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Mongolian Neuroscience Society (MNS) - The 8th Annual Meeting of the Mongolian Neuroscience Society and IBRO-APRC Ulaanbaatar Associate School on Fundamental Techniques in Neuroscience 2021

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ABSTRACT: In 2021, the Mongolian Neuroscience Society (MNS), together with the International Brain Research Organization (IBRO) and the Mongolian National University of Medical Sciences (MNUMS), organized two events: The 8th Annual Meeting of the Mongolian Neuroscience Society themed as "Multidisciplinary Brain Science 2021" and the IBRO-APRC Ulaanbaatar Associate School on Fundamental Techniques in Neuroscience. Multidisciplinary Brain Science 2021 aimed to bring together scientists with brain science-related backgrounds under an umbrella meeting consisting of educational lectures and academic connections. It was held with 14 invited lecturers and 20 speakers for two days virtually from August 13 to 14, 2021. The meeting was streamed live on social media, which brought together 2.6K online viewers. The goal of the IBRO-APRC Associate School on Fundamental Techniques in Neuroscience was to enable students to understand the theoretical and practical fundamentals of neuroscience. This virtual school was formed by 20 students and 16 faculty members from 5 countries. The students participated in lectures, technical talks, interactive discussions, and hands-on sessions on responsible conduct of research in neuroscience with a high neuroethical standard during the 6-day program. The events were a great success, offering a unique opportunity for the participants to get updated with current advances in brain science by global and regional experts in neuroscience and facilitate academic collaborations.

Keywords: brain science; conference; school; Mongolia.

The Mongolian Neuroscience Society was established in 2014 by combining two non-profit organizations led by Prof. Battuvshin Lkhagvasuren and Prof. Damdindorj Boldbaatar. It was expanded to include neuroscientists and clinicians, psychologists, and other scientists with different backgrounds. The main goal of MNS is to develop and support brain science in Mongolia. The society's objectives include establishing research labs, centres, and institutes in brain science across the country, providing a platform for scientists with different backgrounds in neuroscience research, promoting education in neuroscience, and strengthening human resources in brain science. MNS is an official member organization of the International Brain Research Organization (IBRO) and the Federation of Asian-Oceanian Neuroscience Societies (FAONS). The membership of MNS is gradually increasing, with 82 members to date. We provide a platform for research, training, education, and academic exchange for the members, as well as public lectures, brain bee competitions, and news & columns for the general population. The society's annual meeting started in 2014, has become an umbrella meeting for researchers, clinicians, and psychologists who are interested in brain science in Mongolia. Consecutively, yearly meetings have been held eight times in Ulaanbaatar since 2014. **Figure 1** shows the participants of the 1st Annual Meeting of MNS in 2014.

Figure 1: The 1st Annual Meeting of the Mongolian Neuroscience Society, June 13, 2014, Ulaanbaatar. (first row, left to right) Uyanga, Khongorzul, Oyunjargal, **Battuvshin Lkhagvasuren**, Marc Gilbert, **Damdindorj Boldbaatar**, Sarantuya Jav, **Enkhsaikhan Lkhagvasuren**, **Darambazar Gantulga;** (second row, left to right) Altanzul, anonymous, anonymous, anonymous, Erkhembayar, Enkhchimeg, Oyungerel, Munkh-Orgil, Anar, Munkh, Sarantsatsral, Sarantsetseg, **Bayasgalan Tumenbayar**, Choinyam Bayarmunkh, Ganbat Atarsaikhan, anonymous, anonymous, **Jambaldorj Jamiyansuren** (Founding member's names of MNS are written in bold, 2014).

In 2018, under the auspice of the President of Mongolia, we successfully organized our 5th Annual Meeting with world-renowned invited speakers, Pierre Magistretti (President, IBRO), Juan Lerma (Chief-in-Editor, Neuroscience), Edward Moser (2014 Nobel laureate), and many other international neuroscientists as a major event in the Mongolian academic society in the main hall of the House of Parliament. The annual meetings aim to promote brain science by stimulating collaborative works between the participants, raising the awareness of brain science in public, and encouraging young researchers to pursue a career in brain science. Of importance, the annual meetings offer a unique educational opportunity for participants to keep updated on recent advances and innovations in brain science from world-renowned neuroscientists. **Figure 2** presents the memorial photo of the 5th Annual Meeting of MNS in 2018.

