

Publication

2D crystallization of membrane proteins : rationales and examples

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 153278

Author(s) Hasler, L; Heymann, J B; Engel, A; Kistler, J; Walz, T

Author(s) at UniBasel [Engel, Andreas](#) ;

Year 1998

Title 2D crystallization of membrane proteins : rationales and examples

Journal Journal of Structural Biology

Volume 121

Number 2

Pages / Article-Number 162-71

Keywords Bacterial Proteins/chemistry/isolation & purification; Crystallization; Crystallography; X-Ray; Detergents/pharmacology; Humans; Hydrogen-Ion Concentration; Lipid Bilayers; Membrane Lipids/chemistry; Membrane Proteins/*chemistry/drug effects/isolation & Protein Conformation/drug effects

The difficulty in crystallizing channel proteins in three dimensions limits the use of X-ray crystallography in solving their structures. In contrast, the amphiphilic character of integral membrane proteins promotes their integration into artificial lipid bilayers. Protein-protein interactions may lead to ordering of the proteins within the lipid bilayer into two-dimensional crystals that are amenable to structural studies by electron crystallography and atomic force microscopy. While reconstitution of membrane proteins with lipids is readily achieved, the mechanisms for crystal formation during or after reconstitution are not well understood. The nature of the detergent and lipid as well as pH and counter-ions is known to influence the crystal type and quality. Protein-protein interactions may also promote crystal stacking and aggregation of the sheet-like crystals, posing problems in data collection. Although highly promising, the number of well-studied examples is still too small to draw conclusions that would be applicable to any membrane protein of interest. Here we discuss parameters influencing the outcome of two-dimensional crystallization trials using prominent examples of channel protein crystals and highlight areas where further improvements to crystallization protocols can be made.

Publisher Academic Press

ISSN/ISBN 1047-8477

edoc-URL <http://edoc.unibas.ch/dok/A5257690>

Full Text on edoc No;

Digital Object Identifier DOI 10.1006/jsbi.1998.3960

PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/9615435>

ISI-Number WOS:000073775400008

Document type (ISI) Journal Article, Review