The International STRESS AND BEHAVIOR Society (ISBS)

Program and Proceedings

8th International Regional (Asia)
ISBS Neuroscience and Biological Psychiatry
"Stress and Behavior"
Conference

Yokohama, Japan
July 23-25, 2016

IN PARTNERSHIP WITH:

The Japan Society for Neuroscience (Japan) – Satellite Symposium of JSN

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Day 1. Saturday, July 23, 2016

Tokyo City University, Yokohama Campus, Yokohama, Japan

15.00-17.00 REGISTRATION

Afternoon session

17.00-17.20 ISBS OPENING CEREMONY AND WELCOMING ADDRESSES

17.20-18.00 ISBS OPENING PLENARY LECTURE: COMPARATIVE MODELING OF EMOTIONAL BEHAVIOR AND BRAIN. S Nakamura, ISBS Fellow, Tokyo University of Agriculture and Technology, Tokyo, Japan, CorLab Inc., Tokyo, Japan

18.00-18.20 ISBS PRESIDENTIAL REPORT: TASK FORCE ON NEURODEVELOPMENTAL DISORDERS. AV Kalueff, ISBS Fellow, ZENEREI Research Center, Slidell, LA, USA

18.20-18.40 ART AND SCIENCE MEET: AN ARTIST'S PERSPECTIVE ON MENTAL HEALTH. D Raytchev, Raytchev Art, London, UK

Day 2. Sunday, July 24, 2016

Tokyo City University, Yokohama Campus, Yokohama, Japan

09.00-17.00 REGISTRATION

Morning session

09.00-10.30 SYMPOSIUM 1. ZUKOWSKA SYMPOSIUM ON TRANSLATIONAL STRESS NEUROSCIENCE. Chairs: AV Kalueff (USA) and S Nakamura (Japan)

09.00-09.20 ACUTE ENCEPHALOPATHY IN INFANCY AND ITS RELATED DISORDERS. H Yamanouchi, Saitama Medical University, Saitama, Japan

09.20-09.40 BEHAVIORAL AND SYNAPTIC EFFECTS OF COX-2 INHIBITION IN AN ANIMAL MODEL OF STRESS-INDUCED ANXIETY. JC Gamble-George, L Halladay, A Kocharian, C Silva, H Roberts, C Pham-Lake, DJ Hermanson, LJ Marnett, A Holmes, S Patel. Department of Psychiatry, Vanderbilt Brain Institute, A.B. Hancock Jr. Memorial Laboratory for Cancer Research, Departments of Biochemistry, Chemistry, and Pharmacology, Vanderbilt Institute of Chemical Biology, Center in Molecular Toxicology, and the Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine, Vanderbilt University College of Arts and Sciences, Nashville, TN, Laboratory of Behavioral and Genomic Neuroscience, Section on Behavioral and Genomic Neuroscience, National Institute on Alcoholism and Alcohol Abuse, NIH, Bethesda, MD, Agnes Scott College, Decatur, GA, USA

09.40-10.00 AUTOPHAGY-ERK1/2-INVOLVED DISINHIBITION OF HIPPOCAMPAL NEURONS CONTRIBUTES TO THE PRE-SYNAPTIC TOXICITY INDUCED BY Aβ EXPOSURE. Y Yin, N Zhang, S Han, Capital Medical University, Beijing, China

10.00-10.15 THE REGULATORY EFFECTS OF PINK1 ON TYROSINE HYDROXYLASE GENE EXPRESSION. LL Lu, HZ Jia, H Yang, Center of Parkinson's Disease, Beijing Institute for Brain Disorders, Department of Neurobiology, Capital Medical University, Beijing

Center of Neural Regeneration and Repair, Key Laboratory for Neurodegenerative Diseases of the Ministry of Education, Beijing, China

10.15-10.30 **PREDICTED VS. RANDOM CHRONIC STRESS, EFFECTS ON CELL MORPHOLOGY, LEARNING AND DECISION BASED BEHAVIOR.** M Kassem and B Balleine, The Brain and Mind Centre, University of Sydney, Sydney,Decison Neuroscience Laboratory, School of Psychology, University of New South Wales, NSW, Australia

10.30-11.00 **SPECIAL LECTURE OF ISRAELI SOCIETY FOR BIOLOGICAL PSYCHIATRY (ISBP): ANXIETY DISORDERS IN INDIVIDUALS WITH INTELLECTUAL DISABILITIES AND NEUROGENETIC SYNDROMES.** D Gothelf, Sheba Medical Center, Tel Aviv University, Tel Aviv, Israel

11.00-11.20 **COFFEE BREAK**

11.20-14.10 **SYMPOSIUM 2. LAPIN SYMPOSIUM ON BIOLOGICAL PSYCHIATRY**
Chairs: M Koshiba (Japan), AV Kalueff (USA)

11.20-11.35 **FOUR FORMULATED PSYCHOLOGICAL PROBLEMS OF RESIDENTS OF FUKUSHIMA AFTER THE NUCLEAR PLANT ACCIDENTS.** A Hori, Hori Mental Clinic, Non-profit Organization Minano-Tonari-Gumi, Japan

11.35-11.50 **THE OUTCOME OF CHILDREN WITH SELECTIVE MUTISM FOLLOWING COGNITIVE BEHAVIORAL INTERVENTION.** A Gothelf, C Lang, Z Nir, D Gothelf, The Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Sheba Medical Center, Tel Hashomer, Israel

11.50-12.05 **POSITIVE FEATURES OF ASIAN INTERNATIONAL STUDENTS IN THE UK: MINIMIZING ACCULTURATIVE STRESS AND PROMOTING PERSONAL GROWTH.** W Mekwilai, Department of Mental Health, Ministry of Public Health, Bangkok, Thailand

12.05-12.20 **DEPRESSION AND COGNITIVE IMPAIRMENT AMONG HEMODIALYSIS PATIENTS IN KUALA LUMPUR HOSPITAL: AN URBAN EXPERIENCE.** NN Raduan, MR Salleh, GA Kutty, Psychological and Behavioral Medicine, Faculty of Medicine, University Technology of MARA, Nephrology Department, Kuala Lumpur Hospital, Kuala Lumpur, Malaysia

12.20-12.35 **BURNOUT AND PSYCHOLOGICAL DISTRESS AMONG CHILDMINDERS IN RESIDENTIAL CHILDRENS' HOMES IN MALAYSIA.** Siti Halimatul Saadiah H, Manveen Kaur HS, Aili Hanim H, Aminah K, Ng Chong Guan, Child and Adolescent Psychiatry Unit, Department of Psychological Medicine, Faculty of Medicine, University Malaya, Petaling Jaya, Selangor, Malaysia, Child and Adolescent Psychiatry Unit, Department of Psychiatry, Kuala Lumpur Hospital, Kuala Lumpur, Malaysia

12.35-12.50 **PSYCHIATRIC SCREENING AT PRE-DIALYSIS CONSULTATION.** DG Straatsburg, EA Hoekman, R Smulders, JG Lijmer, OLVG Hospital, Amsterdam, Netherlands

12.50-13.05 **HEALING IN THE HARVEST: TRYPTOPHAN IN THE CREE DIET.** N Spiegelaar, University of Toronto, Toronto, Canada

13.05-13.20 **EXPLORING THE SOCIAL ASPECTS OF PRIVACY AMONG PSYCHIATRIC PATIENTS TOWARDS A PSYCHIATRIC BEHAVIORAL MONITORING SYSTEM.** N Zakaria, R Ramli, School of Computer Sciences , Universiti Sains Malaysia, Malaysia; Medical Informatics and e-learning Unit, Medical Education Department, College of Medicine, King Saud University, Riyadh, Saudi Arabia; Advanced Military Maintenance Repair and Overhaul Center (AMMROC), Abu Dhabi, UAE

13.20-13.35 **DEVELOPMENT MODEL FOR COMMUNITY MENTAL HEALTH PROMOTION FOR THE ELDERLY IN HIGH-RISK GROUPS.** S Wongsawad, Bureau of Mental Health Promotion and Development, Department of Mental Health, Ministry of Public Health, Bangkok, Thailand

13.35-13.50 **BEHAVIOR ANALYSIS OF LOW AND HIGH PREGNANCY RATE USING BREEDING PARTER OF COMMON MARMOSET (*CALLITHRIX JACCHUS*) AS AN MODEL.** M Yoda, Gumma Paz College, School of Nursing, Faculty of Health Science, Takasaki, Japan

13.50-14.10 **A PSYCHIATRIC DEVELOPMENTAL TREATMENT APPROACH WITH INTERNET OF THINGS (IOT) IN A MARMOSET MODEL.** M Koshiba, ISBS Fellow, G Karino, K Mimura, M Shukuya, T Kunikata, S Nakamura, ISBS Fellow, H Yamanouchi, Yamaguchi University, Saitama University, Saitama Medical University, Saitama, Tokyo University of Agriculture and Technology, NCNP, University of Tokyo, Tokyo City University, Tokyo, Japan

14.10-15.30 **LUNCH BREAK (FREE TIME)**

Afternoon session

15.30-18.00 **SYMPOSIUM 3. INTERACTIVE MODERATED POSTER SESSION**

- **ACROLEIN-INDUCED NEUROTOXICITY IN PRIMARY CULTURED NEURONS AND CATH.A CELLS.** H-J Huang, T-Y Yeh, Y-J Hsiao, BW Lin, H-T Wang, AM-Y Lin, Department of Medical Research, Taipei Veterans General Hospital, Department of Pharmacology, National Yang-Ming University, National research Institute of Chinese Medicine, Ministry of Health and Welfare, Taipei, Taiwan

- **ANTI-INFLAMMATORY ROLE OF AFATINIB IN OGD-TREATED CTX-TNA2 CELLS AND PRIMARY CULTURED ASTROCYTES.** LYJ Chen, YJ Hsaio, YL Lo, AMY Lin, JCH Yang, Department of Pharmacology, National Yang-Ming University, National research Institute of Chinese Medicine, Ministry of Health and Welfare, Department of Medical Research, Taipei Veterans General Hospital; Institute of Oncology, National Taiwan University, Taipei, Taiwan

- **NEUROBEHAVIORAL EFFECTS OF A MESOIONIC PYRROLO-TRIAZOLE CF3 (2-(4-FLUOROPHENYL)-2,4,5,6-TETRAHYDROPYRROLO [1,2-C] [1,2,3] TRIAZOLIO-5-OLATE) IN ADULT ZEBRAFISH IN THE NOVEL TANK TEST.** TO Kolesnikova, SL Khatsko, AV Zhdanov, TV Gluhareva, Yu Nein, AV Kalueff, ISBS Fellow, YuYu Morzherin, Ural Federal University, Ekaterinburg, Russia

- **EFFECTS OF CLOVE OIL NANOEMULSION ON FISH ANESTHESIA AND STRESS IN *OREOCHROMIS NILOTICUS.*** S Okonogi, K Kheawfu, W Chaisri, S Pikulkaew, Department of Pharmaceutical Sciences, Faculty of Pharmacy, Nanoscience and Nanotechnology Program, The Graduate School, Department of Food Animal Clinic, Faculty of Veterinary Medicine, Chiang Mai University, Chiang Mai, Thailand

- **EXPLORING THE DENTAL VISITING BEHAVIOR DURING PREGNANCY.** L-L Chuang, Chang Gung University of Science and Technology, Taoyuan, Chi-Chen Sun, Cheng Hsin General Hospital, Taipei, Taiwan

- **LONG-LASTING MONOAMINERGIC DYSFUNCTIONS IN A MOUCE MODEL OF ADOLESCENT UNPREDICTABLE SOCIO-ENVIRONMENTAL STRESS.** AP Lima, TM Sandini, TM Reis-Silva, CO Massoco, Department of Pathology, School of Veterinary Medicine, University of Sao Paulo, Sao Paulo, Brazil

