

# ISN Symposium

## “Structure-Function relationships in neurotransmitter transporters”

### Final report

#### General conference details:

The 10<sup>th</sup> annual SFB35 Symposium organized by Harald H. Sitte was held September 6 – 8, 2017 at the University of Vienna - Waehringer Strasse 29, 1090 Vienna.

A total of 155 participants from 16 nations (Australia, Austria, Chile, Czech Republic, Denmark, France, Germany, Hungary, Ireland, Italy, Pakistan, Singapore, Sweden, Switzerland, United Kingdom, United States of America) attended the 10<sup>th</sup> SFB35 Symposium, which consisted of four plenary lectures, 8 sessions with three invited speakers each and one session with talks of five Poster Award Winners selected on-sight by a committee out of the 74 presented posters.

#### Overview of all invited speakers in alphabetical order – including speakers of the ISN-Symposium:

Walter Berger, AT	Hassane Mchaourab, US	Sonja Sucic, AT
Joseph Bryan, US	Joseph Mindell, US	Giulio Superti-Furga, AT
Paul Gasser, US	Sven Rottenberg, CH	Stina Syvänen, SE
Ulrik Gether, DK	Gary Rudnick, US	Gergely Szakacs, AT
Joachim Geyer, DE	Renaë Ryan, AU	Robert Tampé, DE
L. Keith Henry, US	Balázs Sarkadi, HU	Michael Trauner, AT
Peter Hinterdorfer, AT	Lutz Schmitt, DE	Andras Varadi, HU
Saul Karpen, US	Gerhard Schütz, AT	Matthäus Willeit, AT
Oliver Langer, AT	Satinder K. Singh, US	
Paul Lockman, US	Bruno Stieger, CH	

#### Short talk speakers (Poster Award Winners)

Eric R. Geertsma (Goethe University Frankfurt, Germany)  
Javier Koh (Duke NUS Medical School, Singapore)  
Lisa Konrad (University of Copenhagen, Denmark)  
Julia Preobraschenski (Max Planck Institute for Biophysical Chemistry, Germany)  
Alice Verchere (Weill Cornell Medicine, USA)

The full program can be downloaded at:

[http://www.sfb35.at/pdf/SFB35 Symposium 2017 - Scientific Program.pdf](http://www.sfb35.at/pdf/SFB35_Symposium_2017_-_Scientific_Program.pdf)

## **ISN-Session details:**

### **Short overview:**

The ISN supported sessions were held 9:00 – 11:55 on Thursday, September 7, 2017 as part of the 10<sup>th</sup> annual SFB35 Symposium.

Speakers of the ISN-Sessions:

Satinder K. Singh  
Hassane Mchaourab  
L. Keith Henry  
Gary Rudnick

### **A short description of the highlights of the symposium**

The 10<sup>th</sup> annual SFB35 symposium was held in Vienna to gather transporter researchers from all over the world to share ideas and exchange thoughts or, simply speaking: transport information. Within this 2.5-day symposium, the ISN-sponsored session 3 and plenary session 2 named “*Structure-Function relationships in neurotransmitter transporters*” featured four speakers: in the first part, we had three renowned speakers, Satinder K Singh (Yale University), Hassane Mchaourab (Vanderbilt University, USA) and L. Keith Henry (University of North Dakota, USA). After a short coffee & tea break, the ISN-session concluded with the plenary lecturer Gary Rudnick (Yale University School of Medicine, USA).

After an elegant introductory talk by Dr. Maarten Reith (New York University School of Medicine, USA), Dr. Singh started out with her talk describing conformational dynamics of a neurotransmitter:sodium symporter in a lipid bilayer which elegantly described the use of nanodiscs for bacterial homologs of mammalian neurotransmitter transporters. Dr. Mchaourab continued on the same topic and explained how structural and conformational dynamics of an ASD-linked DAT mutant has been modeled in the bacterial homologue of this class of transporters, the leucine- and alanine-transporter LeuT, crystalized from *Aquifex aeolicus*. Finally, the session turned to molecular switches in the serotonin transporter deemed to be important for transport of the a very popular psychostimulant: “ecstasy” (3,4-methylenedioxymethamphetamine).

