



INTERNATIONAL TRANSMEMBRANE TRANSPORTER SOCIETY

Newsletter

A Word from the President

Dear Fellow ITTS members,

It is a pleasure to address you as the WHO declares an end to the COVID-19 global emergency. But let's reflect on how profoundly COVID-19 disrupted, not just our lives, but science. In particular, the pandemic led many to reassess and then re-balance their lives. What have been some of the impacts of COVID on science:



A positive aspect was an effort to repurpose drugs for the treatment of COVID-19 and this accelerated the drug development process. COVID-19 also increased collaboration between scientists and institutions globally promoting increased sharing of data, research results, and ideas. It also advanced the adoption of technologies such as artificial intelligence, machine learning, and big data analytics to understand and combat the virus. These technologies helped in predicting the spread of the virus, identifying potential treatment options, and accelerating the development of vaccines. Many of these approaches may facilitate our future endeavors.

There have been significant pandemic downsides: fewer in person interactions, limited contact between colleagues, etc. The pandemic also catalyzed the closure of many research facilities, laboratories, and universities, resulting in the disruption of ongoing research activities. All scientists, but especially the young scientists, have faced delays in their research projects, but sometimes insurmountable obstacles and some have had to put their work on hold due to the pandemic. The economic downturn caused by the pandemic limited funding opportunities for research. Thus, the pandemic has caused significant disruptions to ongoing biomedical research, particularly in areas not related to COVID-19. This has resulted in delays and setbacks in the development of new treat-

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ments for other diseases. It is likely that there has also been a significant impact on the mental health of people worldwide, including young scientists. The stress and uncertainty caused by the pandemic likely increased anxiety, depression, and burnout, which can impact their ability to conduct research effectively. Overall, the pandemic has both accelerated and disrupted biomedical research in different ways. It will take time for complete recovery from the disruptions caused by the pandemic. However, many organizations and institutions are working to provide support and resources to especially help scientists cope and overcome these challenges. But as we move forward let us not forget the importance of collaboration and communication.

"The ITTS, International Transmembrane Transporter Society is dedicated to promoting transporter-biologists and transporter-related research." Why did I use a quote from our website, a statement that might be self-evident to our ITTS members? It is because at a recent meeting (in person), I suggested to a colleague that joining the ITTS would be good to further promote and foster transporter research. Sensing reluctance, I probed and discovered the concern was a misperception that this society (ITTS) was siloed into one particular transporter domain. In a world where tribalism seems rampant, I can assure you it is not. While the scientists who catalyzed its genesis might represent a certain area, the members I have met have common goals: to understand...(last meeting). So, if you are reticent to join because of a misperception of its origins or perceived trajectory, please join. We are a young society endeavoring to broadly represent and embrace all transporter researchers (transportologists). You can have a voice and make a difference and have an impact. Our society brings together experts from around the world to collaborate on research, share knowledge, and develop new techniques and tools. Together, we can continue to advance the fundamentals of transmembrane transporters and their role in health and disease.

As we move forward toward a new "normal", I would like to include a section in our newslet-

ter called the "ECR corner", ECR for "early career researcher". This section will be one where our ECR researchers can provide comments on meetings, etc. To kick this off at a recent Gordon Conference I attended, I reached out to two ECR and asked for their perspective. Here are their comments with some very light editing:

"For an ECR the GRC [included] academics at all levels from trainee to retiree were engaged and enthusiastic. Almost all of the research was unpublished, yet researchers were open to questions and discussion. As someone who works on both bacterial and mammalian efflux pumps, the cross-discipling discussion was refreshing!"

-Heather Aitken, PhD ECR, University of Queensland; mentor: Meghan O'Mara

"As a postbaccalaureate trainee...this was not the first conference that I had the pleasure of attending, [but] this was the first where I felt that I was able to interact with other scientists and experts within the field. The number of attendees and duration of the conference really allowed ample time for everyone to get to know each other and discuss their research.

