The International Stress and Behavior Society (ISBS)

Program and Proceedings

5th Caribbean Biomedical Research Days CBRD-2018

Rodney Bay, St. Lucia
January 16-18, 2018

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ZEBRAFISH NEUROSCIENCE RESEARCH CONSORTIUM

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CONFERENCE PROGRAM:

DAY 1. Tuesday, January 16, 2018

Dolphins Conference Center, Bay Gardens Beach Resort & Spa, Rodney Bay, St. Lucia

09.30 – 10.00	**Registration**
10.00 – 10.20	**CONFERENCE OPENING REMARKS. BRIEF INTRODUCTION TO THE HISTORY OF ISBS AND CBRD. WELCOMING ADDRESSES**
10.20 – 11.00	**ISBS Lecture 1: PROTEIN KINASE C IN THE PATHOPHYSIOLOGY OF BIPOLAR ILLNESS: A POTENTIAL BIOLOGICAL MARKER.** GN Pandey, ISBS Fellow, University of Illinois at Chicago, Department of Psychiatry, Chicago, IL, USA
11.00 - 11.40	**ISBS Lecture 2: CELL-TYPE SPECIFIC MECHANISMS OF GENE-ENVIRONMENT INTERACTION IN PSYCHIATRIC DISORDERS.** M Pletnikov, ISBS Fellow, Johns Hopkins University School of Medicine, Baltimore, MD, USA
11.40 - 12.10	**THE EFFECTS OF MINDFULNESS-ORIENTED RECOVERY ENHANCEMENT ON ALLOSTATIC MECHANISMS IN STRESS, PAIN, AND ADDICTION.** E Garland, University of Utah, Salt Lake City, UT, USA
12.10 – 12.40	**ROUND TABLE: IMPROVING THE VALIDITY OF BIOMEDICAL RESEARCH**
12.40 – 02.00	***Lunch Break (free time)***
02.00 - 03.40	**SYMPOSIUM 1. ZUKOWSKA SYMPOSIUM ON BIOLOGICAL PSYCHIATRY. CHAIR: AV KALUEFF (USA)**
02.00 - 02.10	**INTRODUCTION: PROFESSOR ZOFIA ZUKOWSKA**
02.10 - 02.35	**THE IMPACT OF A BEHAVIORAL INTERVENTION ON FAMILY CAREGIVERS' C-REACTIVE PROTEIN.** PR Sherwood, HS Donovan, L Terhorst, A Marsland, BA Given and CW Given, University of Pittsburgh, Pittsburgh, PA, USA
02.35 - 03.00	**ASSOCIATION BETWEEN EARLY AND RECENT LIFE STRESS AND DNA METHYLATION - EPIGENOME-WIDE ASSOCIATION STUDY.** WL Dragan, A Sokołowski, P Stawiński, P Gasperowicz, G Kostrzewa and R Płoski, Interdisciplinary Centre for Behavioural Genetics Research, Faculty of Psychology, University of Warsaw, Departments of Medical Genetics, and Forensic Medicine, Medical University of Warsaw, Warsaw, Poland
03.00 - 03.25	**DOES RUMINATION ALLOW TO PREDICT EMOTIONAL DISORDERS?** M Dragan, University of Warsaw, Warsaw, Poland

03.25 - 03.40 **GENERAL DISCUSSION**

03.40 – 04.00 ***Coffee Break***

04.00 - 04.30 **ISBS Special Focus talk: UNDERSTANDING ANTIDEPPRESSANT DISCONTINUATION SYNDROME (ASD) – BRIDGING CLINICAL AND PRECLINICAL FINDINGS.** KN Zabegalov, TO Kolesnikova, SL Khatsko, AD Volgin, OA Yakovlev, TG Amstislavskaya, PA Alekseeva, DA Meshalkina, AJ Friend, W Bao, KA Demin and AV Kalueff, ISBS Fellow, Ural Federal University, Yekaterinburg, Institute of Translational Biomedicine, St. Petersburg State University, St. Petersburg, Laboratory of Translational Biopsychiatry, Research Institute of Physiology and Basic Medicine, Department of Neuroscience, Novosibirsk State University, Novosibirsk, Russia; School of Pharmacy, Southwest University, Chongqing, China; Institute of Experimental Medicine, Almazov National Medical Research Center, St. Petersburg, Russia; Tulane University School of Science and Engineering, New Orleans, The International Zebrafish Neuroscience Research Consortium (ZNRC), ZENEREI Research Center, Slidell, LA, USA

04.30 - 05.00 **VIDEO-PRESENTATION: ART MEETS SCIENCE.** D Raytchev, D Raytchev Art, London, UK

DAY 2. Wednesday, January 17, 2018

Dolphins Conference Center, Bay Gardens Beach Resort & Spa, Rodney Bay, St. Lucia

09.00 – 09.30 **Registration**

09.30 – 10.10 **ISBS Plenary Lecture 3: PAIN MANAGEMENT IN THE CANCER PATIENT.** WCV Parris, Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA

10.10 - 01.15 **SYMPOSIUM 2. LAPIN SYMPOSIUM ON TRANSLATIONAL BIO-MEDICINE. CHAIR: MV PLETNIKOV (USA)**

10.10 – 10.20 **INTRODUCTION: PROFESSOR IZYASLAV LAPIN**

10.20 - 10.40 **ISBS Presidential Lecture 4: ZEBRAFISH MODELS OF DRUG ABUSE AND STRESS.** AV Kalueff, ISBS Fellow, ZENEREI Research Center, Slidell, LA, USA; Southwest University, Chongqing, China; St. Petersburg State University, St. Petersburg, Ural Federal University, Ekaterinburg, Russia

