

Oxidative Stress in Applied Basic Research and Clinical Practice

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Donald Armstrong

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All books in this series illustrate point-of-care testing and critically evaluate the potential of antioxidant supplementation in various medical disorders associated with oxidative stress. Future volumes will be up-dated as warranted by emerging new technology, or from studies reporting clinical trials.

Donald Armstrong
Editor-in-Chief

Toshio Miyata • Kai-Uwe Eckardt
Masaomi Nangaku
Editors

Studies on Renal Disorders

 Humana Press

Editors

Toshio Miyata
Division of Molecular Medicine
and Therapy
United Centers for Advanced Research
and Translational Medicine (ART)
Tohoku University Graduate School
of Medicine
2-1 Seiryō-Machi, Aoba-ku
Sendai, Miyagi 980-8575
Japan
miyata@med.tohoku.ac.jp

Kai-Uwe Eckardt
Department of Nephrology
and Hypertension
Friedrich-Alexander-University
Erlangen-Nuremberg
Krankenhausstrasse 10-12 D-91054
Erlangen, Germany
Kai-Uwe.Eckardt@med4.med.
uni-erlangen.de

Masaomi Nangaku
University of Tokyo School of Medicine
7-3-1 Hongo, Bunkyo-ku
Tokyo 113-8655
Japan
mnangaku-ky@umin.ac.jp

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Preface

Broad derangements of oxygen metabolism, such as oxidative stress and hypoxia, have been implicated in the genesis of kidney disease, independently of hemodynamic and metabolic abnormalities. They further impact various biological reactions linked to oxygen metabolism, such as nitrosative stress, advanced glycation, carbonyl stress, and endoplasmic reticulum stress. This causal role of impaired oxygen metabolism in kidney disease has implications for our understanding of current therapeutic benefits accruing from antihypertensive agents, the control of hyperglycemia/hyperinsulinemia or of hyperlipidemia, and the dietary correction of obesity. The defense mechanisms against oxidative stress (e.g., the Nrf2-Keap1 system) and hypoxia (e.g., the HIF-PHD system) have been recently explored in various cells, including kidney cells, and they include intracellular sensors for oxidative stress and hypoxia. Novel approaches targeting these sensors may offer clinical benefits in several disorders in which oxidative stress or hypoxia is a final, common pathway. Leading basic researchers and clinical scientists have contributed to this book and provide up-to-date, cutting-edge reviews on recent advances in the pathobiology of oxygen metabolism in kidney disease, especially oxidative stress and hypoxia.

Sendai
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February 8, 2010

Toshio Miyata, MD, PhD
Kai-Uwe Eckardt, MD
Masaomi Nangaku, MD, PhD

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Contributors

Abolfazl Zarjou

Division of Nephrology, THT 647, University of Alabama at Birmingham,
1900 University Boulevard, Birmingham, Alabama 35294, USA

Adam Whaley-Connell

Division of Nephrology, Department of Internal Medicine, University
of Missouri-Columbia School of Medicine, CE416, 5 Hospital Drive,
Columbia, MO 65212, USA

Agnes B. Fogo

Division of Renal Pathology, Vanderbilt University School of Medicine,
C-3310 Medical Center North Department of Pathology,
Vanderbilt University Medical Center, Nashville, TN 37232-2561, USA
agnes.fogo@vanderbilt.edu

Akira Nishiyama

Department of Pharmacology and Hypertension and Kidney
Disease Research Center, Kagawa University Medical School, 1750-1 Ikenobe,
Miki-cho, Kita-gun, Kagawa Prefecture 761-0793, Japan
akira@kms.ac.jp

Alexander Angerhofer

Division of Renal Diseases and Hypertension, University of Colorado,
Aurora, CO 80045 USA

Antonio L. Bartorelli

Centro Cardiologico Monzino, Via Parea 4, 20138 Milan, Italy

Anupam Agarwal

Division of Nephrology, THT 647, University of Alabama at Birmingham,
1900 University Boulevard, Birmingham, Alabama 35294, USA
agarwal@uab.edu

Bernardo Rodriguez-Iturbe

Servicio de Nefrología, Hospital Universitario,
Universidad del Zulia and IVIC-Zulia, Maracaibo, Estado Zulia, Venezuela
bernardori@telcel.net.ve

Carsten C. Scholz

Conway Institute of Biomolecular and Biomedical Research,
School of Medicine and Medical Science, College of Life Sciences,
University College Dublin, Belfield, Dublin 4, Ireland