After the break, the plenary lecture (chaired by Gerhard Ecker, University of Vienna) featured Gary Rudnick, one of the doyens of the biogenic amine transporter fields. In his talk, Dr. Rudnick explained in line with the previous talks included in this comprehensive ISN-sponsored session, how the structure of the bacterial homolog LeuT encodes rules for ion-substrate coupling which underlie the co-transport of physiologically moved substrates.

Both parts of the ISN-sponsored session were very well received with lengthy question sessions that had to be cut short – and enthusiastic applause for all speakers.

## Travel and accommodation expenses for the speakers of the ISN symposium

The symposium is organized non-profit and is financed exclusively by own funds and sponsoring, there is no registration fee for our participants. We are therefore very grateful to ISN for the generous support of a session within the SFB35 symposium.

Funds from ISN (\$ 2.000,00) were used to partially cover the travel and accommodation expenses of our ISN-Session speakers (\$ 500,00 per speaker).

The total expenses for the ISN-Session amounted to \$ 7.128,95 as shown below. Not included are general expenses like catering, venue hire, AV support, conference secretariat, etc.

### Satinder K. Singh

Reimbursed amount for flight tickets	€ 980,00	\$ 1.180,91
Taxi transfer from and to the airport Vienna	€ 68,00	\$ 81,50
Accommodation at Hotel Boltzmann, €82/night (4 nights)	€ 328,00	\$ 393,00

### Hassane Mchaourab

Reimbursed amount for flight tickets	€ 1.000,00	\$ 1.197,59
Taxi transfer from and to the airport Vienna	€ 68,00	\$ 81,50
Accommodation at Hotel Boltzmann: €82/night (4 nights)	€ 328,00	\$ 393,00

### L. Keith Henry

Reimbursed amount for flight tickets	€ 1.000,00	\$ 1.197,59
Taxi transfer from and to the airport Vienna	€ 68,00	\$ 81,50
Accommodation at Hotel Boltzmann: €82/night (4 nights)	€ 328,00	\$ 393,00

### Gary Rudnick

Reimbursed amount for flight tickets	€ 1.300,00	\$ 1.556,86
Taxi transfer from and to the airport Vienna	€ 68,00	\$ 81,50
Accommodation at Hotel Boltzmann: €82/night (5 nights)	€ 410,00	\$ 491,00

**Total expenses for ISN-Session speakers** **\$ 7.128,95**

## Comments of attendants about the Symposium

“The ISN-sponsored session 3 highlighted structure-function relationships in neurotransmitter transporters. Dr. Singh reconstituted LeuT and SERT into lipid bilayer nanodiscs to probe the accessibility and dynamics of structural elements by subjecting the preparations to hydrogen-deuterium exchange coupled with mass spectrometry. Dr. Mchaourab monitored ligand dependent conformational dynamics of extra- and intra-cellular gates of LeuT and Dr. Henry identified a single amino acid in TM10 in SERT that is primarily responsible in MDMA recognition. Finally, Dr. Rudnick gave a broad overview on how ion-coupled transporters change their conformations to move ions and substrates across the membrane.”

*PH, Johannes Kepler University Linz*

“Gary Rudnick’s presentation was a true tour de force: spanning his entire scientific career, Gary presented his summary view on how the serotonin transporter works.”

*GJS, Technical University Vienna*

“The ISN-Symposium “Structure-function relationships in neurotransmitter transporters”, held at the annual SB35 Symposium in Vienna in September 2017, was a session that proved to be exceedingly popular among the conference participants. The presenters, Satinder K. Singh, Hassane Mchaourab and L. Keith Henry showed outstanding new findings from their laboratories, providing stimulating discussion after the talks. The excellent plenary lecture, entitled “The LeuT structure encodes rules for ion-substrate coupling”, given by Gary Rudnick was inspiring both to young researchers and to more established scientists working in the field of transporter research.”

*SS, Medical University of Vienna*

“The ISN-sponsored session was a true inspiration for my own work!”

*AD, Technical University Vienna*

### **Some photos taken at the ISN Session:**

Final preparations before the ISN session





Satinder K. Singh



Hassane Mchaourab



L. Keith Henry



Gary Rudnick