

Single-Molecule DNA Visualization Using AT-specific Red and Non-specific Green DNA-Binding Fluorescent Protein Combination to Visualize DNA Sequences

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Supporting Information (SI)

PCR Primers Used in This Study

Name	Sequence
P1-HNS	5'-ACT TCA CAT ATG ATG AGC GAA GCA CTT AAA ATT CTG-3'
P2-HNS	5'-GCC ACC AGA ACC ACC TTG CTT GAT CAG GAA ATC GTC G-3'
P3-mCherry	5'-CAA GCA AGG TGG TTC TGG TGG CAT GGT GAG CAA GGG CGA GGA G-3'
P4-mCherry	5'-ATT TCA GGA TCC CTA CTT GTA CAG CTC GTC CAT GCC-3'
P5-BRCA	5'-TAT GCA CAT ATG GTA GAG AGT AAT ATT GAA GAC AAA ATA TTT GGG-3'
P6-BRCA	5'-GCT CAC CAT ACC GCC GCT GCC ACC TTT TGG CCC TCT GTT TCT ACC TAG-3'
P7-eGFP	5'-GGT GGC AGC GGC GGT ATG GTG AGC AAG GGC GAG GAG-3'
P8-eGFP	5'-TAT GCA GGA TCC TTA CGC CTT GTA CAG CTC GTC CAT G-3'
P9-HMG-mCherry	5'-ATA TTG CAT ATG AAA TGG AAA TGG AAA AAA GCG ATG GTG AGC AAG GGC GAG GAG-3'
P10-HMG-mCherry	5'-ATA TTG GGA TCC TTA TTT CCA TTT CCA TTT TTT CGC CTT GTA CAG CTC GTC CAT GCC-3'

Full Sequences for Fluorescent Protein-DNA Binding Protein

H-NS-mCherry

MGSSHHHHHHSSGLVPRGSHMMSEALKILNNIRTLRAQARECTLETLEEMLEKLEVVV
NERREEESAAAAEVEERTRKLQQYREMLIADGIDPNELLNSLAAVKSGTKAKRAQRPAKYSYVDENGE
TKTWTGQGRTPAVIKKAMDEQGKSLDDFLIKQ-GGSGG-mCherry.

BRC1-eGFP

MGSSHHHHHHSSGLVPRGSHMVESNIEDKIFGKTYRKKASLPNLSHVTENLIIGAFVTEP
QIIQERPLTNKLKRKRPTSGLHPEDFIKKADLAVQKTPEMINQGTNQTEQNGQVMNITNSGHENKTKG
DSIQNEKNPNPIESLEKESAFKTKAEPISSSISNMELELNIHNSKAPKKNRLRRKSSTRHHALELVVSRNL
SPPNCTELQIDSCSSSEEIKKKKYNQMPVRHSRNLQLMEGKEPATGAKKSNKPNEQTSKRHDSDTFPEL
KLTNAPGSFTKCSNTSELKEFVNPSLPREEKEEKLETVKVSNNAEDPKDLMLSGERVLQTERSVSSSIS
LVPGTDYGTQESISLLEVSTLGKAKTEPNKCVSQCAAFENPKGLIHGCSKDNRNDTEGFKYPLGHEVNH
SRETSIEMEESELDAQYLQNTFKVSKRQSFAPFSNPGNAEEECATFSAHSGSLKKQSPKVTFECEQKEEN
QGKNESNIKPVQTVNITAGFPVVGQKDKPVDNAKCSIKGGSRFCLSSQFRGNETGLITPNKHGLLQNPY
RIPPLFPIKS FVKTKCKKNLLEENFEEHSMSPEREMGNENIPSTVSTISRNNIRENVFKEASSNINEVGSS
TNEVGSSINEIGSSDENIQAE LGRNRGPK-GGSGG-eGFP