Carsten Willam

Department of Nephrology and Hypertension, Friedrich-Alexander-University
Erlangen, Krankenhausstrasse 12, D-91054 Erlangen, Germany
carsten.willam@uk-erlangen.de

Charles van Ypersele de Strihou

Division of Molecular Medicine and Therapy, United Centers for Advanced
Research and Translational Medicine (ART), Tohoku University Graduate
School of Medicine, 2-1 Seiryō-Machi, Aoba-ku, Sendai, Miyagi 980-8575, Japan

Chih-Wei Yang

Kidney Research Center, Department of Nephrology,
Chang Gung Memorial Hospital, 199, Tun-Hua North Road, Taipei, Taiwan
cwyang@ms1.hinet.net

Christian Rosenberger

Department of Medicine, Hadassah University Hospital,
Mount Scopus, 24035, Jerusalem 91240, Israel

Christopher S. Wilcox

Department of Medical Cell Biology, Uppsala University,
Box 571751 23 Uppsala, Sweden

Colin R. Lenihan

Conway Institute of Biomolecular and Biomedical Research,
School of Medicine and Medical Science, College of Life Sciences,
University College Dublin, Belfield, Dublin 4, Ireland

Cormac T. Taylor

Conway Institute of Biomolecular and Biomedical Research,
School of Medicine and Medical Science, College of Life Sciences,
University College Dublin, Belfield, Dublin 4, Ireland
cormac.taylor@ucd.ie

Danilo Fliser

Department of Internal Medicine – Renal and Hypertensive Diseases
Saarland University Medical Centre, Kirrberger Strasse,
66421 Homburg/Saar, Germany
indfli@uks.eu

David R. Sell

Department of Pathology and Biochemistry, Case Western Reserve University,
Wolstein Research Bldg., 2103 Cornell Road, Cleveland, OH 44106-7288, USA

Eisei Noiri

Department of Medicine, Tokyo University, Tokyo, Japan
noiri-tyk@umin.ac.jp

Erminio Sisillo

Centro Cardiologico Monzino, Via Parea 4, 20138 Milan, Italy

Ferdinand H. Bahlmann

Department of Internal Medicine – Renal and Hypertensive Diseases
Saarland University Medical Centre, Kirrberger Strasse,
66421 Homburg/Saar, Germany

Francesco Addabbo

Department of Medicine, Tokyo University, Tokyo, Japan

Fredrik Palm

Department of Medical Cell Biology, Uppsala University,
Box 571751 23 Uppsala, Sweden
Fredrik.Palm@mcb.uu.se

George Henderson

Division of Renal Diseases and Hypertension, University of Colorado,
Aurora, CO 80045 USA

Giancarlo Marenzi

Centro Cardiologico Monzino, I.R.C.C.S. Department of Cardiovascular Sciences,
University of Milan, Milan, Italy
Giancarlo.marenzi@ccfm.it

Gregg L. Semenza

Vascular Program, Institute for Cell Engineering; McKusick-Nathans
Institute of Genetic Medicine; and Departments of Pediatrics, Medicine,
Oncology, Radiation Oncology, and Biological Chemistry,
The Johns Hopkins University School of Medicine, Baltimore, MD 21205, USA
gsemenza@jhmi.edu

Guo-Hua Fong

Department of Cardiology, Kyushu University of Medicine,
3-1-1 Maidashi, Higashi-ku, Fukuoka 812-8582, Japan

György Balla

Division of Nephrology, THH 647, University of Alabama at Birmingham,
1900 University Boulevard, Birmingham, Alabama 35294, USA

Hidenori Koyama

Department of Metabolism, Endocrinology and Molecular Medicine
Osaka City University School of Medicine, 1-4-3, Asahi-machi,
Abeno, Osaka 545-8585, Japan
hidekoyama@med.osaka-cu.ac.jp

Hideyasu Kiyomoto

Department of Pharmacology and Hypertension and Kidney
Disease Research Center, Kagawa University, 1750-1 Ikenobe,
Miki-cho, Kita-gun, Kagawa Prefecture 761-0793, Japan

Hiroshi Nishi

Division of Nephrology and Endocrinology, University of Tokyo School
of Medicine, 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan
mnangaku-ky@umin.ac.jp

Hiroyuki Kobori

Department of Pharmacology and Hypertension and Kidney
Disease Research Center, Kagawa University, 1750-1 Ikenobe,
Miki-cho, Kita-gun, Kagawa Prefecture 761-0793, Japan

Ina Nemet

Department of Pathology and Biochemistry, Case Western Reserve University,
Wolstein Research Bldg., 2103 Cornell Road, Cleveland, OH 44106-7288, USA

