



Brain in Flux - MSCA NeuroTrans Joint Satellite Meeting

August 12 – 15, 2023

Gaia, Portugal

The Organizers thankfully acknowledge support from the following institutions:



ISN
International Society
for Neurochemistry



NeuroTrans
Marie Skłodowska-Curie Actions
NEUROtransmitter TRANSPORTers:
From Single Molecules to Human Pathologies



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**MEDICAL UNIVERSITY
OF VIENNA**



**STILES-NICHOLSON
BRAIN INSTITUTE**
Florida Atlantic University

Programme Overview

August 12 Saturday	August 13 Sunday	August 14 Monday	August 15 Tuesday
9:00 am - 1:00 pm Registration	9:00 - 11:10 am Session 3 Tackling neuronal diseases and disorders <i>Chair: Suzanne Underhill</i> Erin Calipari Lucia Cavelli (ST) Felix Mayer Lauren Honan (ST) Pablo Moya	9:00 - 10:55 am Session 5 Structural and functional studies <i>Chair: Thomas Stockner</i> Robert Vandenberg George Khelashvili (ST) Pia Lavriha (ST) Alberto Daminato (ST) Zaid Anshari (ST) Basavraj Khanppnavar (ST)	9:00 - 10:55 am Session 7 DAT structure, function and regulation <i>Chair: N.N.</i> Poul Nissen Haley Melikian Marco Niello (ST) Anna Campana (ST) Adithya Gopinath (ST)
1:00 - 1:15 pm Opening Remarks	<i>Coffee Break 11:10 - 11:40 am</i>	<i>Coffee Break 10:55 - 11:25 am</i>	<i>Coffee Break 10:55 - 11:25 am</i>
1:15 - 2:25 pm Keynote I Christoph Fahlke <i>Introduced by Sandra Hewett</i>	11:40 am - 12:50 pm Keynote II Rajini Rao <i>Introduced by Lynette Daws</i>	11:25 am - 12:35 pm Keynote III Jonathan Javitch <i>Introduced by Ulrik Gether</i>	11:25 am - 12:35 pm Keynote IV Habibeh Khoshbouie <i>Introduced by Sonja Sucic</i>
<i>Coffee Break 2:25 - 3:00 pm</i>	<i>Lunch Break 12:50 - 3:00 pm</i>	<i>Lunch Break 12:35 - 3:00 pm</i>	<i>Lunch Break 12:35 - 2:45 pm</i>
3:00 – 4:55 pm Session 1 Insights into excitatory NTTs <i>Chair: Louis-Eric Trudeau</i> Zachary Freyberg Salah El-Mestikawy Paul Rosenberg (ST) Cesar Hernandez (ST) Marco Prado (ST)	3:00 - 5:00 pm Posters and Coffee - Session 1 Posters ODD <i>Coffee will be served from 4:30 - 5:00 pm</i>	3:00 - 5:00 pm Posters and Coffee - Session 2 Posters EVEN <i>Coffee will be served from 4:30 - 5:00 pm</i>	2:45 - 4:10 pm Session 8 - Part 1 What's up with the serotonin transporter? <i>Chair: Randy Blakely</i> Michael Freissmuth Carina Meinke (ST) Leticia Alves da Silva (ST) Iris Kalenderoglou (ST)
<i>Coffee Break 4:55 - 5:30 pm</i>	<i>Coffee Break 4:10 - 4:40 pm</i>		
5:30 – 7:40 pm Session 2 Tools for studying membrane transport <i>Chair: Eurico Cabrita</i> Yulong Li Andre Bazzone Anton Turaev (ST) Fraser MacMillan Rocco Zerlotti (ST)	5:00 - 5:30 pm Brain in Flux - Who's next? Business Meeting 5:30 – 7:25 pm Session 4 GABA transporters and the excitatory/inhibitory balance <i>Chair: Baruch Kanner</i> Christine Ziegler Ameya Kasture (ST) Erika Lazzarin (ST) Manan Bhatt (ST) Elena Bossi	5:00 – 7:25 pm Session 6 Impact of membrane transporters on metabolism <i>Chair: Harald Sitte</i> Gaia Novarino Beatriz López-Corcuero Freja Herborg Nanna MacAulay David Sauer (ST)	4:40 - 6:10 pm Session 8 - Part 2 What's up with the serotonin transporter? <i>Chair: Randy Blakely</i> Cristina Fenollar-Ferrer Ana Sofia Alberto e Silva (ST) Nikki Clauss (ST) Claus Løland 6:10 - 6:20 pm Closing Remarks
8:00 pm Welcome Cocktail <i>Boat trip on Douro river</i>			8:00 pm Farewell Dinner <i>Ticket required</i>

