
Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>

OVERVIEW CHAPTERS

1 Two-Dimensional Electrophoresis: An Overview	3
<i>Richard Smith</i>	
2 Solubilization of Proteins in 2DE: An Outline	19
<i>Thierry Rabilloud</i>	
3 Selection of pH Ranges in 2DE	31
<i>Mireille Starita-Geribaldi</i>	
4 Difficult Proteins	47
<i>Ben Herbert and Elizabeth Harry</i>	
5 Organelle Proteomics	65
<i>Matthias Plösch, Bernhard Granvogl, Veronika Reisinger, Axel Masanek, and Lutz Andreas Eichacker</i>	
6 Applications of Chemical Tagging Approaches in Combination with 2DE and Mass Spectrometry	83
<i>Alexander Leitner and Wolfgang Lindner</i>	
7 Immunoblotting 2DE Membranes	103
<i>Brian McDonagh</i>	

PROTOCOLS CHAPTERS

8 Troubleshooting Image Analysis in 2DE	113
<i>Bettina Levänen and Åsa M. Wheelock</i>	
9 Analysis of Bacterial Proteins by 2DE	131
<i>Philip Cash and Evelyn Argo</i>	
10 Proteomic Analysis of <i>Caenorhabditis elegans</i>	145
<i>Pan-Young Jeong, Keun Na, Mi-Jeong Jeong, David Chitwood, Yhng-Hee Shim, and Young-Ki Paik</i>	
11 Protein Extraction for 2DE	171
<i>Claus Zabel and Joachim Klose</i>	
12 Analysis of Proteins from Marine Molluscs	197
<i>Suze Chora, Maria João Bebianno, and Michèle Roméo</i>	
13 Preparation and Analysis of Plastid Proteomes by 2DE	205
<i>Anne von Zychlinski and Wilhelm Gruissem</i>	
14 High-Resolution 2DE	221
<i>Katrin Marcus, Cornelia Joppich, Caroline May, Kathy Pfeiffer, Barbara Sitek, Helmut Meyer, and Kai Stuehler</i>	

15	Blue Native-Gel Electrophoresis Proteomics	241
	<i>Kelly Andringa, Adrienne King, and Shannon Bailey</i>	
16	2DE for Proteome Analysis of Human Metaphase Chromosomes	259
	<i>Kiichi Fukui and Susumu Uchiyama</i>	
17	Microsomal Proteomics	273
	<i>Diana M. Wong and Khosrow Adeli</i>	
18	Prefractionation Using Microscale Solution IEF	291
	<i>Won-A Joo and David Speicher</i>	
19	Diagonal Electrophoresis for Detection of Protein Disulphide Bridges	305
	<i>Brian McDonagh</i>	
20	High-Resolution Large-Gel 2DE	311
	<i>Claus Zabel and Joachim Klose</i>	
21	Silver Staining of Proteins in 2DE Gels	339
	<i>Cécile Lelong, Mireille Chevallet, Sylvie Luche, and Thierry Rabilloud</i>	
22	Detection of 4-Hydroxy-2-Nonenal- and 3-Nitrotyrosine-Modified Proteins Using a Proteomics Approach	351
	<i>Rukhsana Sultana, Tanea Reed, and D. Allan Butterfield</i>	
23	Proteomic Detection of Oxidized and Reduced Thiol Proteins in Cultured Cells	363
	<i>Sarah L. Cuddihy, James W. Baty, Kristin K. Brown, Christine C. Winterbourn, and Mark B. Hampton</i>	
24	Detection of Ubiquitination in 2DE	377
	<i>Brian McDonagh</i>	
25	Phosphoproteome Analysis by In-Gel Isoelectric Focusing and Tandem Mass Spectrometry	383
	<i>Sarka Beranova-Giorgianni, Dominic M. Desiderio, and Francesco Giorgianni</i>	
26	Detection of Protein Glutathionylation	397
	<i>Elisabetta Gianazza, Ivano Eberini, and Pietro Ghezzi</i>	
27	Activity-Based Protein Profiling of Protein Tyrosine Phosphatases	417
	<i>Chad Walls, Bo Zhou, and Zhong-Yin Zhang</i>	
28	Active Protease Mapping in 2DE Gels	431
	<i>Zhenjun Zhao and Pamela J. Russell</i>	
29	Two-Dimensional Difference Gel Electrophoresis	439
	<i>Gert Van den Bergh</i>	
30	Protein Expression Profiling	455
	<i>Brian P. Bradley, Bose Kalampanayil, and Michael C. O'Neill</i>	
31	C-Terminal Sequence Analysis of 2DE-Separated Proteins	469
	<i>Bart Samyn, Kjell Sergeant, and Jozef Van Beeumen</i>	
32	Shotgun Protein Analysis by Liquid Chromatography-Tandem Mass Spectrometry	483
	<i>Kazuishi Kubota, Toshiyuki Kosaka, and Kimihisa Ichikawa</i>	

33 *De Novo* Sequence Analysis of N-Terminal Sulfonated Peptides After in-Gel Guanidination 495
Kjell Sergeant, Jozef Van Beeumen, and Bart Samyn

34 Tryptic Digestion of In-Gel Proteins for Mass Spectrometry Analysis 507
Mai-Loan Huynh, Pamela Russell, and Bradley Walsh

35 Database Interrogation Algorithms for Identification of Proteins in Proteomic Separations. 515
Patricia M. Palagi, Frédérique Lisacek, and Ron D. Appel

36 Creating 2DE Databases for the World Wide Web 533
Christine Hoogland, Khaled Mostaguir, and Ron D. Appel

Index. 541