SUPPORTING INFORMATION

Nucleotide Excision Repair and Impact of Site-Specific 5′,8-Cyclopurine and Bulky DNA Lesions on Physical Properties of Nucleosomes

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Synthesis of 147 bp Fragments of the 601 Widom DNA Containing Single 5',8-Cyclopurine Lesions and Cy3 and Cy5 Dyes. These lesions were embedded in the 17-mer sequences 5'- CCACCAACX^{cP}CTACCACC with the following modifications of the neighboring sequences (Figure S1):

***"Out"* rotational setting of the lesion**
Modified strand (sequence 2)

***a* : 17-mer sequence**
5'- CCACCAACX^{cP}CTACCACC, X^{cP}= cdA or cdG

***b* : 57-mer sequence**
5'- CACAGGATGTATATATCTGACACGTGCCTGGAYACTAGGGAGTAATCCCCTTGGCGG,
Y = G or Cy3

***c* : 73-mer sequence**,
5'-
GCGCGTACGTGCGTTTAAGCGGTGCTAGAGCTGTCTACGACCAATTGAGCGGCCTCGGCACC
GGGATTCTCCA

***d* : 49-mer scaffold strand**
5'- CACCGCTTAAACGCACGTACGCGCGGTGGTAGCGTTGGTGGCCGCCAAG

Complementary strand (sequence 1)

***e* : 49-mer sequence (Left)**
5'- TGGAGAATCCCGGTGCCGAGGCCGCTCAATTGGTZGTAGACAGCTCTAG
Z = C or Cy5

***f* : 49-mer sequence (Middle)**,
5'- CACCGCTTAAACGCACGTACGGTGGTAGCGTTGGTGGTTAACCGCCAAG

***g* : 49-mer sequence (Right)**,
5'- GGGATTACTCCCTAGTCTCCAGGCACGTGTCAGATATATACATCCTGTG

***h* : 20-mer scaffold strand**
5'-GAGTAATCCCCTTGGCGGCC

***i* : 20-mer scaffold strand**
5'- TTAAGCGGTGCTAGAGCTGT

***"In"* rotational setting of the lesion**
Modified strand (sequence 2)

***a* : 17-mer sequence**
5'- CCACCAACX^{cP}CTACCACC, X^{cP}= cdA or cdG

***b* : 61-mer sequence**

5'-
CACAGGATGTATATATCTGACACGTGCCTGGAYACTAGGGAGTAATCCCCTTGGCGGTTAA
Y = G or Cy3

***c* : 69-mer sequence**,

5'-
GTACGTGCGTTTAAGCGGTGCTAGAGCTGTCTACGACCAATTGAGCGGCCTCGGCACCGGGA
TTCTCCA

***d* : 49-mer scaffold strand**

5'- CACCGCTTAAACGCACGTACGGTGGTAGCGTTGGTGGTTAACCGCCAAG

Complementary strand (sequence 1)

***e* : 49-mer sequence (Left)**

5'- TGGAGAATCCCGGTGCCGAGGCCGCTCAATTGGTZGTAGACAGCTCTAG
Z = C or Cy5

***f* : 49-mer sequence (Middle)**,

5'- CACCGCTTAAACGCACGTACGGTGGTAGCGTTGGTGGTTAACCGCCAAG

***g* : 49-mer sequence (Right)**,

5'- GGGATTACTCCCTAGTCTCCAGGCACGTGTCAGATATATACATCCTGTG

***h* : 20-mer scaffold strand**

5'-GAGTAATCCCCTTGGCGGCC

***i* : 20-mer scaffold strand**

5'- TTAAGCGGTGCTAGAGCTGT

Synthesis of 147 bp Fragments of the 601 Widom DNA Containing Single BP-dGLesions and Cy3 and Cy5 Dyes. These lesions were embedded in the 11-mer sequences 5'-CCATCGG^{BP}CTACCwith the following modifications of the neighboring sequences (Figure S1):