10.40 - 11.20 **ISBS Plenary Lecture 5: HIV PREVENTION, TREATMENT AND CARE AMONG PEOPLE WHO USE STIMULANT DRUGS AND THEIR SEXUAL PARTNERS, AN IMPLEMENTATION GUIDE.** M Day, ISBS Fellow, Caribbean Drug and Alcohol Research Institute (CDARI), Castries, St. Lucia

11.20 - 11.35 **PREVALENCE OF ORAL HPV INFECTION AMONG HEALTHY INDIVIDUALS AND HEAD AND NECK CANCER CASES IN THE FRENCH WEST INDIES.** A Auguste, S Gaete, C Herrmann-Storck, L Michineau, C Joachim, J Deloumeaux, S Duflo and D Luce, INSERM U 1085- IRSET (Research Institute for Environmental and Occupational Health), Pointe-à-Pitre, Guadeloupe, University of Rennes, Rennes, Centre de Ressources Biologiques de Guadeloupe, Laboratory of Microbiology, University Hospital of Guadeloupe, Pointe-à-Pitre, Guadeloupe, Martinique Cancer Registry, UF Pôle de Cancérologie Hématologie Urologie Pathologie, University Hospital of Martinique, Fort-de-France, Martinique, General Cancer Registry of Guadeloupe, Department of Oto-Rhino-Laryngology and Head and Neck Surgery, University Hospital of Guadeloupe, Pointe-à-Pitre, Guadeloupe, France

11.35 – 11.50 ***Coffee Break***

11.50 – 12.20 **ISBS Plenary Lecture 6: UPDATE ON CANNABIS NEUROBIOLOGY.** M Fraites, St. Lucia, WI

12.20 – 12.55 **ISBS Special Focus Lecture 7: STRESS INDUCED CHRONIC FATIGUE - REJUVENATING ABILITIES OF LICORICE ROOT [Glycyrrhiza glabra].** G St. Rose, ISBS Fellow, Managing Director Eden Herbs, Integrative Health Care Consultant and Herbalist, Creative Health Center, St. Lucia, WI

12.55 - 01.15 **GENERAL DISCUSSION AND CONCLUDING REMARKS**

DAY 3. Thursday, January 18, 2018

SOCIAL AND EDUCATIONAL TOURS

ABSTRACTS

DAY 1. Tuesday, January 16, 2018

Dolphins Conference Center, Bay Gardens Beach Resort & Spa, Rodney Bay, St. Lucia

CONFERENCE OPENING REMARKS. BRIEF INTRODUCTION TO THE HISTORY OF ISBS AND CBRD. WELCOMING ADDRESSES

ISBS Lecture 1: PROTEIN KINASE C IN THE PATHOPHYSIOLOGY OF BIPOLAR ILLNESS: A POTENTIAL BIOLOGICAL MARKER. GN Pandey, ISBS Fellow, University of Illinois at Chicago, Department of Psychiatry, Chicago, IL, USA

INTRODUCTION: Lithium is a mood-stabilizing drug effective in the treatment of bipolar (BP) disorder. However, its mechanism of action is unclear. Several studies suggest that lithium inhibits the expression and activity of protein kinase C (PKC), suggesting that PKC abnormalities may be associated with the pathophysiology of BP illness. PKC is an important enzyme of the phosphoinositide (PI) signaling pathway and is involved in many neuronal functions. To examine the role of PKC in BP illness, we determined PKC in platelets of BP and depressed (MDD) patients and in the postmortem brain of BP and schizophrenic (SCZ) subjects and normal control (NC) subjects. **METHODS:** PKC activity was determined both in the platelets and postmortem brain. The protein expression of PKC isozymes was determined using Western blot, and mRNA using real-time RT-polymerase chain reaction (qPCR). **RESULTS AND DISCUSSION:** We observed that protein expression of PKC isozymes (PKC α, PKC βI and PKC βII) was significantly decreased in platelets from BP but not from MDD patients during the drug-free period. To examine if similar changes occur in the brain, we determined protein and mRNA expression of PKC isozymes in the prefrontal cortex (PFC), cingulate cortex (CG) and temporal cortex of BP, SCZ, and NC subjects. We found that protein expression of several PKC isozymes, such as PKC α, PKC βI, PKC βII, and PKC ε were significantly reduced in the PFC, cingulate (CG) and temporal cortex of BP patients compared with NC subjects. We also observed that both protein (in membrane and cytosol fractions) and mRNA expression of PKC α, PKC βI, PKC βII, PKC γ, PKC δ, and PKC ε was significantly decreased in PFC and CG of BP but not SCZ patients. We did not find significant changes in mRNA levels of other PKC isoforms, such as PKC θ, PKC η, PKC ζ, PKC ι. These studies suggest that abnormalities of some specific PKC isoforms may be associated with the pathophysiology of BP illness and that these PKC isoforms may be appropriate targets for developing more effective treatments for BP disorders. **RESEARCH SUPPORT:** US National Institutes of Health (NIH) grants RO1MH077254 and RO1MH56528.

ISBS Lecture 2: CELL-TYPE SPECIFIC MECHANISMS OF GENE-ENVIRONMENT INTERACTION IN PSYCHIATRIC DISORDERS. M Pletnikov, ISBS Fellow, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Multiple adverse environmental factors contribute to the pathogenesis of psychiatric disorders by interacting with genetic risk factors. We modeled relevant gene-environment interactions in mice with expression of mutant Disrupted-In-Schizophrenia 1 (DISC1) in neurons or astrocytes. We exposed these mutant mice to prenatal immune activation or environmental toxins, or cannabis during adolescence. We evaluated the neurobehavioral, histopathological, neuroimmune, and molecular phenotypes in adult mice. We found that mice with neuronal expression of mutant DISC1 developed the brain and behavioral alterations consistent with aspects of mood disorders following prenatal immune activation, and schizophrenia-like abnormalities treatable with D-serine treatment following developmental exposure to low doses of Pb2+. Chronic adolescent cannabis (tetrahydrocannabinol) exposure of mice expressing mutant DISC1 in neurons exacerbated deficient fear conditioning and synergistically decreased c-Fos expression induced by cue-

dependent fear memory retrieval. The similar adolescent cannabis exposure in mice expressing mutant DISC1 in astrocytes led to lasting cognitive impairment and decreased number of parvalbumin-positive neurons in adult mice. These behavioral and neuroanatomical changes were restored in DISC1 mice after doxycycline treatment to shut down expression of mutant DISC1. Our studies indicate that common and cell type specific changes could explain heterogeneous manifestations of gene-environment interactions consistent with variable symptoms of psychiatric disorders.

