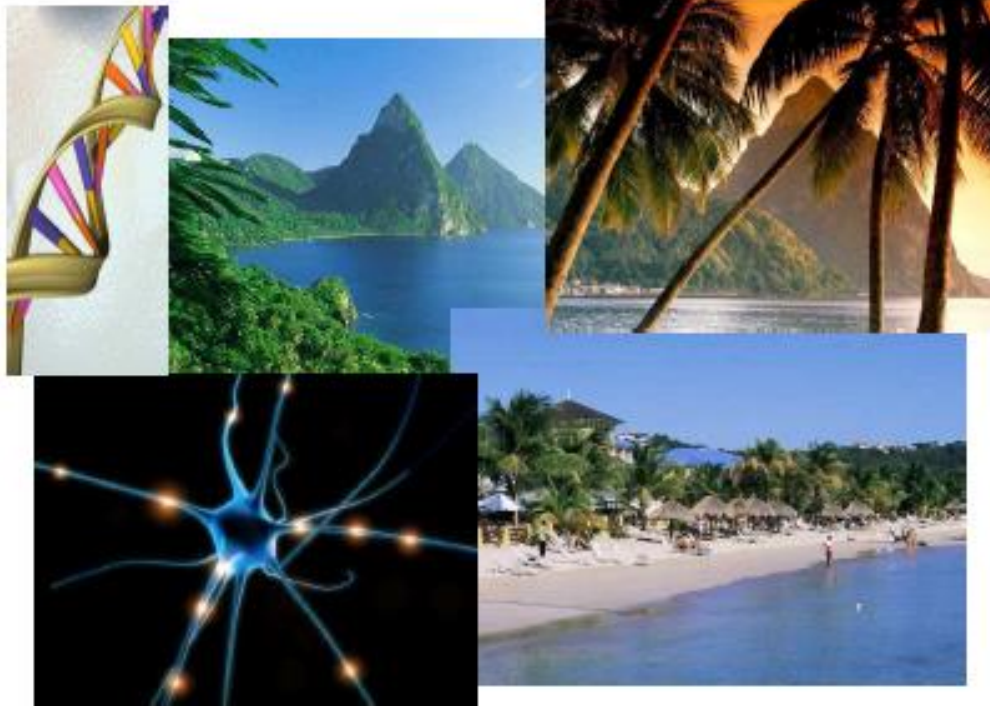


International Stress and Behavior Society (ISBS)

Program and Proceedings

**2nd Caribbean Biomedical
Research Days CBRD-2015**



**Rodney Bay, St. Lucia
January 16-18, 2015**

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CONFERENCE PROGRAM AT GLANCE:

DAY 1, Friday, January 16, 2015

10.30 – 11.30	Registration
11.30 – 12.00	CONFERENCE OPENING INTRODUCTION: HISTORY OF ISBS AND CBRD WELCOMING ADDRESSES
12.00 – 12.45	<u>Opening Plenary Lecture:</u> PRE-CLINICAL STUDIES OF GENE-ENVIRONMENT INTERACTIONS IN SCHIZOPHRENIA: AN UPDATE. M Pletnikov, Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, USA
12.45 - 01.00	DISCUSSION
01.00 – 02.00	<i>Lunch Break (free time)</i>
02.00 – 02.45	<u>ISBS Presidential Lecture:</u> VITAMIN D, BRAIN AND AGING. AV Kalueff, ZENEREI Research Center, Slidell, LA, USA; Guangdong Ocean University, Institute of Marine Drugs and Nutrients, Zhanjiang, China
02.45 - 03.00	DISCUSSION
03.00 - 03.40	COMPREHENSIVE INTERVENTIONAL MANAGEMENT OF CHRONIC LOW BACK PAIN. W Parris, Duke University Medical Center, Durham, NC, USA
03.40 – 04.10	<u>ROUNDTABLE I:</u> PERSPECTIVES AND CHALLENGES OF BIOMEDICAL EDUCATION IN THE CARIBBEAN. Moderator: L Newman, St. Lucia, WI
04.10 – 04.40	<i>Coffee Break</i>
04.40-05.10	MENTALLY SPEAKING. BOOK PRESENTATION. S Stokl, Southlake Regional Health Centre, Newmarket, ON, Canada

DAY 2, Saturday, January 17, 2015**9.30 – 10.00 *Registration***

10.00 – 10.45 ISBS Plenary Lecture: STRESS GENES IN SUICIDE: FOCUS ON HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS. GN Pandey, University of Illinois at Chicago, Department of Psychiatry, Chicago, IL, USA

10.45 - 11.00 DISCUSSION

11.00-11.20 UNILATERAL STERNALIS MUSCLE ON THE ANTERIOR CHEST WALL OF A WEST INDIAN MALE. LS Ramadhar, A Odekunle, S Madivala, C Duncan, R Ali, F Ali, S Mohammed, Anatomy Unit, Dept. of Preclinical Sciences, Faculty of Medical Sciences, University of the West Indies, Trinidad and Tobago, WI

11.20 – 11.50 ZEBRAFISH MODELS FOR TRANSLATIONAL BIOMEDICAL RESEARCH: FROM TANK TO BEDSIDE. AM Stewart and AV Kalueff, ZENEREI Research Center, Slidell, LA, USA; Guangdong Ocean University, Institute of Marine Drugs and Nutrients, Zhanjiang, China

11.50 - 12.00 MODERATED DISCUSSION

12.00 – 01.00 *Lunch Break (free time)***01.00 - 04.30 CANNABIS IN BIOMEDICINE SYMPOSIUM**

01.00 - 01.05 WELCOME AND INTRODUCTION. G St. Rose, Eden Herbs, St. Lucia, WI

01.05 - 01.30 CANNABIS NEUROBIOLOGY WITH A BRIEF HISTORY AND RECENT UPDATES. M Fraites, St. Lucia, WI

01.30 - 02.00 LEGALIZE CANNABIS – THE EVIDENCE. S King, Rise (St. Lucia), St. Lucia, WI

02.00 - 02.15 WHY SHOULD CANNABIS BE DECRIMINALIZED? A de Caires. Industrial Hemp Initiative, St. Lucia, WI

