

**The Chair,
CAEN of ISN**

REPORT ON RESEARCH VISIT TO ANOTHER LABORATORY – CATEGORY 1A

The title of the project I went to undertake in this visit was **The Role of Iron and Iron Related Proteins in the Pathogenesis of Vanadium induced Neurotoxicity.**

My Host and host Institution was Prof James R. Connor, Department of Neurosurgery, Pennsylvania State College of Medicine, Pennsylvania State University, USA.

I arrived in Pennsylvania State University, Hershey on 19th, August 2013 and was later introduced to the management, staff and students working in my host laboratory of the Neurosurgery section of the University as well as the equipment, the laboratories, animal core facilities, office space and all the necessary support towards a smooth settling, learning and research.

I received hands-on training on techniques in **CELL CULTURE, CYTOTOXICITY ASSAY, WESTERN BLOT, HISTOLOGY and IMMUNOHISTOCHEMISTRY.**

I was able to culture primary mature and immature oligodendrocytes as well as astrocytes. I treated the cultured cells with different concentrations of vanadium with or without the iron chelator, deferoxamine. I also found out from the experiment that iron deficiency can only reduce the rate of vanadium induced neurotoxicity at the LD50 dose.

The animal experiments involved the use of pregnant rat dams involving three treatment groups of four dams each. Group 1(ND-PBS) served as control while Group 2(ND-Van) dams were fed with normal diet and pup injected with 3mg/kg body weight of sodium metavanadate daily from post natal day (PND) 1-21. Group 3(FeD-Van) dams were fed with iron deficient diet and pups injected with 3mg/kg body weight sodium metavanadate from PND1-21. The pups from each group were sacrificed at two time points-PND15 and PND21. Before the sacrifice, open field test of behaviour, rotarod test of motor function and negative geotaxis, a test of motor, balance and vestibular function were performed across groups. Immediately after the last test, the pups were sacrificed by lethal injection and the brain harvested over ice. One half of the harvested brain was immersion fixed and was used for immunohistochemical staining with Myelin (MBP), glial (GFAP), microglia (iBA-1), activated astrocytes (nestin), oxidative stress (iNOS), oligodendrocytes progenitors (NG2), Ferritin and Transferrin receptor markers. The other half was frozen fixed and was used for quantitative analysis of these markers through western blotting.

In addition, I investigated changes in the rat brains of some pups from each group at PND20 using magnetic resonance imaging (MRI). Data generated is currently been analysed.

During my stay, I attended seminar presentations, laboratory and journal club meetings by visiting professors, researchers and some students of the University. I was exposed to the available research facilities and equipment available in the laboratories of the department

and university with lessons on their functions and I had the opportunity to try my hands on several of them.

This research visit broadened my scope of science and has empowered me significantly to better undertake neuroscience research. I returned to Nigeria on the 24th of October, 2013 and I resumed work in the Neuroscience unit of the Department of Veterinary Anatomy on the 28th of October 2013. I recently presented my research finding through an abstract and poster at the Neuroscience Society of Nigeria, and ISN was acknowledged.

I want to sincerely thank CAEN and ISN once again for the grant and the significant and indelible mark this visit has made on my sense of research. I pledge to acknowledge the ISN in all proceeding journal articles that may arise from this visit in the nearest future.

Long live CAEN! Long live ISN!!

Dr. Usende, Ifukibot Levi

MSc/PhD scholar

Department of Veterinary Anatomy,

University of Ibadan, Ibadan

Oyo State, Nigeria

Tel +2348037386219

Please find attached a report letter from my host and some pictures of me during the course of my stay in the laboratory.

PICTURE KEY

1. I, in my host lab.

2. -Prof. Dr. James R. Connor (my host), the Iron man and I in Prof James Connor office, two days before my departure after discussing my research with him (top left)

-Dominique Leitner, a PhD student in my host laboratory who was of great assistance to me getting ready for the days job. I worked with her and she taught me like someone in elementary school (Top right).

-Amanda Synder, a post doc research fellow and I. She made sure I got all I needed (Bottom right).

-The Sue's, my best friends in the lab and I. They took me round town (Bottom left).

