

**Figure 8-figure supplement 1.**Representative time traces of the extension change of the hairpin (pH = 6.1) in the absence of SsrB (A), and in the presence of SsrB at 37 nM (B) and 75 nM (C). The measurements were recorded at three forces: the binding force (**∼**3 pN, grey, 2 min), at which the SsrB-hairpin complex reaches equilibrium, the probing force (**∼**12 pN, blue, 30 s), slightly greater than Fc, to observe the binding signals, if any, and the displacing force (**∼**30 pN, magenta, 5 s), to rapidly displace bound SsrB. The black arrows indicate the cycles at which SsrB-DNA binding was observed.