Report on the IBRO/ISN African Neuroscience School, 4-13th December 2014.

The theme was "**Behavioral Bioassays in Neuroscience: Brain and Behavior from Invertebrates to Small Mammals**" organized by Nilesh B. Patel (University of Nairobi, Kenya), Richard Brown (Dalhousie University, Canada) and held at the International Centre for Insect Physiology and Ecology (ICIPE), Nairobi, Kenya.

The objective of the school was to show how behavioral bioassays are used to study questions relating to behavior and its neurochemistry. In particular, the emphasis was on the use simple techniques in behavioral bioassays for the study the unique small rodent species found in Africa and insects, especially insects, which are disease vectors, e.g. mosquitos, tse tse. This was the first time to have a session on insect behavior, the main purpose being to illustrate the contribution neuroscience can make to the control of disease vector for human and livestock health as well as for agriculture, and therefore the relevance of neuroscience for African development. In addition, the students were shown the equipment that can be built at low-cost using open hardware and software. This would encourage the students to carry our research at their home institutions especially where funds for research are limited.

The school was organized with lectures in the morning and hands-on practical sessions in the afternoon. In addition, each student gave a presentation of their current research, and in groups wrote a min-proposal to investigate a question using the experimental facilities of the different practicals. For both these activities the students were assigned tutors. There were also 2 journal club sessions.

And as in the past Richard Brown brought a suitcase full of books to be distributed among the students.

The Faculty

Nilesh B. Patel, University of Nairobi, Kenya
Richard Brown, Dalhousie University, Canada
Daniel Maisga, International Center for Insect Physiology and Ecology, Kenya
David Tchouassi, International Center for Insect Physiology and Ecology, Kenya
Adhil Bhagwandin, University of Wittswaterand, South Africa
Nouria Lakhdar-Gazhal, Mohammed V-Agdal University, Morocco
Lucia Prielo Godino, University of Lausanne, Switzerland
Tom Baden, Bernstein Centre for Computational Neuroscience, Germany

Students (10 women; 9 men)

A total of 82 applications were received from Africa; others came from Brazil (1), Pakistan (6) and Iran (1).

Selection criteria were the applicant must be studying and be resident in Africa and be enrolled for graduate studies (MSc or PhD) in African institution. Other criteria was gender balance and depending on availability of funds good geographical distribution of students.

Surname	First Names	Institution	Country
Boumansour	Lydia	University of The Sciences and Technology Houari Boumediene (USTHB)	Algeria
Ngoungoure Ndam	Viviane Laure	University of Yaounde I	Cameroon
Kediso	Teketel Eristu	Addis Abba University	Ethiopia
Okoth	Patrick	Masinde Muliro University of Science and Technology	Kenya
Berkiks	Inssaf	Universite ibn Tofail	Morocco
Uzokwe	Chioma Blessing	University of the Witswaterand	Nigeria
Isamoh	Theresa Ekenyong	University of Calabar	Nigeria
Mtintsilana	Asanda	University of Cape Town	South Africa
Billings	Brendon Kurt	University of the Witswaterand	South Africa
Olateju	Oladiran Ibukunolu	University of the Witswaterand	Nigeria
Swart	Patricia Cathryn	University of Cape Town	South Africa
Manchishi	Stephen Malunga	University of Zambia	Zambia
Issad	Salem Mamoun	University of The Sciences and Technology Houari Boumediene (USTHB, Algeria	Algeria
Bouabid	Safa	Mohammed V University	Morocco
Musembi	Christopher	Mt. Kenya University	Kenya
Currin	Christopher Brian	University of Cape Town	South Africa
Murithi	Mary K	Jomo Kenyatta University of Agriculture and Technology	Kenya
Karegi	Frida	University of Nairobi	Kenya
Nzomo	Antony	University of Nairobi	Kenya