THE EFFECTS OF MINDFULNESS-ORIENTED RECOVERY ENHANCEMENT ON ALLOSTATIC MECHANISMS IN STRESS, PAIN, AND ADDICTION. E Garland, University of Utah, Salt Lake City, UT, USA

INTRODUCTION: Chronic pain results in stress-induced neuroplastic changes to the extended amygdala that are further exacerbated by addictive behavior, resulting in an allostatic state marked by hypersensitivity to stress and aversive stimuli coupled with a downward shift in responsiveness to natural rewards. This stress-induced hedonic dysregulation may represent a crucial tipping point leading to full blown addiction. Novel therapies that target allostatic mechanisms may be an effective means of remediating stress and addiction. **METHODS:** To test this hypothesis, we examined psychophysiological data from a randomized controlled trial of Mindfulness-Oriented Recovery Enhancement (MORE), a cognitive training intervention designed to reduce chronic pain and prescription opioid misuse. Chronic pain patients (N = 115) were randomized to either a MORE group (n = 57) or a supportive therapy group (n = 58). MORE sessions involved training in mindfulness, reappraisal, and savoring skills designed to modulate self-regulation of stress reactivity and enhance responsiveness to natural rewards. Stress arousal, chronic pain symptoms, opioid craving, and opioid misuse were assessed pre- and post-intervention, as well as at 3-month follow-up. Participants completed a psychophysiological protocol that assessed attentional and autonomic responses during attention to threat-related, opioid, and natural reward cues. **RESULTS:** Participants in the MORE intervention reported significantly greater reductions in stress arousal and pain, as well as significantly greater decreases in opioid craving and opioid misuse, than support group participants. Psychophysiological measures indicated that MORE participants exhibited decreased attentional bias to stressful, threatening cues coupled with improvements in cardiac-autonomic responsiveness to natural reward cues. Increases natural reward responsiveness were associated with decreased opioid craving and misuse. **DISCUSSION:** Study findings provide evidence that MORE may modulate allostatic mechanisms, thereby reducing sensitivity to stress and pain while increasing sensitivity to natural reward. The MORE intervention may be a promising treatment for stress and addiction. **RESEARCH SUPPORT:** US National Institutes of Health (NIH).

SYMPOSIUM 1. ZUKOWSKA SYMPOSIUM ON BIOLOGICAL PSYCHIATRY. CHAIR: AV KALUEFF (USA)

INTRODUCTION: PROFESSOR ZOFIA M ZUKOWSKA

Prof. ZOFIA M. ZUKOWSKA (1949-2012) received her M.D. and Ph.D., trained in cardiovascular medicine at the Warsaw Medical Academy (Poland). She pursued post-doctoral training at the NIH, working with such renowned scientists as Irwin I. Kopin, Scientific Director of NINDS, and Julie Axelrod, a Nobel Laureate. During this research period, her interest in stress and neuropeptides became galvanized. For the 25 years, she was a professor (and, later Chair) of the Department of Physiology and Biophysics at Georgetown University, before moving to the University of Minnesota as the Director of Stress Physiology Center. Her research examined how stress affects cardiovascular and metabolic health and diseases, and the role of peptides, in particular neuropeptide Y (NPY), a sympathetic neurotransmitter and stress mediator. She was the first to determine that NPY mediates stress-induced prolonged vasoconstriction and vascular mitogenic and pro-atherosclerotic effects (via Y1 receptors) and potent angiogenic actions (via Y2 receptors), establishing the role of NPY in ischemia, retinopathy, tumors and obesity. Professor Zukowska (or Zosia, as she was known and admired by many) was a good friend and a strong supporter of the ISBS, serving as a regular plenary speaker at our conferences. Her scientific vision, extraordinary creativity, kindness to colleagues, and the talent to be daring, continue to inspire all her ISBS colleagues and their research. This regular ISBS symposium continues Zofia's scientific legacy in the field of biological psychiatry of stress.

THE IMPACT OF A BEHAVIORAL INTERVENTION ON FAMILY CAREGIVERS' C-REACTIVE PROTEIN.

PR Sherwood, HS Donovan, L Terhorst, A Marsland, BA Given and CW Given, University of Pittsburgh, Pittsburgh, PA, USA

