



OXYGEN CLUB OF CALIFORNIA

2006

OXIDANTS AND ANTIOXIDANTS IN BIOLOGY

CO-SPONSORED BY THE
LINUS PAULING INSTITUTE

PROGRAM

15-18 MARCH 2006
FESS PARKER'S DOUBLETREE RESORT
SANTA BARBARA, CALIFORNIA

OXIDANTS AND ANTIOXIDANTS IN BIOLOGY

A CONFERENCE ORGANIZED BY THE
OXYGEN CLUB OF CALIFORNIA

AND

CO-SPONSORED BY THE
LINUS PAULING INSTITUTE

PROGRAM AND CONFERENCE ORGANIZERS

Helmut Sies

OCC PRESIDENT

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

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DEPARTMENT OF MOLECULAR PHARMACOLOGY & TOXICOLOGY, SCHOOL OF PHARMACY,
UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CA, USA

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RESEARCH CENTER FOR LIVER DISEASE, KECK SCHOOL OF MEDICINE,
UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CA, USA

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DEPARTMENT OF MOLECULAR PHARMACOLOGY & TOXICOLOGY, SCHOOL OF PHARMACY,
UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES, CA, USA

**WEDNESDAY
MARCH 15**

05:50

WELCOME

Helmut Sies

PRESIDENT OF THE OXYGEN CLUB OF CALIFORNIA
INSTITUTE OF BIOCHEMISTRY AND MOLECULAR BIOLOGY I,
HEINRICH-HEINE-UNIVERSITY, DÜSSELDORF, DÜSSELDORF, GERMANY

06:00

KEYNOTE LECTURE

CHAIRPERSON

Bob B. Buchanan – INTRODUCTION

DEPARTMENT OF PLANT AND MICROBIAL BIOLOGY,
UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA, USA

Thioredoxin and glutaredoxin systems: from basic science
to clinical applications

Arne Holmgren

MEDICAL NOBEL INSTITUTE FOR BIOCHEMISTRY, DEPARTMENT OF
MEDICAL BIOCHEMISTRY AND BIOPHYSICS, KAROLINSKA INSTITUTE,
STOCKHOLM, SWEDEN

07:00

WELCOME RECEPTION

**THURSDAY
MARCH 16**

SESSION I OBESITY, THE METABOLIC SYNDROME, AND OXIDATIVE STRESS

CHAIRPERSONS *Giuseppe Poli*

DEPARTMENT OF CLINICAL AND BIOLOGICAL SCIENCES,
UNIVERSITY OF TURIN, SAN LUIGI HOSPITAL, ORBASSANO, TURIN, ITALY

Francisco Romero

DEPARTMENT OF PHYSIOLOGY, PHARMACOLOGY & TOXICOLOGY,
CARDENAL HERRERA UNIVERSITY, VALENCIA, SPAIN

08:30 – 09:00 Role of oxidative stress in diseases associated with
overweight and obesity

Jason D. Morrow

DEPARTMENTS OF MEDICINE AND PHARMACOLOGY,
VANDERBILT UNIVERSITY, NASHVILLE, TENNESSEE, USA

09:00 – 09:30 Macronutrient intake induces oxidative and
inflammatory stress while insulin causes suppression of
reactive oxygen species generation and inflammation

Pareesh Dandona

DIVISION OF ENDOCRINOLOGY, DIABETES, AND METABOLISM,
DIABETES-ENDOCRINOLOGY CENTER OF WESTERN NEW YORK,
STATE UNIVERSITY OF NEW YORK AT BUFFALO, NEW YORK, USA

09:30 – 10:00 Impact of weight reduction in diabetes type 2 on
inflammation and oxidative stress

David Heber

CENTER FOR HUMAN NUTRITION, UNIVERSITY OF CALIFORNIA,
LOS ANGELES, CALIFORNIA, USA

10:00 – 10:30 *Coffee break*

10:30 – 11:00 Nutritional modulation of inflammation in the metabolic syndrome

Ishwarlal Jialal

LABORATORY FOR ATHEROSCLEROSIS AND METABOLIC RESEARCH,
DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE,
UNIVERSITY OF CALIFORNIA-DAVIS MEDICAL CENTER, SACRAMENTO,
CALIFORNIA, USA

