

Abstract Submitted
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Nanopore DNA sequencing using kinetic proofreading¹ XIN-SHENG LING, Southeast University (Nanjing China) and Brown University — We propose a method of DNA sequencing by combining the physical method of nanopore electrical measurements and Southern’s sequencing-by-hybridization. The new key ingredient, essential to both lowering the costs and increasing the precision, is an asymmetric nanopore sandwich device capable of measuring the DNA hybridization probe twice separated by a designed waiting time. Those incorrect probes appearing only once in nanopore ionic current traces are discriminated from the correct ones that appear twice. This method of discrimination is similar to the principle of kinetic proofreading proposed by Hopfield and Ninio in gene transcription and translation processes. An error analysis of this nanopore kinetic proofreading (nKP) technique for DNA sequencing is carried out in comparison with the most precise 3’ dideoxy termination method developed by Sanger.

¹Nanopore DNA sequencing using kinetic proofreading

Xinsheng Ling
Southeast University (Nanjing China) and Brown University

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