

ENRIQUE CADENAS

Curriculum vitae

Curriculum vitae

PERSONAL INFORMATION

Cadenas, Enrique
 Nationality United States of America
 University Address Pharmacology & Pharmaceutical Sciences, School of Pharmacy, University of Southern California, 1985 Zonal Avenue, Los Angeles, California 90089. Tel.: (323) 442-1418. Fax (323) 223-7473. E-mail: cadenas@usc.edu

EDUCATION

1973 M.D., School of Medicine, University of Buenos Aires, Argentina
 1977 Ph.D., Biochemistry, School of Medicine, University of Buenos Aires, Argentina

PROFESSIONAL BACKGROUND

2015-present Professor of Pharmacology & Pharmaceutical Sciences, School of Pharmacy, University of Southern California, Los Angeles, CA
 2007-2015 Professor of Pharmacology & Pharmaceutical Sciences, School of Pharmacy, and of Biochemistry and Molecular Biology, School of Medicine, University of Southern California, Los Angeles, CA
 2006-2008 Chairperson, Cellular Mechanisms of Aging and Development study section, NIH/NIA
 2004-2006 Member, Cellular Mechanisms of Aging and Development study section, NIH/NIA
 2002-2004 Member, Geriatrics and Rehabilitation Medicine study section, NIH/NIA
 1998-2007 Professor & Chairman, Department of Molecular Pharmacology & Toxicology, School of Pharmacy, and Professor, Department of Biochemistry, School of Medicine, University of Southern California, Los Angeles, CA
 1996-present Professor, Department of Molecular Pharmacology & Toxicology, School of Pharmacy, University of Southern California, Los Angeles, CA
 1994-1996 Professor & Chairman, Department of Molecular Pharmacology & Toxicology, School of Pharmacy, University of Southern California, Los Angeles, California
 1993-present Professor of Molecular Pharmacology and Toxicology, School of Pharmacy and Professor of Biochemistry, School of Medicine, University of Southern California, Los Angeles, California, USA.
 1991- 1993 Associate Professor, Department of Molecular Pharmacology and Toxicology, School of Pharmacy, University of Southern California, Los Angeles - California 90033, USA.
 1992-1993 Professor (Secondary appointment) Department of Biochemistry and Molecular Biology, School of Medicine, University of Southern California
 1989-1991 Associate Professor, Institute for Toxicology, School of Pharmacy, University of Southern California, Los Angeles - California, USA.
 1987-1989 Associate Professor, Department of Pathology II, University of Linköping, Sweden.
 1986-present Visiting Professor, Department of Biochemistry and Biophysics, School of Pharmacy, University of Buenos Aires, Buenos Aires, Argentina.
 1986-1987 T.F. University Lector, Department of Pathology II, University of Linköping, Sweden.
 1981-1986 Research Associate, Institut für Physiologische Chemie I, Universität Düsseldorf, Germany.
 1980-1981 Research Associate, Johnson Research Foundation, Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, USA.
 1978-1980 Post-doctoral Research Fellow, Johnson Research Foundation, Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, USA.
 1977-1978 Research Fellow, Department of Biochemistry, School of Medicine, University of Dundee, Dundee, Scotland.
 1975-1977 Research Trainee, National Research Council, Buenos Aires, Argentina.

1974-1975 Research Trainee, Campomar Foundation, School of Chemistry, University of Buenos Aires, Argentina. Director: L.F. Leloir.

AWARDS AND FELLOWSHIPS

1977 British Council Fellowship. Department of Biochemistry, School of Medicine, University of Dundee, Dundee, Scotland.

1978 Faculty Prize - Ph.D. Dissertation, Department of Biochemistry, School of Medicine, University of Buenos Aires, Argentina.

1978 Fogarty International Fellowship, National Institute of Health. Johnson Research Foundation, Department of Biochemistry and Biophysics, University of Pennsylvania, Philadelphia, USA.

1981 Alexander-von-Humboldt Fellowship. Institut für Physiologische Chemie I, Universität Düsseldorf, Düsseldorf, Germany.

1986 Visiting Scientist Fellowship, Swedish Medical Research Council. Department of Pathology II, University of Linköping, Linköping, Sweden.

1987 Odd-Fellow Orden Prize, University of Linköping, Sweden.

1987 Associate Professor, Department of Pathology II, University of Linköping, Linköping, Sweden

1991 Italian National Research Council Fellowship, Department of Biochemistry, University of Padova, Padova, Italy

1999 Doctor *Honoris Causa*, University of Linköping, Linköping, Sweden

2012 Knight of the National Order of Merit, France

2012 Fellow of the Society for Free Radical Biology and Medicine

2014 Copernicus Medal, University of Ferrara, Italy

2015 SFRR Europe Award Lecture – Stuttgart, Germany

2015 Corresponding Member Nordrhein-Westfälische Academy of Sciences and Arts

SCIENTIFIC SOCIETY MEMBERSHIPS

American Chemical Society, USA - *Regular Member*

Biochemical Society, United Kingdom - *Regular Member*

Biophysical Society, USA - *Regular Member*

International Cell Research Organization (ICRO-UNESCO) - *Council Member*

International Society for Free Radical Research – *Past Treasurer, Past President*

Oxygen Club of California – *Board of Directors Chair*

Society for Redox Biology & Medicine – *Fellow*

Society for Free Radical Research Europe

RECORD OF RESEARCH FUNDING

Perimenopause in brain aging and Alzheimer's disease

NIA - 2 PO1 AG026572

Project 1: Cadenas, Principal Investigator; Program Director: Brinton
09/01/2011 - 08/31/2016 \$1,053,172

Perimopause in brain aging and Alzheimer's disease

NIA - 2 PO1 AG026572

Analytical Core: Cadenas, Core Leader; Program Director: Brinton

Perimenopause in brain aging and Alzheimer's disease

NIA - 2 PO1 AG026572

Project 5: Cadenas, CoI; Brinton, PI

Estrogen-induced neuroprotective mitochondrial mechanisms

NIA - R01 AG032236

PI: Brinton; CoI: Cadenas

A novel treatment for retinal ischemia

1RO1 EY02259-01A1

PI: Humayun; CoI: Cadenas

The metabolic-inflammatory axis in Alzheimer's Disease

NIH R13 (Gordon Conference)

04/01/2013 – 03/31/2013 \$50,000

Role of oxidative stress and mitochondria in COPD

Tobacco-Related Disease Research

17RT-0171

07/01/08 – 06/30/11 \$ 654,850

Linking spatial variations in shear stress with oxidative stress

1 RO1 HL083015

Co-Principal Investigator

07/01/06 – 06/30/11 \$ 1,250,000

Oxidative stress, mitochondrial dysfunction, and aging

NIA – 1 RO11 AG16718

Principal Investigator

09/30/05 – 09/30/11

Mitochondrial oxidative damage in dopaminergic cells

NIH – 1 RO1 ES11342

Principal Investigator

07/01/01 – 06/30/07 \$ 2,031,250

Biochemical toxicology of myoglobin oxidation states

NIEHS –

Principal investigator

07/01/95 – 06/30/00 \$ 745,877

Oxidative stress, mitochondrial dysfunction, and aging

NIA – 1 RO1 AG16718

Principal Investigator

04/01/99 – 03/31-03 \$ 1,184,622

Endothelial Cell Dysfunction in Diabetes: Regulation of redox-sensitive signaling pathways

American Diabetes Association — 011868

Principal Investigator

01/01/00 – 12/31/02 \$ 271,720

Free Radical Research Laboratory

Leiner Health Products

Principal Investigator

08/01/01 – 07/31/06 \$ 29,640

Biennial Meeting of SFRRRI
NIH R13 CA124282-01

Modulation of quinone toxicity by two-electron transfers

NIEHS – RO1 ES05423

Principal Investigator

07/01/90 – 06/30/95 \$ 635,196

Plant estrogens: effects on cell cycle progression in breast cancer cells

DOD – BC980078

Principal Investigator \$ 336,511

Isoflavones and cell signaling pathways

Johnson & Johnson

Principal Investigator

02/12/01 \$ 100,000

Carotenoids and gene expression

BASF

Principal Investigator

05/11/01 \$ 199,985

Phenols and polyaromatic hydrocarbons in tobacco-related cardiovascular disease

UC Berkeley - Tobacco-Related Disease Research Program — Grant 1RT85

Principal Investigator

07/01/90–06/30/93 \$ 266,229

Molecular mechanisms of quinone cytotoxicity with application to a chemotherapeutic/antitumor activity

Principal Investigator

Swedish Cancer Foundation – Grant 2703

07/01/88–06/30/90 SKR 154,500

Swedish Medical Research Council – Grant 2471

Principal Investigator

07/01/89 – 06/30/90 SKR 290,000

The lysosomal vacuome and oxidative conditions

Swedish Medical Research Council — Grant 4481

Co-Principal Investigator

07/01/88 – 06/30/90 SKR 576,000

MEMBER OF THE EDITORIAL BOARD OF
Antioxidants and Redox Signaling
Archives of Biochemistry & Biophysics
Biological Chemistry
Chemico-Biological Interactions (Section Editor)
Free Radical Biology & Medicine (Associate Editor)

AD-HOC REVIEWER FOR

American Journal of Physiology
 Analytical Biochemistry
 Biochemical Journal
 Biochemistry
 Biochemical Pharmacology
 Biochimica Biophysica Acta
 Cancer Research
 Chemical Research in Toxicology
 Chemistry and Physics of Lipids
 FEBS Letts
 International Journal of Cancer
 Journal of the American Chemical Society
 Journal of Biological Chemistry
 Journal of Cell Biology
 Journal of Neurochemistry
 Life Sciences
 Photochemistry & Photobiology
 Proceedings of the National Academy of Science, USA

ORGANIZATION-CO-ORGANIZATION OF NATIONAL AND INTERNATIONAL COURSES AND MEETINGS

- 1986 ICRO International Course on *Oxygen Radicals and Excited States*. Buenos Aires, Argentina.
- 1987 Graduate Course on *Free Radicals in Biology and Medicine*, Linköping, Sweden.
- 1988 ICRO-UNESCO International Training Course on *Oxygen Radicals: Biochemical, Physiological and Medical Aspects*, University of Buenos Aires, Argentina.
- 1988 Vth International Symposium on *Bioluminescence and Chemiluminescence*, Florence – Bologna, Italy. Member of International Advisory Committee and Co-editor of the Proceedings.
- 1989 Summer Meeting of the Society for Free Radical Research: *Bioreductive Activation of Quinoid Compounds: Chemical, Biochemical, and Toxicological Aspects*, Stockholm, Sweden. Co-organizer and guest editor of the proceedings.
- 1989 International School on *Biological Luminescence*, Wroclaw, Poland. Member of the International Program Committee.
- 1990 ICRO-UNESCO International Training Course on *Oxygen Toxicity: Biochemistry, Physiology, and Pathology*, University of Buenos Aires, Buenos Aires, Argentina.
- 1991 Meeting on *Biological Free Radical Oxidations and Antioxidants*, Udine, Italy, July 1-5, 1991.
- 1993 Joint Spring Meeting of the University of Southern California and the University of California, Berkeley, on *Biological Oxidants and Antioxidants: New Developments in Research and Health Effects*, Pasadena, 12-13 March 1993.
- 1994 Joint Spring Meeting of the University of Southern California and University of California, Berkeley, Joint Spring Meeting on *Oxidants and Antioxidants in Biology*, Pasadena, 4-5 February 1994.
- 1994 ICRO-UNESCO International Training Course on *Biochemical, Biophysical, and Clinical Aspects of Oxygen Radicals and Antioxidants*, University of Buenos Aires, Argentina.
- 1995 Oxygen Club of California Annual Meeting, *Oxidants & Antioxidants in Biology: Novel Antioxidants and Health Effects of Antioxidant Nutrients – Oxidative Stress and Signal Transduction*, San Francisco, 22-24 March 1995.
- 1996 Oxygen Club of California Annual Meeting, *Oxidants & Antioxidants in Biology*, Santa Barbara, 8-10 February 1996.

- 1997 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara 26-28 February – 1 March 1997
- 1998 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara, February 5-8, 1998
- 1999 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara, March 3-6, 1999
- 2000 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara, March 1-4, 2000
- 2001 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara, March 7-10, 2001
- 2002 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara, March 6-9, 2002
- 2003 Joint Meeting of the University of Cádiz, Spain, and Oxygen Club of California, Cádiz, Spain, February 6-10, 2003
- 2004 Oxygen Club of California Annual Meeting, Oxidants & Antioxidants in Biology, Santa Barbara, March 2004
- 2005 Joint Meeting of the Oxygen Club of California and the University of Turin, Italy, Oxidants & Antioxidants in Biology, Alba, Italy, September 2005
- 2006 Oxygen Club of California Annual Meeting, Oxidants and Antioxidants in Biology, Santa Barbara, March 2006
- 2008 Oxygen Club of California Annual Meeting, Oxidants and Antioxidants in Biology, Santa Barbara, March 2008
- 2010 Oxygen Club of California Annual Meeting, Oxidants and Antioxidants in Biology, Redox Translational Science, March 2010
- 2011 IVth International Symposium on Nutrition, Oxygen Biology and Medicine, 15-17 June 2011, Paris, France. Co-Organizer
- 2012 Oxygen Club of California Conference, Oxidants and Antioxidants in Biology, Cell Signaling and Nutrient – Gene Interactions, 20-23 June 2012, Alba, Italy
- 2013 Gordon Research Conference on Oxidative Stress and Disease (The metabolic-inflammatory axis in brain aging and Alzheimer's disease). 14-19 April 2013, Les Diablerets Conference Center, Switzerland
- 2014 Oxygen Club of California Conference, Oxidants and Antioxidants in Biology, University of California Davis, 7-10 May 2014

GRANT REVIEWING

National Science Foundation
 Health Research Council of New Zealand
 National Academy of Sciences
 National Research Council
 National Institutes of Health (National Institute on Aging)
 American Federation for Aging Research
 Welcome Trust
 Biotechnology & Biological Sciences Research Council

MAJOR PUBLICATIONS

Bibliometric Indicators

Citations	23223
h-index	75
i10-index	214

- ¹ Boveris, A. and Cadenas, E. (1975) Mitochondrial production of superoxide anions and its relationship to the antimycin-insensitive respiration. *FEBS Lett.* 54, 311-314.
- ² Boveris, A., Cadenas, E. and Stoppani, A.O.M. (1976) Role of ubiquinone in the mitochondrial generation of hydrogen peroxide. *Biochem. J.* 156, 435-444.
- ³ Cadenas, E., Boveris, A., Ragan, C.I. and Stoppani, A.O.M. (1977) Production of superoxide radicals and hydrogen peroxide by NADH-ubiquinone reductase and ubiquinol-cytochrome *c* reductase from beef-heart mitochondria. *Arch. Biochem. Biophys.* 180, 248-257.
- ⁴ Cadenas, E. and Garland, P.B. (1979) Synthesis of cytoplasmic membrane during growth and division of *Escherichia coli*. Dispersive behavior of respiratory nitrate reductase. *Biochem. J.* 184, 45-50.
- ⁵ Kakinuma, K., Cadenas, E., Boveris, A., and Chance, B. (1979) Low-level chemiluminescence of intact polymorphonuclear leukocytes. *FEBS Lett.* 102, 38-42.
- ⁶ Boveris, A., Cadenas, E., Reiter, R., Filipkowski, M., Nakase, Y. and Chance, B. (1980) Organ Chemiluminescence: non-invasive assay for oxidative radical reactions. *Proc. Natl. Acad. Sci. U.S.A.* 77, 347-351.
- ⁷ Cadenas, E., Boveris, A. and Chance, B. (1980) Low-level chemiluminescence of bovine heart submitochondrial particles. *Biochem. J.* 186, 659-667.
- ⁸ Cadenas, E., Boveris, A. and Chance, B. (1980) Low-level chemiluminescence of hydroperoxide-supplemented cytochrome *c*. *Biochem. J.* 187, 131-142.
- ⁹ Cadenas, E. and Boveris, A. (1980) Enhancement of hydrogen peroxide formation by protophores and ionophores in antimycin-supplemented mitochondria. *Biochem. J.* 188, 31-37.
- ¹⁰ Cadenas, E., Boveris, A. and Chance, B. (1980) Chemiluminescence of lipid vesicles supplemented with cytochrome *c* and hydroperoxide. *Biochem. J.* 188, 577-583.
- ¹¹ Cadenas, E., Arad, I.D., Boveris, A., Fisher, A.B. and Chance, B. (1980) Partial spectral analysis of the hydroperoxide-induced chemiluminescence of the perfused lung. *FEBS Lett.* 111, 413-418.

