

COMMENTARIES

Editorial Comment

JOURNAL OF ENVIRONMENTAL NEUROSCIENCE AND BIOMEDICINE – A NEW JOURNAL AND A NEW EXPERIMENT

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The Journal of Environmental Neuroscience and Biomedicine now begins. With this inaugural issue, the Editor-in-Chief, Polycarp Nwoha, has set in motion a process of scientific communication that is notable on several levels. First, JENB offers a forum to the scientific community for publication of research articles related to those issues of particular interest and relevance to Africa. The journal will address scientific questions that fall within the intersection of neuroscience and the environment as related to health and disease – areas that are both intellectually stimulating as well as of practical consequence.

From a sociological point of view, JENB represents an emerging trend in the globalization of science. As an online journal, the opportunity is here for investigators in Africa to instantly share their research with a worldwide audience. The trend toward globalisation is also evident in the sense that it will be managed and published from within Nigeria with contributors and editorial input from across the world. The democratization of science, as represented here by JENB, is undeniable. New discoveries and new theories are increasingly being communicated outside the traditional publication venues for science. JENB continues this trend in terms of both technology and geography.

In a sense, JENB itself is an experiment. Given this new opportunity for scientific publication in Africa, how will JENB impact education, research, medicine, and ultimately the lives of Africans? We live in a time of accelerating change to our environment. The impact of

pollution on human health – particularly on the CNS – is of great concern because the developing brain is highly sensitive to many industrial chemicals. There has been insufficient research to fully understand the magnitude of the problem. JENB could be of great importance in publishing research related to such an issue. Whether it is a success depends on you. The readers, physicians, scientists and others who participate in this experiment will provide the intervening variable in the equation whereby scientific questions are studied and then related back to the human condition. As JENB is international in scope, I hope this endeavor will also bring together the best research efforts in a publication that will foster scientific cooperation and interaction in delightfully unexpected ways.

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The Journal of Environmental Neuroscience and Biomedical Research (JENB) is a new journal that adds to the diversity of journals in the scientific world. Its novelty lies in its vision of incorporating works of researchers from Africa and the Third World with those from the developed world, for the sole aim of advancing human health. The Journal will achieve this by encouraging collaborative research and ideas and revealing hidden natural potentials that may have positive impact on the environment; and exposing those that would have negative impact. The Journal has a great future considering the composition of the Editorial Board which is made up very accomplished and dedicated scientists from across the continents. The JENB will promote not only the exchange of ideas but also of materials, equipment and methods necessary for quality scientific research across the globe. Hence the Journal publishes not only original research papers but also communications, news and commentaries. This maiden issue is tailored to providing insight into what the Journal will stand for: the quality of articles that it will be publishing. The maiden issue contains not only quality original research articles from Africa and beyond but also abstracts of papers presented at the first

international neuroscience conference organized by the Institute of Neuroscience and Biomedical Research, Owerri, Nigeria, in July 2006. By publishing abstracts from quality scientific meetings the Journal intends to encourage the organization of conferences, workshops and seminars. These will culminate in providing a unique forum for scientific integration and advancement. It is a journal with a great future. I strongly support this journal and warmly recommend you all to enthusiastically support it. Publish in it, advertise in it and make helpful suggestions. I salute the hard work of the Editor-in-Chief, Polycarp Umunna Nwoha, in putting together this great journal, and I look forward to reading your articles in future issues.

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Starting a new journal is a daunting task and starting a new journal in Africa is even more daunting. But here we have it – the first issue of the Journal of Environmental Neuroscience and Biomedicine, an international journal which marks a significant milestone in the coming of age of Neuroscience in Africa. The development of neuroscience in Africa has been slow but steady. Since the 1980s a number of regional neuroscience societies such as the South African Neuroscience Society, the Kenyan Society for Neurosciences, the Moroccan Association for Neuroscience and the Nigerian Society for Neuroscience have been founded. The Society of Neuroscientists of Africa (SONA), founded in 1993, has now organized seven biennial conferences to promote the development of neuroscience research, training and teaching in Africa.

Aiding the development of Neuroscience in Africa have been the contributions of the Society for Neuroscience and the International Brain Research Organization (IBRO), whose African Regional Committee has organized the neuroscience schools program since 2000. To date there have been 14 IBRO neuroscience schools programs throughout Africa. IBRO also provides visiting lecture teams, educational resources, support for libraries and an online guide for young neuroscientists through the Map

and Compass program [www.ibro.org]. With the IBRO schools program and support from the International Society for Neurochemistry and other societies, many students from all areas of Africa have been exposed to short courses in Neuroscience. The continued involvement of IBRO ensures that the development of neuroscience is supported worldwide.

