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Abstract for an Invited Paper
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Single-molecule studies of biological molecules[1]

STUART LINDSAY, Arizona State University

Structural heterogeniety, i.e., the existence of multiple nearly-degenerate conformational substates of molecules, plays a key role in biological machinery. Therefore, in order to understand many biological processes, it is necessary to examine processes at the single molecule level. This talk will describe AFM imaging of processes involved in turning on genes (1), methods for chemically-identifying single proteins (2) and methods for wiring single molecules into electrical circuits (3). .1. H. Wang *et al.*, *Biophys. J.* **87**, 1964–1971 (2004). 2. C. Stroh *et al.*, *Proc. Natl. Acad. Sci. (USA)* **101**, 12503–12507 (2004). 3. X. D. Cui *et al.*, *Science* **294**, 571 (2001).

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