UPPSALA UNIVERSITET

Molecular Biotechnology Programme

Uppsala University School of Engineering

UPTEC X 10 026	**Date of issue 2010-11**

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Title (English)

Rolling circle transcription on smallest size double stranded DNA minicircles

Title (Swedish)

Abstract

RNA polymerase T7 is utilized as a component of motor complexes in DNA nanotechnology due to its high promotor specificity, the lack of external transcription factors and its very high processivity, but there is no experience of its application on small double stranded DNA circles. Circular templates from 210 to 126 bp in circumference sharing common promoter and termination motifs were synthesized and transcription was monitored at end point on gel and in real time with a 2' O methyl RNA molecular beacon. RNAP T7 was found to be able to utilize circular dsDNA templates down to 126 bp with moderate impact on transcription rate for saturated systems and rolling circle transcription products were evident with denaturing PAGE gel electrophoresis for templates down to 167 bp.

Keywords

RNA polymerase, RNAP T7, DNA nanotechnology, molecular motor, real time monitoring of transcription, 2' O methyl RNA, molecular beacon, minicircle

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Project name	Sponsors
Language **English**	Security None
ISSN 1401-2138	Classification
Supplementary bibliographical information	Pages **64**

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