IBRO 2019

The 10th IBRO World Congress of Neuroscience

Joint Meeting of
International Brain Research Organization &
Federation of Asian-Oceanian Neuroscience Societies

SEPTEMBER 21 - 25 | DAEGU, KOREA

Program Book

IBRO International Brain Research Organization
Federation of Asian-Oceanian Neuroscience Societies
KBRI Korea Brain Research Institute
The Korean Society for Brain and Neural Sciences
Ministry of Science and ICT
DAEGU METROPOLITAN CITY
KOREA TOURISM ORGANIZATION
dcvb DAEGU Convention & Visitors Bureau

P37.09 **Involvement of area 3a in nociception processing investigated by fMRI of anesthetized rhesus monkey**

MIN-JUN HAN[1], CHAN-UNG PARK[1], EUNHA BAEG*[2]
[1]Department of Biomedical Engineering Sungkyunkwan University (SKKU), Suwon, Korea, Republic of, [2]Center for Neuroscience Imaging Research, Institute for Basic Science (IBS), Suwon, Korea, Republic of

P37.10 **Distinct spatiotemporal responses of Dentate granule and mossy cells to local change in a one-dimensional landscape**

DAJUNG JUNG[1], SOYOUN KIM[2], ANVAR SARIEV[2], DAESOO KIM[1], SEBASTIEN ROYER*[2]
[1]KAIST, Daejeon, Korea, Republic of, [2]KIST, Seoul, Korea, Republic of

P37.11 **Cell-type specific role of the ventral pallidum and subthalamic nucleus circuitry in locomotion and behavior**

HYUNJU AHN[1], GYURYANG HEO[1], SIEUN JUNG[1], SEONG-RAE KIM[1], SUNG-YON KIM*[1]
[1]Seoul Natl. Univ., Seoul, Korea, Republic of

P37.12 **Slow spindles are associated with cortical high frequency activity**

MARYAM GHORBANI*[1], NASRIN SADAT HASHEMI[1], FERESHTEH DEHNAVI[1], SAHAR MOGHIMI[1]
[1]Department of Electrical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran

P37.13 **Analysis of structural connectivity network of basal ganglia in mouse brain: MR diffusion-tractography at 9.4 T**

A-YOON KIM*[1,2], HYEON-MAN BAEK[3]
[1]gachon university, Incheon, Korea, Republic of, [2]Department of Health Science & Technology, GAIST, Gachon University, Incheon, Korea, Korea, Republic of, [3]Lee Gil Ya Cancer & Diabetes Institute, Gachon University, Incheon, Korea, Korea, Republic of

P37.14 **Brain-wide neural dynamics during flexible task switching in mice**

DOHOUNG KIM[1], ALBERT LEE*[1]
[1]Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, VA, USA

P37.15 **Structural correlates of modular organization of activity propagation in the primate somatosensory cortex**

MOHD YAQUB MIR*[1], LÁSZLÓ NÉGYESSY[2]
[1]semmelweis university, Budapest, Hungary, [2]Wigner research centre, Budapest, Hungary

P37.16 **Predicting transgenic markers of a neuron by electrophysiological properties using machine learning**

HYUNSU LEE*[1,2], INCHEOL SEO[3]
[1]School of Medicine, Keimyung Univ., Daegu, Korea, Republic of, [2]Department of Anatomy, Keimyung University School of Medicine, Daegu, Korea, Republic of, [3]Department of Microbiology, Keimyung University School of Medicine, Daegu, Korea, Republic of

P37.17 **Characterization of receptive fields of mouse retinal ganglion cells through comparative analysis of spike-triggered average and spike-triggered covariance**

JUNGRYUL AHN[1], YONGSEOK YOO[2], YONG SOOK GOO*[1]
[1]Department of Physiology, Chungbuk National University School of Medicine, Cheongju, Korea, Republic of, [2]Department of Electronics Engineering, Incheon National University, Incheon, Korea, Republic of

P37.18 **Persistent gamma spiking in SI non-sensory fast-spiking cells predicts perceptual success**

HYEYOUNG SHIN*[1], CHRISTOPHER MOORE[1]
[1]Brown University, Providence, Rhode Island, USA

P37.19 **Acute amyloid β (25-35 and 1-40) effects on oscillatory activity and synaptic plasticity in the CA3-CA1 circuit of the hippocampus**

MAURICIO NAVA-MESA*[1], CECILE GAUTHIER-UMAÑA[2], JONHATAN MUÑOZ-CABRERA[3], MARIO VALDERRAMA[4], ALEJANDRO MUNERA[5]
[1]Universidad del Rosario (Bogotá, Col), Bogotá, Colombia, [2]Universidad del Rosario , Bogotá, Colombia, [3]Universidad Nacional de Colombia, Bogotá, Colombia, [4]Universidad de los Andes, Bogotá, Colombia, [5]Universidad Nacional de Colombia, Bogota, Colombia

P37.20 **Information processing in the primary olfactory cortex directly induces hippocampal synaptic plasticity**

DENISE MANAHAN-VAUGHAN*[1], CHRISTINA STRAUCH[1]
[1]Ruhr University Bochum, Medical Faculty, Neurophysiology, Bochum, Germany

P37.21 **Effect of interpopulation spike-timing-dependent plasticity on neuronal synchronized rhythms in clustered small-world networks with inhibitory and excitatory populations**

WOOCHANG LIM*[1], SANG-YOON KIM[1]
[1]Institute for Computational Neuroscience and Daegu National University of Education, Daegu, Korea, Republic of

Effect of interpopulation spike-timing-dependent plasticity on neuronal synchronized rhythms in clustered small-world networks with inhibitory and excitatory populations

WOOCHANG LIM[*1], SANG-YOON KIM[1]

[1]Institute for Computational Neuroscience and Daegu National University of Education, Daegu, Korea, Republic of

We consider clustered small-world networks with two inhibitory (I) and excitatory (E) populations. This I-E neuronal network has adaptive dynamic I to E and E to I interpopulation synaptic strengths, governed by interpopulation spike-timing-dependent plasticity (STDP). In previous works without STDPs, fast sparsely synchronized rhythms, related to diverse cognitive functions, were found to appear in a range of noise intensity D for static synaptic strengths. Here, by varying D, we investigate the effect of interpopulation STDPs on synchronized rhythms that emerge in the I- and the E-populations. Depending on values of D, long-term potentiation and long-term depression for population-averaged values of saturated interpopulation synaptic strengths are found to occur, and they make effects on the degree of population synchronization. In a broad region of intermediate D, the degree of good synchronization (with higher spiking measure) becomes decreased, while in a region of large D, the degree of bad synchronization (with lower spiking measure) gets increased. Consequently, in each I- or E-population, the synchronization degree becomes nearly the same in a wide range of D. We note that this kind of equalization effect in interpopulation synaptic plasticity is in contrast to the Matthew (bipolarization) effect in intrapopulation (I to I and E to E) synaptic plasticity where good (bad) synchronization gets better (worse).

Keywords : Equalization effect, Interpopulation spike-timing-dependent plasticity, Fast sparsely synchronized rhythm, Inhibitory and excitatory populations