

SFB 35 Colloquia in Membrane Transport

Venue: Medical University Vienna, Center for Physiology and Pharmacology,
Institute of Pharmacology, Waehringerstrasse 13a, 1090 Vienna,

"Leseraum"

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Friday	21.4.2017	14:00 s.t.	Enrico Girardi (host: M. Freissmuth)
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CeMM
Research Center for Molecular Medicine
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"The role of Solute Carriers (SLCs) in drug transport and their genetic interactions: a systematic approach"

Enrico Girardi (egirardi@cemm.oeaw.ac.at)

Abstract.

Solute carriers (SLCs) are the largest family of transmembrane transporters, controlling the movement of a variety of diverse molecules across cellular membranes. Despite the importance of this process, most chemical compounds still lack an associated protein transporter that explains their entry and distribution in cells and tissues. In order to prioritize new SLC-drug relationships, we have investigated a publicly available large pharmacogenomic dataset involving 1001 molecularly annotated cancer cell lines and 265 compounds using linear regression models. In parallel, we have also screened a large panel of cytotoxic approved drugs in HAP1 cells in order to address the long-standing question of whether all drugs require transporters to enter cells and at the same time identify novel and therapeutically relevant SLC-drug interactions. Furthermore, we have undertaken a large genetic screen by systematically looking for synthetic lethality interactions between all non-essential SLCs expressed in the human HAP1 cell line (136 genes, approximately 250 individual cell lines) and any other SLC. Mapping of the genetic interactions between SLCs holds the promise to be a powerful method to derive hypotheses on the function and potential ligands of orphan transporters and understand the degree of redundancy present within the family.