My favorite part of the conference was the seminar that took place for trainees the day before the conference began. As a postbac, I knew going into the conference that most—if not all—of the other trainees had several years of research and experience on me. I was intimidated before arriving, but during the seminar I had the opportunity to greatly improve my confidence throughout the seminar and subsequent conference by networking with the other trainees. It was beneficial for me as a young scientist to not only speak with the experts in the field, but also scientists in training that had similar levels of experience. I learned so much, not just about the current science on multi-drug efflux transporters, but also on the potential directions I could take in my career path, in addition to making life-long connections."

-Shaylin Brown, post-Baccalaurate NIEHS ECR; mentor Ron Cannon

Lewis Thomas, a poet-philosopher of medicine said was always an inspiration to me when I first

started out, with advice like this:

“You can’t give up your passion if things don’t work right away. You can’t lose heart, or grow cynical if there are twists and turns on your journey. The cynics may be the loudest voices – but I promise you, they will accomplish the least. It’s those folks who stay at it, those who do the long, hard, committed work of change that gradually push this country in the right direction, and make the most lasting difference.”

Before closing, I must express my appreciation to our Secretary Elena Bossi, and to Sonja Sucic, for assembling the content and Lee Gilman, for formatting and assembling the content of this newsletter.

John Schuetz

ITTS president

Open Positions & Job Announcements



The *Jobs Corner* on our *News* page of the ITTS website serves as a convenient platform for group leaders to announce open positions in their labs and institutions, for researchers at various stages of their career (PhD, Postdoc and beyond). Should you like to post a job opening, please send an email to Elena Bossi (Elena.Bossi@uninsubria.it).

<http://www.ittsociety.org/new-page>

Member News

PUBLICATION FROM BAZZONE LAB

Bazzone A, Zerlotti R, Barthmes M, Fertig N. [Functional characterization of SGLT1 using SSM-based electrophysiology: Kinetics of sugar binding and translocation.](#) *Front Physiol* (2023) 14:1058583

PUBLICATIONS FROM BOSSI LAB

Romanazzi T, Zanella D, Bhatt M, Di Iacovo A, Galli A, Bossi E. [Bile acid interactions with neurotransmitter transporters.](#) *Front Cell Neurosci* (2023) 17:1161930

Bhatt M, Gauthier-Manuel L, Lazzarin E, Zerlotti R, Ziegler C, Bazzone A, Stockner T, Bossi E. [A comparative review on the well-studied GAT1 and the understudied BGT-1 in the brain.](#) *Front Physiol* (2023) 14:1145973

Bhatt M, Di Iacovo A, Romanazzi T, Roseti C, Bossi E. [Betaine-The dark knight of the brain.](#) *Basic Clin Pharmacol Toxicol* (2023) Online ahead of print

PUBLICATIONS FROM INDIVERI LAB

Davies JS, Currie MJ, North RA, Scalise M, Wright JD, Copping JM, Remus DM, Gultati A, Morado DR, Jamieson SA, Newton-Vesty MC, Abeysekera GS, Ramaswamy S, Friemann R, Wakatsuki S, Allison JR, Indiveri C, Drew D, Mace PD, Dobson RCJ. [Structure and mechanism of a tripartite ATP-independent periplasmic TRAP transporter.](#) *Nat Commun* (2023) 14(1):1120

Console L, Scalise M, Salerno S, Scanga R, Giudice D, De Bartolo L, Tonazzi A, Indiveri C. [N-glycosylation is crucial for trafficking and stability of SLC3A2 \(CD98\).](#) *Sci Rep* (2022) 12(1):14570

Member News

PUBLICATIONS FROM INDIVERI LAB (CONT'D)

Tonazzi A, Giangregorio N, Console L, Calvano CD, Prejanò M, Scalise M, Incampo G, Marino T, Russo N, Cataldi TRI, Indiveri C. [Inhibition of the carnitine acylcarnitine carrier by carbon monoxide reveals a novel mechanism of action with non-metal-containing proteins](#). *Free Radic Biol Med* (2022) 188:395-403

Scalise M, Pappacoda G, Mazza T, Console L, Pochini L, Indiveri C. [Cysteine 467 of the ASCT2 Amino Acid Transporter Is a Molecular Determinant of the Antiport Mechanism](#). *Int J Mol Sci* (2022) 23(3):1127