- 12 Cadenas, E., Boveris, A. and Chance, B. (1980) Spectral analysis of the low-level chemiluminescence of hydrogen peroxide-supplemented ferricytochrome *c*. *FEBS Lett.* 112, 285-288.
- 13 Boveris, A., Sánchez, R.A., Varsavsky, A.I. and Cadenas, E. (1980) Spontaneous chemiluminescence of soybean seeds. *FEBS Lett.* 113, 29-32.
- 14 Cadenas, E., Varsavsky, A.I., Boveris, A. and Chance, B. (1980) Low-level chemiluminescence of cytochrome *c*-catalyzed decomposition of hydrogen peroxide. *FEBS Lett.* 113, 141-144.
- 15 Boveris, A., Cadenas, E. and Chance, B. (1980) Low-level chemiluminescence of the lipoxygenase reaction. *Photobiochem. Photobiophys.* 1, 175-182.
- 16 Cadenas, E., Boveris, A. and Chance, B. (1980) Hydroperoxide-dependent chemiluminescence of submitochondrial particles and its relationship to superoxide anion and other oxygen radicals. In *Chemical and Biochemical Aspects of Superoxide and Superoxide Dismutase* (Bannister, J.V. and Hill, H.A.O., eds.), vol. 11A, pp. 92-103, Elsevier-North Holland, New York.
- 17 Cadenas, E., Arad, I.D., Fisher, A.B., Boveris, A. and Chance, B. (1980) Hydroperoxide-induced chemiluminescence of the perfused lung. *Biochem. J.* 192, 303-309.
- 18 Boveris, A., Cadenas, E. and Chance, B. (1981) Ultraweak chemiluminescence: a sensitive assay for oxidative radical reactions. *Fed. Proc. Fed. Am. Soc. Exp. Biol.* 40, 195-198.
- 19 Cadenas, E., Daniele, R.P. and Chance, B. (1981) Low-level chemiluminescence of alveolar macrophages: spectral evidence for singlet oxygen generation. *FEBS Lett.* 123, 225-228.
- 20 Cadenas, E., Varsavsky, A.I., Boveris, A. and Chance, B. (1981) Oxygen- or organic hydroperoxide-induced chemiluminescence of brain and liver homogenates. *Biochem. J.* 198, 645-654.
- 21 Cadenas, E., Wefers, H. and Sies, H. (1981) Low-level chemiluminescence of isolated hepatocytes. *Eur. J. Biochem.* 119, 531-536.
- 22 Boveris, A. and Cadenas, E. (1982) Production of superoxide radicals and hydrogen peroxide in mitochondria. In *Superoxide Dismutase* (Oberley, L.W., ed.), vol. 11, pp. 15-30, CRC Press, Boca Raton.
- 23 Sies, H., Akerboom, T.P.M. and Cadenas, E. (1982) The role of glutathione in hepatic hydroperoxide metabolism. *Biochem. Soc. Trans.* 10, 79-80.
- 24 Cadenas, E. and Sies, H. (1982) Low-level chemiluminescence of liver microsomal fractions initiated by *t*-butyl hydroperoxide. Relation to microsomal hemoproteins, oxygen dependence, and lipid peroxidation. *Eur. J. Biochem.*, 124, 349-356.
- 25 Cadenas, E., Wefers, H., Müller, A., Brigelius, R. and Sies, H. (1982) Active oxygen metabolites and their action in the hepatocytes. Studies on chemiluminescence response and alkane production. *Agents & Actions* 11, 203-216.

- ²⁶ Sies, H., Brigelius, R., Cadenas, E. and Wefers, H. (1982) Redox cycling, mixed disulfide formation, and lipid peroxidation in rat liver. *Hoppe-Seyler's Z. Physiol. Chem.* 363, 547-548.
- ²⁷ Cadenas, E., Graf, H., Ullrich, V. and Sies, H. (1983) Oxene donors yield low-level chemiluminescence with liver microsomes and isolated cytochrome P₄₅₀. *Hoppe-Seyler's Z. Physiol. Chem.* 363, 971-972.
- ²⁸ Cadenas, E., Brigelius, R. and Sies, H. (1983) Paraquat-induced chemiluminescence of microsomal fractions. *Biochem. Pharmacol.* 32, 147-150.
- ²⁹ Cadenas, E., Sies, H., Graf, H. and Ullrich, V. (1983) Oxene donors yield low-level chemiluminescence with microsomes and isolated cytochrome P₄₅₀. *Eur. J. Biochem.* 130, 117-121.
- ³⁰ Sies, H. and Cadenas, E. (1983) Biological basis of detoxication of oxygen free radicals. In *Biological Basis of Detoxication* (Caldwell, J. and Jakoby, W.D., eds.), pp. 181-221, Academic Press, New York.
- ³¹ Cadenas, E., Sies, H., Nastainczyk, W. and Ullrich, V. (1983) Singlet oxygen formation detected by low-level chemiluminescence during the enzymatic reduction of prostaglandin G₂ to H₂. *Hoppe-Seyler's Z. Physiol. Chem.* 364, 519-528.
- ³² Sies, H., Brigelius, R., Wefers, H., Müller, A. and Cadenas, E. (1983) Cellular redox changes and response to drugs and toxic agents. *Fundament. Appl. Toxicol.* 3, 200-208.
- ³³ Cadenas, E., Müller, A., Brigelius, R., Esterbauer, H. and Sies, H. (1983) Effects of 4-hydroxynonenal on isolated hepatocytes. Studies on chemiluminescence response, alkane production, and glutathione status. *Biochem. J.* 214, 479-487.
- ³⁴ Lengfelder, E., Cadenas, E. and Sies, H. (1983) Effect of DABCO (1,4-diazabicyclo-[2,2,2]-octane) on singlet oxygen monomol (1270 nm) and dimol (634 and 703 nm) emission. *FEBS Lett.* 164, 366-370.
- ³⁵ Bartoli, G.M., Müller, A., Cadenas, E. and Sies, H. (1983) Antioxidant effect of diethyldithiocarbamate on microsomal lipid peroxidation assessed by low-level chemiluminescence and alkane production. *FEBS Lett.* 164, 371-374.
- ³⁶ Cadenas, E., Brigelius, R., Akerboom, T.P.M. and Sies, H. (1983) Oxygen radicals and hydroperoxides in mammalian organs. Aspects of redox cycling and hydrogen peroxide metabolism. In *Biological Oxidations* (Sund, H. and Ullrich, V., eds.), pp. 288-310, Springer Verlag, Berlin.
- ³⁷ Aldrich, T.K., Fisher, A.B., Cadenas, E. and Chance, B. (1983) Evidence for lipid peroxidation by paraquat in the perfused rat lung. *J. Lab. Clin. Med.* 101, 66-73.
- ³⁸ Cadenas, E. and Sies, H. (1984) Low-level chemiluminescence as indicator of singlet molecular oxygen in biological systems. *Methods Enzymol.* 105, 221-231.

- ³⁹ Cadenas, E., Boveris, A. and Chance, B. (1984) Low-level chemiluminescence of biological systems. In *Free Radicals in Biology* (Pryor, W.A., ed.), vol. VI, pp. 211-242, Academic Press, San Diego.
- ⁴⁰ Nastainczyk, W., Ullrich, V., Cadenas, E. and Sies, H. (1984) Mechanisms of singlet oxygen formation by prostaglandin-endoperoxide synthase. In *Oxygen Radicals in Chemistry and Biology* (Bors, W., Saran, M. and Tait, D., eds.), pp. 441-446, Walter de Gruyter & Co., Berlin.
- ⁴¹ Müller, A. and Cadenas, E. (1984) Alkane evolution and chemiluminescence induced by aldehydic products of lipid peroxidation. In *Oxygen Radicals in Chemistry and Biology* (Bors, W., Saran, M. and Tait, D., eds.), pp. 325-330, Walter de Gruyter & Co., Berlin
- ⁴² Cadenas, E., Müller, A., Brigelius, R., Sies, H., Lang, J. and Esterbauer, H. (1984) Low-level chemiluminescence, alkane production, and glutathione depletion in isolated hepatocytes caused by a diffusible product of lipid peroxidation, 4-hydroxy-nonenal. In *Oxygen Radicals in Chemistry and Biology* (Bors, W., Saran, M. and Tait, D., eds.), pp. 317-324, Walter de Gruyter & Co., Berlin.
- ⁴³ Cadenas, E. and Sies, H. (1984) Free radicals in lipid peroxidation and prostaglandin formation: role of glutathione. In *Mechanisms of Hepatocyte Injury and Death* (Keppler, D., Popper, H., Bianchi, L. and Reuter, W., eds.), pp. 163-173, Lancaster, MTP Press.
- ⁴⁴ Sies, H., Wefers, H. and Cadenas, E. (1984) Photoemission in lipid peroxidation and prostaglandin G₂ reduction and during quinone redox cycling: involvement of singlet oxygen. In *Icosanoids and Cancer* (Thaler-Dao, H., Crastes de Paulet, A. and Paoletti, R., eds.), pp. 11-19, Raven Press, New York.
- ⁴⁵ Cadenas, E. and Sies, H. (1984) Singlet molecular oxygen in lipid peroxidation as detected by low-level chemiluminescence. *Life Chemistry Reports* 2, 111-120.
- ⁴⁶ Cadenas, E., Ginsberg, M., Rabe, U. and Sies, H. (1984) Estimation of α -tocopherol antioxidant activity in microsomal lipid peroxidation as detected by low-level chemiluminescence. *Biochem. J.* 223, 755-759.
- ⁴⁷ Sies, H., Graf, P. and Cadenas, E. (1984) Hydroperoxide reduction in liver cells: calcium release and relationship to arachidonate metabolism. In *Prostaglandins and Membrane Ion Transport* (Braquet, P., Nicosia, S., Fröhlich, J.C. and Garay, R., eds.), pp. 119-128, Raven Press, New York.
- ⁴⁸ Müller, A., Cadenas, E., Graf, P. and Sies, H. (1984). A novel active seleno-organic compound. I. Glutathione peroxidase-like activity *in vitro* and antioxidant capacity of PZ51 (Ebselen). *Biochem. Pharmacol.* 33, 3235-3239.
- ⁴⁹ Cadenas, E., Sies, H., Campa, A. and Cilento, G. (1984) Electronically-excited species in microsomal membranes: use of chlorophyll-*a* as an indicator of triplet carbonyls. *Photochem. Photobiol.* 40, 661-666.

- ⁵⁰ Cadenas, E. (1985) Oxidative stress and formation of excited species. In *Oxidative Stress* (Sies, H., ed.), pp. 311-330, Academic Press, London.
- ⁵¹ Cadenas, E. (1985) Detection and importance of excited species in biological reactions. In *Drug Metabolism: Molecular Approaches and Pharmacological Implications* (Siest, G., ed.), pp. 205-214, Pergamon Press, New York.
- ⁵² Cadenas, E. and Sies, H. (1985) Oxidative stress: excited oxygen species and enzyme activity. *Advan. Enzyme Regul.* 23, 217-237.
- ⁵³ Sies, H., Wefers, H. and Cadenas, E. (1985) Fate of reactive oxygen radicals. In *Microsomes and Drug Oxidations* (Boobis, A.R., Caldwell, J., De Matteis, F. & Elcombe, C.R., eds.), pp. 198-221, Taylor & Francis, London.
- ⁵⁴ Ginsberg, M. and Cadenas, E. (1985) Electronically excited states during diaphorase-catalyzed benzoquinone reduction. *Photobiochem. Photobiophys.* 9, 223-232.
- ⁵⁵ Schulte-Herbrüggen, T. and Cadenas, E. (1985) Formation of electronically-excited states during the lipoxygenase-catalyzed oxidation of fatty acids with different degree of unsaturation. In *Free Radicals in Liver Injury* (Dianzani, M.U., Poli, G., Slater, T. F. and Cheeseman, K.H., eds.), pp. 91-95, IRL Press Ltd., Oxford, England.
- ⁵⁶ Schulte-Herbrüggen, T. and Cadenas, E. (1985) Electronically excited state generation during the lipoxygenase-catalyzed aerobic oxidation of arachidonate. The effect of reduced glutathione. *Photobiochem. Photobiophys.* 10, 35-51.
- ⁵⁷ Sies, H. and Cadenas, E. (1985) Oxidative stress: damage to intact cells and organs. *Phil. Trans. R. Soc. Lond.* B311, 617-631.
- ⁵⁸ Sies, H. and Cadenas, E. (1985) Oxidative stress and photoemissive species: relation to protein and DNA damage. In *Molecular Biology and Aging: Gene Stability and Gene Expression* (Sohal, R.S., Birnbaum, L. and Cutler, R.G., eds.), pp. 145-154, Raven Press, New York.
- ⁵⁹ Cadenas, E. and Sies, H. (1985) Detection of singlet oxygen by low-level chemiluminescence. In *CRC Handbook of Methods for Oxy Radical Research* (Greenwald, R.A., ed.), pp. 191-196, CRC Press, Boca Raton.
- ⁶⁰ Naqui, A., Chance, B. and Cadenas, E. (1986) Reactive intermediates in biochemistry. *Ann. Rev. Biochem.* 55, 137-166.
- ⁶¹ Jamieson, D., Chance, B., Boveris, A. and Cadenas, E. (1986) The relation of free radical production to hyperoxia. *Ann. Rev. Physiol.* 48, 703-719.
- ⁶² Durán, N., Campa, A., Leite, L.C.C., Cilento, G. and Cadenas, E. (1986) Microsomal lipid peroxidation concomitant to peroxidase-catalyzed aerobic oxidation of indole-3-acetate. *Photobiochem. Photobiophys.* 11, 281-292.

- ⁶³ Cadenas, E. (1987) Biological chemiluminescence. In *Reactive Oxygen Species in Chemistry, Biology, and Medicine*, Plenum Press, New York, pp. 117-141.
- ⁶⁴ Durán, N. and Cadenas, E. (1987) The role of singlet oxygen and triplet carbonyls in biological systems. *Reviews of Chemical Intermediates* 8, 147-187.
- ⁶⁵ Cadenas, E. (1987) Generation of electronically-excited states during electron transfer of quinones. *Chem. Scr.* 27A, 113-115.
- ⁶⁶ Cadenas, E. (1987) Low-level chemiluminescence of biological systems. In *Bioluminescence and Chemiluminescence. New Perspectives* (Schölmerich, J., Andreesen, R., Kapp, A., Ernst, M. and Woods, W.G., eds.), pp. 33-40, John Wiley & Sons, New York.
- ⁶⁷ Mira, D., Brunk, U., Barsacchi, R., Ursini, F. and Cadenas, E. (1987) Organ Chemiluminescence, in *Free Radicals, Oxidant Stress, and Drug Action* (Rice-Evans, C., Ed.), pp. 57-64, Richelieu Press, London.
- ⁶⁸ Brunmark, A. and Cadenas, E. (1987) Electronically-excited state generation during the reaction of *p*-benzoquinone with hydrogen peroxide. Relation to product formation: 2-OH- and 2,3 epoxy-*p*-benzoquinone. *Free Rad. Biol. Med.*, 3, 169-180.
- ⁶⁹ Brunmark, A., Cadenas, E., Lind, C., Segura-Aguilar, J. and Ernster, L. (1987) DT-diaphorase- catalyzed two-electron reduction of quinone epoxides. *Free Rad. Biol. Med.*, 3, 181-188.
- ⁷⁰ Romero, J.F. and Cadenas, E. (1987) Hydroperoxide metabolism in vitamin E-deficient hepatocytes. Studies on low-level chemiluminescence, lipid peroxidation, and glutathione status. *Pharmac. Ther.* 33, 179-186.
- ⁷¹ Sies, H., Akerboom, T., Ishikawa, T., Cadenas, E., Graf, P., Gabriel, H. and Müller, A. (1987) Hepatic and cardiac hydroperoxide metabolism: role of selenium. In *Selenium in Biology and Medicine* (Combs, G.F., Spallholz, J.E., Levander, O.A. and Oldfield, J.E., Eds.) pp. 104-114, AVI Book, Van Nostrand Reinhold Co. Inc., New York.
- ⁷² Brunk, U. and Cadenas, E. (1988) The potential intermediate of lysosomes in oxygen free radical pathology. *Acta Pathol. Microbiol. Immunol. Scand.* 96, 3-13.
- ⁷³ Galaris, D., Mira, D., Sevanian, A., Cadenas, E. and Hochstein, P. (1988) Co-oxidation of salicylate and cholesterol and generation of electronically-excited states during the oxidation of metmyoglobin by H₂O₂. *Arch. Biochem. Biophys.*, 262, 221-231.
- ⁷⁴ Cadenas, E., Mira, D., Brunmark, A., Lind, C., Segura-Aguilar, J. and Ernster, L. (1988) Effect of superoxide dismutase on the autoxidation of various hydroquinones. A possible role of superoxide dismutase as superoxide-semiquinone oxidoreductase. *Free Radicals Biol. Med.*, 5, 71-79.

- ⁷⁵ Brunmark, A., Cadenas, E., Segura-Aguilar, J., Lind, C. and Ernster, L. (1988) DT-diaphorase-catalyzed two-electron reduction of various *p*-benzoquinone- and 1,4-naphthoquinone epoxides. *Free Radicals Biol. Med.*, 5, 133-141.
- ⁷⁶ Mira, D., Brunk, U., Boveris, A. and Cadenas, E. (1988) One-electron transfer reactions of diquat radical to different reduction intermediates of oxygen. *Free Radical Biol. Med.*, 5, 155-163.
- ⁷⁷ Glaser, E., Cadenas, E., Andell, S. and Ernster, L. (1988) Inhibition of mitochondrial F₁-ATPase by Rose Bengal-mediated photooxidation. Interaction of the Fe²⁺ chelate of bathophenanthroline with the sensitizer. *Acta Chem. Scand. B* 42, 175-182.
- ⁷⁸ Buffinton, G., Mira, D., Galaris, D., Hochstein, P. and Cadenas, E. (1988) Reduction of ferryl- and met-myoglobin to ferrous myoglobin by menadione-glutathione conjugate. Spectrophotometric studies under aerobic and anaerobic conditions. *Chem.-Biol. Interactions*, 66, 205-222.
- ⁷⁹ Buffinton, G. and Cadenas, E. (1988) Reduction of ferrylmyoglobin by quinonoid compounds. *Chem.-Biol. Interactions*, 66, 233-250.
- ⁸⁰ Brunmark, A., Mira, D., Buffinton, G. and Cadenas, E. (1988) Generation of electronically-excited states during electron transfer to quinones and splitting of the O–O bond of hydroperoxides by hemoproteins. Studies with single-photon counting and HPLC with electrochemical detection. In *Free Radicals: Methodology and Concepts* (C. and B. Halliwell, eds.), Richelieu Press - Free Radical Series, London, pp. 369-391.
- ⁸¹ Abok, K., Cadenas, E. and Brunk, U. (1988) An experimental model for leishmaniasis Effects of porphyrin-compounds and menadione on Leishmania parasites engulfed by cultured macrophages. *Acta Pathol. Microbiol. Immunol. Scand.*, 96, 543-551.
- ⁸² Brunmark, A. and Cadenas, E. (1988) Oxidation of quinones by H₂O₂. Formation of epoxy- and hydroxyquinone adducts and electronically-excited states. In *Oxygen Radicals in Biology and Medicine* (Basic Life Sciences - volume 49), Simic, M., Taylor, K.A., Ward, J.F. and von Sonntag, C., Eds., Plenum Press, New York, pp. 81-86.
- ⁸³ Mira, D., Brunk, U., Ursini, F. and Cadenas, E. (1988) The reaction between oxymyoglobin and organic hydroperoxides. Formation of electronically excited states detected by low-level chemiluminescence. In *The Role of Oxygen Radicals in Cardiovascular Diseases* (L'Abbate, A. and Ursini, F., Eds.), pp. 105-116, Kluwer Academic Publishers, London.
- ⁸⁴ Knoblauch, A.L., Paki, A., Michael, J.R., Kutner, M.E., Cadenas, E., Sies, H., Adkinson, N.F. and Gurtner, G.H. (1988) Hydroperoxide-induced chemiluminescence in rabbit lungs: role of arachidonic acid enzymes. *J. Appl. Physiol.*, 65, 1340-1350.
- ⁸⁵ Buffinton, G., Öllinger, K., Brunmark, A. and Cadenas, E. (1989) DT-Diaphorase-catalyzed reduction of 1,4-naphthoquinone derivatives and glutathionyl-quinone conjugates. Effect of substituents on autoxidation rates. *Biochem. J.*, 257, 561-571.

