

## An introduction to IBRO and the CDROM “Neuroscience: Science of the Brain”

### IBRO: Who we are and what do we do?



**IBRO, The International Brain Research Organization**, is an international network of neuroscience organizations that promotes and supports neuroscience training and research around the world. Our members have a common interest in the brain. Some are academic or industrial research scientists who are attempting to learn how the brain works. They also study the changes that occur when the brain goes wrong in the hope of discovering new cures and treatments. Other members are doctors and clinical practitioners who treat patients who suffer from psychiatric illnesses and brain disorders. Many of us are teachers and students.

IBRO is active all around the world. Our members are divided into six regional groups. Our primary purpose is to support young people who wish to enter careers in brain research or become clinicians treating psychiatric disorders. The six world regions are:

- **Africa Regional Committee (ARC)**
- **Asia-Pacific Regional Committee (APRC)**
- **Central and Eastern Europe Regional Committee (CEERC)**
- **Latin America Regional Committee (LARC)**
- **US/Canada Regional Committee (NARC)**
- **Western Europe Regional Committee (WERC)**

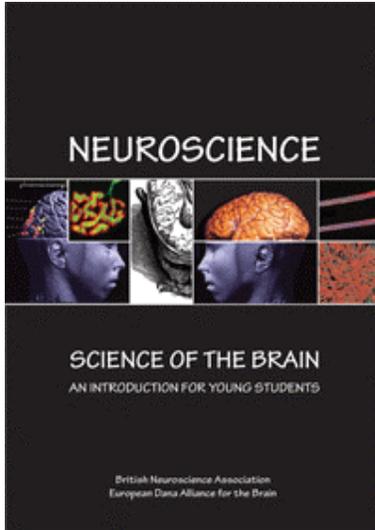
Throughout the world IBRO runs **Workshops and Schools**, teaching young scientists about the brain (neuroscience) and giving them the opportunity to learn practical skills for research. We provide **Studentships and Postdoctoral Fellowships** so that aspiring neuroscientists from developing countries can travel and work in the world's most prestigious laboratories. We help young people who have been tutored by world-renowned neuroscientists to return to their home countries and set up laboratories where they will study the brain disorders that are important to them and their own communities. We help these **Returning Scientists** to develop their careers in their own countries by giving them access to our equipment exchange program (**IBRO-Equip**) and knowledge database, **IBRO-Edu**. We also help young people travel to international conferences where they can present their own research findings for discussion and learn about the most recent advances in their field. The members of IBRO hope that these activities will encourage brilliant young people from all over the world to fulfil their potential as neuroscientists.

This is a very important aspiration. The human brain is a fundamental part of our body as the nervous system controls everything that we perceive, think and do. Without a healthy brain, an individual cannot access reliable information about the world, and make appropriate physical and emotional responses. The brain remains one of the least understood parts of our body, yet illnesses relating to the brain affect almost every family. At least one in every four people will suffer a short- or long-term brain disorder at some point in their lives. Brain disorders affect the way we interact with each other and the manner in which our communities and families work. Often there is a progressive deterioration in mental faculties that eventually results in a need for long-term care and prevents the sufferer from making a social or economic contribution to their families.

Our limited understanding of the brain means that many brain disorders are presently untreatable and often sufferers are stigmatized. **Public Education about the Brain** can assist individuals, their families and communities to cope with brain disorders and access help. By working with schoolchildren, we hope to inspire a few young people to become the future brain scientists we so badly need.

The CDROM “**Neuroscience: Science of the Brain**” is part of IBRO's public education effort. It contains a booklet consisting of short articles about aspects of the brain. The British Neuroscience

Association (**BNA**) and European Dana Alliance for the Brain (**EDAB**) originally commissioned the booklet and the articles are written by leading neuroscientists. **IBRO** has commissioned the translation of this booklet into over 20 languages. We want to enable you to promote better public understanding of the brain. You are welcome to download these files, print and distribute the material in part or in its entirety to be used as part of any **Brain Awareness** event. You may also make copies of this CDROM. You may not use this material for personal gain.



