



## International Society for Neurochemistry

### Report for the Schools Initiative Committee of the International Society for Neurochemistry

Name of the advanced school: **Specialized African Neuroscience School On “Neurobiology of Adaptations to Environment: Focus on African Biotopes”**

Location: **Dakhla, Morocco**

Dates: **June 18-24, 2014.**

Organizers:

Khalid El Allali. Comparative Anatomy Unit –URAC-49 CNRST, Hassan II Agronomy and Veterinary Institute, BP6202 Rabat-Instituts 10101 Rabat Morocco. Phone: +2126 61 14 04 70. Email address: [Khalid\\_elallali@yahoo.fr](mailto:Khalid_elallali@yahoo.fr).

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Local organizing committee:

Khalid El Allali, Nouria Lakhdar-Ghazal, Safa Bouabid, Mounir Ouzir (School secretariat) and Abdelkader Amellah

The Specialized African Neuroscience School On “Neurobiology of Adaptations to Environment: Focus on African Biotopes” was held in Dakhla, a city in the South of Morocco from June 18th to 24th, 2014. The school was jointly organized and financially supported by the International Society for Neurochemistry (ISN), the International Organization of Brain Research (IBRO) and the Moroccan -Cherifian Phosphates office-Foundation (FOCP). The three institutions supported this ambitious project to make this scientific event a success. The partners of this school were: the Hassan II Agronomic and Veterinary Institute (IAV Hassan II), the Association for the Promotion and vulgarization of Neurosciences (AVPN) and the University of the Witwatersrand, Johannesburg, South Africa.

The school was also sponsored by the local authority of the Wilaya of Oued Eddaheb Lagouira, province of Dakhla, the Hassan II Academy of Science and Technology, the International Research Network France-morocco on neuroscience (the GDRI-Neuro), the Academy of the Kingdom of Morocco, the University Agency of the Francophonie (AUF) and the National Research Foundation of South Africa.

This IBRO-ISN-FOCP Specialized African Neuroscience School on adaptations of African species provided an opportunity for 23 selected African students originating from different African countries including Morocco, Algeria, South Africa, Zambia, Cameroon, Nigeria, Kenya (see table below of participants), to acquire knowledge of the theoretical and technical advances in the neuroscientific study of animals in Africa and elsewhere, that can be applied to their own research. The training was performed by a panel of 10 professors and experts all with extensive experience in the neurobiology of adaptation especially of African animals, coming from Morocco, South Africa, Kenya, France and Netherlands (see table below of participants).

The school provided a 7-day comprehensive course (for details please see attached the scheduled program). The school was declared open by the organizers during an official opening ceremony with presence of the Wali and Governor of Dakhla, the General secretary of the Hassan II Agronomic and Veterinary and the Heads of local authorities and associations. The school started at the Sahara Regency Hotel located in the city of Dakhla with two general lectures: the first one ‘What is the environment? A global view of the formation and interaction of environments: focus on African environments’ by Pr. Nigel Bennett from South Africa and the second one: ‘The variety of environments on the African continent – what is in our own backyards?’ by Dr. Cornelia Voigt from South Africa. The first day schedule also involved 4 others lectures as a part of the session

1: 'Functional Neuroanatomy and Neurochemistry' which focused on basic knowledge about brain adaptations, neuroanatomy and neurotransmitter systems, receptors and signaling systems.

The school covered different aspects of the neuroanatomy and neurochemistry of adaptations split into two sessions, the first being 'Functional Neuroanatomy and neurochemistry' and the second being 'Brain, hormones and neuroplasticity'. The program included others sessions with lectures concerning the neurobiological process of adaptation in the special biotopes of Africa : this includes, survival of animals under arid biotopes in Africa / water and heat Stress, the retina and underground adaptation, biological rhythms and adaptation to the desert : example of the camel and a special session on sleep in African Mammals. The program of the school also involved two sessions of journal clubs devoted to the analysis of 5 selected scientific papers. During the second day, students began to design a research project on the topic of the school. They first learned, during an interactive workshops entitled 'How to design a research project on brain adaptation?' how to develop a research project concerning the neurobiology of adaptation to environment, and then, during the school, prepare a research proposal which was orally presented at the end of the school. The best project was awarded a prize of 4 copies of the textbook: Comparative Vertebrate Neuroanatomy, by Ann Butler and William Hodos. Moreover, the school provided one session on how to work on African animals. Students had also the opportunity to learn and to apply techniques during two technical workshops. The first was about techniques of recording body temperature rhythm in the camel – Surgery, implantation of devices, data analysis using free software and the second about immunohistochemistry and cytochemical techniques applied to the brain. During two other sessions, each of the 23 students gave a presentation of his/her research topic and work and had an interactive discussion with lecturers and the others students.