Scientific Programme

Brain in Flux – NeuroTrans Joint Satellite Meeting

August 12, Saturday

Meeting Registration	9:00 am - 1:00 pm
Opening Remarks Harald Sitte and Thomas Stockner	1:00 pm - 1:15 pm
Keynote Lecture I Christoph Fahlke (Introduced by Sandra Hewett) Vesicular glutamate transporters are H ⁺ -anion exchangers that operate at variable stoichiometry	1:15 pm - 2:25 pm

Coffee Break 2:25 – 3:00 pm

Session 1	3:00 pm - 4:55 pm
Insights into excitatory neurotransmitter transporters	
Chair & Introduction: Louis-Eric Trudeau	3:00 - 3:10
Zachary Freyberg VGLUT2 modulates sex differences in dopamine neuron resilience	3:10 - 3:40
Salah El-Mestikawy From the molecular properties of a vesicular transporter to a potential treatment of anorexia nervosa	3:40 - 4:10
Paul Rosenberg Reprogramming of glucose utilization may underlie heightened vulnerability to excitotoxic injury observed in the CA1 region in hippocampal slices from the neuronal GLT-1 knockout mouse	4:10 - 4:25
Cesar Hernandez Drosophila as a model to study functional alteration of VMAT2 in disease associated genetic variants	4:25 - 4:40
Marco Prado Regulation of cognition and pathology in Alzheimer's disease mouse models by the vesicular acetylcholine transporter	4:40 - 4:55

Coffee Break 4:55 pm – 5:30 pm

Session 2	5:30 pm - 7:40 pm
Different tools for studying membrane transport function	
Chair & Introduction: Eurico Cabrera	5:30 - 5:40
Yulong Li Spying on neuromodulation by constructing a toolbox of genetically encoded GRAB sensors	5:40 - 6:10
Andre Bazzone Unveiling Transporter Kinetics and Drug Potencies: SGLT1 and TMEM175 in Focus with SSM-based Electrophysiology	6:10 - 6:40
Anton Turaev Novel isothermal fluorescent spectral shift-based method to study membrane transporters.	6:40 - 6:55
Fraser MacMillan Exploring the structural dynamics and oligomerisation state of LeuT using EPR spectroscopy: A focus on transmembrane helix 10	6:55 - 7:25
Rocco Zerlotti Functional characterization of human GAT-1 through solid supported membrane electrophysiology	7:25 - 7:40

August 13, SundaySession 3 9:00 am - 10:55 am**Tackling neuronal diseases and disorders through membrane transporters****Chair & Introduction: Suzanne Underhill** 9:00 - 9:10**Erin Calipari** 9:10 - 9:40

Estradiol alters nicotinic regulation of dopamine release in females through a non-estrogen receptor mechanism

Lucia Cavelli 9:40 - 9:55

Amphetamine Exposure During Embryogenesis Causes Long-lasting Physiological and Behavioral Effects in Adults and Offspring

Felix Mayer 9:55 - 10:25

The Disease-Associated DAT Variant Val559 Impacts Dopamine Release in Response to Naturalistic Rewards

Lauren Honan 10:25 - 10:40

Organic cation transporter 3 mediates abuse-related properties of amphetamine

Pablo Moya 10:40 - 11:10

Impaired cognitive flexibility in a mouse model of OCD with increased forebrain expression of EAAT3

*Coffee Break 11:10 - 11:40 am***Keynote Lecture II** 11:40 am - 12:50 pm**Rajini Rao** (Introduced by Lynette Daws)

The Golgi as a therapeutic target in neurodegenerative disorders

Lunch Break 12:50 - 3:00 pm
(restaurant suggestions on [meeting website](#))**Poster Session 1** **Odd Numbers** 3:00 pm - 5:00 pm*Coffee Break 4:30 - 5:00 pm***Brain in Flux - who's next?** 5:00 pm - 5:30 pm
Business MeetingSession 4 5:30 pm - 7:25 pm**GABA Transporters: The critical clog in maintaining excitatory/inhibitory balance****Chair & Introduction: Baruch Kanner** 5:30 - 5:40**Christine Ziegler** 5:40 - 6:10

Symmetric or asymmetric, that is the question

Ameya Kasture 6:10 - 6:25

Understanding the role of human GABA transporter 1 (hGAT-1) variants in epilepsy: molecular insights and rescue mechanisms

Erika Lazzarin 6:25 - 6:40

Refining the interaction of GAT1 with sodium ions: from efficient recruitment to stabilisation of substrate and conformation

Manan Bhatt 6:40 - 6:55

Impact of betaine on GABA transport via GABA transporter 1 (GAT1)

Elena Bossi 6:55 - 7:25

Modulating the Neurotransmitter Transporters: A Potential Approach for Enhancing Brain Health

August 14, MondaySession 5 9:00 am - 10:55 am**Structural and functional studies of membrane transporters****Chair & Introduction: Thomas Stockner** 9:00 - 9:10**Robert Vandenberg** 9:10 - 9:40

