Program and Proceedings

12th International ISBS Regional Neuroscience and Biological Psychiatry (Asia)
“Stress and Behavior” Conference

Yokohama, Japan
July 24-25, 2017
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CONFERENCE LOCATION: Tokyo City University - Yokohama Campus - Nakagawa Station (Blue subway station). See TCO www for details - www.tcu.ac.jp/english/access/index.html

Yokohama Campus, with the Faculty of Environmental Studies and Informatics, is a five-minute walk from Nakagawa Station on the Yokohama City Municipal Subway Line and located at a quiet corner of Kohoku New Town. With only 14 minutes to Shin-Yokohama Station, 25 minutes to Yokohama Station, and 24 minutes to Shibuya, the campus boasts convenient access to the center of both Yokohama and Tokyo.
CONFERENCE PROGRAM

Day 1. Monday, July 24, 2017
Tokyo City University, Yokohama Campus, Yokohama, Japan

14.00-17.00 REGISTRATION

15.00-15.20 ISBS OPENING CEREMONY AND WELCOMING ADDRESSES

15.20-17.30 SYMPOSIUM 1. ZUKOWSKA SYMPOSIUM ON TRANSLATIONAL STRESS NEUROSCIENCE. Chairs: AV Kalueff (USA) and S Nakamura (Japan)

15.20-16.00 ISBS OPENING PLENARY LECTURE: HALLUCINOGENIC BIOMEDICINE. AV Kalueff, ISBS Fellow, 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

16.00-16.20 EFFECT OF MALEIC ACID ON MICRORNA EXPRESSION IN HUMAN NEUROBLASTOMA CELLS. C-W Tung, School of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan

16.20-16.40 VALIDITY OF STRESS SCALE FOR PREDICTING DEPRESSION IN PREGNANT ADOLESCENTS, THAILAND. P Boontem, S Lagampan and P Pitchayapinyo, Faculty of Public Health, Mahidol University, Thailand

16.40-17.15 WHITE MATTER TRACT ABNORMALITIES IN CHILDREN AND ADOLESCENTS WITH REACTIVE ATTACHMENT DISORDER: A DIFFUSION TENSOR IMAGING STUDY. S Takiguchi, H Naruse, K Shimada, TX Fujisawa, S Morioka, K Shimoji and A Tomoda, Department of Child and Adolescent Psychological Medicine, Division of Physical Therapy and Rehabilitation, University of Fukui Hospital, Research Center for Child Mental Development, University of Fukui, Department of Pediatrics, Fukui Aiiku Hospital, Fukui, Department of Diagnostic Radiology, Tokyo Metropolitan Geriatric Hospital, Tokyo, Japan

17.15-17.30 ART AND SCIENCE MEET: AN ARTIST’S PERSPECTIVE ON MENTAL HEALTH. D Raytchev, Raytchev Art, London, UK

Day 2. Tuesday, July 25, 2017
Tokyo City University, Yokohama Campus, Yokohama, Japan

09.30-17.00 REGISTRATION

10.00-12.45 SYMPOSIUM 2. LAPIN SYMPOSIUM ON BIOLOGICAL PSYCHIATRY
Chairs: TG Amstislavskaya (Russia) and AV Kalueff (USA)
10.00-10.20 CORRECTION OF COGNITIVE DEFICITS WITH CEFTRIAXONE TREATMENT IN ANIMAL MODELS OF PARKINSON’S DISEASE. TG Amstislavskaya, YJ Ho and MA Tikhonova, Federal State Scientific Research Institute of Physiology and Basic Medicine, Novosibirsk State University, Novosibirsk, Russia; Department of Psychology, Chung Shan Medical University, Taichung, Taiwan

10.20-10.40 APPLICATION OF CEFTRIAXONE TREATMENT FOR CORRECTION OF COGNITIVE IMPAIRMENT IN ANIMAL MODELS OF ALZHEIMER’S DISEASE. MA Tikhonova, MV Tenditnik, AE Tishin, AA Akopyan, YJ Ho, TG Amstislavskaya, Federal State Scientific Research Institute of Physiology and Basic Medicine, Novosibirsk State University, Novosibirsk, Russia; Department of Psychology, Chung Shan Medical University, Taichung, Taiwan

10.40-11.00 PATHOLOGICAL GAMBLING AND IMPULSIVITY: COMPARISON OF THE DIFFERENT MEASURES IN THE BEHAVIOR INHIBITION TASKS. P Dannon and S Kertzman, Tel Aviv University, Tel Aviv, Israel

11.00-11.20 COFFEE BREAK

11.20-11.50 SCREENING PRO-ANTI-IMPULSIVE DRUGS IN RODENTS. Y Ohmura and M Yoshioka, ISBS Fellow, Department of Neuropharmacology, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Sapporo, Hokkaido, Japan

11.50-12.10 DYNAMICS OF PLASMA CATECHOLAMINES AND HEART RATE VARIABILITY DURING STRESS CAUSED BY RESTRAINING IN RATS. VV Gavrilov and AV Bakhchina, Institute of Psychology RAS, Moscow, Russia

12.10-12.25 ATYPICAL BEHAVIORAL AND NEURAL PHENOTYPES IN A COMMON MARMOSE MODEL OF AUTISM SPECTRUM DISORDERS. K Mimura, C Sato, J Matsumoto, I Aoki, N Ichinohe, S Tetsuya and T Minamimoto, National Institute of Radiological Science, National Institutes of Quantum and Radiological Science and Technology, Department of Ultrastructural Research, National Center of Neurology and Psychiatry, System Emotional Science, Graduate School of Medicine and Pharmaceutical Sciences, University of Toyama, Toyama, Japan

12.25-12.45 ETHICS IN BIOMEDICAL RESEARCH (ROUND TABLE)

12.45-14.00 LUNCH BREAK (FREE TIME)

14.00-14.35 IMPROVING OPERATORS’ HEALTH BY PERIPHERAL VISUAL INSPECTION METHOD: ITS UNDERSTANDING FROM NEUROSCIENCE, QUANTITATIVE ANALYSIS AND TRAINING. J Margraff, Y Mori, S Nakamura, ISBS Fellow, A Ishii and A Sasaki, ENSIL Limoges, France, Yokohama National University, Kanagawa, CorLab Inc., Tokyo, Kagawa University, Kagawa, Peripheral Visual Inspection Lab, Kanagawa, Japan

14.35-16.00 SYMPOSIUM 3. NEURO-TECH-ENVIRONMENTOLOGY FOR MENTAL DEVELOPMENT
Chairs: M Koshiba and M Shukuya (Japan)
14.35-14.45  NEURO-TECH-ENVIRONMENTOLOGY FOR CHILD MENTL DEVELOPMENT. M Koshiba, M Hariyama, W Hidenori, S Ito, S Shimazaki, T Kubota, M Senda, S Taniguchi and M Shukuya, Yamaguchi University, Yamaguchi, Tohoku University, Miyagi, Kohhoku Kindergarten, Kanagawa, Seitoku Univeristy, Chiba, Environment Design Institute, Tokyo, Tokyo City University, Kanagawa, Japan

