

Abstrakt

To survive under changing environmental conditions, the bacterial cell must adapt to them. This adaptation depends on changes in gene expression. A key step in gene expression is transcription. Bacterial RNA polymerase (RNAP) is an essential multisubunit enzyme, which is the main transcription enzyme. The most studied RNAP is from *Escherichia coli*, which is a model organism of gram-negative bacteria. I have compared the differences in RNAP between *E. coli* and *Bacillus subtilis* (a representative gram-positive bacteria). Their RNAPs differ by the presence of the δ subunit in gram-positive bacteria. This subunit increases promoter selectivity, enhances recycling of RNAP core, and generally stimulates RNA synthesis. The δ subunit affects sporulation and is essential for virulence of some bacteria. In this work, I have summarized current knowledge about gene expression, namely about regulation of transcription initiation and about the δ subunit of RNAP.