
Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>
PART I FUNDAMENTALS	
1 DIGE: Past and Future <i>Jonathan S. Minden</i>	3
2 The Basics of 2D DIGE <i>Phil Beckett</i>	9
3 Multifluorescence 2D Gel Imaging and Image Analysis <i>Ingo Vormbrock, Sonja Hartwig, and Stefan Lehr</i>	21
4 Assessing Signal-to-Noise in Quantitative Proteomics: Multivariate Statistical Analysis in DIGE Experiments <i>David B. Friedman</i>	31
5 Analysis of Proteins Using DIGE and MALDI Mass Spectrometry <i>Witold M. Winnik, Robert M. DeKroon, Joseph S.Y. Jeong, Mihaela Mocanu, Jennifer B. Robinette, Cristina Osorio, Nedyalka N. Dicheva, Eric Hamlett, and Oscar Alzate</i>	47
6 Synthesis and Validation of Cyanine-Based Dyes for DIGE <i>Michael E. Jung, Wan-Joong Kim, Nuraly K. Avliyakov, Merve Oztug, and Michael J. Haykinson</i>	67
PART II METHODS	
7 2D DIGE Saturation Labeling for Minute Sample Amounts <i>Georg J. Arnold and Thomas Fröhlich</i>	89
8 Proteomic Analysis of Redox-Dependent Changes Using Cysteine-Labeling 2D DIGE. <i>Hong-Lin Chan, John Sinclair, and John F. Timms</i>	113
9 Analysis of Protein Posttranslational Modifications Using DIGE-Based Proteomics <i>Robert M. DeKroon, Jennifer B. Robinette, Cristina Osorio, Joseph S.Y. Jeong, Eric Hamlett, Mihaela Mocanu, and Oscar Alzate</i>	129
10 Comparative Analyses of Protein Complexes by Blue Native DIGE <i>Katrin Peters and Hans-Peter Braun</i>	145
11 2D DIGE Analysis of Protein Extracts from Muscle Tissue <i>Cecilia Gelfi and Sara De Palma</i>	155

12	Combination of Highly Efficient Hexapeptide Ligand Library-Based Sample Preparation with 2D DIGE for the Analysis of the Hidden Human Serum/Plasma Proteome	169
	<i>Sonja Hartwig and Stefan Lehr</i>	
13	2D DIGE Analysis of Serum After Fractionation by ProteoMiner™ Beads	181
	<i>Cynthia Liang, Gek San Tan, and Maxey C.M. Chung</i>	
14	Study Design in DIGE-Based Biomarker Discovery	195
	<i>Alexandra Graf and Rudolf Oehler</i>	
15	Comparative 2D DIGE Analysis of the Depleted Serum Proteome for Biomarker Discovery	207
	<i>Megan Penno, Matthias Ernst, and Peter Hoffmann</i>	

PART III APPLICATIONS IN CLINICAL PROTEOMICS

16	Differential Gel-Based Proteomic Approach for Cancer Biomarker Discovery Using Human Plasma	223
	<i>Keun Na, Min-Jung Lee, Hye-Jin Jeong, Hoguen Kim, and Young-Ki Paik</i>	
17	2D DIGE for the Analysis of RAMOS Cells Subproteomes	239
	<i>Marisol Fernández and Juan Pablo Albar</i>	
18	Application of Saturation Labeling in Lung Cancer Proteomics	253
	<i>Gereon Poschmann, Barbara Sitek, Bence Sipos, and Kai Stübler</i>	
19	Proteomic Profiling of the Epithelial-Mesenchymal Transition Using 2D DIGE	269
	<i>Rommel A. Mathias, Hong Ji, and Richard J. Simpson</i>	
20	Method for Protein Subfractionation of Cardiovascular Tissues Before DIGE Analysis	287
	<i>Athanasios Didangelos, Xiaoke Yin, and Manuel Mayr</i>	
21	Application of DIGE and Mass Spectrometry in the Study of Type 2 Diabetes Mellitus Mouse Models	299
	<i>Celia Smith, Davinia Mills, and Rainer Cramer</i>	
22	Evaluating the Efficacy of Subcellular Fractionation of Blast Cells Using Live Cell Labeling and 2D DIGE	319
	<i>Yin Ying Ho, Megan Penno, Michelle Perugini, Ian Lewis, and Peter Hoffmann</i>	

PART IV APPLICATIONS IN ANIMAL, PLANT, AND MICROBIAL PROTEOMICS

23	DIGE Analysis of Plant Tissue Proteomes Using a Phenolic Protein Extraction Method	335
	<i>Christina Rode, Traud Winkelmann, Hans-Peter Braun, and Frank Colditz</i>	
24	Native DIGE of Fluorescent Plant Protein Complexes	343
	<i>Veronika Reisinger and Lutz Andreas Eichacker</i>	

25	An Overview of 2D DIGE Analysis of Marine (Environmental) Bacteria	355
	<i>Ralf Rabus</i>	
26	Application of 2D DIGE in Animal Proteomics	373
	<i>Ingrid Miller</i>	
	<i>Index</i>	397

Difference Gel Electrophoresis (DIGE)

Methods and Protocols

Cramer, R.; Westermeier, R. (Eds.)

2012, XIII, 401 p., Hardcover

ISBN: 978-1-61779-572-5

A product of Humana Press