PUBLICATIONS FROM PEREGO LAB

Perego C, Di Cairano ES, Galli A, Moretti S, Bazzigaluppi E, Centonze VF, Gastaldelli A, Assi E, Fiorina P, Federici M, Porzio O, Bertuzzi F, Davalli AM, Folli F. [Autoantibodies against the glial glutamate transporter GLT1/EAAT2 in Type 1 diabetes mellitus-Clues to novel immunological and non-immunological therapies](#). *Pharmacol Res* (2022) 177:106130

Iovino L, Giusti V, Pischedda F, Giusto E, Plotegher N, Marte A, Battisti I, Di Iacovo A, Marku A, Piccoli G, Bandopadhyay R, Perego C, Bonifacino T, Bonanno G, Roseti C, Bossi E, Arrigoni G, Bubacco L, Greggio E, Hilfiker S, Civiero L. [Trafficking of the glutamate transporter is impaired in LRRK2-related Parkinson's disease](#). *Acta Neuropathol* (2022) 144(1):81-106

PUBLICATIONS FROM SLOTBOOM LAB

Colucci E, Anshari ZR, Patiño-Ruiz MF, Nemchinova M, Whittaker J, Slotboom DJ, Guskov A. [Mutation in glutamate transporter homologue GltTk provides insights into pathologic](#)

PUBLICATIONS FROM SLOTBOOM LAB (CONT'D)

[mechanism of episodic ataxia 6](#). *Nat Commun* (2023) 14(1):1799

Bailoni E, Partipilo M, Coenradij J, Grun-del DAJ, Slotboom DJ, Poolman B. [Minimal Out-of-Equilibrium Metabolism for Synthetic Cells: A Membrane Perspective](#). *ACS Synth Biol* (2023) 12(4):922-946

PUBLICATIONS FROM STOCKNER LAB

Niello M, Sideromenos S, Gradisch R, O Shea R, Schwazer J, Maier J, Kastner N, Sandtner W, Jäntschi K, Lupica CR, Hoffman AF, Lubec G, Lolland CJ, Stockner T, Pollak DD, Baumann MH, Sitte HH. [Persistent binding at dopamine transporters determines sustained psychostimulant effects](#). *Proc Natl Acad Sci USA* (2023) 120(6):e2114204120

Gyöngy Z, Mocsár G, Hegedűs É, Stockner T, Ritter Z, Homolya L, Schamberger A, Orbán TI, Remenyik J, Szakacs G, Goda K. [Nucleotide binding is the critical regulator of ABCG2 conformational transitions](#). *Elife* (2023) 12:e83976



International Transmembrane
Transporter Society

**Not Sure of Your
Membership Status?**

Go to our secure website to check
whether your membership is current:
<http://www.ittsociety.org/member-login>

Third annual meeting of NeuroTrans MSCA ITN



The European training network [NeuroTrans](#), a Marie Skłodowska-Curie Actions Innovative Training Network (MSCA ITN) funded by Horizon 2020, trains 15 PhD students (ESRs) or early stage researchers (ESR) in EU language across 9 European countries. The primary focus are membrane transporters, most importantly from the SLC6 family. Each ESR is directly supervised by its respective principal investigator (PI), but in addition it is supported through co-supervision by other members of the network. Important support has come from Baruch Kanner, a living legend in the field of SLC1 and SLC6 transporters. We students could gain lots of input from Baruch and learn from his experience in intense discussions. Every year the network organizes an annual meeting, where all the ESRs and PIs come together, share and discuss achievements, with the common aim to pushing forward this specific frontier in science. From 8th to 12th May 2023, our 3rd annual meeting took place in the northern Italy with venues spread across Varese Como, and Busto Arsizio, hosted by Dr. Elena Bossi at University of Insubria, Italy. During the 3rd annual meeting, we ESRs also received different soft skill trainings to support our professional growth.

