

1ST IBRO ASSOCIATE SCHOOL OF NEUROSCIENCE AND SYMPOSIUM ON "VISION FOR NEUROSCIENCE"

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The biology of mind will be as important to the 21st century as the biology of gene was to the 20th century.

- **Eric R. Kandel**

The plight of basic science research remains deplorable in Pakistan, and research in the field of neuroscience is almost unheard of. The prevalent view, if you visit any teaching hospital in Pakistan, is that it is the practice of neurology or neurosurgery and some elementary clinical research that defines neuroscience. Unfortunately there has been little effort, if any, to redress this misconception and to promote this rapidly evolving discipline until now. This was the theme of the first IBRO (International Brain Research Organization) Associate School of Neuroscience organized recently at the Panjwani Center for Molecular Medicine and Drug research (PCMD) at Karachi University (KU). The purpose was to increase awareness among students and attract those inquisitive minds who feel inclined towards pursuing a career in this field.

On the inauguration day, seated amongst a diverse audience, were 36 students who had come from different parts of the world to attend this first school. The students were mainly from the Asia-Pacific region but a few came from Africa and Europe to attend this school. Distinguished speakers and eminent researchers both from within the country and abroad spoke on various topics spanning the discipline of neuroscience.

Prof. Iqbal Chaudhary, the chairman of the organizing committee, in his inaugural address said that Pakistan today faces the scourge of chronic psychiatric and organic brain illnesses such as epilepsy, schizophrenia, Parkinson's disease, and Alzheimer's disease. It is the thorough understanding of chemical processes within the brain that will unravel its biological functionality. Speaking on the vision of neuroscience, Prof. Pirzada Qasim, the vice-chancellor of KU, emphasized metaphorically that the occurrence of a chemical reaction requires a critical mass, and the organization of this school shows that Pakistan has achieved that critical mass to start the chain reaction of neuroscience research. He further announced that Pakistan will join the international community in establishing a human brain bank where research on brain

tissue would provide insight into the organic as well as chemical disorders of the brain.

Dr. Lawrence Garey, the chairman of the IBRO Neuroscience Program Network, said that IBRO if read in reverse becomes "orbi," a Greek word meaning the world. While pointing towards the map of the world, represented as the human cerebral cortex, he added that Pakistan, quite surprisingly, occupies a region of the brain called Wernicke's area which is pivotal to our understanding of the world through the sense of hearing, thus underlining the significance of Pakistan with respect to neuroscience research.

Chair of the Aga Khan University Research Council, Dr. Zulfiqar A. Bhutta, chief guest for the symposium, stressed on the role of neuroscience research in the pediatric population. Following the inaugural session several scientific talks were presented in the symposium.

The following five days were devoted to the First IBRO Associate School of Neuroscience. Each day was organized into one of five different themes within neuroscience - overview of neuroscience, neurobiology of disease, cellular and molecular neuroscience, computational neuroscience, and neurogenesis and neural behavior. Additionally, each afternoon following the first day was devoted to practical workshops on basic laboratory techniques such as cell culture, electrophysiology, microscopy and immuno-histochemistry, and neural networks.

The first day of the school commenced with a lecture on the history of neuroscience. The audience came to know how many discoveries especially in the early days of neuroscience were serendipitous. The students were then introduced to the gross structural and functional organization of the central nervous system (CNS). Following a detailed lecture on the functioning of the CNS at the molecular level, an impressive talk was delivered on higher mental functions that uniquely characterize the mind within the brain. The session on developmental biology of the CNS was organized such that the intricate developmental processes appeared much simplified. Each day ended with a review of daily activities.

On the second day, students were introduced to the concept of disease. The complex yet precise mathematical functioning of the CNS makes it easier to localize a lesion to a particular region within the brain or spinal cord. Since brain comprises of a large population of terminally differentiated cells, it is thus the focus of many chronic degenerative processes. Prof. Khalid Iqbal gave an extraordinary lecture on neurodegenerative disorders where he shared his inspirational work on the discovery of neurofibrillary tangles and association of α -amyloid precursor proteins. This was followed by a series of succinct talks on molecular mechanisms of stroke and immunological basis of neurological diseases. The day ended with a very interesting lecture elucidating the involvement of genes in the pathogenesis of epilepsy.

Day three was aimed at educating the students on how millions of neurons communicate with each other. There were discussions on synapse structure and function, the neurotransmitters and their receptors, and second messenger molecules involved in the execution of signals brought on by chemical messengers.

On the evening of day three, a grand dinner was arranged in honor of participating faculty and students. It was thought to be a suitable occasion to announce the launching of the Pakistan Society for Basic and Applied Neuroscience (PASBAN). The society would promote the discipline of neuroscience in Pakistan and attract potential students while maintaining relationships with corresponding international fraternities as well as organizing meetings of international neuroscience scholars.