14.45-15.05  THERMODYNAMIC REVIEW ON THE CYCLIC PROCESS FROM SENSATION TO ADAPTIVE BEHAVIOR. M Shukuya, Department of Restoration Ecology and Built Environment, Tokyo City University, Kanagawa, Japan

15.05-15.25  ENVIRONMENTAL STRESS DURING THE EARLY PERIOD OF LIFE ALTERS EPIGENETIC MODIFICATIONS THAT ARE ASSOCIATED WITH NEURODEVELOPMENTAL DISORDERS. T Kubota, Faculty of Child Studies, Seitoku University, Chiba, Japan

15.25-15.45  LONGITUDINAL RECORDING REVEALED PRETERM INFANTS’ CIRCADIAN VOCAL BEHAVIORS INFLUENCED BY LIFE EVENTS. T Tao, H Sakurai, H Kakei, K Morita, M Honda, Z Jiang, H Yamanouchi, T Kunikata and M Koshiba, Saitama Medical University, Saitama, Yamaguchi University, Yamaguchi, Japan Society for the Promotion of Science (JSPS), Tokyo, Japan

15.45-16.00  BEHAVIOR ANALYSIS OF CHILDREN USING A HIGH-ACCURACY GPS SYSTEM. M Hariyama, M Koshiba, H Watanabe, S Ito, S Shimazaki, T Kubota, M Senda, S Taniguchi, Tohoku University, Miyagi, Yamaguchi University, Yamaguchi, Kohhoku Kindergarten, Kanagawa, Seitoku University, Chiba, Environment Design Institute, Tokyo, Japan

16.00-16.20  COFFEE BREAK

16.20-17.30  SYMPOSIUM 4. INTERACTIVE MODERATED POSTER SESSION

- TIME ESTIMATION IS SLOWED DOWN IN POST-TRAUMATIC STRESS DISORDER. CM Vicario and K Felmingham, University of Tasmania, Hobart, University of Melbourne, Melbourne, Australia

- THE SHARED NEUROBIOLOGY AND TREATMENT OF COMORBID ADHD-OCD: A CASE REPORT. JA King, N Dowling, F Leow, Professorial Unit, The Melbourne Clinic, Department of Psychiatry, University of Melbourne, The Royal Melbourne Hospital, Victoria, Australia

- MINNESOTA STARVATION EXPERIMENT AND ITS LESSONS FOR THE NEUROBIOLOGY OF ANOREXIA NERVOSA. F Leow and JA King, The Royal Melbourne Hospital, Professorial Unit, The Melbourne Clinic, Department of Psychiatry, University of Melbourne, Victoria, Australia

- OCCUPATIONAL STRESS AND ORGANIZATIONAL COMMITMENT AMONG DOCTORS WORKING IN PUBLIC AND PRIVATE HOSPITALS OF KARACHI. Syeda Zufi-e-sha Zehra, Marium Ather, Beenish Zehra, Fakher-un-nisa, Dow University of Health Sciences, Dow, Pakistan

- 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

17.30-18.00 CONFERENCE CLOSING LECTURE: ZEBRAFISH MODELS FOR STUDYING HUMAN BRAIN DISORDERS – AN UPDATE AND FUTURE PERSPECTIVES. AV Kalueff, ISBS Fellow, A Kaluyeva and 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

18.00-18.10 CONFERENCE CLOSING REMARKS

ANNOUNCING FORTHCOMING ISBS CONFERENCES
ABSTRACTS
Day 1. Monday, July 24, 2017
Tokyo City University, Yokohama Campus, Yokohama, Japan

ISBS OPENING CEREMONY AND WELCOMING ADDRESSES

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

INTRODUCTION: PROFESSOR ZOFIA M ZUKOWSKA

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

ISBS OPENING PLENARY LECTURE: HALLUCINOGENIC BIOMEDICINE. AV Kalueff, ISBS Fellow, 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

Traditional hallucinogenic psychedelic drugs, such as lysergic acid diethylamide (LSD), mescaline and psilocybin, act mostly on serotonergic 5HT2A receptors to exert profound effects on brain and behavior in both animals and humans. In addition to psychedelics, other hallucinogenic drugs include dissociatives - hallucinogens which distort perceptions and produce feelings of dissociation from the environment and self. Dissociatives, such as ketamine, phencyclidine and MK-801, act by inhibiting glutamatergic receptors, and can evoke general depressant effects, sedation, respiratory depression, analgesia, anesthesia, ataxia and cognitive/memory deficits. Deliriant hallucinogens represent another group, acting mostly as anticholinergic agents to induce specific behavioral effects, primary of which is delirium (as opposed to the more lucid states produced by other hallucinogens). Other hallucinogenic drugs include opioid ligands, such as ibogaine and Salvinorin A, and several hallucinogenic-related specific drugs, such as marijuana and ecstasy (3,4-Methylenedioxymethamphetamine, MDMA), which are not currently classified as classic hallucinogens, but often cause similar behavioral effects. After decades of stagnation in studying these compounds globally (due to unjust overregulation and political oppression), hallucinogenic...
drugs are now again being tested as potential treatments for human intractable disorders. Preclinical research of such drugs complements human neuroimaging studies and pilot clinical trials, suggesting these compounds as promising treatments for addiction, depression, anxiety and other CNS conditions. Here, I will summarize recent preclinical and clinical data in this field of studying hallucinogenic drugs, discuss their pharmacological mechanisms of action, and outline critical areas for future studies of hallucinogenic drugs, with the goal of maximizing the potential benefits of their translational biomedicine to patients.

EFFECT OF MALEIC ACID ON MICRORNA EXPRESSION IN HUMAN NEUROBLASTOMA CELLS. C-W Tung, School of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan

INTRODUCTION: Maleic acid has been used for producing food additives and food contact materials that may contaminate food by the release from food packages or intentional addition. Previously, we have developed a toxicogenomics system ChemDIS (http://cwtung.kmu.edu.tw/chemdis) to analyze potential effects of maleic acid on human. The effects on neuronal systems were identified and subsequently confirmed by transcriptomic profiling and functional assays in human neuronal cells. This study further investigates the regulation of microRNA expression to give a whole picture of the effects of maleic acid on neuronal cells.

METHODS: MicroRNA expression profiles of human neuroblastoma SH-SY5Y cells exposed to three concentrations of maleic acid (10, 50, and 100 μM) for 24 h were firstly analyzed using microarray. Subsequently, monotonically increased or decreased microRNAs with more than twofold changes over control after applying 100 μM maleic acid were identified for enrichment analysis. The enrichment analysis is based on direct miRNA-function associations without potential bias introduced from the target prediction.

RESULTS AND DISCUSSION: The expression of 2,539 microRNAs was profiled and analyzed. A total of 115 differentially expressed microRNAs (68 upregulated and 47 downregulated) were identified in response to the treatment of maleic acid. In addition to the calcium ion binding already identified by our transcriptomics analysis, the enrichment analysis of the 115 microRNAs showed that nervous system development, calmodulin binding, cadherin signaling pathway, and neurotrophin signaling pathway are significantly affected by maleic acid. The multiomics evidence was analyzed to provide a better understanding of the interference and mechanism of maleic acid on neuronal cells. RESEARCH SUPPORT: The Ministry of Science and Technology of Taiwan (MOST104-2221-E-037-001-MY3).