- 02.15 - 02.50 THE CONTRIBUTION OF CANNABIS TO THE LOST GENERATION OF MALES IN SAINT LUCIA. M Day, Caribbean Drug and Alcohol Research Institute (CDARI), St. Lucia, WI
- 02.50 - 03.20 SOME REPORTED ALTERNATIVE USES OF CANNABIS FOR GRENADA. G Marcelle, Grenada
- 03.20 – 03.50** *Coffee Break*
- 03.50 - 04.15 BENEFITING FROM CANNABIS. G St. Rose, Eden Herbs, St. Lucia, WI
- 04.15 – 04.30 DISCUSSION
- 04.30 – 05.10 SILENCE OF DEMENTIA CONTRIBUTES TO CAREGIVER STRESS: A RANDOMIZED SURVEY. R Posvar, Angels of the West Indies, St. Lucia, WI

DAY 3, Sunday, January 18, 2015

- 10.00 - 11.30 INTERACTIVE GUIDED POSTER SESSION (MINI-SYMPOSIUM)
- DE-NOVO DEVELOPMENT OF KIDNEY-SPECIFIC AUTOANTIBODIES OCCURS EVEN AT EARLY TIME POINTS AFTER KIDNEY TRANSPLANTATION IN CHILDREN. VR Dharnidharka, LE Hesemann, V Subramanian and T Mohanakumar, Washington University School of Medicine in St. Louis, St. Louis, MO, USA
 - INCREASED AUTOPHAGY FOLLOWING DELETION OF CD200 MEDIATES INCREASED A β CLEARANCE. A Lyons, J Noonan, EJ Downer, S Denieffe, VA Campbell and MA Lynch, St Matthew's University, School of Medicine, Cayman Islands, Trinity College Institute of Neuroscience, Trinity College, Dublin, Ireland
 - DETERMINANT OF ANTIBIOTICS PRESCRIBING FOR UPPER RESPIRATORY TRACT INFECTIONS AMONG PRIMARY HEALTH CARE PHYSICIANS IN AL-KHOBER AREA, SAUDI ARABIA. AK Al-Enezi, LE Fiala, LZ Abu-Zaid, S Alsolami and A Taha, Department of Family and Community Medicine, Northern Borders University (KSA), Arar, Saudi Arabia

- ANXIOGENIC-LIKE EFFECTS OF CHRONIC NICOTINE EXPOSURE IN ZEBRAFISH. AM Stewart, AD Collier, DJ Echevarria and AV Kalueff, ZENEREI Institute and The International Zebrafish Neuroscience Research Consortium (ZNRC), Slidell, LA; Department of Psychology, University of Southern Mississippi, Hattiesburg, MS, USA
- INCREASED CENTRAL CONTRIBUTION DURING NEUROMUSCULAR ELECTRICAL STIMULATION WHEN APPLIED OVER A NERVE TRUNK. AA Aldayel, KS Aljaloud, SO Aljaloud, YR Alayafi, King Saud University, Riyadh, Saudi Arabia

11.30 – 12.00

Coffee Break

12.00 – 12.45

ROUNDTABLE II: ETHICS IN BIOLOGY AND MEDICINE.
Moderators: AV Kalueff and M Pletnikov, USA

12.45 – 01.30

ROUNDTABLE III: ANIMAL MODELS IN BIOMEDICAL RESEARCH: FROM LOGIC TO BIOETHICS. Moderators: AV Kalueff and M Pletnikov, USA

01.30 - 01.45

OFFICIAL CLOSING OF THE CONFERENCE.
ANNOUNCING FUTURE ISBS AND CBRD CONFERENCES

CONFERENCE ABSTRACTS

DAY 1, Friday, January 16, 2015

Opening Plenary Lecture: **PRE-CLINICAL STUDIES OF GENE-ENVIRONMENT INTERACTIONS IN SCHIZOPHRENIA: AN UPDATE.** M Pletnikov, Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Gene-environment interactions (GEI) likely play significant roles in the pathogenesis of psychiatric disorders, determining their variable pathological, behavioral and clinical presentations. While significance of GEI in the pathogenesis of psychiatric disease is widely accepted, we know very little about the mechanisms whereby genetic risk factors interact with environmental adversities at cellular and molecular levels. Recent advances in epidemiology and psychiatric genetics have assisted in the generation of animal models of GEI relevant to schizophrenia. These models have been instrumental in uncovering the molecular, cellular and circuitry mechanisms that mediate GEI in this disorder. We will critically review current GEI animal models and propose the possible future directions for molecular studies of GEI in schizophrenia and related conditions.

ISBS Presidential Lecture: **VITAMIN D, BRAIN AND AGING.** AV Kalueff, ZENEREI Research Center, Slidell, LA, USA; Guangdong Ocean University, Institute of Marine Drugs and Nutrients, Zhanjiang, China

Vitamin D is an important seco-steroid hormone which controls calcium metabolism, bone formation, as well as cell differentiation and proliferation in various tissues. Millions of people are currently vitamin D-deficient globally, which represents a growing medical concern, and an unmet public health need. Vitamin D has multiple biological targets, and its action is mediated by a nuclear Vitamin D receptor (VDR). Vitamin D is also emerging as an important brain hormone, and we are only now beginning to understand the role of vitamin D and VDR in human psychiatric conditions. The vitamin D action on CNS has been experimentally supported in various clinical and preclinical models, indicating its critical role as a neuroactive/neurosteroid hormone. The need to explore the effects of vitamin D on the aging brain is also critical, because hypovitaminosis D (due to health/life style problems) is particularly prominent in older patients. Adults with cognitive deficits show also high incidence of vitamin D deficiency, raising the possibility that both vitamin D and VDR modulate cognitive [dys]function, and may contribute to neurodegenerative disorders. Here, we will discuss the role of age-related hypovitaminosis D in CNS behavioural and cognitive deficits, with the focus on the VDR knockout (VDR^{-/-}) mice, a

useful genetic tool to study disrupted vitamin D/VDR signalling in the brain. For example, VDR^{-/-} mice seem to have accelerated aging, likely contributing to their overall cognitive and behavioural deficits. In addition, these mutant mice also show increased fear/anxiety, aberrant social and maternal behaviours, as well as progressive decline in sensory functions (e.g., hearing and balance) and various motor deficits. Consistently seen in VDR^{-/-} mice, these aberrant phenotypes may be relevant to similar symptoms (e.g., sensory, affective and motor deficits) commonly reported in aging human patients, and may also contribute non-specifically to overall decline and other key CNS functions, such as cognition. Overall, preclinical data presented here generally parallel mounting clinical evidence, collectively supporting the critical role of vitamin D in the brain and brain aging.

