Singe Molecule Protein/DNA Detection Using Designed DNA Carriers and Solid-State Nanopores

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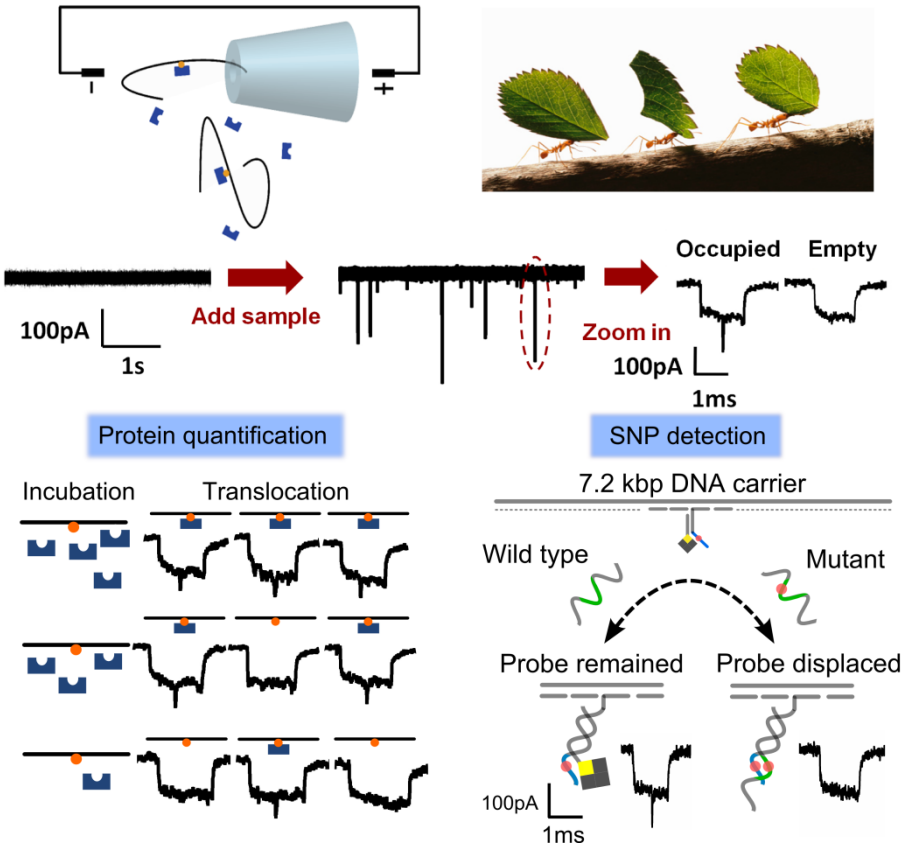

Designed “DNA carriers” have been proposed [1] as a new method for nanopore based specific biosensing. In this system, target protein molecules bind to a long DNA strand at a defined position creating a second level transient current drop against the background DNA translocation. We demonstrate the ability of this system to quantify protein concentrations in the nanomolar range [2] and to discriminate single base pair mismatch in DNA sequences [3] which are both of fundamental importance in biological research, drug screening and disease diagnosis. The results show the potential for a novel quantitative single molecule detection scheme using the nanopore-DNA carrier method.

Reference

1. N. A. W. Bell and U. F. Keyser. *JACS*, 2015, 137, 5.
2. **Jinglin Kong**, N. A. W. Bell and U. F. Keyser. *Nano letters*, 2016, 16, 6.
3. **Jinglin Kong**, J. Zhu and U. F. Keyser. *Chemical Communications*. 2016.