DSpace@IISERMohali (/jspui/)
/ **Publications of IISER Mohali (/jspui/handle/123456789/4)**
/ **Research Articles (/jspui/handle/123456789/9)**

Please use this identifier to cite or link to this item: `http://hdl.handle.net/123456789/4563`

Title:	Pyrophosphate release acts as a kinetic checkpoint during high-fidelity DNA replication by the Staphylococcus aureus replicative polymerase PolC
Authors:	Lahiri, Indrajit (/jspui/browse?type=author&value=Lahiri%2C+Indrajit)
Keywords:	Pyrophosphate kinetic high-fidelity DNA replication
Issue Date:	2021
Publisher:	Oxford Academic
Citation:	Nucleic Acids Research, 49(14), 8324–8338.
Abstract:	Bacterial replication is a fast and accurate process, with the bulk of genome duplication being catalyzed by the α subunit of DNA polymerase III within the bacterial replisome. Structural and biochemical studies have elucidated the overall properties of these polymerases, including how they interact with other components of the replisome, but have only begun to define the enzymatic mechanism of nucleotide incorporation. Using transient-state methods, we have determined the kinetic mechanism of accurate replication by PolC, the replicative polymerase from the Gram-positive pathogen Staphylococcus aureus. Remarkably, PolC can recognize the presence of the next correct nucleotide prior to completing the addition of the current nucleotide. By modulating the rate of pyrophosphate byproduct release, PolC can tune the speed of DNA synthesis in response to the concentration of the next incoming nucleotide. The kinetic mechanism described here would allow PolC to perform high fidelity replication in response to diverse cellular environments.
Description:	Only IISER Mohali authors are available in the record
URI:	https://doi.org/10.1093/nar/gkab613 (https://doi.org/10.1093/nar/gkab613) http://hdl.handle.net/123456789/4563 (http://hdl.handle.net/123456789/4563)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need To Add…Full Text_PDF..pdf (/jspui/bitstream/123456789/4563/1/Need%20To%20Add%e2%80%a6Full%20Text_PDF..pdf)	Only IISER Mohali authors are available in the record	15.36 kB	Adobe PDF	View/Open (/jspu

Show full item record (/jspui/handle/123456789/4563?mode=full)

📊 (/jspui/handle/123456789/4563/statistics)