- **EFFECTS OF CLOVE OIL LOADED SELF MICRO-EMULSIFYING DRUG DELIVERY SYSTEMS (C-SMEDDS) ON STRESS BIOMARKERS IN *CYPRINUS CARPIO.*** K Kheawfu, S Pikulkaew, W Chaisri, S Okonogi, Nanoscience and Nanotechnology Program, The Graduate School, Department of Food Animal Clinic, Faculty of Veterinary Medicine, Department of Pharmaceutical Sciences, Faculty of Pharmacy, Chiang Mai University, Chiang Mai, Thailand

- **THE NORMALIZATION OF BRAIN F-18-FDG HYPOMETABOLISM FOLLOWING ELECTROCONVULSIVE THERAPY IN A WOMAN WITH TREATMENT-RESISTANT DEPRESSION: CASE REPORT.** S Shim, Soonchunhyang University Cheonan Hospital, Seoul, South Korea

- **THE ASSOCIATION OF THE SEROTONIN TRANSPORTER GENE POLYMORPHISM (5-HTTLPR) AND MAJOR DEPRESSION IN QATAR.** RW Salem, ZM Kabir, RA Basha, TE Shaltout, SB Zainulabdeen and NM Rizk, Qatar University, Doha, Qatar

- **THE RELATIONSHIP BETWEEN SENSORY PROCESSING PATTERNS AND ANXIETY IN ADULTS.** S Khodabakhsh, SC Loh, NA Rosli, University of Malaya, UCSI University, Kuala Lumpur, Malaysia

Day 3. Monday, July 25, 2016

Tokyo City University, Yokohama Campus, Yokohama, Japan

09.00-12.00 REGISTRATION

09.00-09.20 THE JAPAN SOCIETY FOR NEUROSCIENCE (JSN) TALK: THE REGIONAL NEURAL FUNCTION AND FUNCTIONAL INTEGRATION OF THE CEREBELLUM IN CHILDREN WITH ADHD: A RESTING-STATE FUNCTIONAL MRI STUDY. Y Mizuno, M Jung, T Fujisawa, K Shimada, S Takiguchi, D Saito, H Kosaka, A Tomoda. Department of Child and Adolescent Psychological Medicine, University of Fukui Hospital, Fukui, United Graduate School of Child Development, Osaka University, Kanazawa University, Hamamatsu University School of Medicine, Chiba University and University of Fukui, Research Center for Child Mental Development, University of Fukui, Fukui, Japan; Department of Psychiatry, Harvard Medical School (MGH), Harvard University, Charlestown, MA, USA

09.20-09.35 HEADACHE: A STUDY ABOUT AURICULOTHERAPY EFFECT ON STRESS, PAIN AND QUALITY OF LIFE. FLP Salles, DM Ferreira, ABC, Souza, Faculdade Estácio de Sá de Vitória, Vitória, Brazil

09.35-10.00 **YOUNG SCIENTIST SPECIAL TALK: MODERN RESEARCH APPROACHES TO EVALUATION OF AFFECTIVE AND COGNITIVE FUNCTIONS: APPLICATION TO THE PHENOTYPING OF A MOUSE GENETIC MODEL OF PARKINSON'S DISEASE.** MA Tikhonova, YJ Ho, TG Amstislavskaya, Scientific Research Institute of Physiology and Basic Medicine, Novosibirsk, Russia; Department of Psychology, Chung Shan Medical University, Taipei, Taiwan

10.00-10.15 **QUANTITATIVE ANALYSIS OF IMPROVING OPERATORS' HEALTH.** Y Mori, A Ishii, A Sasaki, S Nakamura, Yokohama National University, Kanagawa, Kagawa University, Kagawa, Peripheral Visual Inspection Lab, Kanagawa, CorLab Inc., Tokyo, Japan

10.15-11.00 **ROUND TABLE: ETHICS IN BIOMEDICINE – CURRENT CHALLENGES**
Moderators: S Nakamura, M Koshiba (Japan), AV Kalueff (USA)

11.00-11.30 **COFFEE BREAK**

11.30-13.00 **MINI-SYMPOSIUM 4. ALTERNATIVE MODEL ORGANISMS IN BIOLOGICAL PSYCHIATRY.** Chair: AV Kalueff (USA)

11.30-11.45 **INTRODUCTION TO ALTERNATIVE MODELS IN BIOPSYCHIATRY: WHY AND HOW?**

11.45-12.15 **ZEBRAFISH NEUROSCIENCE RESEARCH CONSORTIUM (ZNRC) LECTURE: ZEBRAFISH MODELS FOR STUDYING HUMAN BRAIN DISORDERS – AN UPDATE AND FUTURE PERSPECTIVES.** AV Kalueff, ISBS Fellow, A Kaluyeva, C Song, International Zebrafish Neuroscience Research Consortium (ZNRC), ZENEREI Institute, Slidell, LA, USA; Institute of Translational Biomedicine, St. Petersburg State University, St. Petersburg, Institute of Chemical Technologies, Institute of Biological Science, Ural Federal University, Ekaterinburg, Russia; Research Institute for Marine Drugs and Nutrition, Guangdong Ocean University, Zhanjiang, China

12.15-12.30 **SEROTONIN TOXICITY SYNDROME-LIKE PHENOTYPE EVOKED IN ADULT ZEBRAFISH BY ACUTE EXPOSURE TO AMITRIPTYLIN, A TRICYCLIC SEROTONIN/NORADRENALINE REUPTAKE INHIBITOR.** TO Kolesnikova, SL Khatsko, KA Demin, YuYu Morzherin, AV Kalueff, ISBS Fellow, Ural Federal University, Ekaterinburg, Russia

12.30-13.00 **ROUND TABLE AND ASK-THE-EXPERT SESSION: FUTURE OF ZEBRAFISH MODELS IN TRANSLATIONAL NEUROSCIENCE RESEARCH**

13.00-13.20 **CONFERENCE CLOSING CEREMONY**
ANNOUNCING FORTHCOMING ISBS CONFERENCES

CONFERENCE ABSTRACTS

Day 1. Saturday, July 23, 2016

ISBS OPENING PLENARY LECTURE: COMPARATIVE MODELING OF EMOTIONAL BEHAVIOR AND BRAIN. S Nakamura, ISBS Fellow, Tokyo University of Agriculture and Technology, Tokyo, Japan, CorLab Inc., Tokyo, Japan

Since the attachment theory of J Bowlby (1953, 1969), we have made a great progress in understanding of child emotional development based on comparative behavior and brain studies. Among them, the field observation of great apes social behavior and the flexibility of their social structure have impacted our understanding of human nature (Frans de Waal, 2013). We have also learned much from the epigenetic effects of detachment experience in early stage of development on the later stage of vulnerability to stressors and various co-morbidities in late-onset psychiatric disorders. Another important progress is our understanding of brain dynamics revealed by resting state functional analysis (rs-fMRI, Biswal, 1997, Raichle, 2001). The connectivity analysis based on rs-fMRI revealed several basic networks and we've started to categorize psychiatric disorders and developmental disorders as a topological dynamic structure. In this short opening lecture, I would like to introduce our own behavioral study on peer social attachment (domestic chick and marmoset monkey, M Koshiba et al., 2013) and human child having autism spectrum disorder (Koshiba et al., 2013, 2016). The goal of this study is the development of an integrated modeling of behavior output and developing emotional brain network revealed by the connectivity dynamics.

ISBS PRESIDENTIAL REPORT: TASK FORCE ON NEURODEVELOPMENTAL DISORDERS. AV Kalueff, ISBS Fellow, ZENEREI Research Center, Slidell, LA, USA

Neurodevelopmental disorders (NDDs) are clinically heterogeneous illnesses caused by aberrant brain growth and development. Presenting with motor, cognitive, language and affective disabilities, common NDDs include autism spectrum disorder (ASD), social communication disorders, intellectual disability (ID), attention deficit hyperactivity (ADHD) and motor/tic disorders. While NDD symptoms typically emerge during childhood, aberrant neural development usually starts during early embryogenesis and continues over a substantial period of time. Affecting neurogenesis, glia/neuronal proliferation and migration, synapse formation and myelination, these developmental changes lead to long-lasting behavioral and physiological deficits in both child- and adulthood. NDDs remain a relatively unmet biomedical concern with high prevalence and socio-economic impact. Unfortunately, specific and effective treatments for NDDs are lacking, as we do not know the biological targets and the exact symptoms, which are also often detected at clinically advanced stages, past the best therapeutic intervention period (Homberg et al., 2015). This necessitate further translational research in this field and the development of valid preclinical models, novel biomarkers and therapies. To address these challenges, the International Stress and Behavior Society (ISBS) has established the Strategic Task Force on NDDs - a team of international experts representing different clinical and preclinical fields (Homberg et al., 2015). Here, we will summarize the ISBS Task Force report, including both traditional (rodent) and alternative models of NDDs, will outline the emerging areas of research, and will emphasize how preclinical models help gain translational and mechanistic insights into NDDs and their therapy.

ART AND SCIENCE MEET: AN ARTIST'S PERSPECTIVE ON MENTAL HEALTH. D Raytchev, Raytchev Art, London, UK

'Progress not Perfection' and upcoming 'Capital' projects are centered around people who currently suffer or have dealt with their addictions, whole spectrum of them. Abstract portraits of the participants who come from all walks of life show their past experience, present state of mind and

future ambitions. Graphic nature in some cases suggests altered state of reality as well as playful, honest and open-minded approach to discussing many times stigmatized issue. Expressive character of the artwork relates to the fluctuating emotions, often accompanied by anxiety and depression, that is juxtaposed against clean 'peaceful' linework. There is certain beauty in capturing the chaos and vulnerabilities. Paintings include personal narratives of the subjects who Raytchev interviews and studies over the period of several sittings before creating the final large scale pieces.

Day 2. Sunday, July 24, 2016

SYMPOSIUM 1. ZUKOWSKA SYMPOSIUM ON TRANSLATIONAL STRESS NEUROSCIENCE.
Chairs: AV Kalueff (USA) and S Nakamura (Japan)

INTRODUCTION: PROF. ZOFIA M. ZUKOWSKA. This regular ISBS symposium is dedicated to Professor Zofia Zukowska (1949-2012). Professor Zukowska 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, Nobel Laureate. It was during this research period when her interest in stress and neuropeptides became galvanized. For the 25 years, she was a professor (and, recently, 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 a 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 was a strong supporter of the ISBS and 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.

ACUTE ENCEPHALOPATHY IN INFANCY AND ITS RELATED DISORDERS. H Yamanouchi, Saitama Medical University, Saitama, Japan

Acute encephalopathy in infancy is frequently associated with prolonged seizures and/or comatose state, causing neurological sequelae as well as intractable epilepsies. In this huge range of this disease category, we present classification based on the plausible etiology and pathophysiology. One of the most familiar types of acute encephalopathy in infancy in Japan is acute encephalopathy with febrile convulsive status epileptics (AEFCSE/AESD).Acute Infantile Encephalopathy predominantly affecting the Frontal Lobes (AIEF) is frequently encountered type of AEFCSE/AESD, whereas Hemiconvulsion-hemiplegia epilepsy syndrome is secondary frequently encountered type.