11:00 – 11:30 Oxidative stress in the adipocyte: local and systemic consequences

Philipp E. Scherer

DEPARTMENT OF CELL BIOLOGY, ALBERT EINSTEIN COLLEGE OF MEDICINE,
BRONX, NEW YORK, USA

11:30 – 12:00 A new model for type 2 diabetes: progressive defect in β -cell mass in rats transgenic for human islet amyloid polypeptide

Peter C. Butler

DAVID GEFLEN SCHOOL OF MEDICINE, UNIVERSITY OF CALIFORNIA,
LOS ANGELES, CALIFORNIA, USA

12:00 – 02:00 *Group Photo and Lunch*

SESSION II OBESITY, UNCOUPLING PROTEINS, AND MICRONUTRIENT ACTION

CHAIRPERSONS *Maret G. Traber*

LINUS PAULING INSTITUTE, OREGON STATE UNIVERSITY, CORVALLIS,
OREGON, USA

Tilman Grune

RESEARCH INSTITUTE FOR ENVIRONMENTAL MEDICINE,
HEINRICH-HEINE-UNIVERSITY DÜSSELDORF, DÜSSELDORF, GERMANY

02:00 – 02:30 Obesity is associated with dysregulation of metabolic
and inflammatory pathways in pregnant women

Janet King

CHILDREN'S HOSPITAL OAKLAND RESEARCH INSTITUTE, OAKLAND,
CALIFORNIA, USA

02:30 – 03:00 Obesity due to metabolic malprogramming in early life

Mulchand Patel

DEPARTMENT OF BIOCHEMISTRY, SCHOOL OF MEDICINE AND BIOMEDICAL
SCIENCES, STATE UNIVERSITY OF NEW YORK AT BUFFALO, NEW YORK, USA

03:00 – 03:30 UCP-2, oxidative stress, and the pancreatic β -cell

Jingyu Diao

DEPARTMENTS OF MEDICINE AND PHYSIOLOGY, UNIVERSITY OF TORONTO,
TORONTO, ONTARIO, CANADA

03:30 – 04:00 Modulating mitochondrial function in adipocytes and
pancreatic β -cells with mitochondrial nutrients: Effects
on UCP2, insulin, and oxidative stress

Jiankang Liu

CHILDREN'S HOSPITAL OAKLAND RESEARCH INSTITUTE, OAKLAND,
CALIFORNIA, USA

04:00 – 04:30 *Coffee break*

04:30 – 05:00 AMP-kinase as a potential target for anti-obesity therapy
with dietary factors

Ock-Jin Park

HANNAM UNIVERSITY, DAEJEON, SOUTH KOREA

05:00 – 05:30 Analysis of Bcmo1 knock-out mice uncovers a role of β -
carotene for the regulation of lipid metabolism

Johannes von Lintig

INSTITUTE OF BIOLOGY I, UNIVERSITY OF FREIBURG, FREIBURG, GERMANY

05:30 – 06:00 Selenium as an anti-inflammatory agent: mechanisms for
its hepatoprotective effect

Oren Tirosh

INSTITUTE OF BIOCHEMISTRY, FOOD SCIENCE AND NUTRITION,
HEBREW UNIVERSITY OF JERUSALEM, REHOVOT, ISRAEL

06:00 – 08:00 *Poster Viewing and Refreshments*

FRIDAY
MARCH 17

SESSION III DIETARY MODULATION OF CELL SIGNALING PATHWAYS

CHAIRPERSONS *Young-Joon Surh* (SESSION CO-ORGANIZER)

COLLEGE OF PHARMACY, SEOUL NATIONAL UNIVERSITY, SEOUL,
SOUTH KOREA

Junji Yodoi

DEPARTMENT OF BIOLOGICAL RESPONSES, LABORATORY OF INFECTION AND
PREVENTION, INSTITUTE FOR VIRUS RESEARCH, KYOTO UNIVERSITY, KYOTO,
JAPAN

