

# Essential Concepts in Toxicogenomics

*Edited by*

**Donna L. Mendrick**  
**William B. Mattes**



**Humana Press**

# Contents

Preface .....	v
Contributors .....	ix
Color Plates .....	xi
1 Toxicogenomics and Classic Toxicology: How to Improve Prediction and Mechanistic Understanding of Human Toxicity <i>Donna L. Mendrick</i> .....	1
2 Use of Traditional End Points and Gene Dysregulation to Understand Mechanisms of Toxicity: Toxicogenomics in Mechanistic Toxicology <i>Wayne R. Buck, Jeffrey F. Waring, and Eric A. Blomme</i> .....	23
3 Quality Control of Microarray Assays for Toxicogenomic and <i>In Vitro</i> Diagnostic Applications <i>Karol L. Thompson and Joseph Hackett</i> .....	45
4 Role of Statistics in Toxicogenomics <i>Michael Elashoff</i> .....	69
5 Predictive Toxicogenomics in Preclinical Discovery <i>Scott A. Barros and Rory B. Martin</i> .....	89
6 <i>In Vivo</i> Predictive Toxicogenomics <i>Mark W. Porter</i> .....	113
7 Bioinformatics: Databasing and Gene Annotation <i>Lyle D. Burgoon and Timothy R. Zacharewski</i> .....	145
8 Microarray Probe Mapping and Annotation in Cross-Species Comparative Toxicogenomics <i>John N. Calley, William B. Mattes, and Timothy P. Ryan</i> .....	159
9 Toxicogenomics in Biomarker Discovery <i>Marc F. DeCristofaro and Kellye K. Daniels</i> .....	185
10 From Pharmacogenomics to Translational Biomarkers <i>Donna L. Mendrick</i> .....	195
11 Public Consortium Efforts in Toxicogenomics <i>William B. Mattes</i> .....	221

12 Applications of Toxicogenomics to Nonclinical Drug  
Development: Regulatory Science Considerations

*Frank D. Sistare and Joseph J. DeGeorge* . . . . . 239

Index . . . . . 263