



# **REPORT & RECOMMENDATIONS**

**5<sup>th</sup> Congress of Federation of Asian-Oceanian  
Neuroscience Societies (FAONS)  
&  
XXVIII Annual Meeting of  
Indian Academy of Neurosciences (IAN)**

**Emerging Trends in Basic and  
Clinical Neuroscience**



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# *F*oreword

Knowledge and application of neuroscience in India can be traced back to 6<sup>th</sup> Century B.C. There are evidences for treatment and management of neurological disorders by drugs and surgery in ancient literature - *Susruta Samhita* and other Ayurvedic texts. Development of Neuroscience as a distinct discipline has largely been after the independence. Over the years, several major centers of neuroscience like Vellore, Bangalore, Chennai, Delhi, Kolkata and Lucknow have emerged where both basic and clinical neuroscience research is being pursued.

Lucknow has several centers of excellence in neuroscience like Departments of Pharmacology, Psychiatry and Neurology in Chhatrapati Shahuji Maharaj Medical University, Lucknow (formerly King Georges Medical College), CSIR- Central Drug Research Institute, CSIR- Indian Institute of Toxicological Research (formerly Industrial Toxicology Research Centre) and Sanjay Gandhi Postgraduate Institute of Medical Sciences. These institutions have excellent infrastructure and have made significant contributions in the development of drugs from natural and synthetic products for neurological disorders and understanding their mechanism of action, neurotoxicology, developing biomarkers of neurodisorders and played an important role in development of human resource. These institutions actively collaborate and pursue basic and clinical research and play an important role in human resource development.

Lucknow, therefore, was an obvious choice for holding the 5<sup>th</sup> Congress of Federation of Asian-Oceanian Neuroscience Societies and the XXVIII Annual meeting of Indian Academy of Neurosciences. The city was a buzz with neuroscience activities from November 25 to 28, 2010 and played host to eminent neuroscientists from Asian and Ocean regions, USA, Europe and across the country. A special feature of the event was participation of a large number of young students and researchers from Asian-Oceanian region.

We are happy to present a brief report and some glimpses of the memorable neuroscience event held for the first time in the country.

**Rakesh Shuka**  
President, IAN

**P.K. Seth**  
President, FAONS



**Prof. P.K. Seth**  
President, FAONS



**Prof. Rakesh Shukla**  
President, IAN

# *Indian Academy of Neurosciences (IAN)*

The Indian Academy of Neurosciences (IAN) came to existence in 1982 with the efforts of Late Prof. K.P. Bhargava, Prof. Mahdi Hasan, Prof. S.S. Parmar, Prof. B.N. Dhawan, Prof. P.K. Seth and other eminent neuroscientists of the country. The Academy has been active in promoting neuroscience since then. It has been holding meetings regularly at different centers involved in neuroscience research in the country ever since its inception. The Academy regularly organizes and sponsors national and international symposia, workshops and conferences in areas of current interest. It has established international linkages with IBRO, FAONS, etc.

The Academy has instituted awards for poster and oral presentations and published work for young investigators. In addition, travel awards / fellowships are given to encourage students and younger neuroscientists for attending the annual conferences of IAN. The Academy recognizes eminent neuroscientists in India and abroad by electing them as Fellows and Honorary Fellows. The Academy has instituted annual B.K. Bachhawat Life-time Achievement Award in Neuroscience. This award is given to a scientist for his/her outstanding contributions in neurosciences. Recently, K.T. Shetty Memorial Oration has been instituted and is delivered annually. The Academy publishes a Newsletter and a quarterly Journal - Annals of Neurosciences (since 1991). It has published a comprehensive status report entitled "Neurosciences in India".

Established with few neuroscientists, the Academy has grown into a sizable organization of dedicated members with good amalgamation of basic and clinical researchers. At present it has around 50 Fellows and 800 life members from India, Germany, Japan, Poland, Saudi Arabia, Sri Lanka, South Africa, UK and USA. Annual meetings of the Academy are attended by many of its foreign members and other neuroscientists and thus provide a unique forum for interaction among the neuroscientists from India and abroad.

You may visit IAN's website <http://www.neuroscienceacademy.org.in/> and go through an article entitled 'Brief History of the Indian Academy of Neurosciences' by Prof. Mahdi Hasan in 'Neuroscience in India' for further information.

