Report of IBRO School Nepal, 2016

Parul Bali

Department of Biophysics, Panjab University, Chandigarh, India

IBRO-APRC Associate School of Neuroscience conducted a scientific program at Nagarkot, Nepal from 9 to 13 February 2016, with 21 participants. The program was aimed at discussing the advances in neuroscience. The theme of the school at Nepal is 'Neuroendocrinology in Nature–Discover hormone in your mind'. The overall focus of the program was on neuroendocrine, that is, how the nervous system and hormone interact to maintain various physiologies. The scientific program included 3 plenary, 4 advanced, and 5 special lectures by renowned neuroscientists, especially from the Asia Pacific region.

The program started with a plenary lecture by Yasuo Sakuma from the University of Tokyo Health Science. He described the role of oxytocin in social interaction. In his study, he used oxytocin knockout mice to decipher hormone modulation in olfactory-related sexual behavior. He also found that the nasal administration of oxytocin increases the gazing behavior in dogs, which in turn increased urinary oxytocin. The advanced lecture by Ishwar Parhar from Monash University, Malaysia discussed the essential role of gonadotropin releasing hormone (GnRH) in sexual development and social behavior. The neuropeptide kisspeptin regulates the GnRH, which acts on the pituitary gland and has a physiological effect on gonads. He studied the expression of kiss1 and kiss2 in habenula and hypothalamus in zebra fish. Kiss1 indirectly acts on 5HT neurons via glutamatergic neurons. He observed

how kisspeptin overcomes fear by the behavior analysis of freezing in zebra fish. The motivated plenary lecture by Basant Pant from Nepal on 're-innovating scientific tools and techniques' explained various innovative ideas implemented by him during neurosurgeries, which also led to cost reduction.

On the second day, a special lecture was delivered by the school organizer Dr. Sunil Dhungel on 'Olfactory Preference – A Paradigm for Studying Social Behavior'. Oxytocin plays a major role in aggression, anxiety, stress, and nurture behavior. The oxytocin receptor expressing neurons were found in medial amygdala, medial pre-optic area. The knockout mice can successfully accomplish reproduction, but cannot rear pups due to lack of lactation abilities. He employed alternate choice paradigm to assess the olfactory preference to investigate the socio-sexual behavior by analyzing nose poking time spent through air-inlet. It was concluded that this hormone plays an important role in the regulation of olfaction-related sexual behavior in both male and female mice. The next special lecture was delivered by Dr. Akshay Anand on 'Good Retraction' in which he described how and why self-acknowledgement and self-retraction are good or important to maintain quality in research. The last advance lecture was delivered by Dr. Madhab from Nepal in which he reviewed the role of thyroid hormone, that is, T3 and T4. In general, the cross talk between thyroid and brain was discussed.

On the third day, Dr. Ajaya Jang Kunwar delivered his work presentation on the development of nervous system, with emphasis on the role of SNARE in cortical development. He described the anatomy of cortical layers and its development. The SNARE double knockout mice showed loss in major axonal tracts and impairment in cortical development. He reported for the first time that these mice have increased layer 6 neurons, and layer 5 neurons failed to migrate. The rate of proliferation was not found to be affected by Brdu, ki67 whereas PCNA positive neurons and dendritic outgrowth were found to be reduced. The next special lecture was delivered by Dr. Akshay, with emphasis on the quality to be implemented in research. He explained good laboratory practices, which he implemented in his lab and the importance of blinding and validation of data to generate reliable data.

On the fourth day, Dr. Ravi Shankar Akundi explained his work, in which he studied the mitochondrial dynamics in PTEN-induced kinase 1 (Pink1) knockout model. Pink 1 is a serine threonine kinase linked to Parkinson disease. In this model, there was impairment in striatal dopamine release without dopaminergic neuronal loss. He cultured fibroblast cells from Pink1 KO mice and found distortion in the mitochondrial structure. The fibroblasts were cultured with pancreatic cells and showed 2 remarkable phenotypes, that is, impairment in glucose-induced insulin secretion and altered T-cell determination. He suggested that Pink1 is linked to the PD with type-2 diabetes. Dr. Syed Shahib Habib from Saudi Arabia discussed the clinical application and the use as a biomarker of brainstem auditory evoked potentials in vari-

ous central auditory processing disorders. The pattern of these different wave forms are used to assess cortical auditory dysfunctions in relation to auditory processing, language, reading disorders, traumatic brain injury, neurological, and various neuropsychiatric disorders.

On the next day, the closing ceremony of IBRO School was conducted, with the vote of thanks to the organizers and the neuroscientists. Subsequently, the first Neuroscience Society of Nepal meeting was inaugurated. Dr. Syed Habib from Saudi Arabia presented his case report study on 'Post-traumatic bilateral facial paralysis associated with temporal bone fracture'. In this report, a 23-year-old male developed paralysis; he developed loss of taste sensation and hearing impairment due to motor vehicle accident. After a 3-month follow-up, the recovery of facial nerve function was observed. Dr. Tapas from Nepal studied the effect of exercise (Harvard step test) on healthy volunteers aged 19–25 years on sympathetic domain. He found increment in FEF, which indicates better alveolar ventilation. Dr. Shahid Bashir explained the application of transcranial direct stimulation. He explained invasive and non-invasive approach of direct stimulation. There are 2 types of non-invasive approach, that is, transcranial magnetic stimulation and transcranial current stimulation. Anode is used to give current to the brain for excitation, and cathode takes current from the brain to take energy from the brain to reduce excitability. He worked on smokers who were consuming 20 cigarettes per day, and after stimulation they reduced the consumption upto 2 cigarettes per day. DBS methods are also approved by FDA for Parkinson's disease.