COMPREHENSIVE INTERVENTIONAL MANAGEMENT OF CHRONIC LOW BACK PAIN. WCV Parris, Duke University Medical Center, Durham, NC, USA

Chronic low back pain is relatively common in both developing and developed countries. Its management is quite expensive, and usually not very effective. In this presentation, I propose to explore the various Interventional strategies that are currently used to manage various Chronic Low Back Pain syndromes. Some of these modalities are relatively straightforward, while others are more complex. Nevertheless, when appropriately applied to the correct patient and when the necessary precautions are taken, most patients obtain some partial or occasionally complete and sustained pain relief with minimal or no morbidity and mortality. Interventional pain procedures are usually performed by injecting specific regions of the neuraxis including the spinal nerves, epidural space, sub-arachnoid space, spinal and peripheral nerves with local anesthetics, steroid solutions, neurolytic agents and other specialized drugs. Those parts of the neuraxis, in addition to injections, may be electrically stimulated, subjected to high heat (Radiofrequency Lesioning) or low temperatures (Cryotherapy) in an effect to change the electrical configuration of the central and peripheral nervous system with the ultimate objective of controlling or relieving chronic pain. Most of these procedures are performed in a procedure room with sterile precautions and under fluoroscopic guidance using a C-Arm. Intravenous sedation is usually provided depending on the invasiveness of the particular procedure. Clearly, adequate training, credentialing and expertise are needed before undertaking these procedures which can produce life-threatening complications even in the best of hands. A thorough knowledge and understanding of the anatomy and physiology of the Central Nervous system is mandatory prior to practicing Interventional Pain Medicine. These are some of the interventional procedures to be reviewed: Epidural Steroid Injections; Cervical-Thoracic-Lumbar-Caudal-Facet Joint Injections; Cervical-Lumbar-Subarachnoid

Injections; Discography; Percutaneous Neuroplasty; Radiofrequency Thermo-coagulation Lesioning; Sacro-Iliac Joint Injections with Arthrography; Stellate Ganglion Blocks; Lumbar Sympathetic Blocks; Celiac Ganglion Blocks; Neurolytic Blocks; C-2 Cervical Ganglion Block; Peripheral Nerve Blocks; Hip Joint Arthrography; Intravenous Lidocaine Infusion. These Interventional pain procedures are not a panacea for all pain syndromes. However, with the proliferation of opioid prescriptions with associated opioid abuse, opioid misuse, opioid diversion and opioid-related deaths in the USA and most European countries, these procedures represent important tools in the Pain Physicians' armamentarium for the management of Chronic Pain syndromes.

DAY 2, Saturday, January 17, 2015

ISBS Plenary Lecture: **STRESS GENES IN SUICIDE: FOCUS ON HYPOTHALAMIC-PITUITARY-ADRENAL (HPA) AXIS.** GN Pandey, University of Illinois at Chicago, Department of Psychiatry, Chicago, IL, USA

INTRODUCTION: Stress is a major risk factor for suicide in general and teenage suicide in particular. Abnormalities of hypothalamic-pituitary-adrenal (HPA) axis, activated by stress are abnormal in depression and suicide. However, the specific molecular mechanism associated with HPA axis abnormality in the brain of depressed or suicidal subjects is not clear. It is believed that abnormal HPA axis is caused by increased levels of CRF, and decreased levels of GR in the brain of depressed or suicide subjects. To study their role in teenage suicide we determined the protein and gene expression of CRF, CRF receptors, and GR in the prefrontal cortex (PFC), hippocampus and amygdala of teenage suicide victims and teenage normal control subjects. **METHODS:** The postmortem brain samples were obtained from the Maryland Brain Collection at the Maryland Psychiatric Research Center, Baltimore, MD, USA. Samples were obtained from 24 teenage suicide victims and 24 normal teenage control subjects. Psychological autopsy was performed and the subjects were diagnosed according to the DSM-IV (SCID). Protein expression was determined using Western blot and gene expression (mRNA) was determined using real-time RT-polymerase chain reaction (qPCR) technique. **RESULTS AND DISCUSSION:** We observed that the protein and gene expression of the CRF was significantly increased in the PFC (Brodmann area 9) and in amygdala, but not in the hippocampus, of teenage suicide victims compared with normal control subjects. The protein and gene expression of CRF-R1 was significantly decreased in the PFC and amygdala, but not in the hippocampus, of teenage suicide victims. We also observed a significant decrease in the protein and mRNA expression of GR in the PFC and amygdala, but not in the hippocampus, of teenage suicide victims compared with control subjects. Thus, these results indicate that suicidal behavior is associated with increased CRF and decreased GR in certain specific areas of the brain of suicide victims compared with controls. **RESEARCH SUPPORT:** US National Institutes of Health, NIMH R01 MH048153.

