

CHAPTER 16 DNA SYNTHESIS

- **DOUBLE HELIX/SEMI-CONSERVATIVE, 1/2 OLD DNA, 1/2 NEW DNA.**
- **ENZYMES: HELICASE, PRIMASE AND DNA POLYMERASE.**
- **4 NUCLEOTIDES: EACH WITH PHOSPHATE, SUGAR, AND NITROGENOUS BASES, A,T,G,C; PAIR AS A-T, AND C-G.**

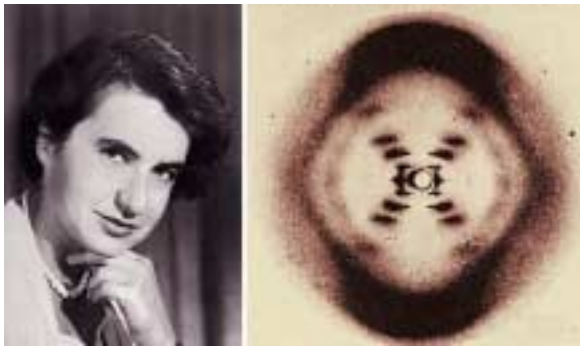
DNA SYNTHESIS

- **DOUBLE HELIX**
- **WATSON,CRICK,WILKENS**
- **FRANKLIN AND PAULING**
- **DNA CAN SERVE AS ITS OWN TEMPLATE.**
- **DNA STAYS IN NUCLEUS/EXCEPT MITOCHONDRIA AND PLASTIDS**
- **DNA CODES FOR 20 AMINO ACIDS.**



Fig. 13.4, p. 214

Figure 16.4 Rosalind Franklin and her X-ray diffraction photo of DNA



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Fig. 13.2, p. 215

TYPES OF PROTEINS

- HORMONAL/SEX
- ENZYMES/LACTASE
- CARRIER/HEMOGLOBIN
- IONIC/ K^+ , Na^+
- STRUCTURAL/MUSCLE
- IMMUNOGLOBULIN/ANTIBODIES
- TRANSPORT/ HORMONES/DRUGS

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Fig. 13.41, p. 213

PROTEIN SYNTHESIS

- **TRANSCRIPTION:** DNA + m-RNA
- **CODES DNA TO m-RNA; CODON**
- **GOES TO RIBOSOME (r-RNA)**
- **TRANSLATION:** m-RNA + RIBOSOMES + t-RNA + AMINO ACIDS.
- **CENTRAL DNA DOGMA**

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Fig. 13.9, p. 220

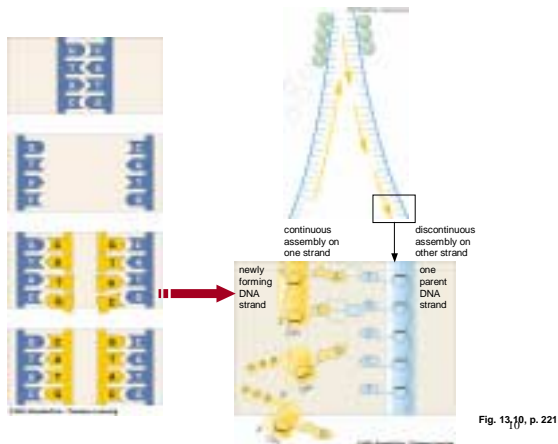
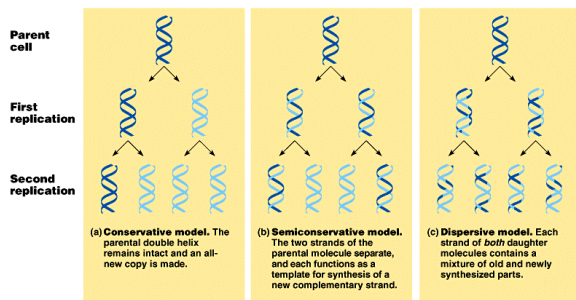


Figure 16.8 Three alternative models of DNA replication



DNA EXPERIMENTS

- DONE WITH VIRUSES THAT INFECT BACTERIA-BACTERIOPHAGES!
- DNA IN VIRUS PUT INTO BACTERIA.
- HERSHEY-CHASE EXPERIMENTS: SHOWED THAT S AND P WERE CENTRAL TO DNA STRUCTURE.
- USED RADIOACTIVE S AND P.

Figure 16.2b The Hershey-Chase experiment

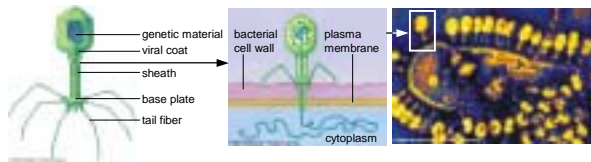
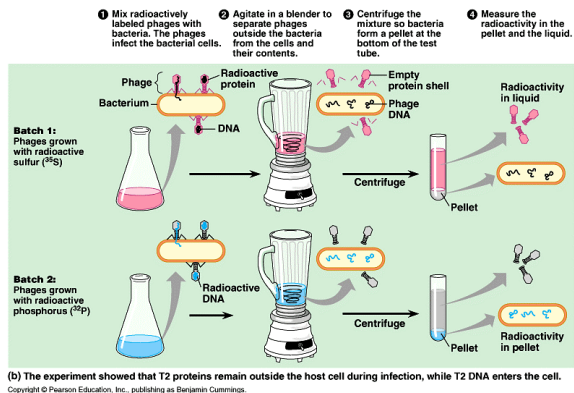


