

DNA Electrochemistry through the Base Pairs Not the Sugar-Phosphate Backbone

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Abstract:

Using intercalated, covalently bound daunomycin as a redox probe, ground state charge transport in DNA films with a perturbation in base pair stacking was examined in comparison with breaks in the sugar-phosphate backbone. While the introduction of one or even two nicks in the sugar-phosphate backbone yields no detectable effect on electron transfer, a CA mismatch significantly attenuates the electron transfer yield. These results confirm that the base pair stack is the pathway for DNA-mediated charge transfer, not the sugar-phosphate backbone.

Full Text (Subscription May be Required):

<http://pubs.acs.org/cgi-bin/abstract.cgi/jacsat/2005/127/i29/abs/ja053025c.html>