VALIDITY OF STRESS SCALE FOR PREDICTING DEPRESSION IN PREGNANT ADOLESCENTS, THAILAND. P Boontem, S Lagampan and P Pitchayapinyo, Faculty of Public Health, Mahidol University, Thailand

INTRODUCTION: Depression in pregnant adolescents is very serious problem of public health in Thailand, and very difficult to early detection. The objective of this research was to study the validity of stress scale for predicting depression in pregnant adolescents in Thailand. METHODS: This cross-sectional study design was conducted with third trimester pregnant adolescents randomly selected from five regions of Thailand (n = 200). Data were collected with stress scale in third trimester and depression at the 4th week after childbirth was surveyed. Descriptive statistics, ROC Curve analysis, and Logistic regression analysis were used for data analysis. RESULTS: This study present the prevalence rate of depression in pregnant adolescent was 16.5% (33 out of 200); stress scale had cut point score at ≥ 5.5 with sensitivity 76% and specificity 79%, and the area under curve = .84 (p < 0.001). Stress scale gained scores for cut point at ≥ 5.5; only 5 items showed capability to predict depression in pregnant adolescents. DISCUSSION: The cut point scores of stress scale at ≥ 5.5 was potential predicting; so this stress scale can be useful for health professionals for early detecting depression in pregnant adolescents at the cut of scores only 5.5 from 15.
WHITE MATTER TRACT ABNORMALITIES IN CHILDREN AND ADOLESCENTS WITH REACTIVE ATTACHMENT DISORDER: A DIFFUSION TENSOR IMAGING STUDY. S Takiguchi, H Naruse, K Shimada, TX Fujisawa, S Morioka, K Shimoji and A Tomoda, Department of Child and Adolescent Psychological Medicine, Division of Physical Therapy and Rehabilitation, University of Fukui Hospital, Research Center for Child Mental Development, University of Fukui, Department of Pediatrics, Fukui Aikiku Hospital, Fukui, Department of Diagnostic Radiology, Tokyo Metropolitan Geriatric Hospital, Tokyo, Japan

INTRODUCTION: Reactive attachment disorder (RAD) is a severe social functioning disorder associated with early childhood maltreatment, characterized by emotionally withdrawn/inhibited behavior towards caregivers. Children with disrupted attachment have developed other psychiatric disorders in young adulthood. A better understanding of their underlying mechanisms will aid in developing effective preventive interventions. Diffusion tensor imaging (DTI) has been used to study the white matter architecture and integrity of both normal and neuropsychiatric disorders. The aim of this study is to evaluate white matter disruption in children and adolescents with RAD. METHODS: Twenty-five children and adolescents with RAD (14 male/11 female, mean age 13.2 years) and 33 typically developing (TD) controls (20 male/13 female, 13.0 years) underwent MRI imaging by using DTI. Group differences in fractional anisotropy (FA), co-varied by age, gender, IQ, handedness and depression scale, were assessed using tract-based spatial statistics (TBSS), which projects FA values onto an alignment-invariant fiber tract representation. This study was approved by the ethical committee at University of Fukui, and written informed consent was obtained from all participants. RESULTS: Compared with the TD group, FA values in the right anterior thalamic radiation (ATR) and right superior longitudinal fasciculus (SLF) were significantly lower in the RAD group (p < 0.05 FWE corrected). DISCUSSION: The ATR is part of a different emotional/motivational system, which helps to mediate separation distress and sadness in humans. And SLF is involved in executive functioning. The results suggest that white matter disruptions may be involved with the psychopathology of RAD. RESEARCH SUPPORT: Grant-in-Aid from the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) of Japan (KAKENHI grants 15K21026, 15H03106).

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.
This regular ISBS symposium is dedicated to Professor Izyaslav ‘Slava’ P. Lapin (1930-2012), a true pioneer 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 (together with G Oxenkrug) in Lancet in 1969, became one the most cited papers published in this journal in the last 50 years. Lapin’s studies have contributed greatly to the development of newest serotonergic antidepressants, such as SSRIs, currently representing the most prescribed group of psychotropic drugs in the world. Prof. Lapin was also the first to report the neuroactive effects of kynurenine and its derivatives – a discovery that opened another rapidly expanding area of glutamatergic psychopharmacology. A talented professional musician, prolific writer, painter, and an enthusiastic athlete, Prof. Lapin was a strong supporter of ISBS, and generously shared his knowledge with colleagues and students at our “Stress and Behavior” conferences and ISBS summer schools. His enthusiasm, friendship, generous support of junior colleagues, and the deep knowledge as both a clinical and experimental neuropharmacologist (‘humanists’ and ‘animalists’, as he called them), made a long-lasting impact on his colleagues and students. This regular ISBS symposium will continue Lapin’s scientific legacy in the field of biological psychiatry.

CORRECTION OF COGNITIVE DEFICITS WITH CEFTRIAXONE TREATMENT IN ANIMAL MODELS OF PARKINSON'S DISEASE. TG Amstislavskaya, YJ Ho and MA Tikhonova, Federal State Scientific Research Institute of Physiology and Basic Medicine, Novosibirsk State University, Novosibirsk, Russia; Department of Psychology, Chung Shan Medical University, Taichung, Taiwan

INTRODUCTION: Drug repurposing appeared to be quite effective strategy in psychopharmacology. Ceftriaxone (CEF), which has been used for decades as an antimicrobial agent, recently attracted attention as a neuroprotective agent due to its ability to reduce glutamate-mediated neurotoxicity and to enhance the degradation of misfolded proteins (Bachetti et al., 2010; Altas et al., 2013; Lujia et al., 2014). Parkinson's disease (PD) is characterized by dementia affecting about 30% of PD patients (PDD). Memory impairment, decreased attention and visuospatial skills are among the most common cognitive deficits in PDD. Current treatment of PD does not cover all manifestations of the disease focusing mainly on motor symptoms. The aim of this study was to determine the neurobehavioral effects of ceftriaxone in a 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)-induced PD rat model and in a genetic model of PD (B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J mouse strain). METHODS: To evaluate the effects of CEF, the animals of experimental groups were treated chronically with the drug (100 mg/kg/day, i.p.). We conducted the behavioral testing including open-field test, novel object recognition test, Barnes test, T-maze as well as neuromorphological and immunohistochemical study of brain cryosections. RESULTS AND DISCUSSION: Ceftriaxone
treatment improved MPTP-induced cognitive deficits and inhibited the dopaminergic degeneration in the nigrostriatal system, microglial activation in the SNc, and cell loss in the hippocampal CA1 area. CEF also exhibited beneficial effects on some of impaired cognitive features in a genetic model of PD. CEF administration diminished memory deficits associated with alpha-synuclein overexpression in the Barnes test as evidenced by improved dynamics of the latency to find the target hole, decreased value of weighted mean distance and increased percentage of visits to the target hole. Besides, CEF increased the ratio of correct choices to all choices in T-maze in B6.Cg-Tg(Prnp-SNCA*A53T)23Mkle/J mice. The results suggest ceftriaxone as a promising pharmacological tool for therapy of PDD.

