

SUPPLEMENTARY DATA

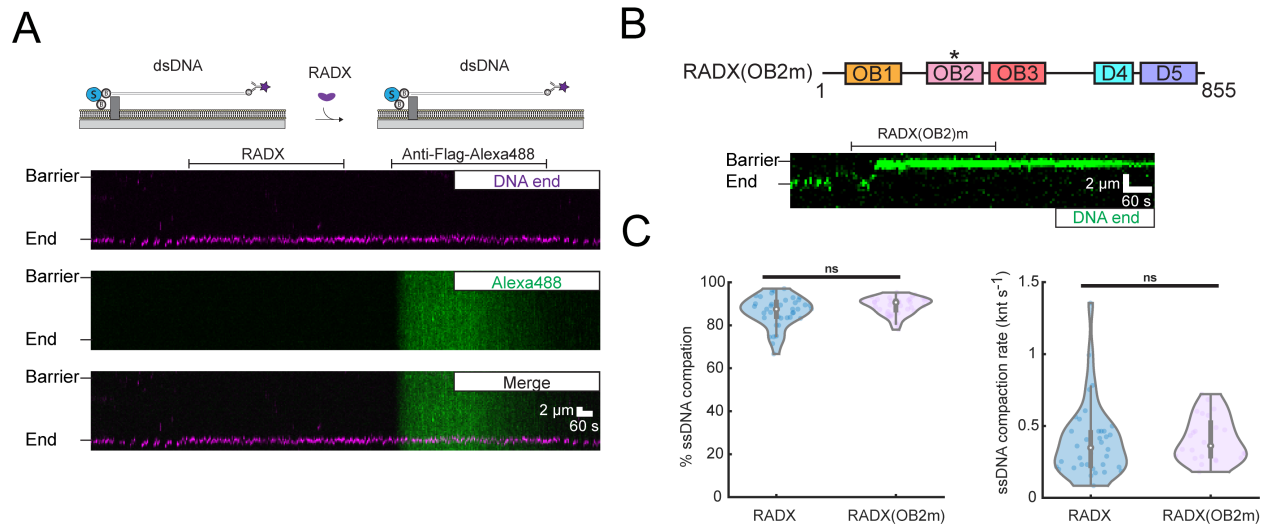


Figure S1. RADX does not bind to dsDNA. RADX(OB2m) compacts ssDNA.

(A) A representative kymograph showing RADX does not bind to or compact dsDNA. (B) ssDNA was compacted by RADX(OB2m). (C) ssDNA compaction percentage and rate in the presence of wtRADX and RADX(OB2m).