The meeting began on the first day in the beautiful city of Como with two amazing soft skill training sessions. The first training was "How to use the Emotional Intelligence?" by David Corcoran from "Six seconds Europe". The training was aimed at providing us with the necessary skill and tools to maintain the work-life balance and to grow not only professionally, but also personally. The second training touched "Innovation Management: Introduction to the EU public fundraising and proposal writing" and was given by Dr. Ilaria Re from University of Milan and the ItalBiotec consortium. This training introduced us ESRs to different options offered by the EU for obtaining research grants to which we could apply in the future. This engaging session provided valuable insights to understand the world of grant applications and to circumnavigate turbulent waters.

The primary venue for the meeting was the beautiful Villa Toeplitz in Varese, where for three days all ESRs presented their work in the form of a talk and a poster. A key feature of the scientific part of the meeting has always been the intensive discussions that take place after each talk, during the poster sessions, but importantly also during coffee breaks and in the evening during commonly spend time. These discussions help us students to understand our results better, but also to be able to overcome difficulties we have encountered. Every year the network NeuroTrans also awards the best talk and the best poster to us ESRs; this year the award of the best talk was given to Anna Campana from University of Copenhagen, Denmark and the best poster was

Third annual meeting of NeuroTrans MSCA ITN

awarded to Manan Bhatt from University of Insubria.

The final day of the meeting was dedicated to additional soft skill training in the city of Busto Arsizio. The training was on “Pivoting to the industrial research” by David Ederle from the “Trentino Innovation Hub”. We learned how technology transfer and the translation of the basic research work into a commercial product could be achieved and managed.

Apart from the lovely dinners at the Alpen lakes, we really appreciate the guiding remarks that Dr. Thomas Stockner (head of the network) and Dr. Baruch Kanner gave us for our future projects.

The PhD in NeuroTrans, being a member of this European wide training network, has been an amazing life changing experience for all of us, and we would certainly recommend future PhD students to apply to MSCA ITN projects, now renamed to MSCA Doctoral Network in the Horizon Europe framework. Because when you work in a network such as ours, you work with the strength of not one, but many! It almost feels like can stand on the shoulders of scientific giants, starting from inspiring Baruch Kanner.

Since this is the final year of the network, the meeting held a special moment in all of our hearts. However, do not consider this as a last hurrah from NeuroTrans. We are going to get together again by co-organizing the [Brain in Flux](#) satellite meeting of ISN 2023 at Gaia, Portugal. Do join us there and encourage us young transporter aficionados to come!

Importantly: This project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 860954.



BECOME A MEMBER

Renew Your Membership or Join ITTS Now

Payment can be made by credit card (via PayPal) or by check.
Details on how to pay can be found at <http://www.ittsociety.org/join-itts>.



REGISTER NOW!
meduniwien.ac.at/bif2023

Brain In Flux: Genetic, Physiologic, and Therapeutic Perspectives on Transporters in the Nervous System
 August 12 – 15, 2023 - Gaia, Portugal

Keynote Speakers

H. Khoshbouei

Florida University,
USA

R. Rao

Johns Hopkins
University, USA

Ch. Fahlke

Forschungszentrum
Jülich, GER

J. Javitch

Columbia University,
USA

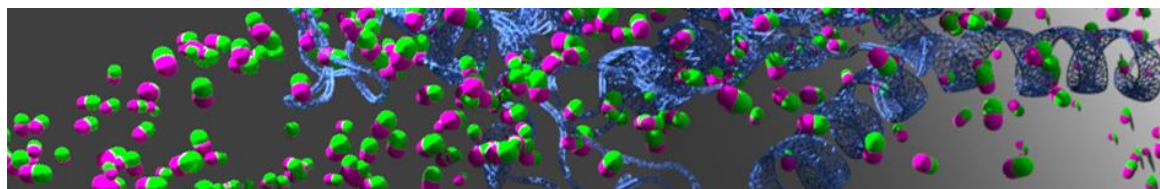
Early Bird Registration Deadline: **May 31, 2023**

Regular Registration Deadline: **July 15, 2023**

Travel Grants Application Deadline: **June 18, 2023**

(applicants need to be registered for the conference; PhD student or early stage PostDoc; submit an abstract and opt-in for oral presentation)

Held as a satellite meeting to the **ISN-ESN biennial meeting** in Porto (Portugal), and as a joint meeting with **NeuroTrans**, a European Training Network (ETN) from the Marie Skłodowska-Curie Actions Innovative Training Networks (MSCA ITN) of the European Commission's Horizon 2020 framework.