The project to translate material for the purpose of public education was initiated in 2005. As a pilot exercise, the booklet was translated into Mandarin and Spanish. Volunteer translators for the remaining versions were recruited to the project in 2006. The project has been managed and organized by K. Esther Binns, Chair of IBRO's Public Education Committee). Esther would like to express her personal thanks to Duncan Banks of the BNA and Open University, UK for his considerable help and advice. Without Duncan these translations would not have been produced.

## IBRO in your region: the work of the regional committees



### Africa Regional Committee (ARC)

The ARC is made up of neuroscientists and clinicians who work in Africa. Some of our members also work in Europe and America but are of African origin and hold this world region in very high regard. Africa is IBRO's poorest region. Many citizens still do not receive any formal education, let alone have the opportunity to attend a university and learn about the brain.

Yet there are many extremely talented young people in Africa. There are also several universities with good reputations in medical science and biology. When young Africans are given the opportunity to learn, they exploit this potential to the full. These students are best placed to advance neuroscience in this region by studying the brain disorders that affect people on this continent.

In the 1970s, IBRO set out to develop neuroscience research and training in Africa. A series of workshops helped to identify the problems and chart a course of development. This initiative now continues under ARC. One of our major achievements has been the formation of the Society of Neuroscientists of Africa (SONA), which has organized an international neuroscience meeting biennially since 1993. The meetings have been held all over Africa: Nairobi, Kenya; Marrakech, Morocco; Cape Town, South Africa, Dakar, Senegal, and Abuja, Nigeria. The meeting provides a forum for African neuroscientists who rarely have the opportunity to attend international neuroscience conferences to present their work as well as interact with neuroscientists from outside Africa.

Since 2001, ARC has organized IBRO African Neuroscience Schools providing teaching and research training in neuroscience to junior faculty and graduate students. This programme has been highly successful. So far 14 schools have been held and nearly 250 students have participated. Students have gone on to obtain PhD in neuroscience in the USA, Canada and Sweden, as well as to visit laboratories in Italy, Australia and the UK.

ARC also supports regional neuroscience meetings in Africa promoting the formation of regional neuroscience societies. To date there are six African neuroscience societies represented on the IBRO Governing Council (Moroccan Association of Neuroscience, Kenya Society for Neuroscience, Association pour la Promotion des Neurosciences (DR Congo), Southern African Neuroscience Society, Nigerian Society for Neuroscience, Society of Neuroscientists of Africa). In addition, a number of African neuroscientists are represented on IBRO committees.

ARC also provides travel support for African neuroscientists to present their work at international conferences. Through the initiative of Marina Bentivoglio, there is also the Levi-Montalcini Fellowship, which provides support for African women to pursue higher degrees in Africa or outside. Through the support of the US/Canada Regional Committee, African students have also attended summer courses at the Marine Biology Laboratory, Woods Hole and Cold Spring Harbor Laboratory.

Raj Kalaria is Chair of the African Regional Committee. The booklet on this CDROM has been translated into Arabic, Farsi, French and Swahili at the request of some of our African members.

### Asia-Pacific Regional Committee (APRC)

This Committee covers the most diverse region of IBRO, both geographically and culturally. Member societies cover a vast area, from Japan to Australia and New Zealand and from Jordan to the Philippines. It includes members from wealthy nations with substantial neuroscience research communities such as Japan and Australia, emerging economies such as China and India, much smaller communities such as Iran, Malaysia, Singapore, Thailand and United Arab Emirates, as well as poorer countries where the only chance to study neuroscience is in another, wealthier country.

Many languages are used in teaching in this region. This CDROM has translations of the teaching booklet in Arabic, Bengali, Farsi, Hindi, Japanese, Mandarin and Punjabi.

IBRO trains students from the region in the latest neuroscience knowledge and techniques through its schools in Hong Kong, India and Thailand and associate schools in China, India, Thailand, Iran, and Singapore. Two more were held in Karachi (mid-November 2006) and Dubai (mid-December 2006). Local support provides matching funds for the schools programme, e.g the International Society for Neurochemistry co-sponsored a school in Singapore. There are more than 400 alumni from the educational programmes organized by APRC.

IBRO offers Exchange Fellowships to young neuroscientists to carry out research for six months in a host laboratory within the APRC region. Offers are made only to applicants who can provide strong justification that he/she would return to their home country after the exchange. IBRO supports travel awards for young people to attend courses in other countries, to present papers in conferences, as well as to participate in the congresses held by the Federation of Asian and Oceanian Neuroscience Societies (FAONS) every four years. The 4th FAONS Congress was held in Hong Kong, China, November 30–December 2, 2006 and included a mini-symposium for IBRO alumni.