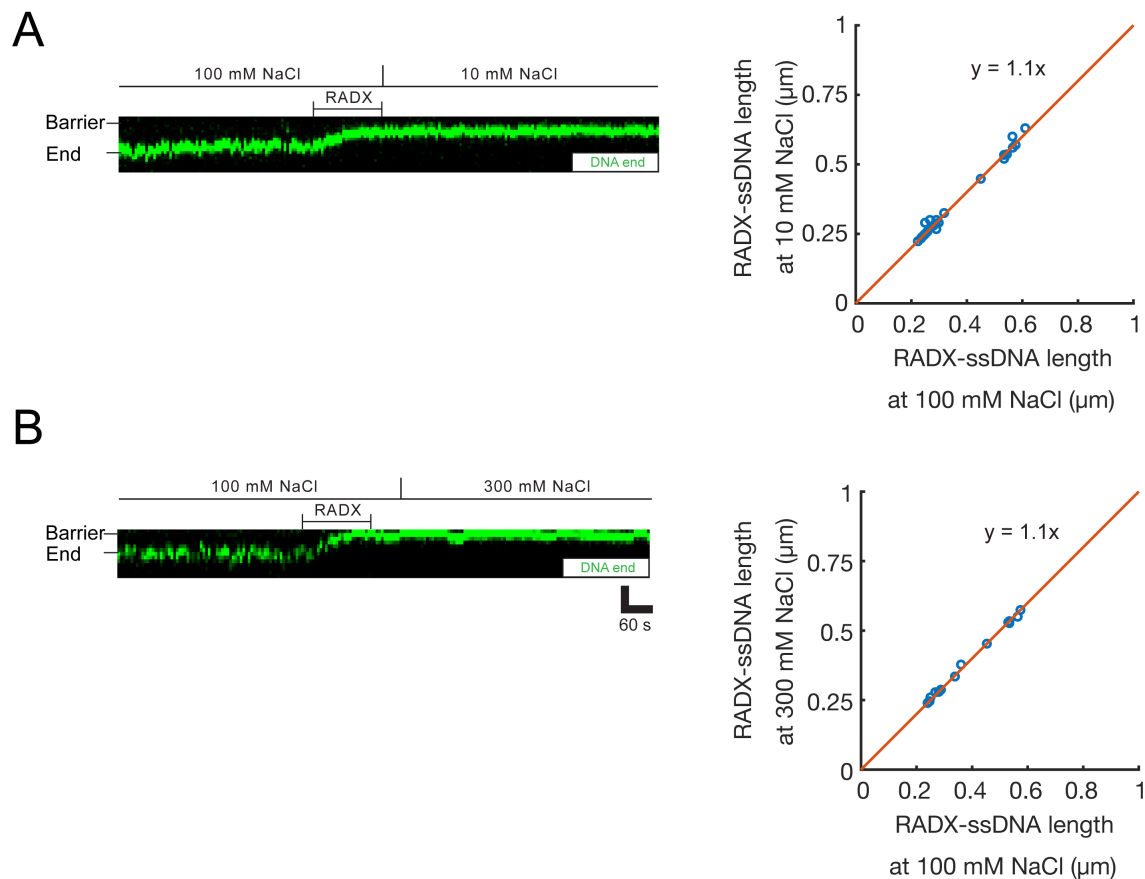


Figure S2. RADX-ssDNA complexes are insensitive to salt concentration change.

(A) A representative kymograph showing NaCl concentration in imaging buffer was switched from 100 mM to 10 mM after ssDNA compacted by RADX. Right panel shows the length of RADX-ssDNA before and after salt concentration switch. (B) A representative kymograph showing NaCl concentration was switched from 100 mM to 300 mM after ssDNA compacted by RADX. Right panel shows the length of RADX-ssDNA before and after salt concentration switch.

