

Editor SAURA C. SAHU

# Toxicogenomics

A Powerful Tool For Toxicity Assessment



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# Toxicogenomics

A Powerful Tool for Toxicity Assessment

**Editor**

SAURA C. SAHU

*Center for Food Safety & Applied Nutrition,  
US Food and Drug Administration, USA*



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# **Toxicogenomics**

## **Dedicated to**

**My parents, Gopinath and Inchhamani, for their gift of life,  
love, and living examples**

**My wife, Jarana, for her life-long companionship, love, care, and  
support for following my dreams**

**My children, Megha, Sudhir and Subir, for their love and care**

# Preface

Toxicogenomics is the integration of genomics to toxicology. This technology is a powerful tool for collecting information from a large number of biological samples simultaneously; thus, it is very useful for large-scale screening of potential toxicants. This book provides up-to-date state-of-the-art information presented by the recognized experts and, therefore, it is an authoritative source of current knowledge in this field of research. The potential link between toxicology, genetics, and human diseases makes this book very useful to investigators in many and varied disciplines of science and toxicology.

The book is designed primarily for the research scientists currently engaged in toxicogenomics. However, it should be of interest to wide disciplines of science, including toxicology, genetics, medicine, and pharmacology, as well as in drug and food sciences. Also, it should be of interest to federal regulators and risk assessors of drug, food, environmental, and agricultural products. The tools used in the field of toxicogenomics can be used in humans as well as in human surrogate models, providing data that scientists and regulators would have more confidence in for making extrapolations from surrogates to humans.

Toxicogenomics is a rapidly developing field of science. There is a risk of being out of date in the not too distant future. However, neither the fundamental concepts and ideas, nor the experimental data are going to change. Therefore, for years to come, this book will be useful to the students and investigators in toxicogenomics, as well as in many disciplines of science to guide them in their future work.

Saura C. Sahu

# List of Contributors

**P. Ancian** CIT, Evreux, France

**S. Arthaud** CIT, Evreux, France

**Kirsten A. Baken** Department of Health Risk Analysis and Toxicology (GRAT), Nutrition and Toxicology Research Institute Maastricht (NUTRIM), Maastricht University, PO Box 616, 6200 MD Maastricht, The Netherlands

**Johanna M. Beekman** Clinical Biomarkers, Clinical Pharmacology, Bayer Schering Pharma AG, Müllerstrasse 170–178, 13353 Berlin, Germany

**Kathleen Boehme** Merck Serono, Toxicology, 64271 Darmstadt, Germany

**Daniel A. Casciano** University of Arkansas for Medical Sciences, Department of Pharmacology and Toxicology, Little Rock, AR 72205, USA

**Nabarun Chakraborti** Department of Animal and Avian Sciences, University of Maryland, College Park, MD, USA

**Leila Chekir-Ghedira** Faculté de Médecine Dentaire de Monastir, Lab. de Biologie Moléculaire et Cellulaire, Rue Avicenne 5000, Monastir, Tunisie

**Muireann Coen** Department of Biomolecular Medicine, Sir Alexander Fleming Building, SORA Division, Faculty of Medicine, Imperial College London, SW7 2AZ, UK

**Jennifer C. Davey** Dartmouth Medical School, HB 7650 Renssen, Room 510, Hanover, NH 03755-3835, USA

**Amy C. Ditewig** Abbott Laboratories, Department R4DA, Building AP9A, 100 Abbot Park Rd, Abbott Park, IL 60064, USA

**Bhalchandra A. Diwan** Basic Research Program, SAIC-Frederick, Inc., NCI Frederick, MD, USA

**Janine Ezendam** Laboratory for Health Protection Research, National Institute for Public Health and the Environment (RIVM), PO Box 1, 3720 BA Bilthoven, The Netherlands

**R. Forster** CIT, Evreux, France

**Brigitte Ganter** Ingenuity Systems, 1700 Seaport Blvd., Redwood City, CA 94063, USA

**Elisavet T. Gatzidou** Department of Forensic Medicine and Toxicology, University of Athens, Medical School, Athens, Greece

**Julie A. Gosse** University of Maine, 5735 Hitchner, Room 108, Orono, ME 04469-5735, USA

**Karen Hamernik** Office of Science Coordination and Policy, Office of Prevention, Pesticides, and Toxic Substances, US Environmental Protection Agency, Washington, DC, USA

**Joshua W. Hamilton** Dartmouth Medical School, HB 7650 Remsen, Room 510, Hanover, NH 03755-3835, USA

**Thomas H. Hampton** Dartmouth Medical School, HB 7650 Remsen, Room 510, Hanover, NH 03755-3835, USA

**Kenneth Haymes** Office of Science Coordination and Policy, Office of Prevention, Pesticides, and Toxic Substances, US Environmental Protection Agency, Washington, DC, USA

**Susan Hester** Office of Research and Development, National Health and Environmental Effects Research Laboratory, US Environmental Protection Agency, Research Triangle Park, NC, USA

**Yoko Hirabayashi** Cellular & Molecular Toxicology Division, National Center for Biological Safety & Research, National Institute of Health Sciences, 1-18-1 Kamiyohga, Setagayaku, Tokyo, Japan

**Elaine Holmes** Department of Biomolecular Medicine, Sir Alexander Fleming Building, SORA Division, Faculty of Medicine, Imperial College London, SW7 2AZ, UK

**Taisen Iguchi** Division of Bio-Environmental Science, Department of Bio-Environmental Science, Okazaki Institute for Integrative Bioscience, National Institute



for Basic Biology, National Institutes of Natural Sciences, 5-1 Higashiyama, Myodaiji, Okazaki Aichi 444-8787, Japan