New discoveries about the brain from laboratories in the Asia-Pacific region and the rest of the world will take centre-stage at IBRO's 7th World Congress of Neuroscience in Melbourne, Australia in July 2007. World-class brain research in the Asia-Pacific Region is done in the larger universities (such as in Tokyo, Osaka, Fukuoka, Beijing, Shanghai, Hong Kong, Seoul, Melbourne, Canberra and Sydney), as well as in Research Centres dedicated to neuroscience such as the RIKEN Brain Research Institute in Wako, Japan, the Institute of Neuroscience in Shanghai, the Institute of Biophysics in Beijing, the National Brain Research Centre near Delhi, the National Institute of Mental Health and Neurological Sciences in Bangalore, the Prince of Wales Medical Research Institute in Sydney, the Howard Florey Institute in Melbourne, and the new National Neuroscience Institute in Singapore.

Ying Shing Chan from Hong Kong has been the Chair of the Asia-Pacific Regional Committee since 2002. Elspeth McLachlan (Sydney) was the Founding Chair when the Committee was established in 1999.

### **Central and Eastern Europe Regional Committee (CEERC)**

Historically, the CEERC supports brain researchers from all former socialist Eastern European countries and now independent countries that were part of the USSR. Thus, besides Central European countries and Russia, which extends to the Pacific Ocean, the CEERC supports Armenia, Georgia, Azerbaidjan, and Northern Asian countries, too (Kazakhstan, Uzbekistan, Turkmenia, Tadjikistan, Kirgizia).

At the end of the twentieth century great political change occurred throughout our region. Many Central European countries have now joined the European Union and there has been a revolution in the politics of education, student mobility and science research. In many ways there is now little difference between Western and Eastern European countries in respect of brain research development and achievements. In recognition of the changes that have occurred, IBRO has recently brought together the neuroscience schools programmes of Western and Eastern Europe to create PENS (Programme of European Neuroscience Schools).

The CEERC meets each year to discuss strategic issues and applications... In 2006 we awarded 19 stipends to representatives of 12 countries of the region to attend the FENS Forum. Research awards within the region were given to R. Averkin (Ukraine) for work in Russia (Moscow) in 2006, and to M. Balcerzyk (Poland) for a short-term visit to Ukraine (Kiev). A new CEERC initiative, 'IBRO Lecturers' Visits to the Region' resulted in one award (up to 1,500Euros) for the visit of Prof. H. Atwood (Canada) to Kazan (Russia). Eight conferences are supported in 2006.

Thus IBRO is helping to train young Eastern Europeans to pioneer brain research in their home countries. Academics who have received training and support from IBRO include Natalia Lozovava (Ukraine), who is currently working on the effects of cannabis-like chemicals on the brain at the Center for Neurogenomics and Cognitive Research, Vrije Universiteit Amsterdam, Netherlands.

Pavel Balaban is Chair of the Central and Eastern European Regional Committee. There has been great interest in this translation project throughout Eastern Europe and we have been able to make the following translations: Armenian, Croatian, Greek, Polish, Romanian, Russian, Ukrainian. The translations into Farsi and Arabic may also be useful.

#### **Latin American Regional Committee (LARC)**

The LARC is active throughout Central America, the Caribbean and South America. It is made up of 14 neuroscience societies within the region. The most northerly is Mexico and the most southerly is Chilli. Many people in this region speak either Portuguese or Spanish and this booklet is available in both languages. The French version may be useful in some Caribbean areas.

The IBRO schools have helped to train many of the region's brightest young scientists. During 2006 alone there were five schools located in Argentina, Brazil, Chilli and Venezuela. A strong partnership between LARC and the Spanish Society for Neuroscience has resulted in a regular European School for Latin American students in Seville, Spain.

