

**SPEAKER 1:** Polymerase chain reaction-- or PCR-- uses repeated cycles of heating and cooling to make many copies of a specific region of DNA. First, the temperature is raised to near boiling, causing the double stranded DNA to separate-- or denature-- into single strands. When the temperature is decreased, short DNA sequences, known as primers, was bind or anneal to complementary matches on the target DNA sequence.

The primers bracket the target sequence to be copied. At a slightly higher temperature, the enzyme Taq polymerase, shown here in blue, binds to the primed sequences and adds nucleotides to extend the second strand. This completes the first cycle.

In subsequent cycles, the process of denaturing, annealing, and extending are repeated to make additional DNA copies. After three cycles, the target sequence defined by the primers begins to accumulate. After 30 cycles, as many as a billion copies of the target sequence are produced from a single starting molecule.