- ⁸⁶ Cadenas, E. (1989) Biochemistry of oxygen toxicity. *Ann. Rev. Biochem.* 58, 79-110.
- ⁸⁷ Cadenas, E. (1989) Formation of electronically excited states in biological systems: contribution of singlet oxygen and excited carbonyl compounds to biological chemiluminescence. In *CRC Handbook of Free Radicals and Antioxidants in Biomedicine* (Miquel, J., Quintanilha, A.T. and Weber, H., eds.), volume I, pp. 29-36, CRC Press, Boca Raton.
- ⁸⁸ Brunmark, A. and Cadenas, E. (1988) Reductive addition of glutathione to *p*-benzoquinone, 2-hydroxy-*p*-benzoquinone, and *p*-benzoquinone epoxides. Effect of the hydroxy- and glutathionyl substituents on *p*-benzohydroquinone autoxidation. *Chem.-Biol. Interact.* 68, 273-298.
- ⁸⁹ Brunmark, A. and Cadenas, E. (1989) 1,4-Reductive addition of glutathione to quinone epoxides. Mechanistic studies with h.p.l.c. with electrochemical detection under anaerobic and aerobic conditions and evaluation of chemical reactivity in terms of autoxidation reactions. *Free Radical Biol. Med.*, 6, 149-165.
- ⁹⁰ Galaris, D., Cadenas, E. and Hochstein, P. (1989) Glutathione-dependent reduction of peroxides during ferryl- and met-myoglobin interconversion: a potential protective mechanism in muscle. *Free Radical Biol. Med.*, 6, 473-478.
- ⁹¹ Cadenas, E., Simic, M.G. and Sies, H. (1989) Antioxidant activity of 5-hydroxytryptophan, 5-hydroxyindole, and DOPA against microsomal lipid peroxidation and its dependence on vitamin E. *Free Rad. Res. Comms.*, 6, 11-17.
- ⁹² Galaris, D., Edy, L., Arduini, A., Cadenas, E. and Hochstein, P. (1989) Mechanisms of reoxygenation injury in myocardial infarction: implications of a myoglobin redox cycle. *Biochem. Biophys. Res. Commun.* 160, 1162-1168.
- ⁹³ Cadenas, E., Merényi, G. and Lind, J. (1989) Pulse radiolysis study on the reactivity of trolox C phenoxyl radical with superoxide anion, *FEBS Letts.*, 253, 235-238.
- ⁹⁴ Cadenas, E. (1989) Lipid peroxidation during the oxidation of hemoproteins by hydroperoxides. Relation to electronically-excited state formation. *J. Bioluminescence Chemiluminescence* 4, 208-218.
- ⁹⁵ Brunmark, A. and Cadenas, E. (1989) Redox and addition chemistry of quinoid compounds and its biological implications. *Free Radical Biol. Med.*, 7, 435-477.
- ⁹⁶ Galaris, D., Cadenas, E. and Hochstein, P. (1989) Redox cycling of myoglobin and ascorbate: a potential protective mechanism against oxidative reperfusion injury in muscle. *Arch. Biochem. Biophys.*, 273, 497-504.
- ⁹⁷ Öllinger, K., Llopis, J. and Cadenas, E. (1989) Study on the redox properties of naphthazarin (5,8-dihydroxy-1,4-naphthoquinone) and its glutathionyl conjugate in biological reactions: one- and two-electron enzymic reduction. *Arch. Biochem. Biophys.*, 275, 514-530.

- ⁹⁸ Cadenas, E. and Ernster, L. (1990) Detection of quinonoid compounds by high performance liquid chromatography with electrochemical detection. *Methods Enzymol.*, 186, 180-196.
- ⁹⁹ Lind, C., Cadenas, E., Hochstein, P. and Ernster, L. (1990) DT-Diaphorase: purification, properties, function. *Methods Enzymol.*, 186, 287-301.
- ¹⁰⁰ Llopis, J., Ernster, L. and Cadenas, E. (1990) Effect of glutathione on the redox transitions of naphthoquinone derivatives formed during DT-diaphorase catalysis. *Free Rad. Res. Comms.*, 8, 271-285.
- ¹⁰¹ Galaris, D., Buffinton, G., Hochstein, P. and Cadenas, E. (1990) Role of ferryl-myoglobin in lipid peroxidation and its reduction to met- or oxy-myoglobin by glutathione, quinone derivatives, and ascorbate. In *Membrane Lipid Oxidation* (Vigo-Pelfrey, C., Ed.) vol. I, pp. 269-283, CRC Press, Boca Raton, Florida.
- ¹⁰² Öllinger, K., Buffinton, G., Ernster, L. and Cadenas, E. (1990) Effect of superoxide dismutase on the autoxidation of hydro- and semi-naphthoquinones. *Chem.-Biol. Interact.*, 73, 53-76.
- ¹⁰³ Cadenas, E. and Ernster, L. (1990) Effect of superoxide dismutase on the autoxidation of hydroquinones formed during DT-diaphorase catalysis and glutathione nucleophilic addition. *Adv. Exp. Med. Biol.* 264, 37-44.
- ¹⁰⁴ Galaris, D., Sevanian, A., Cadenas, E. and Hochstein, P. (1990) Ferrylmyoglobin-catalyzed linoleic acid peroxidation. *Arch. Biochem. Biophys.*, 281, 163-169.
- ¹⁰⁵ Brunmark, A. and Cadenas, E. (1990) Biological implications of the nucleophilic addition of glutathione to quinonoid compounds. In *Handbook of Glutathione: Metabolism and Physiological Functions*, Viña, J., Ed., CRC Press, Boca Raton, Florida, pp. 279-294.
- ¹⁰⁶ Goin, J., Gibson, D.D., McCay, P.B. and Cadenas, E. (1991) Glutathionyl- and hydroxyl radical formation coupled to the redox transitions of 1,4-naphthoquinone bioreductive alkylating agents during glutathione two-electron reductive addition, *Arch. Biochem. Biophys.*, 288, 386-396.
- ¹⁰⁷ Cadenas, E. (1991) Two-electron bioreductive activation of 1,4-naphthoquinones: prooxidant and antioxidant aspects. In *Oxidative Damage and Repair: Chemical, Biochemical, and Medical Aspects* (Davies, K.J.A., Ed.), pp. 606-611, Pergamon Press, New York.
- ¹⁰⁸ Cadenas, E., Hochstein, P. and Ernster, L. (1992) Pro- and antioxidant functions of quinones and quinone reductases in mammalian cells, *Adv. Enzymol.*, 65, 97-146.
- ¹⁰⁹ Romero, F.J., Ordoñez, I., Arduini, A. and Cadenas, E. (1992) The reactivity of thiols and disulfides with different redox states of myoglobin. Redox- and addition reactions and formation of thiyl radical intermediates, *J. Biol. Chem.* 267, 1680-1688.

- ¹¹⁰ Arduini, A., Mancinelli, G., Radatti, G.L., Hochstein, P. and Cadenas, E. (1992) Possible mechanism of inhibition of nitrite-induced oxidation of oxyhemoglobin by ergothioneine and uric acid. *Arch. Biochem. Biophys.* 294, 398-402.
- ¹¹¹ Ordoñez, I. and Cadenas, E. (1992) Thiol oxidation coupled to DT-diaphorase-catalyzed reduction of diaziquone. Reductive and oxidative pathways of diaziquone semiquinone modulated by glutathione and superoxide dismutase. *Biochem. J.*, 286, 481-490.
- ¹¹² Arduini, A., Mancinelli, G., Radatti, G.L., Damonti, W., Hochstein, P., and Cadenas, E. (1992) Reduction of sperm whale ferrylmyoglobin by endogenous reducing agents. Potential reducible loci of ferrylmyoglobin. *Free Radical Biol. Med.*, 13, 449-454.
- ¹¹³ Giulivi, C., Romero, F.J. and Cadenas, E. (1992) The interaction of Trolox C, a water-soluble vitamin E analog, with ferrylmyoglobin. Reduction of the oxoferryl moiety. *Arch. Biochem. Biophys.*, 299, 302-312.
- ¹¹⁴ Adams, J.D., Klaidman, L.K., and Cadenas, E. (1992) MPP⁺ redox cycling: a new mechanism involving hydride transfer, *Annals N.Y. Acad. Sci.*, 648, 239-240.
- ¹¹⁵ Ordoñez, I., Goin, J., and Cadenas, E. (1992) One- and two-electron reactions involving quinones, glutathione, and superoxide dismutase. Prooxidant and antioxidant aspects. In *Biological Free Radical Oxidations and Antioxidants* (Ursini, F. and Cadenas, E., eds.), pp. 31-39, Cleup University Press, Padova.
- ¹¹⁶ Romero, F.J. and Cadenas, E. (1992) The reactivity of thiols and disulfides with different redox states of myoglobin. In *Biological Free Radical Oxidations and Antioxidants* (Ursini, F. and Cadenas, E., eds.), pp. 173-179, Cleup University Press, Padova.
- ¹¹⁷ Romero, F.J. and Cadenas, E. (1993) The reactivity of thiols and disulfides with different redox states of myoglobin. In *Methionine Metabolism: Molecular Mechanisms and Clinical Implications* (Mato, J.M., Lieber, C., Kaplowitz, N. and Caballero, A., Eds.), pp. 221-226.
- ¹¹⁸ Goin, J., Ordoñez, I., and Cadenas, E. (1993) Reductive and oxidative decay pathways of semiquinones. The effects of glutathione and superoxide dismutase, in *Active Oxygen, Lipid Peroxides, and Antioxidants* (Yagi, K., ed.), pp. 69-82, Japan Scientific Society Press and CRC Press, Boca Raton.
- ¹¹⁹ Giulivi, C. and Cadenas, E. (1993) Inhibition of protein radical reactions of ferrylmyoglobin by the water-soluble analog of vitamin E, Trolox C. *Arch. Biochem. Biophys.*, 303, 152-158.
- ¹²⁰ Klaidman, L.K., Adams, J.D., Leung, A.C., Kim, S.S. and Cadenas, E. (1993) Redox cycling of MPP⁺: evidence for a new mechanism involving hydride transfer with xanthine oxidase, aldehyde dehydrogenase, and lipoamide dehydrogenase. *Free Radical Biol. Med.* 15, 169-179.
- ¹²¹ Giulivi, C. and Cadenas, E. (1993) The reaction of ascorbic acid with different heme iron redox states of myoglobin. *FEBS Lett.*, 332, 287-290.

- ¹²² Giulivi, C. and Cadenas, E. (1993) Formation of ferrylmyoglobin and its chemical reactivity towards electron-donating compounds. *Methods Enzymol.*, 233, 189-202.
- ¹²³ Cadenas, E. (1994) One- and two-electron activation of quinonoid compounds. Oxidant and antioxidant aspects. In *Free Radicals in Biochemistry and Medicine: Critical Aspects and Current Highlights* (Nohl, H., Esterbauer, H. and , C., eds.), pp. 119-136, Richelieu Press, London.
- ¹²⁴ Romero, F.J., Ordoñez, I., Giulivi, C. and Cadenas, E. (1994) The interaction of sulfur compounds with ferrylmyoglobin. In *Biological Oxidants and Antioxidants* (Packer, L. & Cadenas, E., Eds.), pp. 49-56, Hyppokrates Verlag, Stuttgart.
- ¹²⁵ Maiorino, M., Ursini, F. and Cadenas, E. (1994) Reactivity of metmyoglobin towards phospholipid hydroperoxides. *Free Radical Biol. Med.*, 16, 661-667.
- ¹²⁶ Giulivi, C. and Cadenas, E. (1994) One- and two-electron activation of 2-methyl-1,4-naphthoquinone bioreductive alkylating agents. Kinetic studies, free radical production, thiol oxidation, and DNA strand break formation. *Biochem. J.*, 301, 21-30.
- ¹²⁷ Cadenas, E., Giulivi, C., Ursini, F., and Boveris, A. (1994) Electronically-excited state formation during lipid peroxidation. *Methods Toxicol.*, 1B, 384-399.
- ¹²⁸ Giulivi, C., Boveris, A. and Cadenas, E. (1995) Hydroxyl radical generation during mitochondrial electron transfer and the formation of 8-hydroxy-desoxyguanosine in mitochondrial DNA. *Arch. Biochem. Biophys.*, 316, 909-916.
- ¹²⁹ Cadenas, E. (1995) Mechanisms of oxygen activation and reactive oxygen species detoxification. In *Oxidative-Induced Stress and Antioxidant Defenses in Biological Systems* (Ahmad, S., Ed.), pp. 1-61, Chapman & Hall.
- ¹³⁰ Cadenas, E. (1994) Thiyl radical generation during thiol oxidation by ferrylmyoglobin. *Methods Enzymol.* 251, 106-116.
- ¹³¹ Cadenas, E. (1995) Antioxidant and prooxidant functions of DT-diaphorase in quinone metabolism, *Biochem. Pharmacol.*, 49, 127-140.
- ¹³² Goin, J., Giulivi, C., Butler, J. and Cadenas, E. (1995) Enzymic- and thiol-mediated activation of halogen-substituted diaziridinylbenzoquinones. Redox transitions of the semiquinone and semiquinone-thioether species. *Free Radical Biol. Med.*, 18, 525-536.
- ¹³³ Carreras, M.C., Poderoso, J.J., Cadenas, E. and Boveris, A. (1996) Measurement of nitric oxide and hydrogen peroxide production from human neutrophils. *Meth. Enzymol.* 269, 65-75.
- ¹³⁴ Hauptmann, N., Grimsby, J., Shih, J.C., and Cadenas, E. (1996) The metabolism of tyramine by monoamine oxidase A/B causes oxidative damage to mitochondrial DNA. *Arch. Biochem. Biophys.*, 335, 295-304.

- ¹³⁵ Hauptmann, N. and Cadenas, E. (1996) The Oxygen Paradox: Biochemistry of Active Oxygen. In *Oxidative Stress and the Molecular Biology of Antioxidant Defenses*. Scandalios, J.G., ed. Cold Spring Harbor Laboratory Press, pp. 1-20.
- ¹³⁶ Qiu, X., Schönthal, A.H., Forman, H.J., and Cadenas, E. (1996) Induction of p21 mediated by reactive oxygen species formed during the metabolism of aziridinybenzoquinones by HCT116 cells. *J. Biol. Chem* 271, 31915-31922.
- ¹³⁷ Boveris, A. and Cadenas, E. (1997) Cellular sources and steady-state levels of reactive oxygen species. In *Oxygen, Gene Expression and Cellular Function* (Mazzaro, D. And Clerch, L., Eds.), Marcel Dekker, pp. 1-25.
- ¹³⁸ Cadenas, E. (1997) Physicochemical determinants of free radical cytotoxicity. In *Free Radical Toxicology*, Kendal B. Wallace, Ed., Taylor & Francis, pp. 115-139.
- ¹³⁹ Qiu, X. and Cadenas, E. (1997) The role of NAD(P)H:quinone oxidoreductase in quinone-mediated p21 induction in human colon carcinoma cells. *Arch. Biochem. Biophys.* 346, 241-251.
- ¹⁴⁰ Giulivi, C. and Cadenas, E. (1997) Heme protein radicals: formation, fate, and biological consequences. *Free Radical Biol. Med.* 24, 269-279.
- ¹⁴¹ Cadenas, E. (1997) Mechanism of antioxidant activity. *Biofactors* 6, 391-397.
- ¹⁴² Qiu, X., Schönthal, A.H., and Cadenas, E. (1998) Anticancer quinones induce pRb-preventable G₂/M cell cycle arrest and apoptosis. *Free Radical Biol. Med.* 24, 848-854.
- ¹⁴³ Poderoso, J.J., Peralta, J.G., Lisdero, C.L., Carreras, M.C., Radisic, M., Schöpfer, F., Cadenas, E., and Boveris, A. (1998) Nitric oxide regulates oxygen uptake and promotes hydrogen peroxide release by the isolated beating rat heart. *Am. J. Physiol.*, 274 (Cell Physiol. 43), C112-C119.
- ¹⁴⁴ Giulivi, C., Forlin, A., Bellin, S., and Cadenas, E. (1998) Reactions of halogen-substituted aziridinybenzoquinones with glutathione. Formation of diglutathionyl conjugates and semiquinones. *Chem.-Biol. Interactions* 108, 137-154.
- ¹⁴⁵ Cadenas, E. and Sies, H. (1998) The lag phase. *Free Rad. Res.* 28, 601-609.
- ¹⁴⁶ Giulivi, C. and Cadenas, E. (1998) Oxidation of adrenaline by ferrylmyoglobin. *Free Radical Biol. Med.*, 25, 175-183.
- ¹⁴⁷ Giulivi, C. and Cadenas, E. (1998) Extracellular activation of fluorinated aziridinybenzoquinone in HT29 cells. EPR studies. *Chem.-Biol. Interact.*, 113, 191-204.
- ¹⁴⁸ Giulivi, C. and Cadenas, E. (1998) The role of mitochondrial glutathione in DNA base oxidation. *Biochim. Biophys. Acta*, 1366, 265-274.