***"Out"* rotational setting of the lesion**
Modified strand (sequence 2)

***a* : 11-mer sequence**

5'-CCATCG^{BP}CTACC, G^{BP} = *cis*- or *trans*-BPDE-G

***b* : 60-mer sequence**

5’- CACAGGATGTATATATCTGACACGTGCCTGGAYACTAGGGAGTAATCCCCTTGGCGG,
Y = G or Cy3

c : **76-mer sequence**,
5’-
GCGCGTACGTGCGTTTAAGCGGTGCTAGAGCTGTCTACGACCAATTGAGCGGCCTCGGCACC
GGGATTCTCCA

d : **49-mer scafoldstrand**
5’- CACCGCTTAAACGCACGTACGCGCGGTGGTAGCGTTGGTGGCCGCCAAG

Complementary strand (sequence 1)

e : **49-mer sequence (Left)**
5’- TGGAGAATCCCGGTGCCGAGGCCGCTCAATTGGTZGTAGACAGCTCTAG
Z = C or Cy5

f : **49-mer sequence (Middle)**,
5’- CACCGCTTAAACGCACGTACGGTGGTAGCGTTGGTGGTTAACCGCCAAG

g : **49-mer sequence (Right)**,
5’- GGGATTACTCCCTAGTCTCCAGGCACGTGTCAGATATATACATCCTGTG

h : **20-mer scaffold strand**
5’-GAGTAATCCCCTTGGCGGCC

i : **20-mer scaffold strand**
5’- TTAAGCGGTGCTAGAGCTGT

“In” rotational setting of the lesion
Modified strand (sequence 2)

a : **11-mer sequence**
5’-CCATCG^{BP}CTACC, G^{BP} = *cis*- or *trans*-BPDE-G

b : **64-mer sequence**
5’-
CACAGGATGTATATATCTGACACGTGCCTGGAYACTAGGGAGTAATCCCCTTGGCGGTTAA
Y = G or Cy3

c : **72-mer sequence**,
5’-
GTACGTGCGTTTAAGCGGTGCTAGAGCTGTCTACGACCAATTGAGCGGCCTCGGCACCGGGA
TTCTCCA

d : **49-mer scaffold strand**
5’- CACCGCTTAAACGCACGTACGGTGGTAGCGTTGGTGGTTAACCGCCAAG

Complementary strand (sequence 1)