We are active in supporting the continued education and careers of the IBRO School Alumni through a range of travel and research fellowships. For example, **Lucia Francini**, Institute for Genetic Engineering and Molecular Biology (INGEBI), Buenos Aires, Argentina, is spending a year in Dr Bruce Lahn's laboratory, in the Department of Human Genetics, University of Chicago, Chicago, IL, USA. Her research relates to determining the genes associated with cognitive skills such as language and learning and the genetic deficits that can lead to problems such as schizophrenia, dyslexia, autism and attention deficit/hyperactivity disorder (ADHD). We hope that after this period of training Lucia and others will return to work in their home countries.

Help to return home after training is made possible by the **Return Home Programme**, which has recently announced the award of fellowships to two young neuroscientists in the region. So after respective training periods in Italy and Canada, **Elaine Gavioli**, Universidade do Extremo Sul Catarinense, Criciuma, Brazil and **Valeria Della-Maggiore**, Dept. of Physiology of the School of Medicine, Universidad de Buenos Aires, Argentina, will return to work in their home countries.

Marta Hallak is Chair of the Latin American Regional Committee.

#### **US/Canada Regional Committee (IAC-USNC/IBRO) and the Western European Regional Committee (WERC)**

The Largest and most active communities of brain research are based in either North America or Western Europe where they are well supported by the American Society for Neuroscience (SfN) and the Federation of European Neuroscience Societies (FENS), IBRO works closely with these organizations but reserves much of its resources for the four regions where neuroscience is less well supported. The US/Canada RC and WERC organize schools that bring students from around the world to the premier research departments and locations so that they can experience first-rate research with the worlds leading brain researchers.

We support studentships and fellowships for foreign students in North American and Western European laboratories and provide travel fellowships so that students can travel to the world's most prestigious Brain Science conferences.

Biology is widely taught in schools in these areas and neuroscience degrees are available in many universities. The booklet on this CDROM is useful for public education and high-school students (14-18 years) and is available in English and several other European languages (Portuguese, Spanish, French and Greek). Both North America and Western Europe have diverse multicultural populations in which some members of the community use the language of their country of origin rather than the first language of their nation. These individuals can be educationally disadvantaged in schools and communities where science is not taught in their first language. The non-European language translations of this booklet may be of great use for such groups. The full list of languages available can be found at the end of this document.

**IBRO is committed to education and training**



### **Workshops and schools**

Each of the IBRO regions organises schools and workshops so that the regions most promising students can be given training on particular areas of brain research and practical techniques. Together the regional committees run around 20 schools each year. The IBRO schools board supports and links these schools by offering advice on the organisation of individual schools and teaching programmes: Arranging for teaching materials to be shared and disseminated amongst the schools. Working in partnership with other national and international organisations providing similar teaching and learning opportunities. Our aims are to strengthen and expand the programme by attracting sponsors and new partnerships, help to publicize and explain the Programme to the membership and public. All the attendees at IBRO schools are eligible to become IBRO School Alumni and thereby benefit from the mutual support of other students and tutors throughout their future careers in brain research.

IBRO is committed to promoting the best practice in all areas of brain research and thus in addition to the above schools we run workshops devoted to the use and role of animals in research.

### **The Visiting Lecture team**

IBRO is working to bring the best academic teaching on neuroscience to students all over the world. Our **Visiting Lecture Team** is composed of five internationally recognised researchers who are able to offer an experiment based lecture course in basic neuroscience at host institutions in developing countries. The course normally covers; mechanisms of impulse conduction and synaptic transmission; structure, function and pharmacology of membrane receptors and channels; information processing in sensory systems; regulation of behavioural patterns; and neurodevelopment. Teaching is given in 35 lecturers over nine days. Since 1994 the VLTP has given 31 courses in 20 countries. These are amazing opportunities, as students from developing countries can rarely expect to be taught by world leaders in their field.

### **Fellowships**

Students that have attended the courses run by the visiting lecture team or attended IBRO schools may decide to begin a career in brain research. IBRO wants to foster the careers of the most promising young neuroscientists from diverse geographical and scientific areas. We focus our support on the less well-developed countries where funding for research is very limited. Fellowships are offered so that young scientists can broaden the scope of their training in neuroscience by working abroad in good laboratories, or participating at international neuroscience meetings.

