

Tethered bilayer lipid membranes to study membrane proteins

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Tethered bilayer lipid membranes (tBLMs) can serve as a powerful model system to study structure and function of membranes and membrane proteins, when they are incorporated into the bilayer in a functional form.

We have developed and used a tethered bilayer membrane platform to study the influence of drugs on the structure and function of a lipid bilayer, by using a variety of surface analytical techniques such as impedance spectroscopy and neutron reflectometry.

Additionally, we have used the tBLM platform for the functional incorporation of a plant membrane transporter protein. The high molecular weight protein is expressed in barley roots and mediates tolerance to high soil boron levels. Incorporation of the membrane transporter was achieved using a cell-free expression approach and functional characterisation was performed using electrochemical impedance spectroscopy.