

Wed 27. March 2019
Time: 17:00 h

ETH Zürich, Campus
Hoenggerberg,
Otto-Stern-Weg 5,
8093 Zürich,
Room HPK D3

Everybody is welcome

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Hendrik van Veen is
Reader in Molecular
Pharmacology and
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University of Cambridge
(UK).

This lecture is hosted by
Prof. Kaspar Locher
(ETHZ).

NCCR TransCure Lecture in Biology by Hendrik van Veen

Energy coupling in ABC exporters

ATP-binding cassette (ABC) transporters are present in plasma membranes of all organisms. The metabolic energy for substrate transport by these proteins is thought to be exclusively derived from ATP binding and hydrolysis, but observations on apparent proton-drug symport by the multidrug transporter LmrA (Venter et al. Nature 2003) and proton-drug antiport by the Lipid-A transporter MsbA (Singh et al. Nature Commun. 2016) indicate that energy coupling in these transporters is more complex. We applied electrophysiological and biochemical techniques to further study the mechanism of LmrA (Agboh et al. Science Adv. 2018). We observed sodium motive force-dependent drug antiport in the ATP-bound state of LmrA, and determined the ion stoichiometry of this reaction. The functional importance of ion-coupling and nucleotide utilisation in the transport reactions of LmrA and MsbA is discussed.