BEHAVIORAL AND SYNAPTIC EFFECTS OF COX-2 INHIBITION IN AN ANIMAL MODEL OF STRESS-INDUCED ANXIETY. JC Gamble-George, L Halladay, A Kocharian, C Silva, H Roberts, C Pham-Lake, DJ Hermanson, LJ Marnett, A Holmes, S Patel. Department of Psychiatry, Vanderbilt Brain Institute, A.B. Hancock Jr. Memorial Laboratory for Cancer Research, Departments of Biochemistry, Chemistry, and Pharmacology, Vanderbilt Institute of Chemical Biology, Center in

Molecular Toxicology, and the Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine, Vanderbilt University College of Arts and Sciences, Nashville, TN, Laboratory of Behavioral and Genomic Neuroscience, Section on Behavioral and Genomic Neuroscience, National Institute on Alcoholism and Alcohol Abuse, NIH, Bethesda, MD, Agnes Scott College, Decatur, GA, USA

INTRODUCTION: Cannabinoid receptors have been examined as potential targets to alleviate the negative consequences of anxiety, trauma-related, and stress-related disorders. However, in preclinical animal studies, synthetic cannabinoids can produce adverse motoric and cognitive effects. Thus, pharmacological strategies that augment endocannabinoid levels in the brain, with the aim of enhancing signaling through cannabinoid receptors, are being investigated for their ability to modulate anxiety and stress responses. Previously, we have demonstrated that either genetic removal of prostaglandin-endoperoxide synthase 2 gene, which codes for the cyclooxygenase-2 (COX-2) enzyme that degrades the endocannabinoids, anandamide and 2-arachidonylglycerol, or pharmacologically inhibiting COX-2 activity with a substrate-selective COX-2 inhibitor (SSCI), LM-4131, can increase brain anandamide levels. These elevations in endocannabinoid levels in the rodent brain resulted in enhanced endocannabinoid signaling through the cannabinoid type 1 receptor and, subsequently, reduced anxiety-like behaviors in mice under basal conditions. **METHODS:** Using the novelty-induced feeding suppression assay, elevated plus maze, and in vivo electrophysiology, we tested the hypothesis that endocannabinoid augmentation via SSCIs may have the potential to counteract stress-induced anxiety-like behaviors. **RESULTS AND DISCUSSION:** We have found that the SSCIs, LM-4131 and lumiracoxib, and the selective COX-2 inhibitor, celecoxib, can reduce anxiety-like behaviors in mice subjected to footshock stress. In contrast, these inhibitors had little effect in non-stressed mice. The anxiolytic action of the SSCI, LM-4131, was mediated through the cannabinoid type 1 receptor under non-stressed (control) conditions, but mediated through the small conductance calcium-activated potassium (SK) channels when mice were subjected to footshock stress. Also, we have found that the anxiolytic effects of SSCIs in stressed mice may be due to a decrease in excitatory cell firing in the amygdala. Ongoing studies will further elucidate the receptor mechanisms in terms of brain region specificity that are involved in the anxiolytic effects of SSCIs after stress exposure. **RESEARCH SUPPORT:** The National Institutes of Health (NIH) Grants K08MH090412 and R01MH100096 (SP), DA031572 (DJH), GM15431 (LJM), the NIAAA Intramural Research program (AH), and, in part, the State Regional Education Board (SREB)-State Doctoral Scholars Program and the UNCF/Merck Science Initiative.

AUTOPHAGY-ERK1/2-INVOLVED DISINHIBITION OF HIPPOCAMPAL NEURONS CONTRIBUTES TO THE PRE-SYNAPTIC TOXICITY INDUCED BY Aβ EXPOSURE. Y Yin, N Zhang, S Han, Capital Medical University, Beijing, China

INTRODUCTION: Alzheimer's disease (AD) is a progressive neurodegenerative disease and the most frequent cause of progressive cognitive decline in the elderly population. In the present study we investigated the effects of Aβ on the inhibitory synaptic transmission in the cultured hippocampal neurons and explored the possible mechanism. **METHODS:** Whole-cell patch clamp recording method, western blot assay and immunofluorescence staining are used in this paper. **RESULTS AND DISCUSSION:** The frequency but not mean amplitude of miniature inhibitory post-synaptic currents (mIPSCs) were significantly suppressed by Aβ, indicating that Aβ played its role in inhibitory transmission release from the pre-synaptic sites. The number of GABAergic neurons and synapses were not influenced by Aβ treatment with the immunofluorescence staining. And the effect of Aβ can be mimicked by PD98059 (an inhibitor of ERK1/2) and blocked by Curcumin(an activator of MEK), which reveals Aβ-involved influence is via the decreased phosphorylation of MAPK-ERK1/2. In the further exploration, we found Aβ decreased the expression of Synaptophysin, downstream protein of MAPK-ERK1/2 in the pre-synaptic site. Also in this stage, it was confirmed Aβ suppressed autophagy, which may support scaffolds or cellular signaling platforms facilitated ERK1/2

phosphorylation by LC3-II-positive membranes, which can be reversed by the activator of autophagy. So, we conclude autophagy may be the initial step of Aβ-involved cytoxicity. Together these data suggest that diminished GABAergic tone likely occurs in preclinical AD, so some GABAergic stress test may be an effective method for identifying cognitively normal elder adults. Moreover, autophagy-target strategy should be focused on in the early stage of AD because of its initial effect in the process. **RESEARCH SUPPORT:** National Natural Science Foundation of China (31571162, 31200895).

THE REGULATORY EFFECTS OF PINK1 ON TYROSINE HYDROXYLASE GENE EXPRESSION. LL Lu, HZ Jia, H Yang, Center of Parkinson's Disease, Beijing Institute for Brain Disorders, Department of Neurobiology, Capital Medical University, Beijing Center of Neural Regeneration and Repair, Key Laboratory for Neurodegenerative Diseases of the Ministry of Education, Beijing, China

OBJECTIVE: To investigate the regulatory effects of PINK1 on tyrosine hydroxylase (TH) gene expression and its mechanism. **METHODS:** The MN9D cells were divided into four groups: PINK1 knocking-down group (transfected with small interference RNA for PINK1) and its control (transfected with scramble sequence), PINK1 overexpressing group (transfected with PINK1 expressing plasmid) and its control (transfected with empty plasmid). Then mRNA and protein level of TH were detected by real-time RT-PCR and western bloting, respectively. **RESULTS:** Compared with control group, TH mRNA level increased by 76% ($P<0.001$) and protein expression level increased by 74% ($P<0.001$) compared with PINK1 knocking-down group. Meanwhile, TH protein levels increased by 116% in PINK1 over-expressing group ($P<0.05$). **CONCLUSION:** These data suggest that PINK1 may play a role in the regulation of TH expression.

PREDICTED VS. RANDOM CHRONIC STRESS, EFFECTS ON CELL MORPHOLOGY, LEARNING AND DECISION BASED BEHAVIOR. M Kassem and B Balleine, The Brain and Mind Centre, University of Sydney, Sydney, Decison Neuroscience Laboratory, School of Psychology, University of New South Wales, NSW, Australia

INTRODUCTİON: Chronic stress has been shown to dramatically affect the brain on a molecular and cellular level, changing dendritic morphology in the prefrontal and sub-cortices to a degree that changes in grey matter volume become evident. Recent evidence has revealed that neurons go through region specific atrophy and proliferation under stress. These regions are specifically involved in the circuitry of learning and decision based behavior. Further evidence has indicated that control of an acute stressor removes all negative effect of said stressor on the animal. To replicate this in a chronic stress paradigm we have used prediction as a form of control. We investigated the effects predicted and random chronic restraint stress had on rat dendritic and spine morphology within a large battery of regions, and how any changes within these regions may relate to any changes in performance in learning and decision based behavioral tasks. **METHODS:** Rats were restrained using tube restrainers and placed on either a strict schedule with key predictors (lights, sounds and time) or on a random schedule. Rats were then behaviorally tested, via pavlovian instrumental transfer, outcome devaluation and contingency degradation to measure habit and goal directed behaviors. **RESULTS:** Rats that were subject to the random stressor show severely degraded goal directed behavior, preference for habitual behavior, and neuronal deterioration compared to controls and predicted stress groups. **DİSCUSSİON:** These results support previous evidence that chronic stress changes dendritic and spine morphology and performance in learning and decision based tasks. Furthermore, these results suggest that prediction of chronic stress offers the animal adequate control over the stressor, reducing the harmful effects stress has on the animal.

SPECIAL LECTURE OF ISRAELI SOCIETY FOR BIOLOGICAL PSYCHIATRY (ISBP): ANXIETY DISORDERS IN INDIVIDUALS WITH INTELLECTUAL DISABILITIES AND NEUROGENETIC SYNDROMES. D Gothelf, Sheba Medical Center, Tel Aviv University, Tel Aviv, Israel

Individual with intellectual disabilities cope with variety of psychiatric comorbidities including anxiety disorders and obsessive-compulsive disorder. We will review the predisposing risk factors for anxiety and stress in individuals with intellectual disabilities. We will further describe anxiety phenotypes in several common neurogenetic syndromes. For example, in 22q11.2 deletion syndrome (22q11.2DS) also named DiGeorge and velo-cardio-facial syndrome about half of individuals suffer from anxiety disorders with stable rates from early childhood to adulthood. Levels of anxiety in 22q11.2DS are strongly negatively correlated with level of adaptive functioning and the presence of anxiety disorders are strong predictors of the later evolution of psychotic disorders in 22q11.2DS. Preliminary findings associating proinflammatory factors and neuropsychiatric symptoms in 22q11.2DS will be presented. Williams syndrome, another microdeletion syndrome, is associated with high rates of specific phobias and especially prominent is phonophobia or hyperacusis that is present in almost all individuals with the Williams syndrome at early age. The central and peripheral neurophysiological processes associated with hyperacusis in Williams syndrome will be outlined.

SYMPOSIUM 2. LAPIN SYMPOSIUM ON BIOLOGICAL PSYCHIATRY

Chairs: M Koshiba (Japan), AV Kalueff (USA)

INTRODUCTION: PROF. IZYASLAV P. LAPIN. This regular ISBS symposium is dedicated to Professor Izyaslav 'Slava' P. Lapin (1930-2012), one of the true pioneers of experimental neuropsychopharmacology 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 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.

FOUR FORMULATED PSYCHOLOGICAL PROBLEMS OF RESIDENTS OF FUKUSHIMA AFTER THE NUCLEAR PLANT ACCIDENTS. A Hori, Hori Mental Clinic, Non-profit Organization Minano-Tonari-Gumi, Japan

BACKGROUND: On the 11th March in 2011, the triple disaster (earthquake, tsunami and nuclear power plant accident) happened in Fukushima prefecture. Because the collapsed nuclear power

plant is located near the Pacific Ocean, the coastal region of Fukushima have been seriously affected by the disaster. The reconstruction and revitalization of the region is still in progress. The areas which is within 20km from the plant were once forced to evacuate by the order of Japanese government in 2011. In 2015 some residents of these mandatory evacuation areas just started to come back to their home town. Such delays of recovery of daily life have inevitably affected psychological conditions of people who live in the coastal areas of Fukushima. Tendencies of denial of their inner emotions became prominent. Therefore, effective ways to intervene these residents' psychological problems are expected, in order to prevent serious psychiatric problems of the residents including alcoholism and suicide. **METHODS:** A psychiatrist engaged in clinical practice after the disaster has studied scientific literature and consulted with researchers who are specialized in cognitive-behavioral therapy. **RESULTS:** Four psychological problems were formulated. (1) Trauma reactions: the earthquake and tsunami itself could increase the risk of PTSD. But the psychological need for trauma reaction tends to be ignored. (2) Object loss and grief reactions: lots of people lost families, friends or houses. But few people had chance to think about their loss in this 5 years. (3) Conflicts concerning low dose radiation exposure in the coastal areas of Fukushima Prefecture. (4) Divisions brought into local communities after the disaster and its psychological effects: evacuation and compensation money have given rise to lots of psychological struggles among local residents.

