Electron Transfer Rates in DNA Films as a Function of Tether Length

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Received August 23, 2004

Abstract:

A homologous series of DNA-modified electrodes has been investigated in which the molecular tether length varies. Using intercalated, covalently bound daunomycin as a redox probe, an exponential dependence of electron transfer rates on the number of intervening methylene groups in the σ-bonded tether is observed. In contrast, variation in DM position within DNA yields no detectable change in rate. These data confirm that overall electron transfer rates in DNA films are limited by the tether, not the DNA.