<https://www.neurotrans.org>



<https://www.neurochemistry.org/isn-biennial-meetings/>

RESOLUTE Conference

Unlocking Transporters for Drug Discovery

27-29 September 2023

Palais Niederösterreich

Vienna, Austria

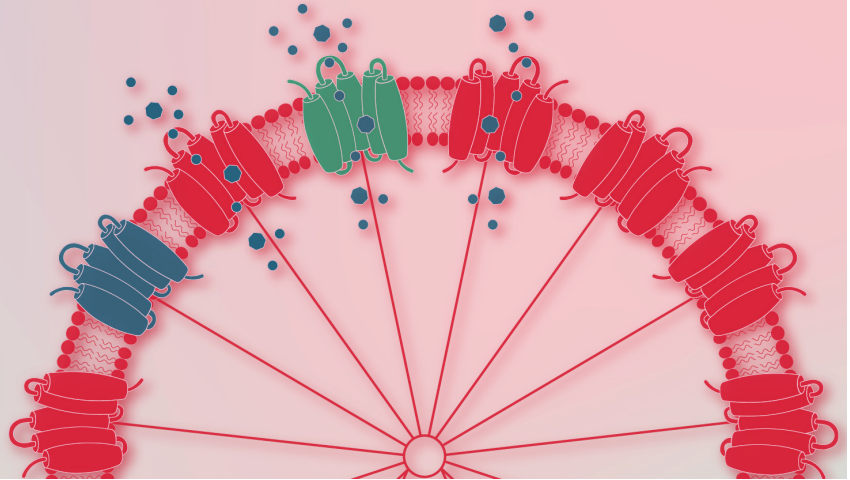
Registration now open!

Abstract submission:

1 May - 31 August 2023

More information and registration:

re-solute.eu/conference



The RESOLUTE and RESolution consortia (re-solute.eu) of the Innovative Medicines Initiative of the European Union have been empowering over the last years the scientific community with novel research tools and datasets for transporters of the Solute Carrier (SLC) supergroup. In 2023 both projects are coming to an end, and we would like to finish with a big celebratory and future-looking event open to the broad scientific community.

At the event expect to see presented the results and lessons learned by the RESOLUTE and RESolution consortia over the last five years. Furthermore, top international scientists interested in metabolism and its regulation, drug discovery and the function and structure of membrane proteins will be speaking. The conference is open to scientists of all levels of seniority. There are reserved slots for talks and posters selected from the abstracts submitted.

Limited places! Register and submit your abstract until 31 August 2023

<https://re-solute.eu/conference>

Student and Post-Doctoral ITTS Chapters Welcome

ITTS welcomes applications for local Chapters of ITTS, comprised of students and post-doctoral fellows. To form a Chapter, have your mentor nominate you as leader of that Chapter, and provide assurance of your rank, good academic standing, and commitment to the ITTS. Please also provide a name for your Chapter. Annual dues for Chapter members is only \$10, and paid by your mentor (with their blessing, of course). Chapter members will receive a member card, and have this as a valuable addition to their curriculum vitae. ITTS Chapters will be evaluated annually for their contributions to the society. The role of Chapters is to encourage active involvement with the ITTS through local outreach events, and attracting new members. Inactive Chapters, as deemed by the ITTS Executive Committee and Council, will be disbanded.

Please send applications to ITTS secretary, Elena Bossi at Elena.Bossi@uninsubria.it

Gordon Research Conference & Seminar



Grand Summit Hotel at Sunday River
97 Summit Road
Newry, ME, United States

Conference

New Insights into Structure, Function, and Regulation of Critical Membrane Transport Proteins in Health and Disease

July 21-26, 2024

Chairs: Renae M. Ryan and Susan L. Ingram
Vice Chairs: Habibeh Khoshbouei and Hanne Poulsen

Seminar

July 20-21, 2024

Chairs: Marco Niello and Alexandra C. Schwartz

Transporter Fun Corner

Mark every country where we have members



PhD Position - Experimental and Translational Medicine

Membrane Transporters in Health and Disease

Role of the substrates, inhibitors, and modulation.