Jean-Marc Odee

Department of Medicine, Hadassah University Hospital, Mountt Scopus,
24035, Jerusalem 91240, Israel

Johannes Jacobi

Department of Nephrology and Hypertension, Friedrich-Alexander-University
Erlangen, Krankenhausstrasse 12, D-91054 Erlangen, Germany

Josef Pfeilschifter

Pharmazentrum frankfurt/ZAFES, University Hospital, Goethe University,
Theodor-Stern-Kai 7, D-60590, Frankfurt am Main, Germany
pfeilschifter@em.uni-frankfurt.de

Josephine M. Forbes

Diabetes Complications Division, Baker IDI Heart and Diabetes Institute,
Glycation and Diabetes, Baker IDI Heart and Diabetes Institute,
75 Commercial Road, Melbourne, VIC 3004, Australia
Josephine.Forbes@bakeridi.edu.au

József Balla

Division of Nephrology, THT 647, University of Alabama at Birmingham,
1900 University Boulevard, Birmingham, Alabama 35294, USA

Kai-Uwe Eckardt

Department of Nephrology and Hypertension, Friedrich-Alexander-University,
Erlangen-Nuremberg, Krankenhausstrasse 10-12, D-91054 Erlangen, Germany

Karl-Friedrich Beck

Pharmazentrum frankfurt/ZAFES, University Hospital, Goethe University,
Theodor-Stern-Kai 7, D-60590 Frankfurt am Main, Germany

Kotaro Takeda

Department of Cardiology, Kyushu University of Medicine,
3-1-1 Maidashi, Higashi-ku, Fukuoka 812-8582, Japan
ktakeda@cardiol.med.kyushu-u.ac.jp

Kyung Mee Kim

Division of Renal Diseases and Hypertension, University of Colorado,
Aurora, CO 80045 USA

Li-Jun Ma

Division of Renal Pathology, Vanderbilt University School of Medicine,
C-3310 Medical Center North Department of Pathology,
Vanderbilt University Medical Center, Nashville, TN 37232-2561, USA

Lina Nordquist

Department of Medical Cell Biology, Uppsala University,
Box 571751 23 Uppsala, Sweden

Lu-Ping Li

Department of Radiology, Evanston Northwestern Healthcare, Suite G507,
Evanston Hospital, 2650 Ridge Avenue, Evanston, IL 60201, USA

Mark E. Cooper

Diabetes Complications Division, Baker IDI Heart and Diabetes Institute,
Glycation and Diabetes, Baker IDI Heart and Diabetes Institute,
75 Commercial Road, Melbourne, VIC 3004, Australia

Masaomi Nangaku

Division of Nephrology and Endocrinology, University of Tokyo School
of Medicine, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan
mnangaku-tky@umin.ac.jp

Michael S. Goligorsky

Division of Nephrology and Endocrinology, University of Tokyo School
of Medicine, 7-3-1 Hongo, Bunkyo, Tokyo 113-8655, Japan

Miriam F. Weiss

Department of Pathology and Biochemistry, Case Western Reserve University,
Wolstein Research Bldg., 2103 Cornell Road, Cleveland, OH 44106-7288, USA

Mogher Khamaisi

Department of Medicine, Hadassah University Hospital, Mount Scopus,
24035, Jerusalem 91240, Israel

Motoko Yanagita

Division of Nephrology, Jikei Medical University, 3-25-8, Nishi-Shimbashi,
Minato-ku, Tokyo 105-8461, Japan

Naila Rabbani

Warwick Medical School, Clinical Sciences Research Institute, University of Warwick, University Hospital, Coventry CV2 2DX, UK

Nosratola D. Vaziri

Servicio de Nefrología, Hospital Universitario, Universidad del Zulia and IVIC-Zulia, Maracaibo, Estado Zulia, Venezuela

Olivier Devuyst

Laboratory of Nephrology, Université catholique, de Louvain Medical School, 54 Avenue Hippocrate, UCL 5450, 1200 Brussels, Belgium
olivier.devuyst@uclouvain.be

Paul J. Thornalley

Warwick Medical School, Clinical Sciences Research Institute, University of Warwick, University Hospital, Coventry CV2 2DX, UK
P.J.Thornalley@warwick.ac.uk

Peter Hansell

Department of Medical Cell Biology, Uppsala University, Box 571751 23 Uppsala, Sweden

Pottumarthi V. Prasad

Department of Radiology, Evanston Northwestern Healthcare, Suite G507, Evanston Hospital, 2650 Ridge Avenue, Evanston, IL 60201, USA
pprasad@enh.org