e : **49-mer sequence (Left)**

5’- TGGAGAATCCCGGTGCCGAGGCCGCTCAATTGGTZGTAGACAGCTCTAG

Z = C or Cy5

f : **49-mer sequence (Middle)**,

5’- CACCGCTTAAACGCACGTACGGTGGTAGCGTTGGTGGTTAACCGCCAAG

g : **49-mer sequence (Right)**,

5’- GGGATTACTCCCTAGTCTCCAGGCACGTGTCAGATATATACATCCTGTG

h : **20-mer scaffold strand**

5’-GAGTAATCCCCTTGGCGGCC

i : **20-mer scaffold strand**

5’- TTAAGCGGTGCTAGAGCTGT

FIGURES

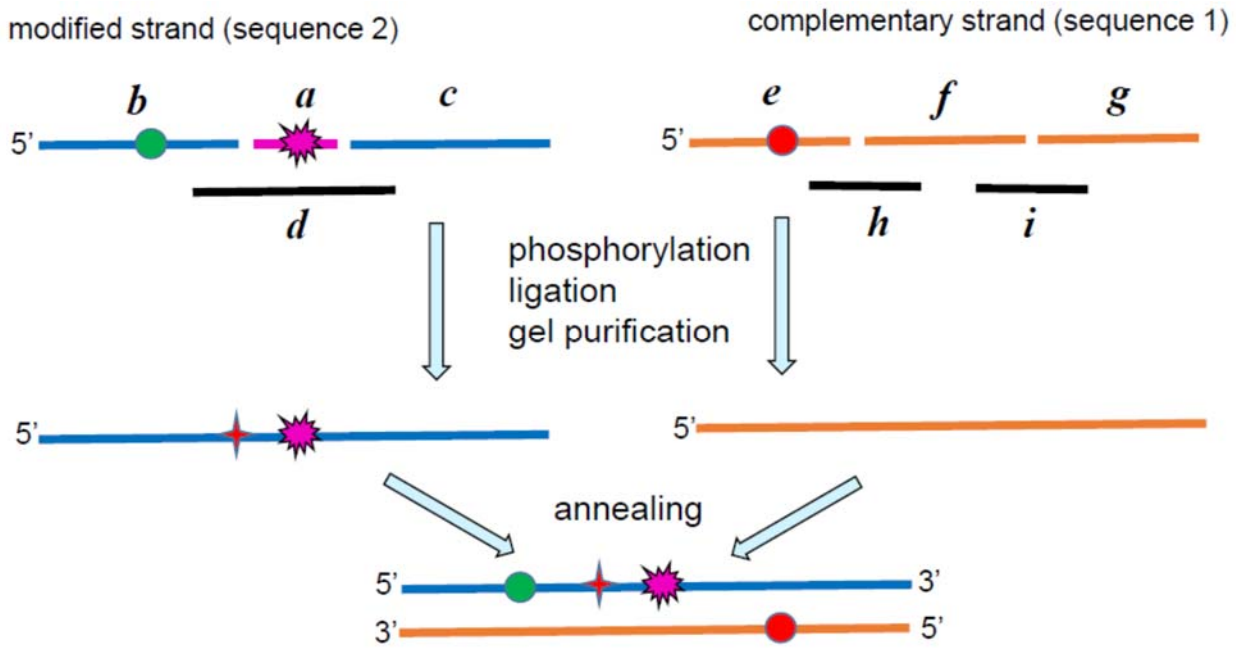

Figure S1. Construction of the ^{32}P-internally labeled (✦) 147 bp fragments of 601 Widom sequence containing single 5',8-cyclopurine lesion (✸) for NER experiments. The 5'-^{32}P-endlabeled modified strands were used in the hydroxyl radical footprinting and competitive reconstruction experiments. The Cy3 (●) and Cy5 (●) were incorporated for the FRET studies.

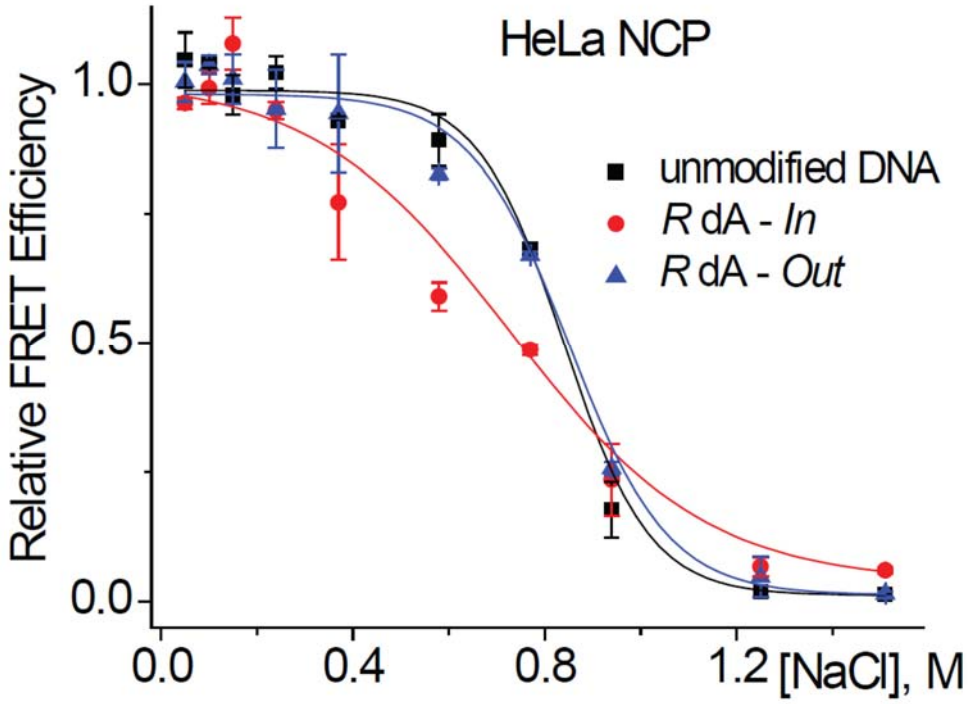

Figure S2. Relative FRET signals measured at 670 nm of HeLa histone nucleosomes with *R* cdA lesions as a function of NaCl concentrations; the sigmoidal curves are plots of Eq. 3.