

Prepared for the International Society of Neurochemistry (ISN) International Neuroscience School Report

School Name: International Neuroscience School (ISN Neuroscience School-2025)

Theme: "Unlocking the Neurochemical Mysteries of the Brain: Integrating Neurochemistry and Neuroscience for Innovative Therapies"

Host Institutions:

International Center for Neuroscience Research
Tbilisi State Medical University

School Location: Tbilisi, Georgia

Dates: May 22-26, 2025

Venues:

Lectures (May 22-23): Conference Hall, Tbilisi State Medical University, 33 Vazha-Pshavela Ave, Tbilisi, Georgia

Lab Visits (May 24-25): Ivane Beritashvili Center of Experimental Biomedicine, 14 Levan Gotua St, Tbilisi, Georgia

1. Purpose of the school

The International Neuroscience School, held from May 22-26, 2025, in the historic city of Tbilisi, Georgia, was conceived as an intensive, high-impact educational event. The school's mission was to provide a select group of young researchers with a comprehensive and in-depth understanding of the fundamental principles and cutting-edge concepts in neurochemistry and neuroscience. The school's theme, "Unlocking the Neurochemical Mysteries of the Brain," underscored the core focus on integrating molecular-level neurochemical knowledge with broader neuroscience concepts to drive the development of innovative therapies.

The primary objectives were strategically designed to create a holistic and impactful learning experience:

To bridge the bench-to-bedside gap: A central goal was to actively bridge the gap between basic neurochemical research and its clinical applications. The program was structured to empower participants to adopt a translational mindset, seeing a direct line from molecular discoveries to potential patient therapies.

To uncover neurochemical mechanisms: The school aimed to offer profound insights into crucial neurochemical mechanisms, complex signalling pathways, and their integral role in both normal brain function and the pathophysiology of neurological disorders.

To foster the next generation of scientists: The program was designed to cultivate essential skill development, enhance research capabilities, and create high-impact networking opportunities. A key mission was to support and elevate talented young researchers from underrepresented regions,

particularly from institutions across Europe and low-income countries in Asia, thereby strengthening global scientific collaboration and diversity.

To inspire innovative therapies: By combining theoretical lectures with practical sessions, the school sought to empower and inspire students to explore and develop novel therapeutic strategies for treating devastating brain disorders.

The school was specifically designed for a competitive cohort of Master's and PhD students, MD students, postdoctoral fellows, and early-career researchers, providing a platform for advanced education and career development.

2. Summary of the school

The five-day program was meticulously structured to provide a balanced and deeply immersive blend of academic lectures, a dedicated student research forum, hands-on laboratory experience, and valuable networking opportunities.

Day 1 (Thursday, May 22): Foundations of Neurochemistry and Disease The school commenced at Tbilisi State Medical University with registration and an opening ceremony. Welcome messages from organizers Nasrollah Moradikor and Wael Mohamed set a collaborative tone. The academic program was launched by Prof. Vladimir Parpura with an introductory speech, "The International Society for Neurochemistry-Building A Global Research Community," followed by his keynote lecture on astrocyte function. This provided a strong cellular foundation for the subsequent disease-focused talks. The day continued with two intensive sessions. Session 1, chaired by Profs. Parpura, Montana, and Beselia, focused on clinical and translational modules, featuring lectures on astrocyte pathology in Alzheimer's and ALS by Prof. Vedrana Montana, and the role of Tau protein by Dr. Youssra Al-Hilaly. Session 2, chaired by Profs. Ben Sassi, Sandhir, and Dr. Al-Hilaly, covered basic and clinical modules, with Prof. Samia Ben Sassi delivering a keynote on LRRK2 in Parkinson's disease and Prof. Rajat Sandhir discussing therapeutic targeting of nuclear receptors for Alzheimer's. The day's formal activities concluded with the crucial Session 3: Poster Presentation by Participants, which provided a platform for students to present their work and engage in direct scientific exchange with faculty and peers.

Day 2 (Friday, May 23): Advanced Topics and Therapeutic Strategies The second day of lectures began with a plenary lecture by Prof. Wael Mohamed on an innovative smart capsule for Parkinson's neuroprotection. The main academic focus was Session 4, a comprehensive session on clinical and translational modules chaired by Prof. Beselia and Drs. Sotiropoulos and Machavariani. This session covered a broad range of advanced topics, starting with a keynote by Prof. Parisa Gazerani on neurochemical signatures of chronic pain. It was followed by invited lectures from Prof. Gela Beselia on research methods in neuroscience, Dr. Maia Machavariani on the chemical basis of emotion and cognition, and Dr. Ioannis Sotiropoulos on the role of exosomes in Alzheimer's pathology. This concluded the two-day theoretical portion of the school, having provided participants with a wide-ranging overview of current neuroscience research.