PI: Elena Bossi/Cristina Roseti; Lab: Laboratory of Cellular and Molecular Physiology

[Application](#) opens in July



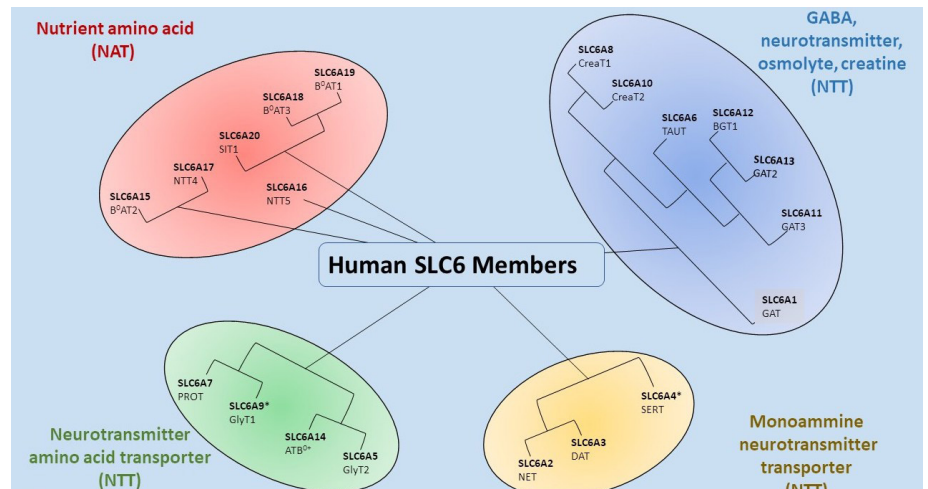
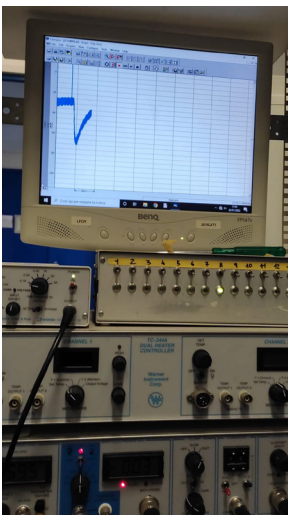
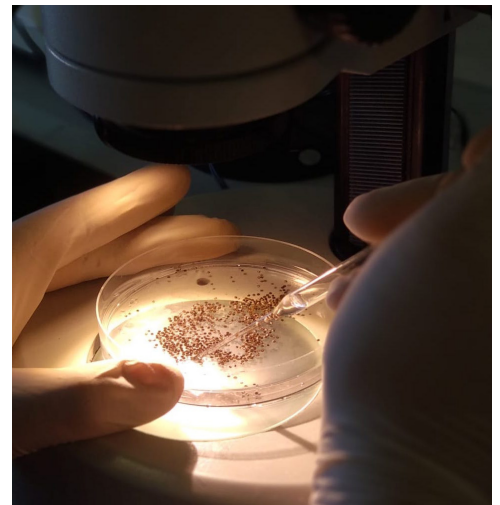
The membrane transporters belonging to SLC6 and SLC1 families are mainly expressed in neurons and glia and involved in the excitation/inhibition balance regulation. These proteins have vital roles in the control of excitability in any brain circuit. Consequently, the comprehension of the functions and dysfunction of these proteins and the possible modulation is fundamental for understanding their roles in many neurological/neurodegenerative/cognitive disorders. The aim of the project is to investigate the role

of substrate and inhibitors in the transport activity and expression, in the presence or absence of regulatory proteins. The biophysical characterization of neurotransmitter transporters, in particular, GABA (GATs), Glycine (GlyTs), and glutamate transporters (EAATs) is the main goal of this research project. The activity of the transporters will be studied by heterologous expression and classical two-electrode voltage clamp, in addition to that, immunochemistry and molecular biology will also be part of the laboratory work. Moreover, different bioinformatics tools will be used to complete the picture of the structure and function interactions.