- ¹⁴⁹ Cadenas, E. (1998) Mechanisms of antioxidant action. In *Free Radicals, Oxidative Stress, and Antioxidants: Pathological and Physiological Significance* (Özben, T., Ed.), Plenum Publishing Co., pp. 237-251.
- ¹⁵⁰ Wu, R.-C., Hohenstein, A., Park, J.M., Qiu, X., Mueller, S., Cadenas, E., and Schönthal, A.H. (1998) Role of p53 in aziridinylnbenzoquinone-induced p21^{WAF1} expression. *Oncogenesis* 17, 357-365.
- ¹⁵¹ Poderoso, J.J., Carreras, M.C., Schöpfer, F., Lisdero, C.L., Riobó, N., Giulivi, C., Boveris, A.D., Boveris, A., and Cadenas, E. (1999) The reaction of nitric oxide with ubiquinol. Kinetic properties and biological significance. *Free Radical Biol. Med.* 26, 925-935.
- ¹⁵² Giulivi, C., Boveris, A. and Cadenas, E. (1999) The steady-state concentration of oxygen radicals in mitochondria. In *Reactive Oxygen Species in Biological Systems. An Interdisciplinary Approach* (Gilbert, D.L. and Colton, C.A., Eds.), pp. 77-102, Kluwer Academic / Plenum Publishers, New York
- ¹⁵³ Boveris, A. and Cadenas, E. (1999) Brain chemiluminescence as an indicator of oxidative stress. In *Reactive Oxygen Species in Biological Systems. An Interdisciplinary Approach* (Gilbert, D.L. and Colton, C.A., Eds.), pp. 557-568, Kluwer Academic / Plenum Publishers, New York
- ¹⁵⁴ Cadenas, E., Poderoso, J.J., , F., and Boveris, A. (1999) The reaction of ubiquinols with nitric oxide. In *Antioxidant Food Supplements and Human Health* (Packer, L., Hiramatsu, M., and Yoshikawa, T., Eds.), Academic Press, San Diego, pp. 143-163
- ¹⁵⁵ Boveris, A., Costa, L.E., Cadenas, E., and Poderoso, J.J. (1999) Regulation of mitochondrial respiration by adenosine diphosphate, oxygen, and nitric oxide. *Meth. Enzymol.*, 301, 188-198.
- ¹⁵⁶ Laranjinha, J. and Cadenas, E. (1999) Redox cycles of caffeic acid, α -tocopherol, and ascorbate. Implications for LDL protection against oxidation. *IUBMB Life* 48, 57-65.
- ¹⁵⁷ Schönthal, A.H., Mueller, S., and Cadenas, E. (1999) Redox regulation of p21. Role of reactive oxygen- and nitrogen species in cell cycle progression. In *Antioxidant and Redox Regulation of Genes* (Sen, C.K., Sies, H., and Baeuerle, P.A., eds.) pp. 311-336, Academic Press, San Diego.
- ¹⁵⁸ Cadenas, E. and Sies, H. (2000) Formation of electronically-excited states during the oxidation of arachidonic acid by prostaglandin endoperoxide synthase. *Methods Enzymol.* 319, 67-77.
- ¹⁵⁹ Boveris, A., Costa, L.E., Poderoso, J.J., Carreras, M.C., and Cadenas, E. (2000) Regulation of mitochondrial respiration by oxygen and nitric oxide. *Annals N.Y. Acad. Sci.*, 899, 121-135.
- ¹⁶⁰ Mueller, S., Cadenas, E., and Schönthal, A.H. (2000) p21^{waf1} regulates anchorage-independent growth of HCT116 colon carcinoma cells via E-cadherin expression. *Cancer Res.*, 60, 153-163.

- ¹⁶¹ Poderoso, J.J., Lisdero, C., Schöpfer, F., Riobó, N., Carreras, M.C., Cadenas, E., and Boveris, A. (1999) The regulation of mitochondrial oxygen uptake by redox reactions involving nitric oxide and ubiquinol. *J. Biol. Chem.*, 274, 37709-37716.
- ¹⁶² Han, D., Kobayashi, M.S., Cadenas, E., and Packer, L. (2000) Oxidative stress in glutamate toxicity. In *Free Radicals in Brain Pathophysiology* (Poli, G., Cadenas, E., and Packer, L., eds.), pp. 127-156, Marcel Dekker, New York.
- ¹⁶³ Qiu, X., Schönthal, A., and Cadenas, E. (1999) Induction of p21 and cell cycle arrest mediated by oxidative stress. In *Proceedings of the Vth International Congress on EPR Spectroscopy*.
- ¹⁶⁴ Schöpfer, F., Riobó, N., Carreras, M.C., Alvarez, B., Radi, R., Boveris, A., Cadenas, E., and Poderoso, J.J. (2000) Oxidation of ubiquinol by peroxynitrite: implications for protection of mitochondria against nitrosative damage. *Biochem. J.*, 349, 35-42.
- ¹⁶⁵ Cadenas, E. and Davies, K.J.A. (2000) Mitochondrial free radical generation, oxidative stress, and aging. *Free Radical Biol. Med.* 29, 222-230.
- ¹⁶⁶ Davies, K.J.A. and Cadenas, E. (2000) Tribute to Lars Ernster. *Free Radical Biol. Med.* 29, 201.
- ¹⁶⁷ Poderoso, J.J., Boveris, A., and Cadenas, E. (2000) Mitochondrial oxidative stress: a self-propagating process with implications for signaling cascades. *Biofactors* 11, 43-45.
- ¹⁶⁸ Antunes, F. and Cadenas, E. (2000) Estimation of H₂O₂ gradients across biomembranes. *FEBS Lett.* 475, 121-126.
- ¹⁶⁹ Han, D., Williams, E., and Cadenas, E. (2000) Mitochondrial respiratory chain-dependent generation of superoxide anion and its release into the intermembrane space. *Biochem. J.*, 353, 411-416.
- ¹⁷⁰ Boveris, A. and Cadenas, E. (2000) Mitochondrial production of hydrogen peroxide regulation by nitric oxide and the role of ubisemiquinone. *IUBMB Life* 50, 245-250.
- ¹⁷¹ Mueller, S., Schönthal, A.H., and Cadenas, E. (2000) Zytostatika lösen die oxidative Bremse im Zellzyklus aus. *Pharmazeut. Z.* 18, 11-18
- ¹⁷² Cadenas, E., Poderoso, J.J., Antunes, F., and Boveris, A. (2001) Analysis of the pathways of nitric oxide utilization in mitochondria. *Free Radical Res.*, 33, 747-56
- ¹⁷³ Antunes, F., Cadenas, E., and Brunk, U.T. (2001) Apoptosis, induced by exposure to a low steady-state concentration of H₂O₂, is a consequence of lysosomal rupture. *Biochem. J.* 356, 549-555.
- ¹⁷⁴ Antunes, F. and Cadenas, E. (2001) Cellular titration of apoptosis with steady-state concentrations of H₂O₂. Near to *in vivo* levels of H₂O₂ induce apoptosis through Fenton chemistry independently of cellular thiol state. *Free Radical Biol. Med.* 30, 1008-1018.

- ¹⁷⁵ Riobó, N.A., Clementi, E., Melani, M., Boveris, A., Cadenas, E., Moncada, S., and Poderoso, J.J. (2001) Nitric oxide inhibits mitochondrial NADH-ubiquinone reductase activity through the formation of peroxynitrite. *Biochem. J.*, 359, 139-145.
- ¹⁷⁶ Laranjinha, J. and Cadenas, E. (2001) Oxidation of DOPAC by nitric oxide. The effect of superoxide dismutase. *J. Neurochem.* 81, 892-900.
- ¹⁷⁷ Han, D., Antunes, F., Daneri, F., and Cadenas, E. (2002) Mitochondrial superoxide anion production and its release into the intermembrane space. *Methods Enzymol.*, 349, 271-280
- ¹⁷⁸ Riobó, N.A., Schöpfer, F.J., Boveris, A.D., Cadenas, E., and Poderoso, J.J. (2002) The reaction of nitric oxide with 6-hydroxydopamine: Implications for Parkinson's disease. *Free Radical Biol. Med.* 32, 115-121.
- ¹⁷⁹ Schroeter, H., Boyd, C.S., Spencer, J.P.E., Williams, R.J., Cadenas, E., and Rice-Evans, C. (2001) MAPK signaling in neurodegeneration: influences of flavonoids and of nitric oxide. *Neurobiol Aging* 23, 861-880.
- ¹⁸⁰ Boyd, C.S. and Cadenas, E. (2003) Mitochondrial actions of flavonoids. In *Flavonoids in Health and Disease* (Rice-Evans, C. and Packer, L., Eds.), vol. II, pp. 273-301, Marcel Dekker Inc., New York.
- ¹⁸¹ Boyd, C.S. and Cadenas, E. (2002) Nitric oxide and cell signaling pathways in mitochondrial-dependent apoptosis. *Biol. Chem.* 383, 411-423.
- ¹⁸² Rettori, D., Tang, Y., Dias, L.C., and Cadenas, E. (2002) Pathways of dopamine oxidation mediated by nitric oxide. *Free Radic. Biol. Med.* 33, 685-690.
- ¹⁸³ Antunes, F., Han, D., and Cadenas, E. (2002) Relative contributions of heart mitochondria glutathione peroxidase and catalase to hydrogen peroxide detoxification in *in vivo* conditions. *Free Radical Biol. Med.*, 33, 1260-1267.
- ¹⁸⁴ Riobó, N.A., Melanin, M., Sanjuán, N., Carreras, M.C., Cadenas, E., and Poderoso, J.J. (2002) The modulation of mitochondrial nitric oxide synthase activity in rat brain development. *J. Biol. Chem.* 277, 42447-42455
- ¹⁸⁵ Antunes, F., Han, D., Rettori, D., and Cadenas, E. (2002) Mitochondrial damage by nitric oxide is potentiated by dopamine in PC12 cells. *Biochim. Biophys. Acta*, 1556, 233-238
- ¹⁸⁶ Han, D., Antunes, F., Canali, R., Rettori, D., and Cadenas, E. (2002) Voltage-dependent anion channels control the release of superoxide anion from mitochondria to the cytosol. *J. Biol. Chem.*, 278, 5557-5563
- ¹⁸⁷ Schroeter, H., Boyd, C.S., Ahmed, R., Spencer, J.P., Duncan, R.F., Rice-Evans, C., and Cadenas, E. (2003) JNK-mediated modulation of brain mitochondria function: New target proteins for JNK signaling in mitochondria-dependent apoptosis. *Biochem. J.* 372, 359-369

- ¹⁸⁸ Schöpfer, F.J., Jasnis, M.A., Carreras, M.C., Cadenas, E., Bal de Kier Joffé, E., and Poderoso, J.J. (2002) Potentiation of doxorubicin toxicity by nitric oxide in the murine mammary adenocarcinoma LM3 cell line. *Free Radic. Biol. Med.*
- ¹⁸⁹ Bustamante, J., Di Libero, E., Fernandez-Cobo, M., Monti, N., Cadenas, E. and Boveris, A. (2004) Kinetic analysis of thapsigargin-induced thymocyte apoptosis. *Free Radic. Biol. Med.* 37, 1490-1498.
- ¹⁹⁰ Cadenas, E. (2004) Mitochondrial free radical production and cell signaling. *Mol. Asp. Med.* 25, 17-26.
- ¹⁹¹ Antunes, F., Boveris, A., and Cadenas, E. (2004) On the mechanism and biology of cytochrome oxidase inhibition by nitric oxide. *Proc. Natl. Acad. Sci. USA* 101, 16774-16779.
- ¹⁹² Remiao, F., Rettori, D., Han, D., Carvalho, F., Bastos, M.L., and Cadenas, E. (2004) Leucoisoprenochrome-*o*-semiquinone formation in freshly isolated adult rat cardiomyocytes. *Chem. Res. Toxicol.*, 17, 1584-1590
- ¹⁹³ Boveris, A. and Cadenas, E. (2004) Free radicals, sources, and targets of mitochondria. In *Encyclopedia of Biological Chemistry* (W.J. Iennarz and M.D. Lane, eds), Elsevier, Oxford, Vol. 2, pp. 134-142.
- ¹⁹⁴ Antunes, F., Nunes, C., Laranjinha, J., and Cadenas, E. (2005) Redox interactions of nitric oxide with dopamine and its derivatives. *Toxicology* 208, 207-212
- ¹⁹⁵ Ghafourifar, P. and Cadenas, E. (2005) Mitochondrial nitric oxide synthase. *Trends Pharmacol. Sci.* 26, 190-195.
- ¹⁹⁶ Han, D., Canali, R., Garcia, J., Aguilera, R., Gallaher, T.K., and Cadenas, E. (2005) Sites and mechanisms of aconitase inactivation by peroxynitrite: Modulation by citrate and glutathione. *Biochemistry* 44, 11986-11996.
- ¹⁹⁷ Iñarrea, P., Moini, H., Rettori, D., Han, D., Martínez, J., García, I., Fernández-Vizarra, E., Iturralde, M., and Cadenas, E. (2005) Redox activation of mitochondrial intermembrane space Cu,Zn-superoxide dismutase. *Biochem. J.*, 387, 203-209
- ¹⁹⁸ Boveris, A. and Cadenas, E. (2005) Mitochondrial free radical production, antioxidant defenses, and cell signaling. In *Handbook of Environmental Chemistry: Oxidants and Antioxidant Defense Systems* (Grune, T., Ed.) vol. 2, pp. 219-234, Springer-Verlag Berlin Heidelberg.
- ¹⁹⁹ Siems, W., Grune, T., Sommerburg, O., Flohé, L., and Cadenas, E. (2005) HNE and further lipid peroxidation products. *Biofactors* 24, 1-14

- 200 Ledo, A., Barbosa, R.M., Gerhardt, G.A., Cadenas, E. and Laranjinha, J. (2005) Concentration dynamics of nitric oxide in rat hippocampal subregions evoked by stimulation of the NMDA receptor. *Proc. Natl. Acad. Sci. USA* 102, 17483-17488.
- 201 Carreras, M.C., Galli, S., Converso, D.P., Poderoso, J.J., and Cadenas, E. (2005) Mitochondrial nitric oxide and redox signaling modulation of cell behaviour. In *Nitric Oxide, Cell Signaling, and Gene Expression* (Lamas, S. and Cadenas, E., eds), CRC - Taylor & Francis, Boca Raton.
- 202 Antunes, F. and Cadenas, E. (2007) On the mechanism of cytochrome *c* oxidase inhibition by nitric oxide. *Front. Biosci.* 12, 975-985.
- 203 Nguyen, D.T., Hernandez-Montes, E., Vauzour, D., Schönthal, A.H., Rice-Evans, C., Cadenas, E., Spencer, J.P. (2006) The intracellular genistein metabolite 5,7,3',4'-tetrahydroxyisoflavone mediates G₂-M cell cycle arrest in cancer cells via modulation of the p38 signaling pathway. *Free Radical Biol. Med.* 41, 1225-1239.
- 204 Navarro, A., Sánchez-Pino, M.J., Gómez, C., Báñez, M.J., Cadenas, E., and Boveris, A. (2007) Dietary thioproline decreases spontaneous food intake and increases survival and neurological function in mice. *Antioxid. Redox Signal.* 9, 131-141.
- 205 Hsiai, T.K., Hwang, J., Barr, M.L., Correa, A., Hamilton, R., Alavi, M., Rouhanizadeh, M., Cadenas, E., and Hazen, S.L. (2007) Hemodynamics influences vascular peroxynitrite formation: Implication for low-density lipoprotein apo-B-100 nitration. *Free Radic. Biol. Med.* 42, 519-529.
- 206 Schroeter, H., Bahia, P., Spencer, J.P., Sheppard, O., Rattray, M., Cadenas, E., Rice-Evans, C., and Williams R.J. (2007) (-)Epicatechin stimulates ERK-dependent cyclic AMP response element activity and up-regulates GluR2 in cortical neurons. *J. Neurochem.*, 101, 1596-1606.
- 207 Packer, L. and Cadenas, E. (2007) Oxidants and antioxidants revisited: New concepts of oxidative stress. *Free Radic. Res.* 41, 951-952.
- 208 Antunes, F., Boveris, A., and Cadenas, E. (2007) On the biological role of the reaction of NO with oxidized cytochrome *c* oxidase. *Antioxid. Redox. Signal.*, 9, 1569-1579.
- 209 Zhou, Q., Lam, P.Y., Han, D., and Cadenas, E. (2007) c-Jun N-terminal kinase (JNK) regulates mitochondrial bioenergetics by modulating pyruvate dehydrogenase activity in primary cortical neurons. *J. Neurochem.*, 104, 325-335.
- 210 Vauzour, D., Vafeidou, K., Rice-Evans, C., Cadenas, E., and Spencer, J.P. (2007) Inhibition of cellular proliferation by the genistein metabolite, 5,7,3',4'-tetrahydroisoflavone is mediated by DNA damage and activation of the ATR signalling pathway. *Arch Biochem Biophys.* 468, 159-166.
- 211 Iñarreza, P., Moini, H., Han, D., Rettori, D., Aguiló, I., Alava, M.A., Iturralde, M., and Cadenas, E. (2007) Mitochondrial respiratory chain and thioredoxin reductase regulate intermembrane space Cu,Zn-superoxide dismutase activity: implications for mitochondrial energy DNA damage and activation of the ATR signaling pathway. *Arch. Biochem. Biophys.*, 468, 159-166.

