

Supporting Information for Electron Transport in DNA Initiated by Diaminonaphthalene Donors Alternatively Bound by Non-Covalent and Covalent Association

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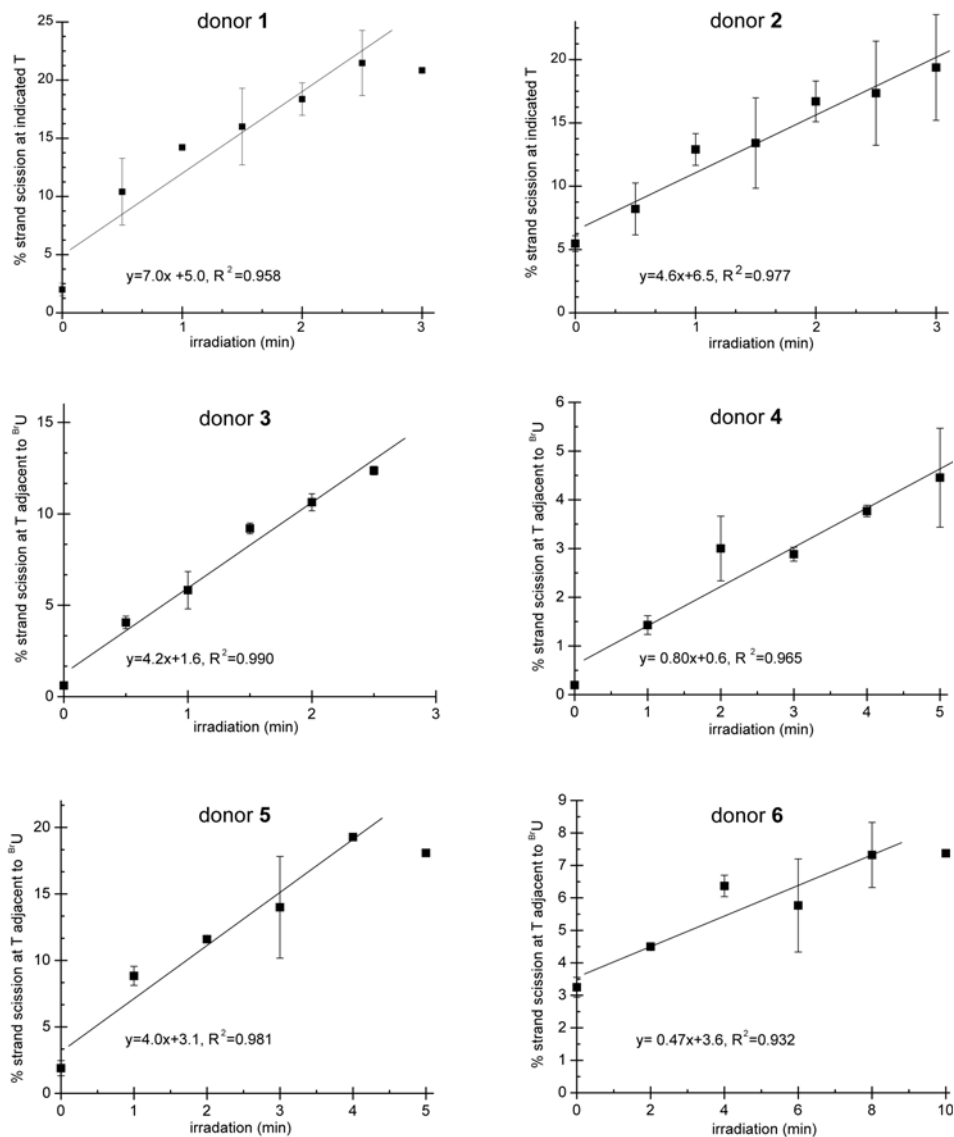