School Lectures

1) The importance of Behavioural Bioassays in Neuroscience - Richard Brown
2) Designing animal experiments - Richard Brown
3) Experimental Design and Data Analysis – Nilesh B. Patel
4) Proposals: What are the issues? -Adhil Bhagwandin
5) Functional Neuroanatomy– Nilesh Patel
6) Neurotransmitters involved in behavior – Nilesh Patel
7) Developing the ability to measure behaviour: making an ethogram Richard Brown

8) Introduction to the organization and function of the nervous system and introduction to insects to study the nervous system–Tom Baden
9) Functional organization of Drosophila nervous system – Lucia Prieto
10) A conserved dedicated olfactory circuit for detecting harmful microbes in Drosophila - Lucia Prieto
11) Genetic tools in Drosophila for studying the nervous system – Lucia Prieto
12) Open source technology at the service of science – Tom Baden.
13) Electrophysiology in Insect Chemoreception - David Tchouassi
14) Sensory genes in insects - Daniel Masiga
15) Behavioural tests and confounds - Age related changes in learning & memory among multiple memory systems in mouse models of Alzheimer's disease Part 1 & part 2 - Richard Brown
16) Neurobiology of circadian rhythms – Nouria Lahkdar Ghazal
17) Neurobiology of sleep - Adhil Bhagwandin
18) Animal welfare in neuroscience Richard Brown
19) Monitoring sleep patterns – Adhil Bhagwandin
20) Studying small desert mammals Nouria Lahkdar Ghazal
21) Toxicity and Parkinson Disease - Nouria Lakhdar-Ghazal
22) Writing a research paper. Richard Brown
23) Naked Mole Rats – Nilesh Patel
24) The importance of epigenetics for neuroscience - Richard Brown

Practical Sessions

LAB 1.   Use of genetic tools to study the nervous system in Drosophila: ChR2, shibts, TRiPA in motor neurons.
LAB 2.   Adult olfactory trap assays
LAB 3.   Larval olfactory assay in wild type, olfactory mutants, and using ChR2 and shibts
LAB 4.   Proboscis extension assay in wild type flies and in ChR2-Gr5a.
LAB 5.   Using automated tracking systems in mouse behavior
LAB 6.   Open field test for testing activity
LAB 7.   Elevated plus maze for testing anxiety
LAB 8.   Light-dark box for testing anxiety
LAB 9.   Puzzle box for executive function
LAB 10. Morris water maze for testing spatial learning and memory

Note: Lab 5 and 6 were together; lab 7,8, and 9 together, and lab 10 by itself. For the program to work we needed to reduce the small mammals sessions to 3 rotations so there were 3 groups. For the insect work there were 4 groups.

Social Events and Outing

Social events included a welcome cocktail and final school dinner at the Nyama Choma Ranch restaurant. The outing on the free afternoon lunch at the Carnivore Restaurant followed by a game drive through Nairobi National Park, where all the wildlife except for elephants can be viewed.

Finances

Income			Expenditures	
	USD			USD
IBRO	26,782.80		Airfares	17,267.61
ISN	15,000.00		Accommodation	18,886.29
			School costs	1,589.31
			Social Events	1,680.09
			Staff/Student outing	2,434.87
Total	41,782.80		Total	41,858.18
			Balance	(75.38)

Note: Accommodation costs are full board and include use of lecture hall and 3 side rooms, and morning and afternoon tea/coffee. Water and drinks with meals were charged separately.

Exchange rate of Kshs 91.90 to 1 usd was used.

Acknowledgment

The organizers would like to thank the financial assistance received from the International Brain Research Organization (IBRO) and International Society for Neurochemistry (ISN). And for their participation, the Teaching and Research in Neuroscience for Development of Africa (TReND), and ICIPE and University of Nairobi for logistic, technical, and laboratory support.

School Website
Further information and lecture details can be found at IBRO African Neuroscience School website:
http://www.uonbi.ac.ke/projects/ibro/index.php?option=com_content&view=article&id=70&Itemid=85