

Abstract Submitted
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Investigating hexameric helicases: Single-molecule studies of DnaB and T4 gp41 OMAR SALEH, NOAH RIBECK, JOHN BEREZNEY, University of California Santa Barbara — Hexameric, ring-shaped motor proteins serve as replicative helicases in many systems. They function by encircling and translocating along ssDNA, denaturing dsDNA in advance of its motion by sterically occluding the complementary strand to the outside of the ring. We investigate the helicase activity of two such motors using single-molecule measurements with magnetic tweezers. First, we measure the activity of the *E. coli* helicase DnaB complexed with the tau subunit of the Pol III holoenzyme. Tau is known from bulk measurements to stimulate DnaB activity (Kim et al., *Cell*, 1996); we investigate the means of this stimulation. Second, we measure helicase activity of the T4 phage helicase gp41 in multiple tethered DNA geometries. Previous work on DnaB showed a dependence of helicase activity on DNA geometry (Ribeck et al., *Biophys. J.*, 2010); here, we test gp41 for similar behavior to see whether it is a common characteristic of hexameric helicases.

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