OXYGEN CLUB OF CALIFORNIA

2016

OXIDANTS AND ANTIOXIDANTS IN BIOLOGY

REDOX MEDICINE AND NUTRITION

PROGRAM

4-6 MAY 2016
UNIVERSITY OF CALIFORNIA DAVIS CONFERENCE CENTER
DAVIS, CALIFORNIA
OXIDANTS AND ANTIOXIDANTS IN BIOLOGY
REDOX MEDICINE AND NUTRITION
4-6 MAY 2016
UNIVERSITY OF CALIFORNIA DAVIS CONFERENCE CENTER

CONFERENCE ORGANIZERS

César G. Fraga
PHYSICAL CHEMISTRY INSTITUTE FOR MOLECULAR BIOCHEMISTRY AND MOLECULAR MEDICINE,
SCHOOL OF PHARMACY AND BIOCHEMISTRY, UNIVERSITY OF BUENOS AIRES, ARGENTINA

Patricia Oteiza
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Helmut Sies
INSTITUTE OF BIOCHEMISTRY AND MOLECULAR BIOLOGY I,
HEINRICH-HEINE-UNIVERSITY DÜSSELDORF, DÜSSELDORF, GERMANY

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Hagen Schroeter
MARS INC., MCLEAN, VIRGINIA, USA
WEDNESDAY, MAY 4

10:00 – 12:00  REGISTRATION

01:00 – 01:15  WELCOME

  César G. Fraga
  PHYSICAL CHEMISTRY INSTITUTE FOR MOLECULAR BIOCHEMISTRY AND MOLECULAR MEDICINE, SCHOOL OF PHARMACY AND BIOCHEMISTRY, UNIVERSITY OF BUENOS AIRES, ARGENTINA

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  Helmut Sies
  INSTITUTE OF BIOCHEMISTRY AND MOLECULAR BIOLOGY I, HEINRICH-HEINE-UNIVERSITY DÜSSELDORF, DÜSSELDORF, GERMANY

01:15 – 02:00  PLENARY LECTURE

  CHAIRPERSON  Balz Frei
  LINUS PAULING INSTITUTE, DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS, OREGON STATE UNIVERSITY, CORVALLIS, OR, USA

  The remarkable effects of altering copper metabolism in familial SOD-linked amyotrophic lateral sclerosis
  Joseph S. Beckman
  LINUS PAULING INSTITUTE, DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS, OREGON STATE UNIVERSITY, CORVALLIS, OR, USA
SESSION I  REDOX REGULATION OF CELL SIGNALING

CHAIRPERSONS  Junji Yodoi
DEPARTMENT OF BIOLOGICAL RESPONSES, INSTITUTE FOR VIRUS RESEARCH,
GRADUATE SCHOOL OF MEDICINE, KYOTO UNIVERSITY, KYOTO, JAPAN

Fawaz Haj
DEPARTMENT OF NUTRITION, UNIVERSITY OF CALIFORNIA, DAVIS, USA

02:00 – 02:30  Sites of mitochondrial ROS production
Martin D. Brand
BUCK INSTITUTE FOR RESEARCH ON AGING, NOVATO, CA, USA

02:30 – 03:00  Role of redox-sensitive p38a in the regulation of cytokinesis
in the liver
Juan Sastre
DEPARTMENT OF PHYSIOLOGY, FACULTY OF PHARMACY, UNIVERSITY OF
VALENCIA, VALENCIA, SPAIN

03:00 – 03:30  Finding the right balance: how exquisite interrelationships of
conformation and chemistry govern peroxiredoxin catalysis
P. Andrew Karplus
DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS, OREGON STATE UNIVERSITY,
CORVALLIS, OREGON, USA