UNILATERAL STERNALIS MUSCLE ON THE ANTERIOR CHEST WALL OF A WEST INDIAN MALE. LS Ramadhar, A Odekunle, S Madivala, C Duncan, R Ali, F Ali, S Mohammed, Anatomy Unit, Dept. of Preclinical Sciences, Faculty of Medical Sciences, University of the West Indies, Trinidad and Tobago, WI

In general, minor and rare morphological anomalies of little or no clinical significance are often not accorded much attention in morphological studies. In this regard, the occurrence of the sternalis muscle on the anterior chest wall is an exception. This anomaly should be noted as its unacknowledged presence can ultimately lead to misdiagnosis and mismanagement of patients. During a routine dissection of the anterior chest wall, a thin strap-like, rectangularly shaped muscle within the superficial fascia was encountered on the right aspect of this region. The muscle commenced superiorly from a narrow tendon which was continuous mainly with the tendon of the sternal attachment of the left sternocleidomastoid muscle (contralateral sternocleidomastoid) and extended inferolaterally to the right upper aspect of the anterior abdominal wall. It terminated in a fibrous sheath (Aponeurosis), which attached to the rectus sheath, aponeurosis of the external oblique muscle and the serratus anterior. The muscle measured 20cm from the level of the jugular notch to the midpoint of lower border of the sternum. The oblique lateral and medial borders were free (not attached to any structure) and measured 14 cm. At its tendinous attachment superiorly, a conjoint tendon was formed with the tendinous attachments of the sternal heads of the left and right sternocleidomastoids. Further dissection revealed branches of the 4th and 6th intercostal nerves penetrating the deep surface of the muscle, with the 1st intercostal nerve penetrating the region of the conjoint tendon. Further dissection was done in the abdominal region to look for accompanying anomalies. An extra-renal calycal network was observed in the left kidney, whereas the right kidney showed no vessel anomalies. The immense clinical significance of our findings will be discussed at the presentation.

ZEBRAFISH MODELS FOR TRANSLATIONAL BIOMEDICAL RESEARCH: FROM TANK TO BEDSIDE. AM Stewart and AV Kalueff, ZENEREI Research Center, Slidell, LA, USA; Guangdong Ocean University, Institute of Marine Drugs and Nutrients, Zhanjiang, China

Zebrafish (*Danio rerio*) is a small tropical fish which is rapidly becoming a popular model organism in translational neuroscience and biological psychiatry research. In the next decades, it may catch up with, and even surpass, the widely used rodent models. The application of this model organism to improving our understanding of brain disorders involves several directions of research, including modeling neoplastic (e.g., CNS cancers), neurological (e.g., epilepsy) and neuropsychiatric disorders (e.g., anxiety, depression, autism and schizophrenia). Here we present the 'tank to bedside' view of modern zebrafish research, including recent molecular, genetic and neuroimaging

approaches to use this fish species in uncovering CNS pathobiology. We will also outline some conceptual and practical aspects of using zebrafish in this field, such as the role of high-throughput zebrafish-based screens for CNS drug discovery, as well as the emerging role of zebrafish for aquatic toxicology and environmental health research. Finally, we will critically discuss the existing limitations of zebrafish models of human brain disorders.

CANNABIS IN BIOMEDICINE SYMPOSIUM

CANNABIS NEUROBIOLOGY WITH A BRIEF HISTORY AND RECENT UPDATES. M Fraitas, St. Lucia, WI

I will outline the earliest known history of cannabis and some of the most significant or remarkable studies and discoveries made to date. This information will show that humans have been inextricably linked with cannabis for a very long time, and that prohibition causes more harm than good, and hinders science. The first isolation of the THC molecule from cannabis was a breakthrough that led to the discovery and understanding of the endocannabinoid system, and still leads to many discoveries. We have insight, but not a full understanding, of how the endocannabinoid system can be used to prevent, diagnose and treat a disease, defect or symptom of illness. The endocannabinoid system is comprised of receptors, the endogenous compounds that activate them, and the proteins synthesized to degrade them. Research has identified various cannabinoid receptors in the brain and immune cells which respond to agonists or inverse agonists which may be endogenous, synthetic or phyto-derived. These cannabinoid receptors may be the most abundant G Protein Coupled Receptors in the mammalian brain. Appropriate levels of cannabinoids appear to be required to support pregnancy, and breast milk contains cannabinoids for the development and growth of the newborn. Perhaps, the greatest synergy will be achieved when phytocannabinoids are used as the prevention and synthetic cannabinoids as the cure. With a firm understanding of the endocannabinoid system and the 60 plus cannabinoids, we can prevent or eliminate the few negative possible outcomes of Cannabis use and maintain optimum health.

LEGALIZE CANNABIS – THE EVIDENCE. S King, Rise (St. Lucia), St. Lucia, WI

The issue of legalization of Marijuana is a controversial subject that is being actively debated. I decided to review the existing evidence on marijuana, use and effects with

special focus on the medical, social and economic impact of the existing laws and practices. The main objective is to create an argument for a different framework to govern marijuana use, that would mitigate negative effects and allow the benefits to be realized. The main documents used to draw evidence from, were: Marijuana: Current Concepts – Greydanus et al, Frontiers Public Health, 2013; Adverse health effects of marijuana use, Volkow et al, NEJM, 2014; The endocannabinoid system: physiology and pharmacology, F Rodriguez de Fonseca, Alcohol & Alcoholism, 2005; Comparative Analysis of Student Drug Use in Caribbean Countries, CICAD Secretariat for Multidimensional Security Inter-American Drug Abuse Control Commission, 2011; Global School-based Student Health Survey, St. Lucia 2007 Fact Sheet, 2007; Youth Choices And Change – PAHO, Report of the Global Commission on Drug policy – UN, 2011.

WHY SHOULD CANNABIS BE DECRIMINALIZED? A de Caires, Industrial Hemp Initiative, St. Lucia, WI

From a human rights standpoint: The law is an unjust, discriminatory law which infringes on ones basic human rights. The law is also racist, and exposes double standards and hypocrisy within our society (e.g., alcohol and tobacco). **From an economic standpoint:** The law prevents the country from developing a hemp industry which can provide much needed jobs in both the agricultural and manufacturing sectors and add value to raw materials; The law prevents the country from developing a tourism industry around hemp and ganja for both the medical and recreational markets; The law prevents the country from developing medicines from the cannabis plant; The law forces the Government to feed and house people in jail who really should not be there at all (this costs tens of thousands of dollars per year). **From a crime-fighting standpoint:** It would free up the courts and the justice system; It would help with the overcrowding problem at Borderlais; It would free up police resources to deal with violent, more serious crimes; It would lead to better relations between the police and the citizens. **Supporters for a change in drug law policy:** President Obama; President Carter; President Majuca; E Holder, US AG; Dr R Paul, GOP Senator and physician; Dr J Elders, former US Surgeon General; Dr S Gupta, CNN medical correspondent and neurologist; Dr D Chopra, world-famous doctor, healer and author; Mr. K Annan, former UN SG; Member countries of the OAS; Uruguay, Holland, Portugal and Spain (already decriminalized); Sir R Branson; Sir R Sanders; Drs E Edmunds, R Gonsalves, S King, M Day, G St Rose. None of them supports incarceration for possession of personal amount of cannabis. **CONCERNS:** Abuse, public consumption, addiction, consumption by minors, plantations on forest reserves, lack of prevention and harm reduction strategies, Lack of education, in schools

IN OUR HOMES and in the media. Now there are no rules or regulations and it is illegal.