- ²¹² Irwin, R.W., Yao, J., Hamilton, R.T., Cadenas, E., Brinton, R.D., and Nilsen, J. (2008) Progesterone and estrogen regulate oxidative metabolism in brain mitochondria. *Endocrinology* 149, 167-175.
- ²¹³ Navarro, A., López-Cepero, J.M., Bández, M.J., Sánchez-Pino, M.J., Gómez, C., Cadenas, E., and Boveris, A. (2008) Hippocampal mitochondrial dysfunction in rat aging. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 294, R501-R509.
- ²¹⁴ Packer, L., Cadenas, E. and Davies, K.J. (2008) Free radicals and exercise: an introduction. *Free Radic. Biol. Med.*, 44, 123-125.
- ²¹⁵ Galli, S., Antico Arciuch, V.G., Poderoso, C., Converso, D.P., Zhou, Q., Bal de Kier Joffé, E., Cadenas, E., Boczkowski, J., Carreras, M.C., and Poderoso, J.J. (2008) Tumor cell phenotype is sustained by selective MAPK oxidation in mitochondria. *PLoS One*, 3(6):e2379.
- ²¹⁶ Lam, P.Y. and Cadenas, E. (2008) Compromised proteasome degradation elevates neuronal nitric oxide synthase levels and induces apoptotic cell death. *Arch. Biochem. Biophys.* 478, 181-186.
- ²¹⁷ Lam, P.Y., Yin, F., Hamilton, R.T., Boveris, A., and Cadenas, E. (2009) Elevated neuronal nitric oxide synthase expression during aging and mitochondrial energy production. *Free Radic. Res.* 43, 431-439.
- ²¹⁸ Zhou, Q., Lam, P.Y., Han, D., and Cadenas, E. (2008) Activation of c-Jun-N-terminal kinase and decline of mitochondrial pyruvate dehydrogenase activity during brain aging. *FEBS Lett.* 583, 1132-1140.
- ²¹⁹ Golden, E.B., Lam, P.Y., Kardosh, A., Gaffney, K.J., Cadenas, E., Louie, S.G., Petasis, N.A., Chen, T.C., and Schönthal, A.H. (2009) Green tea polyphenols block the anticancer effects of bortezomib and other boronic acid-based proteasome inhibitors. *Blood* 113, 5927-5937.
- ²²⁰ Yap, L.P., Garcia, J.V., Han, D., and Cadenas, E. (2009) The energy-redox axis in aging and age-related neurodegeneration. *Adv. Drug. Deliv. Rev.* 61, 1283-1298.
- ²²¹ Antico Arciuch, V.G., Galli, S., Franco, M.C., Lam, P.Y., Cadenas, E., Carreras, M.C., and Poderoso, J.J. (2009) Akt1 intramitochondrial cycling is a crucial step in the redox modulation of cell cycle progression. *PLoS One* 4: e7523.
- ²²² Ledo, A., Barbosa, R., Cadenas, E., and Laranjinha, J. (2010) Dynamic and interacting profiles of NO and O₂ in rat hippocampal slices. *Free Radic. Biol. Med.*, 48, 1044-1050..
- ²²³ Yap, L.-P., Garcia, J.V., Han, D., and Cadenas, E. (2010) Role of nitric oxide-mediated glutathionylation in neuronal function. Potential regulation of energy utilization. *Biochem. J.*, 428, 85-93. metabolism and apoptosis. *Biochem. J.*, 405, 173-179.

- ²²⁴ Yap, L.-P., Sancheti, H., Ybanez, M.D., Garcia, J.V., Cadenas, E., and Han, D. (2010) Determination of GSNO, GSH, and GSSG by HPLC with electrochemical detection. *Methods Enzymol.*, 473, 137-147.
- ²²⁵ Lourenço, C.F., Santos, R., Barbosa, R.M., Gerhardt, G., Cadenas, E., and Laranjinha, J. (2010) In vivo modulation of nitric oxide concentration dynamics upon glutaminergic neuronal activation in the hippocampus. *Hippocampus* 21, 622-630.
- ²²⁶ Yao, J., Hamilton, R.T., Cadenas, E., and Brinton, R.D. (2010) Decline in mitochondrial bioenergetics and shift to Ketogenic profile in brain during reproductive senescence. *Biochim. Biophys. Acta* 1800, 1121-1126.
- ²²⁷ Yap, L.P., Garcia, J.V., Han, D.S., and Cadenas, E. (2010) Role of nitric oxide-mediated glutathionylation in neuronal function: potential regulation of energy utilization. *Biochem. J.* 428, 85-93.
- ²²⁸ Garcia, J.V., Han, D., Sancheti, H., Yap, L.P., Kaplowitz, N., and Cadenas, E. (2010) Regulation of mitochondrial glutathione redox status and protein glutathionylation by respiratory substrates. *J. Biol. Chem.* 285, 39646-39654.
- ²²⁹ Irwin, R.W., Yao, J., Ahmed, S., Hamilton, R., Cadenas, E., and Brinton, R.D. (2011) Medroxyprogesterone acetate antagonizes estrogen up-regulation of brain mitochondrial function. *Endocrinology*, 152, 556-567
- ²³⁰ Packer, L. and Cadenas, E. (2011) Lipoic acid: energy metabolism and redox regulation of transcription and cell signaling. *J. Clin. Biochem. Nutr.*, 48, 26-32.
- ²³¹ Cadenas, E. and Boveris, A. (2011) Models of mitochondrial oxidative stress. In *Studies on Experimental Models: Oxidative Stress in Applied Basic Research and Clinical Practice* (Basu, S. and Wiklund, L., Eds), pp. 545-561, Springer Science, London.
- ²³² Navarro, A., Bandez, M.J., Lopez-Cepero, J.M., Gómez, C., Boveris, A.D., Cadenas, E., and Boveris, A.A. (2011) High doses of vitamin E improve mitochondrial dysfunction in rat hippocampus and frontal cortex upon aging. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 300, R827-R834.
- ²³³ Yao, J., Chen, S., Cadenas, E., and Brinton, R.D. (2010) Estrogen protection against mitochondrial toxin-induced cell death in hippocampal neurons: antagonism by progesterone. *Brain Res.*, 1370, 2-10.
- ²³⁴ Yao, J., Irwin, R., Chen, S., Hamilton, R., Cadenas, E., and Brinton, R.D. (2011) Ovarian hormone loss induces bioenergetic deficits and mitochondrial β -amyloid. *Neurobiol. Aging*, in press.
- ²³⁵ Iñarrea, P., Casanova, A., Alava, M.A., Iturralde, M., and Cadenas, E. (2011) Melatonin and steroid hormones activate intermembrane Cu,Zn-superoxide dismutase by means of mitochondrial P450. *Free Radic. Biol. Med.*, 50, 1575-1581.

- ²³⁶ Santos, R.M., Lourenço, C.F., Gerhardt, G.A., Cadenas, E., Laranjinha, J., and Barbosa, R.M. (2011) Evidence for a pathway that facilitates nitric oxide diffusion in the brain. *Neurochem. Int.*, 59, 90-96.
- ²³⁷ Yao, J., Chen, S., Mao, Z., Cadenas, E., and Brinton, R.D. (2011) 2-Deoxy-D-glucose treatment induces ketogenesis, sustains mitochondrial function, and reduces pathology in female mouse model of Alzheimer's disease. *PLoS One* 6:e21788.
- ²³⁸ Yao, J., Rettberg, J.R., Klosinski, L.P., Cadenas, E., and Brinton, R.D. (2011) Shift in brain metabolism in late onset Alzheimer's disease: implications for biomarkers and therapeutic interventions. *Mol. Aspects Med.* (32) 247-257.
- ²³⁹ Yin, F., Sancheti, H., and Cadenas, E. (2012) Silencing nicotinamide nucleotide transhydrogenase impairs cellular redox homeostasis and energy metabolism in PC12 cells. *Biochim. Biophys. Acta* 1087, 401-409.
- ²⁴⁰ Yin, F., Sancheti, H., and Cadenas, E. (2012) Mitochondrial thiols in cell death. *Antiox. Redox Signal.*, 17, 1714-1727.
- ²⁴¹ Yao, J., Rettberg, J.R., Klosinski, L.P., Cadenas, E., and Brinton, R.B. (2011) Shift in brain metabolism in late onset Alzheimer's disease: implications for biomarkers and therapeutic interventions. *Mol. Aspects Med.* 32, 247-257.
- ²⁴² Irwin, R.W., Yao, J., To, J., Hamilton, R.T., Cadenas, E., and Brinton, R.D. (2012) Selective oestrogen receptor modulators differentially potentiate brain mitochondrial function. *J. Neuroendocrinol.* 24, 236-248.
- ²⁴³ Shen, W., Carlson, D.A., Packer, L., Cadenas, E., and Liu, J. (2012) Lipoamide as a potential therapy for insulin resistance associated with mitochondrial biogenesis. In *Mitochondrial Signaling in Health and Disease* (Orrenius, S., Packer, L., and Cadenas, E., eds), pp. 93-111, CRC Press – Taylor & Francis, New York.
- ²⁴⁴ Zhao, L., Morgan, T.E., Mao, Z., Lin, S., Cadenas, E., Finch, C.E., Pike, C.J., Mack, W.J., and Brinton, R.D. (2012) Continuous versus cyclic progesterone exposure differentially regulates hippocampal gene expression and functional profiles. *PLoS ONE* 7, e31267.
- ²⁴⁵ Yin, F., Boveris, A., and Cadenas, E. (2013) Mitochondrial energy metabolism and redox signaling in brain aging and neurodegeneration. *Antioxid. Redox Signal.*, 20, 353-371.
- ²⁴⁶ Ermak, G., Sonitra, S., Yin, F., Cadenas, E., Cuervo, A.M., and Davies, K.J.A. (2012) Chronic expression of RCAN1-1L induces mitochondrial Autophagy and a metabolic shift from oxidative phosphorylation to glycolysis in neuronal cells. *J. Biol. Chem.*, 287, 14088-14098.
- ²⁴⁷ Agarwal, A.R., Zhou, L., Sancheti, H., Sundar, I.K., Rahman, I., and Cadenas, E. (2012) Short-term cigarette smoke exposure induces reversible changes in energy metabolism and cellular redox status independent of inflammatory responses in the lungs. *Am. J. Physiol.*, 303, L889-L898.

- ²⁴⁸ Yin, F., Jiang, T., and Cadenas, E (2013) Metabolic triad in brain aging: mitochondria, insulin/IGF1 signaling, and JNK signaling. *Biochem. Soc. Trans.*, 41, 101-105.
- ²⁴⁹ Han, D., Ybanez, M.D., Johnson, H.S., McDonald, J.N., Mesropyan., Sancheti, H., Martin, G., Martin, A., Lim, A.M., Dara, L., Cadenas, E., Tsukamoto, H., and Kaplowitz, N. (2012) Dynamic adaptation of liver mitochondria to chronic alcohol feeding in mice: biogenesis, remodeling, and functional alterations. *J. Biol. Chem.*, 287, 42165-42179.
- ²⁵⁰ Marinho, H.S., Cyrne, L., Cadenas, E., and Antunes, F. (2013) H₂O₂ delivery to cells: steady-state versus bolus addition. *Methods Enzymol.*, 526, 159-173
- ²⁵¹ Marinho, H.S., Cyrne, L., Cadenas, E., and Antunes, F. (2013) H₂O₂ metabolism: Determination of a cellular steady-state. *Methods Enzymol.*, 527, 3-19.
- ²⁵² Li, C., Li, Y., He, L., Agarwal, A.R., Zeng, N., Cadenas, E., and Stiles, B.L. (2013) PI3K/AKT signaling regulates bioenergetics in immortalized hepatocytes. *Free Radic. Biol. Med.*, 60, 29-40.
- ²⁵³ Jiang, T., Yin, F., Yao, J., Brinton, R.D., and Cadenas, E. (2013) Lipoic acid restores age-associated impairment of brain energy metabolism through the modulation of Akt/JNK signaling and PGC1 α transcriptional pathway. *Aging Cell*, 12, 1021-1031.
- ²⁵⁴ Sancheti, H., Akopian, G., Yin, F., Brinton, R.D., Walsh, J.P., and Cadenas, E. (2013) Age-dependent modulation of synaptic plasticity and insulin mimetic effect of lipoic acid on a mouse model of Alzheimer's disease. *PLoS One*, 8 (7) e69830.
- ²⁵⁵ Li, Y., He, L., Zeng, N., Sahu, D., Cadenas, E., Shearn, C., Li, W., and Stiles, B.L. (2013) Phosphatase and tensin homolog deleted on chromosome 10 (PTEN) signaling regulates mitochondrial biogenesis and respiration via estrogen-related receptor α (ERR α). *J. Biol. Chem.*, 288, 25007-25024.
- ²⁵⁶ Agarwal, A.R., Yin, F., and Cadenas, E. (2013) Metabolic shift in lung alveolar cell mitochondria following acrolein exposure. *Am. J. Physiol.*, 305, L764-773.
- ²⁵⁷ Sancheti, H., Kanamori, K., Patil, I., Brinton, R.D., Ross, B., and Cadenas, E. (2014) Reversal of metabolic deficits by lipoic acid in a triple transgenic mouse model of Alzheimer's disease: a ¹³C-NMR study. *J. Cereb. Blood Flow Metab.*, 34, 288-296
- ²⁵⁸ Agarwal, A.R., Yin, F., and Cadenas, E. (2014) Short-term cigarette smoke exposure leads to metabolic alterations in lung alveolar cells. *Am. J. Respir. Cell Mol. Biol.*, 51, 284-293.
- ²⁵⁹ Gundimeda, U, McNeill, T.H., Fan, T.K., Deng, R., Rayudu, D., Chen, Z., Cadenas, E., and Gopalakrishna, R. (2014) *Biochem. Biophys. Res. Commun.* 445, 218-224
- ²⁶⁰ Chang, A., Sancheti, H., Garcia, J., Kaplowitz, N., Cadenas, E., and Han, D. (2014) Respiratory substrates regulate S-nitrosylation of mitochondrial proteins through a thiol-dependent pathway. *Chem. Res. Toxicol.*, 27, 794-804.

- ²⁶¹ Lourenço, C.F., Santos, R.M., Barbosa, R.M., Cadenas, E., Radi, R., and Laranjinha, J. (2014) Neurovascular coupling in hippocampus is mediated via diffusion by neuronal-derived nitric oxide. *Free Radic. Biol. Med.*, 73, 421-429.
- ²⁶² Li, B., Iglesias-Pedraz, J.M., chen, L.Y., Yin, F., Cadenas, E., Reddy, S., and Comai, L. (2014) *Aging Cell* 13, 367-378.
- ²⁶³ Jiang, T. and Cadenas, E. (2014) Astrocytic metabolic and inflammatory changes as a function of age. *Aging Cell* 13, 1059-1067.
- ²⁶⁴ Liu, Z., Patil, I.Y., Jiang, T., Sancheti, H., Walsh, J.P. Stiles, B.L., Yin, F., and Cadenas, E. (2015) High-fat diet induces hepatic insulin resistance and impairment of synaptic plasticity. *PLoS One* 10(5): e012874.
- ²⁶⁵ Brinton, R.D., Yao, J., Yin, F., Mack, W.J., and Cadenas, E. (2015) Perimenopause as a neurological transition state. *Nat. Rev. Endocrinol.*, 11, 393-405
- ²⁶⁶ Yin, F., Yao, J., Sancheti, H., Feng, T., Melcangi, R.C., Morgan, T.E., Finch, C.E., Pike, C.J., Mack, W.J., Cadenas, E., and Brinton, R.D. (2015) The perimenopausal aging transition in the female rat brain: decline in bioenergetic systems and synaptic plasticity. *Neurobiol. Aging* 36, 2282-2295.
- ²⁶⁷ Yin, F. and Cadenas, E. (2015) Mitochondria: the cellular hub of the dynamic coordinated network. *Antioxid. Redox Signal.* 22, 961-964.
- ²⁶⁸ Gundimeda, U., McNeill, T.H., Barseghian, B.A., Tzeng, W.S., rayudu, D.V., Cadenas, E., and Gopalakrishna, R. (2015) Polyphenols from green tea prevent antineurotogenic action of Nogo-A via 67-kDa liminin receptor and hydrogen peroxide. *J. Neurochem.* 132, 70-84.
- ²⁶⁹ Yin, F., Sancheti, H., Liu, Z., and Cadenas, E. (2016) Mitochondrial function in ageing: coordination with signaling and transcriptional pathways. *J. Physiol.*, 594, 2025-2042.
- ²⁷⁰ Deochand, C., Tong, M., Agarwal, A.R., Cadenas, E., and de la Monte, S.M. (2015) Tobacco smoke exposure impairs brain insulin/IGF signaling: potential co-factor role in neurodegeneration. *J. Alzheimers Dis.*, 50, 373-386.
- ²⁷¹ Yu, R., Deochand, C., Krotow, A., Leao, R., Tong, M., Agarwal, A.R., Cadenas, E., and de la Monte, S.M. (2015) Tobacco smoke-induced brain white matter myelin dysfunction: potential co-factor role of smoking in neurodegeneration. *J. Alzheimers Dis.*, 50, 133-148.
- ²⁷² Nunez, K., Kay, J., Krotow, A., Tong, M., Agarwal, A.R., Cadenas, E., and de la Monte, S.M. (2016) *J. Alzheimers Dis* 51, 151-163.
- ²⁷³ Murali, K., Kang, D., Nazari, H., Scianmarello, N., Cadenas, E., Tai, Y.C., Kashani, A., and Humayun, M. (2016) Spatial variations in vitreous oxygen consumption. *PLoS One* 11(3): e0149961.
- ²⁷⁴ Cadenas, E., Packer, L., and Traber, M.G. (2016) Antioxidants, oxidants, and redox impacts on cell function — A tribute to Helmut Sies. *Arch. Biochem. Biophys.* 595, 94-99.

