

## Publication

## Asymmetric ABC-Triblock Copolymer Membranes Induce a Directed Insertion of Membrane Proteins

**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4515641**Author(s)** Stoenescu, Roxana; Graff, Alexandra; Meier, Wolfgang**Author(s) at UniBasel** [Meier, Wolfgang P.](#) ;**Year** 2004**Title** Asymmetric ABC-Triblock Copolymer Membranes Induce a Directed Insertion of Membrane Proteins**Journal** Macromolecular Bioscience**Volume** 4**Number** 10**Pages / Article-Number** 930-5**Keywords** amphiphiles, block copolymers, directional insertion, membranes, proteins, self-assembly**Mesh terms** Aquaporins, chemistry; Biocompatible Materials; Biological Transport; Carrier Proteins; Cell Membrane, metabolism; Drug Delivery Systems; Lipids, chemistry; Membranes, Artificial; Microscopy, Electron, Transmission; Models, Chemical; Polymers, chemistry; Protein Structure, Tertiary

Asymmetric molecules and materials provide an important basis for the organization and function of biological systems. It is well known that, for example, the inner and outer leaflets of biological membranes are strictly asymmetric with respect to lipid composition and distribution. This plays a crucial role for many membrane-related processes like carrier-mediated transport or insertion and orientation of integral membrane proteins. Most artificial membrane systems are, however, symmetric with respect to their midplane and membrane proteins are incorporated with random orientation. Here we describe a new approach to induce a directed insertion of membrane proteins into asymmetric membranes formed by amphiphilic ABC triblock copolymers with two chemically different water-soluble blocks A and C. In a comparative study we have reconstituted His-tag labeled Aquaporin 0 in lipid, ABA block copolymer, and ABC block copolymer vesicles. Immunolabeling, colorimetric, and fluorescence studies clearly show that a preferential orientation of the protein is only observed in the asymmetric ABC triblock copolymer membranes.

**Publisher** Wiley**ISSN/ISBN** 1616-5187 ; 1616-5195**URL** <https://onlinelibrary.wiley.com/doi/abs/10.1002/mabi.200400065>**edoc-URL** <https://edoc.unibas.ch/72406/>**Full Text on edoc** No;**Digital Object Identifier DOI** 10.1002/mabi.200400065**PubMed ID** <http://www.ncbi.nlm.nih.gov/pubmed/15490442>**ISI-Number** 000225004100003**Document type (ISI)** Journal Article