

**Supplementary Fig. 1 – Effect of ATP $\gamma$ S preincubation on the rate of  $\gamma$  complex binding p/t-DNA-DCC.** The change in DCC fluorescence due to  $\gamma$  complex binding DNA was measured as a function of time. In one assay (*black trace*), a solution of  $\gamma$  complex and ATP $\gamma$ S was added to a solution of p/t-DNA-DCC and ATP $\gamma$ S. In the second (*gray trace*), a solution of  $\gamma$  complex that did not contain ATP $\gamma$ S was added to a solution of p/t-DNA-DCC and ATP $\gamma$ S. The relative intensity of DCC is plotted as a function of time on a scale of 2 s. Final concentrations were 200 nM p/t-DNA-DCC and  $\gamma$  complex, and 0.5 mM ATP $\gamma$ S in assay buffer with 4% glycerol. Observed rate constants calculated from exponential fits were 1 s<sup>-1</sup> (*gray curve on black trace*) for the ATP $\gamma$ S-preincubated reaction and 0.7 s<sup>-1</sup> (*black curve on gray trace*) for the reaction in which the  $\gamma$  complex was not preincubated with ATP $\gamma$ S.