### **Return home programme**

Students who have benefited from the best teaching opportunities through our **VLT, Schools and Fellowships** have the potential can become excellent neuroscientists. So it will not surprise you to know that they are sought after by academic and industrial institutions all over the world and often tempted to leave their home countries and take jobs in Western Europe and America. IBRO believes that this practice weakens the academic community in developing countries, so we try to encourage our students to make their careers in their country of origin. The **return home programme** provides grants, fellowships and travel assistance to support the careers of students who return to their countries of origin.

## Alumni Success Stories



Oliver Mazodze (left) with Andy Randall (right)

**Oliver Mazodze** an alumnus of IBRO's African schools in Kenya and South Africa travelled to the UK to spend 6 weeks as a visiting scientist in the neurophysiology laboratory at GlaxoSmithKline's Harlow research facility.

Oliver is tenured member of the Dept. of Biological Sciences at Bindura University of Science Education in Zimbabwe. Whilst in the UK he has learned in vitro electrophysiological techniques for the study of neuronal activity. He intends to use these techniques to begin researching the potential neurophysiologic effects of extracts derived from a widely used African medicinal plant. The training at GSK was under the guidance of Dr **Jon Spencer** and Professor **Andy Randall**, two scientists he first met in their capacity as tutors at the IBRO African School held in November 2004 in Nairobi.

**Wael Mohamed Yousef** attended IBRO schools in Mali and Kenya and now works as an assistant lecturer of neuropharmacology at the Faculty of Medicine, University of Menoufiya, Egypt.

Weal was awarded a scholarship from the Egyptian Government to study for a PhD in neuropharmacology with Professor **Byron C. Jones**, Biobehavioral Health and Pharmacology, at Penn State University, USA. During his 5 years in the USA Weal will learn advanced techniques in the neuroscience and work on the development of new drugs needed for many patients suffering from neurological diseases. Afterwards he hopes to return and work in Egypt.



Weal Yousef (left) with Byron Jones (right)

**Bin Liu** from a small island in the Shandong Province of China is one of just three people who have obtained a doctoral degree from this region. She obtained her PhD in Physiology from Qingdao University in China in 2004 and has since become an Assistant Professor at the Center for New Drugs Evaluation, School of Pharmacy in Shandong University.

In 2005 she won an IBRO Research Fellowship to work in the Department of Anatomy at Northeastern Ohio Universities College of Medicine. Her studies in the USA focused on observing the effects of gonadal steroid hormones against neurotoxins, which target the nigrostriatal dopaminergic system of rodents.

This fellowship has meant that Bin has received training in an excellent laboratory and is now well placed to contribute to neuroscience research in China.



Bin Liu

**Dimiter Prodanov** from Bulgaria attended an IBRO VLTP course in 1998, in Sofia, Bulgaria. He has recently been awarded the John G. Nicholls Fellowship for 2006. He will spend a year with Dr Jean Delbeke of the Department of Physiology & Pharmacology, the Neural Rehabilitation Engineering Laboratory at the Catholic University of Louvain, Brussels, Belgium.

The John G. Nicholls IBRO Fellowship was created in honour of John G. Nicholls who headed IBRO's Visiting Lecture Team Programme (VLTP) from 1994 to 2002. The Fellowship aims to assist annually one promising young researcher who wishes to further his/her training in

neuroscience at a distinguished foreign laboratory for one year. The successful candidate is expected to return to his/her home country after the training, bringing new knowledge and skills in the neurosciences.



## IBRO and Public Education on the brain



Given the impact that brain disorders can have on individuals, families and their communities and the high global prevalence of these illnesses, we believe that each person needs some understanding of the brain and how this part of our bodies can be kept healthy. So, together with other international organisations that support brain research we are working to improve the public's general understanding of the central nervous system.

**The Brain Campaign** is an initiative by many like organisation to encourage those involved in research to engage with public and share their knowledge and findings worldwide. While many of the organisations involved have focussed their effort on their own world region, IBRO is committed to public education in neuroscience in the developing world. We actively and financially support activities and events being organised by academics in developing countries and taking place in the most remote locations. We want all people in all corners of the globe to have access to public education about the brain. We want all governments and health programmes to take the brain and psychiatric illness seriously.

Since 2003 IBRO has supported this aspiration by helping to finance around 25 public education events in approximately 15 countries. A wide variety of events have received support. Some activities have taken place in schools in remote villages while others attract a massive audience by occurring at agricultural shows or in train stations. Sometimes the event covers many aspects of brain function and disease but at other times the focus is on a single disease or problem (eg Drugs, head injury and epilepsy) that is relevant to the local community.