**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).

**APPLICATION OF CEFTRIAXONE TREATMENT FOR CORRECTION OF COGNITIVE IMPAIRMENT IN ANIMAL MODELS OF ALZHEIMER'S DISEASE.** MA Tikhonova, MV Tenditnik, AE Tishin, AA Akopyan, YJ Ho, TG Amstislavskaya, Federal State Scientific Research Institute of Physiology and Basic Medicine, Novosibirsk State University, Novosibirsk, Russia; Department of Psychology, Chung Shan Medical University, Taichung, Taiwan

**INTRODUCTION:** Drug repurposing appeared to be quite effective strategy in psychopharmacology. Ceftriaxone (CEF) is a safe and multipotent agent that has been used for decades as an antimicrobial drug while its capability to attenuate neurodegenerative disturbances was revealed in the last decade (Bachetti et al., 2010; Altas et al., 2013; Lujia et al., 2014). Recently we obtained promising results on its neuroprotective properties in MPTP-induced PD rat model including the restoration of cognitive deficits (Ho et al., 20104; Weng et al., 2016). The aim of this study was to determine the behavioral effects of CEF using two models of AD-like pathology, a mouse pharmacological model induced by amyloid-beta neurotoxicity and a rat OXYS strain with genetically defined accelerated senescence and signs of AD-like pathology, as well as to estimate the involvement of neuro-immune mechanisms in the effects.

**METHODS:** To evaluate the effects of CEF, the animals of experimental group were chronically treated with the drug (100 mg/kg/day). Mice were injected bilaterally i.c.v. with amyloid-beta fragment 25-35 prior to start of CEF treatment. We conducted the behavioral testing including the open-field test, novel object recognition test, T-maze, Barnes test, and IntelliCage. Neuromorphological study of the brain was performed in OXYS rats and mice. For quantitative assessment of immune cells in the thymus and spleen, multi-color flow cytometry was used.

**RESULTS AND DISCUSSION:** CEF treatment exhibited beneficial effects on some of impaired cognitive features in OXYS rats and mice with deficits induced by amyloid-beta. Neuromorphologically, CEF increased the density of pyramidal neurons in the hippocampal CA1 area, decreased the number of degenerating neurons and edema of brain tissue in OXYS rats. A diffuse lymphoid infiltration was observed in the brain while peripheral immune parameters were suppressed after CEF treatment in OXYS rats. The data suggested CEF as a promising pharmacological tool for the prevention of cognitive decline at neurodegenerative disorders and gave new insights into neuro-immune mechanisms of its neuroprotective effects.

**RESEARCH SUPPORT:** Grant No. 15-04-05593-a from the Russian Foundation for Basic Research (Russia).

**PATHOLOGICAL GAMBLING AND IMPULSIVITY: COMPARISON OF THE DIFFERENT MEASURES IN THE BEHAVIOR INHIBITION TASKS.** P Dannon and S Kertzman, Tel Aviv University, Tel Aviv, Israel

Impulsive behavior and underlying brain processes are hypothesized to be central in the development and maintenance of pathological gambling. Inhibition ability can be differentially impaired in pathological gamblers (PGs). The goal of this cross-sectional study is to compare common inhibition measures in the discrimination of PG and healthy controls (HC). PG (N = 51) and HC (N= 51) performed the “response inhibition” (the Go/No-go), the “interference inhibition” (the
Stroop), and the “reflective inhibition” (the Matching Familiar Figures, MFFT) tasks. Augmented total interference response time in the Stroop task ($\eta^2=0.054$), high number of commission errors ($\eta^2 = 0.053$) in the Go/No-go task, and total number of errors in the MFFT ($\eta^2 = 0.05$) can discriminate PGs. Slow response time in the Go/No-go task ($\eta^2 = 0.038$) has borderline ability, but the number of errors in the incongruent condition, total interference in terms of error rate, number of omissions in the Go/No-go task, and first response time in the MFFT could not differentiate between the PG and the HC. There were no significant correlations between inhibition measures. Most inhibition measures are not relevant to gambling. PGs do not express rash impulsive behavior such as quick answer without thinking. In contrary, the inhibition impairment was related to slow-inaccurate performance.

SCREENING PRO-/ANTI-IMPULSIVE DRUGS IN RODENTS. Y Ohmura and M Yoshioka, ISBS Fellow, Department of Neuropharmacology, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Sapporo, Hokkaido, Japan

Higher impulsivity could be a risk factor for drug addiction, criminal involvement, and suicide. Moreover, poor inhibitory control is observed in several psychiatric disorders such as attention-deficit/hyperactivity disorder, schizophrenia, and bipolar disorder. Thus it is preferred that the therapeutic drugs have anti-impulsive effects in addition to the therapeutic effects on the primary disease. At least it is better to use the therapeutic drugs that do not increase impulsivity. We have developed a 3-choice serial reaction time task and examined the effects of the therapeutic drugs or clinically available drugs on impulsivity in rats and mice using the task. We have found several anti-impulsive drugs (lithium, tandospirone, milnacipran, and duloxetine) and some pro-impulsive drugs (nicotine and varenicline) and elucidated the mechanism of action in some of these drugs. For example, we demonstrated that milnacipran and duloxetine enhanced the control of impulsive action by activating D1-like receptors in the infralimbic cortex, a ventral part of the medial prefrontal cortex. These anti-impulsive drugs increase extracellular dopamine levels in the medial prefrontal cortex without altering dopamine levels in the nucleus accumbens. We propose a strategy for identifying potential drugs to treat impulsivity-related disorders by investigating clinically available drugs that increase extracellular dopamine levels in the medial prefrontal cortex and stimulate dopamine D1-like receptors without increasing extracellular dopamine levels in the ventral striatum.

DYNAMICS OF PLASMA CATECHOLAMINES AND HEART RATE VARIABILITY DURING STRESS CAUSED BY RESTRAINING IN RATS. VV Gavrilov and AV Bakhchina, Institute of Psychology RAS, Moscow, Russia

Neural mechanisms of learning through observation can be studied in the model of instrumental food-acquisition behavior, when a naive rat has an opportunity to observe the behavior of an experienced rat before training to perform the same task. In our model the naive rat is gently restrained in a hammock to facilitate observation and limit the impact of the naive rat’s irrelevant behavior when analyzing neural activity. However, the question arises as to how much the results obtained in this model can be affected by an additional variable of stress caused by restriction of movements. Therefore, the goal of this work was to evaluate the levels of stress during repeated short-term restriction of movement in rats using plasma catecholamines measurements and heart rate variability analysis. Permanently jugular vein-cannulated rats (Long-Evans, males, weight = about 300 g, N=6) were placed in the hammock for 30 min per an experimental session. Experiments were run for five days, one session a day. ECG was recorded using a wireless device “Fisiobelt” during all experimental sessions. Spectral indexes (TP, LF, HF, LF/HF) of heart rate variability (HRV) were evaluated. Noradrenaline (NA) and adrenaline (A) concentrations in plasma were measured on the first, third and fifth days of experiments. Probes were taken four times during each experimental session: 30 min prior to placing animals in the hammock, 5 min after its restriction in the hammock, at the end of a session, and after 30 min of recovery. We used Friedman test to
identify any significant trends in the dynamics of variables during each experimental day. Plasma NA and A were increased significantly on the first experimental day (A: Chi Sqr. (N = 6, df = 3) = 14.8, p = 0.002, NA: Chi Sqr. (N = 6, df = 3) = 8.8, p = 0.03) with the maximal values during the period sustained in the hammock. No significant fluctuations were observed in plasma NA and A levels on the third (A: Chi Sqr. = 3.8, p = 0.28; NA: Chi Sqr. = 1.0 p = 0.80, with maximum during first 30 min of recovery period) or fifth experimental days (A: Chi Sqr. = 6, p = 0.11; NA: Chi Sqr. = 2.4, p = 0.49). HRV indexes (TP, LF/HF) are often used as noninvasive markers of acute stress, and in this study TP level decreased during the period rats were sustained in the hammock across all experimental sessions (1: Chi Sqr. = 11.4, p = .01; 2: Chi Sqr. = 9.0, p = 0.03; 3: Chi Sqr. = 10.6, p = 0.02). TP level did not return to a baseline on the first or third experimental days, however it was higher the baseline during the last 30 min of recovery period on the fifth day. No significant fluctuations in LF/HF levels were found during any experimental sessions. Thus, we found that the levels of stress in our experimental model decreased from session to session, and these results support the use of this model of restrained movement in the studies of learning through observation in rats. Supported by the Russian Science Foundation (RSF) grant 14-28-00229.