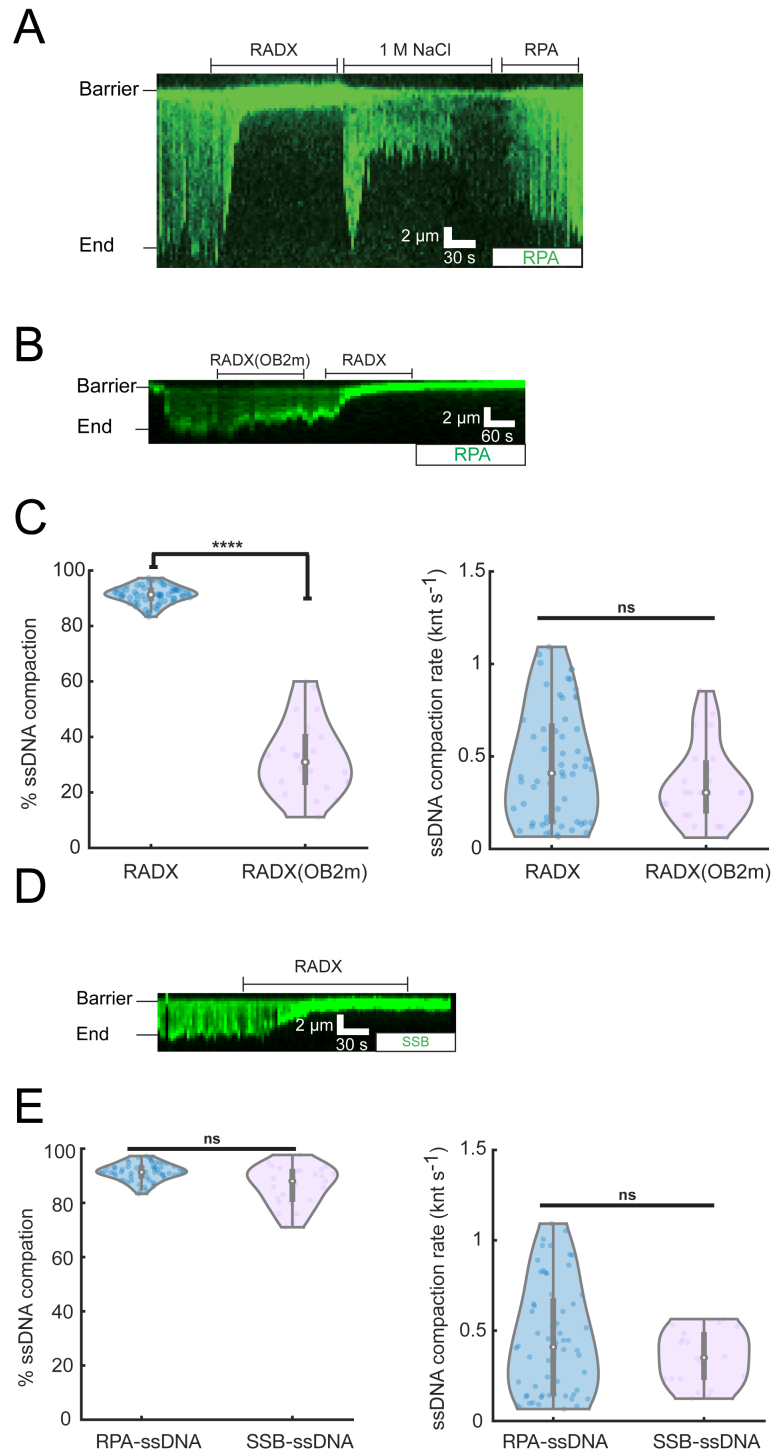


Figure S3. High salt dissociates RADX from ssDNA. RADX(OB2m) has compromised activity to compact RPA-ssDNA. RADX condenses SSB-ssDNA.

(A) 1 M NaCl can dissociate RADX from ssDNA and resolve the condensed complexes back to full-length ssDNA molecules. (B) A typical kymograph showing RADX(OB2m) has compromised activity to compact RPA-ssDNA. (C) RPA-ssDNA compaction percentage and rate in the presence of wtRADX and RADX(OB2m). (D) RADX greatly condenses *E.coli* SSB-coated ssDNA. (E) Comparison of SSB-ssDNA and RPA-ssDNA compaction percentage and rate in the presence of RADX.