Days 3 & 4 (Saturday, May 24 & Sunday, May 25): Immersive Laboratory Experience The weekend was dedicated to translating theoretical knowledge into a practical context. Participants were divided into two groups for visits to the renowned Ivane Beritashvili Center of Experimental

Biomedicine. Over these two days, from 10:00 to 15:00, each group visited the "Laboratory of Behavior and Cognitive Functions." This practical component was designed to introduce participants to the methods and strategies employed in modern experimental neuroscience, allowing them to witness firsthand how the concepts discussed in lectures are investigated and validated in a real-world laboratory setting.

Day 5 (Monday, May 26): Cultural Immersion and Collaborative Networking The final day of the school was a full-day cultural excursion to the historic town of Signaghi. This trip served a dual purpose: to provide participants with an experience of Georgian culture and to offer a relaxed, informal environment for networking. The trip was a strategic element of the program, designed to foster camaraderie and encourage deeper professional connections among students and faculty, reinforcing the school's goal of building a strong and lasting international network of young scientists.

3. Student demographics

The school hosted a diverse cohort of participants, including Master's and PhD students, MD students, postdoctoral fellows, and early-career researchers. Attendees were selected from a competitive pool of applicants from institutions across Europe and low-income countries in Asia, creating a rich multicultural and interdisciplinary environment for learning and collaboration. All participants received an international certificate of completion, verifiable online through the Center of Advanced Scientific Research and Publications, UK.

Number of Domestic Students: [35]

Number of International Students: [18]

Gender Distribution: [55%] females and [45%] males

Countries Represented: [Georgia, Turkey, China, India, Malaysia, France, United Kingdom, Iraq, Azerbaijan, Iran, Egypt, Netherlands, Greece, Armenia, Serbia, Tunisia, Nigeria, Pakistan, Morocco, Brazil, Norway]

4. List of Faculty and Lectures

The school was honored to host a distinguished faculty of leading international experts:

Prof. Dr. Vladimir Parpura (Zhejiang Chinese Medical University, China)

Introductory Speech: "The International Society for Neurochemistry-Building A Global Research Community"

Keynote Lecture: "Astrocytes release glutamate by regulated exocytosis in health and disease"

Prof. Dr. Vedrana Montana (Zhejiang Chinese Medical University, China)

Invited Lecture: "Two Tales of Astrocyte Pathology: Alzheimer disease and Amyotrophic Lateral Sclerosis"

Prof. Dr. Parisa Gazerani (Oslo Metropolitan University, Norway)

Keynote Lecture: "Neurochemical Signatures of Chronic Pain: Pathways to Personalized Therapeutics"

Prof. Dr. Wael Mohamed (International Islamic University Malaysia, Malaysia)

Plenary Lecture: "Swallowing Hope: Smart Capsule and the Biochemistry Behind Parkinson's

Neuroprotection"

Prof. Dr. Rajat Sandhir (Panjab University, India)

Invited Lecture: "Targeting nuclear receptors as therapeutics of Alzheimer's Disease"

Prof. Dr. Gela Beselia (Ivane Beritashvili Center of Experimental Biomedicine, Georgia)

Invited Lecture: "Methods and Strategies of Research in Neuroscience"

Prof. Dr. Samia Ben Sassi (Mongi Ben Hmida National Institute of Neurology, Tunisia)

Keynote Lecture: "LRRK2 and Parkinson's disease"

Dr. Ioannis Sotiropoulos (Institute of Biosciences and Applications, Greece)

Invited Lecture: "Exosomes and chronic stress in precipitation and diagnosis of Alzheimer's disease brain pathology"

Dr. Youssra K. Al-Hilaly (Mustansiriyah University, Iraq)

Invited Lecture: "Tau protein as a therapeutic target for Alzheimer's disease: A key region of tau protein that drives assembly and modulates inhibition by HMT"

Dr. Maia Machavariani (Caucasus University, Georgia)

Invited Lecture: "How brain chemistry shapes emotions, cognition and behavior"

5. Laboratory visit details

The laboratory visits on May 24th and 25th were a cornerstone of the school's experiential learning approach. Participants spent the day at the Laboratory of Behavior and Cognitive Functions at the prestigious Ivane Beritashvili Center of Experimental Biomedicine. The purpose of this visit was to provide students with direct exposure to the experimental paradigms used to study the neural basis of behavior. In such a laboratory, research typically focuses on linking molecular and cellular changes in the brain to observable outcomes in cognition, emotion, and action. The visit was designed to be highly interactive, allowing students to ask in-depth questions and gain a practical understanding of how to design, execute, and interpret experiments that test complex neuroscience hypotheses. This experience provided a vital bridge between the theoretical knowledge gained in lectures and the realities of cutting-edge experimental research.

6. Conclusion

The 2025 International Neuroscience School in Tbilisi successfully fulfilled its mission to unite promising young scientists with leading experts to explore the frontiers of neurochemistry and neuroscience. The thoughtful integration of high-level scientific lectures with practical laboratory visits and cultural exchange created a uniquely dynamic and enriching environment. The event fostered significant knowledge exchange, inspired novel research directions, and established a strong, collaborative network among a diverse group of international participants and faculty. By providing a platform that bridged basic science with clinical application and theory with practice, the school made a tangible contribution to the advancement of neuroscience research and to the professional development of its future leaders.