The team consists of Prof. Elena Bossi (PI), Prof. Cristina Roseti, Dr. Raffaella Cinquetti (Tech.), supported by three PhD students, two master's students, and five bachelor's students.

Our team has a very international background with multiple collaborations spanning across Europe and beyond.

If you are interested in this project and would like to be part of our vibrant team, please contact before the application the PI (elena.bossi@uninsubria.it). Or cid <https://orcid.org/0000-0002-9549-2153>



More Upcoming Conferences

Transport**DEMENTIA**⁵

A premier platform to share cutting-edge research and current findings

**From Advanced Technologies to
Applied Translational Medicine**

**Aug 28 – Sep 1, 2023
Tromsø, Norway**

The Organizers

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University of Latvia
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Dr. Katja Stefan

University of Oslo

katja.stefan@medisin.uio.no



Dear ITTS Members,

You are cordially invited to contribute to the 5th round of our TransportDEMENTIA meeting series.

TransportDEMENTIA⁵ focuses all aspects of chemical biology, molecular mechanisms, and clinical implications of membrane bound transporter systems in human health and disease.

Check out the **PRELIMINARY PROGRAM!**

Updates and more information can be found here:

WWW.PAHNKELAB.EU/TD5

Deadline for Abstract Submissions: **July 1, 2023**

Deadline for Registrations: **July 1, 2023**

World Congress of Basic & Clinical Pharmacology 2023

Prices fixed at
Early Bird Rates
until
02 July 2023

Website: [https://
wcp2023.org](https://wcp2023.org)

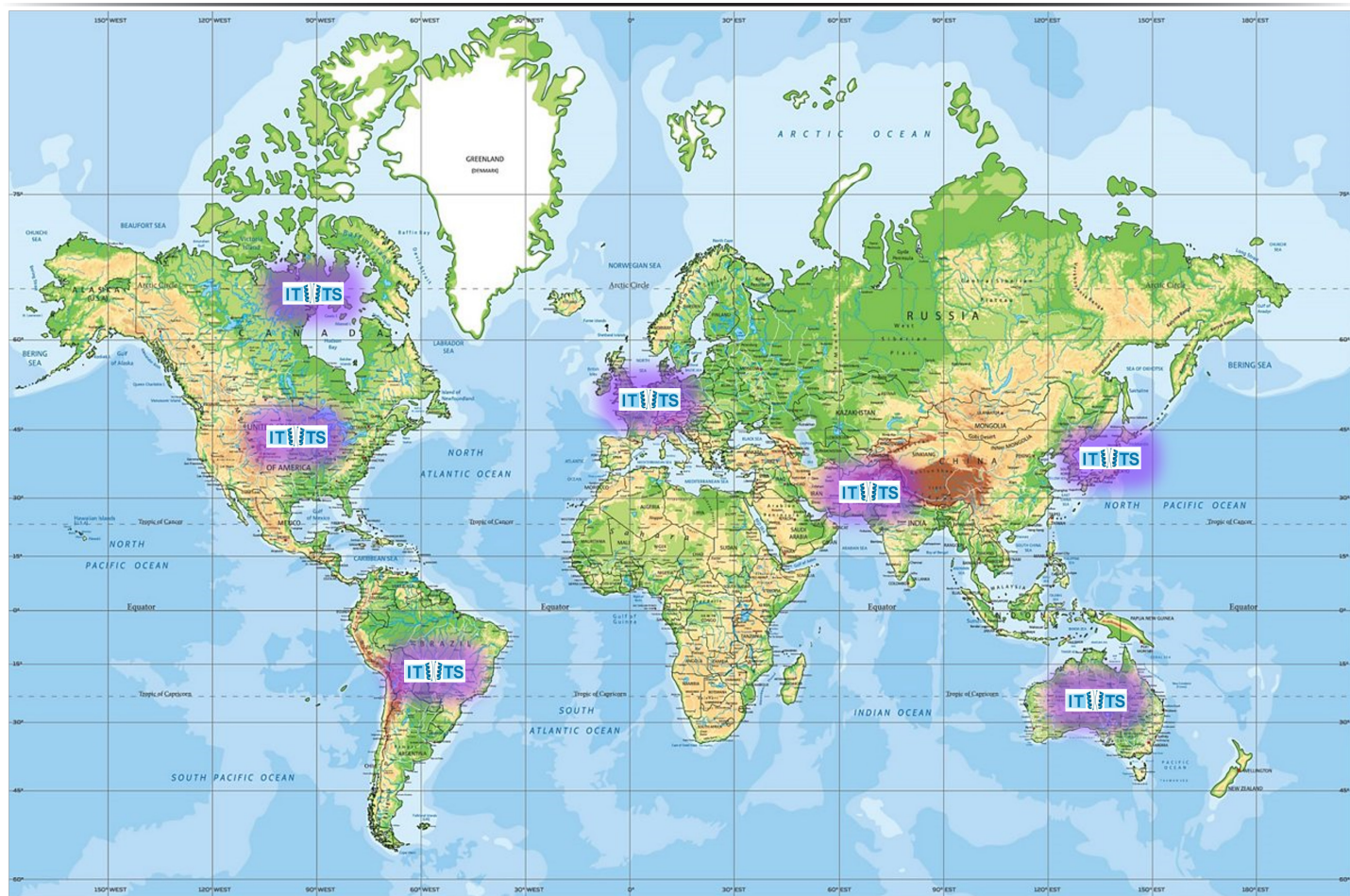
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2 - 7 JULY 2023
GLASGOW | SCOTLAND

