

Phage λ Q protein is a transcriptional antiterminator that is required for late gene expression from the pR' promoter when λ prophage decides to follow the lytic pathway. λ Q modifies *Escherichia coli* RNA polymerase (RNAP) at the early elongation stage. Once engaged, λ Q maintains itself as a subunit of the elongation complex throughout the elongation. Studies show that λ Q confers RNAP resistance to both intrinsic and p-mediated terminators and less pausing. However, little is known about the interaction between λ Q and RNAP. In this study, the largest subunits (β and β') of RNAP were examined to map the λ Q binding site. A stronger binding was observed with β than β' , and the binding site was narrowed to β 501-832. This region was further defined as small as 82 amino acids (β 600-681) that interacted with λ Q. In addition, 12 mutant RNAPs were isolated for a reduced λ Q antitermination within the potential λ Q binding regions, specifically near the main channel. These results propose that λ Q modifies the active center of RNAP for antitermination.



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