ATYPICAL BEHAVIORAL AND NEURAL PHENOTYPES IN A COMMON MARMOSET MODEL OF AUTISM SPECTRUM DISORDERS. K Mimura, C Sato, J Matsumoto, I Aoki, N Ichinohe, S Tetsuya and T Minamimoto, National Institute of Radiological Science, National Institutes of Quantum and Radiological Science and Technology, Department of Ultrastructural Research, National Center of Neurology and Psychiatry, System Emotional Science, Graduate School of Medicine and Pharmaceutical Sciences, University of Toyama, Toyama, Japan

Autism spectrum disorder (ASD) is a group of behaviorally defined neurodevelopmental disorders associated with social and cognitive disabilities. In rodents, valproic acid (VPA) exposure in utero is widely used to an ASD model (Shin, 2015) because of its obvious surface fidelity. VPA has been reported as a risk factor of ASD in human clinical studies (Christensen, 2013). We have reported VPA exposed ASD model in non-human primate, common marmoset (Callithrix jacchus) (Yasue, 2015). Here we show brain structural and behavioral phenotypes in early developmental stage of this model. By using high-resolution diffusion tensor imaging (DTI) of neonatal marmosets brain, we found the size of the anterior commissure of ASD model marmosets (n=7) is significantly smaller than that of unexposed (UE) marmosets (n=9) (P2 day, p < 0.05). The kinship vocal communications in the family with ASD model child were longitudinally recorded. There were significant differences in call-use between VPA and UE families. In VPA families, frequency of social isolation call “phee” was increased, while “trill” call was decreased (P90 day, 9 VPA exposed, and 7 UE). These results suggested that VPA model marmosets have a risk of communication deficits at neonate, which is manifested by family social event, e.g. weaning.

IMPROVING OPERATORS’ HEALTH BY PERIPHERAL VISUAL INSPECTION METHOD: ITS UNDERSTANDING FROM NEUROSCIENCE, QUANTITATIVE ANALYSIS AND TRAINING. J Margraff, Y Mori, S Nakamura, ISBS Fellow, A Ishii and A Sasaki, ENSIL Limoges, France, Yokohama National University, Kanagawa, CorLab Inc., Tokyo, Kagawa University, Kagawa, Peripheral Visual Inspection Lab, Kanagawa, 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 (PVI) 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 clarify the improvement of the operator’s health conditions by questionnaires and vital data, and to understand the improvement from neuroscience. Finally the PVI training system will be introduced. METHODS: A total of around 300 operators in charge of visual inspection 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 the gravity center fluctuation during visual inspection. We acquired the vital data from wearable devices to evaluate whether the vital data can reveal the operator's skill level. **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. The locus of the center of gravity during visual inspection indicated the operators’ skill level of PVI. Conclusions: Questionnaires can be useful for understanding the improvement of the operator’s health conditions on a long-term basis quantitatively. The locus of the center of gravity during visual inspection can show the change in the skillfulness of PVI operation quantitatively.

**SYMPOSIUM 3. NEURO-TECH-ENVIRONMENTOLOGY FOR MENTAL DEVELOPMENT**

Chair: M Koshiba and M Shukuya (Japan)

**NEURO-TECH-ENVIRONMENTOLOGY FOR CHILD MENTL DEVELOPMENT.** M Koshiba, M Hariyama, W Hidenori, S Ito, S Shimazaki, T Kubota, M Senda, S Taniguchi and M Shukuya, Yamaguchi University, Yamaguchi, Tohoku University, Miyagi, Kohhoku Kindergarten, Kanagawa, Seioku University, Chiba, Environment Design Institute, Tokyo, Tokyo City University, Kanagawa, Japan

**INTRODUCTION:** Mental development is diversified over lifetime through variable environmental processes, whose mechanisms may be comprehended with the current internet of things technology for our arbitrary self-management. To perform the application to approach to novel function such as developmental diagnosis and intervention in our lives, we need a meta-field networking with basic consideration of neurobiological psychiatry. In this symposium, we organize communicative sessions about four topics that have been attempted in real human lives from babies to adults. **METHOD:** We complied with the approved contents by each institute ethical committee. The participant age bands involved preterm infants, children, adults and elderly in clinical and ordinary school environments, such as kindergarten, university, or elderly home. **RESULTS AND DISCUSSION:** To compare or comprehend in different generation or situation status, the common metaphase communication tools were crucial for these inclusive analyses. The expression of mental modulation should have been described certain quantic and multiple correlation with computing methodology. Moreover, the acquisition tools should satisfy stress-free function that usually faces to stressfulness in analyzers. We, therefore, discuss demanding points to realize innovative life technology for mental evolution, not for atrophy, in humane lives with interactive views in the thermal physics, space and information sciences, cognitive and genetic biology and social sciences. And let’s talk how these concepts and thinking ways should be considered to touch in earlier lives, that actually makes our next generation. **RESEARCH SUPPORT:** JSPS (grants P16307, 15J06978, 17K18648, 25282221, 21200017, 25119509), JST-ALCA, JST-a-step and SCOPE.

**THERMODYNAMIC REVIEW ON THE CYCLIC PROCESS FROM SENSATION TO ADAPTIVE BEHAVIOR.** M Shukuya, Department of Restoration Ecology and Built Environment, Tokyo City University, Kanagawa, Japan

**INTRODUCTION:** Built-environmental thermal conditioning can be made by two distinctively characterized means of technology: one is so-called “passive” technology and the other “active” technology. The former is to prepare thermally-well insulated building envelopes and thereby put
appropriate openings such as windows, vents and doors so that a variety of immediate natural resources such as solar radiation, wind, and others can be utilized for lighting, heating, cooling and ventilating indoors. The latter is to exploit fossil fuels to produce “heat” and then “work” with mechanical and electrical devices at the supply sites and deliver either of them or both of them to the demand sites for running a variety of indoor environmental conditioning systems. The purpose of conditioning is, whether it is by “passive” or by “active” means, to make the indoor environment healthy and comfortable enough for occupants; in other words, to make it less stressful and thereby enhance the occupants’ adaptive behaviour. In order to design rational passive and active systems for built-environmental conditioning, it is necessary to know how the whole of human body, the body proper and brain, works, since the human discomfort or comfort emerges within the cyclic process from sensation, via perception and cognition, to behaviour. In this presentation, recent findings with respect to such cyclic process from the thermodynamic viewpoint are going to be reported.

