Sensing proteins at the single-molecule level using biological nanopores

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Following the successful application of biological nanopores in DNA sequencing, nanopore-based technologies are now emerging as powerful analytical tools for observing and sensing proteins at the single-molecule level, with the potential to become the first method capable of sequencing full-length proteins one molecule at a time [1,2].

After years of dedicated research, biological nanopores are now beginning to overcome many of the longstanding challenges associated with protein analysis. This progress is opening the door to a wide range of new applications in chemistry, biology, and medicine [3–6].

This tutorial introduces the fundamental principles of biological nanopores and explains how they function as nanoconfined spaces to study biomolecules at the single-molecule level [7]. It examines the key differences and current challenges in analyzing proteins compared to DNA and provides an overview of the expanding applications of nanopore-based methods, from DNA sequencing to the emerging frontier of protein detection and sequencing [8].

References

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