



MICROGRAPH OF BACTERIA LYSED - CHROMOSOMAL DNA SURROUNDS THE CELL.

Figure 10.20 Structure of the nucleosome. (A) Atomic-level depiction of the nucleosome core particle revealing both the histone octamer and the encircling DNA. (B) Alternative atomic-level view of the nucleosome. (C) Cartoon representation of the nucleosome core particle. (A, B courtesy of D. Goodsell.)

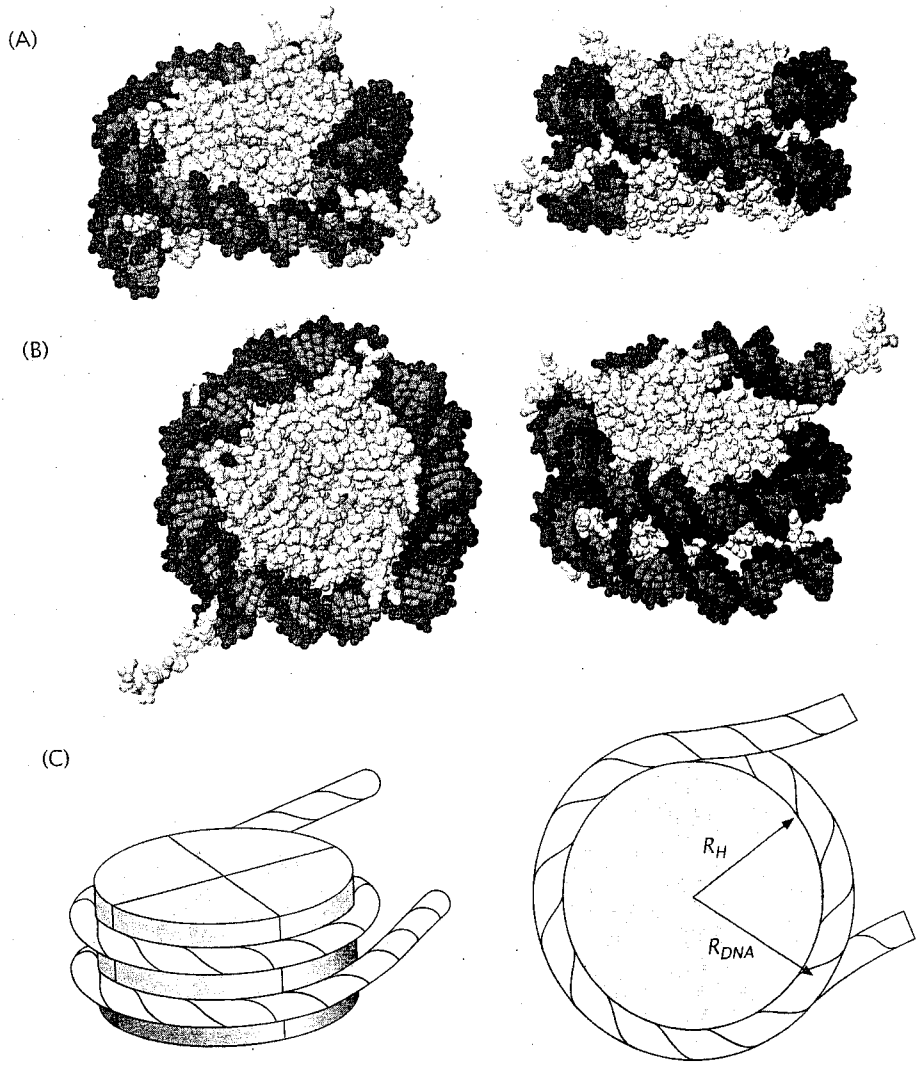


Figure 10.15 Two simplified models used to illustrate the calculation of free energy associated with packaged DNA. (A) The spherical capsid on the left is a simplified version of T7 or lambda phage. The elongated capsid on the right is a simplified version of the $\phi 29$ capsid. (B) Close up of cross-sections of DNA packed inside the capsids. Note that a given segment of DNA is surrounded by six neighboring segments in a hexagonal arrangement.

