



TC  
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UNIVERSITY  
*10<sup>th</sup> year*



## ABSTRACT BOOK

# “BRAIN-MIND IN PROBABILISTIC HYPERSPACE”

October 19-21, 2007

**Istanbul Kültür University**

**Brain Dynamics, Cognition and Complex  
Systems Research Unit**

**Faculty of Science and Letters**

**Prof.Dr. Erol Başar  
Chairman**



# **BRAIN-MIND IN PROBABILISTIC HYPERSAPCE**

## **19-21 OCTOBER 2007**

### **PROGRAM OF THE SYMPOSIUM**

#### **October 19<sup>th</sup> 2007 First Day**

**15:30 -17:00 Registration**

**17:00-17:30 Opening ceremonies**

#### **I.PRELUDE**

**Chairman: John Polich, San Diego, USA**

**17:30 -18:15 Erol Başar, Istanbul, Turkey**  
Brain and Mind in a Cartesian System of 21<sup>st</sup> Century

**18:15 -19:00 Scott Kelso, Florida, USA**  
On Understanding Mind

*19:00- 22:00 Reception*

#### **October 20<sup>th</sup> 2007 Second Day**

#### **II. CELLULAR LEVEL**

**Chairman: Charles Bowden, San Antonio, USA**

**9:00-10:00. Menahem Segal, Rehovot, Israel**  
Determinants of neuronal network activity in cultured hippocampus

**10:00-10:45: Stuart Hughes, Cardiff, UK**  
Cellular Alpha Rhythm Mechanisms and Their Possible Association with Perceptual Timing

*10:45-11:15 Coffee Break*

#### **III. COGNITION**

**Chairman: Canan Başar-Eroğlu, Bremen, Germany**

**11:15-12:00 John Polich, San Diego, USA**  
Updating P300: An Integrative Theory of P3a and P3b

**12:00-12:40 Christopher Moore, Boston, USA**

Frequency-Dependent Cortical Dynamics and the Optimization of Perception

*12:40-14:00 Lunch*

**Chairman: Scott Kelso, Florida, USA; Maria Corsi-Cabrera, Mexico City, Mexico**

**14:00-14:40 Wolfgang Klimesch, Salzburg, Austria**

Memory Related EEG Oscillation and Top-Down Control

**14:40-15:20 Jochen Kaiser, Frankfurt am Main, Germany**

Cortical Oscillations and Auditory Memory

*15:20 -15:50 Coffee Break*

**Chairman: Oğuz Tanrıdağ, Istanbul, Turkey; Christopher Moore, Boston, USA**

**15:50- 16:30 Maria Corsi-Cabrera, Mexico City, Mexico**

REM Sleep Dreaming, a Frontal Disconnection State

**16:30- 16:50 Bahar Güntekin, Istanbul, Turkey**

Gender Differences in Event Related Oscillations during Visual Paradigms

**16:50 -17:10 Christoph Herrmann, Magdeburg, Germany**

Summary of the Day

## **October 21<sup>st</sup> 2007 Third Day**

### **IV. COGNITIVE DISORDERS AND TRANSMITTERS**

**Chairman: Menahem Segal, Rehovot, Israel**

**9:00-10:00 Charles Bowden, San Antonio, USA**

Bipolar Pathophysiology and Treatment Development

**10:00-10:30 Ayşegül Özerdem, Izmir, Turkey**

Hyperresponsive Oscillatory Delta Frequency to Visual Stimuli in Bipolar Disorder Normalizes With Chronic Valproate Use

*10:30-11:00 Coffee Break*

**Chairman: Wolfgang Klimesch, Salzburg, Austria**

**11:00- 11:40 Christoph Herrmann, Magdeburg, Germany**

Neural traits and states predict brain responses and behaviour

**11:40-12:10 Görsev Yener, Izmir, Turkey**  
Delta/Theta Responses of Alzheimer Patients

*12:10-13:30 Lunch*

**Chairman: Jochen Kaiser, Frankfurt am Main, Germany; Stuart Hughes, Cardiff, UK**

**13:30 - 14:10 Tamer Demiralp, Istanbul, Turkey**  
ERP and ERO Variability's Due To Genetic Polymorphisms of Glutamatergic and Gabaergic Neurotransmission

**14:10-14:50 Canan Başar-Eroğlu, Bremen, Germany**  
Alpha and Theta Oscillations in Patients with Schizophrenia

**14:50-15:10 Tamer Demiralp, Istanbul, Turkey**  
Summary of the Day

**15:10-16:40 V. POSTER SESSION**  
*and Coffee Break*

**16:40 -18:00 Concluding Panel**

# ERP and ERO Variabilities Due To Genetic Polymorphisms of Glutamatergic and Gabaergic Neurotransmission

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ERPs as well as event related oscillations are heritable. Recent studies on gene polymorphisms related with specific components of neurotransmitter systems suggest that the inter-individual differences in brain functions within healthy and patient populations can depend on polymorphisms, because of their capability of constituting neurochemical and/or structural differences. Therefore, potential candidates for the genetic determinants of ERPs are genes encoding several most important neurotransmitter receptors. In this study, we aimed to identify associations of functional polymorphisms in dopaminergic, noradrenergic, GABAergic and glutamatergic neurotransmission systems on wave components of auditory and visual ERPs. Three cognitive paradigms were used to derive ERPs: (i) auditory novelty paradigm with 70% standard, 15% target and 15% novel sounds, (ii) visual go/nogo paradigm with 50% go and 50% nogo stimuli, and (iii) a CNV paradigm with a visual S1 and auditory S2 and 1.5 s interval between them. ERPs were derived from 30 channels according to the extended 10/20 system. To avoid confounding effects of gender, age, education, and IQ on ERPs, the study was carried out on 202 healthy male medical students. The differences of amplitudes and latencies of ERP wave components and the evoked and total powers of EROs obtained by means of wavelet transform among various genotypes of these polymorphisms were tested with ANOVA. The results showing significant effects of these polymorphisms on both ERP wave components and on evoked and induced oscillations in various frequency ranges will be reported in this presentation.