INTRODUCTION: Several decades of research have linked family caregiver distress to psychological distress and several studies have also linked providing care to altered immune function in family caregivers. Although caregiver interventions have shown moderate success in reducing caregivers' psychological distress, the impact of these interventions on biological outcomes is relatively unknown. The purpose of this analysis was to determine whether an 8-week web and telephone based behavioral intervention delivered by nurses would affect circulating levels of C-reactive protein (CRP) in caregivers of persons with a primary malignant brain tumor (PMBT). **METHODS:** Family caregivers (n=48) of persons with PMBT were randomized into two groups, one who received access to an internet site with evidence based neuro-oncology information (enhanced care as usual, ECAU), and the other who received the eight-week behavioral intervention. In-home visits were conducted to collect plasma for analysis of caregivers' C-reactive protein (CRP) at baseline and at the end of the intervention. CRP was analyzed using high sensitivity CRP with laser nephelometry. A generalized linear model with gamma distribution evaluating group by time changes in CRP from baseline to 4 months was conducted controlling for gender, age, baseline CRP, relationship to the care recipient, number of comorbid conditions, cardiac medication, alcohol use, and smoking status. **RESULTS AND DISCUSSION:** The majority of caregivers were female (68%) with a mean age of 52 (SD=11); 44% had a pre-existing history of cardiac conditions. When CRP values were examined over time, there was a significant (p=0.03) group by sex interaction in that females who received the intervention displayed a decrease in CRP over time from baseline (1.11mg/L) to the end of the intervention (0.88mg/L). Participants in the ECAU group displayed a rise in CRP levels over time

doubling from 0.63mg/L to 1.30mg/L. This intervention effect remained significant after controlling for potential covariates. Additional responder analyses will be presented to compare the percentage of participants in each group who moved from low level of risk for coronary disease (CRP<1.0mg/L) to a moderate level of risk for coronary disease (CRP 1.0-3.0mg/L), stayed the same, or increased from low to high risk. Preliminary analyses support the relationship of psychological and biological variables and also underscore the potential to affect overall physical health through behavioral interventions targeting stress reduction. **RESEARCH SUPPORT:** US National Institutes of Health (NIH), National Institute of Nursing Research grant R01-NR013170.

ASSOCIATION BETWEEN EARLY AND RECENT LIFE STRESS AND DNA METHYLATION - EPIGENOME-WIDE ASSOCIATION STUDY. WL Dragan, A Sokołowski, P Stawiński, P Gasperowicz, G Kostrzewa and R Płoski, Interdisciplinary Centre for Behavioural Genetics Research, Faculty of Psychology, University of Warsaw, Departments of Medical Genetics, and Forensic Medicine, Medical University of Warsaw, Warsaw, Poland

Several lines of evidence indicate that early and recent life stress may impact the development of psychopathology. DNA methylation is the potential mediating mechanism underlying this effect. Our study aimed to investigate possible links between early and recent life stress and DNA methylation profiles in an epigenome-wide manner. The studied group includes 90 participants (47 male and 43 female) aged 18 – 25 years (M = 21.6; SD = 1.81) selected from the group of 503 subjects by the Early Life Stress Questionnaire (ELSQ) and Recent Life Changes Questionnaire (RLCQ) scores. The DNA methylation status was analyzed using array technology in the DNA derived from lymphoblastoid cells. We will present data on differences in methylation status of single CpG sites between groups differing in the level of stress as well as pathway analysis results. We will discuss the obtained results in the light of inoculation and sensitization model of the impact of stress. **RESEARCH SUPPORT:** This study was supported by the National Science Center, Poland (grant 2014/14/E/HS6/00413) and internal funds of the University of Warsaw.

DOES RUMINATION ALLOW TO PREDICT EMOTIONAL DISORDERS? M Dragan, University of Warsaw, Warsaw, Poland

INTRODUCTION: Rumination – a pattern of prolonged negative thinking – is associated with the worsening of negative mood states and prolonging and deepening episodes of depression as well as increasing the risk of developing subsequent episodes. However, in the metacognitive self-regulatory function model it is also hypothesized to serve as a transdiagnostic vulnerability factor in the development and maintenance of various disorders. The aim of presented study was to test hypothesis that tendency to rumination is predictive for diagnosis of Axis I disorders. **METHODS:** At the first stage a large sample of participants (N=1200) fulfilled three questionnaires measuring tendency to rumination and dysfunctional metacognition. From this sample, 90 participants were selected to the second stage of the study. 45 of them were classified as ruminators, and 45 as non-ruminators. Both groups of participants were examined using DSM-IV-R SCID-I clinical interview (belonging to the groups was blinded). **RESULTS AND DISCUSSION:** Results confirm an assumption that diagnosis of Axis I disorders (mainly depression and anxiety disorders) can be predicted on the basis of tendency to rumination. Diagnosis of emotional disorders was significantly more frequent in the group of ruminators. Moreover, ruminators reported also more sub-clinical symptomatology. These findings can be interpreted as a confirmation of basic assumptions of transdiagnostic metacognitive model of psychopathology. **RESEARCH SUPPORT:** The National Science Centre in Poland.

ISBS Special Focus talk: UNDERSTANDING ANTIDEPPRESSANT DISCONTINUATION SYNDROME (ASD) – BRIDGING CLINICAL AND PRECLINICAL FINDINGS. KN Zabegalov, TO Kolesnikova, SL Khatsko, AD Volgin, OA Yakovlev, TG Amstislavskaya, PA Alekseeva, DA Meshalkina, AJ Friend, W Bao, KA Demin and AV Kalueff, ISBS Fellow, Ural Federal University, Yekaterinburg, Institute of Translational Biomedicine, St. Petersburg State University, St. Petersburg, Laboratory of Translational Biopsychiatry, Research Institute of Physiology and Basic Medicine, Department of Neuroscience, Novosibirsk State University, Novosibirsk, Russia; School of Pharmacy, Southwest University, Chongqing, China; Institute of Experimental Medicine, Almazov National Medical Research Center, St. Petersburg, Russia; Tulane University School of Science and Engineering, New Orleans, The International Zebrafish Neuroscience Research Consortium (ZNRC), ZENEREI Research Center, Slidell, LA, USA

Antidepressant drugs are currently the most prescribed class of medications. In addition to treatment resistance and side effects of antidepressants, their clinical use is further complicated by antidepressant discontinuation syndrome (ADS). ADS typically occurs in patients following the interruption, dose reduction, or discontinuation of antidepressant drugs. ADS resembles a classical drug withdrawal syndrome, albeit differing from it because antidepressants generally do not induce addiction. The growing clinical importance and prevalence of ADS necessitate novel experimental (animal) models of this disorder. Currently available preclinical models of ADS are mainly rodent-based, and study mostly serotonergic antidepressants and their combinations. Here, we systematically assess clinical ADS symptoms and discuss current trends and challenges in the field of experimental (animal) models of ADS. We also outline basic mechanisms underlying ADS pathobiology, evaluate its genetic, pharmacological and environmental determinants, and suggest how using animal models of ADS may help generate important translational insights into human ADS condition, its prevention and therapy. **RESEARCH SUPPORT:** The Russian Foundation for Basic Research (RFBR).

