Abstract

Bacillus subtilis strain 3610 is an ancestral undomesticated strain. It differs from the laboratory strain 168 in many aspects. One difference in strain 3610 is the presence of plasmid pBS32 encoding the sigma factor N (σ^N). This σ factor is activated when DNA damage occurs and induces the bacteria's cell death. The aim of the Thesis was a systematic characterisation of σ^N-dependent transcription. First, I showed that plasmid-borne but not chromosome-borne predicted σ^N-dependent promoters were active in transcription *in vitro*. Next, the affinities of RNAP with σ^N for DNA, initiating NTP (iNTP) were determined for both relaxed and supercoiled DNA templates. Surprisingly, the activity of RNAP on relaxed σ^N-dependent promoters was higher than on their supercoiled versions, an opposite trend than displayed by RNAP associated with other σ factors. This property of σ^N-dependent promoters was not encoded by the core promoter sequence. In summary, this Thesis contributed to our understanding of the bacterial transcription apparatus.