



Supplementary Figure 3. (a) Representative traces of the change in DNA extension versus time due to $FtsK_{50C}$ translocation on $DNA_{FRS,1/3}$. Note frequent pauses and reversals at the position of the FRS repeat. (b-c) Representative traces of the change in DNA extension versus time due to $FtsK_{50C}$ or $FtsK_{50C}\Delta\gamma$ translocation on DNA_{no-FRS} .