THE OUTCOME OF CHILDREN WITH SELECTIVE MUTISM FOLLOWING COGNITIVE BEHAVIORAL INTERVENTION. A Gothelf, C Lang, Z Nir, D Gothelf, The Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Sheba Medical Center, Tel Hashomer, Israel

Selective mutism (SM) is an underdiagnosed and undertreated anxiety disorder of childhood. It is characterized by persistent failure to speak in situations where speaking is socially expected (e.g., kindergarten), while being able to speak freely in other situations (e.g., at home) The purpose of the retrospective naturalistic study was to examine the long-term outcome of children with SM who were treated with specifically designed modular cognitive behavioral therapy (MCBT). Parents of 36 children who met diagnostic criteria of SM that received MCBT treatment were invited for a follow-up evaluation. Parents were interviewed using structured scales and completed questionnaires regarding the child, including the Selective Mutism Questionnaire (SMQ). Twenty-four subjects were identified and evaluated. Their mean age±SD of onset of SM symptoms, beginning of treatment, and age at follow-up were 3.4±1.4, 6.4±3.1, and 9.3±3.4 years, respectively. There was robust improvement from beginning of treatment to follow-up evaluation in SM, social anxiety disorder, and specific phobia symptoms. The recovery rate from SM was 84.2 %. Focused MCBT is feasible in children with SM and possibly effective in inducing long-term reduction of SM and comorbid anxiety symptoms.

POSITIVE FEATURES OF ASIAN INTERNATIONAL STUDENTS IN THE UK: MINIMIZING ACCULTURATIVE STRESS AND PROMOTING PERSONAL GROWTH. W Mekwilai, Department of Mental Health, Ministry of Public Health, Bangkok, Thailand

Moving to other countries, particularly, the United Kingdom, an international student may experience challenges and difficulties due to the adjustment to cultural diversities causing acculturative stress, a stress effect in reaction to the experiences of acculturation resulting in mental difficulties. This research intended to clarify if and to what extent the background characteristics, psychological wellbeing and positive affects significantly predicted participants' levels of acculturative stress and personal growth. Data collection was conducted via an online survey of Asian international students currently studying in the UK. Of 125 Thai international students who undertook the survey, only the complete data from 100 respondents were counted in this study. Descriptive statistics, bivariate and multivariate statistical analyses were used to run through and test the main hypotheses. The results indicated that background characteristics could not predict the levels of acculturative stress among

international students. The results of the regression also indicated, without statistical significance, the higher levels psychological wellbeing and positive affects could predict the lower levels of acculturative stress, which in turn, could predict higher levels of personal growth at the significant level of .05. Thus, the results emphasized the importance of positive features in minimizing acculturative stress and promoting personal growth among international students.

DEPRESSION AND COGNITIVE IMPAIRMENT AMONG HEMODIALYSIS PATIENTS IN KUALA LUMPUR HOSPITAL: AN URBAN EXPERIENCE. NN Raduan, MR Salleh, GA Kutty, Psychological and Behavioral Medicine, Faculty of Medicine, University Technology of MARA, Nephrology Department, Kuala Lumpur Hospital, Kuala Lumpur, Malaysia

INTRODUCTION: Depression and Cognitive impairment are two most common complications of patients on hemodialysis. They both lead to poor compliance to treatment leading to increased mortality. However they are mostly under diagnosed and under-treated. This study aims to explore depression and cognitive impairment among hemodialysis patients in Kuala Lumpur Hospital. **METHODOLOGY:** This is a cross-sectional study involving 110 hemodialysis patients in Kuala Lumpur Hospital. The samples were recruited through universal sampling. The patients were assessed with Beck Depression Inventory- Malay (BDI), Malay Mini International Neuropsychiatric Interview – Malay (MINI) and Malay Montreal Cognitive Assessment (MOCA). Descriptive analysis was performed, followed by multiple logistic regression analysis. **RESULTS:** This study found that 18.2% patients had depression and 48.2% had cognitive impairment. The factors significantly associated with depression were patients having no current episode of depression in M.I.N.I Depression (OR= 0.047; 95% CI= 0.012-0.176), unmarried status (OR= 3.906; 95% CI= 1.409-10.830) and low education level (OR= 3.056; 95% CI= 1.108, 8.427). Factors found to be significantly associated with cognitive impairment were low education level (OR=7.714; 95% CI=2.954-20.147) and unemployment (OR=3.299, 95% CI=1.443-7.541). **DISCUSSION:** Depression and cognitive impairment are prevalent in hemodialysis patients; they are significantly associated with unmarried status, unemployment and low education level. Routine screening and multidisciplinary management of hemodialysis patients are important preventive measures. **RESEARCH SUPPORT:** University Technology of MARA, Malaysia.

BURNOUT AND PSYCHOLOGICAL DISTRESS AMONG CHILDMINDERS IN RESIDENTIAL CHILDRENS' HOMES IN MALAYSIA. Siti Halimatul Saadiah H, Manveen Kaur HS, Aili Hanim H, Aminah K, Ng Chong Guan, Child and Adolescent Psychiatry Unit, Department of Psychological Medicine, Faculty of Medicine, University Malaya, Petaling Jaya, Selangor, Malaysia, Child and Adolescent Psychiatry Unit, Department of Psychiatry, Kuala Lumpur Hospital, Kuala Lumpur, Malaysia

INTRODUCTION: Childminders in residential homes are often faced great challenges, when dealing with childrens' behavioral and emotional difficulties. This contributes to psychological distress and burnout among these caregivers. Burnout among childminders give impact on the childcare and it effect the children's life as well as the caregiver in the long term. Burnout has three categorizations consist of exhaustion (EX), cynicism (CY) and personal efficacy (PE). **AIM:** The primary objective was to determine the proportion of burnout and psychological distress of childminders and identify their relationship with sociodemographic variables. The second objective was to assess the correlation between burnout and psychological distress. **METHOD:** This was a cross sectional study done among childminders in Kuala Lumpur and Selangor. A total of 150 childminders were selected using universal sampling from 33 children homes between July to October 2015. Assessments were carried out using the Maslach Burnout Inventory- General Survey (MBI-GS) and the Depression Anxiety Stress (DASS-21) scale as the self-reported questionnaires. The relevant personal and socio-demographic data were also collected. The ethical approval for the study was obtained from the Ethics Committee of University Malaya Medical Centre. The data were analysed using SPSS

(version 22). **RESULTS:** The level of burnout (high) was based on each domain and noted to be 31.3% (n=47) for CY, 28.7% (n=43) for EX and 36% (n=54) for reduced sense of PE. The proportion of the severe burnout (EX+CY) among the childminders was found at 24.7% (n=37). The proportion of the depressive symptoms was 45.3% (n=68), anxiety symptoms was 54% (n=81) and stress symptoms was 36% (n=54). By attending early childhood training (adjusted OR 0.42, 95% CI 0.18, 0.99), perceived inadequate staff (adjusted OR 0.40, 95% CI 0.17, 0.96) and not working in shift system (adjusted OR 3.41, 95% CI 1.28, 9.07) were significantly associated with EX. The childminders prone to have decrease sense of PE (adjusted OR 4.18, 95% CI 1.15, 15.19). Childminders who had symptoms of stress (adjusted OR 0.24, 95% CI 0.09, 0.68) or not attended early childhood training (adjusted OR 0.30, 95% CI 0.11, 0.79) were at risk of severe burnout. The childminders with 4 children or less at home (adjusted OR 8.5, 95% CI 1.45, 50.39), childminders who were EX (adjusted OR 0.4, 95% CI 0.17, 0.90) or who experienced severe burnout (adjusted OR 0.28, 95% CI 0.09, 0.85), were prone to exhibit depressive symptoms. Those childminders who had job stability (adjusted OR 0.30, 95% CI 0.13, 0.68), or were exhausted (adjusted OR 0.15, 95% CI 0.06, 0.37), were prone to anxiety symptoms. Female childminders (adjusted OR 0.34, 95% CI 0.13, 0.90), childminders who demonstrated EX (adjusted OR 0.2, 95% CI 0.08, 0.51) or childminders with severe burnout (adjusted OR 0.24, 95% CI 0.08, 0.72), were more likely to develop symptoms of stress. There was a moderate correlation between severe burnout and psychological distress (r= 0.51) to (r=0.60). **CONCLUSION:** These high levels of burnout and symptoms of psychological distress among our childminders, are of great concern to healthcare providers. Screening and detection of burnout and psychological distress among these carers is crucial, as they serve as caregivers to a very vulnerable group: young children and adolescents in residential homes. It is recommended that screening of these symptoms be conducted in all residential homes to ensure quality of care. Referral to the mental health services may be required for further evaluation and treatment when indicated. As this study is the first research done in Malaysia in this area, it can be used as a stepping stone to begin effective intervention programs that are relevant in the local setting for the betterment of childminders' mental health and child-care services in South East Asia.

PSYCHIATRIC SCREENING AT PRE-DIALYSIS CONSULTATION. DG Straatsburg, EA Hoekman, R Smulders, JG Lijmer, OLVG Hospital, Amsterdam, Netherlands

INTRODUCTION: Patients with end-stage renal failure disease (ESRD) are referred to our dialysis clinic for pre-dialysis work-up. Often these patients expressed psychiatric complaints which interfered with their compliance of the work-up. In this retrospective study we examined the prevalence of psychiatric symptoms with the Hospital Anxiety Depression Scale (HADS 14 item questionnaire) and the added value of screening in this population by the number of changes in treatment plan. **METHODS:** Retrospective cohort study. Since, 2011 all patients referred for pre-dialysis work-up were screened with the HADS for psychiatric symptoms. Protocol dictated that patients with a HADS score ≥ 12 were referred for psychiatric evaluation. Two researchers (EH, DS) independently of each other examined the charts of all patients who were referred to the dialysis clinic from 2011-2013. All HADS scores were retrieved and the results of the psychiatric evaluations and the number of changes in treatment plan were assessed. **RESULTS:** In total 102 patients, 27 women and 79 men, were referred for pre-dialysis work-up, 91 patients, 23 women, 68 men, had an interview with our social worker (RS). Of the 91 patients, 88 filled in the HADS questionnaire and the mean score was 13 (SE 0.8). Of these 46 patients scored ≥ 12. 52 % (CI 36%-56%). All patients with this score were offered a psychiatric assessment, however only 19 patients were seen. Of the 27 patients that weren't seen, 5 were referred to another psychiatric practice, 9 preferred only follow-up by the social worker, 3 patients didn't want to see the psychiatrist and 10 were lost to follow-up. All of the 19 patients that had a psychiatric assessment had a psychiatric diagnosis; 3 substance dependence disorder, 8 depressive disorder, 6 anxiety disorder and 2 personality traits that interfere with treatment. For all of these patients a new treatment plan was formulated. **DISCUSSION:** We found that there is a high prevalence (52%) of anxiety and depressive symptoms in patients referred for pre-dialysis work-up. In addition we found that with screening and psychiatric

follow-up at least 24 (24%, CI 15%-34%) patients benefited from screening by a new treatment plan for their symptoms. Importantly, many dialysis patients often have psychiatric complaints. We found that many patients that are about to start with dialysis already have psychiatric complaints. These complaints can interfere with their compliance of the treatment program. This research shows that with a standardised screening instrument and psychiatric follow-up this group can be detected. This screening strategy could improve the treatment of psychiatric complaints but also of the end-stage renal failure disease in pre-dialysis patients.

