

Introduction to Planar Lipid Bilayer Electrophysiology: A Hands-on Workshop

The objective of this workshop is to train students, from bachelor's to PhD level, through hands-on experience. Participants will measure real ionic currents of biological nanopores reconstituted in lipid bilayers, reinforcing theoretical concepts through experimentation. ELEMENTS will provide the necessary equipment, including the loan of current amplifiers such as the [Nanopore Reader 100 kHz](#), which students will use for practical training. If needed, an Application Scientist from ELEMENTS will guide participants through the experiments, ensuring expert training. All Required materials will be supplied. Participants will learn key techniques, including lipid membrane formation, protein reconstitution, data collection, and analysis. The workshop can be customized to fit specific educational needs.

Theoretical Module (2 hours)

- Introduction to Biological Nanopores: Overview of their purpose, applications, and usage methods.
- The Bilayer Lipid Membrane as a platform for Biological Nanopores: Theoretical background on how biological nanopores function in lipid bilayer membranes and their role in research.
- Lipid Membrane Formation Protocol: Detailed explanation of the lipid bilayer formation process, specifically using DPhPC lipids, and the scientific rationale behind the methods.

Practical Module (4 hours)

- Demonstration: Step-by-Step demonstration of the formation of the lipid bilayer membrane using DPhPC lipids and the successful insertion of a membrane protein.
- Data Collection and Analysis: Participants will use the EDR4 and Clampfit software for live data collection, including current measurements and interpretation of results.
- Hands-On Practice: Guided, hands-on session where participants apply the techniques themselves, from membrane formation to data acquisition and analysis, with individual supervision for personalized learning.

What is included

- Loan of 5 or 10 Nanopore Readers 100 kHz and EDR4 Software
- Supervision and Support of an Application scientist throughout all the modules
- Consumables: BLM Chips, DPhPC lipids, Membrane Protein, Buffer solutions

What is not included

- Basic Laboratory Supplies: Pipetting tools and other standard laboratory equipment and accessories (e.g. Personal Protective Equipment, tweezers, vials etc.)
- Laptops

Optional:

- Want to run the workshop independently, without an application scientist? Simply rent the equipment and the course materials to run the workshop at your own pace.

Pricing Overview

Description	Price
6 hours Workshop Elements Training On-Site (Europe) <i>Includes instruments & BLM Chips for 5 stations with instructor</i>	from 3400 €*
6 hours Workshop Elements Training On-Site (US/Canada) <i>Includes instruments & BLM Chips for 5 stations with instructor</i>	from \$ 4200 USD*
Instrument rental only (EU/US/Canada) <i>Includes instruments & BLM Chips for 5 stations</i>	from 1950 €/ \$1950 USD*
<i>* Please inquire for additional stations and/or training hours</i>	
Discounts	
10% off Instrument Loan for 2nd workshop	
5% off Instrument Purchase after workshop	