- ²⁷⁵ Yin, F., Sancheti, H. Patil, I., and Cadenas, E. (2016) Energy metabolism and inflammation in brain aging and Alzheimer's disease. *Free Radic. Biol. Med.*, in press.
- ²⁷⁶ Liu, Z., Sancheti, H., Cadenas, E., and Yin, F. (2016) Energy-redox axis in mitochondria. Interconnection of energy-transducing capacity and redox status. In *Mitochondria in Liver Disease* (Han, D. and Kaplowitz, N., Eds.) pp.29-44, CRC Press, Taylor & Francis, Boca Raton.
- ²⁷⁷ de la Monte, S.M., Tong, M., Agarwal, A.R. and Cadenas, E. (2016) Tobacco smoke-induced hepatic injury with steatosis, inflammation, and impairments in insulin and insulin-like growth factor signaling. *J. Clin. Exp. Pathol.* 6 (2) pii.269
- ²⁷⁸ Bolaños, J.P., Cadenas, E., Duchon, M.R., Hampton, M.B., Mann, G.E., and Murphy, M.P. (2016) Editorial: Mitochondrial Redox Signaling in Health and Disease. *Free Radic Biol. Med.* 100, 1-4.
- ²⁷⁹ Han, D., Johnson, H.S., Rao, M.P., Martin, G., Sancheti, H., Silkwood, K.H., Decker, C.W., Nguyen, K.T., Casian, J.G., Cadenas, E., and Kaplowitz, N. (2016) *Free Radic. Biol. Med.*, 102, 100-110.
- ²⁸⁰ McDougall, M. Choi, J., Kim, H.-K., Bobe, G., Stevens, J.F., Cadenas, E., Tanguay, R., and Traber, M. (2017) Lethal dysregulation of energy metabolism during embryonic vitamin E deficiency. *Free Radic. Biol. Med.* 104, 324-332.

EDITORIAL WORK

Proceedings of the Vth International Symposium on Bioluminescence and Chemiluminescence, *Journal of Bioluminescence and Chemiluminescence*, Vol. 4, Editors: M. Pazzagli, E. Cadenas, L.J. Kricka, A. Roda and P.E. Stanley. John Wiley & Sons, 1989.

Member of the Editorial Advisory Board, *Membrane Lipid Oxidation*, Vol. I-III, C. Vigo-Pelfrey, Ed., CRC Press, Boca Raton, 1990-1991.

Bioreductive Activation of Quinonoid Compounds: Chemical, Biochemical, and Toxicological Aspects, *Free Radical Research Communications*, Vol. 8. Editor: Helmut Sies, Guest Editor: Enrique Cadenas. Harwood Academic Publishers, New York, 1990.

Biological Free Radical Oxidation and Antioxidants, Editors: F. Ursini and E. Cadenas, Cleup University Publisher, Padova, Italy, 1992.

Dietary Lipids, Antioxidants, and the Prevention of Atherosclerosis. Editors: F. Ursini and E. Cadenas, Cleup University Publisher, Asolo, Italy, 1993.

Biological Oxidants and Antioxidants (Packer, L. & Cadenas, E., Eds.), Hyppokrates Verlag, Stuttgart, 1994.

Handbook of Antioxidants. Editors E. Cadenas and L. Packer, Marcel Dekker, New York. 1996.

Biothiols in Health and Disease. Editors L. Packer and E. Cadenas, Marcel Dekker, New York. 1996.

Handbook of Synthetic Antioxidants. Editors: E. Cadenas and L. Packer, Marcel Dekker, New York. 1997.

Oxidative Stress and Signal Transduction. Editors: H.J. Forman and E. Cadenas, Chapman & Hall, New York. 1997.

Understanding the Molecular Basis of Aging. Editors: E. Cadenas and L. Packer, Marcel Dekker Inc., New York, 1999.

Member of the Editorial Advisory board of *Methods in Enzymology* **251** on Biothiols (Part A) (Editor Lester Packer)

Member of the Editorial Advisory Board of *Methods in Enzymology* **252** on Biothiols (Part B) (Editor Lester Packer).

Member of the Editorial Advisory Board of *Methods in Enzymology* **268** on Nitric Oxide (Part A) (Editor Lester Packer).

Member of the Editorial Advisory Board of *Methods in Enzymology* **269** on Nitric Oxide (Part B) (Editor Lester Packer).

Member of the Editorial Advisory Board of *Methods in Enzymology* **301** on Nitric Oxide (Part C) (Editor Lester Packer).

Member of the Editorial Advisory Board of *Methods in Enzymology* **299** on Oxidants and Antioxidants (Part A) (Editor Lester Packer).

Member of the Editorial Advisory Board of *Methods in Enzymology* **300** on Oxidants and Antioxidants (Part B) (Editor Lester Packer).

Free Radicals in Brain Pathophysiology. Editors: G. Poli, E. Cadenas, and L. Packer, Marcel Dekker, New York, 2000.

Handbook of Antioxidants. Second Edition. Editors: E. Cadenas and L. Packer, Marcel Dekker Inc., New York, 2001.

Member of the Editorial Advisory Board of *Methods in Enzymology* on Flavonoids and Other Polyphenols (Editor Lester Packer).

Member of the Editorial Advisory Board of *Methods in Enzymology* on Title (Editors Helmut Sies and Lester Packer).

Methods in Enzymology – Nitric Oxide – Part C. vol **359** (Editors: Enrique Cadenas and Lester Packer).

Methods in Enzymology - Nitric Oxide - Part D. vol. **386** (Editors: Enrique Cadenas and Lester Packer)

Member of the Editorial Advisory Board of *Methods in Enzymology Part A: Quinone Enzymes and Quinone Metabolites*

Lamas, S. and Cadenas, E., Eds. *Nitric Oxide, Cell Signaling, and Gene Expression*, 2005, CRC - Taylor & Francis, Boca Raton

Cadenas, E. and Packer, L., Eds. (2008) *Methods in Enzymology, Nitric Oxide, Part F*. Vol. 440, Academic Press.

Cadenas, E. and Packer, L., Eds. (2008) *Methods in Enzymology, Nitric Oxide, Part G*, Vol. 441, Academic Press.

Surh, Y.-J., Dong, Z., Cadenas, E., and Packer, L. (2008) *Dietary modulation of cell signaling pathways*, CRC Press, Taylor & Francis Group.

Zierhut, M., Cadenas, E., and Rao, N. (2008) *Free Radicals in Ophthalmic Disorders*, Informa Health Care, New York, London.

Hamm-Alvarez, S. and Cadenas, E. (2008) Theme editors: *Mitochondrial Medicine and Mitochondrion-Based Therapeutics*. *Advances in Drug Delivery Reviews* (vol. 60), Elsevier Inc.

Packer, L., Sies, H., Eggersdorfer, M., and Cadenas, E. (2009) Micronutrients and brain health. CRC Press, Taylor & Francis Group.

Hamm-Alvarez, S. and Cadenas, E. (2009) Theme editors: Mitochondrial Medicine and Therapeutics, Part II. *Advances in Drug Delivery Reviews* (vol. 61), Elsevier Inc.

Cadenas, E. and Packer, L. (2010) *Methods Enzymol.* Vol. 473, Thiol Disulfide Exchange in Signal Transduction.

Cadenas, E. and Packer, L. (2010) *Methods Enzymol.* Vol. 474, Thiol Disulfide Exchange in Signal Transduction.

Galli, F. and Cadenas, E. (2011) Guest Editors: Protein Post-Translational Modifications in Cell Signaling and Disease, *Free Radical Research* 45.

Orrenius, S., Packer, L., and Cadenas, E. (Eds) (2011) *Mitochondrial Signaling in Health and Disease*, Taylor & Francis, CRC Press.

Packer, L. and Cadenas, E. (Eds) (2013) *Methods in Enzymology: Hydrogen Peroxide and Cell Signaling*, volumes 526, 527, and 528. Academic Press – Elsevier, Amsterdam

Cadenas, E. and Packer, L. (Eds) (2015) *Methods in Enzymology: Hydrogen Sulfide in Redox Biology*, volumes 554 and 555, Academic Press – Elsevier, Amsterdam

PRESENTATIONS AT SCIENTIFIC CONFERENCES

IVth Annual Meeting of the Biophysical Society, Buenos Aires, Argentina. Production of hydrogen peroxide by complex I and III of the respiratory chain.

International Symposium on the Mechanism of Enzymatic Activity, Sao Paulo, Brazil. Ubiquinone and the mitochondrial generation of hydrogen peroxide.

XXIIIrd Annual Meeting of the Biophysical Society, Atlanta, USA. Low-level chemiluminescence in hydroperoxide-supplemented mitochondrial membranes. (*Biophysical J.* **24**, 48A, 1979).

LXIIIrd Annual Meeting of the Federation of American Societies for Experimental Biology, Dallas, USA. In vivo assay for oxidative stress by chemiluminescence. (*Fed. Proc.* **38**, 895, 1979).

XIth International Congress on Biochemistry, 9-12 July, 1979, Toronto, Canada. Chemiluminescence of hydroperoxide-supplemented systems. (*Abstract N°* 05/4/R61).

VIIIth Annual Meeting of the Argentinean Biophysical Society, 5-6 December, 1979, Buenos Aires. Chemiluminescence of hydroperoxide/hemoprotein systems.

VIIIth Annual Meeting of the American Society for Photobiology, 17-21 February, 1980, Colorado Springs, USA. Chemiluminescence of biological and model systems. (*Abstract N°* P-18, p. 55).

LXIVth Annual Meeting of the Federation of American Societies for Experimental Biology (FASEB). 14-18 April, 1980, Anaheim, California, USA. Hydroperoxide-induced chemiluminescence of the lung. (*Fed. Proc.* **39**, 1093, 1980).

XXIVth Annual Meeting for the Biophysical Society (ABC/BS), 1-5 June, 1980, New Orleans, Louisiana. Singlet oxygen contribution to chemiluminescence of hydroperoxide-supplemented cytochrome *c*. (*Fed. Proc.* **39**, 2148, 1980).

Mixed Function Oxidase Meeting 12 March, 1982, Leiden, The Netherlands. Homolytic scission of hydroperoxide catalyzed by cytochrome P₄₅₀ in microsomal fractions.

Cologne Atherosclerosis Conference, N° 1: Inflammatory Aspects, 5-7 May, 1982, Cologne, West Germany. Active Oxygen metabolites and their action in the hepatocyte. Studies on chemiluminescence response and alkane production.

Joint Meeting of the Nordic Biochemical Society and Gesellschaft für Biologische Chemie, 27-29 September 1982, Kiel-Damp, West Germany. Oxene donors yield low-level chemiluminescence with liver microsomes and isolated cytochrome P₄₅₀.

Gordon Research Conference on *Oxygen Radicals in Biology and Medicine*, 12-16 January, 1983, Ventura, CA, USA.

XXXIVth Mosbacher Kolloquium der Gesellschaft für Biologische Chemie, 14-16 April 1983, Mosbach, West Germany.

Symposium of the European Group of the National Foundation for Cancer Research, 18-20 May 1983, Graz, Austria. Arachidonate metabolism and singlet oxygen.

Seminare über *Ergebnisse über Probleme der Biochemische Pharmakologie*. 6 July 1983, Tübingen, West Germany. Singlet oxygen in biological systems. Lipid peroxidation and electron-transfer reactions.

IIIrd International Conference on *Oxygen Radicals in Chemistry and Biology*, 10-15 July 1983, München, West Germany. Low-level chemiluminescence, ethane production, and glutathione depletion in isolated hepatocytes caused by a diffusible product of lipid peroxidation, 4-hydroxynonenal.

Falk Symposium N° 38: *Mechanisms of Hepatocyte Injury and Death*, 3-5 October 1983, Basel, Switzerland. Free radicals in lipid peroxidation and prostaglandin formation: role of glutathione.

EMBO Workshop on *Oxidative Damage and Related Enzymes*, 2-7 October 1983, Rome, Italy. Oxidative stress in hepatocytes induced by biologically-occurring 4-hydroxynonenal.

Ist International Workshop on *Icosanoids and Ion Transport*, 17-18 November 1983, Paris, France. Excited oxygen species, pyridine nucleotides, and calcium transport.

Conference on *Singlet Molecular Oxygen*, 3-7 January 1984, Clearwater Beach, Florida, USA.

IXth European Workshop on *Drug Metabolism*, 11-15 June 1984, Pont-à-Mousson, France. Detection and importance of excited species in biological systems.

IXth International Congress on Photobiology, 1-6 July 1984, Philadelphia, USA. Workshop Organizer: *Ultraweak level light emission from living systems: a tool for diagnosis and research*.

ICRO Course on *Biochemistry of Oxygen Toxicity*, Universidade do Porto, Portugal, 5-19 August, 1984. Excited states in oxidative biological reactions.

IVth International PAABS Congress, Buenos Aires, Argentina. 4-8 November 1984. Generation of excited states during free radical interactions and enzymatic reactions (*Abstract N° 132*).

Freie Universität Berlin, Fachbereich Pharmazie, Berlin, West Germany, 30 November 1984. Production of excited states in biological reactions.

Homburg-Saar Universität, Fachbereich Physiologische Chemie, Homburg-Saar, West Germany, 7 December 1984. Formation of triplet carbonyls during hydroperoxide-initiated microsomal lipid peroxidation.

Winter Meeting of the Society for Free Radical Research, London, 16-17 December 1984. Evaluation of α -tocopherol antioxidant activity during microsomal lipid peroxidation by the low-level chemiluminescence technique.

Universität Konstanz, Fakultät für Biologie, Konstanz, 21 January 1985. Formation of excited carbonyl compounds during microsomal lipid peroxidation.

Graduate Course on *Free Radicals and Oxygen Toxicity in Biology*. University of California, Berkeley, 6 February 1985. Detection methods: low-level chemiluminescence.

Gordon Research Conference on *Oxygen Radicals in Biology and Medicine*, Santa Barbara, California, 11-15 February 1985.

Workshop on *Oxygen Radicals, Pathology, and Ageing*. University of California, San Diego, School of Medicine, Office of Continuing Medical Education. San Diego, 16 February 1985.

Southern Methodist University, Department of Biology, Dallas, 19 February 1985. Free radicals and excited states in biological systems.

Linköping University, Department of Pathology, Linköping, Sweden. 19 April 1985. Evaluation of free radical-promoted cellular oxidative stress by low-level chemiluminescence.

Nestec Ltd., Research Department, Vevey, Switzerland, 24 May 1985. Free radicals and electronically-excited states during oxidative cellular conditions assessed by low-level chemiluminescence.

NATO International Summer School on *Oxygen Radicals in Biological Systems*, Braga, Portugal, 1-14 September 1985. I. Introduction to the low-level chemiluminescence technique as reflecting free radical damage. II. Excited states during cellular oxidative stress. Role of antioxidant defenses. III. Enzymatic generation of excited states.

Department of Chemistry, University of Sao Paulo, Sao Paulo, Brazil. 3 October 1985. Lipid peroxidation and the formation of singlet molecular oxygen and excited carbonyl compounds.

Universität Konstanz, Fakultät für Biologie, Konstanz, West Germany, 21 November 1985. Electronically excited states during the lipoxygenase-catalyzed aerobic oxidation of arachidonate. The effect of glutathione.

Center for Nuclear Research Julich, Julich, West Germany, 2 December 1985. Cellular oxidative conditions and the formation of electronically excited species.

ICRO International Course on *Oxygen Radicals and Excited States*, 23 February-5 March 1986, Buenos Aires, Argentina. Molecular mechanisms of generation of excited states during peroxidative reactions.

International Symposium *Free Radicals and Excited States in Biological Systems* (IUB Symposium 146; PAABS Symposium 7), 6-7 March 1986, Buenos Aires, Argentina. Electronically excited states during the lipoxygenase reaction.

International Conference on *DT-Diaphorase: A Quinone Reductase with Special Functions in Cell Metabolism and Detoxication*, 1-4 June 1986, Stockholm, Sweden. Electronically-excited states during electron transfer by quinones.

IVth International Symposium on *Bioluminescence and Chemiluminescence*, 8-10 September 1986, Freiburg, West Germany. Low-level chemiluminescence from biological systems: its relationship to free radical interactions and antioxidant defenses.

Ist European Congress on Photobiology, 7-12 September 1986, Grenoble, France. Photosensitization of microsomal membranes by acridine orange.

Discussion Meeting on the *Role of Oxygen Radicals in Cardiovascular Diseases*, 2-5 December 1986, Asolo, Italy. The reaction between oxymyoglobin and organic hydroperoxides. Formation of electronically excited states detected by low-level chemiluminescence.

Karolinska Institute, Department of Toxicology, Stockholm, Sweden, 11 February 1987. The reaction of quinones with hydrogen peroxide: formation of free radical intermediates, excited states, and quinone epoxides.

University of Southern California, Institute of Toxicology, School of Pharmacy, Los Angeles, USA, 11 March 1987. Generation of electronically excited states during oxidative stress: relation to free radical formation and antioxidant defenses.

Pharmacia Research Division, La Jolla, California, USA, 19 March 1987. Low-level chemiluminescence: a non-invasive assay for cellular oxidative stress.

Southern Methodist University, Department of Biology, Dallas, USA, 23 March 1987. One-electron transfer reactions to quinones: importance in biological systems.

University of Buenos Aires, School of Biochemistry & Pharmacy, Department of Physical Chemistry, Buenos Aires, Argentina, 8 April 1987. Biochemistry of oxygen toxicity and cellular activation of quinonoid compounds.

University of Buenos Aires, School of Biochemistry & Pharmacy, Department of Chemistry, Buenos Aires, Argentina, 14 April 1987. Two-electron reduction of epoxides by DT-diaphorase.

Pharmacia, AB, Uppsala, Sweden, 12 May 1987. Effect of superoxide dismutase on the autoxidation of several hydroquinonoid compounds. A possible role as $O_2^{\cdot-}$ -semiquinone oxidoreductase.

Institute for Toxicology, University of Mainz, Mainz, West Germany, 19 June 1987. One- and two-electron transfer reactions to quinones: formation of reactive oxygen species.

IVth International Congress on Oxygen Radicals, University of California at San Diego, La Jolla, California, USA, 27 June-3 July 1987. Oxidation of quinones by hydrogen peroxide: formation of epoxy- and hydroxy quinones and electronically-excited states.

Institute for Pathology, Università Cattolica di Roma, Rome, Italy, 18 November 1987. Electron transfer, nucleophilic- and electrophilic addition reactions to quinones.

International Meeting on *Diet, Free Radicals, and Tissue Damage*, Rome, Italy, 19-20 November 1987. Formation of electronically-excited states in biological systems. Relation to free radical interactions.

Department of Physiology and Biochemistry, University of Pisa, Pisa, 23 November 1987. Formation of excited states during lipid peroxidation and the reduction of PGG₂ to PGH₂.

Department of Clinical Physiopathology, University of Florence, Florence, Italy, 24 November 1987. Low-level chemiluminescence: Basic principles and applications to biological systems.

