

## **Molecular Basis of Transcription Elongation, Blockage, and Damage Repair**

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During transcription elongation, RNA polymerase moves along DNA template, recognizes the template base, and synthesizes RNA with a high fidelity. Transcription elongation process is subject to pausing and arrest by various obstacles such as pause-inducing DNA sequences or secondary structures, DNA modifications, DNA lesions, DNA-binding proteins and small molecules. Here we will present our recent progress in understanding the structural basis of lesion recognition and repair. In particular, we will focus on recent results related to transcription blockage, recognition of DNA lesions and unnatural base pairs, as well as transcription-coupled repair.