VIDEO-PRESENTATION: ART MEETS SCIENCE. D Raytchev, D Raytchev Art, London, UK

DAY 2. Wednesday, January 17, 2018

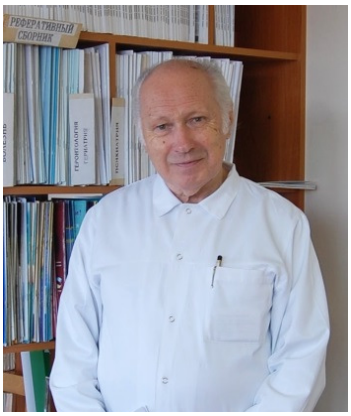
Dolphins Conference Center, Bay Gardens Beach Resort & Spa, Rodney Bay, St. Lucia

PAIN MANAGEMENT IN THE CANCER PATIENT. WCV Parris, Department of Anesthesiology, Duke University Medical Center, Durham, NC, USA

The goals and objectives of this presentation are to discuss the overall treatment of the cancer patient with special emphasis on pain mechanisms and relevant therapies. To that end, the following objectives would be emphasized: 1. The background and epidemiological issues related to cancer pain, 2. Classification and mechanisms of cancer pain syndromes, 3. Therapeutic options for cancer pain syndromes. Issues relating to the patient, the providers and the healthcare system would be discussed in the context of providing care for the cancer pain patient.

SYMPOSIUM 2. LAPIN SYMPOSIUM ON TRANSLATIONAL BIOMEDICINE. CHAIR: MV PLETNIKOV (USA)

INTRODUCTION: PROFESSOR IZYASLAV P LAPIN



This regular ISBS symposium is dedicated to Professor Izyaslav 'Slava' P. Lapin (1930-2012), a true pioneer of experimental neuro-psychopharmacology and biological psychiatry. Slava Lapin graduated from Pavlov Medical School in St. Petersburg, and shortly after receiving PhD, was invited in 1960 to establish the first psychopharmacology laboratory at the Bekhterev Psychoneurological Institute. The most important scientific contribution of Prof. Lapin was establishing the link between serotonin levels and mood-elevating (thymoleptic) action of antidepressants. He suggested that enhanced central serotonergic tone is essential for the mood-elevating effects of antidepressants. Lapin's serotonin hypothesis of antidepressant action, published (together with G Oxenkrug) in Lancet in 1969, became one the most cited papers published in this journal in the last 50 years. Lapin's studies have contributed greatly to the development of newest serotonergic antidepressants, such as SSRIs, currently representing the most prescribed group of psychotropic drugs in the world. Prof. Lapin was also the first to report the neuroactive effects of kynurenine and its derivatives – a discovery that opened another rapidly expanding area of glutamatergic psychopharmacology. A talented professional musician, prolific writer, painter, and an enthusiastic athlete, Prof. Lapin was a strong supporter of ISBS, and generously shared his knowledge with colleagues and students at our "Stress and Behavior" conferences and ISBS summer schools. His enthusiasm, friendship, generous support of junior colleagues, and the deep knowledge as both a clinical and experimental neuropharmacologist ('humanists' and 'animalists', as he called them), made a long-lasting impact on his colleagues and students. This ISBS symposium will continue Lapin's scientific legacy in the field of biological psychiatry and translational neuroscience.

ISBS Presidential Lecture 4: ZEBRAFISH MODELS OF DRUG ABUSE AND STRESS. AV Kalueff, ISBS Fellow, ZENEREI Research Center, Slidell, LA, USA; Southwest University, Chongqing, China; St. Petersburg State University, St. Petersburg, Ural Federal University, Ekaterinburg, Russia

Chronic stress is the major pathogenetic factor of human anxiety and depression. Drug abuse is commonly comorbid with stress, anxiety and depression. Zebrafish (Danio rerio) have recently become a novel popular model species for neuroscience research and CNS drug discovery. The utility of zebrafish for mimicking human affective disorders is also rapidly growing. Here, we

summarize zebrafish models of acute and chronic stress, and the sensitivity of zebrafish to major drugs of abuse. Together, these findings support zebrafish as a useful in-vivo model of stress and drug abuse, also calling for further cross-species studies of both shared/overlapping and distinct neurobiological responses. Finally, we overview recent findings on the role of environmental enrichment in zebrafish (with a specific focus on auditory enrichment), and discuss potential strategic areas of research in this field.

