Mo 29. April 2019
Time: 16:30 h

Dept. of Chemistry and Biochemistry (DCB)
Freiestrasse 3, 3012
Bern, Room S481

Everybody is welcome

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Andreas Kuhn
is Professor at the Institute of Microbiology of the Hohenheim University (DE).

This lecture is hosted by Prof. Dimitrios Fotiadis (IBMM) and is offered within the framework of the Seminars in Biochemistry (DCB).

NCCR TransCure Lecture in Biology
by Andreas Kuhn

Folding and stepwise insertion of bacterial membrane proteins

The translocase SecYEG and membrane insertase YidC of *Escherichia coli* catalyze the insertion of proteins into the plasma membrane. Both systems can be reconstituted into proteoliposomes and studied for their molecular mechanism. YidC provides an entry site for simple and small proteins. Substrates contact the insertase at the transmembrane segment TM3 and TM5 of YidC that act as a hydrophobic slide. The substrate domain that passes through the membrane is transiently located in a hydrophilic groove of YidC prior its translocation. Using fluorescently labeled single substrate proteins and a labeled YidC in proteoliposomes single membrane insertion events can be followed. This approach allowed us to measure the speed of translocation by smFRET.

For the insertion of most membrane proteins both YidC and SecYEG are required and collaborate in a complex. Co-reconstitution of SecYEG and YidC showed that this complex leads to the insertion of the 12-spanning membrane protein lactose permease (LacY). Single molecule force spectroscopy (smFS) showed that the unfolded LacY protein re-inserts into the membrane when YidC and SecYEG are present.

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