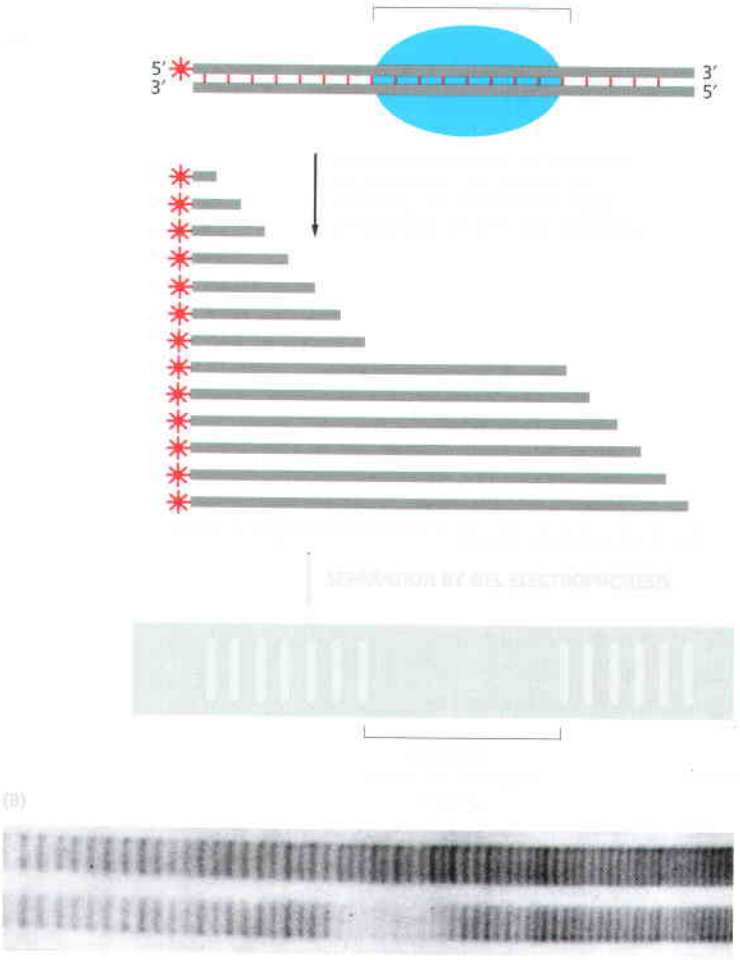
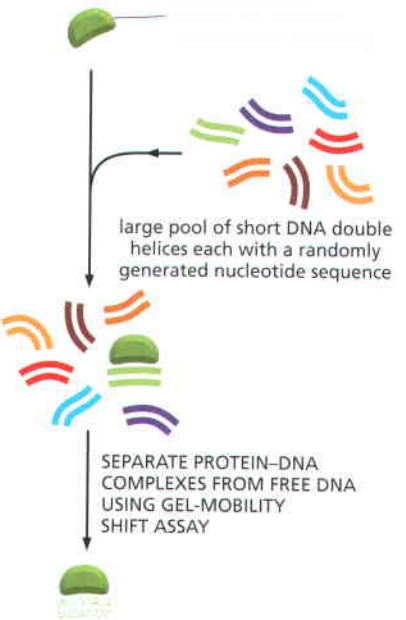


regulate. Here, the purified protein is used to select, from a large, randomly generated pool of different short DNA fragments, only those that bind tightly to it. After several rounds of such selection, the nucleotide sequences of the tightly bound DNAs are determined, and a consensus DNA recognition sequence for the gene regulatory protein can be formulated (**Figure 7–30**). Once the DNA



produced by programming a DNA synthesizer, a machine that chemically synthesizes DNA of any desired sequence (discussed in Chapter 8). For example, there are 4^{11}, or approximately 4.2 million, possible sequences for a DNA fragment of 11 nucleotides. The double-stranded DNA fragments that bind tightly to the gene regulatory protein are then separated from the DNA fragments that fail to bind. One method for accomplishing this