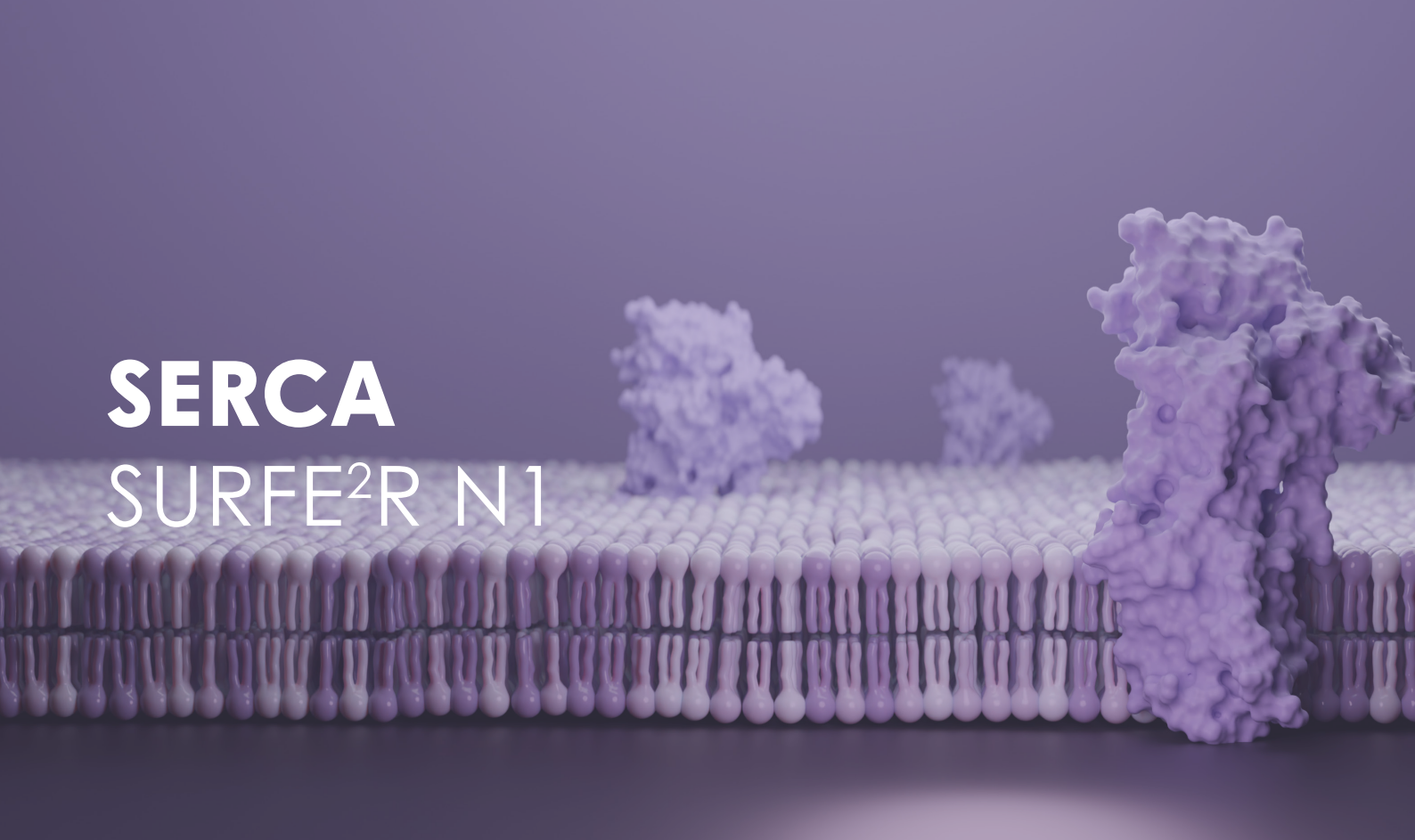




SERCA SURFE²R N1

Studying SERCA with the SURFE²R N1

The SURFE²R platforms from Nanion Technologies are designed to meet the high demands of both academic research and pharmaceutical development, particularly in the characterization and drug discovery efforts targeting transporters. These systems utilize solid-supported membrane (SSM)-based electrophysiology recordings for direct and label-free measurements of electrogenic events. The high sensitivity and rapid data acquisition of the SURFE²R platforms allow for efficient screening of compounds, making them particularly valuable in identifying and evaluating potential drug candidates affecting transporters. The versatility and robustness of these platforms ensure they are well-suited for detailed functional analysis and higher-throughput screening, essential for advancing drug discovery programs focused on novel therapeutic targets.