Dipartimento di Biochimica, Biofisica, e Chimica delle Macromolecole, Università degli Studi di Trieste, Trieste, Italy, 26 November 1987. Cellular activation of quinonoid compounds: One- and two-electron transfer reactions and reductive addition with glutathione.

Winter Meeting of the Society for Free Radical Research, London, UK, 14 December 1987. The generation of electronically-excited states during electron transfer to quinones as detected by the low-level chemiluminescence technique.

Biophoton 1987 Symposium, Research Development Corporation of Japan, Tohoku University, Sendai, Japan, 21-22 December 1987. Generation of electronically-excited states during the reaction of quinones with H₂O₂. Relation to product formation: 2-OH- and 2,3-epoxy-quinone adducts.

Resuscitation Research Center, University of Pittsburgh, Pittsburgh, 29 January 1988. General concepts on single-photon counting. Application of low-level chemiluminescence as a non-invasive method to monitor oxidative free radical reactions.

ICRO-UNESCO International Training School on *Oxygen Free Radicals: Biochemical, Physiological, and Pathological Aspects*. 7-16 March 1988, University of Buenos Aires, Argentina. (I) Redox- and addi-

tion reactions to quinonoid compounds. (II) Formation of electronically-excited states during lipid peroxidation.

International Symposium on *Oxygen Free Radicals: Biochemical, Physiological, and Pathological Aspects*. 17-18 March 1988, Buenos Aires, Argentina. 1,4-Reductive addition of glutathione to quinone epoxides: mechanistic studies with h.p.l.c. with electrochemical detection under anaerobic and aerobic conditions.

Vth International Symposium on *Bioluminescence and Chemiluminescence*. 25-29 September 1988, Florence, Italy. Generation of electronically-excited states during the interaction of hydroperoxides with hemoproteins.

Department of Biochemistry, University of Stockholm, 28 November 1988. Redox activation of quinoid compounds. Relationship to pro- and anti-oxidant cellular pathways.

International Symposium on *Free Radicals in Medicine*. 8-12 November 1988, Vienna, Austria.

Biochemical Society Meeting, The Royal Free Hospital, School of Medicine, University of London. 19-21 December 1988, London.

Joint Meeting of the American Society for Cell Biology and the American Society for Biochemistry and Molecular Biology, January 29-February 2, 1989, San Francisco, CA. Superoxide- semiquinone oxidoreductase: Evidence for a novel function of superoxide dismutase.

Liposome Technology Inc., Menlo Park, California, 2 February 1989. Prooxidant and anti-oxidant activities of superoxide dismutase during bioreductive activation of quinonoid compounds.

Gordon Research Conference on *Free Radicals in Biology*. 6-10 February 1989, Ventura, California.

Department of Toxicology, Karolinska Institute, 13 April 1989. Redox transitions of substituted hydro- and semi-naphthoquinones following their enzymic reduction and nucleophilic addition.

Institute for Toxicology, University of Southern California, 18 May 1989. Redox transitions of quinones during DT-diaphorase catalysis: pro- and antioxidant properties of superoxide dismutase.

Summer Meeting of the Society for Free Radical Research: *Bioreductive Activation of Quinoid Compounds: Chemical, Biochemical, and Toxicological Aspects*, 18-21 June 1989 Stockholm, Sweden. Pro- and antioxidant properties of superoxide dismutase during one- and two-electron reactions of quinone compounds.

Meeting on *Antioxidants and Degenerative Diseases*, 26-27 January 1990, Berkeley, California.

Gordon Research Conference on *Oxygen Radicals in Biology*, January 29-February 2, 1990, Ventura, California.

ICRO-UNESCO International Training School on *Oxygen Toxicity: Biochemistry, Physiology, and Pathology*. February 26-March 9, 1990, University of Buenos Aires, Argentina. Redox- and addition chemistry of quinonoid compounds and its biological implications.

Oklahoma Medical Research Foundation, Oklahoma City. 8 May 1990. Cytotoxic aspects of the redox- and addition chemistry of quinonoid compounds.

Children's Hospital, Los Angeles. 14 May 1990. Pro- and antioxidant aspects of two-electron transfers to quinones: effects of glutathione and superoxide dismutase.

Department of Medical Oncology and Therapeutics Research, City of Hope, Duarte, California. 25 June 1990. Free radical formation coupled to the redox transitions of 1,4-naphthoquinones during two-electron transfers: DT-diaphorase catalysis and glutathione nucleophilic addition.

Vth Biennial Meeting of the International Society for Free Radical Research: *Oxidative Damage & Repair*, Pasadena, California, 14-20 November 1990. Effect of superoxide dismutase on hydroquinone autoxidation during DT-diaphorase catalysis and glutathione reductive addition.

Institute of Clinical Physiology, University of Pisa, Pisa - Italy. 8 April 1991. One- and two- electron transfers involving quinonoid compounds.

Institute of Clinical Physiology, University of Pisa, Pisa - Italy. 9 April 1991. A concerted prooxidant or antioxidant activity involving DT-diaphorase and superoxide dismutase.

Sigma-Tau Research Division, Rome - Italy. 19 April 1991. Quinone and quinone reductases: redox chemistry and biological implications.

Meeting on *Biological Free Radical Oxidations and Antioxidants*, Udine, Italy, July 1-5, 1991. One- and two-electron reactions involving quinones, glutathione, and superoxide dismutase. Prooxidant and antioxidant aspects.

Vth International Congress on *Oxygen Radicals – Active Oxygen, Lipid Peroxides, and Antioxidants*, Kyoto, Japan, November 17-21, 1991. DT-Diaphorase and superoxide dismutase: a concerted activity in quinone redox metabolism.

Department of Biochemistry and Biophysics, School of Pharmacy, University of Buenos Aires, Buenos Aires, December 27, 1991. Redox- and addition chemistry of the antitumor quinone, diaziquinone: oxidative and reductive pathways of the semiquinone species.

Department of Pharmacology, University of California, Los Angeles, 29 January 1992. The concerted activity of DT-diaphorase and superoxide dismutase on quinone redox metabolism: prooxidant and antioxidant aspects.

Department of Chemistry, California State University, Northridge, 18 March 1992. Redox and addition biochemistry of diaziridinylbenzoquinone: reductive and oxidative decay pathways of the semiquinone intermediate.

Bay Area Oxygen Club / University of Southern California Joint Meeting, Berkeley, 3-4 April 1992. Reactivity of thiols and disulfides towards different redox states of myoglobin.

Institute for General Pathology, University of Modena, Modena, Italy - 12 June 1992. Chemical reactivity of the high oxidation state of myoglobin, ferrylmyoglobin, towards the water-soluble analog of vitamin E, Trolox C.

VIth Biennial Meeting of the International Society for Free Radical Research, *Free Radicals: from Basic Science to Medicine*, Torino, Italy, 16-20 June 1992. Reaction of thiols with the high oxidation state of myoglobin, ferrylmyoglobin. Importance of electron transfer and alkylation reactions.

Symposium on *Dietary Lipids, Antioxidants, and the Prevention of Atherosclerosis*, 7-9 December 1992, Asolo, Italy. Session on Lipid peroxidation and Antioxidants

Department of Biochemistry and Biophysics, School of Pharmacy, University of Buenos Aires, 22 December 1992. The peroxidatic activity of ferrylmyoglobin: thiol and phenol antioxidant oxidation.

International Conference on *Critical Aspects of Free Radicals in Chemistry, Biochemistry, and Medicine*, 14-17 February 1993, Vienna, Austria. A critical overview of one- and two-electron transfer reactions involving quinones: prooxidant and antioxidant aspects.

Joint Spring Meeting of University of Southern California and University of California, Berkeley: *Biological Oxidants and Antioxidants: New Developments in Research and Health Effects*. 12-13 March 1993, Pasadena, California. Session on Oxidants and Antioxidants: New Chemical Aspects.

International Symposium on *Frontiers in Cardiovascular Science. Bioenergetics in Cardiovascular Physiology and Pathophysiology*, 1-2 June 1993, Gothenburg, Sweden. The high oxidation state of myoglobin, ferrylmyoglobin: its chemical reactivity and biological significance.

International Symposium on *Antioxidants and Disease Prevention. Biochemical, Nutritional, and Pharmacological Aspects*, 30 June-3 July 1993, Stockholm, Sweden. Antioxidant and prooxidant functions of quinones and quinone reductases in bioreductive activation processes.

Symposium on *Antioxidants, Inflammation, Cardiovascular and Ophthalmic Disease. Biochemical and Clinical Studies on the Effects of Antioxidants on Lipoprotein and Hemoprotein Oxidation*. September 30-October 2, 1993, Valencia, Spain. Reactivity of phenolic antioxidants and thiol compounds towards the high oxidation state of myoglobin, ferrylmyoglobin.

VIth International Conference on *Superoxide and Superoxide Dismutase*, 11-15 October 1993, Kyoto, Japan. Dual effect of superoxide dismutase on the autoxidation of semi- and hydroquinones.

1st Annual Meeting of the Oxygen Society, 12-17 November 1993, Charleston, South Carolina. DT-Diaphorase activity and quinone toxicity: pro- and antioxidant aspects and the effect of super-oxide dismutase.

International Cell Research Organization course on *Biochemical, Biophysical, and Clinical Aspects of Oxygen Radicals and Antioxidants*, 7-15 March 1994, Buenos Aires, Argentina. Electron transfer reactions and antioxidant activity.

FEBS Advanced Course on *Peroxidation and Molecular Dynamics of Biomembranes*, 6-15 April 1994, Coimbra, Portugal. Redox transitions of hemoproteins. Chemical reactivity of the high oxidation state of myoglobin and biological significance.

FEBS Advanced Course on *Peroxidation and Molecular Dynamics of Biomembranes*, 6-15 April 1994, Coimbra, Portugal. Two-electron activation of quinonoid compounds by DT-diaphorase. Oxidant and antioxidant aspects.

International Conference on *Clinical Chemiluminescence*, 25-28 April 1994, Berlin, Germany. Chairman of the session on Chemiluminescence Methods in the Study of Drugs and Noxious Substances. (Member of the International Organizing Committee).

Oklahoma Medical Research Foundation, Oklahoma, 26 September 1994. Redox reactivity of ferryl-myoglobin: a high oxidation state hemoprotein with implications for muscle oxidative stress.

Conference on *Therapeutic Potential of Biological Antioxidants*, 29 September - 1 October 1994, Tiburon, California. Reactivity of antioxidants toward oxoferryl complexes in hemoproteins and the fate of antioxidant-derived radicals.

ILSI Meeting on *Antioxidant Vitamins and Health*, 25 October 1994, México DF, México. Pro- and antioxidant functions of quinones and quinone reductases.

Oxygen Club of California Annual Meeting, 22-24 March 1995, San Francisco, California. Organizer and Session Chairman.

Experimental Biology'95, American Physiological Society Symposium on *Oxygen Metabolism, Gene Expression, and Cellular Function*, Atlanta, Georgia, 9-13 April 1995. Metabolites of oxygen: cellular sources and rates of production.

International Workshop: *DT-Diaphorase and related enzymes – Their role in antioxidant defense and chemotherapy*, Stockholm, Sweden 9-12 June 1995. Antioxidant and prooxidant functions of DT-diaphorase in quinone metabolism.

International Symposium on *Free Radicals in Health and Disease*, Istanbul, Turkey, September 6-10, 1995. Mitochondrial formation of hydroxyl radical and its involvement in mitochondrial DNA oxidative damage.

Workshop on Wine and Human Health, Udine, Italy, October 9-12, 1996. Physicochemical requirements for antioxidant activity.

IIIrd Panamerican Conference on Pharmaceutical Education, Buenos Aires, Argentina, October 21-23, 1996. Chemical structure / pharmacological activity relationship.

The Gerontological Society of America, Washington DC, November 17, 1996. Mitochondrial oxidative damage: role of inner- and outer-mitochondrial generators of oxyradicals.

VIII PABMB Congress, Pucón, Chile, November 16-21, 1996. Mitochondrial DNA oxidative damage. Role of outer and inner membrane electron transfer activities.

Annual Meeting of the Oxygen Club of California, Santa Barbara, California, 7-9 February 1996. Oxidants and Antioxidants in Biology. Co-Organizer and Chairperson.

Graduate Course on Free Radicals and Antioxidants, Buenos Aires, Argentina, March 20-27, 1997. Mechanisms of action of antioxidants. Drug design targeted to cell cycle disruption.

USC Liver Disease Research Center. USC, Los Angeles, May 1, 1997. Metabolism of quinones by cancer cells: oxidative stress-mediated p21 induction and inhibition of cell proliferation.

NATO Advanced Study Institute Co-sponsored by FEBS, Free radicals, Oxidative Stress, and Antioxidants. Pathological and Physiological Significance, May 24-June 4, 1997, Antalya, Turkey. Free radical-mediated damage of mitochondrial DNA and the role of antioxidant defenses.

NATO Advanced Study Institute Co-sponsored by FEBS, Free radicals, Oxidative Stress, and Antioxidants. Pathological and Physiological Significance, May 24-June 4, 1997, Antalya, Turkey. Free radical-mediated damage of mitochondrial DNA and the role of antioxidant defenses. Mechanisms of antioxidant action.

Oxidative Stress: Biochemistry and Pathophysiology, Barcelona, Spain, June 4-6, 1997. Free radical production during quinone metabolism in cancer cells and inhibition of cell proliferation.

Ist International Workshop on Free Radicals in Liver Metabolism and Disease, Dinard, France, June 13-15, 1997. Induction of the p21 gene in cancer cells mediated by reactive oxygen species formed during the metabolism of quinones.

IIIrd National Congress on Free radicals in Chemistry, Biology, and Medicine, Coimbra, Portugal, June 19-21, 1997. A controlled oxidative stress model leading to inhibition of cell proliferation: the role of the cell cycle inhibitor p21.

SFRR Europe Summer Meeting, Abano Terme, Italy, June 26-28, 1997. Oxidative stress induces p21 and pRb-preventable cell arrest and apoptosis.

IInd International Conference on Bioradicals and 5th International Workshop on ESR (EPR) Imaging and *in vivo* ESR Spectroscopy, Yamagata, Japan, October 12-16, 1997. Effects of oxygen radicals on cell cycle progression.

International Symposium on Antioxidant Food Supplements in Human Health, Kaminoyama, Japan, October 16-18, 1997. The reaction of ubiquinol with nitric oxide.

Oxygen Club of California, World Congress, Santa Barbara, California, February 5-8, 1998. Organizer.

Ist Regional Meeting on Medical Sciences: The role of Free Radicals in health and Disease, Jerusalem, Israel, March 22-27, 1998. Induction of p21 and cell cycle arrest mediated by oxidative stress.

XXXIIIrd Annual Meeting of the European Association for the Study of the Liver, Lisbon, Portugal, April 15-18, 1998. Fundamentals of antioxidant action.

Meeting of the American Society for Pharmacology and Experimental Therapeutics, San Francisco, California, April 18-22, 1998. Targeting p21 induction by drugs, which elicit cellular oxidative stress.

Department of Biology, Southern Methodist University, Dallas, Texas. May 1, 1998. Mitochondria: Oxidants, antioxidants, and mtDNA.

IIIrd International Congress on Pathophysiology, Lahti, Finland, June 28-July 3, 1998. The role of glutathione and ubiquinol in mitochondrial oxidative damage.

IIIrd International Congress on Vitamins and Related Biofactors, Goslar, Germany, June 30-July 3, 1998. Mitochondrial oxidative stress: A self-propagating process with implications for signaling cascades.

IX Biennial Meeting of the International Society for Free Radical Research, Sao Paulo, Brazil, September 6-11, 1998. Role of mitochondria in cell signaling.

Satellite Meeting on Oxidants and Antioxidant in Cell Signaling, September 12-14, 1998. Iguazu Falls, Argentina. Chairman.

Annual Meeting of the Oxygen Club of California. Oxidants and Antioxidants in Biology. March 3-6, 1999, Santa Barbara, California. Co-Organizer, Session Co-Chair.

Graduate Course on Free Radicals in Biology & Medicine (PGG 298), University of California, Davis, April 8, 1999. Molecular mechanisms of oxidant and antioxidant action.

Graduate Course on Gerontology, University of Southern California, School of Gerontology, Los Angeles, April 27, 1999. Oxidants and antioxidants in biology.

Department of Pathology, University of Linköping, Linköping, Sweden, 4 June 1999. Role of mitochondria in cell signaling.

Summer Meeting of the Society for Free Radical Research Europe on Antioxidants, Adaptation, and Aging, 2-6 July 1999, Dresden, Germany. Mitochondrial oxidative stress amplified into cellular lethal events.

National Institute on Aging, The Biology of Aging Program: Antioxidants: Strategies for Interventions in Aging and Age-related Diseases Workshop, 14-16 July 1999, Chevy Chase, Maryland. The regulation of mitochondrial oxygen uptake by redox reactions involving nitric oxide and ubiquinol.

ICRO-UNESCO International Training Course on Plant Polyphenol Antioxidants in the Biology and Pathology of Free Radicals, 19-28 July 1999, Santiago, Chile. Flavonoids: antioxidant properties.

International Symposium on Plant Polyphenol Antioxidants in the Biology of and Pathology of Free Radicals, 29-30 July 1999, Santiago, Chile. Redox cycles of caffeic acid, vitamin E, and ascorbic acid. Implications for LDL protection against oxidation.

Redox' 99 Kyoto Symposium, International Symposium on Oxidative Stress, Redox Regulation, and Signal Transduction: Clinical Implications, 4-6 November 1999, Kyoto, Japan. Oxidant generation by mitochondria: its regulation by nitric oxide and implications for programmed cell death.

Society for Free Radical Research Europe, Winter Meeting: Bioflavonoids and polyphenols in health and disease, Grand Hotel, Dinard, France, 2-5 December 1999. Chairperson session on Chemical and Biochemical Reactions of Flavonoids and Polyphenols.

Department of Anesthesiology, School of Medicine, University of Alabama at Birmingham, January 26, 2000. Regulation of mitochondrial functions by nitric oxide and oxygen.