The school actively encouraged excellence by giving 3 prizes for the 3 best oral presentations. But also a prize for each student of the group which presented the best research project on neurobiology of adaptation in Africa. Students also had the opportunity to discuss their own PhD project and to learn about current trends in neurosciences from the school faculty. This school turned out to be an excellent platform for scientific and human exchange.

Besides the scientific and educational program, the school provided different social events that augmented communication and interaction between the faculty and the students from different countries. First, at the arrival to the hotel, a welcome party was offered with welcoming remarks of the organizers. Also during Day five of the school, a trip to the desert was organized with a special presentation of how the camel is adapted to this hostile conditions but also a discussion about a newly discovered fish (*Tilapia guineensis*) in this desert that is well adapted to small wetlands. The trip included a visit to an Ostrich ranch and a discussion of how ostriches survive in the desert. At the end of this day, a special Gala dinner was provided at Bab Al Bahr Hotel on a lovely terrace overlooking the bay of Dakhla with entertainment provided by two local music groups.

The evaluation of the School was made at two levels:

- An evaluation of the activities was done by students at the end of each day by providing their impression of each lecture and activity.
- An evaluation by students and faculty by completing the ISN form

The results of these different evaluations show that the overall satisfaction of students was 4.37/5 and they commended the faculty for high quality teaching and appreciated the topics of the school; they were very satisfied by:

- 1) The various valuable lectures reflected in the mean score of 4.13/5;
- 2) The interaction with the speakers
- 3) as well as the venue itself.

The students declared that this advanced school was very helpful for their own research projects and that they benefited from the different lectures and discussions with faculty. The faculty were also appreciative with an overall satisfaction score of 4/5.

In agreement with IBRO schools guidelines, alumni of this 36th IBRO School in Africa elected Ansa Cobham from Nigeria (ansacobham@yahoo.com) as class President and Ilias Marmouzi from Morocco (marmouzi.i@hotmail.fr) as the Secretary, who will keep the school group informed of all the future neuroscience activities in Africa. A page group was also created on the social network: facebook : [IBRO-ISN-FOCP Specialized African Neuroscience School - Dakhla 2014](#)

<b>List of Instructors</b>		
<b>Name</b>	<b>Address</b>	<b>Email</b>
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<b>Safa Bouabid</b>	Laboratory of Biological Rhythms Neurosciences and Environment- Faculty of Sciences , Mohamed V University, Rabat-Morocco) Phone : 0699538940	<b>safa.bouabid@gmail.com</b>

