

## Special Issue on **Free Radical and Reactive Oxygen Species Production during Synaptic Activity: Physiological and Pathological Events**

# CALL FOR PAPERS

Synaptic activity is essential to produce memory and learning processes. Previous studies demonstrate that free radicals and reactive oxygen species can be produced as a result of neuronal activity. The production and subsequent accumulation of these molecules can be associated with pathological processes like stress and neurodegenerative diseases but can also be beneficial and part of essential biological pathways.

Despite the presence of antioxidant systems, it remains unclear how the whole brain and in particular neurons can specifically fine-tune the amount and function of reactive oxygen species to maintain low steady-state levels and prevent the development of pathological conditions. Understanding the function of and defense systems against reactive species in neurons would be a step towards uncovering the causes and underlying processes of aging or neurodegeneration. This is particularly important when comparing the brain with other organs, as it consumes 20% of the total body oxygen, so the production of reactive oxygen species and their associated insults are constant and severe.

This special issue welcomes original research and review articles that unveil the fine equilibrium between the physiological and pathological action of free radicals and reactive oxygen species. The aim is to compile consistent information on pathways involved in the formation of reactive oxygen species and oxygenated products during synaptic activity, and their feedback into processes related to neuronal communication and brain function. Our main goal is to show the relevance of reactive oxygen species action during neuronal communication in pathophysiological events.

Potential topics include but are not limited to the following:

- ▶ Signaling involved in free radical and reactive oxygen species production during synaptic activity, including metabolic processes
- ▶ Pathological effects of free radicals and reactive oxygen species in neuronal communication during neurodegeneration and aging
- ▶ Facilitation of synaptic transmission by free radical and reactive oxygen species production
- ▶ Comparative studies of synaptic activity in different regions of the brain and how this correlates with free radical and reactive oxygen species production
- ▶ Correlation between local free radical and reactive oxygen species production induced by activity and susceptibility to aging or degeneration
- ▶ Antioxidant treatments and their effect on synaptic activity in humans and other models of study

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/omcl/oxrp/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

### **Lead Guest Editor**

Eva Ramos-Fernández, Pontificia Universidad Católica, Santiago, Chile  
[eva.ramos@bio.puc.cl](mailto:eva.ramos@bio.puc.cl)

### **Guest Editors**

Carolina Andrea Oliva, Center for Aging and Regeneration, Santiago, Chile  
[coliva@bio.puc.cl](mailto:coliva@bio.puc.cl)

Ernest Palomer Vila, University College London, London, UK  
[e.palomer@ucl.ac.uk](mailto:e.palomer@ucl.ac.uk)

Francesc Xavier Guix Rafols, Molecular Biology Center Severo Ochoa (CBMSO), Madrid, Spain  
[fguixrafols@gmail.com](mailto:fguixrafols@gmail.com)

### **Submission Deadline**

Friday, 15 March 2019

### **Publication Date**

August 2019