03:30 – 04:00  Coffee break

04:00 – 04:30  Translational bioenergetics and oxidative stress in human
patients
Victor Darley-Usmar
DEPARTMENT OF PATHOLOGY, UNIVERSITY OF ALABAMA AT BIRMINGHAM,
BIRMINGHAM, ALABAMA, USA
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<tr>
<td>04:30 – 05:00</td>
<td>Aryl hydrocarbon receptor (AhR): ligand promiscuity and diversity of response</td>
<td>Michael S. Denison</td>
<td>Department of Environmental Toxicology, University of California, Davis, CA, USA</td>
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<tr>
<td>05:00 – 05:15</td>
<td>Nitrite-mediated S-nitrosylation of caspase-6 prevents hypoxia-induced neural injury</td>
<td>Tzu-Ching Meng</td>
<td>Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan</td>
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<tr>
<td>05:15 – 05:30</td>
<td>Nrf2 signaling as potential therapy for mitochondrial diseases</td>
<td>Genki Hayashi</td>
<td>Molecular Biosciences, School of Veterinary Medicine, University of California, Davis, USA</td>
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</table>
ROUND TABLE DISCUSSION

05:30 – 06:30  REDOX CHEMISTRY IN CELL FUNCTIONS
Dean P. Jones, Discussion Leader
DIVISION OF PULMONARY, ALLERGY, AND CRITICAL CARE MEDICINE,
EMORY UNIVERSITY, ATLANTA, GA, USA

Martin D. Brand
BUCK INSTITUTE FOR RESEARCH ON AGING, NOVATO, CA, USA

Bob Buchanan
DEPARTMENT OF PLANT AND MICROBIAL BIOLOGY, UNIVERSITY OF CALIFORNIA,
BERKELEY, CA, USA

P. Andrew Karplus
DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS, OREGON STATE UNIVERSITY,
CORVALLIS, OREGON, USA

Santiago Lamas
CENTRO DE BIOLOGÍA MOLECULAR “SEVERO OCHOA” (CSIC-UAM), MADRID, SPAIN

06:30 – 08:00  Poster Viewing and Welcome Reception
THURSDAY, MAY 5

SESSION II  NUTRITION AND THE GENOME-EPIGENOME

CHAIRPERSONS  Maret G. Traber
Linus Pauling Institute, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR, USA

Tilman Grune
German Institute of Human Nutrition Potsdam-Rehbrücke, Nuthetal, Germany

09:00 – 09:30  Lactoferrin and its receptor: Effects on gene transcription
Bo Lonnerdal
Department of Nutrition, University of California, Davis, CA, USA

09:30 – 10:00  Iron overload and genome alterations
Shinya Toyokuni
Department of Pathology and Biological Responses, Nagoya University Graduate School of Medicine, Nagoya, Japan

10:00 – 10:30  Proteomic profiles in humans in response to diet:
Inflammation and oxidative stress biomarkers
Johanna W. Lampe
Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA, USA

10:30 – 11:00  Coffee break
CHAIRPERSONS

Francene M. Steinberg  
DEPARTMENT OF NUTRITION, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

Patricia I. Oteiza  
DEPARTMENT OF NUTRITION, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

11:00 – 11:30  
Epigenetics in differentiation and development  
Frederick Domann  
DEPARTMENT OF RADIATION ONCOLOGY AND HOLDEN COMPREHENSIVE CANCER CENTER, THE UNIVERSITY OF IOWA, IOWA CITY, IA, USA

11:30 – 12:00  
Nutritional regulation of cathelicidin antimicrobial peptide gene expression  
Adrian F. Gombart  
LINUS PAULING INSTITUTE, DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS, OREGON STATE UNIVERSITY, CORVALLIS, OR, USA

12:00 – 12:15  
Tocotrienols induce apoptosis via endoplasmic reticulum stress in HeLa cells  
Fabio Virgili  
COUNCIL AGRICULTURAL RES AND ECONOMICS - FOOD AND NUTRITION RESEARCH CENTRE, ROME, ITALY

12:15 – 12:30  
Soluble epoxide hydrolase podocyte deficiency protects against hyperglycemia-induced renal injury and improves systemic glucose homeostasis  
Ming-Fo Hsu  
DEPARTMENT OF NUTRITION, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

12:30 – 01:00  
Group Photo

01:00 – 02:00  
Lunch and Poster Viewing
SESSION III  REGENERATIVE MEDICINE

CHAIRPERSONS  

Giuseppe Poli  
Department of Clinical and Biological Sciences, University of Torino, San Luigi Hospital, Torino, Italy

Chandan K. Sen  
Center for Regenerative Medicine and Cell Based Therapies, The Ohio State University Wexner Medical Center, Columbus, OH, USA