Ravi Nistala

Division of Nephrology, Department of Internal Medicine, University of Missouri-Columbia School of Medicine, CE416, 5 Hospital Drive, Columbia, MO 65212, USA
nistalar@health.missouri.edu

Raymond C. Harris

Division of Nephrology, Vanderbilt University, School of Medicine and Nashville Veterans Affairs Hospital, Nashville, TN 37232, USA
ray.harris@vanderbilt.edu

Reiko Inagi

Division of Nephrology and Endocrinology, University of Tokyo School of Medicine, 7-3-1, Hongo Bunkyo-ku, Tokyo 113-8655, Japan
inagi-npr@umin.ac.jp

Richard J. Johnson

Division of Renal Diseases and Hypertension, University of Colorado, Aurora, CO 80045, USA
richard.johnson@ucdenver.edu

Roland Veelken

Department of Nephrology and Hypertension, Friedrich-Alexander-University
Erlangen, Krankenhausstrasse 12, D-91054, Germany

Sadayoshi Ito

Division of Nephrology, Endocrinology and Vascular Medicine,
Tohoku University Graduate School of Medicine, 1-1 Seiryochō,
Aoba-ku, Sendai 980-8574, Japan

Samuel N. Heyman

Department of Medicine, Hadassah University Hospital,
Mount Scopus, 24035, Jerusalem 91240, Israel
heyman@cc.huji.ac.il

Sara Terryn

Laboratory of Nephrology, Université catholique, de Louvain Medical School,
54 Avenue Hippocrate, UCL 5450, B-1200, Brussels, Belgium

Seymour Rosen

Department of Medicine, Hadassah University Hospital, Mount Scopus,
24035, Jerusalem 91240, Israel

Takashi Dan

Division of Molecular Medicine and Therapy, United Centers for Advanced
Research and Translational Medicine (ART), Tohoku University Graduate School
of Medicine, 2-1 Seiryō-Machi, Aoba-ku, Sendai, Miyagi 980-8575, Japan
dantks@m.tains.tohoku.ac.jp

Takashi Yokoo

Division of Nephrology, Jikei Medical University, 3-25-8, Nishi-Shimbashi,
Minato-ku, Tokyo 105-8461, Japan
tyokoo@jikei.ac.jp

Takefumi Mori

Division of Nephrology, Endocrinology and Vascular Medicine,
Tohoku University Graduate School of Medicine, 1-1 Seiryochō,
Aoba-ku, Sendai 980-8574, Japan
tmori@med.tohoku.ac.jp

Tetsuhiro Tanaka

Division of Nephrology and Endocrinology, University of Tokyo School
of Medicine, 7-3-1 Hongo, Bunkyo-ku, 113-8655 Tokyo, Japan
tetsu-ty@umin.ac.jp

Tilmann Ditting

Department of Nephrology and Hypertension, Friedrich-Alexander-University
Erlangen, Krankenhausstrasse 12, D-91054, Germany

Toshio Miyata

Division of Molecular Medicine and Therapy, United Centers for Advanced Research and Translational Medicine (ART), Tohoku University Graduate School of Medicine, 2-1 Seiryō-Machi, Aoba-ku, Sendai, Miyagi 980-8575, Japan
t-miyata@mail.tains.tohoku.ac.jp

Ulrike Bruning

Conway Institute of Biomolecular and Biomedical Research, School of Medicine and Medical Science, College of Life Sciences, University College Dublin, Belfield, Dublin 4, Ireland

Vincent M. Monnier

Department of Pathology and Biochemistry, Case Western Reserve University, Wolstein Research Bldg., 2103 Cornell Road, Cleveland, OH 44106-7288, USA
vmm3@cwru.edu

Volker H. Haase

Division of Nephrology and Hypertension, Vanderbilt University, C-3119A, MCN, 1161 21st Avenue, Nashville, TN 37232, USA
volker.haase@vanderbilt.edu

Wanja M. Bernhardt

Department of Nephrology and Hypertension, Friedrich-Alexander-University Erlangen, Krankenhausstrasse 10-12, D-91054 Erlangen, Germany
wanja.bernhardt@uk-erlangen.de

Witcha Imaram

Division of Renal Diseases and Hypertension, University of Colorado, Aurora, CO 80045, USA

Yoshiki Nishizawa

Department of Metabolism, Endocrinology and Molecular Medicine
Osaka City University School of Medicine, 1-4-3, Asahi-machi, Abeno, Osaka, 545-8585, Japan

Yuri Y. Sautin

Division of Renal Diseases and Hypertension, University of Colorado, Aurora, CO 80045, USA