

- C1. First, cloned genes can be used for DNA sequencing. This has allowed researchers to understand genetics at the molecular level. Second, cloned DNA can be mutated using site-directed mutagenesis to see how specific mutations alter the structure and function of DNA. Third, cloning is useful in biotechnology. This topic is discussed more thoroughly in Chapter 20. And many others.
- C2. A restriction enzyme recognizes a DNA sequence and then cleaves a (covalent) phosphoester bond in each of two DNA strands.
- C3. Here is an example:  
GGGCCCATATATATGGGCC  
CCCGGGTATATATACCGGG
- C4. The term *cDNA* refers to DNA that is derived from mRNA. Compared to genomic DNA, it would lack introns.
- C5. A dideoxynucleotide is missing the 3' —OH group. When the 5' end of a dideoxynucleotide is added to a growing strand of DNA, another phosphoester bond cannot be formed at the 3' position. Therefore, the dideoxynucleotide terminates any further addition of nucleotides to the growing strand of DNA.