2HMG-mCherry¹

MGSSHHHHHHSSGLVPRGSHM-TPKRPRGRPKK-GGSGG-mCherry-GGSGG-KKPRGRPRKPT

2(KW)₂-eGFP²

MGSSHHHHHHSSGLVPRGSHM-KWKWKKA-eGFP-AKKWKWK

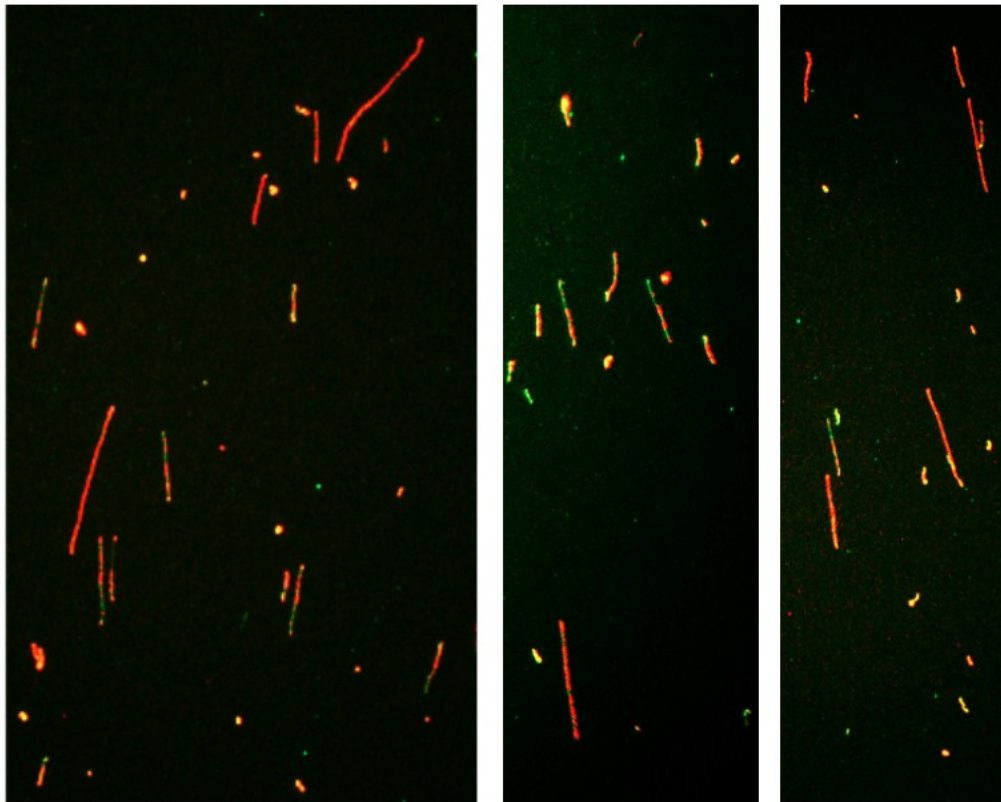


Figure S1. H-NS-mCherry and BRCA1-eGFP stained T4 DNA (166 kb) with λ DNA (48.5 kb).

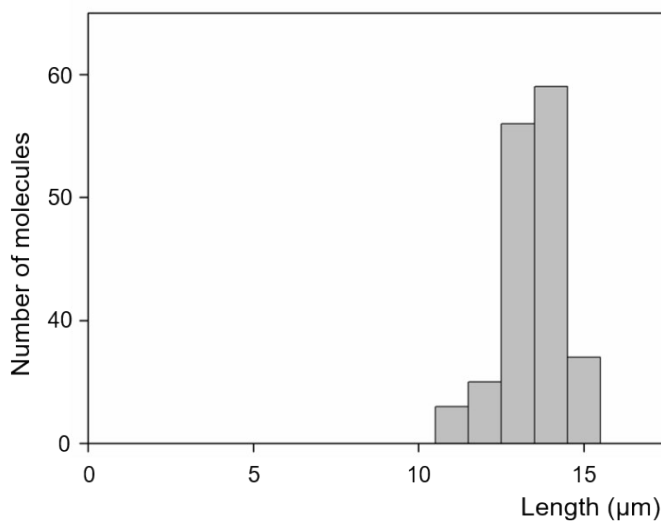


Figure S2. Length distribution of λ DNA molecules stained in H-NS-mCherry and BRCA1-eGFP. The average length is 13.4 μm (53 pixels).

1. S. Lee, C. Wang, J. Song, D. G. Kim, Y. Oh, W. Ko, J. Lee, J. Park, H. S. Lee and K. Jo, *Rsc Adv*, 2016, **6**, 46291-46298.
2. S. Lee, Y. Oh, J. Lee, S. Choe, S. Lim, H. S. Lee, K. Jo and D. C. Schwartz, *Nucleic Acids Res*, 2016, **44**, e6.