Gordon Research Conference on Oxygen Radicals, Ventura, California, February 6-10, 2000. Section Chairperson.

Annual Meeting of the Oxygen Club of California, Oxidants and Antioxidants in Biology. Santa Barbara, California, March 1-4, 2000.

International Conference on Free Radicals in Biosystems, Tokyo, Japan, March 8-10, 2000. Mitochondrial formation of peroxynitrite and complex I damage.

EPR course, 16-19 April 2000, Coimbra, Portugal. Spin trapping electron paramagnetic resonance: principles and biological examples.

Stress in Aging: Models, Mechanisms, and Interventions. Boston, Massachusetts, 2-5 June 2000. Mitochondrial pathways for free radical production and modulation.

Sixth Iberoamerican Meeting on Free Radicals, Cadiz, Spain, 25-29 June 2000. Plenary Lecture: The effects of mitochondria on cell death pathways.

Antioxidant Research Group, Guy's Hospital, London, United Kingdom, 17-18 July 2000. Modulation of free radical production by mitochondria: the effects of nitric oxide.

SFRR Europe Summer Meeting, Liverpool, United Kingdom, 19-22 July 2000. Chairperson.

Third International Symposium on Antioxidants and Free Radicals in Health and Disease. Vancouver, Canada, July 22-25, 2000. Mitochondrial oxidative and nitrosative stress.

10th Biennial Meeting of the International Society for Free Radical Research. Kyoto, Japan, 16-20 October 2000. Chairperson of session on Protein Oxidative Modifications.

Seventh Annual Meeting of the Oxygen Society, San Diego, California, 16-20 November 2000. Hydrogen peroxide and apoptosis: role of mitochondria.

2nd International Meeting on Oxidative Stress: Biochemistry and Pathophysiology, November 30-December 2, 2000, Valencia, Spain. Pathways of nitric oxide and superoxide anion metabolism in mitochondria.

Annual Meeting of the Oxygen Club of California, 7-10 March 2001, Santa Barbara, California, USA. Co-Organizer.

Diet and Optimum Health Conference, Linus Pauling Institute, 16-19 May 2001, Portland, Oregon, USA. Chairperson of the session on CVD Prevention by Antioxidants and Diet Supplements.

Advanced Course in Free Radical Biology: From Basic Science to Medicine, Center for Neurosciences of Coimbra, 16-21 June 2001, Coimbra, Portugal. The basis of free radical biochemistry. Mechanisms of antioxidant activity. Production of oxidants by mitochondria.

Annual Meeting of the Society for Free Radical Research Europe, Rome, Italy, 22-24 June 2001.

US-Japan Conference on Drug Development and Rational Drug Therapy, 6-8 August 2001, Tokyo, Japan. Mitochondrial oxidative stress.

II Congress of the South American Group for Free Radical Research, 9-11 September 2001, Mar del Plata, Argentina. Caffeic acid: bioavailability and mechanisms of action.

Department of Chemistry and Biochemistry, California State University, 13 February 2002, Long Beach, California. Regulation of mitochondrial functions by nitric oxide

Annual Meeting of the Oxygen Club of California, 6-9 March 2002, Santa Barbara, California, USA. Co-Organizer

UCLA-Harbor, 26 March 2002. Nitric oxide-mediated modulation of mitochondrial functions.

Symposium on Oxidative Stress: In honor of Professor Helmut Sies' 60th Birthday. Düsseldorf, Germany, 4 May 2002. Mitochondrial redox status and nitric oxide metabolic pathways.

Keystone Symposium on Mitochondria and Pathogenesis. Copper Mountain, Colorado, 6-11 April 2002. Oxyradical production by mitochondria: Regulation by nitric oxide.

University of Cádiz / Oxygen Club of California Joint Annual Meeting. Cádiz, Spain. February 6-9, 2003. Session Chair: Mitochondria. Conference Co-Organizer.

Linus Pauling Institute, Conference on Diet and Optimum Health, Portland, Oregon, 21-24 May 2003. Session chair: Brain function and neurodegenerative diseases.

European Society for Free Radical Research, Annual Meeting, Ioannina, Greece, 26-29 June 2003. Mitochondrial oxidative metabolism and cell death pathways.

XIIth Biennial Meeting of the International Society for Free Radical Research, Buenos Aires, Argentina, 5-9 May 2004. JNK and mitochondrion-dependent signaling pathways.

Nobel Conference N° 46 Redox Signaling and Cellular Function, Stockholm, Sweden, 6-9 June 2004. Mitochondria and cell death pathways: JNK-mediated modulation of brain mitochondrial function.

IVth International Conference on Peroxynitrite and Reactive Nitrogen Species in Biology and Medicine, Konstanz, Germany, 27-31 July 2004. Nitric oxide, peroxynitrite, and mitochondrial function.

3rd Annual Oxidative Stress and Aging Workshop, Bandera, Texas, 14-17 October 2004. Nitric oxide: a physiological regulator of mitochondrial function.

2nd Spanish and Portuguese Congress on Free Radicals, 25-27 November 2004, Bilbao, Spain. Mitochondrial function and redox regulation of cell signaling.

Free Radicals and Antioxidants in Ocular diseases, Ettal, Germany, 31 March - 1 April, 2005. Introduction on oxidative and nitrosative stress in disease.

4th World Conference of the International Coenzyme Q Association, 14-17 April 2005, Beverly Hills, CA, USA. Session chair: Coenzyme Q in Bioenergetics and Biosynthesis.

Symposium on the Role of Mitochondria in the Life and Death of Cells, 26-29 April 2005, Coimbra, Portugal. Lectures: Mitochondria: Between Life and Death. Mitochondrial protein post-translational modifications and cell function.

3rd International Symposium on Natural Antioxidants: Molecular Mechanisms and Health Effects (A meeting of the Society for Free Radical Research Asia), 24-29 June 2005, Shanghai, China. Protein post-translational modifications in mitochondrial nitrosative / nitrative stress.

European Meeting of the Society for Free Radical Research Europa, 8-11 July 2005, West Midland, UK. Mitochondrial oxidative / nitrosative stress and cell function.

US-Japan Conference on Drug Development & Rational Drug Design, Los Angeles, California, July 31- August 3, 2005. Session chair: Pathways of cell signaling and disease progression.

Oxidants and Antioxidants in Biology, Joint Meeting of the Oxygen Club of California and the University of Turin, (Italy), 7-10 September 2005, Alba, Italy. Meeting Co-Organizer.

XIth Congress of the Spanish Society of Cellular Biology, 3-6 November 2005, Cadiz, Spain. Opening Lecture: Mitochondria bioenergetics and protein post-translational modifications during aging.

Barshop Aging Seminar Series, University of Texas, San Antonio, 11-13 April 2006, San Antonio, Texas. Energy metabolism and mitochondrial function in aging: Role of protein post-translational modifications.

2006 Molecular and Cellular Bioenergetics Gordon Research Conference, Proctor Academy, Andover, new Hampshire, 11-16 June 2006. Mitochondrial oxidative/nitrosative stress in cell signaling and bioenergetics.

6th Costam / SFRR (Asean Malaysia) International Workshop, 29 June- 2 July 2006, Kuching, Sarawak, Malaysia. Translocation of JNK to mitochondria and consequent protein post-translational modifications.

Biennial Meeting of the Society for Free Radical Research International, 15-19 August 2006, Davos, Switzerland. Protein post-translational modifications upon cytosolic signaling and mitochondrial nitric oxide.

5th World Assembly on Tobacco Counters Health, 2-5 December 2007, New Delhi, India. Redox regulation of mitochondrion-cytosol crosstalk in pathology

4th Meeting of the International Redox Network, October 30-November 2, 2007, Jeju Island, Korea. Cytosolic redox signaling and mitochondrial function through protein post-translational modifications

International Conference on Food Factors and Health Promotion, November 27-December 1, 2007, Kyoto, Japan. Mitochondrial protein post-translational modifications as biomarkers of oxidative stress.

5th Meetins of the Society for Free Radical Biology and Medicine, South American Group, and 4th International Conference on Peroxynitrite and Reactive Nitrogen Species, 2-6 September 2007, Montevideo, Uruguay. Mitochondrial energy metabolism and redox regulation.

Nutrition, Oxygen Biology, and Medicine, Société Française de Recherche sur les Radicaux Libres, 11-13 April 2007, Paris, France. Cytosolic redox signaling through mitochondrial protein modifications in nitrosative stress.

2007 Diet and Optimum Health Conference, 16-19 May 2007, Portland Oregon. Chairperson, session on Diet and Neurodegeneration.

2008 Keystone Symposium on Metabolic Pathways of Longevity, 30 March-4 April, 2008, Copper Mountain, Colorado. Energy Metabolism and Mitochondrial Function in Aging.

Environmental Stressors in Biology and Medicine, 4-6 June 2008, Siena Italy. Modulation of mitochondrial bioenergetics by protein modifications.

Annual Meeting of the Society for Free Radical Research Europe, 5-9 July 2008, Berlin, Germany. Regulation of cell redox functions by mitochondria energetics.

British Society for Research on Ageing, 17-18 July 2008, Brighton, United Kingdom. Molecular aspects of ageing: analysis of damage.

Society for Free Radical Research Europe, Free Radical School on Lipid peroxidation and free radical signaling: role in pathophysiology. Spetses, Greece, 30 August – 5 September 2008.

International Conference on Mitochondrial Stress and Health, Beijing, China, 16-17 October 2008. Chairperson and co-organizer.

XIVth Biennial Meeting of the Society for Free Radical Research International, Beijing, China, 18-22 October 2008. Chairperson.

University of California, Merced. Lecture on: Metabolic control of aging and neurodegeneration. 6 February 2009, Merced, California.

Gordon Research Conference on Oxidative Stress and Disease. Lucca, Italy, 8-13 March 2009. Chairperson.

International Conference Nutrition, Exercise, Energy, and the Metabolic Syndrome. The energy-redox axis in aging and neurodegeneration. 8-11 April 2009, Paris, France

International Congress of Molecular Medicine. Session on Redox Modulation of Cell Signaling. Lecture title: Metabolic targets in a model of Alzheimer's disease 5-8 May 2009, Istanbul, Turkey.

International Courses on Toxicology. "Mitochondria: Between Life and Death" Organized by the Center for Neurosciences and Cell Biology, University of Coimbra. Lecture(s) on: Mitochondrial oxidative / nitrosative stress and the thiol/disulfide exchange system. 6-8 May 2009, Coimbra, Portugal.

7th Costam / SFRR (Asia / Malaysia) International Workshop on Chemoprevention and Translational Research. Lecture on: Metabolic targets in a model of Alzheimer's disease: Effects of α -lipoic acid. 9-12 July 2009, Langkawi, Malaysia.

SFRR Europe Annual Conference on Free Radicals, Health, and Lifestyle: from Cell Signaling to Disease Prevention. Lecture on Lipoic acid and insulin signaling in a model of Alzheimer's disease. 26-29 August 2009, Rome, Italy.

VIth Conferente of the Society for Free Radical Biology and Medicine South American Group on Free Radicals and Antioxidants. Plenary lecture on Redox Signaling Pathways in a model of Alzheimer's disease. 27-30 September 2009, Santiago, Chile.

Neuroscience 2009. Nanosymposium on Steroid Hormone Aging. Lecture on Progesterone and clinical progestin regulation of mitochondrial function in vitro and in vivo. 20 October 2009, Chicago, IL.

Indo-USA Bilateral Forum on Redox Signaling. Lecture on Metabolic and redox perspectives in neurodegeneration. 19-21 December 2009, New Delhi, India.

International Symposium on the Pathophysiology of Reactive Oxygen and Nitrogen Species, Salamanca, May 19-21, Salamanca, Spain. Redox-sensitive protein modifications in the regulation of energy metabolism.

SFRR-Europe Summer School on Protein Maintenance and Turnover in Aging and Diseases, 4-10 June 2010, Spetses, Greece. Protein post-translational modifications in aging and neurodegenerative disorders.

Annual Meeting of the Hellenic Academy, 11-14 June 2010, Spetses, Greece. Lipoic acid and thiol-disulfide exchange in aging.

Conferente on Lipid Oxidation, Human Diseases, and Aging. 16-17 June 2010, Turin, Italy. MAPK- and insulin signaling in aging and a model of Alzheimer's disease: role of mitochondria.

International Symposium on Free Radical Research – Contributions to Medicine, 20-22 January 2011, Kyoto, Japan. Mitochondrial dysfunction in a neurodegeneration model.

Gordon Research Conference on Oxidative Stress and Disease, March 2011, Ventura, California. Vice-Chairman Elect.

International Symposium on Mitochondrial Biology and Medicine and Chinese Mit' 2011, 7-11 April 2011, Conference Advisory Board and Lecturer: Mitochondrial Signaling in Aging.

Alexander von Humboldt Workshop. MAPK Signaling and Mitochondrial Function in Neurodegeneration. 14 June 2011, Düsseldorf, Germany.

IVth International Symposium on Nutrition, Oxygen Biology, and Medicine; Free Radicals, Nutrition, and Aging: From Fundamental Aspects to Clinical Applications, 15-17 June 2011, Paris, France. Conference Co-organizer.

2nd International Conference on Environmental Stressors in Health and Disease, 5-7 October 2011, Siena, Italy. Mitochondrial energy metabolism in brain aging.

Workshop on *Molecular and Cellular Bases of Redox Signaling and Oxidative Stress: Implications for Biomedicine*. 2-4 November 2011, Baeza, Spain. The mitochondrial energy-redox axis, post-translational modifications, and cell function.

The mitochondrial energy-redox axis in brain aging and neurodegeneration. February 6, 2012, University of Nebraska, Lincoln.

Cellular redox homeostasis and energy metabolism in brain aging. 26 April 2012, Linus Pauling Institute, Oregon State University, Oregon, USA.

Effects of insulin signaling on mitochondrial function in brain aging. Canadian Oxidative Stress Consortium, 10-12 May 2012, Lakehead University, Thunder Bay, Ontario, Canada

Mitochondrial energy homeostasis and cell function in brain aging. International Symposium on Redox Signaling and Oxidative Stress in Health and Disease. 5-7 June 2012, Valencia, Spain.

XVI Biennial Meeting of the Society for Free Radical Research International, 6-9 September 2012, London, UK. The hypometabolic state of the aging brain: restoration by lipoic acid through modulation of redox-sensitive signaling pathways

XXXI Meeting of the Italian Society of Pathology and Translational Medicine, 12-15 September 2012, Udine, Italy. Impairment of brain energy- and redox metabolism: Imbalance of JNK and insulin signaling.

2nd Symposium on Oxidative Stress, Antioxidants, and Health, 4-6 October 2012, Mexico City, Mexico. Effects of lipoic acid on brain aging.

5th Conference of the Chinese Society of Mitochondrial Research and Medicine, 5-7 November 2012, Beijing, China. Energy and redox modulation of brain aging by thiol-containing compounds.

4th Congress on Reactive Oxygen Species in Biology and Medicine, Mexican Society of Biochemistry. Imbalance of insulin and JNK signaling and brain bioenergetics. 19-22 March 2013, Querétaro, Mexico.

Gordon Research Conference on Oxidative Stress and Disease: The metabolic-inflammatory axis in brain aging and Alzheimer's disease, 13-19 April 2013, Les Diablerets, Switzerland. Conference Chair.

5th Nutrition, Oxygen Biology, and Medicine Conference, 5-7 June 2013, Paris, France. Chairperson session on Mitochondria, Energy, and Metabolic Disease.

12th Annual Moving Targets Symposium. Neurodegenerative diseases: therapeutic challenges and opportunities. Los Angeles, 23 August 2013

8th Meeting of the Society for Free Radical Biology and Medicine, South American Group. Mitochondrial energy metabolism and redox signaling. Buenos Aires, Argentina, 14-17 October, 2013.

43rd AGE Annual Meeting Pre-Conference Symposium. Mitochondrial function and synaptic plasticity in brain aging and a mouse model of Alzheimer's disease. San Antonio, Texas, 30-31 May 2014.

2rd International Conference on Cellular Environmental Stressors in Biology and Medicine: Focus on Redox Reactions. Short-term cigarette smoke exposure induces reversible changes in energy metabolism and cellular redox status independent of inflammatory responses in mouse lungs. 25-27 June 2014, University of Ferrara, Italy.

Oxidative Stress and Disease Gordon Research Conference - Redox Chemistry and Signaling session (Discussion leaders) 1-5 March 2015, Ventura, California.

Mitochondrial Biogenesis and Dynamics in Health, Disease, and Aging. FASEB Science Research Conference. The energy-redox axis as a therapeutic target in brain aging and neurodegeneration. 17-22 May 2015, Palm Beach, Florida, USA.

International Conference on Antioxidants and Degenerative Diseases, 2-4 June 2015, Kuala Lumpur, Malaysia. Plenary Talk: The insulin-like effect of lipoic acid on brain aging and a mouse model of Alzheimer's disease.

Oxidants and Antioxidants in Biology, Joint Meeting of European Societies for Free Radical Research and the Oxygen Club of California. Co-Chair session on Aging and Longevity. 24-26 June 2015, Valencia, Spain.

Redox Biology meets Nutrition. Joint Meeting of the Society for Free Radical Research Europe and the Society for Nutrition. SFRR-Europe Annual Award Lecture: Enrique Cadenas on Redox Biology and Metabolism on Brain Aging and Alzheimer's disease. 2-4 September 2015, Stuttgart, Germany.

Society for Free Radical Research International / Society for Redox Biology and Medicine Conference. Plenary session: Pivotal Role of H₂O₂ in Redox Regulation of Signaling and Transcription. Chairs: Helmut Sies and Enrique Cadenas. September 16-19, 2016, San Francisco, USA.

International Union of Biochemistry and Molecular Biology Jubilee Lecturer. Portuguese Society of Biochemistry. 8-10 December 2016. Guimarães, Portugal. Brain energy metabolism and inflammation. Role of insulin resistance.

Gordon Research Conference Oxidative Stress and Disease: Redox Biology in Disease and Translational Medicine. Discussion Leader of Mitochondrial Quality Control in the Disease Brain. 19-24 March 2017. Il Ciocco (Lucca), Italy.