And then came the day both faculty and students had anxiously been waiting for. Dr. Ali Minai, a professor of computational neuroscience at the University of Cincinnati, had been invited to speak on the topic of neural networking and artificial intelligence. He began by describing neuronal networking in the language of computers, which he later followed up with a detailed presentation on artificial intelligence and the human-machine interface that provoked much discussion.

The last day of the school was organized around the theme of molecular mechanisms of CNS function. One of the central topics was learning and memory. There was also a discussion on the brain's sexual dimorphism when, during the course of development, the brain acquires a unique gender identity. The last two sessions of the day were about neural stem cells, an area that has captivated both the professional and popular imagination because of potentially immense implications in developmental neurobiology as well as in repair of the brain following disease or injury. Dr. Inge Grundke-Iqbal focused on the implications of stem cell research in the field of various

neurodegenerative disorders of the brain and in brain repair after injury.

In many ways this 1st IBRO Associate School of Neuroscience in Pakistan should be seen as a new beginning. It marks the assembly of a critical mass of neuroscientists in Pakistan who are well placed to advance the cause of neuroscience in their country.

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14TH NATIONAL NEUROLOGY CONFERENCE

Athar Javed and Mohammad Wasay

The 14th National Neurology Conference was held at Avari Hotel, Lahore, on March 24-25, 2007. The conference included 46 platform and 20 poster presentations. Most presentations were original studies, both prospective and retrospective, and covered a broad range of topics including epilepsy, stroke, neuromuscular diseases, movement disorders, demyelinating illness, and CNS infections. There was also a full session on pediatric neurology.

Participants came from all over Pakistan. Most presentations were from Liaquat National Hospital and Aga Khan University Hospital in Karachi, but a number of papers were also presented from centers in Lahore and Islamabad.

The conference began with a plenary lecture from Dr. Naeemul Hameed, who gave an overview entitled "Fifty years of Neurology in Pakistan." The first session was on stroke. Dr. Maimoona presented her findings from Liaquat National Hospital's stroke data bank. Mohsin Zaheer presented his work on the prevalence of Homocystinuria among stroke patients. Hamzullah Khan, a medical student from Khyber Medical College, presented data on the risk factors of stroke in Peshawar, and Dr. Ayeesha Kamal of Aga Khan University presented her paper entitled "Characteristics of patients presenting with TIAs and their management."

The second session was related to vascular neurology. Dr. Asad Jawed presented a paper on "Carotid intervention in high risk patients: a prospective comparative observational analysis of carotid endarterectomy (CEA) and carotid artery stenting (CAST) under neuro-protection." Safdar Malik presented local data on multi-slice CT scanning in stroke, and Dr. Khalid Mehmood presented his experience of carotid endarterectomy at Lahore General Hospital. Dr. Athar Javed of King Edward Medical University presented 30 cases of cerebral venous thrombosis.

Several original papers were presented during the third session including "Acute disseminated encephalomyelitis: clinical spectrum in the pediatric versus adult population" by Dr Aziz Sonawalla; "Neurological involvement in Dengue viral infection" by Dr Mohammad Wasay; and "Role of intravenous immunoglobulin in refractory malignant status epilepticus" by Dr Fowzia Siddqui - all from Aga Khan University. Session four was related to pediatric neurology and epilepsy.

The inaugural session was addressed by the Minister of Health, Government of Punjab, and by Prof. Mumtaz Hasan. Session five also had many interesting presentations including "Unexplained episodic vomiting - the answer may be in the brain" by Dr Ismail A. Khatri (Shifa International Hospital, Islamabad) and "New-onset seizure in the elderly: clinical, radiological and EEG characteristics" by Dr M. Hashmi. Session six was addressed by Dr. Mutahar Ali (radiotherapy of primary brain tumors), Dr Anjum Habib Vohra (atraumatic spinal cord compression: delay in management), Dr Mohammad Nasrullah (etiological profile of patients with optic atrophy), Dr Mohammad Moeen Ahmad (time to freedom after thymectomy in myasthenia gravis), and Dr Faika Usman (dancing and moving toes - a malady with nuisance).

Session seven was related to CNS infections featuring many interesting presentations. Dr Syed Buland Akhtar Zaidi presented his data on "frequency and pattern of neurological complications in tuberculous meningitis." Dr M. Athar Javed presented "clinical and laboratory features and outcomes in 95 cases of acute bacterial meningitis," and Dr. Wasay presented a paper entitled "itraconazole before surgical biopsy of suspected cerebral aspergillosis may improve outcome." This session, in particular, generated extensive discussion.

Six papers were presented during session eight. Interesting papers in this session included "critical illness polyneuropathy and myopathy: experience at a tertiary care center" by Dr Ghulam Shabbir, "frequency of depression in stroke patients" by Dr Hayat Malik, and "body position in sleep affects diagnosis of obstructive sleep apnea" by Rana Babur. Session nine was related to clinical neurophysiology and included presentations from Mustafa Khan, Asiya Bano, Bano Malik, and M. Mobin. The conference ended with concluding remarks from Dr. Nasrullah.

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