And so African students are being trained in neuroscience methods and are able to present the results of their experiments at local and regional neuroscience meetings throughout Africa, but where are they able to publish the results of their research? The Pan African Association of Neurological Sciences publishes The African Journal of Neurological Sciences and now there is the Journal of Environmental Neuroscience and Biomedicine, published by the Centre for Scientific Investigations and Training (CSIT), Owerri, and the Institute of Neuroscience and Biomedical Research (INBR) in Owerri, Nigeria.

Following from the first International Neuroscience Congress on Environment and the Developing Brain at the Institute of Neuroscience and Biomedical Research (INBR) in Owerri, Nigeria in July 2006, it was clear that there was a need for an international journal which could take a multidisciplinary approach to environmental issues in neuroscience. These issues include the physical and social environment as well as diseases, parasites and pollutants and how these factors impact the development, maturation, function and deterioration of the brain. As stated by Polycarp Nwoha in his welcome address at the first INBR International Neuroscience Congress “myriads of environmental hazards affect the human nervous system, leading to disordered behaviour and debilitating diseases”. Of course there are also environmental factors which stimulate and facilitate neural development and neural function and prevent neural degeneration and it is important to discover the environmental factors which enhance brain function.

It was Donald O. Hebb who first examined the effects of environmental influences on intellectual and emotional behaviour in rats, dogs and humans. He concluded that “all behaviour is dependent both on heredity and environment” and stated that it was meaningless to ask how much of a given

behaviour is due to heredity or environment as “this is exactly like asking how much of the area of a field is due to its length, how much to its width” (Hebb, 1953, p.44). Hebb’s ideas led others to examine the effects of environmental experiences on the development and function of the brain. Decades of such studies have found that environmental experience can affect neuron size, neuron density, dendritic branching, dendritic spine density, number of synapses and other measures of brain function (Kolb et al., 1998; Mohammed et al., 2002).

Environmental variables mediate neural growth and function by modulating the action of neurotransmitters, neuropeptides and neurotrophic factors and this can influence the development and degeneration of the brain as well as recovery from brain injury (Kolb et al., 1998; Mohammed et al., 2002; Lewis, 2004). Stroke, epilepsy, Alzheimer’s disease and Parkinson’s disease as well as psychiatric disorders and recovery from traumatic brain disorders are all influenced by environmental variables (Nithanantharajah & Hannan, 2006).

More importantly, as found by Hebb, the effects of environmental influences on brain development can have lifetime consequences for brain health, brain disease and cognitive function (Gluckman et al., 2005; Olness, 2003). Malnutrition, disease, head injury, birth asphyxia and prenatal exposure to drugs, alcohol or environmental toxins can all lead to disorders of neural and cognitive development, which last a lifetime. Likewise famine, natural disasters, war, child neglect and abuse and social isolation are factors in the social environment, which can compromise brain development and function (Olness, 2003).

The Journal of Environmental Neuroscience and Biomedicine fills a unique niche in neuroscience as it focuses on basic and clinical research on the impact of the environment on brain and behaviour. This first issue illustrates that theme by including papers on the effects of malnutrition, dietary constituents, neurotoxins, alcohol, lead poisoning and anti-oxidants on the brain.

These papers, by an international group of scientists, focus on general problems of neural function, as exemplified by Wengian Yu, Liang Qiang and Peter Baas in their research on the effects of the neural environment on

microtubule function; the paper of My Mustapha Bouyatas and Halima Gamrani on the effects of lead poisoning on serotonergic activity in the brain of *Meriones shawi*; and the study by Nwoha Polycarp Umunna, Ayoka Abiodun Oladele, Ibeh Joseph Nkem and Okoro Iheanyi on the effects of malnutrition on mouse behaviour. George Hammons and Beverly Lyn-Cook investigate the effects of dietary constituents and neurotoxins on the development of neurological diseases. Other papers examine neurologic problems with an African focus, such as Kathleen Egbuna, Chimere Agomo and Rita Tita’s paper on the effects of the local liquor “Ogogoro” on brain development and function in rats.

These papers in issue One of the Journal of Environmental Neuroscience and Biomedicine provide an excellent introduction to the multidisciplinary range of topics to be covered in the journal and the international focus of the journal. These papers are complemented by the publications of the abstracts from the first International Neuroscience Congress hosted by the Institute of Neuroscience and Biomedical Research at Owerri, Nigeria, with the theme of “Environment and the Brain.”

Polycarp Nwoha and the journal editors are to be complimented for their ability to conceive and produce an exciting new journal in an environment which can be hostile, but which we hope will be supportive of the development of neuroscience in Africa.