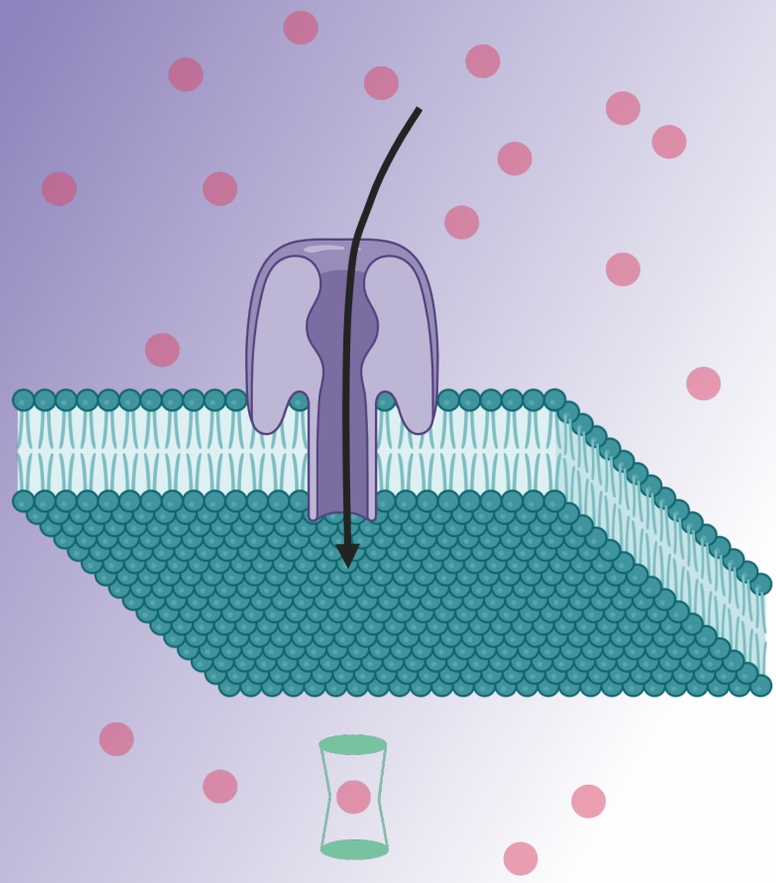
Molecular translocation
Orbit mini



Understanding silent molecular translocations through nanopores

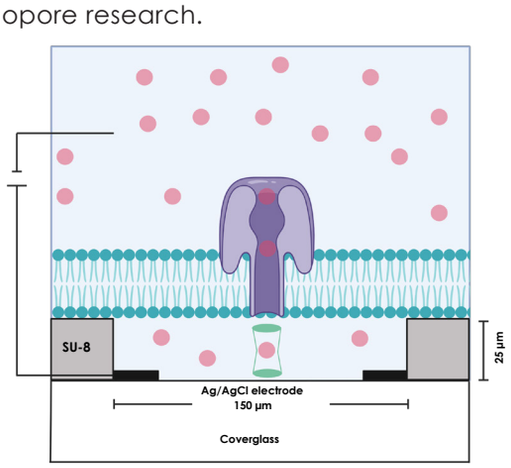
Silent translocation describes the movement of molecules through nanopores without producing detectable alterations in the electrical signals. Typically, ionic current changes reveal the presence and properties of a molecule during nanopore sensing. However, recent research[1] has shown that some molecules, like Cyanine 5 derivatives (sCy5a), can pass through a-hemolysin (aHL) nanopores without altering the electrical current.

Advanced tools combining optical and electrical recordings are essential for studying these subtle events. Nanion's Orbit mini, equipped with the MECA 4 OPTO-INV kit, enables simultaneous optical and electrical measurements. This combination captures complementary signals, such as fluorescence, to study events otherwise invisible to traditional current-based methods.

Some applications of nanopore-based systems:

- Monitoring biologically events, such as drug delivery or weak molecular interactions.
- DNA sequencing, protein analysis, and biomolecular diagnostics.
- Investigating molecular membrane transport mechanisms.

The Orbit mini with the MECA 4 OPTO-INV kit overcomes traditional limitations, offering new insights into molecular sensing and advancing nanopore research.



Contact us today

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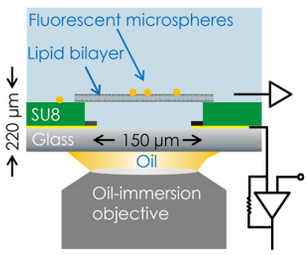
Orbit mini: MECA 4 OPTO-INV kit

Combining optical and electrical readouts

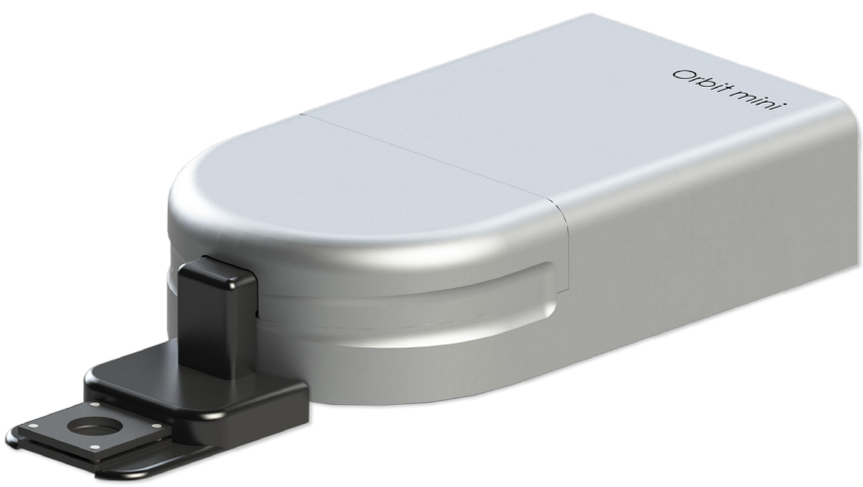


Ideal for simultaneous optical and electrical experiments

- Increased throughput due to four simultanoues recordings
- The MECA 4 OPTO-technology enables simultaneous optical and electrical recordings in free standing artificial lipid bilayers.

Features

- Standalone turn-key system
- Integrated 4-channel low-noise amplifier (Elements S.R.L.)
- Low noise recodings at highest bandwidths
- Cost efficient experiments with disposable MECA 4 chips (Ionera Technologies)
- Target molecules can be introduced directly or by fusion of (proteo-)liposomes



Applications

- Studying translocation of macromolecules through nanopores
- Characterizing transport of native & engineered channels, pores and toxins
- Studying toxins and anti-microbial peptides
- Sequencing of DNA, RNA, and even the primary structure of proteins
- Recording ion channels at the single-channel level

1. Burden *et al.* (2023) Anal. Chem. (49): 18020-18028
2. Ensslen et al. (2022) J. Am. Chem. Soc. (35): 16060-160683.
3. Robertson et al. (2021) Biochim Biophys Acta Biomembr. (9): 183644

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