

# Journal Cellular Neuroscience and Oxidative Stress

<http://dergipark.gov.tr/jcnos>

Former name; Cell Membranes and Free Radical Research

**Epilepsy**

**Alzheimer**



**Pain**

**Stress**

**Depression**

**Paralysis**

**Brain Research School**

OPEN ACCESS and  
NO PUBLICATION FEE

Editor in Chief  
Prof.Dr. Mustafa NAZIROĞLU

Supp 1 Volume, 2019

# 4<sup>th</sup> International Brain Research School

24-30 June 2019 Isparta /TURKEY  
[2019.brs.org.tr](http://2019.brs.org.tr)

---

# Journal of Cellular Neuroscience and Oxidative Stress

<http://dergipark.gov.tr/jcnos>

BSN Health Analyses, Innovation, Consultancy, Organization, Industry  
and Trade Limited Company

<http://www.bsnsaglik.com.tr/>

[info@bsnsaglik.com.tr](mailto:info@bsnsaglik.com.tr)

**Formerly known as:**

Cell Membranes and Free Radical Research (2008 - 2014)

---

Supp 1 Volume, 2019

#### EDITOR IN CHIEF

Prof. Dr. Mustafa Nazırođlu,  
Department of Biophysics and Neurosciences,  
Medical Faculty, Suleyman Demirel University,  
Isparta, Turkey.  
Phone: +90 246 211 36 41, Fax:+90 246 237 11 65  
E-mail: mustafanaziroglu@sdu.edu.tr

#### Managing Editors

Kenan Yıldızhan and Yener Yazđan  
Department of Biophysics, Medical Faculty,  
Suleyman Demirel University, Isparta, Turkey.  
E-mail: biophysics@sdu.edu.tr

#### Editorial Board

##### Neuronal Membranes, Calcium Signaling and TRP Channels

Alexei Tepikin, University of Liverpool, UK.  
Jose A. Pariente, University of Extremadura,  
Badajoz, Spain.  
James W. Putney, Jr. NIEHS, NC, USA.  
Laszlo Pecze, University of Fribourg, Switzerland.  
Stephan M. Huber, Eberhard-Karls University,  
Tubingen, Germany.

##### Neuroscience and Cell Signaling

Denis Rousseau, Joseph Fourier, University,  
Grenoble, France.  
Makoto Tominaga, National Institute for Physiological  
Sciences (NIPS) Okazaki, Japan.  
Ömer Çelik, Süleyman Demirel University, Turkey.  
Ramazan Bal, Gaziantep University, Turkey.  
Saeed Semnanian, Tarbiat Modares University,  
Tehran, Iran.  
Yasuo Mori, Kyoto University, Kyoto, Japan.

##### Antioxidant and Neuronal Diseases

Suresh Yenugu, Osmania University, Hyderabad, India.  
Süleyman Kaplan, Ondokuz Mayıs Univesity,  
Samsun, Turkey.  
Özcan Erel, Yıldırım Beyazıt University,  
Ankara, Turkey.  
Xingen G. Lei, Cornell University, Ithaca, NY, USA.  
Valerian E. Kagan, University of Pittsburg, USA.

##### Antioxidant Nutrition, Melatonin and Neuroscience

Ana B. Rodriguez Moratinos, University of  
Extremadura, Badajoz, Spain.  
Cem Ekmekcioglu, University of Vienna, Austria.  
Peter J. Butterworth, King's College London, UK.  
Sergio Paredes Department of Physiology, Madrid  
Complutense University, Spain.

#### AIM AND SCOPES

Journal of Cellular Neuroscience and Oxidative Stress is an online journal that publishes original research articles, reviews and short reviews on the molecular basis of biophysical, physiological and pharmacological processes that regulate cellular function, and the control or alteration of these processes by the action of receptors, neurotransmitters, second messengers, cation, anions, drugs or disease.