RECOMMENDATIONS IN THE SHORT TERM: 1. Each member Government of CARICOM needs to form a task force or Commission to deal with cannabis matters where stakeholders from every sector of society will be able to voice their concerns and recommendations. The task force will then decide which recommendations will be adopted and a resulting document formulated. These recommendations will be then presented to the Government so that they will be able to present St. Lucia's position at the meeting in July 2014. From these discussions, a regional policy will then be formed. 2. Each individual CARICOM territory needs to encourage decriminalization advocates to form Cannabis Activist groups so as to debate their position for the benefit of their populace. This allows for extensive discussion and debate by the entire country on the issue so as to get the feel of the people and as a result come up with a policy that best suits the majority of the population. 3. Each individual territory needs to commence an island wide ongoing education program by their respective Cannabis Movements or Activist Groups so that the entire Caribbean population is well informed about the issues involved. **STRATEGIES THAT SHOULD BE IMPLEMENTED:** 1. There should be no incarceration of any kind for the possession of any amount of cannabis. As a result, the substance must be removed from that list of substances named in the class A schedule and placed to Class C schedule in our Misuse of Drugs Act. 2. Establish the amount of cannabis that one can possess that will make it legal. We suggest 1 ounce or 30 grams as a starting point. 3. There should be an amnesty for all the people languishing in jail for simple possession of cannabis. 4. Establish fines for public smoking of cannabis. 5. Establish the number of plants that one can have growing on ones property. We suggest 12 indica or 6 sativa species (indicas growth habits results in small plants, Sativas grow much larger). 6. Establish fines for excesses. If one possesses more than the one ounce, the excess is weighed and a resulting fine is implemented. 7. Establish a code of conduct for the police when they are involved in dealing with individuals possessing cannabis. 8. License and tax commercial growers. 9. Establish fees for licenses to grow and to sell. 10. These recommendations should be phased in. 11. Trial periods for implementation of new laws. 12. Establish smoking areas and fully comply with the no smoking laws that are about to become enacted. 13. Create a ganja research center to study cause and effects of the use of cannabis on individuals as well as on society, to be able to produce real facts and figures about the plant's impact. 14. Establish a treatment center for people that may need psychiatric help because of an anticipated increase of use by the general population. 15. Form a ganja growers association or co-op like Saint Vincent and Jamaica in order to capitalize on the "new industry". 16. Give the Industrial Hemp Initiative the necessary permissions to commence research trials as soon as possible. 17. An apology should be given to all people that were persecuted by the Government as a result of

these unjust laws. It is plain to see that the law as it relates to cannabis is unfair, outdated and is doing more harm than good for the country, and needs to be revised.

THE CONTRIBUTION OF CANNABIS TO THE LOST GENERATION OF MALES IN SAINT LUCIA. M Day, Caribbean Drug and Alcohol Research Institute (CDARI), St. Lucia, WI

INTRODUCTION: As in most places of the world cannabis is illegal in Saint Lucia with drug law enforcement focusing on interdiction, eradication of illicit crops and public drug use which consists primarily of public cannabis use by young males. This use of cannabis in Saint Lucia has lead, not to a public health response to address the underlying causes of cannabis use but to a criminal justice response targeting the use and possession of cannabis. The overall study examined the use, acquisition, brokering and sales of cannabis. This presentation focuses on an analysis of cannabis use to address self reported “mental health issues”. In the past 30 years St. Lucia’s response to the “World Drug Problem” has been one of “zero tolerance”, including the adoption by the school system of a zero tolerance approach to student cannabis use. Penalties for students who are caught with cannabis at school or in uniform are dealt with by suspension or even expulsion if over the age of 16. It has become standard procedure for the school authorities to call the police in the case of a “drug” offense. This event then often becomes that student’s first criminal justice contact with all the implications of the stigma associated with being an offender. **METHODS:** A 109-item questionnaire was developed including questions based upon those used in previous research with similar populations (Crofts and Reid 2000). The instrument was reviewed and approved by the IRB of the CDARI. The questionnaire included items addressing social relations, economic status, drug use history, personal experience using cannabis, acquiring cannabis, growing cannabis, brokering/selling cannabis, criminal justice contacts related to cannabis possession. The instrument was piloted in order to assess the ease with which it could be administered, to determine whether the questions were easy to understand, and to ensure that it could be completed in a timely fashion. Based upon the piloting phase, minor revisions were made and the instrument was finalized. The interviews were administered to non-probability sample in northern Saint Lucia. Public spaces where young men congregate on a regular basis were targeted to recruit the sample. Additionally, as the spaces we sought to recruit individuals were primarily populated males, convenience sampling techniques were used to ensure that women were represented in the study¹. Eligible participants were cannabis users who reported using