HEALING IN THE HARVEST: TRYPTOPHAN IN THE CREE DIET. N Spiegelaar, University of Toronto, Toronto, Canada

INTRODUCTION: The Canadian government has recently declared a state of mental health emergency in the James Bay region of subarctic Canada, which is populated by indigenous Cree communities. High rates of suicide attempts, alcoholism and associated mental health disorders have been attributed to abuse and intergenerational trauma imposed by the colonial residential schooling system during the 1900s. At the onset of this institutionalization of Cree youth, these remote communities also underwent abrupt food system transition: from harvesting primarily wild meats for thousands of years to sedentary life with highly processed foods. My research explores the value of ecological subsistence (harvesting) for various biological, social and spiritual facets of psychological resilience. Psychological resilience is the adaptive capacity to cope with and recover from stress and adversity. At ISBS-2016, I wish to discuss the biological portion of my study: does wild game of the traditional Cree diet have significantly higher levels of tryptophan, compared to processed meats common in the modern Cree diet? **METHODS:** I have collected the most frequently consumed wild and processed meats of a Cree community and will analyze tryptophan content in these diets via HPLC amino acid determination. Tryptophan is an essential amino acid required for synthesis of serotonin, an important neurotransmitter involved in regulation of mood, energy and cognition. The ratio of dietary and plasma tryptophan in relation to other large neutral amino acids (T:LNAA) is the most significant predictor of available tryptophan in the brain. Tryptophan is particularly labile and known to be easily degraded by food processing; yet current databases for amino acid content are compiled from unreliable methods of the 1980's that have since been standardized. **PROSPECTIVE RESULTS:** If processed meats have significantly lower T:LNAA than wild game, we may deduce that the modern Cree diet could impair their adaptive responses to stress and adversity. This research could highlight biological forms of degradation in the legacy of abusive colonial practices and further propel food system improvements in remote aboriginal communities. It also has implications for the psychological well-being of globe at large given the devastating knowledge gap on tryptophan content in modern foods. **RESEARCH SUPPORT:** CIHR Canada.

EXPLORING THE SOCIAL ASPECTS OF PRIVACY AMONG PSYCHIATRIC PATIENTS TOWARDS A PSYCHIATRIC BEHAVIORAL MONITORING SYSTEM. N Zakaria, R Ramli, School of Computer Sciences , Universiti Sains Malaysia, Malaysia; Medical Informatics and e-learning Unit, Medical Education Department, College of Medicine, King Saud University, Riyadh, Saudi Arabia; Advanced Military Maintenance Repair and Overhaul Center (AMMROC), Abu Dhabi, UAE

INTRODUCTION: Patients have concerns when a new technology is introduced in the ward setting as it may affect their privacy. Using a case study approach, we explored ten social dimensions (external intimacy, internal intimacy, status, social, anonymity, autonomy, interaction, formality, unit and personalness of topic) that can impact to the psychiatric patient perceptions towards a psychiatric behavioral monitoring systems (PBMS) to be placed in psychiatric wards. Past research had explored how monitoring behavioral patterns allowed medical team to closely track patient activities and respond to alerts when a problem is detected. In psychiatric wards, monitoring is done by tracking patients' vital signs and behaviors. Psychiatric patients need continuous monitoring

because they may be at risk of death or injury when sedated or secluded. For restless and aggressive patients, a monitoring system can track their behavior continuously especially for patients with dementia and delirium. A behavioral monitoring system is a useful to measure patient clinical outcome especially in psychiatric, however very little research is available on how such system will impact psychiatric patient's privacy. **OBJECTIVE:** The objective of this study was to investigate the privacy perceptions from social aspects by adapting a privacy framework for information system development. **METHOD:** In this study, we conducted a case study in one teaching hospital in Malaysia. We investigated the privacy perception from social and psychology aspects towards a psychiatric monitoring system. 14 social and psychology factors from the privacy framework by Carew and Stapleton were adapted in this study in order to ensure developers design a system by incorporating privacy factors. Scenario-based interviews were conducted with 25 patients in a psychiatric ward from February- April 2012. The interviews were conducted in Malay (the official language in Malaysia), transcribed and then translated into English for analysis and reporting. NVIVO Qualitative Data Analysis software was used for data coding and analysis. A deductive coding was applied throughout the thematic analysis. Inter-coder reliability was performed between two independent coders to ensure coding process was done consistently. **RESULTS:** Psychiatric patients were able to describe the social aspect of privacy towards PBMS. We are able to describe in depth how all ten social dimension influence patients' privacy perception. In this setting, we found external and internal intimacy can be combined as one dimension. **RESEARCH SUPPORT:** Research University Grant (1001/PKOMP/817057), Universiti Sains Malaysia and College of Medicine Research Center, Deanship of Scientific Research, King Saud University, Riyadh, Kingdom of Saudi Arabia, covering all editorial, conference and travel fees.

DEVELOPMENT MODEL FOR COMMUNITY MENTAL HEALTH PROMOTION FOR THE ELDERLY IN HIGH-RISK GROUPS. S Wongsawad, Bureau of Mental Health Promotion and Development, Department of Mental Health, Ministry of Public Health, Bangkok, Thailand

Thailand has joined the ranks of ageing societies. The elderly are experiencing life challenges, personal and health needs and social role. Given their fragile mental health conditions, stress in particular, the risk for an increase in mental health problems in the community is a valid concern. Focusing on hospitals as the primary service provider, community health teams are actively participating in providing elderly care but not fully taken into account. Without an efficient working model, the Ministry needs to develop a working model to guide health teams. The objectives of this study are to develop and create a working model for promoting mental health among the elderly with high-risk. Emancipatory Action Research method was used in this research. To collect data, interviews, focus group sessions, observations, storytelling and dialogues were conducted. The participants in this research are public health officials, public health volunteers and the elderly in Thailand. Content data analysis was used to analyze the data. The result demonstrated the availability of government measures, public health volunteers and elderly caretakers in promoting mental health for the elderly with high risk. Communities were arranged to promote elderly mental health in different forms depending on the local available resources. An improved Community Mental Health Promotion Model for the Elderly in Risk Group was developed. This model is expected to perform effective and suitable health operations. The current study suggests that the agency responsible for elderly care should establish a policy and develop a system that facilitates and supports health care in the community, a system that considers both their physical and mental well-being. These will result in a better quality of life for senior citizens.

BEHAVIOR ANALYSIS OF LOW AND HIGH PREGNANCY RATE USING BREEDING PARTER OF COMMON MARMOSET (*CALLITHRIX JACCHUS*) AS AN MODEL. M Yoda, Gumma Paz College, School of Nursing, Faculty of Health Science, Takasaki, Japan

INTRODUCTION: Midwife usually assists normal delivery, but recently has an increasing chance aiding high-risk delivery because of the first delivery at higher age, imminent premature delivery, external fertilization, and other reason. Almost 40,000 babies born after external fertilization was reported (2013 in Japan). Thus, it is important to understand the mechanism of premature delivery. Various stressors during pregnancy including psychological relationship between parents have been suggested. However, it is still uncertain what the mechanism is. **OBJECTIVE:** As we need an animal model to understand the premature delivery, here we used common marmoset (*Callithrix Jacchus*) as a primate model of human partnership. Breading behavior of female and male was recorded and analyzed in terms of pregnancy rate. **METHODS:** The re-union behavior after separation was video recorded. The video-camera was located in the cage. The male was first separated for 5 min and body-weight was measured. The female left in the cage was recorded. Then the female was leaved from the cage for 5 min and the body-weight was measured. The female was returned to the cage and recorded for 5 min. Finally, the male was returned to the cage and the re-union behavior was recorded for another 5 min. The social behavior was analyzed by our BOUQUET method (Koshiba et at., 2016). **RESULT AND DISCUSSION:** We hypothesize that the social communication behavior upon the re-union may be correlated with pregnancy rate and that the quality of social communication may develop through social interaction during infantile and juvenile stages.

A PSYCHIATRIC DEVELOPMENTAL TREATMENT APPROACH WITH INTERNET OF THINGS (IOT) IN A MARMOSET MODEL. M Koshiba, ISBS Fellow, G Karino, K Mimura, M Shukuya, T Kunikata, S Nakamura, ISBS Fellow, H Yamanouchi, Yamaguchi University, Saitama University, Saitama Medical University, Saitama, Tokyo University of Agriculture and Technology, NCNP, University of Tokyo, Tokyo City University, Tokyo, Japan

INTRODUCTION: Psychiatric developmental disorders, such as autism spectrum disorder, demand innovative, break-through directions for the treatment. Current facilitating approaches with internet of things (IoT) technologies offer new possibilities for novel intelligence. The longitudinal logging and analysis of big data based on physiological, behavioral and environmental tracking may provide integral underlying information to help better understand the neuronal networking processes. Here, we introduce an infant common marmoset model and applied an IoT cloud service to visualize physical and psychological rhythms during nurturing care. **METHODS:** We used 4 common marmoset infants and recorded the surrounding environmental information of their inner and outer home by infrared image sensors networked with a computer for a period of over 4 weeks. The obtained big data (dosens of Tera bite data) were semi-automatically processed into the subjects' centroid motion and body surface temperatures, and were further analyzed using multivariate correlation analysis including principal component analysis (PCA) by correlation matrix, BOUQUET (Koshiba et al., 2013). The three extracted principal components were superimposed in a double-plotting graph. **RESULTS AND CONCLUSIONS:** The results of BOUQUET analysis showed complex rhythmic transition dependent on age-stage, which was not seen in the original data. These novel analyses visualize further state estimation of the subjects affected by social and physical environments. **RESEARCH SUPPORT:** JSPS KAKENHI Grants 25282221, 21200017, 25119509, 15K15404 and JST-ALCA, JST-a-step in Japan.

SYMPOSIUM 3. INTERACTIVE MODERATED POSTER SESSION

ACROLEIN-INDUCED NEUROTOXICITY IN PRIMARY CULTURED NEURONS AND CATH.A CELLS. H-J Huang, T-Y Yeh, Y-J Hsiao, BW Lin, H-T Wang, AM-Y Lin, Department of Medical Research, Taipei Veterans General Hospital, Department of Pharmacology, National Yang-Ming University, National research Institute of Chinese Medicine, Ministry of Health and Welfare, Taipei, Taiwan

Acrolein is known as a highly reactive α, β-unsaturated aldehyde with an oxidative activity. Significantly high levels of acrolein- protein adducts are detected in the brain of patients with CNS neurodegenerative diseases, including Alzheimer's and Parkinsonian diseases. In the present study, the neurotoxic effect of acrolein was investigated using CATH.a cells (a mouse brain catecholaminergic cell line) and primary cultured cortical neurons. Both MTT and LDH assay showed that acrolein concentration (10, 20 and 30 uM)- and time (3, 8 and 24hrs) -dependently reduced cell survival in CATH.a cells and primary cultured cortical neurons. Western blot assay showed that acrolein-induced ROS formation, acrolein increased acrolein-FDP (a biomarker of acrolein-protein conjugates), 4-HNE (a product of lipid peroxidation) and heme oxygenase-1 (a redox-regulated protein) levels, indicating that acrolein is capable of inducing oxidative injury. The acrolein-induced neurotoxicity was indicated by acrolein-induced activation of caspase 3, caspase 9 and caspase12, indicating the involvement of endoplasmic reticulum and mitochondrial pathways in the acrolein-induced apoptosis. Moreover, acrolein increased LC3-II levels, a biomarker of autophagy, indicating that acrolein is capable of inducing autophagy. In addition, treatment of acrolein induced phosphorylation of ERK and AKT, indicating that MAPK and PI3K/AKT signaling pathway may be involved in the acrolein-induced neurotoxicity. To study the neuroprotective strategy, both N-acetyl cysteine and glutathione were found to inhibit acrolein-induced neurotoxicity. In conclusion, our study suggests that apoptosis is involved in acrolein-induced neurotoxicity in CATH.a cells and primary cultured cortical neurons. Furthermore, anti-oxidative treatments and EKR inhibitors may be a potential neuroprotective strategy against acrolein-induced neurotoxicity in CNS neurodegenerative diseases. **RESEARCH SUPPORT:** MOST grant 2016.