**Tohru Inoue** National Center for Biological Safety & Research, National Institute of Health Sciences, 1-18-1 Kamiyohga, Setagayaku, Tokyo, Japan

**Daehee Kang** Molecular and Genomic Epidemiology Laboratory (MGEL), Seoul National University College of Medicine, 103 Daehangno, Chongnogu, Seoul 110-799, Korea

**Yoshinao Katsu** Division of Bio-Environmental Science, Department of Bio-Environmental Science, Okazaki Institute for Integrative Bioscience, National Institute for Basic Biology, National Institutes of Natural Sciences, 5-1 Higashiyama, Myodaiji, Okazaki Aichi 444-8787, Japan

**J.J. Legrand** CIT, Evreux, France

**S. Leuillet** CIT, Evreux, France

**Lian Li** Department of Preventive Medicine, Seoul National University College of Medicine, Seoul 110-799, Korea

**Michael J. Liguori** Abbott Laboratories, Department R4DA, Building AP9A, 100 Abbot Park Rd, Abbott Park, IL 60064, USA

**John C. Lindon** Department of Biomolecular Medicine, Sir Alexander Fleming Building, SORA Division, Faculty of Medicine, Imperial College London, SW7 2AZ, UK

**Jie Liu** Inorganic Carcinogenesis Section, Laboratory of Comparative Carcinogenesis, National Cancer Institute at NIEHS, Research Triangle Park, NC, USA

**J. Thomas McClintock** Office of Science Coordination and Policy, Office of Prevention, Pesticides, and Toxic Substances, US Environmental Protection Agency, Washington, DC, USA

**Kirstin Meyer** Early and Mechanistic Toxicology, Nonclinical Drug Safety, Bayer Schering Pharma AG, Müllerstrasse 170-178, 13353 Berlin, Germany

**Arindam Mitra** Virginia Maryland Regional College of Veterinary Medicine, University of Maryland, College Park, MD, USA

**Stefan O. Mueller** Merck Serono, Toxicology, 64271 Darmstadt, Germany

**Suman Mukhopadhyay** Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, USA

**Jeremy K. Nicholson** Department of Biomolecular Medicine, Sir Alexander Fleming Building, SORA Division, Faculty of Medicine, Imperial College London, SW7 2AZ, UK

**Paul A. Nony** Center for Toxicology and Environmental Health, LLC, North Little Rock, AR, USA

**Woong-Yang Park** Department of Biomedical Sciences, Seoul National University College of Medicine, Seoul 110-799, Korea

**Jeroen L.A. Pennings** Laboratory for Health Protection Research, National Institute for Public Health and the Environment (RIVM), PO Box 1, 3720 BA Bilthoven, The Netherlands

**P. Scott Pine** Center for Drug Evaluation and Research, US Food and Drug Administration, Silver Spring, MD, USA

**Barry Rosenzweig** Center for Drug Evaluation and Research, US Food and Drug Administration, Silver Spring, MD, USA

**Saura C. Sahu** Division of Toxicology, Office of Applied Research and Safety Assessment, Center for Food Safety and Applied Nutrition, US Food and Drug Administration, Laurel, MD 20708, USA

**Hiroshi Sawada** Development Research Center, Pharmaceutical Research Division, Takeda Pharmaceutical Company Limited, 2-17-85 Jusohonmachi Yodogawa-ku, Osaka 532-8686, Japan

**Susanne U. Schmidt** Merck Serono, Toxicology, 64271 Darmstadt, Germany

**Susanne Schwenke** Global Drug Discovery Statistics, Global Biostatistics, Bayer Schering Pharma AG, Müllerstrasse 170-178, 13353 Berlin, Germany

**Stephanie Simon** Merck Serono, Toxicology, 64271 Darmstadt, Germany

**Laura Suter** F. Hoffmann-La Roche Ltd. Grenzacherstrasse, 90/505a, 4070 Basel, Switzerland

**Raymond Tennant** National Institute of Environmental Health Sciences, Research Triangle Park, NC, USA

**Stamatios E. Theocharis** Department of Forensic Medicine and Toxicology, University of Athens, Medical School, Athens, Greece

**Karol Thompson** Center for Drug Evaluation and Research, US Food and Drug Administration, Silver Spring, MD, USA

**Rob J. Vandebriel** Laboratory for Health Protection Research, National Institute for Public Health and the Environment (RIVM), PO Box 1, 3720 BA Bilthoven, The Netherlands

**Henk van Loveren** Laboratory for Health Protection Research, National Institute for Public Health and the Environment (RIVM), PO Box 1, 3720 BA Bilthoven, The Netherlands

**Antoaneta Vladimirova** Ingenuity Systems, 1700 Seaport Blvd., Redwood City, CA 94063, USA

**Michael P. Waalkes** Inorganic Carcinogenesis Section, Laboratory of Comparative Carcinogenesis, National Cancer Institute at NIEHS, Research Triangle Park, NC, USA

**Jeffrey F. Waring** Abbott Laboratories, Department R4DA, Building AP9A, 100 Abbott Park Rd, Abbott Park, IL 60064, USA

**Hajime Watanabe** Division of Bio-Environmental Science, Department of Bio-Environmental Science, Okazaki Institute for Integrative Bioscience, National Institute for Basic Biology, National Institutes of Natural Sciences, 5-1 Higashiyama, Myodaiji, Okazaki Aichi 444-8787, Japan

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# **Section 1**

## **Design, Analysis and Interpretation of Toxicogenomics**