## **IAN Officers**

**President** : Rakesh Shukla, Lucknow

**Dean** : I.K. Patro, Gwalior

**General Secretary** : M.K. Thakur, Varanasi

**Secretary (HQ)** : Vinay K. Khanna, Lucknow

**Treasurer** : A.K. Agarwal, Lucknow

**Immediate Past President** : B.N. Dhawan, Lucknow

# *Federation of Asian-Oceanian Neuroscience Societies*

Prior to formation of FAONS, the Pan Asian Oceanic Neuroscience Commission as a chapter of the International Brain Research Organization (IBRO) was formed in 1987 at Tokyo at the initiative of Professors Masao Ito (Tokyo), David Ottoson (Stockholm) and Pavich Tongroach (Bangkok). Prof. S. Manchanda from India and representatives from other Asian countries were associated with the commission. The commission organized annual intensive training workshops in various Asian and Pacific Region countries to meet the shortage and immediate needs for research manpower in brain science.

FAONS was established in 1995 at Pataya, Thailand, as a successor of the Commission, with the primary objective of fostering linkages between Neuroscience Societies in the Asia Pacific Region. Prof. Masao Ito and Prof Pavich Tongroach were the Founder President and Secretary respectively. Prof. P.K. Seth and Prof. Wing Ho Yung are currently the President and Secretary respectively.

FAONS supports the organization of symposia on emerging topics of interest to region, provides travel awards to young students and investigators and several other activities. It successfully organized symposia at Hong Kong (December 2000) and Tehran, Iran (May 2004).

For more information, you may visit the website <http://neuroscienceacademy.org.in> and go through the article 'FAONS – Brief History' by Prof. P.K. Seth, President, FAONS,

## **Council Members**

- Australian Neuroscience Society
- The Chinese Society for Neuroscience
- Neuroscience Society of Taiwan
- The Hong Kong Society of Neurosciences
- Indian Academy of Neurosciences
- Iranian Neuroscience Society
- Israel Society for Neuroscience
- Japan Neuroscience Society
- The Korean Society of Brain and Neural Science
- Malaysian Society of Neurosciences
- Philippine Society for Neuroscience
- Singapore Neuroscience Society
- Neuroscience Society of Sri Lanka
- Thai Neuroscience Society
- Vietnam Neuroscience Society

## **FAONS Officers**

**President :** P.K. Seth, India  
**Secretary :** Wing Ho Yung, Hong Kong  
**Treasurer :** Hitoshi Okamoto, Japan  
**President Past :** Pavich Tongroach, Thailand  
**Honorary President :** Masao Ito, Japan



A view of the dais



Prof. P.N. Tandon apprising about Neuroscience activities



Dr. Shubha Tole delivering Plenary Lecture



Dr. Vinay K. Khanna proposing vote of thanks



Prof. Torsten N. Wiesel with Prof. V. Ravindranath

The 5<sup>th</sup> Congress of Federation of Asian-Oceanian Neuroscience Societies (FAONS) hosted by the Indian Academy of Neurosciences (IAN) was held along with its XXVIII annual conference at Lucknow from November 25–28, 2010. With the theme **Emerging Trends in Basic and Clinical Neurosciences**, the neuroscience event first of its kind organized in the country provided the current status of research in basic and clinical neurosciences, new information on brain development, mechanisms involved in the development of neurodegenerative disorders and ageing as well as advances in neurodiagnostics, neuroimaging, neurogenetics and neuroinformatics and their applications in basic and clinical research and treatment. This neuroscience event also led to identification of areas for collaboration in the Asian-Oceanian region and the capabilities and expertise to be further developed in the country. The event was attended by around 500 delegates predominantly from Asian-Oceanian region as well as neuroscientists from Australia, Canada, France, Germany, Ireland, New Zealand, South Africa, UK and USA.

The Department of Biotechnology (DBT), New Delhi was the major sponsor of this neuroscience meet. The Congress was supported by International Brain Research Organization (IBRO), FAONS, IAN, The National Academy of Sciences, India (NASI) and other science ministries and organizations of the country including Council of Scientific and Industrial Research (CSIR), New Delhi; Indian Council of Medical Research (ICMR), New Delhi; and local institutions.