ISBS Plenary Lecture 5: HIV PREVENTION, TREATMENT AND CARE AMONG PEOPLE WHO USE STIMULANT DRUGS AND THEIR SEXUAL PARTNERS, AN IMPLEMENTATION GUIDE. M Day, ISBS Fellow, Caribbean Drug and Alcohol Research Institute (CDARI), Castries, St. Lucia

BACKGROUND: The context of drugs, drug taking and BBV has changed in the past 4 decades with the increase in use of stimulants and new psychoactive substances (NPS). The use of and injection of stimulants and NPS has lead to the growth of HIV and other BBV in populations not specifically supported by services designed for opioid users. Other subpopulations of stimulant users who's risk of HIV comes from sexual transmission rarely encounter community based HIV prevention initiatives. **DESCRIPTION:** People who use stimulants include individuals who use, either by injecting or non-injecting routes, cocaine and it's smokable derivatives; amphetamine-type stimulants (ATS) or any of the other varieties of new psychoactive stimulant (NPS) drugs. The injection of stimulants differs from that of opioids and is associated with rapid repeated patterns of injecting that requires tailored safer injecting advice and access to adequate stocks of injecting equipment. HIV epidemics among people who use stimulants, are particularly prevalent among among female, MSM and trans sex workers and MSM engaged in concurrent sex parties and other high risk sexual behaviour. HIV vulnerability increases when the interaction of poverty, marginalisation, sex work intersects with historic epidemics and elevated viral loads, particularly in communities of people who inject drugs. The collective use of drugs to enhance sexual experience, the use of stimulants to extend working hours, and immunosuppressant qualities of stimulants co-exist to create conditions that can exacerbate risk of transmission of HIV. **LESSONS LEARNED:** The promotion and development of services for people who use stimulant drugs is often taking place within contexts where their drug use attracts high levels of stigma, discrimination and criminalisation, constituting major barriers to access and utilise services. When these individuals are also members of other key population groups, such as MSM or women who present as sex workers, the stigma and discrimination comes from both the external society and their own community. **CONCLUSIONS/NEXT STEPS:** To address these issues requires a targeted response tailored to the needs of key populations engaged in stimulant use including community access to harm reduction commodities, condom and lubricant distribution, HIV/STI testing and treatment, and access to ART, PEP and PREP. Country of research: Antigua and Barbuda, Dominica, Dominican Republic, Jamaica, Martinique, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago. Key population targeted: People who inject drugs, Men who have sex with men, Transgender people.

PREVALENCE OF ORAL HPV INFECTION AMONG HEALTHY INDIVIDUALS AND HEAD AND NECK CANCER CASES IN THE FRENCH WEST INDIES. A Auguste, S Gaete, C Herrmann-Storck, L Michineau, C Joachim, J Deloumeaux, S Duflo and D Luce, INSERM U 1085-IRSET (Research Institute for Environmental and Occupational Health), Pointe-à-Pitre, Guadeloupe, University of Rennes, Rennes, Centre de Ressources Biologiques de Guadeloupe, Laboratory of Microbiology, University Hospital of Guadeloupe, Pointe-à-Pitre, Guadeloupe, Martinique Cancer Registry, UF Pôle de Cancérologie Hématologie Urologie Pathologie,

University Hospital of Martinique, Fort-de-France, Martinique, General Cancer Registry of Guadeloupe, Department of Oto-Rhino-Laryngology and Head and Neck Surgery, University Hospital of Guadeloupe, Pointe-à-Pitre, Guadeloupe, France

INTRODUCTION: Human papillomavirus (HPV) is known to play a role in the development of head and neck squamous cell carcinomas (HNSCC) and to date, no study has reported on the association oral HPV infection and HNSCC in the Caribbean. The objective was to determine the prevalence of oral HPV infection in the French West Indies (FWI), overall and by HPV genotypes, among HNSCC cases and healthy population controls. **METHOD:** We used data from a population-based case-control study conducted in the FWI. The prevalence of oral HPV was estimated separately among 100 HNSCC cases (mean age 59 years) and 308 population controls (mean age 57 years). Odds ratios (OR) and 95% confidence intervals (CI) were estimated using a logistic regression adjusting for age, sex, tobacco and alcohol consumption, to assess the association between oral HPV infection and HNSCC. **RESULTS AND DISCUSSION:** Prevalence of oral HPV infections was 26% in the controls (30% in men and 14% in women) and 36% in the HNSCC cases (36% in men, 33% in women). HPV52 was the most commonly detected genotype, in cases and in controls. The prevalence of HPV16, HPV33 and HPV51 was significantly higher in cases than in controls (p=0.0340, p=0.0472 and 0.0144 respectively). Oral infection with high-risk HPV was associated with an increase in risk of HNSCC (OR=1.99, 95% CI 0.95- 4.15). HPV16 was only associated with oropharyngeal cancer (OR=16.01, 95% CI 1.67 –153.64). **CONCLUSION:** This study revealed a high prevalence of oral HPV infection in this middle-aged Afro-Caribbean population, and a specific distribution of HPV genotypes. These findings may provide insight into HNSCC aetiology specific to the FWI. **RESEARCH SUPPORT:** Grant from the "Ligue contre le Cancer, comité d'Ille-et-Vilaine" (to AA). This study was funded by the French National Cancer Institute (Institut National du Cancer) and the Cancéropôle Ile-de-France.

ISBS Plenary Lecture 6: UPDATE ON CANNABIS NEUROBIOLOGY. M Fraites, St. Lucia, WI

I will outline the earliest known history of cannabis and some of the most significant studies and discoveries made in this field, showing that humans have long been inextricably linked with cannabis. The first isolation of the THC molecule from cannabis was a breakthrough that led to the discovery and understanding of the endocannabinoid system. However, 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, their endogenous ligands, 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. The cannabinoid receptors are abundant 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. With a firm understanding of the endocannabinoid system and the 60+ cannabinoids, we can prevent or eliminate the few negative possible outcomes of Cannabis use and maintain optimum health.

