Preface

Based upon the success of its first edition, the second edition of Pharmacogenomics: Methods and Protocols aims to continue to provide readers with high-quality content on the most innovative and commonly adopted technologies in the field of pharmacogenomics. Many contributors to this book are leading experts in this field.

Pharmacogenomics: Methods and Protocols has become an established guide for investigators in the selection and the experimental application of pharmacogenomic technologies. Using the extensive information in the materials and methods sections, investigators will be able to easily perform each technique in their laboratories. This book is unique in that it identifies and highlights problems that might be encountered in performing a specific technique and how to overcome these. Each procedure is described in a stepwise fashion, providing detailed information from leading experts that is usually not found in research articles.

Pharmacogenomics aims to study the genetic basis of interpatient variability in response to drug therapy. Understanding an individual’s genetic makeup is the key to creating personalized drugs with greater efficacy and safety. Various technologies are currently available, and this book aids the researchers’ decision on the most suitable method to apply.

In this updated edition, an introductory chapter describes the history of pharmacogenomics and its current status. It is followed by Part II, which includes a variety of techniques that are currently available to interrogate a patient’s genome. Readers will find detailed information on eight technologies for SNP detection, plus three in-depth chapters on recent technological developments in epigenetic techniques, sequencing, and quality control. Relative to the first edition, newer methods such as SmartAmp, GoldenGate, and Luminex X MAP have now been included.

Part III describes six methodologies and tools to assess and infer the functional significance of allele variation in humans, including more innovative in vitro models (assays to detect allelic imbalance or the effects of nonsynonymous variants and to guide identification of candidate genes) and in vivo assays in mice (use of genomically characterized inbred mice and the hydrodynamic tail vein assay for human promoters and enhancers).

Part IV describes current tools for supporting the translation and implementation of pharmacogenomic markers in the clinic. Here, readers will find five completely new chapters on the latest repositories of pharmacogenomic information, a summary guide to the most recent Web-based resources of interest to pharmacogenomic researchers, and two key examples of algorithms and guidelines for treatment personalization based upon genetics.

Pharmacologists, geneticists, molecular biologists, and physicians in academic institutions, in biotechnology, and in pharmaceutical industries will find Pharmacogenomics: Methods and Protocols, second edition an essential reference and a valuable source on the latest information in this field.
We are extremely grateful to all the authors for their excellent contributions making this book a comprehensive and up-to-date resource for investigators in pharmacogenomics.

Chapel Hill, NC, USA
Rotterdam, The Netherlands

Federico Innocenti
Ron H.N. van Schaik
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Contributors

NADAV AHITUV • Department of Bioengineering and Therapeutic Sciences, Institute for Human Genetics, University of California, San Francisco, CA, USA
RUSS B. ALTMAN • Department of Genetics, School of Medicine, Stanford University, Stanford, CA, USA
NATASHA BUTZ • Division of Pharmacotherapy and Experimental Therapeutics, Institute for Pharmacogenomics and Individualized Therapy, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA
GARY W. CALDWELL • CREATè, Janssen Pharmaceutical Companies of Johnson & Johnson, Spring House, PA, USA
EMMANUEL CHAN • Division of Pharmacotherapy and Experimental Therapeutics, Institute for Pharmacogenomics and Individualized Therapy, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA
ROSANE CHARLAB • Office of Clinical Pharmacology, Office of Translational Sciences, Center for Drug Evaluation and Research, United States Food and Drug Administration, Silver Spring, MD, USA
PEI XIAN CHEN • Department of Human Genetics, University of Chicago, Chicago, IL, USA
NANCY J. COX • Section of Genetic Medicine, Department of Medicine, The University of Chicago, Chicago, IL, USA
SOMA DAS • Department of Human Genetics, University of Chicago, Chicago, IL, USA
ANNA DI RIENZO • Department of Human Genetics, University of Chicago, Chicago, IL, USA
VERA H.M. DENEER • Department of Clinical Pharmacy, St. Antonius Ziekenhuis Nieuwegein, Nieuwegein, The Netherlands
SHERRY A. DUNBAR • Luminex Corporation, Austin, TX, USA
ROBIN E. EVERTS • SEQUENOM® Inc., San Diego, CA, USA
DONNA LEE FACKENTHAL • Department of Human Genetics, University of Chicago, Chicago, IL, USA
PAOLO FORTINA • Cancer Genomics Laboratory, Kimmel Cancer Center, Department of Cancer Biology, Thomas Jefferson University, Jefferson Medical College, Philadelphia, PA, USA
AMBER FRICK • Division of Pharmacotherapy and Experimental Therapeutics, Institute for Pharmacogenomics and Individualized Therapy, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA
ERIC R. GAMAZON • Section of Genetic Medicine, Department of Medicine, The University of Chicago, Chicago, IL, USA
MARIANTHI GEORGITSI • Department of Pharmacy, School of Health Sciences, University of Patras, Patras, Greece
DYLAN M. GLUBB • Queensland Institute of Medical Research, Brisbane, QLD, Australia
ANNA GONZÁLEZ-NEIRA • Human Genotyping Unit, Spanish National Cancer Research Center (CNIO), Madrid, Spain
Contributors