The venue of the conference was centrally located Hotel Clarks Avadh, Lucknow which provided excellent conference facilities to run several scientific sessions concurrently.

The neuroscience event started with two important annual award sessions of Indian Academy of Neurosciences for the young neuroscientists - Tulsabai Somani Educational Trust Award and Dr. DM Kar Prize in the morning on November 25, 2010 and was attended by over 300 delegates.

Professor Rakesh Shukla, President, IAN welcoming the participants said that this is the best time to organize a conference of this magnitude in the field of neuroscience when great advancements are being made globally. The brief colourful inaugural function held at magnificent auditorium of Indira Gandhi Prathisthan, Lucknow, included a welcome dance depicting various states of India. Professor P.N.

Tandon, Chair, International Programme Committee, apprised the delegates about the Neuroscience activities being pursued in the country and Professor B.N. Dhawan, Chair, Local Organising Committee apprised about the activities being pursued in Lucknow. Professor Hitoshi Okamoto, Chair, Asia Pacific Regional Committee informed about the activities and programmes of the committee. Professor P.K. Seth, President, FAONS gave a brief history of FAONS and its objectives. Dr Garima Gupta, Scientist, Department of Biotechnology, conveyed the greetings of Professor M.K. Bhan, Secretary DBT and expressed happiness that such an important event has been organised. She said that the Department has drawn several programmes to support both basic and clinical neurosciences in the country. On behalf of DBT, she assured that the recommendations made during this neuroscience event will be considered for support. Professor Devika Nag, on behalf of the organizers felicitated Nobel Laureate, Professor Torsten N. Wiesel and Dr. Vinay K. Khanna, Organising Secretary, proposed vote of thanks.

The main attraction of the inaugural function was the Distinguished Lecture "The Role of nature and nurture in the development of vision" by the neuroscientist Nobel Laureate, Professor Torsten N. Wiesel, Rockefeller University, USA. With his pioneering experiments on cats which laid the foundation for the neuronal basis of perception in visual system. He explained the central visual pathways and image formation in the brain in a lucid manner. An audience of over 500 was present throughout the lecture. The Distinguished Lecture was followed by B.K Bachhawat Memorial Life Time Achievement Award Lecture on "Probing the neurobiology of depression and suicide: An integrated biological model", delivered by Professor G.N. Pandey, University of Illinois, Chicago, USA. Professor Pandey explained the abnormalities in various proteins and neuro-metabolites in the brain in clinical subjects of depression and the risk factors involved in suicidal cases. His meticulous work involved detailed mechanistic studies using postmortem samples of human brain and other changes in behavior pattern of depressed humans which are more prone to suicidal tendencies. Delivering the Second K.T. Shetty Memorial Oration, Professor U.S. Bhalla, National Centre for Biological Sciences, Bangaluru, India discussed his novel findings on tracking odorant trails in mammals. Professor Bhalla elegantly discussed how brain integrates sensory inputs, cognitive processes of path prediction and rapid motor control of timing and position of sampling.

The poster sessions were a great attraction. The students and



Prof. Torsten N. Wiesel being felicitated by Prof. Devika Nag



Prof. Hitoshi Okamoto informing about APRC activities



Prof. Torsten N. Wiesel delivering distinguished lecture



Prof. G.N. Pandey delivering B.K. Bachhawat Memorial Lecture



Prof. U.S. Bhalla being felicitated by Prof. B.N. Dhawan



Participants interacting during the Poster Session



Prof. V.M. Katoch being felicitated



Prof. Sarah A. Dunlop interacting with the students



Prof. Torsten N. Wiesel with Prof. S.S.Parmar



Prof. Torsten N. Wiesel being felicitated by Dr. T.K. Chakraborty and Dr. Madhu Dikshit

young investigators presented their most recent data with great enthusiasm. They discussed their exciting findings with experts and received valuable suggestions for further work.

The closing function was presided over by Professor V.M. Katoch, Secretary, Department of Health Research and Director General, Indian Council of Medical Research, New Delhi. Addressing the participants, Professor Katoch said that neuro-infection is an important area and a worldwide problem. He emphasized the need for collaboration among the countries of Asia-Pacific region to tackle the neurological problems of the region. The IAN elected Professor Torsten N. Wiesel as Honorary Fellow of the Academy and the fellowship was conferred on him by Professor Rakesh Shukla, President, IAN during the closing function. The IBRO Alumni awards for the best poster presentation, IBRO-APRC and FAONS Travel awards and Special Poster awards were conferred on awardees by Professor V.M. Katoch. President Elect of the FAONS, Professor Sarah A. Dunlop, informed about the plans of the next FAONS Congress.