Figure 2: The 5th Annual Meeting of the Mongolian Neuroscience Society, September 24, 2018, Ulaanbaatar.

This event was broadcast live on T.V. and attracted the nation's attention to brain science for a week. As it facilitated the development of brain science in Mongolia, we established the first neuroscience institution in Mongolia, the Brain Science Institute at the Mongolian National University of Medical Sciences (MNUMS), a year later in 2019. The annual meetings from 2014 to 2020 were held on-site in collaboration with the Mongolian Society of Psychiatry and Mongolian Neurology Society. Despite the COVID-19 pandemic, the 7th Annual Meeting was held on-site because the infection was not spread in the community yet.

The main event of our society in 2021 was the 8th Annual Meeting of MNS, held from August 13 to 14 in 2021 in Ulaanbaatar, under the theme of "Multidisciplinary Brain Science 2021" in collaboration with IBRO and the Mongolian National University of Medical Sciences (MNUMS). In contrast to the previous meetings, this meeting was held virtually due to the accelerated infection rate of COVID-19. The goal of the meeting was to maintain our regular event through the pandemic by using online conference tools and social media channels. The 2-day program of the international

conference included plenary lectures by world-renowned neuroscientists, international symposia in recent advances in brain science by leading young neuroscientists from state-of-the-art facilities of developed countries, and sessions for oral and poster presentations of recent works on neuroscience, neurology, neurosurgery, psychiatry, and psychology from local researchers. The meeting used the Zoom app and a live stream on Facebook, bringing together 2.6K online viewers.

Prof. Damdindorj Boldbaatar (Former President of MNS and Vice President of MNUMS) and Prof. Battuvshin Lkhagvasuren (Current President of MNS and Director of the Brain Science Institute, MNUMS) delivered the opening remarks. **Figure 3** depicts the invited speakers at the 8th Annual Meeting of MNS, August 13-14, 2021.

Figure 3: Invited international speakers at the Multidisciplinary Brain Science 2021.

Eighteen invited speakers from 8 countries, including China, India, Japan, Korea, Kyrgyz, Malaysia, Mongolia, and Russia. On day 1, Prof. Mu-Ming Poo (Institute of Neuroscience, Chinese Academy of Sciences, the People's Republic of China) and Prof. Tadashi Isa (Kyoto University, Japan) delivered admirable plenary lectures, titled "Neural Plasticity and Brain Disorders" and "How the brain works for recovery from spinal cord injury", respectively. The International Symposia Lectures were presented by young Professors Kea-Joo Lee (Korean Brain Research Institute, South Korea), Anurag Kuhad (Punjab University, India), Tetsuya Hiramoto (National Hospital Organization, Japan), Michael King Hwa Ling (Universiti Putra, Malaysia), Anton Varlamov (Russia), Fei Peng (Southern Medical University, the People's Republic of China), Ranjana Bhandari (Punjab University, India), and Elena

Molchanova (American University of Central Asia, Kyrgyz). About 20 local researchers presented their recent works in oral and poster sessions in the fields of Neuroscience, Neurology, Psychiatry, and Social Psychology. **Figure 4** depicts the memorial photo of participants of the 8th Annual Meeting of MNS.

Figure 4: Memorial photo during the opening ceremony of MULTIDISCIPLINARY BRAIN SCIENCE 2021.

The best oral presenter award was taken to a work titled "Association between Alexisomia and Mental Health among Mongolians" by Dr. Enkhzaya from the Southern Medical University, China. The best poster presenter award was taken to a work titled "Validation of WHOQOL-BREF in the Mongolian general population" by Dr. Enkhjin Bat-Erdene from MNUMS, Mongolia.

The IBRO-APRC Ulaanbaatar Associate School on Fundamental Techniques in Neuroscience, a 6 – day school, was successfully held from August 9 to 14 in 2021, in Ulaanbaatar, Mongolia. The goal of the school was to equip participants with basic techniques in neuroscience. We provided a virtual meeting platform, live stream, laboratory facilities, and technical aids required for the hands-on procedures during the entire period of the school. The students consisted of 20 local awardees from the country. There were 3 PhD students, eight master students, and nine medical doctors/researchers. The opening remarks by Professor Pike See Cheah, Chair of IBRO-APRC, have provided detailed information on the IBRO-APRC activities

promoting regional academic exchange, training resources, and funding opportunities for both individuals and organizations **(Figure 5)**. The school included four invited lectures by international faculties from Japan, Korea, Malaysia, and the United States of America **(Figure 6)**.