ANTI-INFLAMMATORY ROLE OF AFATINIB IN OGD-TREATED CTX-TNA2 CELLS AND PRIMARY CULTURED ASTROCYTES. LYJ Chen, YJ Hsaio, YL Lo, AMY Lin, JCH Yang, Department of Pharmacology, National Yang-Ming University, National research Institute of Chinese Medicine, Ministry of Health and Welfare, Department of Medical Research, Taipei Veterans General Hospital; Institute of Oncology, National Taiwan University, Taipei, Taiwan

INTRODUCTION: In response to injuries, epidermal growth factor receptor (EGFR), a transmembrane receptor with tyrosine kinase (TK) activity reportedly activates astrocytes. In the present study, the anti-inflammatory effect of afatinib (an EGFR-TK inhibitor) on oxygen glucose deprivation (OGD)-treated astrocytes was investigated. **METHODS:** Both CTX-TNA2 (a rat astrocyte cell line) and primary rat astrocytes were incubated in a cultured medium deprived of glucose in a chamber with 1% O2 and 99% N2. **RESULTS AND DISCUSSION:** Western blot assay showed that OGD consistently induced EGFR phosphorylation (tyrosine 1068) and subsequent signaling pathways, including phosphorylation of AKT and extracellular signal-regulated kinases (ERK). Incubation with afatinib dose-dependently (1 and 10 nM) inhibited OGD-induced EGFR phosphorylation and its signaling pathways. Furthermore, afatinib attenuated OGD-induced elevation in glial fibrillary acidic protein, indicating that afatinib inhibited OGD-induced astrocyte activation. The anti-inflammatory activity of afatinib was demonstrated in several ways. First, afatinib reduced OGD-induced elevation in inducible nitric oxide synthase and inducible cyclooxygenase-II levels as well as nitric oxide levels in the cultured medium. Moreover, afatinib inhibited OGD-induced caspase 1 activation (an inflammatory caspase) and the IL-1β elevation. In addition, afatinib depressed the migration ability of activated astrocytes in the hypoxic condition. In conclusion, afatinib may exert its neuroprotective effect on OGD-treated astrocytes by inhibiting EGFR activation, neuroinflammation and migration. Therefore, EGFR-TKIs may be of clinical significance in treating brain ischemia. **RESEARCH SUPPORT:** MOST grant 2016.

NEUROBEHAVIORAL EFFECTS OF A MESOIONIC PYRROLO-TRIAZOLE CF3 (2-(4-FLUOROPHENYL)-2,4,5,6-TETRAHYDROPYRROLO [1,2-C] [1,2,3] TRIAZOLIO-5-OLATE) IN ADULT ZEBRAFISH IN THE NOVEL TANK TEST. TO Kolesnikova, SL Khatsko, AV Zhdanov,

TV Gluhareva, Yu Nein, AV Kalueff, ISBS Fellow, YuYu Morzherin, Ural Federal University, Ekaterinburg, Russia

INTRODUCTION: Preclinical screening of new chemical substances is an important task in modern chemistry and pharmacology. The zebrafish (Danio rerio) is a popular model organism for in-vivo screening, including testing pharmacological effects of new drugs, and studying diseases of the nervous system. The aim of this study was to characterize acute behavioral effects of a potentially interesting mesoionic pyrrolotriazole CF3 (2-(4-fluorophenyl)-2,4,5,6-tetrahydropyrrolo[1,2-c][1,2,3] triazolio-5-olate) in adult zebrafish. METHODS: 22 adult male and female wild type short-fin zebrafish were housed in groups of 15 per 20-L tank, according to the standards of zebrafish care. All fish were experimentally naïve prior to testing, and were fed twice daily. The novel tank test was used to assess zebrafish behavior for 5 min following a 20-min pre-treatment with CF3 via water immersion in a 0.5-L beaker. We calculated the latency (s) to the upper half (top), time spent (s) in the top, freezing frequency and duration and number of erratic movements. **RESULTS AND DISCUSSION:** CF3 in the dose 25 mg/l significantly reduced the number of top entries and increased the number of erratic movements in the experimental group (n=12) compared to the control group (n=10). Accordingly, the tested substance is likely to have psychoactive anxiogenic-like properties. **RESEARCH SUPPORT:** Ural Federal University, Ekaterinburg, Russia.

EFFECTS OF CLOVE OIL NANOEMULSION ON FISH ANESTHESIA AND STRESS IN *OREOCHROMIS NILOTICUS.* S Okonogi, K Kheawfu, W Chaisri, S Pikulkaew, Department of Pharmaceutical Sciences, Faculty of Pharmacy, Nanoscience and Nanotechnology Program, The Graduate School, Department of Food Animal Clinic, Faculty of Veterinary Medicine, Chiang Mai University, Chiang Mai, Thailand

INTRODUCTION: Clove oil has been reported to have anesthetic activity in fish. Its lipid nature leads to a problem of water immiscible. Nanoemulsion has been widely used to improve water miscible of oils. In the present study, clove oil nanoemulsion (CONE) was prepared and investigated for fish anesthetic effect as well as stress reduction in fish. **METHODS:** *Oreochromis niloticus* was used as a fish model. The fish anesthetic effect was investigated by recording anesthetic induction time after immersing the fish into CONES-water mixture having 60 mg/L clove oil. Clove oil ethanolic solution (COES) at the same clove oil concentration was used as a positive control. Stress biomarkers such as plasma cortisol, glucose, and lactate were determined after the fish reached to stage 4 of anesthesia using 100 mg/L MS-222 as a positive control. **RESULTS AND DISCUSSION:** It was found that anesthetic induction time of *O. niloticus* received CONE was significantly ($P<0.05$) shorter (146.9±20.4 sec) than that received COES (187.0±46.9 sec). The plasma level of cortisol and glucose of the fish received CONE was reduced to 21.9±17.4 ng/mL and 46.40±11.17 mg/mL, respectively. MS-222 significantly ($P<0.05$) increased the plasma biomarkers to 48.8±14.2 ng/mL of cortisol and 77.0±18.7 mg/mL of glucose at 30 min after stage 4 of fish anesthesia. It was concluded that CONE is more effective than COES. CONE is a promising nanoformulation fish anesthesia as it is safer than MS-222. **RESEARCH SUPPORT:** the Thailand Research Fund through the Royal Golden Jubliee PhD Program PHD/0103/2556 and the Graduate School, Chiang Mai University.

EXPLORING THE DENTAL VISITING BEHAVIOR DURING PREGNANCY. L-L Chuang, Chang Gung University of Science and Technology, Taoyuan, Chi-Chen Sun, Cheng Hsin General Hospital, Taipei, Taiwan

INTRODUCTION: Most pregnant women ignore their oral hygiene and not have dental visiting regularly. The purpose of this study was exploring the dental visiting behavior during pregnancy. **METHODS:** This is a cross-sectional design among postpartum women in a medical center in northern Taiwan. After giving birth one and three days, a total of 417 postpartum women were recruited and completed a questionnaire, regarding their use of dental services, oral hygiene and

demographic information during pregnancy. **RESULTS:** Of the participants, 129 (30.4%) reported undergoing at least one dental consultation during their pregnancy. Of these women, 72 (55.8%) reported that they undergoing dental visiting for a regular scaling, 46(35.7%) for restoration. Thus, preventative and restorative treatments were the most common treatments among these women. Reasons for those women do not undergo a dental visit during pregnancy included do not feel discomfort (158, 54.9%), being in pregnancy period (107, 37.2%), worried about fetus health(96, 33.3%), do not have time (23, 8.0%), fear pain about dental examination (15, 5.2%). Participants who were regularly scaling indicated significantly associated with dental visit during pregnancy compared to those not have regularly dental visit ($p<0.001$). **DISCUSSION:** According to National Health Insurance in Taiwan, each insured gets at least once scaling every six months. Spreading health policy of regularly dental visiting is recommended.

LONG-LASTING MONOAMINERGIC DYSFUNCTIONS IN A MOUCE MODEL OF ADOLESCENT UNPREDICTABLE SOCIO-ENVIRONMENTAL STRESS. AP Lima, TM Sandini, TM Reis-Silva, CO Massoco, Department of Pathology, School of Veterinary Medicine, University of Sao Paulo, Sao Paulo, Brazil

INTRODUCTION: Adolescence is one of the critical periods of development and has a great importance to health for an individual as an adult. Stressors or traumatic events during this period are associated with numerous changes in the development and plasticity of the neuroendocrine system predisposing the individual to psychiatric disorders as related to anxiety or depression. However, stress in adolescence is a very discussed topic, there are few studies about the long-term effects of stress during this period. **METHODS:** Using a novel socio-environmental paradigm (2 stressors per day for 10 days) in Balb/c mice it was identified behavioral, hormonal, and neurochemical changes 20 days after the cessation of treatment. **RESULTS AND DISCUSSION:** Stress affected weight gain during the stress phase, affected plasma levels of corticosterone, increased motor activity, emotional arousal, vigilance together with a reduction in anxiety and affected recognition memory; and decreased serotonergic activity on hippocampus, hypothalamus and cortex, decreased noradrenergic activity on hippocampus and hypothalamus, and increased the turnover of dopamine in cortex. These data suggest behavioral phenotypes associated with emotional arousal, but not depression, emerge after cessation of stress and remain in adulthood. That social-environmental stress can induce marked and long-lasting changes in HPA that is related with monoaminergic neurotransmission, mainly 5-HT activity. **RESEARCH SUPPORT:** CAPES.

EFFECTS OF CLOVE OIL LOADED SELF MICRO-EMULSIFYING DRUG DELIVERY SYSTEMS (C-SMEDDS) ON STRESS BIOMARKERS IN *CYPRINUS CARPIO.* K Kheawfu, S Pikulkaew, W Chaisri, S Okonogi, Nanoscience and Nanotechnology Program, The Graduate School, Department of Food Animal Clinic, Faculty of Veterinary Medicine, Department of Pharmaceutical Sciences, Faculty of Pharmacy, Chiang Mai University, Chiang Mai, Thailand

INTRODUCTION: Many effective agents currently used for fish anesthesia possess severe side effect of fish stress induction. Clove oil is a natural favorable alternative fish anesthetic but less data on fish stress. The present study explores the effect of clove oil on the plasma level of stress biomarker in fish. **METHODS:** *Cyprinus carpio* was used as an animal model. The fish were separately subjected to C-SMEDDS (75 mg/l clove oil), clove oil ethanolic solution (C-EtOH) in the same oil content, and 100 mg/l MS-222. The evaluation was characterized by stimulation of the HPI axis and levels of fish stress biomarkers were measured in the fish as indicators of stress after exposure to these formulations during a period of 0 – 120 min. **RESULTS AND DISCUSSION:** C-SMEDDS and C-EtOH showed no effect on cortisol, hematocrit, hemoglobin, and glucose levels whereas MS-222 significant ($P<0.05$) increased on the biomarker of stress levels at different sampling time. Average levels of fish plasma cortisol, hematocrit, hemoglobin, and glucose increased significantly to 335.44±93.92 ng/ml, 44.78±4.92%, 16.96±2.70 g/dl, and 101.50±13.53

mg/dl, respectively after exposure to MS-222. It is concluded that clove oil in the form of C-SMEDDS and C-EtOH have no effect of fish stress. Ethanol might have some side effect on fish behavior. C-SMEDDS is therefore a promising clove oil formulation for fish anesthesia. **RESEARCH SUPPORT:** The Graduate School, Chiang Mai University and the grant from the Thailand Research Fund through the Royal Golden Jubliee PhD Program PHD/0103/2556.

