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 20.05.2016 14:00 s.t. **László Csanády** (host: **G. Szakacs**)

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"Gating mechanism of CFTR, an ion channel member of the ABC transporter family"

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Abstract.

The Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) is the chloride ion channel mutated in cystic fibrosis patients. It belongs to the family of ATP Binding Cassette (ABC) transporters, and shares their conserved core architecture comprising two transmembrane domains, which in CFTR form an ion translocation pathway, and two conserved cytosolic nucleotide binding domains (NBDs) which catalyze a cycle of ATP binding and hydrolysis. CFTR is unique among ion channels because opening and closing (gating) of its transmembrane pore is coupled to this irreversible cycle and hence operates far from equilibrium. A growing number of atomic crystal structures of ABC transporter homologs, together with observations of CFTR conformational transitions at a single-molecule level in patch-clamp recordings, have begun to outline the dynamics of molecular motions responsible for this unique coupling between an enzymatic cycle and gating of an ion-channel pore.