To acquaint the foreign scientists and researchers with the traditional culture of Lucknow, local sight seeing programmes and cultural activities were held. A Ballet based on Lord Buddha's life and teachings was highly appreciated and enjoyed by the participants.

The neuroscience event besides exchanging information about the exciting developments in the field provided the platform to make new friends and identify areas for collaboration and training.

**Interaction with students and young researchers:** An interactive meet for young researchers with Professor Torsten N. Wiesel, Nobel Laureate, Rockefeller University, USA was arranged at Central Drug Research Institute, Lucknow in which around 150 young researchers and Postdoctoral Fellows from local research institutions and medical colleges participated. The invitee participants included recipients of INSA and NASI Young Scientist Medal Award Winners, CSIR Young Scientist and S.S. Bhatnagar Awardees. During discussions, the researchers shared their research highlights and enquired about future prospects of staying in science. Professor Wiesel said that Science should be pursued as a hobby and passion. He opined that the area of science requires very passionate researchers and equated scientists with musicians. He had an opinion that musicians are naturally talented people and they only need to polish their skills, which is applicable in science too.

### Visit of eminent neuroscientists to local schools:

Professor Peter R. Dodd, Australia; Professor M. Belmonte, USA and Professor G.B. Baker, USA visited the Regional Science City, Lucknow and interacted with about 400 students from different schools and colleges of the city. They also distributed prizes to the winners of painting competition organized during this time. In another programme, Professor Sarah A. Dunlop, Australia; Professor Elizabeth L. Scarr, Australia; Professor S. Duan, China; Professor A.J. Greenshaw, Canada and Professor M. Belmonte, USA visited City Montessori School (CMS), Gomti Nagar and Pioneer Montessori Intermediate College (PMIC), Vikas Nagar and interacted with about 350 students at CMS and about 200 students at PMIC. The students were inquisitive and asked questions about the future prospects in neuroscience and were answered by the expert neuroscientists. The visiting scientists were impressed with the depth of the knowledge of the students and wished success to the young students for their future endeavors. A visit of the young overseas students and investigators was arranged to see the NMR and telemedicine facilities at SGPGIMS, Lucknow which was an exciting experience for them. An interactive meet of NASI Fellows and members with the Chinese delegates was also organized to discuss research areas of mutual interest.

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Cultural Evening - Thrilling performance



Making Friends



Sharing views with guests



Prof. Torsten N. Wiesel interacting with young researchers



A view of audience



Prof. M.K. Thakur interacting with the audience



Prof. Wing-Ho Yung delivering invited lecture



Prof. Mahdi Hasan having discussions

## SCIENTIFIC PROGRAMME

The scientific programme was planned under the guidance of an International Programme Committee and National Advisory Committee and organized by the Local Organizing Committee. The details are given on the website of IAN. It included six plenary lectures, fourteen invited lectures and fourteen symposia on focused themes.. Apart from this, eight oral sessions, two technical lectures and two poster sessions were also held.

### ► PLENARY LECTURES ◀

1. Natural products as a resource for treatment of Alzheimer's disease: Vijayalakshmi Ravindranath, Indian Institute of Science, Bangalore, India
2. Glial cells and synaptic plasticity: Shumin Duan, Zhejiang University, Hangzhou, China
3. Towards a blueprint for building the brain: Shubha Tole, Tata Institute of Fundamental Research, Mumbai, India
4. Zebrafish as a model system for study of fear: Hitoshi Okamoto, RIKEN Brain Science Institute, Saitama, Japan
5. Plasticity of pattern formation in spatial recognition: Y.S. Chan, The University of Hong Kong, Hong Kong
6. Neurotrauma: Basic science to clinical trials for spinal cord injury: Sarah A. Dunlop, The University of Western Australia, Perth, Australia