ISBS Special Focus Lecture 7: STRESS INDUCED CHRONIC FATIGUE - REJUVENATING ABILITIES OF LICORICE ROOT [Glycyrrhiza glabra]. G St. Rose, ISBS Fellow, Managing Director Eden Herbs, Integrative Health Care Consultant and Herbalist, Creative Health Center, St. Lucia, WI

The hypothalamic-pituitary-adrenal (HPA) axis functioning is the major key hormonal stress

system of the body. The adrenal glands are the body's response system for emotional, physical or chemical stress. They produce hormones (adrenaline and cortisol) to help responses to stress. When the adrenals are required to constantly respond to stress, they eventually have to struggle to produce cortisol and adrenaline (and other important hormones). This pattern depletes the adrenals and leads to adrenal exhaustion which can lead to chronic fatigue syndrome. Licorice root (*Glycyrrhiza glabra*), alternatively known as liquorice root, is a commonly used herbal medicine. "Chinese licorice", Glycyrrhiza uralensis is the second variety. Licorice was found to help the body to more efficiently regulate cortisol (the main stress hormone) and to reverse the resultant chronic fatigue.

GENERAL DISCUSSION AND CONCLUDING REMARKS

DAY 3. Thursday, January 18, 2018

SOCIAL AND EDUCATIONAL TOURS

THE INTERNATIONAL "STRESS AND BEHAVIOR" SOCIETY (ISBS)

ISBS is the international society of experts working with a wide range of topics in the field of translational neuroscience, neurobehavioral sciences, biopsychology and biopsychiatry, with a particular focus on stress, stress-related neurobehavioral phenotypes, their neural, molecular and genetic mechanisms, as well as stress-evoked neuropsychiatric disorders.

Anyone with an interest in stress-related human or animal behaviors, neurobehavioral disorders and their mechanisms, wishing to join ISBS, can do so by paying dues. Payment can be made following sending the e-mail form and payment request to the ISBS Secretariat at info@stressandbehavior.com. Once the form and the payment have been received, you will receive a membership confirmation.

Membership:

Regular membership dues are $100.00 for the period of three years, or $60.00 for the period of one year. Student (undergraduate and graduate) membership dues are $60.00 for the period of three years.

- Regular membership benefits include a $50.00 discount for registration for any of the ISBS Conferences, symposia, workshops and summer schools.
- Student members will benefit from a $25.00 discount for registration for any of the ISBS Conferences, symposia, workshops and summer schools.
- Membership cycle starts January 1st. ISBS Members benefit from reduced STRESS, BRAIN & BEHAVIOR journal subscription fees: $70.00 (regular member), $55.00 (student member).

ISBS Membership application form (please fill in and send by e-mail to the ISBS Secretariat at info@stressandbehavior.com, with the subject 'ISBS Membership request')

Name, Family name:
Position/Title:
Institute/Company:
Category - please select one:
• Regular member, 3-year term ($ 100.00)
• Regular member, 1-year term ($ 60.00)
• Student member, 3-year term ($ 60.00)
Address (affiliation): City:
Postal code: State: Country:
Phone, Fax:
E-mail address: www:

THE INTERNATIONAL "STRESS AND BEHAVIOR" SOCIETY (ISBS)

Fellows of ISBS:

The ISBS Fellowship (with Life membership) is the highest honor bestowed by the International Stress and Behavior Society. It is awarded annually to international scholars, in recognition of their contribution to clinical or translational neuroscience, biological psychiatry and stress physiology research and/or education, as well as for their long-standing support of the ISBS mission and its national, regional or international programs.

Dr. Mikhail Aghajanov (Yerevan Medical University, Armenia), 2015
Dr. Elliott Beaton (University of New Orleans, USA), 2015
Dr. Evgeniy Budygin (Wake Forest Medical Center, USA), 2014
Dr. Marcus Day (Caribbean Drug and Alcohol Research Institute, St. Lucia), 2017
Dr. David Echevarria (University of Southern Mississippi, USA), 2014
Dr. Alexey Egorov (Sechenov Institute, Russia), 2014
Dr. Irina Ekimova (Sechenov Institute, Russia), 2013
Dr. Raul Gainetdinov (Italian Institute of Technology, Italy), 2013
Dr. Allan Kalueff (ZENEREI Institute, USA), ISBS President, 2013
Dr. Victor Klimenko (Institute of Experimental Medicine, Russia), Vice-President, 2013
Dr. Mamiko Koshiba (Tokyo University of Agriculture and Technology, Japan), 2014
Dr. Shun Nakamura (Tokyo University of Agriculture and Technology, Japan), 2014
Dr. Tatyana Nevidimova (National Mental Health Institute, Russia), 2014
Dr. Yuriy Pastuhov (Sechenov Institute, Russia), 2013
Dr. Ghanshyam Pandey (University of Illinois at Chicago), 2017, USA
Dr. Mikhail Pletnikov (Johns Hopkins University, USA), 2015
Dr. Tatyana Sollertinskaya (Sechenov Institute, Russia), 2013, deceased
Dr. Adam Stewart (ZENEREI Institute, USA), 2015
Dr. Tatyana Strekalova (Maastricht University, Netherlands), 2014
Dr. Gilbertha St. Rose (Eden Herbs, St. Lucia), 2015
Dr. Oleg Syropiatov (UAPO, Ukraine), 2013
Dr. Sergei Tsikunov (Institute of Experimental Medicine, Russia), 2014
Dr. Jason Warnick (Arkansas Tech University, USA), 2014
Dr. Louis Newman (Destiny Medical School, St. Lucia), 2016
Dr. Urban Seraphin (Allied Health Council, St. Lucia), 2016
Dr. Dusko Kozic (University of Novi Sad, Serbia), 2016
Dr. Petr Shabanov (Institute of Experimental Medicine, Russia), 2016

The International Zebrafish Neuroscience Research Consortium (ZNRC)

The main goal of ZNRC is to promote zebrafish neuroscience research. Created in February 2010, ZNRC offers excellent networking opportunities and peer support for active zebrafish labs.

