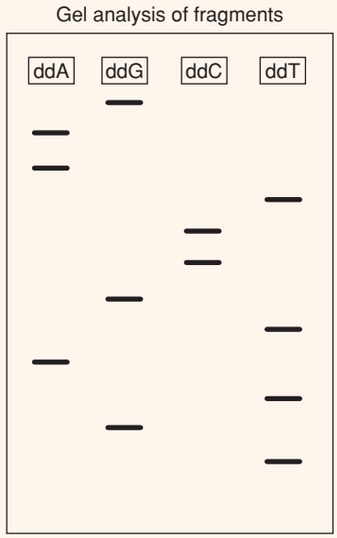
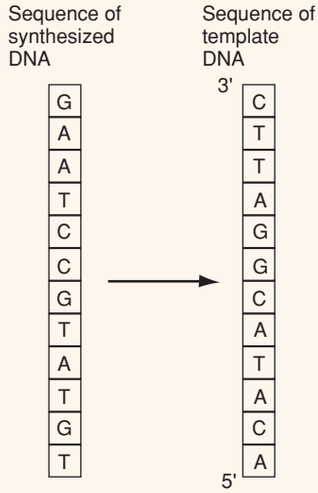
Then use electrophoresis on a polyacrylamide gel to separate the fragments in each of the four aliquots and arrange them by size. The resolution of the gel is such that you can distinguish DNA molecules that differ in length by only a single base. The appearance of a DNA fragment of a particular length demonstrates the presence of a particular nucleotide at that position in the strand.





Suppose, for example, that the aliquot polymerized in the presence of dideoxythymidine shows fragments 32, 35, and 39 bases in length. These fragments indicate that thymidine is present at those positions in the strand of nucleotides. In practice, one does not independently determine the exact lengths of each fragment. Instead, one starts at the bottom of the gel, looks at which of the four lanes has a band in it, records that base, then moves up one position and determines which lane has the next band, and so on. In this way, it is possible to read several hundred bases from a single set of reactions.