**METHODS:** The thermal behavior of human body was modelled as a three-node system and for all of these nodes, the corresponding energy and entropy balance equations were set up and then the exergy balance equation was derived taking the environmental temperature into consideration. Here in this research, a series of sensitivity analyses on the relative influence of mean radiant temperature and air temperature were made.

**RESULTS AND DISCUSSION:** We have found that 1) the human-body exergy consumption rate, which is a kind of thermal-stress indicator, is very sensitive to the changes in mean radiant temperature; 2) the human-body exergy consumption rate becomes smaller with a combination of moderately higher mean radiant temperature with moderately lower air temperature in winter and the opposite turns out to be true in summer; 3) during summer season, in the indoor environment, where mean radiant temperature is moderately lower than air temperature being almost equal to outdoor air temperature, the enhancement of air velocity necessarily brings about smaller human-body exergy consumption rate.

**RESEARCH SUPPORT:** JSPS Grants-in-Aid for Scientific Research (B) 22360242 and 25289200.

**ENVIRONMENTAL STRESS DURING THE EARLY PERIOD OF LIFE ALTERS EPIGENETIC MODIFICATIONS THAT ARE ASSOCIATED WITH NEURODEVELOPMENTAL DISORDERS.** T Kubota, Faculty of Child Studies, Seitoku University, Chiba, Japan

A Japanese saying “the soul of a child of three is the same at one hundred” (i.e., the child is father to the man, or what is learned in the cradle is carried to the grave) indicates that the character once established in early period continues all one’s life. Recent studies suggest that a new biological mechanism named epigenetics underlies this empirically-established saying. Epigenetics is a gene regulation mechanism that does not depend on genomic DNA sequences but depends on chemical modification of genomic DNA and histone proteins (i.e. epigenome). Failures of epigenetic mechanisms cause congenital neurodevelopmental disorders. It is recently known that failures of epigenetic mechanisms also causes acquired neurodevelopmental disorders since epigenetic modifications of the genome are vulnerable to environmental stress, such as malnutrition and mental stress, especially during the early period of life. Moreover, such environmental stress (e.g. mental stress)-induced epigenomic alterations are potentially transmitted to subsequent generations with abnormal behavioural phenotypes. However, the epigenome has a reversible property since it is based on removable residues on genomic DNA. Thus, environmentally induced epigenomic alterations can potentially be restored. In fact, some medicines for psychiatric disorders are known to restore an altered epigenome, resulting in correction of gene expression in the brain. In this symposium, I introduce epigenomic difference between monozygotic twins that shares the same genomic DNA, and maternal smoking-induced epigenomic changes in the fetuses that are potentially avoidable by discontinuance of smoking in early pregnancy. I also propose epigenomic-based preemptive medicine that consists of the early detection of the developmental origins of diseases using epigenomic signatures and the early intervention that take advantages of the use of epigenomic reversibility, by introducing recent advance of epigenomic-based preemptive medicine for Prader-Willi syndrome, a congenital neurodevelopmental disorder, using DNA methylation test for its early detection.
LONGITUDINAL RECORDING REVEALED PRETERM INFANTS’ CIRCADIAN VOCAL BEHAVIORS INFLUENCED BY LIFE EVENTS. T Tao, H Sakurai, H Kakei, K Morita, M Honda, Z Jiang, H Yamanouchi, T Kunikata and M Koshiba, Saitama Medical University, Saitama, Yamaguchi University, Yamaguchi, Japan Society for the Promotion of Science (JSPS), Tokyo, Japan

INTRODUCTION: An infant’s verbal learning is influenced by the neuronal development in the earlier stage, and the influence may start from fetal ages. At the background of the Japanese current issues, the premature delivery number still keeps high and the preterm infants must be exposed absolutely different circumstances from the normal one. In our neonatal intensive care unit (NICU), we focused on preterm infants' voice and the other sounds recorded in an incubator longitudinally for several days or a few weeks, and explored any modulators to their vocal behavior during the clinical cares.

METHOD: We complied with the approved contents by Saitama Medical University Hospital Institutional Review Board (IRB) Committee. Data in twenty preterm infants were acquired by a sound level meter (sample rate 24 kHz) and were performed frequency analysis by Matlab customized application.

RESULTS AND DISCUSSION: Auditory identification with frequency analysis visualized two different vocal types, weak sound A, or high-pressure sound B, extracted qualitatively. The type A has low frequency distribution (under 1800Hz) and a short duration (0.5s). On the other hand, type B, which is a wide range of constituent frequencies (0~5000Hz, 1s), usually appeared before the diaper exchange or disappeared with nursing, that might be interpreted as “negatively emotional cry”. Furthermore, the type B appearance in 48 hours, seemed intermittently repeated like circadian waveforms, accompanied with some life sounds including social events. Our automatic recording and analysis technology may contribute to chronically therapeutic intervention in future for developmental disorders.

RESEARCH SUPPORT: JSPS (P16307, 15J06978, 17K18648, 25282221, 21200017, 25119509), JST-ALCA, JST-a-step and SCOPE.

BEHAVIOR ANALYSIS OF CHILDREN USING A HIGH-ACCURACY GPS SYSTEM. M Hariyama, M Koshiba, H Watanabe, S Ito, S Shimazaki, T Kubota, M Senda, S Taniguchi, Tohoku University, Miyagi, Yamaguchi University, Yamaguchi, Kohhoku Kindergarten, Kanagawa, Seitoku University, Chiba, Environment Design Institute, Tokyo, Japan

INTRODUCTION: The recent survey of Ministry of Health, Labor and Welfare, Japan shows that the number of children with developmental disorders such as autism increases clearly. It is said that one reason for this is the change in living environment and playing environment. In order to improve this situation, we must clarify the relations between environment and mental-and-physical development quantitatively. For the quantitative evaluation, the use of various sensors plays an important role such as sensors for biological signals, accelerations and positions. As a first step for this purpose, this paper reports the outdoor behavior analysis of children using a highly-accurate GPS (Global-Positioning System).

METHODS: In order to measure the position of children outdoor, we use kinematic GPS since they are more accurate than conventional static-type GPS. The accuracy of kinematics GPS is typically less than 10 cm. One problem of current real-time kinematic GPS is its large size and heavy weight. To solve this problem, we use kinematic GPS of the post-processed type, AT-H-02 from AOBA Technologia LLC since it is compact (78.5 mm x 38.5 mm x 18.5 mm), light (69 g) and has a long battery life (6 h). The post-process GPS only stores the received data in real-time and the stored data are processed off line on a PC. This limitation enables the compactness and light weight of the post-process GPS. We attach the GPS devices on children, and measure their positions while they are playing in a kindergarten yard. For processing the stored data in a GPS device, we use the software, RTK-LIB (http://www.rtklib.com).