02:00 – 02:30  Non-selenocysteine containing phospholipid hydroperoxide glutathione peroxidase: a critical role in regenerative wound healing  
Chandan K. Sen  
Center for Regenerative Medicine and Cell Based Therapies, The Ohio State University Wexner Medical Center, Columbus, OH, USA

02:30 – 03:00  Stem cell defects and impaired diabetic wound healing  
Geoff Gurtner  
Stanford University School of Medicine, Stanford, CA, USA

03:00 – 03:30  miRNA in resolution of inflammation  
Sashwati Roy  
Center for Regenerative Medicine and Cell Based Therapies, The Ohio State University Wexner Medical Center, Columbus, OH, USA

03:30 – 04:00  Coffee break

04:00 – 04:30  The role of reactive oxygen species in airway basal stem cell homeostasis and repair  
Brigitte Gomperts  
Department of Pediatrics/Hematology-Oncology, University of California, Los Angeles, CA, USA
4:30 – 05:00  Redoximirs involved in organ fibrosis
_Santiago Lamas_
__CENTRO DE BIOLOGÍA MOLECULAR “SEVERO OCHOA” (CSIC-UAM), MADRID, SPAIN__

05:00 – 05:15  Scavenger receptor B1 as a possible player in cutaneous tissue proliferation and differentiation
_Giuseppe Valacchi_
__DEPARTMENT OF LIFE SCIENCES AND BIOTECHNOLOGY, UNIVERSITY OF FERRARA, FERRARA, ITALY__

05:15 – 05:30  Nanotechnology-enabled non-viral tissue reprogramming
_Daniel Gallego-Perez_
__DEPARTMENTS OF SURGERY AND BIOMEDICAL ENGINEERING, CENTER FOR AFFORDABLE NANOENGINEERING OF POLYMERIC BIOMEDICAL DEVICES, CENTER FOR REGENERATIVE MEDICINE AND CELL-BASED THERAPIES, THE OHIO STATE UNIVERSITY, COLUMBUS, OH__

05:30 – 05:45  Oral supplementation of fermented papaya preparation to type 2 diabetes mellitus patients improves the respiratory burst function in chronic wound-site macrophages
_Ryan Dickerson_
__DEPARTMENT OF SURGERY, THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER, COLUMBUS, OH, USA__

05:45 – 07:00  Poster Viewing
## FRIDAY, MAY 6

### SESSION IV  BIOACTIVES: COGNITION AND AGING

**CHAIRPERSONS**  
*Helmut Sies*  
Institute of Biochemistry and Molecular Biology I, Heinrich-Heine-University Düsseldorf, Düsseldorf, Germany  

*César G. Fraga*  
Physical Chemistry-Institute for Biochemistry and Molecular Medicine, School of Pharmacy and Biochemistry, University of Buenos Aires, Argentina  

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<th>Time</th>
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<tbody>
<tr>
<td>09:00 – 09:30</td>
<td>Dietary flavanols and cognition in older adults</td>
<td>Scott A. Small</td>
<td>Columbia University, New York, NY, USA</td>
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<tr>
<td>09:30 – 10:00</td>
<td>Potential mechanisms by which polyphenols influence memory and cognition</td>
<td>Jeremy P.E. Spencer</td>
<td>Food and Nutritional Sciences, University of Reading, Reading, UK</td>
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<tr>
<td>10:00 – 10:30</td>
<td>A potential role for nitrite and ascorbate in neurovascular coupling during aging</td>
<td>João Laranjinha</td>
<td>Center for Neurosciences and Cell Biology, Faculty of Pharmacy, University of Coimbra, Coimbra, Portugal</td>
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<tr>
<td>10:30 – 11:00</td>
<td>Coffee break</td>
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**Chairpersons**  
*Alan Crozier*  
Department of Nutrition, University of California, Davis, CA, USA

*Andrew L. Waterhouse*  
Department of Viticulture and Enology, University of California, Davis, CA, USA

11:00 – 11:30  
Nutrient biomarker patterns, cognition, and Alzheimer’s pathology in older adults  
*Gene L. Bowman*  
Nestlé Institute of Health Sciences, EPFL Campus, Lausanne, Switzerland