Bioactive Lipids that inhibit Glycine Transporters and Stimulate Glycine Receptors

George Khelashvili 9:40 - 9:55

Molecular mechanisms of fatty acid transport across the blood-brain barrier

Pia Lavriha 9:55 - 10:10

Structures of wild-type and selected CMT1X mutant connexin 32 gap junction channels and hemichannels

Alberto Daminato 10:10 - 10:25

Uncovering a new substrate binding site in the neurotransmitter/sodium symporter homologue LeuT

Zaid Anshari 10:25 - 10:40

Functional analysis of the glutamate/aspartate-proton symporter GltP

Basavraj Khanppnavar 10:40 - 10:55

Structural basis of organic cation transporter-3 inhibition

*Coffee Break 10:55 - 11:25 am***Keynote Lecture III** 11:25 am - 12:35 pm**Jonathan Javitch** (Introduced by *Ulrik Gether*)Differential effects of Na⁺ and Li⁺ on substrate binding and transport in a neurotransmitter:sodium symporter homolog*Lunch Break 12:35 - 3:00 pm*
(restaurant suggestions on [meeting website](#))**Poster Session 2** **Even Numbers** 3:00 pm - 5:00 pm*Coffee Break 4:30 - 5:00 pm*Session 6 5:00 pm - 7:25 pm**Impact of membrane transporters on metabolism****Chair & Introduction: Harald Sitte** 5:00 - 5:10**Gaia Novarino** 5:10 - 5:40

Role of Slc7a5 transporter in neurodevelopment and metabolism.

Beatriz López-Corcuera 5:40 - 6:10

Trafficking properties of GlyT2 hyperekplexia variants

Freja Herborg 6:10 - 6:40

Hypomorphic SERT variants in patients with affective disorder: identification, characterization and pharmacochaperoning

Nanna MacAulay 6:40 - 7:10

Membrane transporters in choroid plexus control cerebrospinal fluid secretion and intracranial pressure in health and disease

David Sauer 7:10 - 7:25

Import and pathophysiology of carboxylate and proline transporters

August 15, Tuesday

Session 7 9:00 am - 10:55 am

Center stage: Dopamine transporter function, structure and regulation

Chair & Introduction: N.N. 9:00 - 9:10

Poul Nissen 9:10 - 9:40

Structure and Mechanism of Dopamine Transporter Inhibition

Haley Melikian 9:40 - 10:10

Presynaptic Dopamine transporter regulation: Tipping the scales against cocaine reward

Marco Niello 10:10 - 10:25

Persistent binding at dopamine transporters determines sustained psychostimulant effects

Anna Campana 10:25 - 10:40

Modulation of dopamine transporter function by zinc in functionally impaired neuropsychiatric disease mutants

Adithya Gopinath 10:40 - 10:55

Dopamine transporter-mediated regulation of peripheral immunity

Coffee Break 10:55 - 11:25 am

Keynote Lecture IV

11:25 am - 12:35 pm

Habibeh Khoshbouie (Introduced by *Sonja Sucic*)

Dopamine Transporter: The Immune System Influencer!

Lunch Break 12:35 - 2:45 pm
(restaurant suggestions on [meeting website](#))



Session 8

2:45 pm - 6:25 pm

What's up with the serotonin transporter?

Chair & Introduction: Randy Blakely

2:45 - 2:55

Michael Freissmuth

2:55 - 3:25

Rescuing SLC6 transporters by chemical and pharmacological chaperones

Carina Meinke

3:25 - 3:40

Genetic elimination of SERT Thr276 phosphorylation capacity reveals a critical role for in vivo PKG and nitric oxide synthase control of transporter trafficking and social behavior

Leticia Alves da Silva

3:40 - 3:55

Unravelling the free energy landscape and key residues involved in SERT occlusion: insights from molecular dynamics simulations

Iris Kalenderoglou

3:55 - 4:10

Structural Basis of Serotonin Reuptake Inhibition by a Dual-Mode Orthosteric/Allosteric Antidepressant

Coffee Break 4:10 - 4:40 pm

Cristina Fenollar-Ferrer

4:40 - 5:10

Functional impact of PIP2 on the Serotonin Transporter (SERT)

Ana Sofia Alberto e Silva

5:10 - 5:25

Molecular mode of action of new ecstasy analogues: methylenedioxyphenyl group bioisosteric replacement

Nikki Clauss

5:25 - 5:40

Organic Cation Transporter 3 is a Crucial Modulator of Serotonin Clearance in Basolateral Amygdala and Sex-Dependently Modulates Fear Behavior

Claus Løland

5:40 - 6:10

Deciphering the role of potassium in Neurotransmitter:Sodium Symporters

Closing Remarks

6:10 pm - 6:20 pm

Eurico Cabrita and Ulrik Gether