¹ Neuman, W., L. (2003). *Social Research Methods: Qualitative and Quantitative Approaches* (5th ed). Boston: Allyn

cannabis regularly. Once informed consent was received, the survey instrument was administered through face-to-face, confidential interviews and participants received \$20 XCD (\$8 USD). A total of 109 (19 female/90 males) eligible persons were identified and recruited into the study 74% of the participants reported daily use of cannabis while another 12% reported using 2- 3 times a week. **RESULTS AND DISCUSSION:** When asked “Why do you use cannabis?” 86% of the responses were related to mental health issues. Comments such as: To relax; To be sociable; To help me calm down; To help forget about things; To help me meditate; To fit in; To help me sleep were recorded. PAHO/WHO has repeatedly reported high levels of “trauma” among Caribbean young people associated with physical, mental, and sexual abuse. Nearly half of the sexually active adolescent women and one third of adolescent men in a multi-country study in the Caribbean reported that their first sexual intercourse was forced². Physical abuse is common, corporal punishment enshrined in legislation and the majority of the population subscribing to the Old Testament biblical injunction “Spare the rod, spoil the child”. Bullying is common and homophobia directed toward particularly towards males the extreme. All of this contributes to an environment where individuals with high levels of environmental trauma, poor coping skills, poor conflict resolution skills and inadequate access to community based mental health issues manifest with high levels of cannabis use to “deaden the pain”. **FINDINGS:** Police involvement by school authorities as a response to student cannabis use is a major contributor to the dislocation of young males in St. Lucia who tend to leave school, drift into cannabis friendly ghetto spaces. This dislocation is further fuelled by stigma perpetuated by drug prevention programs that demonize cannabis use and its users. Cannabis prohibition is the prime cause of male dislocation, not cannabis use or cannabis ‘inebriation’ but simple possession. The mere act of using cannabis in an environment of strict cannabis law enforcement has significantly contributed to the growth of a pool of criminalized young men whose initial exposure to criminality was simply their use of cannabis in an environment where it is criminalized.

SOME REPORTED ALTERNATIVE USES OF CANNABIS FOR GRENADA. G Marcelle, Grenada

INTRODUCTION: Having worked as Chief Analytical Chemist at the Produce Chemist Laboratory Grenada for over 20 years, with responsibility for forensics and analysis of

and Bacon.

² Halco´n L, Beuhring T, Blum R. A portrait of adolescent health in the Caribbean, 2000. Minneapolis, MN, University of Minnesota and Pan American Health Organization, 2000.

controlled drugs, on retirement my scholarly interest was attracted to alternative uses of marihuana (*Cannabis sativa*), locally. **METHODS:** Personal interviews with persons who have used the marihuana plant alternatively. **RESULTS AND DISCUSSION:** Interviewing multiple responders in Grenada showed that the marihuana plant or plant parts have been used as a tea for a number of ailments. These include, but are not limited to, asthma, common cold and chest colds, wheezing, congested chest and fits. These ailments are defined in local layman's terms. The results from these interviews will be presented during the talk.

BENEFITING FROM CANNABIS. G St. Rose, Eden Herbs, Gros Islet, St. Lucia, WI

The importance of knowing the different species, categories of growth and THC and CDB contents of the cannabis plant is the great determining factor to differentiate benefits to be derived. An outline of the varied uses of non drug plant [hemp] and drug plant = medical marijuana [female cannabis flower] is detailed. The various formulations for administration of medical marijuana and the methods of administration are explained. **SUMMARY:** A reminder of the present unfortunate plight of persons who are not allowed to benefit from cannabis.

SILENCE OF DEMENTIA CONTRIBUTES TO CAREGIVER STRESS: A RANDOMIZED SURVEY. R Posvar, Angels of the West Indies, St. Lucia, WI

INTRODUCTION: Caregiver fatigue related to dementia care is a real condition that has been studied in the US, Canada, UK, Australia, and other parts of the world, but nothing significant in St. Lucia. The Island of St. Lucia pays little special attention toward people with Alzheimer's or other dementias, let alone any concerns for their family care takers. It was clear that people just do not talk about their problems, while support groups are another language here. Bringing Awareness of Alzheimer's vs Normal aging Project struggles to grow in St. Lucia because dementia is viewed as mental health. Mental health is a growing concern, and with each suicide, the public pushes for better assistance. Depression, along with delusions and hallucinations play some role with dementia, but in the world of Alzheimer's, it is not mental illness, nor is the treatment the same. The lack of knowledge and recourses of care and assistance for dementia care has caused a lot of fear toward the health system. Most families with loved ones suffering with dementia do not want their loved one pumped with medication for psychosis when their general understanding is that their loved one is "just getting old". Doctor visits are

dramatically decreased, and no real diagnose of the condition is ever done. Families themselves diagnose their loved ones with Alzheimer's, and accept that is how it is. They do not talk about it as it is "their" problem. Silence is broken when a crisis occurs, or their job is on the line from poor performance. The project was aimed toward the family caregivers to provide support and education, one being coping skills to reduce stress. As more people spoke out that there are many people on the Island that are dealing with Alzheimer's, but they keep silent about it. It is just not "their way". As an Alzheimer's Awareness advocate, and understanding that education about the disease and behaviors has helped millions of people across the globe, prompted curiosity, if "their way" or "their silence", limited their stress? If the reports express experience with stress, then pushing forward with the support groups Project would be beneficial when more people are aware that support is available. If the data reports less stress experience, it would warrant more understanding of how people in St. Lucia cope with challenging situations with their loved ones in compared to the studies already out there. **METHODS:** We have used surveys modeled after a combination of Alzheimer's Association, Family Care Givers Association, CARES Approach and Alzheimer's Society. We have asked participants from the support group Project (200 individuals), informal interviews (15 random individuals), and social media forums (33 individuals), to gather data of how people responded to discussions regarding talking about dementia, the concerns they had regarding the disease, why they do not talk about it and if talking about it helped them or not. The data was separated by: Primary family caregiver past or present, Family caregiver, Hired caregiver, People who knew someone with the disease, and People who had no connection to the condition, shared their experiences. **RESULTS AND DISCUSSIONS:** The findings encouraged the need to break the silence. Almost all Primary caregivers reported that the stress was overwhelming and felt it was useless to talk about it because there is no help, but admitted to attending a support group was encouraging. A higher percentage in the other groups reported that talking about it and understanding it better gave them a sense that they were not alone, and that was an important stress factor. The group who knew someone with the disease reported that if there were more knowledge and assistance in the Health Ministry regarding the disease, more people would seek help. The fact that people are pushed toward mental health remedies discourages people to come forward. It was also reported that at the support meetings, valuable tips and information shared by other families proved to be helpful with managing challenging behaviors. The other groups that did not attend a support group, reported that they felt it would be helpful to them and to people they knew. All groups reported that support and treatment should not be the same as mental illness. Conclusion is that the collected data experiences reported that silence of dealing with the disease, contributes to the emotional stress of the family caregiver. Where would these people go to seek this help? Will Mental Health in St. Lucia

provide a support system for people living with dementia and their families who care for them? Will they differentiate between brain health and brain failure? It is not clear in this report, if Cortisol levels and other measurable techniques were affected by silence, but it does support continuing the Awareness Project. The project could aid in more families seeking a medical diagnose therefore better calculation of how many people are affected by the condition, and encouraging more education and resources to assist families with coping with the many challenges associated with the disease.