08:30 – 09:00 Modulation of cell signal transduction by chemo-
preventive phytochemicals

Zigang Dong

HORMEL INSTITUTE, UNIVERSITY OF MINNESOTA, AUSTIN, MINNESOTA, USA

09:00 – 09:30 Regulation of inflammation and glucocorticoid signaling
by dietary polyphenols

Irfan Rahman

DEPARTMENT OF ENVIRONMENTAL MEDICINE, DIVISION OF LUNG BIOLOGY
AND DISEASE, UNIVERSITY OF ROCHESTER MEDICAL CENTER, ROCHESTER,
NEW YORK, USA

09:30 – 10:00 Flavonoid regulation of the cell cycle via interactions
within MAP kinase and PI₃ kinase/Akt signaling
cascades

Jeremy P. Spencer

DEPARTMENT OF BIOCHEMISTRY, UNIVERSITY OF READING, READING,
UNITED KINGDOM

10:00 – 10:30 *Coffee break*

10:30 – 11:00 Modulation of Nrf2, MAPK, IKK by isothiocyanates and phenolic compounds from *in vitro* studies to *in vivo* pharmacological effects

Tony Kong

DEPARTMENT OF PHARMACEUTICS, RUTGERS UNIVERSITY, PISCATAWAY, NEW JERSEY, USA

11:00 – 11:30 NF- κ B and Nrf2 as prime chemopreventive and chemoprotective targets of anti-inflammatory and antioxidative phytonutrients and phytopharmaceuticals

Young-Joon Surh

NATIONAL RESEARCH LABORATORY OF MOLECULAR CARCINOGENESIS AND CHEMOPREVENTION, COLLEGE OF PHARMACY, SEOUL NATIONAL UNIVERSITY, SEOUL, SOUTH KOREA

11:30 – 12:00 Suppression of PhIP-induced tumors by white tea and EGCG, but promotion by caffeine

Rod Dashwood

LINUS PAULING INSTITUTE, OREGON STATE UNIVERSITY, CORVALLIS, OREGON, USA

12:00 – 01:30 *Lunch*

01:30 – 02:00 Dietary modulation of oxidative stress and mucosal damage by *Helicobacter pylori* infection

Ki-Baik Hahm

DEPARTMENT OF GASTROENTEROLOGY, AJOU UNIVERSITY SCHOOL OF MEDICINE, SUWON, SOUTH KOREA

02:00 – 02:30 Chemoprevention and inhibition of tumor metastasis by selenium compounds

An Sik Chung

KOREAN ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY, DAEJEON, SOUTH KOREA

- 02:30 – 03:00 Diets enriched in ω -3 fatty acids decrease amyloid burden and alter signal transduction in a mouse model of Alzheimer's disease
Greg M. Cole
DEPARTMENT OF MEDICINE, UNIVERSITY OF CALIFORNIA, LOS ANGELES, CALIFORNIA, USA
- 03:00 – 03:30 Effects of lycopene on carotenoid cleavage enzymes I and II expression in various tissues of F344 rats and PPAR and RAR gene regulation
John Erdman
DIVISION OF NUTRITIONAL SCIENCES, UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS, USA
- 03:30 – 04:00 *Coffee break*
- 04:00 – 04:30 Acetyl-carnitine induces heme oxygenase in rat astrocytes and protects against oxidative stress: role of the transcription factor Nrf2
Vittorio Calabrese
DEPARTMENT OF BIOCHEMISTRY, UNIVERSITY OF CATANIA, CATANIA, ITALY
- 04:30 – 05:00 Astaxanthin reduces hyperglycemia-induced oxidative stress in glomerular cells
Yuji Naito
DEPARTMENT OF MEDICAL PROTEOMICS,
KYOTO PREFECTURAL UNIVERSITY OF MEDICINE, KYOTO, JAPAN
- 05:00 – 05:30 Genepotency: a new approach to assess and compare the biological activities of natural compounds
Luca Barella
RESEARCH & DEVELOPMENT DEPARTMENT, DSM NUTRITIONAL PRODUCTS, BASEL, SWITZERLAND

