

Transcription can drive replication

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DNA replication and transcription are two fundamental cellular processes. Replication initiation generally requires initiator and helicase recruitment at a replicator. However, in *Escherichia coli*, replication dependent on transcription, but not on the initiator, is known. This mode occurs more efficiently in RNaseH-deficient background, suggesting the role of RNA-DNA hybrids. We have shown potential involvement of G-rich sequences capable of forming a G-quadruplex in initiation of bacterial chromosome replication observed in *rnhA* mutant. This mode of replication is observed to different extents on any sequences. We constructed a synthetic replicon (Pro-G) composed of a promoter and G-rich sequence. We then showed that the Pro-G can replicate as an episome in *E.coli* cells. We conclude that transcription can drive DNA replication provided an RNA-DNA hybrid can be formed. We propose that the mode of replication represented by Pro-G could be related to primordial DNA replication.