THE NORMALIZATION OF BRAIN F-18-FDG HYPOMETABOLISM FOLLOWING ELECTROCONVULSIVE THERAPY IN A WOMAN WITH TREATMENT-RESISTANT DEPRESSION: CASE REPORT. S Shim, Soonchunhyang University Cheonan Hospital, Seoul, South Korea

Major depressive disorder, especially in later life, has heterogeneous clinical characteristics and treatment responses. Classification of depression according to age of onset may be a useful approach to understanding its intricate and complex properties. For symptomatology, psychomotor retardation, lack of energy, and apathy tend to be more common in people with late-onset depression (LOD), which remains under-investigated and with unclear etiology and endophenotypes. In spite of recent advances in psychopharmacologic treatments, 20-30% of patients with mood disorders experience inadequate responses to medication, often resulting in a trial of electroconvulsive therapy (ECT). ECT was performed during several decades, however the therapeutic mechanism of ECT is still unclear. Here, we used F-18-fluorodeoxy-D-glucose positron emission tomography-computed tomography (F-18-FDG PET/CT), we can obtain the status of brain metabolism which of patients with neuropsychiatric disorders and its changing during psychiatric treatment course. In this case report, we introduce 55-year-old female patient who suffered psychotic depression which was treatment-resistant during pharmacological approach. The patient presented not only depressed mood and behaviors but also deficit in cognitive functions. Several antidepressants and atypical antipsychotics was applied but there was no improvement in her symptoms. Because of that, we decided to evaluate the cerebral function of the patient. We found decreased diffuse cerebral metabolism in her brain FDG PET/CT image. FDG PET/CT scans of patient were performed using a Biograph mCT 128 scanner (Siemens Healthcare, Knoxville, TN, USA). The patient fasted for 6 h before the scans. She was intravenously injected with 185 MBq of FDG approximately 60 min before the imaging. The blood glucose level was < 150.0 mg/dL before FDG injection. The patient was stable for 30 min prior to FDG injection and in the subsequent uptake phase. Each PET/CT scan was acquired from the vertex of skull to the skull base during 10 minutes. After CT scanning, a PET scan was performed in the three-dimensional mode. PET images were reconstructed with an iterative reconstruction algorithm with attenuation correction. The patient treated by ECT for 3 weeks showed improved mood symptoms and cognitive functions. By underwent ECT, symptoms of the patient cleared and another brain PET imaging which was taken 7 weeks later from the last ECT course the metabolism of her brain was normalized. By comparing the prior and post images, the effect of ECT in brain metabolism was obtained and could be evaluated. Thus, by using FDG PET/CT the key effect of ECT for depression might be revealed. To understand the effect of ECT, more patients with unipolar and bipolar depression who treated by ECT should be evaluated by PET images before and after the ECT in the further studies. **RESEARCH SUPPORT:** Ministry of Science, ICT and Future Planning, Korea (ITRC, Information Technology Research Center program (IITP-2016-H8601-16-1009) by IITP (Institute for Information and Communications Technology Promotion).

THE ASSOCIATION OF THE SEROTONIN TRANSPORTER GENE POLYMORPHISM (5-HTTLPR) AND MAJOR DEPRESSION IN QATAR. RW Salem, ZM Kabir, RA Basha, TE Shaltout, SB Zainulabdeen and NM Rizk, Qatar University, Doha, Qatar

INTRODUCTION: Major depression (MD) is a universal and etiologically heterogeneous psychological disorder. Many studies demonstrated an association between MD and genetic variations (5-HTTLPR and rs25531) in the serotonin transporter gene (SLC6A4). The aim of this study is to identify mentioned polymorphisms of SLC6A4 and examine their association with MD among Arab patients in Qatar. **METHODS:** A cross-sectional prospective case-control study examined a total of 57 Arab subjects: 27 depressed patients with a mean age (40Y) and 29 healthy controls with a mean age (31Y). Blood samples and demographic data were collected. Control subjects were screened using Patient Health Questionnaire (PHQ-9). For Genotyping analysis of the 5-HTTLPR and rs25531: DNA extraction, polymerase chain reaction (PCR), restriction fragment length polymorphism (RFLP) and gel electrophoresis were performed in Biomedical Sciences Labs at Qatar University. **RESULTS AND DISCUSSION:** In all controls and the majority of patients (N=23, 85.2%), the genotype distribution of 5-HTTLPR was mostly LL with P = 0.031, while the P-value of LS genotype = 0.296 and SS genotype= 0.065. The allele frequency showed a significant difference between L (0.94) and S alleles (0.06) with a P-value= 0.004. Examining the rs25531, showed that LA/LA genotype was present in all controls and most patient (N= 21, 77.8%). In the depressed patients, the LA allele had the highest frequency (0.83) followed by SA (0.13) and then LG (0.04) with the absence of SG. Consistent with Tomoda et al. (2013), all the genotypic distribution in this study of both the 5-HTTLPR and rs25531 alone or when interacted with phenotypic characters of the patients did not show an association with the development of MD. However, Grünblatt et. al. (2006) suggested an association as they noticed that the SS genotype had higher frequency in all patients compared to the controls (P-value= 0.01). This could be due to the relation of 5-HTTLPR with other factors which is not considered in this study such as clinical variables (e.g., age of onset) or variation in the ethnic background or sample size. Conclusion: No evidence of relation between the polymorphisms of SERT gene and occurrence of MD among representative Arab patients in Qatar. **RESEARCH SUPPORT:** Qatar National Research Fund, project UREP: 17-070-3-019.

THE RELATIONSHIP BETWEEN SENSORY PROCESSING PATTERNS AND ANXIETY IN ADULTS. S Khodabakhsh, SC Loh, NA Rosli, University of Malaya, UCSI University, Kuala Lumpur, Malaysia

INTRODUCTION: Anxiety is one of the high prevalent psychological difficulties in adults. The purpose of this study was to explore the relationship between anxiety level and sensory processing patterns in healthy adults. **METHOD:** Three hundred and fifty four university students aged 20-45 years completed the PROMIS® Anxiety Item bank and the Adolescent/Adult Sensory Profile®. **RESULTS:** Analyzing the data by Pearson Correlation, the finding showed that there was positive significant relationship between three of the sensory processing patterns and anxiety, including sensation avoiding, sensory sensitivity, and low registration. Multiple regression analysis showed that sensory avoiding and sensory sensitivity are significant predictors for anxiety. **DISCUSSION:** Sensory processing patterns might have impact on individuals' anxiety level. This study has implications for mental health professionals such as psychologists and counselors.

Day 3. Monday, July 25, 2016

THE JAPAN SOCIETY FOR NEUROSCIENCE (JSN) TALK: THE REGIONAL NEURAL FUNCTION AND FUNCTIONAL INTEGRATION OF THE CEREBELLUM IN CHILDREN WITH ADHD: A RESTING-STATE FUNCTIONAL MRI STUDY. Y Mizuno, M Jung, T Fujisawa, K Shimada, S Takiguchi, D Saito, H Kosaka, A Tomoda, Department of Child and Adolescent Psychological Medicine, University of Fukui Hospital, Fukui, United Graduate School of Child Development, Osaka University, Kanazawa University, Hamamatsu University School of Medicine,

Chiba University and University of Fukui, Research Center for Child Mental Development, University of Fukui, Fukui, Japan; Department of Psychiatry, Harvard Medical School (MGH), Harvard University, Charlestown, MA, USA

INTRODUCTION: Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders, characterized by inattention and hyperactivity/impulsivity. Recent research has focused on the cerebellum's role in ADHD. The aim of this study is to evaluate the regional neural function and functional integration of the cerebellum in children with ADHD. **METHODS:** Thirty-two children with ADHD (aged 7-13 years) and 31 healthy controls (aged 7-14 years) underwent imaging by using resting state functional MRI (rs-fMRI). Amplitude of low-frequency fluctuation (ALFF), which is the index of regional spontaneous brain activity and functional connectivity (FC) with Crus I/II in the cerebellum were analyzed. This study was approved by the ethical committee at University of Fukui, and written informed consent was obtained from all participants and parents. **RESULTS:** Relative to healthy controls, children with ADHD showed significantly higher ALFF in bilateral Crus I, left lobule VI and right lobule VIII in the cerebellum, and significantly less FCs in anterior cingulate cortex (ACC), middle frontal cortex, and inferior parietal cortex with Crus I/II. In addition, across children with ADHD, ALFF in left Crus I and FC in ACC with Crus I/II are significantly correlated with ADHD-rating scale IV total score (respectively $r=0.39$, $p<0.03$, $r=-0.40$, $p=0.02$), and FC in ACC with Crus I/II was significantly correlated with working memory of WISC-IV ($r=0.49$, $p<0.01$). **DISCUSSION:** These results suggest that altered regional neural activity and cortico-cerebellar circuit in the posterior lobule including Crus I are involved with the pathology of ADHD, especially executive function such as working memory.

HEADACHE: A STUDY ABOUT AURICULOTHERAPY EFFECT ON STRESS, PAIN AND QUALITY OF LIFE. FLP Salles, DM Ferreira, ABC, Souza, Faculdade Estácio de Sá de Vitória, Vitória, Brazil

INTRODUCTION: Auriculotherapy has been increasing and has become one of the techniques of traditional chinese medicine greater popularity in Brazil, because of the ease of the procedure, low cost and rapid response, especially in pain conditions. This study evaluated the effect of auriculotherapy with and without bleeding, the level of stress, pain and quality of life of patients with headache. **METHODS:** The study included 36 subjects with headache were randomly divided into 2 groups: auriculotherapy (AT) and auriculotherapy associated with bleeding (ATB), both groups were treated once a week for 5 weeks. Evaluations of both groups were held before the first session, the fifth session and four months after the fifth session, the results are related to the comparison between the original media and the fifth session. For the stress assessment was used inventory of stress symptoms for adults Lipp (ISSL). This questionnaire assesses stress classifying it into 3 parts: alarm, resistance and exhaustion. Pain assessment was made by visual analogue scale (VAS). The evaluation of quality of life was made by SF12.v2 questionnaire. Before starting the study participants signed the free clarification. **RESULTS AND DISCUSSIONS:** Headache affects more women than men in this study 80.44% were female. The majority of subjects were between 18-37 years old (88.88%). The front region (41.66%) fronto-temporo-occipital (27.77%) and occipital (16.66%) were the most affected regions. Before treatment 26 subjects were taking medicine for pain after the 5th session 7 individuals were still using the drug. The comparison of stress levels indicated that there was a reduction of stress in three classifications: AT ($p = 0.000$) and ATB ($p = 0.002$), resistance: AT ($p = 0.000$) and ATB ($p = 0.001$) and exhaustion: AT ($p = 0.000$) and ATB ($p = 0.002$). Similarly, comparison of the protocols indicates that both are effective in reducing stress, since no significant differences in the comparison between TA and ATB groups. There was a reduction in pain intensity in the AT group ($p = 0.000$) and ATB ($p = 0.000$). Similarly, comparison of the protocols indicates that both are effective in reducing pain, since no significant differences in the comparison between TA and ATB groups. When compared the perception of the group's quality of life AT improvement was observed after treatment only in the mental factor (MCS) ($p = 0.033$) and the ATB group had improved only the physical factor (PCS) ($p = 0.026$), there was no significant

differences in the comparison between TA and ATB groups. In this study, the bleed was positive with greater significance at the level of the physical domain of quality of life. This study showed that AT and ATB were effective in improving the studied parameters. It is suggested studies with other protocols in order to verify the effect.

