

X MEETING of the Spanish Group for Research on Free Radicals (GEIRLI)

**“SYMPOSIUM ON OXIDATIVE STRESS AND REDOX SIGNALING IN
BIOLOGY AND MEDICINE”**

Homage to Luis Alfonso del Río and Pere Puig-Parellada

VALENCIA, 2nd-4th June 2014

Venue: Aula Magna, Faculty of Medicine, University of Valencia

SCIENTIFIC PROGRAMME

2nd June 2014

Morning session

Redox signaling in Biomedicine: from epigenetics to disease

Chairs: **Nadezda Apostolova** (*Department of Medicine, University Jaume I, Castellón*) and
Francisco Dasí (*INCLIVA & Department of Physiology, University of Valencia*)

9:00-9:30 **José Luis García-Giménez** (*CIBERer & Department of Physiology, University of Valencia*)

Unlocking the redox control of the epigenome

9:30-10:00 **Francisco Dasí** (*INCLIVA & Department of Physiology, University of Valencia*)

Decreased glutathione and low catalase activity contribute to increased oxidative stress in early stages of alpha-1 antitrypsin deficiency

10:00-10:30 **Consuelo Borrás** (*Department of Physiology, University of Valencia*)

Hormone replacement therapy: it is critical to provide it on time

10:30-11:00 **Carmen Gómez** (*Department of Physiology, University of Valencia*)

Redox regulation of E3 ubiquitin ligases in skeletal muscle and its role in muscular atrophy

11:00-11:15 Break

Chairs: **Carmen Gómez** (*Department of Physiology, University of Valencia*) and **José Luis García-Giménez** (*Department of Physiology, University of Valencia*)

11:15-12:15 Oral communications

O1 **Ana Blas-García** (*Department of Pharmacology, School of Medicine, University of Valencia, FISABIO, University Hospital Doctor Peset, Valencia*)

The anti-HIV drugs Abacavir and Didanosine induce oxidative stress and enhance acetaminophen-induced hepatotoxicity

O2 **Vanesa Carmona** (*Department of Pharmacology, School of Pharmacy, Universidad Complutense de Madrid, Madrid*)

Multiple targets involved in Alzheimer's disease are affected by morin and isoquercitrin

- O3 **Susana Rovira-Llopis** (*Service of Endocrinology, FISABIO, University Hospital Doctor Peset, Valencia*)
Oxidative and endoplasmic reticulum stress are influenced by glycaemic control in leukocytes of type 2 diabetic patients
- O4 **Pablo Hernansanz-Agustín** (*Servicio de Inmunología, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa, Madrid, Departamento de Bioquímica, Facultad de Medicina, Universidad Autónoma de Madrid and Instituto de Investigaciones Biomédicas Alberto Sols, Madrid*)
Acute hypoxia produces a superoxide burst in cells
- O5 **Celia Vived** (*Dept. Ciències Mèdiques Bàsiques, Universitat de Lleida, IRB Lleida*)
A metabolic cycle within the cell division cycle. The role of the Fox transcription factor Hcm1

Redox regulation of cell signaling by superoxide and electrophilic lipids

Chairs: **Consuelo Borrás** (*Department of Physiology, University of Valencia*) and **José Ignacio Ruiz-Sanz** (*Department of Physiology, University of the Basque Country UPV/EHU, Bilbao*)

- 12:15-12:45 **Antonio Martínez-Ruiz** (*Instituto de Investigación Sanitaria Princesa, Madrid*)
Acute hypoxia signals mediated by reactive oxygen species: From superoxide production to thiol modification
- 12:45: 13:15 **Dolores Pérez-Sala** (*CIB, CSIC, Madrid*)
Electrophilic lipids in the elucidation of novel mechanisms of redox regulation

Afternoon session

15:15-16:15 **Poster session:**

Chairs: **Dolores Pérez-Sala** (*CIB, CSIC, Madrid*): Posters **P1-P13**
Víctor Víctor (*FISABIO-Hospital Dr Peset, Valencia*): Posters **P14-P27**
Raquel Taléns (*Department of Pharmacy and Pharmaceutical Technology, Faculty of Pharmacy, University of Valencia*): Posters **P28-P41**

Oxidative stress and antioxidants in tissue damage (I)

Chairs: **M^a Begoña Ruiz-Larrea** (*Department of Physiology, University of the Basque Country UPV/EHU, Bilbao*) and **Jordi Muntané** (*Department of General Surgery, Virgen del Rocío University Hospital, IBiS, Sevilla*)

- 16:15-16:45 **Carmen Vázquez** (*Department of Physiology, University of Sevilla*)
The beneficial effect of antioxidants in hypertension-related organ damage
- 16:45-17:15 **Guillermo Sáez** (*Department of Biochemistry and Molecular Biology, University of Valencia*)
8-Oxo-7,8-dihydro-2-deoxyguanosine (8-oxodG) in human gastrointestinal tumors. Beyond oxidative stress

17:15-17:45 **Reinald Pamplona** (*Department of Physiology, University of Lleida*)
Lipidomic and longevity