Figure 5: Opening remarks by Professor Pike-See Cheah, Chair of IBRO-APRC, at the opening ceremony of the "IBRO-APRC Ulaanbaatar School on Fundamental Techniques in Neuroscience".

Figure 6: Invited international speakers at the "IBRO-APRC Ulaanbaatar Associate School on Fundamental Techniques in Neuroscience".

Local faculties provided nine tech talks and four hands-on modules. The school training program provided the following core concepts in lectures/seminars: neuroinflammation, neurogenesis, synaptic plasticity, circuitry mechanisms of energy balance, neuroethics, cell culture, DNA extraction, immunostaining and microscopy, RT-qPCR, western blotting, stereotaxic ICV injections, and stem cell methods. In group discussions, students learned neuroethical issues and were encouraged to present their poster and oral presentations about their current studies. The students also attended the 8th Annual Meeting of Mongolian Neuroscience Society virtually due to the COVID-19 pandemic. The school fulfilled its primary purpose to provide training in neuroscience for young researchers in Mongolia, where no program in neuroscience at higher education exists. As a long-term objective, we aim to build human resources in brain science; students of this school may become future leaders in the field. Therefore, the school benefited both the students and local faculty, contributing to bubuildingapacity in neuroscience in Mongolia. We believe the school generated enthusiasm among young researchers who want to leverage neuroscience in Mongolia. **Figure 7** depicts the participants of the school on Day 1, August 9, 2021.

Figure 7: Memorial photo during the opening ceremony of the "IBRO-APRC Ulaanbaatar Associate School 2021".

The events were publicized in T.V.s, newspapers, and public journals such as the National Broadcasting Television and Radio, the most extensive media channel in Mongolia **(Figure 8)**.

This short yet successful story of our achievement to promote neuroscience in Mongolia may interest scientists from developing countries with limited resources. All the events and progress were made possible with the generous support of many international experts and organizations who kindly helped us and kept supporting our endeavour. Particularly, the lectures by international faculties of the school provide comprehensive theoretical knowledge to the students, which is nowhere else taught in the country. They support their contents with their study results make their lectures more interesting and evidence-based. After school, many students seek to study abroad in neuroscience since there is no graduate program in neuroscience in the country. Therefore, the core purpose in the short-term goals of our society is

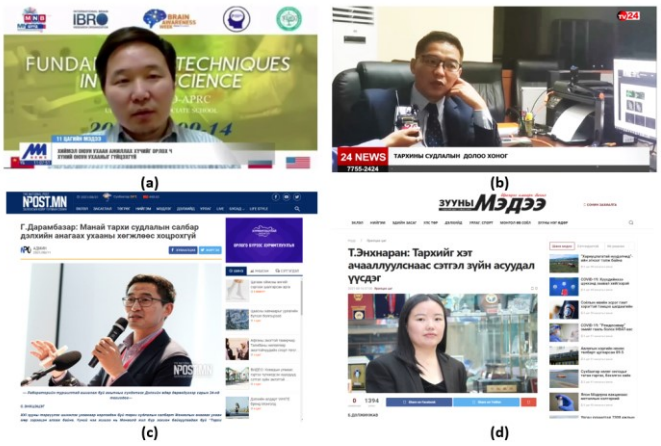

Figure 8. Public media outreach to raise brain awareness during the events: (**a**) T.V. interview on the News Headlines of the Mongolian National Broadcasting, the largest broadcasting media organization in Mongolia, Prof. Lkhagvasuren gave at interview about the school; (**b**) T.V. interview on the 24 News, a private media broadcasting TV24, Prof. Boldbaatar gave an interview on the meeting; (**c**) Newspaper column in the National Post newspaper, a daily newspaper, Prof. Gantulga wrote about the development of brain science in Mongolia; (**d**) Newspaper interview on Centennial News, one of the largest daily newspapers, Dr. Tumurbaatar's interview on the effect stress on brain functions was highlighted in the front page.

establishing a graduate program and an independent institute for brain science in the country.

The highlights of the meeting and school are available at https://neuroscience.mn. Please find further information on the school at https://neuroscience.mn/guidebook/ and on the meeting at https://neuroscience.mn/abstract-book/.

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