YOUNG SCIENTIST SPECIAL TALK: MODERN RESEARCH APPROACHES TO EVALUATION OF AFFECTIVE AND COGNITIVE FUNCTIONS: APPLICATION TO THE PHENOTYPING OF A MOUSE GENETIC MODEL OF PARKINSON'S DISEASE. MA Tikhonova, YJ Ho, TG Amstislavskaya, Scientific Research Institute of Physiology and Basic Medicine, Novosibirsk, Russia; Department of Psychology, Chung Shan Medical University, Taipei, Taiwan

INTRODUCTION: Modern research tools of advanced behavioral phenotyping allows accurate monitoring the behavioral impairments in rodent models of different neurologic and psychiatric disorders. We will present the methods for evaluation of affective and cognitive functions in mice. Parkinson's Disease (PD) is a severe neurodegenerative disease caused primarily by degeneration of dopamine neurons, its incidence is increasing due to the aging of population. In addition to motor dysfunction, in 20-40% of patients with PD dementia occurs including emotional changes, memory and recognition deficits. Mice of B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J strain express the familial Parkinson's disease-associated A53T missense mutant form of human alpha-synuclein and develop adult-onset neurodegenerative disease with a progressive motoric dysfunction. This model is widely used to study the mechanisms of PD and screening for neuroprotective agents. However, cognitive deficits have not yet been assessed in this PD model. The aim of this study was to compare cognitive and affective characteristics of mice of B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J strain with those of mice of control C57Bl/6J strain. **METHODS:** We conducted the following behavioral testing in 5-months old mice: open-field test, Barnes test, T-maze, forced swim test, sucrose preference test, IntelliCage. **RESULTS AND DISCUSSION:** Mutant B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J mice showed higher horizontal locomotor activity and a tendency to increase in vertical locomotor activity in the open-field test. No significant difference was found in T-maze, sucrose preference and IntelliCage performance between mutant and wild-type mice. In forced swim test, mutant mice demonstrated higher activity and a decrease in the immobility time that correlated with their higher locomotion in open field test. However, the goal box latency in the Barnes test was significantly increased while exploratory activity was significantly decreased and learning was retarded in B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J mice that might be regarded as an early marker of cognitive disturbances in this PD model. Hence, at the young age only light cognitive alterations can be detected in B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J mice using Barnes test. **RESEARCH SUPPORT:** Grants 15-54-52029_HHC-a from the Russian Foundation for Basic Research (Russia) and MOST 104-2923-H-040-001-MY3 from the Ministry of Science and Technology (Taiwan).

QUANTITATIVE ANALYSIS OF IMPROVING OPERATORS' HEALTH. Y Mori, A Ishii, A Sasaki, S Nakamura, Yokohama National University, Kanagawa, Kagawa University, Kagawa, Peripheral Visual Inspection Lab, Kanagawa, CorLab Inc., Tokyo, Japan

BACKGROUND: Operators who perform visual inspections tend to have pains in the eyes, neck and shoulders, and unpleasant symptoms to gastroesophageal resulting from fatigue of the eyes and the poor posture. The peripheral visual inspection method was proposed by one of the authors, in his attempt to improve the productivity in visual inspection. This method is capable of improving not only inspection performance but also operators' health conditions. The aim of this study has been to evaluate whether and how quantitative analysis of the visual inspection operators' health conditions can be realized. **METHODOLOGY:** A total of around 250 people were enrolled in the study. The peripheral visual inspection method was applied to the visual inspection site of the factory at the company. All operators completed three kinds of questionnaires, the Frequency Scale for the Symptoms of GERD Questionnaire, the SF-8™ Health Survey, and the Brief Job Stress

Questionnaire. We quantitatively evaluated the results and investigated the correlation among the answers of the questionnaires. Some of the operators were fitted with wearable devices which can measure electrocardiogram (ECG) and the amount of body movement, and their body movements during inspection were recorded on video simultaneously. We acquired the vital data from wearable devices and compared it with the video image to evaluate whether the vital data can reveal the operator's higher load. **RESULTS:** The results of questionnaires indicated that a large number of operators have problems regarding mental and physical conditions to be improved. As a whole, more than 90% of the operators had "eyestrain" and "a stiff neck and/or shoulders". Around 70% of the operators had "lower back pain". Each value for the correlation coefficient between "eyestrain"/"a stiff neck and/or shoulders" and "mental component summery" was greater than 0.5. Operators' stress indexes measured by spectral analysis of consecutive beat-to-beat interval from the ECG signal were reflected in their movements. **CONCLUSIONS:** Questionnaires can be useful for understanding the improvement of the operator's health conditions on a long-term basis quantitatively. The vital data measuring by the wearable devices can show the change in the operator's physical and mental load on a short-term basis quantitatively.

MINI-SYMPOSIUM 4. ALTERNATIVE MODEL ORGANISMS IN BIOLOGICAL PSYCHIATRY.

Chair: AV Kalueff (USA)

INTRODUCTION TO ALTERNATIVE MODELS IN BIOPSYCHIATRY: WHY AND HOW?

ZEBRAFISH NEUROSCIENCE RESEARCH CONSORTIUM (ZNRC) LECTURE: ZEBRAFISH MODELS FOR STUDYING HUMAN BRAIN DISORDERS – AN UPDATE AND FUTURE PERSPECTIVES.

AV Kalueff, ISBS Fellow, A Kaluyeva, C Song, International Zebrafish Neuroscience Research Consortium (ZNRC), ZENEREI Institute, Slidell, LA, USA; Institute of Translational Biomedicine, St. Petersburg State University, St. Petersburg, Institute of Chemical Technologies, Institute of Biological Science, Ural Federal University, Ekaterinburg, Russia; Research Institute for Marine Drugs and Nutrition, Guangdong Ocean University, Zhanjiang, China

Zebrafish *(Danio rerio)* are an excellent model species for translational neuroscience and biological psychiatry research. With a high (75%) genetic homology to humans, the physiological and behavioral complexity of zebrafish offers a unique (and potentially high-throughput) opportunity to model complex human brain disorders and drug-evoked pathologenesis. As numerous zebrafish models become available with a wide spectrum of behavioral, genetic, and environmental methods to test novel drugs, this 'overview' lecture will discuss recent zebrafish data on modeling chronic and acute stress, the interplay between the immune and the nervous systems, as well as neuroinflammation and neurodegeneration. Additionally, behavioral, neurological, and endocrine biomarkers are increasingly well-characterized in zebrafish, making them an inexpensive, robust and effective model for toxicology research and pharmacological screening. Finally, the lecture will critically discuss the limitations of utilizing this model organism, and will outline future strategies of research in the field of zebrafish neuroscience.

SEROTONIN TOXICITY SYNDROME-LIKE PHENOTYPE EVOKED IN ADULT ZEBRAFISH BY ACUTE EXPOSURE TO AMITRIPTYLINE, A TRICYCLIC SEROTONIN/NORADRENALINE REUPTAKE INHIBITOR.

TO Kolesnikova, SL Khatsko, KA Demin, YuYu Morzherin, AV Kalueff, ISBS Fellow, Ural Federal University, Ekaterinburg, Russia

INTRODUCTION: Amitriptyline is a common, clinically used tricyclic antidepressant with serotonin/noradrenaline reuptake-inhibiting properties. The emissions of pharmaceutical industry, together with the presence of numerous psychotropic antidepressants in sewage and environmental

waters around large cities, are becoming emerging bioenvironmental concerns likely to affect both biosystems and human health (Ziarrusta et al., 2016). Zebrafish *(Danio rerio)* are a valuable tool in pharmacology as well as neuro- and eco-toxicology research. They also display high sensitivity to a wide range of antidepressants, including neonatal endocrine disruptor effects of amitriptyline which potently affects zebrafish reproduction and stress endocrine axes (Yang et al., 2014). The aim of the present study was to characterize in-detail the sensitivity and pharmacogenically induced behavior in adult zebrafish following their acute exposure to amitriptyline. **METHODS:** A total of 53 adult wild type short-fin zebrafish of both sexes (~50:50 male-to-female ratio) were used for this study. Zebrafish were housed in groups of 20 per 20-L tank, according to the standards of zebrafish care. All fish were experimentally naïve prior to their acute exposure to 1, 5 and 10 mg/L (n=13-14 per group) of amitriptyline, and were compared to water-treated control fish group (n=13). The novel tank test was used to assess zebrafish behavior for 5 min following a 20- min pre-treatment with amitriptylin via water immersion in a 0.5-L beaker. We analyzed the latency (s) and the number of entries to the upper half (top), time spent (s) in the top, freezing frequency and duration (s) and the number of anxiety-like erratic movements. **RESULTS AND DISCUSSION:** Amitriptylin at the two lower tested doses (1 and 5 mg/L) significantly reduced the number of erratic movements and increased time spent in the top, thereby showing an anxiolytic-like action with characteristic 'top swimming' phenotype. Notably, this psychotropic profile strikingly resembles the effects of chronic treatment with low doses of fluoxetine (a selective serotonin reuptake inhibitor, SSRI) and other SSRIs in zebrafish, also paralleling previous reports on similar profile evoked in fish by high acute doses of SSRIs. This phenotype has recently been described as the zebrafish analog of 'serotonin behavior', potentially relevant to modeling serotonin toxicity syndrome – a serious, lethal human toxidrome commonly caused by abnormally high serotonin tone (Stewart et al., 2013, 2014, Kyzar and Kalueff, 2016). In contrast, the 10 mg/L dose of amitriptyline significantly increased freezing duration and decreased the number of top entries. **CONCLUSIONS:** Taken together, our results suggest dose-dependent psychotropic effects of amitriptylin in zebrafish, acute exposure to which causes serotonin syndrome-like behavior at 1-5 mg/L, but is likely to produce more non-specific sedative/toxic effects at higher (e.g., 10+ mg/L) doses. Further research is needed to investigate the contribution of noradrenaline (vs. serotonin) reuptake inhibition by amitriptyline in its overal profile observed here. Overall, our results suggest that zebrafish may represent a useful *in-vivo* tool for screening novel monoaminergic (especially, serotonergic) drugs as well as analyzing their interactions and/or potential dose-dependent side effects. Zebrafish can also be particularly useful for modeling clinically important drug-evoked neurotoxic syndromes and studying the impact of drug exposure in ecotoxicology studies. **RESEARCH SUPPORT:** Ural Federal University, Ekaterinburg, Russia.

ROUND TABLE AND ASK-THE-EXPERT SESSION: FUTURE OF ZEBRAFISH MODELS IN TRANSLATIONAL NEUROSCIENCE RESEARCH

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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. David Diamond (University of South Florida, USA), 2015
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. Dusko Kozic (University of Novi Sad, Serbia), 2016
Dr. Shun Nakamura (Tokyo University of Agriculture and Technology, Japan), 2014
Dr. Risto Naatanen (University of Helsinki, Finland), 2013
Dr. Tatyana Nevidimova (National Mental Health Institute, Russia), 2014
Dr. Yuriy Pastuhov (Sechenov Institute, Russia), 2013
Dr. Mikhail Pletnikov (Johns Hopkins University, USA), 2015
Dr. Tatyana Sollertinskaya (Sechenov Institute, Russia), 2013
Dr. Adam Stewart (ZENEREI Institute, USA), 2015
Dr. Petr Shabanov (Institute of Experimental Medicine, Russia), 2016
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

ISBS Fellow Nominees:

Dr. Vsevolod Rozanov (Odessa University, Ukraine), 2017
Dr. Mitsuhiro Yoshioka (Hokkaido University, Japan), 2017

THE INTERNATIONAL STRESS AND BEHAVIOR SOCIETY (ISBS)

Please join our 2016-2017 ISBS conferences:

9th ISBS Conference: Neurobiology of Mind and Body: Behavior, Stress, Brain Diseases, Immunity, Drugs and Nutrition
October 27-29, 2016, Zhanjiang, China

International Neuroscience and Biological Psychiatry ISBS Symposium "TRANSLATIONAL NEUROSCIENCE OF STRESS"
November 10-11, 2016, San Diego, CA, USA

10th International Neuroscience and Biological Psychiatry ISBS Regional (S. America) Conference "NEUROSCIENCE OF STRESS"
December 1-3, 2016, Rio de Janeiro, Brazil

4th Caribbean Biomedical Research Days CBRD-2017
January 16-18, 2017, Rodney Bay, St. Lucia

24th International Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR"
May 16-19, 2017, St. Petersburg, Russia

11th International Regional Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR" (North America)
June 22-24, 2017, Miami Beach, FL, USA

12th International Regional Neuroscience and Biological Psychiatry Conference "STRESS AND BEHAVIOR"(Asia)
July 2017, Japan

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