KEYNOTE LECTURE

CHAIRPERSON *Angelo Azzi*

VASCULAR BIOLOGY LABORATORY, JEAN MAYER USDA-HUMAN NUTRITION
RESEARCH CENTER ON AGING AT TUFTS UNIVERSITY, BOSTON,
MASSACHUSETTS, USA

05:30 – 06:30 *Caspase-2 signaling in DNA damage-induced apoptosis*
Sten Orrenius

INSTITUTE OF ENVIRONMENTAL MEDICINE, DIVISION OF TOXICOLOGY,
KAROLINSKA INSTITUTE, STOCKHOLM, SWEDEN

06:30 – 08:00 *Poster Viewing and Refreshments*

08:00 *Piano Concert*
Gala Dinner
Prizes and Awards

**SATURDAY
MARCH 18**

SESSION IV MITOCHONDRIAL FUNCTION, AGING, AND DISEASE

CHAIRPERSONS *Alberto Boveris*

PHYSICAL CHEMISTRY, SCHOOL OF PHARMACY & BIOCHEMISTRY,
UNIVERSITY OF BUENOS AIRES, BUENOS AIRES, ARGENTINA

Kelvin J.A. Davies

GERONTOLOGY & MOLECULAR BIOLOGY, ETHEL PERCY ANDRUS
GERONTOLOGY CENTER AT THE UNIVERSITY OF SOUTHERN CALIFORNIA,
LOS ANGELES, CALIFORNIA, USA

08:30 – 09:00 Mitochondria: An end-point for nitric oxide signaling in
ischemic pre-conditioning

Paul Brookes

DEPARTMENT OF ANESTHESIOLOGY, UNIVERSITY OF ROCHESTER MEDICAL
CENTER, ROCHESTER, NEW YORK, USA

09:00 – 09:30 On the role of outer membrane channels in mitochondria-
initiated apoptosis

Marco Colombini

DEPARTMENT OF BIOLOGY, UNIVERSITY OF MARYLAND, COLLEGE PARK,
MARYLAND, USA

09:30 – 10:00 Glutathione peroxidase 4 in oxidative stress-induced
mitochondrial apoptosis and aging

Holly van Remmen

DEPARTMENT OF CELLULAR AND STRUCTURAL BIOLOGY, UNIVERSITY
OF TEXAS HEALTH SCIENCE CENTER AT SAN ANTONIO, SAN ANTONIO,
TEXAS, USA

10:00 – 10:30 Focused proteomics: towards a high throughput mAb
based resolution of proteins for diagnosis of
mitochondrial diseases

Roderick A. Capaldi

INSTITUTE OF MOLECULAR BIOLOGY, DEPARTMENT OF BIOLOGY,
UNIVERSITY OF OREGON, EUGENE, OREGON, USA

10:30 – 11:00 *Coffee break*

11:00 – 11:30 Glutathione depletion in Parkinson's disease: potential links between subsequent alterations in mitochondrial structure and function

Julie K. Andersen

BUCK INSTITUTE FOR AGING RESEARCH, NOVATO, CALIFORNIA, USA

11:30 – 12:00 Transcriptomal and functional consequences of mitochondrial neurodegenerative disease

Gino Cortopassi

DEPARTMENT OF MOLECULAR BIOSCIENCES,
UNIVERSITY OF CALIFORNIA, DAVIS, CALIFORNIA, USA

12:00 – 12:30 Modulation of mitochondrial function by pro-oxidants: aging and cardiac ischemia/reperfusion

Luke Szweda

OKLAHOMA MEDICAL RESEARCH FOUNDATION, OKLAHOMA CITY,
OKLAHOMA, USA

Closing Remarks

Helmut Sies

PRESIDENT OF THE OXYGEN CLUB OF CALIFORNIA

01:00 *Farewell Lunch*

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