17:45-18:15 **Manuel Portero Otín** (*Department of Physiology, University of Lleida*)
Dietary modulation of lipoxidative stress in a transgenic model of amyotrophic lateral sclerosis

18:15-18:30 Break

Oxidative stress and antioxidants in tissue damage (II)

Chairs: **Teresa Mitjavila** (*Department of Physiology and Immunology, University of Barcelona*)
and **Guillermo Sáez** (*Department of Biochemistry and Molecular Biology, University of Valencia*)

18:30-19:00 **Enrique O'Connor** (*Department of Biochemistry and Molecular Biology, University of Valencia*)
Cytomic analysis of oxidative stress

19:00-19:30 **Susana Cadenas** (*Centro de Biología Molecular "Severo Ochoa" CSIC-UAM, Madrid*)
Uncoupling proteins and the control of mitochondrial ROS production: implications for cardiac ischemia-reperfusion injury

19:30-20:00 **Joan Roselló Catafau** (*IIBB, CSIC, Barcelona*)
Free radicals in liver cold ischemia-reperfusion injury

20:00 **Homage to Luis Alfonso del Río and Pere Puig-Parellada**
Assembly of the Spanish Group for Research on Free Radicals (GEIRLI)

3rd June 2014

Morning session

Chairs: **Susana Cadenas** (*Centro de Biología Molecular "Severo Ochoa" CSIC-UAM, Madrid*)
and **Antonio Martínez-Ruiz** (*Instituto de Investigación Sanitaria Princesa, Madrid*)

8:30-9:30 Oral communications

O6 **David Alsina** (*Ciències Mèdiques Bàsiques, Facultat de Medicina, Universitat de Lleida/ IRB Lleida*)
ADR1 and CTH2 mediate metabolic remodeling in Frataxin deficient yeast

O7 **Cristina Espinosa-Diez** (*Departamento de Biología Celular e Inmunología, Centro de Biología Molecular "Severo Ochoa," CSIC, Universidad Autónoma de Madrid, Madrid*)
miR-433 targets γ -glutamyl-cysteine-ligase and regulates endothelial function, redox hormesis and fibrogenesis

- O8 **Guillermo Zalba** (*Department of Biochemistry and Genetics, University of Navarra, Pamplona*)
NADPH oxidase-mediated oxidative stress promotes telomere shortening in phagocytic cells: involvement in human atherosclerosis
- O9 **Gustavo Egea** (*School of Medicine, University of Barcelona; IDIBAPS, Barcelona*)
TGF- β -dependent NADPH oxidase 4 (NOX4) overexpression in Marfan Syndrome aggravates the formation of aortic aneurysm
- O10 **Jordi Muntané** (*Department of General Surgery, Virgen del Rocío-Virgen Macarena University Hospitals, IBiS, Sevilla*)
Nitric oxide synthase type III overexpression by gene therapy exerts antitumoral activity in hepatocellular carcinoma

Redox signaling in neurodegenerative diseases and inflammation

Chairs: **Corinne Spickett** (*School of Life & Health Sciences, Aston University, Birmingham, UK*) and **Juan Sastre** (*Department of Physiology, University of Valencia*)

- 9:30-10:00 **Daniel Ramón** (*Biópolis, Valencia*)
Using *Caenorhabditis elegans* as a model for the evaluation of antioxidant food ingredients
- 10:00-10:30 **José Viña** (*Department of Physiology, University of Valencia*)
Role of radicals in glutamate excitotoxicity in Alzheimer disease
- 10:30-11:00 **Lisardo Boscá** (*Instituto de Investigación Biomédica Alberto Sols, CSIC, Madrid*)
Interplay between macrophage polarization, glucose metabolism and oxidative stress
- 11:00-11:30 **Joaquim Ros** (*Department of Basic Medical Sciences, University of Lleida*)
Neurons and cardiomyocytes as cell models to study Friedreich Ataxia
- 11:30-12:00 Break

Transcriptional regulation of redox signaling

Chairs: **Lisardo Boscá** (*Instituto de Investigación Biomédica Alberto Sols, CSIC, Madrid*) and **José Viña** (*Department of Physiology, University of Valencia*)

- 12:00-12:30 **Elena Hidalgo** (*Department of Experimental and Health Sciences, Pompeu Fabra University, Barcelona*)
Regulation of gene expression programs by the stress-dependent MAP kinase Sty1 of *Schizosaccharomyces pombe*
- 12:30-13:00 **María Monsalve** (*Instituto de Investigación Biomédica Alberto Sols, CSIC, Madrid*)
Control of endothelial function and angiogenesis by PGC1- α
- 13:00-13:30 **Santiago Lamas** (*Centro de Biología Molecular "Severo Ochoa", CSIC, Madrid*)
MicroRNAs as regulators of glutathione homeostasis

13:30-14:00 **Giovanni Mann** (*King's College London, UK*)
Nrf2-mediated neurovascular protection against oxidative stress in experimental stroke

Afternoon session

16:30-17:30 **Round table with Nobel Laureate Dr. Randy Schekman**

Redox signaling in aging

Chairs: **Santiago Lamas** (*Centro de Biología Molecular "Severo Ochoa", CSIC, Madrid*) and **Giovanni Mann** (*King's College London, UK*)