RESULTS AND DISCUSSION: The original position data are very noisy. The reason for this would be that children change their postures frequently and the radio wave condition is not good. To improve this result, we apply a smoothing filter to the original data considering children’s motion speed. The resulting accuracy is around 20 cm. Thanks to this high accuracy, we can find clearly that two children go...
around by tricycles together. Such group play can be thought of as an indication of children's social development. The analysis for other GPS data is now undergoing, and more interesting behaviors are expected to be found. Moreover, we currently try to develop an indoor positioning system. The hybrid of the highly-accurate GPS and such indoor positioning system allows us to understand the total behavior of children.

SYMPOSIUM 4. INTERACTIVE MODERATED POSTER SESSION

TIME ESTIMATION IS SLOWED DOWN IN POST-TRAUMATIC STRESS DISORDER. CM Vicario and K Felmingham, University of Tasmania, Hobart, University of Melbourne, Melbourne, Australia

INTRODUCTION AND METHODS: People with PTSD are frequently affected by difficulty in managing daily activities. Such issues might be caused, at least in part, by a difficulty in estimating the duration of external events. We tested this possibility by investigating the ability of a group of PTSD and a group of control participants in estimating the duration of supra-second visual stimuli.

RESULTS: Overall, our results indicate that PTSD patients overestimate the duration of supra-second visual stimuli, in agreement with the interpretation that the experience of time is slowed down in this clinical population. Moreover, we found higher variability in the time estimation of the PTSD, compared to the control group. Finally, we found that temporal estimation of PTSD correlated with their performance in Working Memory and Attention tasks. DISCUSSION: The evidence of deranged timing skills in PTSD expands our current knowledge about the cognitive profile of this clinical disorder; and provides useful insights to explain some aspects of the PTSD phenomenology such as their difficulty in managing everyday activities.

THE SHARED NEUROBIOLOGY AND TREATMENT OF COMORBID ADHD-OCD: A CASE REPORT. JA King, N Dowling, F Leow, Professorial Unit, The Melbourne Clinic, Department of Psychiatry, University of Melbourne, The Royal Melbourne Hospital, Victoria, Australia

INTRODUCTION: We describe a case whereby a 15 year old female with treatment-resistant obsessive-compulsive disorder (OCD) was treated with methylphenidate for co-morbid attention deficit hyperactivity disorder (ADHD). The ADHD-OCD co-morbidity has often been overlooked clinically due to conflicting opinions about their underlying neurobiology and treatment options.

METHODS: We report the case of a 15-year-old Caucasian female who was referred to a private outpatient psychiatric service in Australia. She identified contamination-based obsessions and fear of vomiting, being apparent from age five following minor surgery. Her symptoms reportedly followed a general chronic waxing and waning course with little to no periods of remission.

RESULTS AND DISCUSSION: Our report highlights the case of a 15-year-old adolescent who, after therapeutic dose of adjunctive methylphenidate was established, displayed treatment response to ERP for previously treatment-resistant symptoms. Some evidence suggests that ADHD and OCD may be linked neurobiologically. Structural and functional imaging findings have shown abnormalities converging with a failure of cortico-striatal circuit function responsible for cognitive control and performance monitoring processes in both ADHD and OCD patients. Neuropsychological tests and corresponding brain activation studies have also showed deficits in response inhibition and attention allocation, with medial frontal dysfunction that is common to both disorders. Such deficits may explain difficulties in cognitive set-shifting observed across both disorders.

MINNESOTA STARVATION EXPERIMENT AND ITS LESSONS FOR THE NEUROBIOLOGY OF ANOREXIA NERVOSA. F Leow and JA King, The Royal Melbourne Hospital, Professorial Unit, The Melbourne Clinic, Department of Psychiatry, University of Melbourne, Victoria, Australia
INTRODUCTION: Anorexia nervosa (AN) is a debilitating mental illness with high levels of mortality and morbidity. The symptoms of AN are widespread amongst body systems. Much of what we know of these changes is based on the Minnesota Starvation Experiment. METHODS: We describe the history and events of the Minnesota Starvation Experiment, conducted at the University of Minnesota in 1944. Thirty-six young men voluntarily participated in the experiment in which they underwent caloric restriction and a physical exercise program. The aim was loss of 25% of initial body weight. RESULTS AND DISCUSSION: During the pre-starvation phase, subjects were healthy physically, emotionally and socially. The starvation phase highlighted a dramatic range of changes across various health domains - physical, psychological, cognitive, social, behavioural and eating pattern. Participants found the rehabilitation phase and post rehabilitation phases particularly challenging as some of these changes were persistent during these phases. Most of these changes resolved eventually. The period of recovery ranged between 2 months to 2 years. Many of the participants continued to contribute to post war rebuilding of Europe and embarked on careers in politics, law, religion and education. This experiment gives hope to patients, families and clinicians that individuals who suffer from AN can recover even though the journey is challenging. Individuals can lead a values based life after suffering from an eating disorder.

OCCUPATIONAL STRESS AND ORGANIZATIONAL COMMITMENT AMONG DOCTORS WORKING IN PUBLIC AND PRIVATE HOSPITALS OF KARACHI. Syeda Zufi-e-sha Zehra, Marium Ather, Beenish Zehra, Fakher-un-nisa, Dow University of Health Sciences, Dow, Pakistan

INTRODUCTION: In this present era, job stress remains the rampant source of stress for a person. Stress happens to be the main rationale of misleading behavior of an employee working in an organization. In addition, stress affects the commitment of an employee. There are 3 dimensions of organizational commitment; affective commitment (AC), normative commitment (NC), and continuance commitment (CC). METHODS: The self-constructive survey questionnaire was circulated through convenience sampling technique and gathered 1039 responses (public hospitals=549 and private hospitals=490). A five-point Likert Scale measured responses ranges from strongly disagree (1) to strongly agree (5) while 10-item scale was used to evaluate occupational stress. Additionally, dimensions of organizational commitment were evaluated on a scale containing 6-items. The data of this cross-sectional study was analyzed through SPSS 23. RESULTS AND DISCUSSIONS: As interpreted from results, there is a weak positive linear relationship between AC and personal factor and organizational factor. Likewise, NC shares a weak positive linear relationship with personal resources and organizational factor. Similarly, CC has a weak positive linear relationship with personal factor and personal resources. However, AC has a strong negative relationship with personal resources while NC also has a strong negative relationship with personal factor. In a similar manner, CC has a weak negative linear relationship with organizational factor. Moreover, level of stress and commitment among doctors working in public hospitals is relatively low in contrast to private hospitals. In addition, males are under more stress. However, AC and NC are relatively high in females while CC is more in males.