HENK-JAN GUCHELAAR • Department of Clinical Pharmacy and Toxicology, Leiden University Medical Center, Leiden, The Netherlands

toinette HARTSHORNE • Life Technologies, South San Francisco, CA, USA

YOSHIHIDE HAYASHIZAKI • Preventive Medicine and Diagnosis Innovation Program, RIKEN, Wako, Japan

SANDRA G. HEIL • Department of Clinical Chemistry, Erasmus University Medical Center, Rotterdam, The Netherlands

TED HOWE • Transgenomic Inc., Omaha, NE, USA

R. STEPHANIE HUANG • Section of Hematology/Oncology, Department of Medicine, The University of Chicago, Chicago, IL, USA

FEDERICO INNOCENTI • Division of Pharmacotherapy and Experimental Therapeutics, Lineberger Comprehensive Cancer Center, Institute for Pharmacogenomics and Individualized Therapy, Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, NC, USA

TOSHIHISA ISHIKAWA • Center for Life Science Technologies, RIKEN, Yokohama, Japan

MEE J. KIM • Department of Bioengineering and Therapeutic Sciences, Institute for Human Genetics, University of California, San Francisco, CA, USA

CRISTI R. KING • Department of Internal Medicine, Washington University in St. Louis, St. Louis, MO, USA

TERI E. KLEIN • Department of Genetics, Stanford University Medical Center, Stanford, CA, USA

LARRY J. KRICKA • Department of Pathology and Laboratory Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA, USA

MARK W. LINDE • Department of Pathology and Laboratory Medicine, University of Louisville School of Medicine, Louisville, KY, USA

ERIC LONDIN • Computational Medicine Center, Thomas Jefferson University Jefferson Medical College, Philadelphia, PA, USA

FRANCESCA LUCA • Department of Human Genetics, University of Chicago, Chicago, IL, USA

SHARON MARSH • Faculty of Pharmacy and Pharmaceutical Sciences, Katz Group Centre for Pharmacy and Health Research, University of Alberta, Edmonton, AB, Canada

HIROSHI NAKAGAWA • College of Bioscience and Biotechnology, Chubu University, Aichi, Japan

GEORGE P. PATRINOS • Department of Pharmacy, School of Health Sciences, University of Patras, Patras, Greece

STEVEN W. PAUGH • Hematological Malignancies Program and Pharmaceutical Sciences Department, St. Jude Children’s Research Hospital, Memphis, TN, USA

MATHIJS A. SANDERS • Department of Hematology, Erasmus University Medical Center, Rotterdam, The Netherlands

GONNIE SPIERINGS • Luminex B.V., Oosterhout, The Netherlands

SAUL SURREY • Department of Medicine, Thomas Jefferson University, Jefferson Medical College, Philadelphia, PA, USA

OSCAR SUZUKI • Division of Pharmacotherapy and Experimental Therapeutics, Institute for Pharmacogenomics and Individualized Therapy, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

CAROLINE F. THORN • Department of Genetics, School of Medicine, Stanford University, Stanford, CA, USA
Contributors

Peter J.M. Valk • Department of Hematology, Erasmus University Medical Center, Rotterdam, The Netherlands

Ron H.N. van Schaik • Department of Clinical Chemistry, Erasmus University Medical Center, Rotterdam, The Netherlands

Dirk van den Boom • SEQUENOM® Inc., San Diego, CA, USA

Tahar van der Straaten • Department of Clinical Pharmacy and Toxicology, Leiden University Medical Center, Leiden, The Netherlands

Kanako Wakabayashi-Nakao • Medical Genetics Division, Shizuoka Cancer Center Research Institute, Shizuoka, Japan

Tim Wiltshire • Division of Pharmacotherapy and Experimental Therapeutics, Institute for Pharmacogenomics and Individualized Therapy, Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

Matthias Wjst • Comprehensive Pneumology Center (CPC), Helmholtz Zentrum Muenchen, German Research Center for Environmental Health (GmbH), Neuherberg, Germany; Institute of Medical Statistics and Epidemiology, Klinikum Rechts der Isar der TU Muenchen, Muenchen, Germany

Priyanka Yadav • Cancer Genomics Laboratory, Kimmel Cancer Center, Thomas Jefferson University, Jefferson Medical College, Philadelphia, PA, USA

Zhenyin Yan • CREATe, Janssen Pharmaceutical Companies of Johnson & Johnson, Spring House, PA, USA

Lu Yang • Department of Pathology and Laboratory Medicine, University of Louisville School of Medicine, Louisville, KY, USA

Lei Zhang • Office of Clinical Pharmacology, Office of Translational Sciences, Center for Drug Evaluation and Research, United States Food and Drug Administration, Silver Spring, MD, USA