ZNRC currently includes the following labs/PIs:

- Allan Kalueff, USA/Russia/China
- Georgianna Gould, USA
- Oliver Braubach, Canada/Korea
- Anderson Manoel Herculano, Brazil
- Caio Maximino, Brazil
- David Echevarria, USA
- Joseph Schroeder, USA
- Jason Warnick, USA
- Dominic Wright, Sweden
- Carla Denise Bonan, Brazil
- Mônica Ryff Moreira Roca Vianna, Brazil
- Wei Weng, USA
- Bally-Cuif, France
- Julian Pittman, USA
- Denis Rosemberg, Brazil
- Diogo Onofre Souza, Brazil
- Diogo Losch de Oliveira, Brazil
- Raul Bonne Hernandez, Brazil
- William Norton, UK
- Adam Michael Stewart, USA
- Lucas Noldus, Netherlands
- Jeremy Ullmann, Australia
- and others

ZNRC is currently involved in inter-lab academic exchanges, zebrafish scholarly publications, and organizing zebrafish-related symposia and conferences.

If your lab is interested in joining ZNRC, please email your request and PI's CV to the ZNRC coordinator at info@stressandbehavior.com

Dear Colleagues and Friends,

It is our great pleasure to announce the 8th Mind-Body Interface (MBI) International Symposium is to be held at China Medical University, Taichung, Taiwan in October 2018. The tentative dates are Oct. 25-27, 2018.

The main theme of MBI symposium is *"From Molecule to Mind : Bridging the Gap between Bench and Bedside in Neuroscience"*, which will comprise keynote speech, plenary sessions and poster sessions. Bursaries for overseas participants are provided. For more information regarding the symposium updates and abstract submission, please follow up our website: www.mbi2018.org.

The MBI Int'l symposium is organized by Taiwanese Society for Nutritional Psychiatry and it has been vigorously promoting a global agenda of translational medicine by encouraging interdisciplinary research, and integrating biomedical discovery and development focused on patients, to provide better care and service in the field of brain health. The meeting is featured with a broad spectrum of research, including basic science and the biological processes and factors underlying mental illness, including immunology, metabolic processes and molecular science. Furthermore, there will be a strong focus on neuroimaging, personalized medicine, lifestyle intervention, brain-gut-microbe axis, dietary intervention, health promotion and disease management, epidemiology and population studies, as well as Chinese medicine in mental health.

This year (2018), we are especially delighted to welcome our international partners to actively take part in the symposium, including International Stress and Behavior Society (ISBS), and Psychoneuroimmunology Research Society (PNIRS-Asia Pacific). With the inspiration and intimate interaction from society members worldwide, and the great hospitality and social events every year, the 8th MBI Int'l Symposium is guaranteed to be as successful as it has been in the previous years.

※ 2017 MBI Int'l Symposium Photos: https://goo.gl/YG9uYv

※ 2017 MBI Int'l Symposium Website: www.mbi2017.org

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Metris is a leading manufacturer of advanced systems for animal behavior analysis (in-vivo experiments) that are sold globally. Main products are: LABORAS, SONOTRACK and SMARTCHAMBER.

LABORAS is an innovative system that automates behavior scoring–and analysis of small laboratory animals. The system tracks the XY-position and simultaneously identifies more than 18 validated stereotypical and normal behaviors in mice and rats. Laboras does not use video or infrared beams! There are over 300 publications about the use of Laboras by several leading researchers, pharmaceutical companies, CRO's and leading universities from around the world.

SONOTRACK is an advanced system to record, analyze and playback ultrasound vocalizations. The system is highly valued for research in Pain, Stress, Anxiety, Fear, Memory, Learning, Developmental (Neuro) Toxicity and Social Interaction tests. Sonotrack is the best ultrasound vocalization system on the market today because of its full spectrum USV recording (15 kHz to 125 kHz) characteristics, extremely low noise, long duration recording capability and reliable fully-automatic detection of rodent calls.

SMARTCHAMBER provides a sound isolated, ventilated and light controlled environment to perform high performance ultrasonic vocalization experiments. The chamber includes an ultrasonic microphone and the interior of the chamber effectively removes sound echo's, external noise and sounds and magnetic fields. SmartChamber can be seamlessly integrated with our product Sonotrack.

DSI Data Sciences International is the leading manufacturer for implantable monitoring devices used in preclinical studies. The devices acquire cardiovascular, CNS and respiratory data from freely moving animals in a stressfree environment.

In the CIS countries, Metris sells modular vivariums and laboratory cabins and various vivarium and laboratory equipment, including cages, Individual Ventilated Cages (IVC racks), workstations, washing machines, wireless equipment for animal identification and temperature registration, systems for wireless measurement of physiology parameters (ECG, EEG, EMG, Blood pressure, Temperature, Respiration) and Sleep Analysis software.

Metris is exclusive distributor for DataSciences International (DSI-telemetry), LabProducts, Bio Medical Data systems (BMDS), Instech, Buxco and Kissei Comtec.

THE INTERNATIONAL STRESS AND BEHAVIOR SOCIETY (ISBS)

Please join our 2018-2019 ISBS Conferences:

25th International Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR"
May 16-19, 2018, St. Petersburg, Russia

International Neuroscience and Biological Psychiatry ISBS Symposium "TRANSLATIONAL BIOLOGICAL PSYCHIATRY"
May 23, 2018, Kiev, Ukraine

14th International Regional Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR"
(North America)
June 22-23, 2018, Miami Beach, FL, USA

15th International Regional Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR" (Asia)
September 9-10, 2018, Yamaguchi, Japan
(in conjunction with WFSBP Kobe September 7-9, 2018)

26th International Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR"
May 16-19, 2019, St. Petersburg, Russia

16th International Regional Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR"
(North America)
June 22-23, 2019, Miami Beach, FL, USA

E-mail: info@stressandbehavior.com
www.stress-and-behavior.com