Areas of particular interest are four topics. They are;

**A- Ion Channels** (Na<sup>+</sup>- K<sup>+</sup> Channels, Cl<sup>-</sup> channels, Ca<sup>2+</sup> channels, ADP-Ribose and metabolism of NAD<sup>+</sup>, Patch-Clamp applications)

**B- Oxidative Stress** (Antioxidant vitamins, antioxidant enzymes, metabolism of nitric oxide, oxidative stress, biophysics, biochemistry and physiology of free oxygen radicals)

##### C- Interaction Between Oxidative Stress and Ion Channels in Neuroscience

(Effects of the oxidative stress on the activation of the voltage sensitive cation channels, effect of ADP-Ribose and NAD<sup>+</sup> on activation of the cation channels which are sensitive to voltage, effect of the oxidative stress on activation of the TRP channels in neurodegenerative diseases such Parkinson's and Alzheimer's diseases)

##### D- Gene and Oxidative Stress

(Gene abnormalities. Interaction between gene and free radicals. Gene anomalies and iron. Role of radiation and cancer on gene polymorphism)

#### READERSHIP

Biophysics	Biochemistry
Biology	Biomedical Engineering
Pharmacology	PhysiologyGenetics
Cardiology	Neurology
Oncology	Psychiatry
Neuroscience	Neuropharmacology

#### Keywords

Ion channels, cell biochemistry, biophysics, calcium signaling, cellular function, cellular physiology, metabolism, apoptosis, lipid peroxidation, nitric oxide, ageing, antioxidants, neuropathy, traumatic brain injury, pain, spinal cord injury, Alzheimer's Disease, Parkinson's Disease.

# 4<sup>th</sup> International Brain Research School

## Abstract Book

of

4<sup>th</sup> International Brain  
Research School

24-30 June 2019

Isparta, Turkey

with collaboration of  
BSN Health Analyses, Innovation,  
Consultancy, Organization, Industry  
and Trade Limited Company  
& Neuroscience Research Center,  
Süleyman Demirel University

# 4<sup>th</sup> International Brain Research School

## [ Organization Committee ]

### **Organization Chairman**

**Prof. Dr. Mustafa NAZIROĞLU**

*Department of Biophysics, School of Medicine  
Suleyman Demirel University, Isparta, Turkey*

### **Organization Vice Chairman**

**Assoc. Prof. Dr. Ömer ÇELİK**

*Department of Biophysics, School of Medicine  
Suleyman Demirel University, Isparta, Turkey*

### **Organization Secretariat**

**Dr. Bilal ÇİÇ**

**Ahmi ÖZ & Ramazan ÇINAR**

*Department of Biophysics, School of Medicine  
Suleyman Demirel University, Isparta, Turkey*

### **Accountant**

**Kenan YILDIZHAN &**

**Yener YAZĞAN (Graphic Designer & Webmaster)**

*Department of Biophysics, School of Medicine  
Suleyman Demirel University, Isparta, Turkey*

# 4<sup>th</sup> International Brain Research School

## [ Scientific Committee ]

**Prof. Dr. Ana B. Rodríguez**

*Department of Physiology, Neuroimmunophysiology  
and Chrononutrition Research Group,  
Faculty of Science, University of Extremadura,  
Badajoz, Spain*

**Prof. Dr. Peter McNaughton**

*Wolfson Centre for Age-Related Diseases,  
King's College London, London, UK*

**Prof. Dr. İlker Y. Eyüpoğlu**

*Department of Neurosurgery,  
University of Erlangen-Nuremberg  
Erlangen, Germany*

**Prof. Dr. Hülya Bayır**

*Center for Free Radical and Antioxidant Health,  
Department of Environmental Health, University of Pittsburgh  
Pittsburg, USA*

**Prof. Dr. Mustafa Nazıroğlu**

*Department of Biophysics, School of Medicine  
Suleyman Demirel University, Isparta, Turkey*

**Prof. Dr. Peter W. Reeh**

*Institute of Physiology and Pathophysiology,  
Friedrich-Alexander-University Erlangen-Nuernberg,  
Erlangen, Germany*

**Prof. Dr. Makoto Tominaga**

*Division of Cell Signaling, Okazaki Institute for Integrative Bioscience  
(National Institute for Physiological Sciences),  
Okazaki, Japan*

**Prof. Dr. Ismail Laher**

*Department of Anesthesiology, Pharmacology and Therapeutics,  
The University of British Columbia,  
Vancouver, Canada*