Many of the events that we have supported in the past have taken place during a single week in March. This week is designated **Brain Awareness Week**. The organisations supporting Brain Awareness Week, which include IBRO, want this to be a global celebration of the brain where those involved in research explain the latest advances in understanding brain function and treating brain disorders to people all over the world. During Brain Awareness Week 2006 there were several hundred events in over 62 countries.

**Brain education events** including those that are part of **Brain Awareness Week** are attempting to spread knowledge of the brain to a wide audience that speaks in many languages. It is often helpful to back up an event with some literature. Unfortunately, suitable written material is often unavailable in local languages. IBRO has recognised this problem and is seeking to address the issue by providing **Multilingual teaching materials**. The booklet on this CDROM is available in the following languages: **Arabic, Armenian, Bengali, Croatian, English, Farsi, French, Greek, Hindi, Japanese, Mandarin, Polish, Portuguese, Punjabi, Romanian, Russian, Serbian, Spanish, Swahili, and Ukrainian.**

We hope that some of these translations will be useful in your work to promote better public understanding of the brain. If you would like to access these materials in other languages or are willing to make translations for us in another language we would be delighted to make contact with you.

## **Neuroscience: Science of the Brain.**

The original “English Language” version of this booklet was prepared and edited on behalf of The **British Neuroscience Association** and the **European Dana Alliance for the Brain** by Richard Morris (University of Edinburgh) and Marianne Fillenz (University of Oxford). You are reading one of the translations of the booklet that were commissioned by the public education committee of the **International Brain Research Organisation**. These translations have been made by members of **IBRO** as part of their global effort to improve public understanding of the Brain. IBRO is grateful to all the volunteers who have made these translations possible. See list

The graphic design of the original booklet was by Jane Grainger (Grainger Dunsmore Design Studio, Edinburgh). We are grateful for contributions from our colleagues in the Division of Neuroscience, particularly Victoria Gill, and others in the neuroscience community in Edinburgh. We also thank members of the University Department of Physiology in Oxford, particularly Colin Blakemore, and helpful colleagues in other institutions. Their names are listed below.

**The British Neuroscience Association (BNA)** is the professional body in the United Kingdom that represents neuroscientists and is dedicated towards a better understanding of the nervous system in health and disease. Its members range from established scientists holding positions in Universities and Research Institutes through to postgraduate students. The BNA’s annual meetings, generally held in the spring, provide a forum for the presentation of the latest research. Numerous local groups around the country hold frequent seminars and these groups often organise activities with the general public such as school visits and exhibitions in local museums. See <http://www.bna.org.uk/> for further information.

The goal of The **European Dana Alliance for the Brain (EDAB)** is to inform the general public and decision makers about the importance of brain research. EDAB aims to advance knowledge about the personal and public benefits of neuroscience and to disseminate information on the brain, in health and disease, in an accessible and relevant way. Neurological and psychiatric disorders affect millions of people of all ages and make a severe impact on the national economy. To help overcome these problems, in 1997, 70 leading European neuroscientists signed a Declaration of Achievable Research Goals and made a commitment to increase awareness of brain disorders and of the importance of neuroscience. Since then, many others have been elected, representing 24 European countries. EDAB has more than 125 members. See <http://www.edab.net/> for further information.

**The International Brain Research Organisation** Is an independent, international organization dedicated to the promotion of neuroscience and of communication between brain researchers in all countries of the World. A present we represent the interests of about 51,000 neuroscientists in 111 countries. Since our formation in 1960 we have set up a number of active programmes to stimulate international contacts in brain research. We sponsor Symposia and Workshops and Neuroscience schools, worldwide. We offer post-doctoral fellowships and travel grants to students from less favoured countries. We also publish the Journal “Neuroscience”. See <http://www.ibro.info/> for further information.

The project to translate this booklet was initiated in 2005 by myself as chair of the IBRO Committee for Public Education. Special thanks are due to Duncan Banks of the British Neuroscience Association and Open University, Milton Keynes, UK who has made it technically possible to make so many translations and produced the CDROM.

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