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Transporter Fun Corner - Answer





Frontiers in Pharmacology

JCR
Impact Factor
2022
5.988

Network Polypharmacology of ABC and SLC Transporters

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Manuscript Submission **OPEN**

Dear ITTS Community,

We are happy to announce a Special Issue in Frontiers in Pharmacology dedicated to every transporter enthusiast.

You are cordially invited to contribute original research and review reports that complement and advance the chart of chemical, target, and bioactivity space in network polypharmacology of ABC and SLC transporters.

Manuscripts from all disciplines are welcome, particularly from:

- bioinformatics
- computational chemistry
- medicinal chemistry
- molecular genomics
- molecular pharmacology
- structural biology
- other multidisciplinary concepts

More information can be found [here](#)



an Open Access Journal by MDPI

TransportDEMENTIA⁵—From Advanced Technologies to Applied Translational Medicine

Guest Editors:

Prof. Dr. Dr. Jens Pahnke

MD, PhD, EFN, Department of Pathology, Section of Neuropathology, Translational Neurodegeneration Research and Neuropathology Lab, University of Oslo and Oslo University Hospital, Sognsvannsveien 20, 0372 Oslo, Norway

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Dr. Sven Marcel Stefan

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Deadline for manuscript submissions:

31 December 2023

Message from the Guest Editors

Dear Colleagues,

It is our very pleasure to announce a Special Issue released by the *International Journal of Molecular Sciences (IJMS)* associated to the 5th meeting of our TransportDEMENTIA meeting series. The meeting will take place in the Capital of the Arctic, Tromsø, from August 28 until September 1, 2023. More information about the venue can be found on www.pahnkelab.eu/TD5.

The TransportDEMENTIA meeting series has established itself as a premier platform for cutting-edge research outlet amongst leading researchers from multiple disciplines. This year's topic "*From Advanced Technologies to Applied Translational Medicine*" will strongly combine chemical biology, molecular mechanisms, and clinical implications of membrane-bound transporter systems in human health and disease.



mdpi.com/si/162717

Special Issue

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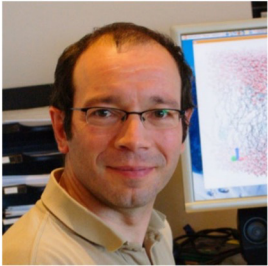
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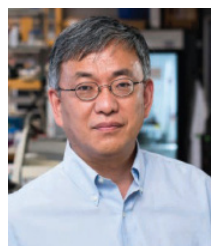
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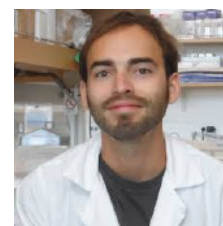
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