

solenoid structures. Chromosomes assume their characteristic structure, with short (p) and long (q) arms at the metaphase stage of the cell cycle.

STRUCTURE OF DNA DNA is a double-stranded helix composed of four different bases: adenine (A), thymidine (T), guanine (G), and cytosine (C). Adenine is paired to thymidine, and guanine is paired to cytosine, by hydrogen bond interactions that span the double helix (Fig. 466-1). DNA has several remarkable features that make it ideal for the transmission of genetic information. It is relatively stable, and the double-stranded nature of DNA and its feature of strict base-pair complementarity permit faithful replication during cell division. Complementarity also allows the transmission of genetic information from DNA → RNA → protein (Fig. 466-2). mRNA is encoded by the so-called sense or coding strand of the DNA double helix and is translated into proteins by ribosomes.