### ► INVITED LECTURES ◀

1. Amine Oxidase Inhibitors as Neuroprotective Agents: Recent Developments: Glen B Baker, University of Alberta, Edmonton, Canada
2. Role of Microglia In Neuronal Damage in The Hypoxic Developing Retina: Charanjit Kaur, National University of Singapore, Singapore
3. Collateral Function of The Circle of Willis And Ceylon Green Tea in The Prevention of Stroke: Ranil de Silva, University of Sri Jayewardenepura, Nugegoda, Sri Lanka
4. A Quest For Alternative Estrogen Replacement Therapies And Their Effects on Neural Structure And Functions: Raj D Mehra, All India Institute of Medical Sciences, New Delhi, India
5. Aluminum Neurotoxicity: Behavioral, Neurochemical And Ultrastructural Changes In The Rat Prefrontal Cortex and Hippocampus; Therapeutic Potentials of Bacopa Monniera (Brahmi): Mahdi Hasan, Sandeep Tripathi, Kalyan Mitra, Abbas A Mahdi, CSM Medical University, Lucknow; Central Drug Research Institute, Lucknow, India
6. Role of Endothelin (Et) And Its Receptors In Alzheimer's Disease: Anil Gulati, Midwestern University Chicago Downers Grove, IL, USA
7. Brain Cholinergic Mechanisms in Ventral Striatum: Implications for Alcohol Dependence: CD Dwivedi, S Rahman, R Sajja, South Dakota State University, Brookings, USA
8. Epigenetic Modifications in Mouse Embryonic Neural Stem Cells Exposed to Different Glucose Concentrations: S T Dheen, S Sukanya, J Shweta, SSW Tay, BHBay, National University Health System, Singapore
9. Serotonin And Reward: Basic And Clinical Aspects: Andrew Greenshaw, University of Alberta, Edmonton, Canada
10. Maternal Thyroid Hormone Regulates Molecular Cues And Governs Early Fetal Neocortical Neuronal Migration: Madan M Godbole, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India
11. Understanding The Scientific Basis of Drug Dependence; A Step Towards Target Oriented Pharmacotherapeutic Options: Chanda K Kulkarni, St. John's Medical College, Bengaluru, India
12. S100a9 Knockdown And Knockout Attenuate The Learning And Memory Impairment And The Neuropathology In Tg2576 Mice: Yoo-Hun Suh, Seoul National University, Seoul, Korea
13. Potential Of Indian Herbal Drugs For Alzheimers Disease: Yogendra Kumar Gupta, Jogender Mehla, All India Institute of Medical Sciences, New Delhi, India
14. Japanese Encephalitis: An Overview: UK Misra, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Rae Bareilly Road, Lucknow, India

## AWARDS

### **Tulsabai Somani Educational Trust Award**

Sonali Kataria, Pavan Kumar, Mukesh Varshney, Pushpa Dhar, Raj D Mehra; All India Institute of Medical Sciences, New Delhi, India

*Estrogen Exerts Neuroprotective Effects by Regulation of p-CREB, bcl2 and bax in the Subiculum of Female Rats*



### **D.M. Kar Prize**

Madhu Sethi, J M Kaul, S Mishra, N Vasudeva; Maulana Azad Medical Collage, New Delhi, India

*Morphogenesis of the cochlear ganglion in human during prenatal period*



### **S.S. Parmar Research Foundation, USA Prize**

Ashish Kumar, M K Thakur; Biochemistry & Molecular Biology Lab., Department of Zoology, Banaras Hindu University, Varanasi, India

*PS1 and PS2 are expressed differentially in mouse cerebral cortex during development*

Lalit P Chandravanshi, Rajesh S Yadav, Rajendra K Shukla and Vinay K. Khanna; CSIR- Indian Institute of Toxicology Research, Lucknow, India

*Neurobehavioral toxicity of arsenic in developing rats*



### **Jyotsnamoyee Raghunath Bhattacharya Prize**

Nisha Patro, Meghna Shrivastava, Surya Tripathi, Ishan K. Patro; School of Studies in Neuroscience, Jiwaji University, Gwalior

*S100 $\beta$  upregulation: A possible mechanism of deltamethrin toxicity and motor coordination deficits, Neurotoxicology and Teratology 31 (2009) 169–176*



