Abstract Submitted
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Direct Measurements of Electrical Transport Through Single DNA Molecules of Complex Sequence HEZY COHEN, DANNY PORATH, The Hebrew University of Jerusalem, CLAUDE NOGUES, RON NAAMAN, The Weizmann Institute, Rehovot, PORATH TEAM, NAAMAN COLLABORATION — Seemingly contradicting results raised a debate over the ability of DNA to transport charge and the nature of the conduction mechanisms through it. We developed an experimental approach for measuring current through DNA molecules, chemically connected on opposite ends to a metal substrate and to a gold nanoparticle, using a conductive atomic force microscope.[1] Many samples could be made due to the experimental approach adopted here that enabled obtaining reproducible results in various samples, conditions and measurement methods. We present multileveled evidence for charge transport through 26 base-pairs long dsDNA of a complex sequence, characterized by S-shaped I-V curves that show currents higher than 220 nA at 2 V.[2] This significant observation implies that a coherent or band transport mechanism takes over for the high currents ($>$ 1 nA). 1. Claude Nogues, Sidney R. Cohen, Shirley S. Daube, and Ron Naaman, "Electrical properties of short DNA oligomers characterized by conducting atomic force microscopy," PCCP, 2004, 18. 2. Hezy Cohen, Claude Nogues Ron Naaman and Danny Porath. "Direct Measurement of Electrical Transport Through Single DNA Molecules," submitted.

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