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Peptide Nucleic Acids as Tools for Single-Molecule Sequence Detection and Manipulation HAGAR ZOHAR, CRAIG HETHERINGTON, CARLOS BUSTAMANTE, SUSAN MULLER, University of California, Berkeley — The ability to strongly and sequence-specifically attach modifications such as fluorophores and haptens to individual double-stranded (ds) DNA molecules is critical to a variety of single-molecule experiments. We propose using modified peptide nucleic acids (PNAs) for this purpose and implement them in two model single-molecule experiments where individual DNA molecules are manipulated via microfluidic flow and optical tweezers, respectively. We demonstrate that PNAs are versatile and robust sequence-specific tethers.

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