11:30 – 12:00  
Carotenoids in cognitive function throughout the lifespan  
*Elizabeth J. Johnson*  
Antioxidants Research Laboratory, Tufts University, Boston, MA, USA

12:00 – 12:15  
Zinc and lipoic acid in the modulation of the STAT3 pathway in the developing brain  
*Suangsuda Supasai*  
Departments of Nutrition and Environmental Toxicology, University of California, Davis, CA, USA

12:15 – 12:30  
Nrf2-mediated antioxidant protection in the retinal pigment epithelium  
*Jiyang Cai*  
Department of Ophthalmology, University of Texas Medical Branch, Galveston, TX, USA  
USANA Health Sciences Inc., Salt Lake City, UT, USA

12:30 – 12:45  
Fast food decreases the anti-inflammatory capacity of HDL particles in stimulated peripheral blood mononuclear cells  
*Angela M. Zivkovic*  
Department of Nutrition, University of California, Davis, CA, USA

12:45 – 02:00  
Lunch and Poster Viewing
### SESSION V  MICROBIOME AND GUT INFLAMMATION

**Chairpersons**  
*Mulchand S. Patel*  
Department of Biochemistry, School of Medicine and Biomedical Sciences, University at Buffalo, State University of New York, Buffalo, NY, USA  
*Carl L. Keen*  
Department of Nutrition, University of California, Davis, CA, USA

**02:00 – 02:30**  
Redox signaling mediates symbiosis between the gut microbiota and the intestine  
*Andrew S. Neish*  
Pathology, Emory University School of Medicine, Atlanta, GA, USA

**02:30 – 03:00**  
The gut microbiome and chronic inflammatory disease  
*Susan V. Lynch*  
Division of Gastroenterology, Department of Medicine, University of California, San Francisco, CA, USA

**03:00 – 03:30**  
Gut microbiota and the metabolism of plant bioactives  
*André Marette*  
School of Medicine, Laval University, Quebec, Canada

**03:30 – 04:00**  
Coffee break

**04:00 – 04:30**  
Nutritional impact of pomegranate polyphenol antioxidants on microbiome metabolism and proliferation in vitro and in vivo  
*David Heber*  
UCLA Center for Human Nutrition, University of California, Los Angeles, CA, USA

**04:30 – 05:00**  
The role of the milk glycome in the development of the infant gut microbiota: Why babies cry over spilled milk  
*David A. Mills*  
Foods for Health Institute, Department of Food Science and Technology and Department of Viticulture and Enology, University of California, Davis, CA, USA
ROUND TABLE DISCUSSION

05:00 – 05:45  THE MICROBIOME: CAUSES AND SOLUTIONS FOR STRESS

J. Bruce German, discussion leader
FOODS FOR HEALTH INSTITUTE, DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

Bethany Henrick
FOODS FOR HEALTH INSTITUTE, DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

Steven A. Frese
FOODS FOR HEALTH INSTITUTE, DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

David A. Mills
FOODS FOR HEALTH INSTITUTE, DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY AND DEPARTMENT OF VITICULTURE AND ENOLOGY, UNIVERSITY OF CALIFORNIA, DAVIS, CA, USA

David Heber
UCLA CENTER FOR HUMAN NUTRITION, UNIVERSITY OF CALIFORNIA, LOS ANGELES, CA, USA
07:00 – 08:00  \textit{Piano concert}
\textsc{Studio Theater, Mondavi Center, University of California, Davis, CA, USA}
\textit{Yoshihiro Ota & Moeko Ota}
Pianists

08:00  \textit{Gala Dinner — Prizes and Awards}
\textsc{Alumni Center, University of California, Davis}

\textit{Health Sciences Prize}
Selection Committee
Lester Packer, Jarrow Rogovin, Enrique Cadenas

\textit{Science and Humanity Award}
Selection Committee
Helmut Sies, Maret G. Traber, Yuki Hayashi

\textit{Young Investigator Awards}
\begin{itemize}
  \item Oxygen Club of California
  \item Linus Pauling Institute
  \item Archives of Biochemistry & Biophysics – Elsevier
\end{itemize}
Selection Committee
John Maguire, Muchald Patel, Sashwati Roy
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