<b>List of students</b>		
<b>Name</b>	<b>Address</b>	<b>Email</b>
<b>Illke Bianca Philander</b>	University Of The Witwatersrand, 7 York Rd, Parktown, Johannesburg, South Africa	<b>i.philander@gmail.com</b>
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<b>Ansa Cobham</b>	University of Ilorin, Ilorin, Kwara State, Nigeria.	<b>ansacobham@yahoo.com</b>
<b>Faborode Samuel</b>	Department of physiology, University of Ibadan Nigeria.	<b>shaeunfabros@ymail.com</b>
<b>Folashade Adewole</b>	Department Of Pharmacology & Therapeutics, University Of Ibadan Nigeria.	<b>shadecrown127@yahoo.com</b>
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<b>Mary Murithi</b>	Jomo Kenyatta University of Agriculture and Technology P.O Box 62000 – 00200, Nairobi Kenya	<b>murithimary11@gmail.com</b>
<b>Maha Deliba</b>	Faculté des Sciences Biologiques, Université des Sciences et de la Technologie Houari Boumediene BP 32 El Alia Babezzouar, 16 120 Algiers Algeria	<b>delibamaha@hotmail.fr</b>
<b>Lydia Boumansour</b>	Université des Sciences et de la Technologie Houari Boumediene, BP 32 EL ALIA 16111 Bab Ezzouar Algiers Algeria	<b>lydiaboumansour@gmail.com</b>
<b>Stephen Malunga Manchishi</b>	The University of Zambia, Dept of Biological Sciences Great East Road Campus. P.O Box 32379. Lusaka, Zambia	<b>st.manchishi@yahoo.com</b>
<b>Njapdounke Kameni Jaqueline Stephanie</b>	University of Ngaoundere P.O Box : 454 Ngaoundere Cameroon	<b>kamsteph58@yahoo.fr</b>
<b>Mengue Ngadena Yolande Sandrine</b>	University of Yaounde 1 PO Box 812 Yaounde Cameroon	<b>Yolsandra89@gmail.com</b>
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<b>Fatima-Zahrae Inssi</b>	Fatima-Zahrae Inssi Comparative Anatomy Unit – URAC- 49 CNRST, Hassan II Agronomy and Veterinary Institute, BP6202 Rabat-Instituts 10101 Rabat Morocco	<b>inssi_fz@hotmail.com</b>
<b>Hassab Safae</b>	Department of Life Sciences, Faculty of Sciences, Mohammed V-Agdal University, Rabat Morocco	<b>safaehassab@gmail.com</b>
<b>Ilias Marmouzi</b>	Comparative Anatomy Unit –URAC-49 CNRST, Hassan II Agronomy and Veterinary Institute, BP6202 Rabat-Instituts 10101 Rabat Morocco	<b>marmouzi.i@hotmail.fr</b>
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<b>Najlae El Bousmaki</b>	Comparative Anatomy Unit –URAC-49 CNRST, Hassan II Agronomy and Veterinary Institute, BP6202 Rabat-Instituts 10101 Rabat Morocco	<b>najlae.ebsmk@yahoo.com</b>
<b>Abboussi Oualid</b>	University Hassan 1er, Faculty of Sciences and Technics Route of Casablanca Settat Morocco	<b>oualid.ab@gmail.com</b>
<b>Inssaf Berkiks</b>	Faculty of Sciences IbnTofail University Morocco	<b>berkiksinssaf@hotmail.com</b>



## **All participants in this African school neuroscience warmly thank the ISN for their support**

“ This is the best so far school attended. If other schools organizers can emulate this, I believe Africa will soon be a hub of scientific exploration. This is my word fantastic, interesting, remarkable, educating, enlightening, motivational, memorable. I can never forgot this Dakhla school” (Anonymous Students comment on ISN evaluation form)

**IBRO-ISN-FOCP Neuroscience School, June 18-24, 2014 Dakhla,  
Morocco : Financial Report**

<b>Sponsors</b>	<b>Entry</b>	<b>Equivalent MAD</b>	<b>Expenses MAD</b>	<b>Total expenses</b>	<b>Total</b>
ISN	19990.00 USD	163551.59(*)			163551.59

**Students travel  
tickets/transport**

Illke Bianca Philander (South Africa)		9890.33	179080.18	
Joshua Davimes (South Africa)		9890.33		
Limacher Aude'marie Maeva (South Africa)		9890.34		
Ansa Cobham (Nigeria)		11430.33		
Faborode Samuel (Nigeria)		11430.33		
Folashade Adewole (Nigeria)		11430.33		
Issa Yusuf (Nigeria)		11430.33		
Abdulmajeed Wahab (Nigeria)		11430.33		
Aminu Imam (Nigeria)		11430.33		
Mary Murithi (Kenya)		13617.40		
Maha Deliba (Algeria)		6528.40		
Lydia Boumansour (Algeria)		6528.40		
Kechkoul Lokman (Algeria) (**)		6528.40		
Sadouk Salma (Algeria) (**)		6528.40		
Stephen Malunga Manchishi (Zambia)		16937.40		
Njapdounke Kameni Jaqueline Stephanie (Cameroon)		12079.40		
Mengue Ngadena Yolande Sandrine (Cameroon)		12079.40		
<b>Moroccan students transport</b>				
Fatima Trebak		2056.40		
Fatima-Zahrae Inssi		2056.40		
Hassab Safae		2056.40		
Ilias Marmouzi		2056.40		

