4** Translation of mRNA into proteins begins with the 40S ribosome and the initial amino acid tRNA (methionine aminoacyl-tRNA) binding the mRNA (a), then the 60S ribosome binds the 40S ribosome (b), and together they facilitate the binding of appropriate tRNAs based on the mRNA sequence (c), and promote the cleavage of the amino acid from the tRNA while forming a peptide bond to the nascent peptide chain (d), this process repeats down the mRNA (e), until a stop codon terminates the peptide chain formation releasing the protein (f), and the protein undergoes posttranslational modification (g).



**Figure 2.5** General organization of the DNA sequence. Only the exons encode a functional peptide or RNA. The coding region accounts for about 3% of the total DNA in a human cell.

. . . GGTTAGGGTTAGGGTTAGGGTTAGGGTTAGGGTTA  
GGGTTAGGGTTAGGGTTAGGGTTAGGGTTAGGGTTAGG  
GTTAGGGTTAGGGTTAGGGTTAGGGTTAGGGTTAG . . .

**Figure 2.6** An entire telomere, about 15 kb, is constituted by thousands of the repeated sequence *GGGTTA*.



**Figure 2.7** Schematic drawing of chromosomes. (a) During the metaphase of cell division, a chromosome becomes two sister chromatids attached at the centromere. (b) Notations about the chromosome bands. This figure uses human chromosome 17 as an example.