7. Detailed ISN budget - how the ISN funds were utilized

Table 1 shows how ISN funds were allocated. Following ISN guidelines, we used more than 60% of funds to support students and young researchers, representing a subtotal of USD 18,000.

The remaining USD 6,000 were used to pay the cost of several services related to the school, such as the speaker's airfare, accommodation and transport from the airport to the venue (and return), venue and facilities, scientific program and printing materials and marketing and promotion.

At this point, we have received USD 24,000 from ISN, corresponding to 80% of the USD 30,000 total funding.

Table 1– Allocation of ISN funds.

Allocation of ISN funding	Amount (in USD)
Invited speakers (Airfare/Round-trip ticket): 4 speakers	\$2500
Invited speaker (Accommodation): (6 night in 4* hotel for 5 Speakers)	\$2500
Young ISN Neurochemistry Awards (students travel support) (10 students)	\$5500
Students accommodation support (15*\$60*6)	\$5500
Students Support (students were granted registration fee waivers)	\$3500
Young Researchers' Awards: Prize for the best research and poster presentation (3*\$500)	\$1500
Printing materials, marketing and promotion, website	\$500
Sighnaghi trip and networking with participants	\$2500
Total	\$24000

8. ISN advertising (ISN promotion)

ISN slides being presented to inform the audience on ISN activities and on the benefits of ISN membership (Presented by Prof. Vladimir Parpura).



9. Appendix

9.1. Participants List

Samia Ben Sassi Gela Beselia Vedrana Montana Vladimir Parpura Elnur Rustamov Ioannis Sotiropoulos Jessica Annamalai Yukta Anchan Daniya Tasnim Tsitsi Papunashvili Muntaha Nadeem Soumiya Nadar Arun Venkiteswaran Harsha Krishna Arnav Walavalkar Fesmi Jerom Arusha Ayub Priyanshi Sinha Abdelrahman Albahtiti Gunjan Changole Mohamad Alfateh Marwan Daod Jaber Tamila Tsulaya Faazil Mohmadrafi	Maia Machavariani Youssra K. Al-Hilaly Rajat Sandhir Shahad Ali Ibrahim Ali Kaitlyn Sharon Ajin Mathews John Dalina Ann Sunu Sara Ahmed Abdi Abdalla Lilit Misakyan Lali Jishkariani Sana Awan Tahereh Hamedi Jubran Al Hooti Nikoloz Arveladze Lado Gabechava Giorgi Paghava Jehan Salem Syeda Fatima Zehra Jana Manana Seelam Radhika Vishnu Vardhan Sajal Agarwal Kimia Nafissi Aieman Javed Kazi	Esma Tcharelashvili Ynah Joyce Leros Orna Tina Tchagalidze Medea Abashidze Ana Avalishvili Rishikesh patil Chris Moris Pereira Mrunal Sule Devanshu Ganje Siddhi Patki Ketki Deshpande Smile Brahmla Archita Verma Maryam Jafarianalvar Sanchit Dhanda Sara Choukeir Nanuka Khatiashvili Charbel Macaron Ghina Sojod Zahra Sadeghi Irine Tvaradze Mohit Mitra
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9.2. Participants' Feedback (ISN Neuroscience School 2025)

https://www.youtube.com/shorts/10oC2_vpNcY

9.3. Examples of Participant Certificates



CERTIFICATE

CERTIFICATE OF PARTICIPATION

This is to certify that **Dr. Mohamad Alfateh Abou Haykal** has participated in the **International Neuroscience School** and successfully completed the **Neuroscience Training Course**, held on May 22-26, 2025 at Tbilisi State Medical University in Tbilisi, Georgia.

This event was held with the support of the International Society for Neurochemistry (ISN), the International Brain Research Organization (IBRO), and the European Society for Neurochemistry (ESN).

Dr. Nasrollah Moradikor

Nasrollah Moradikor, Ph.D.
Organizer & Chair



Dr. Wael Mohamed

Wael Mohamed, MD, Ph.D.
Scientific Secretary



CERTIFICATE

CERTIFICATE OF PARTICIPATION

This is to certify that **Orchid Parthiv** has participated in the **International Neuroscience School** and successfully completed the **Neuroscience Training Course**, held on May 22-26, 2025 at Tbilisi State Medical University in Tbilisi, Georgia.

This event was held with the support of the International Society for Neurochemistry (ISN), the International Brain Research Organization (IBRO), and the European Society for Neurochemistry (ESN).

Dr. Nasrollah Moradikor

Nasrollah Moradikor, Ph.D.
Organizer & Chair



Dr. Wael Mohamed

Wael Mohamed, MD, Ph.D.
Scientific Secretary

9.4. School Photos