Contact us today!

The Sarco/Endoplasmic Reticulum Ca²⁺-ATPase (SERCA) plays a pivotal role in maintaining intracellular calcium balance. By pumping Ca²⁺ from the cytosol into the endoplasmic or sarcoplasmic reticulum, SERCA regulates essential processes like muscle contraction, neuronal signaling, and metabolic control. However, direct functional measurement of SERCA has long been a technical challenge.

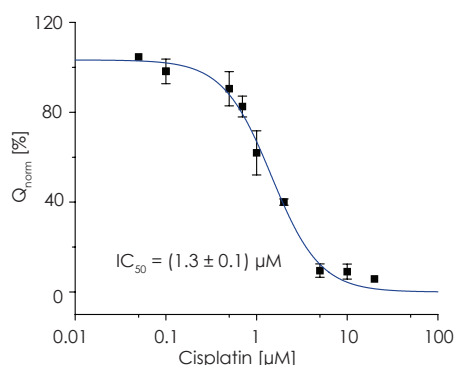
With SURFE²R, ATP-dependent Ca²⁺ transport by SERCA can be monitored in native membrane environments.

Key features of SURFE²R N1:

- Recordings in real time.
- No need for labels, radioactivity or fluorescence.
- High sensitivity & temporal resolution.
- Access any membrane with only 0.1 µg protein per sensor.
- Broad range of validated transporter targets.

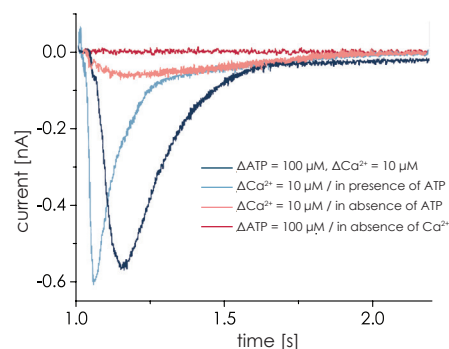
SURFE²R N1

Characterization of SERCA



Effect of Cisplatin on SERCA currents

Using ATP concentration jumps, the IC_{50} of SERCA inhibition by cisplatin was determined¹.



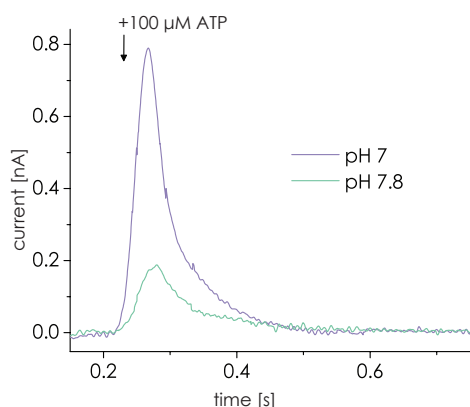
Kinetics of Ca^{2+} transport and binding

Kinetics of the transient currents when applying different assay conditions. Pre steady-state kinetics alter with the availability of ATP and Ca^{2+} ².



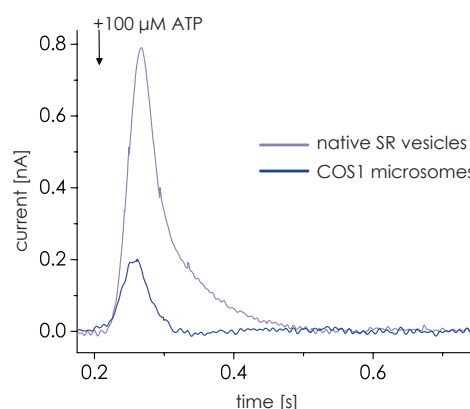
pH dependence of Ca^{2+} translocation

Using ATP concentration jumps at different pH, it was found that Ca^{2+} translocation is inhibited at alkaline pH³.



SERCA in native vesicles and microsomes

SERCA activity was found to be x4 times higher in native SR vesicles purified from New Zealand White rabbits compared to microsomes isolated from COS-1 cells².



1. Tadini-Buoninsegni et al. (2017) Metallomics 9: 960–968.

2. Tadini-Buoninsegni et al. (2006) J. Biol. Chem. 281: 37720–37727.

3. Lewis et al. (2012) J. Biol. Chem. 287: 32717–32727.