<b>Rajae Talbi</b>		2056.40	16451.2	
<b>Najlae El Bousmaki</b>		2056.40		
<b>Inssaf Berkiks</b>		2056.40		
<b>Abboussi Oualid</b>		2056.40		
<i>Lecturers travel Ticket/transport</i>				
<b>Nigel Bennett (South Africa)</b>		9321.1		
<b>Cornelia Voigt (South Africa)</b>		9321.1		
<b>Paul Manger (South Africa)</b>		10730.46		
<b>Joao Paulo Coimbra (South Africa)</b>		9321.1	91394.8	
<b>Adhil Bhagwandin (South Africa)</b>		9321.1		
<b>Karim Fifel (Netherlands)</b>		4139.60		
<b>William Rostène (France)</b>		6044.00		
<b>Nilesh Patel (Kenya)</b>		13617.40		
<b>Paul Pévet (France)</b>		6444.00		
<b>Khalid El Allali (Morocco)</b>		2056.40 + 2057.00		
<b>Nouria Lakhdar -Ghazal (Morocco) (**)</b>		2057.00		
<b>Marina Bentivoglio(**)</b>		6965,14		
<i>Students Hotel accommodation</i>				
<b>Illke Bianca Philander</b>		4744.7		
<b>Joshua Davimes</b>		4744.7		
<b>Limacher Aude'marie Maeva</b>		4744.7		
<b>Ansa Cobham</b>		4269.7		
<b>Faborode Samuel</b>		4269.7		
<b>Folashade Adewole</b>		4269.7		
<b>Issa Yusuf</b>		4269.7		
<b>Abdulmajeed Wahab</b>		4269.7		
<b>Aminu Imam</b>		4269.7		
<b>Mary Murithi</b>		4673.0	103472.9	

<b>Maha Deliba</b>		4673.0		
<b>Lydia Boumansour</b>		4673.0		
<b>Stephen Malunga Manchishi</b>		4744.7		
<b>Njapdounke Kameni Jaqueline Stephanie</b>		4744.7		
<b>Mengue Ngadena Yolande Sandrine</b>		4744.7		
<b>Fatima Trebak</b>		4673.0		
<b>Fatima-Zahrae Inssi</b>		4269.7		
<b>Hassab Safae</b>		4269.7		
<b>Ilias Marmouzi</b>		4269.7		
<b>Rajae Talbi</b>		4673.0		
<b>Najlae El Bousmaki</b>		4269.7		
<b>Inssaf Berkiks</b>		4673.0		
<b>Abboussi Oualid</b>		4269.7		
<b><i>Lecturers Hotel accommodation</i></b>				
<b>Nigel Bennett</b>		5900.5		
<b>Cornelia Voigt</b>		5900.5		
<b>Paul Manger</b>		5900.5		
<b>Joao Paulo Coimbra</b>		5484.5		
<b>Adhil Bhagwandin</b>		5900.5		
<b>Karim Fifel</b>		5700.5		
<b>William Rostène</b>		5900.5	57498.00	
<b>Nilesh Patel</b>		5900.5		
<b>Paul Pévet</b>		5009.5		
<b>Khalid El Allali</b>		5900.5		
<b>Staff travel tickets</b>	- <i>Safa Bouabid</i> - <i>Mounir Ouzir</i> - <i>Abdelkader Amellah</i>	2056.4 2056.4 2056.4	6169.2	
<b>Travel ticket of the represent of Hassan II Veterinary Institute opening ceremony</b>	- <i>Pr. Tligui Noursaid</i>	2056.4	2056.4	
<b>Staff Accommodation</b>	- <i>Safa Bouabid</i> - <i>Mounir Ouzir</i> - <i>Abdelkader Amellah</i>	5006.7 5005.5 5005.5	15017.7	
<b>Student/ lecturers Coffee Break</b>		14350.00 5750.00	20100.00	