17:30-18:00 **Joao Laranjinha** (*Center for Neurosciences and Cell Biology, University of Coimbra, Portugal*)
Dysfunctional nitric oxide-mediated neurovascular coupling in Alzheimer's disease and aging

18:00-18:30 **Bertrand Friguet** (*Life Science Department, University Pierre et Marie Curie, Paris, France*)
Oxidative proteome alterations target specific cellular pathways during oxidative stress and cellular aging

18:30-19:00 Coffee break

Phospholipid oxidation in cell signaling

Chairs: **Federico Pallardó** (*Department of Physiology, University of Valencia*) and **Joao Laranjinha** (*Center for Neurosciences and Cell Biology, University of Coimbra, Portugal*)

19:00-19:30 **Corinne Spickett** (*School of Life & Health Sciences, Aston University, Birmingham, UK*)
Oxidized phospholipids in the vascular system and their cellular effects

19:30-20:00 **Rosario Domínguez** (*Department of Chemistry, University of Aveiro, Portugal*)
Anionic phospholipid oxidation in cell signalling

4th June 2014

Antioxidants and signaling by ROS and RNS in plants (I)

Chairs: **Francisca Sevilla** (*CEBAS, CSIC, Murcia*) and **José M. Palma** (*EEZ, CSIC, Granada*)

09:00-09:25 **Francisco Javier Corpas** (*EEZ, CSIC, Granada*)
Nitric oxide under a "green" perspective

09:25-09:50 **Ana Jiménez** (*CEBAS, CSIC, Murcia*)
Plant mitochondrial Trxol1: looking for its transcriptional gene regulation and functions

09:50-10:15 **Juan Carlos Begara-Morales** (*Group of Biochemistry and Cell Signaling in Nitric Oxide. Department of Biochemistry and Molecular Biology, University of Jaén*)

Post-translational modifications mediated by nitric oxide under physiological and stress conditions in plants

10:15-10:40 **Manuel Becana** (*EEAD, CSIC, Zaragoza*)

Interactions of ROS and RNS with plant hemoglobins

10:40-11:10 **Oral communications**

O11 **Marta Rodríguez-Ruiz** (*Group of Antioxidants, Free Radicals and Nitric Oxide in Biotechnology and Agro-food; Dept. Biochemistry, Cell and Molecular Biology of Plants; EEZ, CSIC, Granada*)

Characterization and RNS-modulation of the ascorbate-synthesizing enzyme galactono- γ -lactone dehydrogenase from pepper fruits

O12 **Capilla Mata-Pérez** (*Group of Biochemistry and Cell Signaling in Nitric Oxide. Department of Biochemistry and Molecular Biology, Campus Universitario "Las Lagunillas" University of Jaén, Jaén*)

Presence of endogenous nitro-fatty acids in olive oil as mediators of cell signaling

O13 **Daymi Camejo** (*Departamento de Biología del Estrés y Patología Vegetal, CEBAS-CSIC, Murcia*)

Antioxidant system and carbonylation of proteins in mitochondria from pepper fruits at two maturation stages

11:10-11:40 Break

Antioxidants and signaling by ROS and RNS in plants (II)

Chairs: **Eva Barreno** (*Departamento de Botánica, Instituto Cavanilles de Biodiversidad y Biología Evolutiva, Universidad de Valencia*) and **Luisa M^a. Sandalio** (*EEZ, CSIC, Granada*)

11:40-12:05 **Juan B. Arellano** (*IRNASA, CSIC, Salamanca*)

Programmed cell death activated by Rose Bengal in *Arabidopsis thaliana* cell suspension cultures requires functional chloroplasts

12:05-12:30 **Eva Barreno/Myriam Catalá** (*Departamento de Botánica, Instituto Cavanilles de Biodiversidad y Biología Evolutiva, Universidad de Valencia; Departamento de Biología y Geología, Física y Química Inorgánica y Analítica. E.S. de Ciencias Experimentales y Tecnología. Universidad Rey Juan Carlos*)

Lichen symbionts strategies to overcome harsh abiotic stress: Diversity and cooperation

12:30-12:55 **María Romero-Puertas** (*EEZ, CSIC, Granada*)

Role of NADPH oxidases in the network regulating cell response to short and long term cadmium exposure

12:55-13:20 **Carmen González Bosch** (*Department of Biochemistry and Molecular Biology, University of Valencia*)

Hexanoic acid protects plants against pathogens by priming defence responses and reducing oxidative stress

13:20-13:50 **Frank van Breussegem** (*Oxidative Stress Signalling Laboratory, Department of Plant Biotechnology and Bioinformatics, Ghent University, Belgium*)

H₂O₂ signal transduction in plants, puzzling the pieces

Chair: **José Viña** (*Department of Physiology, University of Valencia*)

14:00-14:30 **Commemorative Lecture “Ana Navarro”**: **Luis Alfonso del Río** (*EEZ, CSIC, Granada*)

Peroxisomes as a cellular source of ROS and RNS signaling molecules

14:30 **SFRR-E Awards to Young scientists and concluding remarks**