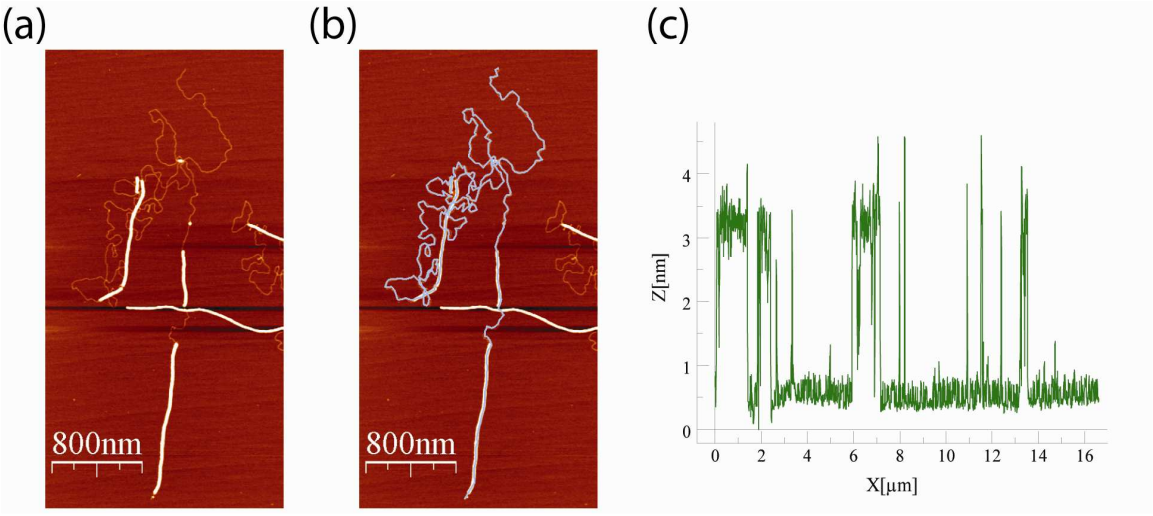

Figure S1. Atomic force microscope (AFM) image and molecule profile. (a) Large-scale view of the molecule shown in Figure 1b. (b) The same molecule traced along its entire length (blue line) using AFM data processing software WSxM (Nanotec Electronica). (c) Resultant height profile along the length of the molecule.

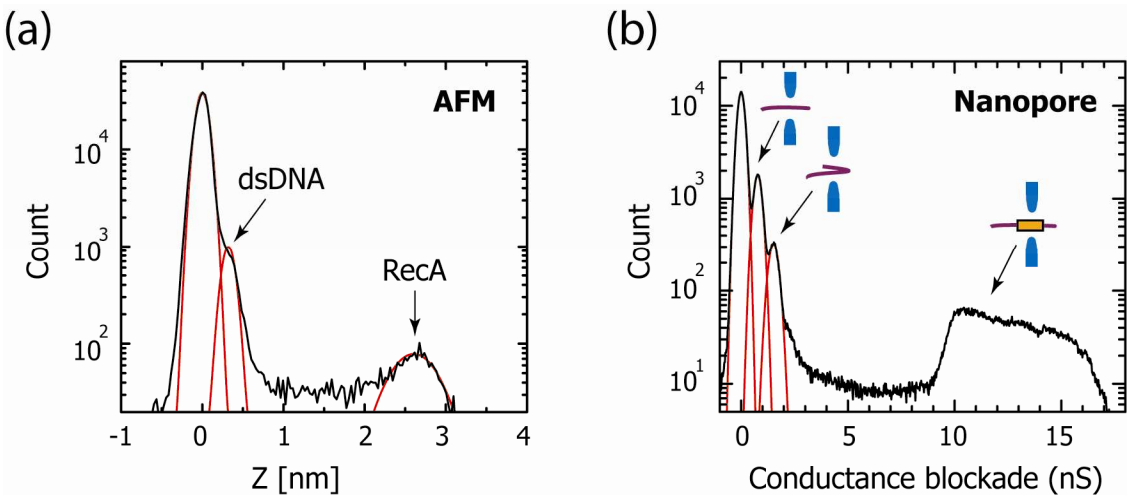

Figure S2. Comparison of the fraction of RecA-coated DNA to that of bare DNA, as measured by atomic force microscopy (AFM) and solid-state nanopore. (a) Height histogram from AFM data of partially RecA-coated molecules, indicating 22.3% RecA-coated DNA versus 77.7% bare DNA. (b) Conductance histogram of all nanopore translocation events recorded at 60 mV, indicating 20.9% RecA-coated DNA versus 79.1% bare DNA, in good agreement with the AFM result. These numbers were obtained by integrating the Gaussian fits (shown in red) of the respective peaks, except for the nanopore RecA peak, for which the raw data was integrated from 9-17 nS. The fraction of RecA-coated DNA found by both methods agrees well with the stoichiometric ratio of 1:15 (RecA monomers: bp of DNA) that was used for the formation of the molecules, considering that one RecA protein binds to 3 DNA base pairs, giving an expected coverage of around 20%.

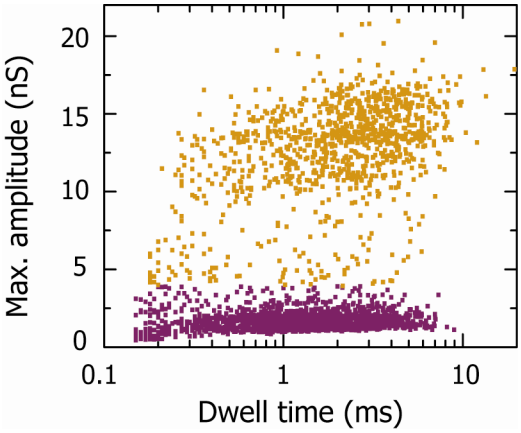

Figure S3. Conductance-blockade versus translocation time scatter plot. For each event, one can identify the average and maximum amplitudes by which the current is reduced as well as the total duration of the blockage. Here, we plot the maximum conductance blockade versus time duration for all translocation events recorded at 60 mV on a semi logarithmic scale (each point represents a single-molecule translocation event). Bare DNA and (partially) protein-coated DNA molecules can be readily distinguished by their low (~ 2 nS, purple) and high (~ 14 nS, orange) maximum conductance blockade levels, respectively.