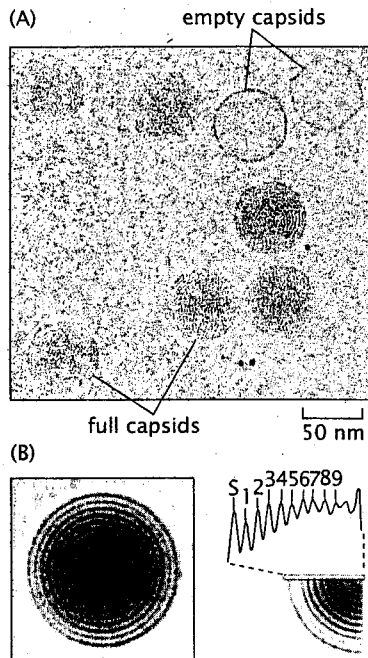
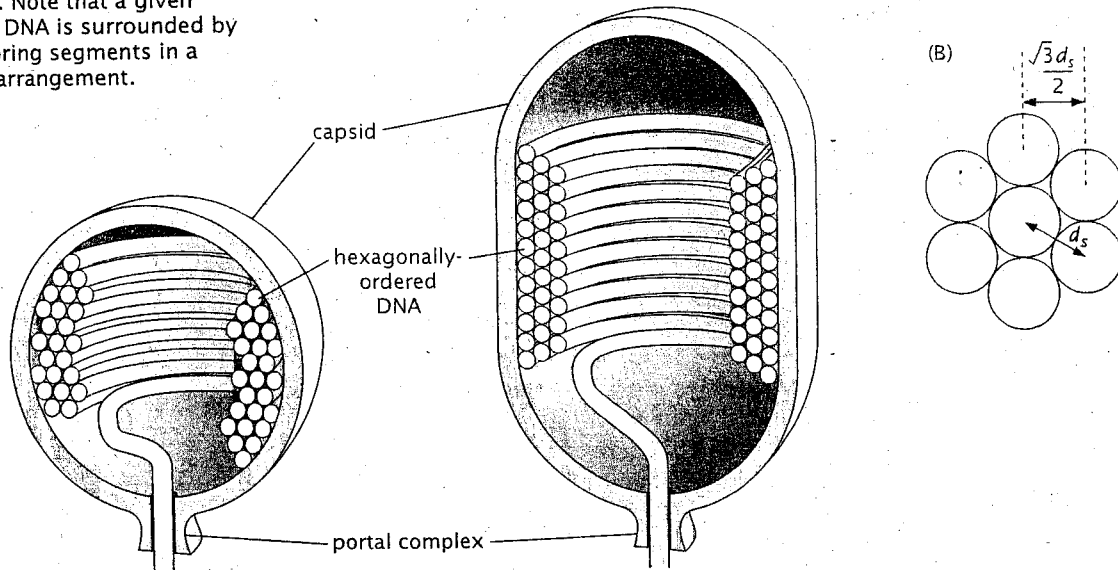


Figure 10.14 Cryo-electron microscopy images of packaged DNA. (A) Image showing several T7 capsids with their complement of packed DNA. (B) High-resolution view of a single capsid which demonstrates the rings of ordered DNA within the capsid. On the right, the series of peaks show the alternating density as a function of radius. The numbering corresponds to the different shells of DNA, while the label "S" refers to the protein shell of the capsid itself. (Adapted from M. E. Cerritelli et al., *Cell*

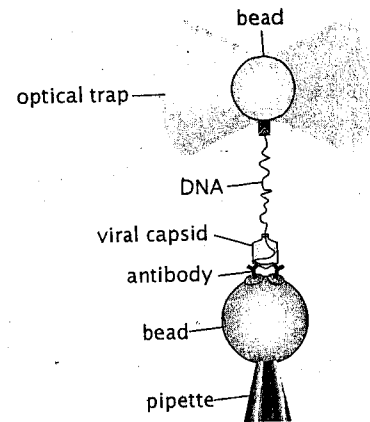


Figure 10.17 Optical tweezers measurement of the forces during DNA packaging. The viral capsid is attached to one bead using antibodies and the viral genome is attached to a second bead. This second bead is held in an optical trap and the forces are monitored as the DNA is reeled into the capsid by the ATP-consuming portal motor. (Adapted from D. E. Smith et al., *Nature* 413:748, 2001.)