Figure S1. Initial rates of DNA scission induced by photoexcitation of electron donors. Duplex DNA (ODN1/[³²P]-ODN2) was combined with 1 mM of the indicated diaminonaphthalene derivative in 100 mM NaCl and 10 mM sodium phosphate pH 7. Aliquots of this solution (25 μ L) were irradiated (1000 W Xe arc lamp) as described in the Methods section. Samples were maintained under anaerobic conditions within a sealed glove bag. After irradiation, samples were suspended in a 10 % v/v solution of piperidine (30 μ L), heated for 30 min at 90 $^{\circ}$ C, dried under reduced pressure and analyzed by denaturing polyacrylamide (20%) gel electrophoresis. Products were detected by phosphoimaging and quantified with ImageQuant 5.2 software. The background level of strand scission is indicated by the value measured before irradiation and was not subtracted from the yield of scission as evident by the non-zero intercepts. Initial rates were determined by linear best fits using Origin (Microcal ver. 6.0). Data points without error bars were measured only once.

Figure S2. Chromatographic detection of (A) the deoxyribose-containing oligonucleotide after oxidative deprotection of its precursor **ODN1** and preparative isolation of the subsequent oligonucleotide conjugates (B) **ODN3** and (C) **ODN4** formed with diamino-naphthalene derivatives analogous to electron donors **1** and **6**, respectively. Chromatograms illustrate the separations achieved during purification of the desired products materials using a Jasco HPLC with a reverse-phase (C18) column and a solvent gradient of 10 % acetonitrile in 50 mM triethylamine acetate (pH 5.0) to 30 % acetonitrile in 35 mM triethylamine acetate over 15 min followed by an increase to 90% acetonitrile over another 10 min (1 mL/min).

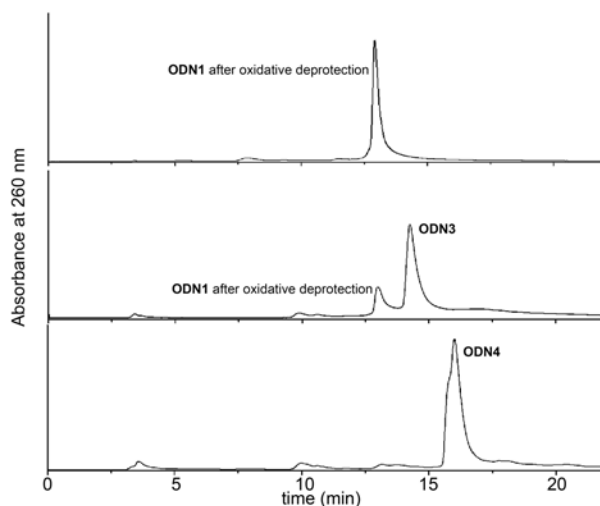


Figure S3. MALDI-TOF mass detection of DNA conjugates **ODN3** and **ODN4**.

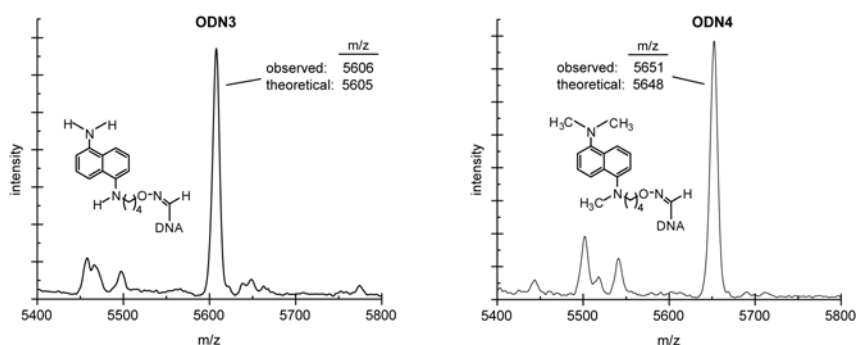


Figure S4. Initial rates of DNA scission induced by photoexcitation of electron donors. Duplex DNA with electron donors attached covalently were prepared, irradiated and analyzed as described in Figure S1 in the absence of the free diamino-naphthalene derivatives.

