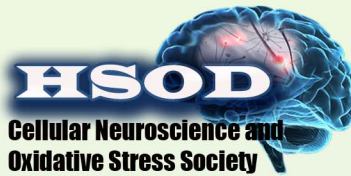


# Journal Cellular Neuroscience and Oxidative Stress

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

Former name; Cell Membranes and Free Radical Research



**Epilepsy**

**Alzheimer**

**Stress**

**Pain**

**Depression**

**Paralysis**

**Brain Research School**

OPEN ACCESS and  
NO PUBLICATION FEE

Editor in Chief  
Prof.Dr. Mustafa NAZIROĞLU

Volume 10, Number 3, 2018

---

# Journal of Cellular Neuroscience and Oxidative Stress

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

An Official Journal of the Cellular Neuroscience and Oxidative Stress Society

<http://hsord.org.tr/en/>

---

**Formerly known as:**

Cell Membranes and Free Radical Research (2008 - 2014)

---

Volume 10, Number 3, 2018

# 3<sup>rd</sup> International Brain Research School

25 June – 1 July 2018 Isparta /TURKEY  
[2018.brs.org.tr](http://2018.brs.org.tr)

#### EDITOR IN CHIEF

Prof. Dr. Mustafa Naziroğlu,  
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 Yazgan  
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 University,  
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.

# 3<sup>rd</sup> International Brain Research School

The congress organization committee wishes thanks to the sponsors below



3<sup>rd</sup> International Brain Research School

# Abstract Book

of

3<sup>rd</sup> International Brain  
Research School

25 June – 1 July 2018

Isparta, Turkey

with collaboration of  
Cellular Neuroscience  
and Oxidative Stress Society  
& Neuroscience Research Center,  
Süleyman Demirel University

# 3<sup>rd</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**

**Ahmi ÖZ & Bilal ÇİĞ & 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*

# 3<sup>rd</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*



# 3<sup>rd</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*

# 3<sup>rd</sup> International Brain Research School

## [ CONTENTS ]

### Speakers

<b>Speak No. 1.</b> Pathophysiology of cation channels in pain: Focus on TRP Channels. <i>Mustafa NAZIROĞLU</i> .....	776
<b>Speak No. 2.</b> Calcium imaging techniques in cell lines. <i>Laszlo PECZE</i> .....	777
<b>Speak No. 3.</b> Western-blot, PCR and immunofluorescence analysis in mitochondrial biogenesis studies. <i>Denis ROUSSEAU</i> .....	778
<b>Speak No. 4.</b> Intravenous NAD <sup>+</sup> effectively increased the NAD metabolome, reduced oxidative stress and inflammation, and increased expression of longevity genes safely in elderly humans. <i>Nady BRAIDY, James CLEMENT, John STURGES, Yue LIU, Anne POLJAK, Perminder SACHDEV</i> .....	779
<b>Speak No. 5.</b> Voltage gated sodium channels and epilepsy. <i>Simon HEBEISEN</i> .....	780

# 3<sup>rd</sup> International Brain Research School

## Oral Presentations

- Oral Presentation 1.** Traumatic brain injury models in rats.  
*Kemal ERTİLAV* .....781
- Oral Presentation 2.** Neurodegenerative disease and microbiota.  
*Mustafa GÜZEL, Doğan AKDOĞAN, Orhan AKPINAR*.....782
- Oral Presentation 3.** The gut-brain axis: interactions between microbiota and nervous systems.  
*Orhan AKPINAR*.....783
- Oral Presentation 4.** Roles of dexmedetomidine and calcium signaling in cerebral ischemia: Focus TRP channels  
*Haci Ömer OSMANLIOĞLU* .....784
- Oral Presentation 5.** Depression models in experimental animals.  
*Arif DEMİRDAŞ* .....785
- Oral Presentation 6.** TRPV1 channel is a potential drug discovery channel for epilepsy.  
*Ahmet ÖZŞİMŞEK* .....786
- Oral Presentation 7.** Cerebral ischemia models in rats.  
*Zeki Serdar ATAİZİ* .....787
- Oral Presentation 8.** Involvement of TRP channels on fibromyalgia-induced pain.  
*Atalay DOĞRU*.....788
- Oral Presentation 9.** Involvement of Thermo TRP channels on chemotherapeutic agents-induced peripheral pain.  
*Mustafa Kemal YILDIRIM*.....789
- Oral Presentation 10.** Role of desflurane on oxidative stress in neuroscience.  
*Mustafa KÜTÜK, Gökçen GÖKÇE*.....790
- Oral Presentation 11.** Effects of cell phone (900 and 1800 MHz) and Wi-Fi (2450 MHz) frequencies on oxidative stress in laryngeal mucosa.  
*Sinem GÖKÇE KÜTÜK* .....791
- Oral Presentation 12.** Role of melatonin on oxidative stress in traumatic brain injury.  
*Yener AKYUVA* .....792

# 3<sup>rd</sup> International Brain Research School

## Poster Presentations

- Poster No. 1.** Dysbiosis of gut microbiota and Alzheimer's Disease.  
*Orhan AKPINAR* .....793
- Poster No. 2.** Human gut microbiota and Parkinson Disease.  
*Mustafa GÜZEL, Orhan AKPINAR*.....794
- Poster No. 3.** Experimental Parkinson's disease models.  
*Eda Duygu IPEK, Hulki BASALOGLU* .....795
- Poster No. 4.** Effects of alpha lipoic acid on TRPV1 cation channel in dorsal root ganglion.  
of diabetes-induced rats  
*Betül YAZĞAN, Yener YAZĞAN, Mustafa NAZIROĞLU*.....796

 **Oral Presentation 12**

Senol N, Nazırođlu M. 2014. Melatonin reduces traumatic brain injury-induced oxidative stress in the cerebral cortex and blood of rats. *Neural Regen Res.* 9:1112-6.

### **Role of melatonin on oxidative stress in traumatic brain injury**

**Yener AKYUVA**

Department of Neurosurgery, GOP Taksim Research and Education Hospital , İstanbul, Turkey

Oxidative stress occurs in the several physiological processes such as phagocytic activity and mitochondrial membrane functions. Oxidative stress is controlled by several enzymatic and non-enzymatic antioxidants. Traumatic brain injury is one of the most common causes of the mortalities. Secondary events occur after primary events like shearing of nerve cells and blood vessels, cause posttraumatic neurodegenerations with an increase in ROS and ROS-mediated lipid peroxidation. Melatonin is a member of non-enzymatic antioxidant group. The protective effects of melatonin on traumatic brain injury have been shown in vivo and in vitro studies (Barlow et al. 2018). Also melatonin has been shown to counteract oxidative stress-induced pathophysiologic conditions like ischemia/reperfusion injury, neuronal excitotoxicity and chronic inflammation. Recently, it was reported that TBI-induced oxidative stress in experimental TBI was inhibited by the melatonin treatment (Senol and Nazırođlu, 2014). In the oral presentation, I will review recent studies on traumatic brain injury in human and rodents.

I concluded that the oxidative stress causes changes through activation of second messengers, which may lead to the pathology of TBI, although melatonin has protective effects on the pathology. It seems to that the exact relationship between melatonin and TBI still remain to be determined.

**Key words;** Melatonin; Hipocampus; Traumatic brain injury; Oxidative stress; Antioxidants.

#### **References**

Barlow K, Esser MMJ, Veidt M, Boyd R. 2018. Melatonin as a treatment after Traumatic Brain Injury: A systematic review and meta-analysis of the pre-clinical and clinical literature. *J Neurotrauma.* doi: 10.1089/neu.2018.5752.