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: Mesoionic 1,2,3-triazolium-5-olate, and especially their fused analogues are poorly known class of heterocyclic compounds, so preclinical screening to identify their potential pharmacological properties is one of the important task in chemistry and pharmacology. Zebrafish (Danio rerio) is a very popular animal model for toxicology and neurobiology research and CNS drug discovery. Here we characterized behavior effects of a 2-[4-(trifluoromethyl)phenyl]-5,6-dihydro-4H-
pyrrol-[1,2-c]triazolo-7-ium-3-olate in adult zebrafish. METHODS: 96 adult wild type short-fin zebrafish were used. Zebrafish were housed in 40-L tank, according to the standards of zebrafish care. All fish were experimentally naïve before testing. The novel lank test was utilized to assess zebrafish behavior for 5 min following their 20-min exposure to 1, 5, 10, 25 and 50 mg/L of the drug. We analyzed the latency (s) and number of top entries, time spent in the upper half, duration and frequency of freezing and the number of anxiety-like erratic movements. RESULTS AND DISCUSSION: While the tested compound does not alter behavioral parameters at 1, 5, 10 and 25 mg/L, its higher dose of 50 mg/L significantly increased freezing frequency (p=0.0024) and duration (p=0.0022). Also, the drug reduced the number of top entries (p=0.0009) and time in the upper part of the tank (p=0.0010), and prolonged the top latency (p=0.0006), compared with control group. Taken together, our results suggest that this new chemical substance is likely to have psychoactive anxiogenic-like, sedative or intoxicating properties. RESEARCH SUPPORT: Ural Federal University, Ekaterinburg, Russia.

CONFERENCE CLOSING LECTURE: ZEBRAFISH MODELS FOR STUDYING HUMAN BRAIN DISORDERS – AN UPDATE AND FUTURE PERSPECTIVES. AV Kaluueff, ISBS Fellow, A Kaluyeva and 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

Neuropsychiatric diseases represent a difficult biomedical problem, both in their treatment and investigation. Additionally, many affected CNS phenotypes (e.g., social deficits in autism or cognitive deficits in schizophrenia) lack efficient approved treatments, and the success rate for new drugs remains extremely low, despite the rapidly growing body of relevant biological information. Based on the premise of targeting evolutionarily conserved (and, therefore, core) disease phenotypes and mechanisms, this strategy highlights the value of novel model organisms, such as zebrafish (Danio rerio), in translational neuroscience research. Native to South-East Asia, the zebrafish is a small tropical fish inhabiting streams, canals, ponds and rice fields. A popular aquarium species, it has also been long used in developmental, genetic, and, more recently, neuroscience research. Recent sequencing of the zebrafish genome reveals high similarity to other vertebrates, with ~71.4% of human genes having at least one zebrafish ortholog. However, zebrafish underwent an additional round of teleost-specific whole-genome duplication and also contain multiple deletions, inversions and duplications, compared to the human genome. A clear advantage of using zebrafish models is the non-invasive drug administration, since water-soluble substances added directly to water can be rapidly absorbed via gills and skin. Zebrafish may also be subjected to systemic (e.g., intraperitoneal or oral) drug administration, which can not only reduce the amount of drug used, but ensure a better dose control and enable direct dose comparisons with rodents (note, however, that immersional substance introduction helps avoid the injection stress, replacing it with a less intense restraint). Approximate generation time of zebrafish is 3-4 month, and females can spawn every 2-3 days producing ~200 eggs in each clutch. Fast reproduction, relatively high genetic homology to humans and low cost have made zebrafish a convenient and cost-effective tool for genetics, embryology, neurophysiology and high-throughput drug or toxicity screening. Zebrafish also represent an emerging organism for modeling of complex brain diseases. Although some of zebrafish models (e.g., anxiety-, depression- and addiction-related) are relatively well-established, others are less recognized (e.g., autism-and obsessive-compulsive-like states) and appreciated. In summary, mounting data indicate that a wide spectrum of CNS diseases can be modeled in adult zebrafish, as will be discussed here using selected brain disorders as examples. Here, we summarize recent findings utilizing the zebrafish as an exciting novel tool to study complex CNS functions and dysfunctions. We also discuss model limitations and challenges, as well as outline future directions of research in this relatively 'young' (and, therefore, currently less established/supported), but highly promising field.
THE INTERNATIONAL STRESS AND BEHAVIOR SOCIETY (ISBS)

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- Student member, 3-year term ($ 60.00)
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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. Jean Martin Beaulieu (Laval University, Canada)
Dr. Marcus Day (Caribbean Drug and Alcohol Research Institute, St. Lucia), 2016
Dr. David Diamond (University of South Florida, USA), 2015
Dr. Evgeniy Budygin (Wake Forest Medical Center, USA), 2014
Dr. David Echevarria (University of Southern Mississippi, USA), 2014
Dr. Alexey Egorov (Sechenov Institute, Russia), 2014
Dr. Irina Ekmova (Sechenov Institute, Russia), 2013
Dr. Philippe Fauquet-Alekhine (Chinon Nuclear Power Plant, France), 2017
Dr. Raul Gainetdinov (Italian Institute of Technology, Italy), 2013
Dr. Allan Kulieff (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. Xiu Liu (University of Mississippi Medical Center, USA), 2016
Dr. Tatyana Nevidimova (National Mental Health Institute, Russia), 2014
Dr. Louis Newman (Destiny Medical School, St. Lucia), 2016
Dr. Yuriy Pastuhov (Sechenov Institute, Russia), 2013
Dr. Ghanshyam Pandey (University of Illinois at Chicago, USA), 2017
Dr. Mikhail Pletnikov (Johns Hopkins University, USA), 2015
Dr. Vsevolod Rozanov (Odessa University, Ukraine), 2017
Dr. Urban Seraphin (Allied Health Council, St. Lucia), 2016
Dr. Tatyana Sollertinskaya (Sechenov Institute, Russia), 2013
Dr. Adam Stewart (ZENEREI Institute, USA), 2015
Dr. Petr Shabanov (Institute of Experimental Medicine, Russia), 2016
Dr. Cai Song (Guangdong Ocean University, China), 2016
Dr. Tatiana 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

ISBS Fellow Nominees:
Dr. James Erskine (St George’s University of London, UK), 2018
THE INTERNATIONAL STRESS AND BEHAVIOR SOCIETY (ISBS)

Established in 2007
President: Allan V. Kalueff, PhD (2015-2017)
Vice-President: Victor M. Klimenko, MD, PhD (2015-2017)

ISBS is the international society of experts working with in the field of clinical and translational neuroscience, neurobehavioral sciences, biopsychology and biopsychiatry, with a particular focus on stress, stress-related neurobehavioral phenotypes, their neural, molecular and genetic mechanisms, as well as stress-evoked neuropsychiatric disorders. Anyone with an interest in stress-related human or animal behaviors, neurobehavioral disorders and their mechanisms, wishing to join the International Stress and Behavior Society can do so by paying dues of $100.00 regular member or $60.00 student member for a three-year term. To join please send membership application request to the ISBS Secretariat at info@stressandbehavior.com.

Please join our forthcoming 2017-2018 ISBS conferences

13th International Neuroscience and Biological Psychiatry ISBS Regional (S. America) Conference "NEUROSCIENCE OF STRESS"
December 1-3, 2017, Rio de Janeiro, Brazil

5th Caribbean Biomedical Research Days CBRD-2018
January 16-18, 2018, Rodney Bay, St. Lucia

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

International Neuroscience and Biological Psychiatry ISBS Symposium "TRANSLATIONAL NEUROSCIENCE OF STRESS"
May 23, 2018, Kiev, Ukraine

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

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