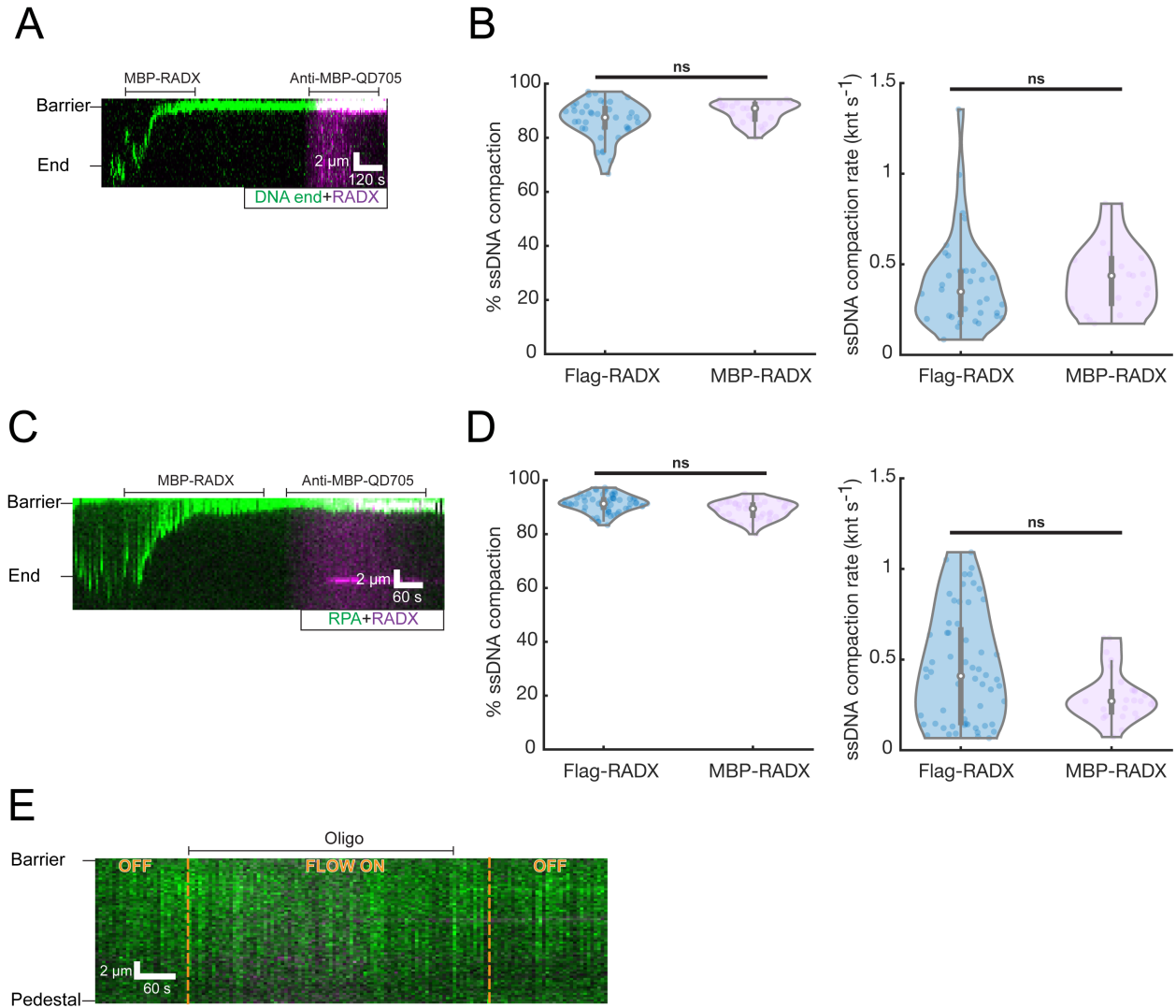


Figure S4. MBP-RADX is functional comparable with Flag-RADX. Non-complementary oligo does not bind to double-tethered RPA-ssDNA.

(A) A kymograph showing MBP-RADX condenses ssDNA. (B) ssDNA compaction percentage and rate in the presence of Flag-RADX and MBP-RADX. (C) A kymograph showing MBP-RADX condenses RPA-ssDNA. (D) RPA-ssDNA compaction percentage and rate in the presence of Flag-RADX and MBP-RADX. (E) Non-complementary oligo does not bind to RPA-ssDNA in the absence of RADX.

TABLE S1. OLIGONUCLEOTIDES USED IN THIS STUDY.

Name	Sequence
IF327	GCT GCC GCC CTT GTC ATC
IF328	ACG ATG ACA AGG GCG GCA GCT CCG GAG AGT CTG GGC AAC
IF329	CCT GCA AAG CAC CGG CCT CGT CAG TGG TGG TGG TGG TGG TGA CTA GTA TTT TCA GGA CTG TAA ATC TTG TGA AG
IF330	CAC CAC CAC CAC CAC CAC TGA CGA GGC CGG TGC TTT GCA
IF333	GGA AAA ATC GAA GAA GGT AAA CTG GTA ATC TGG
IF334	CAT ATG TAT ATC TCC TTC TTA AAG TTA AAC AAA ATT ATT TCT AGA GGG G
IF238	5/Biosg/TC TCC TCC TTC T
IF239	/5Phos/AG GAG AAA AAG AAA AAA AGA AAA GAA GG