DAY 3, Sunday, January 18, 2015**INTERACTIVE POSTER SESSION****DE-NOVO DEVELOPMENT OF KIDNEY-SPECIFIC AUTOANTIBODIES OCCURS EVEN AT EARLY TIME POINTS AFTER KIDNEY TRANSPLANTATION IN CHILDREN.**

VR Dharnidharka, LE Hesemann, V Subramanian and T Mohanakumar, Washington University School of Medicine in St. Louis, St. Louis, MO, USA

BACKGROUND: Chronic rejection is the predominant cause of graft loss following kidney transplantation in children. Our group has previously shown a strong association between the development of antibodies to lung-associated self-antigens, α 1 Tubulin and Collagen V and the development of chronic rejection following human lung transplantation in an adult cohort (Hachem et al, Am J Transplant, 2012). In this study, we determined development of antibodies to kidney-associated self-antigens (Collagen IV and Fibronectin) in a cohort of children following kidney transplantation. **METHODS:** Using ELISA, we determined the presence of antibodies to Type IV Collagen (Col IV) and Fibronectin (Fn) in banked sera samples from a prior prospective and longitudinal immune monitoring study at another institution. Our cohort included 20 subjects, age 1-18 years, M:F=14:6, 75% white, 20% black, 25% living donor, 75% deceased donor. The study protocol included monthly sampling between months 1-12 post-transplant, though samples were not available at each interval for all subjects. **RESULTS AND DISCUSSION:** We analyzed 88 samples for the presence of antibodies to Col IV and 87 samples for the presence of antibodies to Fn. One subject developed antibodies to Col IV during the post-transplant period. All of the 4 serial samples tested from this subject were weakly positive. Five subjects developed antibodies specific to Fn; 8 serial samples from 3 subjects were strongly reactive and 3 serial sera from 2 different subjects were weakly positive. The subject with reactivity to Col IV was also strongly positive for Fn. The earliest development of either antibody was 152 days post-transplantation and none of them had pre-existing antibodies to either of the kidney associated self-antigens. Even at less than one year post kidney transplantation, antibodies to kidney-associated self-antigens Col IV and Fn developed in 5 of 20 children during the post-transplant period. This is a higher rate of early autoantibody development than has previously been described. Further study is required to assess whether these autoantibodies are associated with development of chronic rejection. **RESEARCH SUPPORT:** Barnes-Jewish Healthcare Foundation/Institute of Clinical and Translational Science Research Funding Program Pilot Award through NIH CTSA Grant # UL1 TR000448.

INCREASED AUTOPHAGY FOLLOWING DELETION OF CD200 MEDIATES INCREASED A β CLEARANCE. A Lyons, J Noonan, EJ Downer, S Denieffe, VA Campbell and MA Lynch, St Matthew's University, School of Medicine, Cayman Islands, Trinity College Institute of Neuroscience, Trinity College, Dublin, Ireland

INTRODUCTION: It is widely accepted that neuro-inflammatory changes, characterized by increased microglial activation is a key hallmark of Alzheimer's disease pathology. It has been shown that activation of microglia and the subsequent release of the pro-inflammatory cytokines exert detrimental effects on neurons. We have previously demonstrated that cell-cell interaction and in particular, interaction of CD200 with microglial CD200R is actively involved in immune homeostasis in the brain. Therefore we have investigated the role of CD200 in altering β -amyloid (A β)-induced neuroinflammation. **METHODS:** Flow cytometric analysis was done to evaluate expression of cell surface markers of microglial activation and phagocytic ability. All proinflammatory cytokine concentrations were assessed by ELISA. Lysosomal integrity was assessed by uptake of Acridine Orange and all fluorescent staining was done by confocal microscopy. **RESULTS AND DISCUSSION:** We report that glial cells prepared from CD200^{-/-} mice exhibited an activated phenotype as demonstrated by increased CD68 and CD40 expression and increased phagocytic ability both in vivo and in vitro. However, while A β caused a significant increase in IL-1 β release in mixed glial cultures prepared from wildtype mice, its effect on glia prepared from CD200-deficient mice was minimal. CD200 deletion was also associated with a greater number and activity of phagolysosomes in microglia and increased LC3 staining both in vitro and in vivo, providing further support for the proposal that knock-out of CD200 results in increased microglial autophagy and this may play a role in increased uptake and clearance of A β . In the future, a targeted increase in phagocytosis and autophagic flux of microglial cells may represent a potential therapeutic approach to limiting the formation of A β deposits and open the way to unique opportunities for development of novel therapies for Alzheimer's disease. **RESEARCH SUPPORT:** St Matthews University, Grand Cayman, Health Research Board Ireland and Science Foundation Ireland.

