Like all DNA-dependent RNA polymerases, T7 RNA polymerase carries out \textit{de novo} synthesis of RNA from a double stranded template. The enzyme melts open the duplex, initiates synthesis of a dinucleotide RNA, and moves along the template DNA extending and ultimately displacing the RNA transcript. In the initially transcribing phase, the bubble expands as the RNA:DNA hybrid grows. This phase is associated with large structural rearrangements in the complex and is characterized by an instability leading to the release of short, abortive RNA products.

Although the precise mechanism behind the release of abortive products remains unknown, there are two mechanisms that have been proposed to serve as the primary driving force behind this process: 1) unfavorable scrunching of the template DNA and 2) steric clash of the DNA-RNA hybrid. Utilizing various biochemical techniques we have demonstrated that scrunching is not a primary destabilizing force leading to abortive cycling. We also present preliminary evidence against steric clash as a driving force for abortive cycling.