**Prof. Dr. Yasuo Mori**

*Department of Synthetic Chemistry and Biological Chemistry,  
Graduate School of Engineering, Kyoto University  
Kyoto, Japan*

# 4<sup>th</sup> International Brain Research School

## [ Scientific Committee ]

**Prof. Dr. Jose A. Pariente**

*Department of Physiology, Neuroimmunophysiology  
and Chrononutrition Research Group,  
Faculty of Science, University of Extremadura,  
Badajoz, Spain*

**Prof. Dr. Anirban BASU**

*National Brain Research Centre  
Haryana, India*

**Prof. Dr. Paolo Bernardi**

*Padova University  
Padova, Italy*

**Assist. Prof. Dr. M. Cemal Kahya**

*İzmir Katip Çelebi University  
İzmir, Turkey*

**Assist Prof. Dr. Sergio D. Paredes**

*Madrid Complutense University  
Madrid, Spain*

**Assist Prof. Dr. Denis Rousseau**

*Applied and Fundamental Bioenergetic laboratory  
Joseph Fourier University  
Grenoble Cedex, France*

**Assist. Prof. Dr. Isabella Hininger-Favier**

*Joseph Fourier University  
Grenoble, France*

**Dr. Simon Hebeisen**

*B'SYS Analytics GmbH.  
Bisingen, Switzerland*

**Dr. Sandra Derouiche**

*National Inst for Physiol. Sci.  
Okazaki, Japan*

**Dr. Nady Braidy**

*Centre for Healthy Brain Ageing, School of Psychiatry,  
University of New South Wales, Australia*



# 4<sup>th</sup> International Brain Research School

## [ CONTENTS ]

### Speakers

<b>Speak No. 1.</b> Calcium signaling, TRP channels and intracellular Ca <sup>2+</sup> measurement in neurons <i>Mustafa NAZIROĞLU</i> .....	<b>1</b>
<b>Speak No. 2.</b> Isolation of glia from mice <i>Sandra DEROUICHE</i> .....	<b>2</b>
<b>Speak No. 3.</b> In vivo and ex vivo imaging of nociceptor expression and activity <i>Marie MULIER, Joris VRIENS, Thomas VOETS</i> .....	<b>3</b>
<b>Speak No. 4.</b> Title Mouse models for retinal degeneration <i>Xinhua SHU</i> .....	<b>4</b>
<b>Speak No. 5.</b> Intracellular zinc mobilization is required for nNOS (+) neuron loss. Role of zinc in the excitotoxic cascade <i>Alberto GRANZOTTO</i> .....	<b>5</b>
<b>Speak No. 6.</b> Alzheimer's disease, the road ahead <i>Stefano L. SENSI</i> .....	<b>6</b>
<b>Speak No. 7.</b> Voltage gated sodium channels and epilepsy <i>Simon HEBEISEN</i> .....	<b>7</b>
<b>Speak No. 8.</b> Aggregates of $\alpha$ -synuclein in brain tissue homogenates measured by newly designed Multimer-PAGE techniques <i>Jumana SALEH</i> .....	<b>8</b>

# SPEAKERS

## ▶ Speak No. 2

### **Isolation of glia from mice**

#### **Sandra DEROUCHE**

Division of Cell Signaling, National Institute for Physiological Sciences, Thermal biology group, Exploratory Research Center on Life and Living Systems, Okazaki, Aichi, Japan

Glia constitutes a heterogeneous cell population that makes up half of the cells in the central nervous system (CNS). Glial cells include macroglia, astrocytes and oligodendrocytes, and microglia. Their roles are very diverse but overall they orchestrate CNS formation and function by providing neurons with essential support. Although glia-derived immortalized cell lines are now available, primary cultures of glial cells still constitute the most reliable method to study glial functions as the primary cultures retain important characteristics and markers of glia from their normal brain environment. Isolation and culturing of glia from postnatal rodent brain is well-characterized and give higher yield than from adult brain. Therefore, isolation of glial cells from postnatal mouse brains, with an emphasis on microglia, will be described. It will include a protocol describing the steps of isolation and necessary equipments and reagents, as well as the subsequent cell culture monitoring and potential applications.

**Keywords:** Central nervous system; Microglia; In vitro study.