Fig. 13.4 p. 216-17

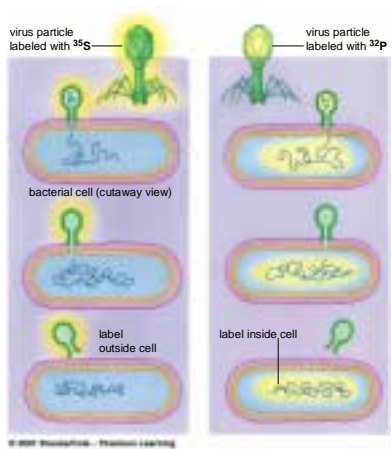


Fig. 13.5, p. 217

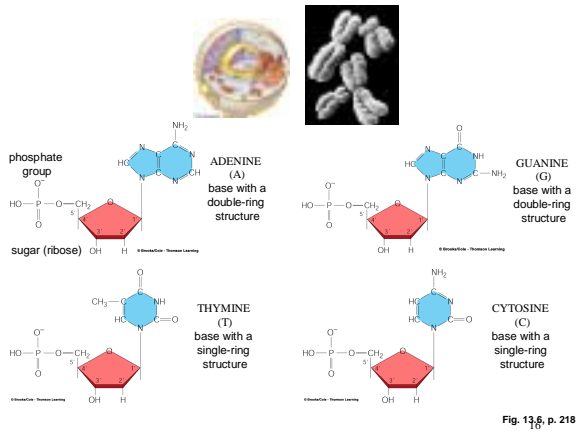


Figure 16.10 Origins of replication in eukaryotes

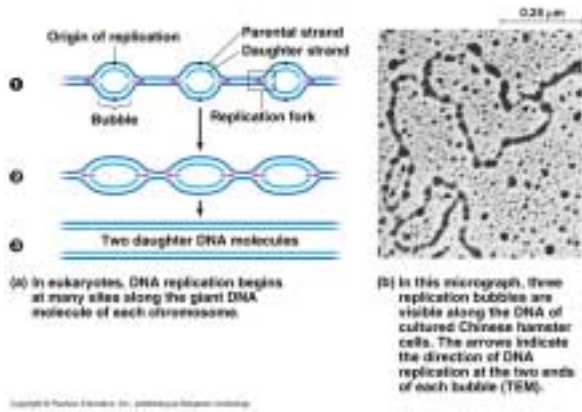


Figure 16.13 Synthesis of leading and lagging strands during DNA replication

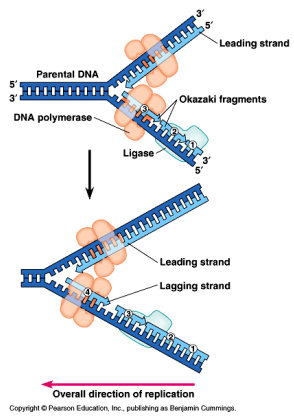
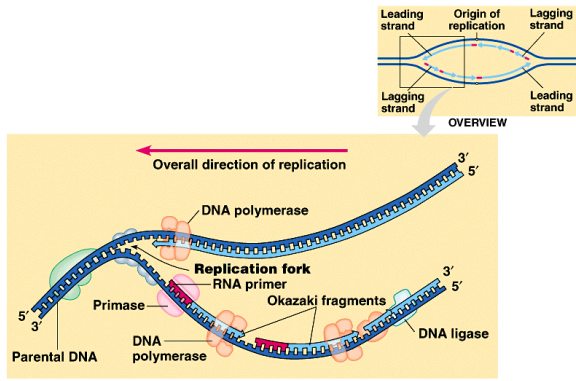
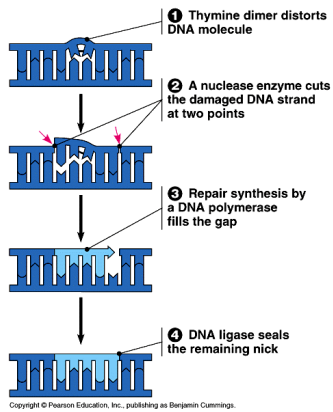


Figure 16.16 A summary of DNA replication



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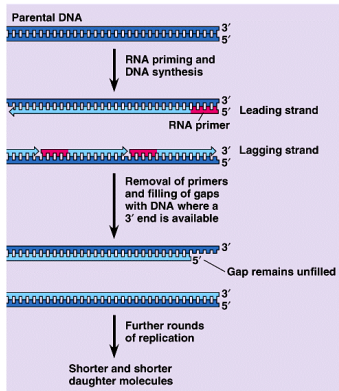
Figure 16.17 Nucleotide excision repair of DNA damage



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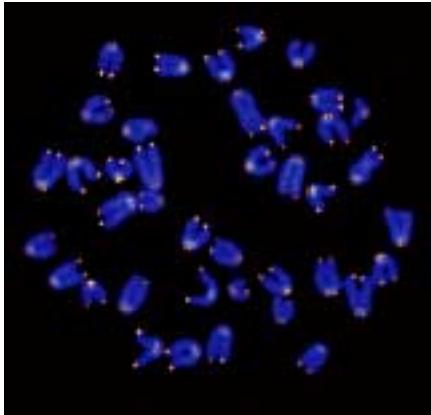
Figure 16.18 The end-replication problem



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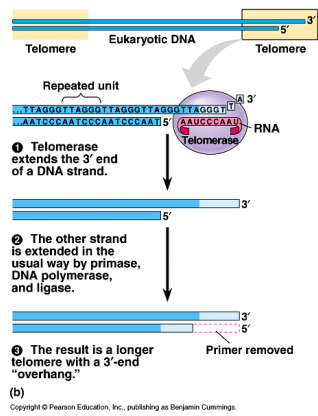
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Figure 16.19a Telomeres and telomerase: Telomeres of mouse chromosomes



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Figure 16.19b Telomeres and telomerase



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