<b>Welcome Cocktail</b>		8000.00	8000.00	
<b>Day trip to desert</b>	<i>Location of 8 four-wheel drive and guide</i>	17360.00	17360.00	
<b>lunch in the desert during the day trip</b>		8389.00	8389.00	
<b>Gala Diner</b>	<ul style="list-style-type: none"> <li>- <i>Cocktail</i></li> <li>- <i>Local Music and show</i></li> <li>- <i>Dinner</i></li> </ul>	8800.00 2650.00 8800.00	20250.00	
<b>Mini-Bus location:</b>	- <i>3 minibus for transport during the Gala diner</i>	1500.00	1500.00	
<b>Gifts</b>	<ul style="list-style-type: none"> <li>- <i>3 Students Best Oral Presentations Gifts</i></li> <li>- <i>4 textbooks Comparative Vertebrate Neuroanatomy, by Ann Butler and William Hodos for the group with best research project</i></li> <li>- <i>Mini Gifts for lecturer</i></li> <li>- <i>Mini gifts for students</i></li> <li>- <i>T-shirts of the School</i></li> </ul>	500.21 5500.00 992.45 1383.32 1865.00	10240,98	
<b>Material</b>	<ul style="list-style-type: none"> <li>- <i>USB 8 GB</i></li> <li>- <i>Pen</i></li> <li>- <i>Extension cords and power adapters</i></li> <li>- <i>Toner (5)</i></li> </ul>	1500.00 326.00 785.00 1290.00	3901.00	
<b>Printing</b>	<ul style="list-style-type: none"> <li>- <i>School banners x5</i></li> <li>- <i>Poster announcing</i></li> <li>- <i>Briefcase</i></li> <li>- <i>Scientific program</i></li> <li>- <i>Diploma</i></li> </ul>	2160.00 600.00 3540.00 3960.00 288.00	<b>10548.00</b>	
<b>Packaging and transport equipment to Dakhla</b>	<ul style="list-style-type: none"> <li>- <i>Packaging</i></li> <li>- <i>Transport by car x2</i></li> <li>- <i>Transport bu flight</i></li> </ul>	334.00 638.66 1100.00	2072.66	
<b>pharmacy</b>	- <i>Emergency kit and paramedical</i>	253.00	253.0	
<b>Sound system location</b>	- <i>Sound Equipment location</i>	921.00	921.0	
<b>Petty cash</b>	<ul style="list-style-type: none"> <li>- <i>Train trasnport</i></li> <li>- <i>Gazoil</i></li> <li>- <i>High way fees</i></li> <li>- <i>Parking</i></li> </ul>	75.00 600.00 176.00 270.00	1121.0	
<b>Salary for helping in the local organization during the period of the school</b>	- <i>Abdelkader Amellah</i>	2500.00	2500.00	

<b>reconnaissance mission and of preparation of the school at dakhla city from march 20-23, 2014</b>	- <i>Air ticket to dakhla</i>		8943,3		
	* <i>Khalid El Allali</i>	2056,4			
	* <i>Nouria Lakhdar-Ghazal</i>	2056,4			
	- <i>Hotel ( 2 single rooms/ 3 nights)</i>	2471,5			
	- <i>Meals for 2 persons/ 3 nights</i>	1800,00			
	- <i>Gazoil</i>	400,0			
	- <i>High way fees</i>	78,00			
	- <i>Parking</i>	81,00			
<b>Second mission of preparation of the school at dakhla city from June 1-4, 2014</b>	- <i>Air ticket to dakhla</i>		3065,4		
	* <i>Khalid El Allali</i>	2056,4			
	- <i>Meals for 1 persons/ 3nights</i>	450,00			
	- <i>Gazoil</i>	400,0			
	- <i>High way fees</i>	78,00			
	- <i>Parking</i>	81,00			
			<b>590305,72</b>		
<b>Total ISN subvention</b>		<b>163551.59</b>	<b>Total expenses</b>	<b>590305,72</b>	<b>Balance</b>
					<b>-426754,13</b>

**I received from :**

ISN (19990.00 USD) = 163551.59 MAD

ARC/IBRO (21000.00 Euros) = 227295.10 MAD

FOCP = 216000.00 MAD

<b>Total subventions</b>	<b>Total expenses</b>	<b>Balance</b>
<b>606846,69</b>	<b>590305,72</b>	<b>+16540,97</b>