### **Best Paper Awards from Organizers (For Posters)**

1. SY Yau, CD Lee, BWM Lau, YP Ching, TMC Lee, KF So; The University of Hong Kong, China: Mild Stress-induced Hippocampal Cell Proliferation and Dendritic Complexity Is Associated with Improved Spatial Learning in Rats
2. Paramita Sen Gupta, M Das, A Das Bhowmik, S Sinha, K Mukhopadhyay; Manovikas Biomedical Research and Diagnostic Centre, Kolkata, India: Study on COMT and MAO A gene polymorphisms in Attention Deficit Hyperactivity Disorder (ADHD) patients from eastern India
3. Nimmi Baby, P Rangarajan, E A Ling, S T Dheen; National University of Singapore, Singapore: Analysis of RUNX1T1 expression in microglial cells of the rat brain
4. Raghavendra Singh, T Sengupta, J Vinayagam, N Nagashayana, B Gowda, P Jaisankar, KP Mohanakumar; Indian Institute of Chemical Biology, Kolkata, India: Aqueous methanolic extract of Hyoscyamus niger seeds attenuates. OH generation by controlling mitochondrial bioenergetics and oxidative enzymes to protect against parkinsonism in mice
5. Arpita Sharma, Nisha Patro, IK Patro; School of Studies in Neuroscience, Jiwaji University, Gwalior, India: Influence of minocycline on neurodegenerative changes and motor behaviour following lipopolysaccharide induced neuroinflammation in rat brain

Closing ceremony  
& Awardees

### **IBRO-APRC Alumni Awards**

1. **Preethi Hegde**, Laxmi T Rao; National Institute of Mental Health and Neuro Sciences, Bangluru, India: Timing of environmental enrichment exposure affects extinction of fear memory in rats
2. **Hossein Azizi**, Semnani Saeed, Mirnajafi-Zadeh Seyed Javad, Rohampour Kambiz, Hassan Azhdari Zarmehri; Tarbiat Modares University, Tehran, Iran: The Orexin-1 Receptor Antagonist SB-334867 Attenuates Signs of Naloxone-Precipitated Morphine Withdrawal in Rats
3. **M Javan**, F Pourabdolhossein, M Javan, S Mozafari, BA Demeneix, J Mirnajafizadeh; Tarbiat Modares University, Tehran, Iran: Knocking down of Nogo Receptor Potentiates Endogenous Repair of Demyelinated Rat Optic Chiasm by Neural Stem Cells
4. **Pretty Garg**, Sadhna Singh, Pankaj Seth; National Brain Research Centre, Manesar, India: HIV - 1 Tat Alters Intercellular Communication in Human Fetal Brain Derived Neural Stem Cells
5. **Proshanto K Saha** and Indramani L Singh; Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi: Task Switching & Individual Differences in Cognitive Control of Attention: Psychophysiological Evidences (EEG/ERP)

### **FAONS APRC Travel Awards**

China – Hong Kong - 03; India - 02; Iran - 11; Singapore - 02; Sri Lanka - 01

### **IAN Travel Bursaries**

India - 32

## *R*ecommendations

- Exchange programmes for the exposure of young researchers / students to the modern neuroscience be initiated in Asia-Pacific Region to build up capacity in neuroscience research in India and Asian-Oceanian region. The Department of Biotechnology, Ministry of Science and Technology, Government of India should consider to institute at least five fellowships for faculty and 10 for young researchers / students.
- Workshops and hands on training courses be run at regular intervals in India and the Asia-Pacific Region to train young researchers in identified areas. Indian Academy of Neurosciences should help in identifying centres / suitable faculty and candidates in the country and co-ordinate the activities.
- Basic and clinical research be geared up on neurodegenerative disorders particularly on Parkinson's disease and aging with focused aim to have translational impact for better quality of life in the society.
- Role of gene-environment interaction in neurodegenerative diseases be studied. Multi-Centric projects in the country and international collaborative projects in the Asian-Oceanian region be developed (participants from Japan, Sri Lanka, Australia, Singapore exhibited lot of enthusiasm for collaborative projects).
- Both basic and clinical studies on the role of stress in brain related disorders and their management be taken on priority.
- Developmental neuroscience studies to further understand the intricacies involved in developmental disabilities should be a priority area of research.
- Studies on natural products be geared up to utilize their potential in the management of neurodegenerative disorders.
- Neuroscience centers be established in medical schools and universities involving basic and clinical neuroscientists.