DETERMINANT OF ANTIBIOTICS PRESCRIBING FOR UPPER RESPIRATORY TRACT INFECTIONS AMONG PRIMARY HEALTH CARE PHYSICIANS IN AL-KHOBER AREA, SAUDI ARABIA. AK Al-Enezi, LE Fiala, LZ Abu-Zaid, S Alsolami and A Taha, Department of Family and Community Medicine, Northern Borders University (KSA), Arar, Saudi Arabia

Respiratory tract infections are among the most frequently encountered clinical conditions, and upper respiratory tract infections (URTIs) are one of the most common reasons for consultations in primary health care centers. Antibiotics are often prescribed un-necessarily for URTIs around the globe. Identifying factors associated with the ubiquitous inappropriate prescribing of antibiotics for URTIs will help develop effective interventions and decrease antimicrobial resistance. **OBJECTIVE:** To determine the clinical factors that affect prescription of antibiotics for URTIs by PHC physicians in Al-Khober area, Eastern Province of Saudi Arabia. **DESIGN:** A cross-sectional study using a self-administered questionnaire. **SETTING:** Primary health care centers in Al-Khober area. Saudi Arabia. The study had been conducted during the period from December 2009 to March 2010. **SUBJECTS:** Primary health care physicians in Al-Khober area. The number of consenting physicians participated in this study was 49 physicians. Main **OUTCOME MEASURES:** To assess the clinical factors that might affect antibiotics prescription. These included fever ($>38.5^{\circ}\text{C}$), throat exudates, cervical lymphadenopathy and presence or absence of cough. Results: The overall response rate was 87.5%. High fever ($>38.5^{\circ}\text{C}$), deteriorating general condition, cervical lymphadenopathy, inflamed eardrums and exudates in throat made more than half of the respondents "definitely indicated" to prescribe antibiotics. **CONCLUSION:** Primary health care physicians in Al-Khober area agreed that the severity of illness and clinical signs were the factors in favor of antibiotics treatment of URTIs. Interventions to reduce antibiotics prescription would needed, first to educate PHC physicians to use more careful criteria for diagnosis and to reassure patients with URTIs, as well as use of supportive measures. Finally, it is important to raise patients' awareness about appropriate indication for antibiotics use for URTIs.

ANXIOGENIC-LIKE EFFECTS OF CHRONIC NICOTINE EXPOSURE IN ZEBRAFISH.

AM Stewart, AD Collier, DJ Echevarria and AV Kalueff, ZENEREI Institute and The International Zebrafish Neuroscience Research Consortium (ZNRC), Slidell, LA; Department of Psychology, University of Southern Mississippi, Hattiesburg, MS, USA

Nicotine is one of the most widely used and abused legal substances. Although its psychopharmacological profile has been extensively investigated in both humans and rodent studies, nicotine CNS action remains poorly understood. The importance of finding and targeting evolutionarily conserved signaling pathways, and the need to apply high-throughput in-vivo screens for CNS drug discovery, necessitate novel efficient experimental models for nicotine research. Zebrafish (*Danio rerio*) are rapidly emerging as an excellent organism for studying drug abuse, neuropharmacology and toxicology, and have recently been applied to testing nicotine. For example, anxiolytic, rewarding and memory-modulating effects of acute nicotine treatment in zebrafish are consistently reported in the literature. However, while nicotine abuse is more relevant to long-term exposure models, little is known about chronic effects of nicotine on zebrafish behavior. Here, we report that chronic 4-day exposure to 1-2 mg/L nicotine evokes robust anxiogenic behavioral responses in zebrafish tested in the novel tank test paradigm, one of the most widely used and sensitive aquatic behavioral screens. In contrast, wholebody cortisol was only slightly (and non-significantly) elevated in the chronically exposed vs. control zebrafish. Overall, strikingly paralleling clinical and rodent data, our study supports the developing utility of zebrafish for nicotine research.

INCREASED CENTRAL CONTRIBUTION DURING NEUROMUSCULAR ELECTRICAL STIMULATION WHEN APPLIED OVER A NERVE TRUNK. AA Aldayel, KS Aljaloud, SO Aljaloud, YR Alayafi, King Saud University, Riyadh, Saudi Arabia

INTRODUCTION: Neuromuscular electrical stimulation (NMES) is a promising approach to control and treat some central nervous system (CNS) disorders. Greater central contribution has been shown when NMES is applied over a nerve trunk compared with a muscle belly. Motor unit (MU) recruitment during NMES over a nerve trunk follows Henneman's size principle, where small motor units (low-threshold) tend to be activated first. These pathways of MU activation may have benefits for rehabilitation, particularly in patients with CNS lesions. Hence, the optimal parameters of NMES have yet to be determined. **METHODS:** Isometric muscle contraction (6 s) was evoked by tetanic NMES applied through electrodes placed over the tibial nerve in the popliteal fossa for the triceps surae muscle of five able-bodied. NMES intensity was set to generate 20-25% maximum

voluntary torque. Central pathway was assessed using the size of H reflexes obtained from soleus electromyography. A range of pulsed durations (20, 100, 400 and 1000 μ s) and frequencies (20, 40, 75 and 100 Hz) were compared, and the main effects and interaction of these parameters on H reflex were examined. **RESULTS AND DISCUSSION:** Central contribution was evidenced in all trials except pulsed duration during 20 μ s for all frequencies and during 100 μ s for 75 and 100 Hz. H reflex size was about two to three-fold during 1000 μ s (for 20 and 40 Hz) than 400 μ s for all frequencies, whereby 400 μ s was similar to 100 μ s for 75 and 100 Hz. Wide pulse duration (i.e. 1000 μ s) delivered at low frequency (i.e. 20-40 Hz) is postulated to maximize the sensory activities to the spinal cord and therefore the central contribution. In conclusion, using NMES with wide pulse duration and low frequency can be effective for rehabilitation of persons with some CNS disorder where central recruitment of MUs is desired. However, further studies concerning the other NMES parameters, such as amplitude (intensity), pulse charge and stimulation time, are warranted. **RESEARCH SUPPORT:** This study has been partly funded by Research Center at College of Sport Sciences and Physical Activity, King Saudi University.



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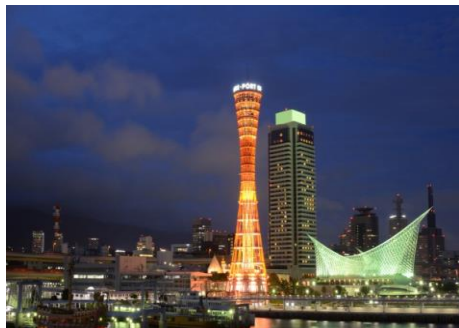
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