

---

## Contents

<i>Preface</i> .....	v
<i>Contributors</i> .....	xi
1. Origins of Protein Blotting..... <i>Harry Towbin</i>	1
2. Western Blotting: Remembrance of Past Things ..... <i>W. Neal Burnette</i>	5
3. Introduction to Protein Blotting ..... <i>Biji T. Kurien and R. Hal Scofield</i>	9
4. Simultaneous Immunoblotting Analysis with Activity Gel Electrophoresis and 2-D Gel Electrophoresis..... <i>Der-Yen Lee and Geen-Dong Chang</i>	23
5. Diffusion Blotting for Rapid Production of Multiple Identical Imprints from Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis on a Solid Support ..... <i>Ingrid Olsen and Harald G. Wiker</i>	35
6. Tryptic Peptide Purification Using Polyvinylidene Difluoride Membrane for Matrix-Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry ..... <i>Biji T. Kurien and R. Hal Scofield</i>	39
7. Affinity Immunoblotting for Analysis of Antibody Clonotype Distribution in a Lupus Patient Developing Anti-Ro 60 Over Time ..... <i>Biji T. Kurien and R. Hal Scofield</i>	45
8. Non-electrophoretic Bi-directional Transfer of a Single SDS-PAGE Gel with Multiple Antigens to Obtain 12 Immunoblots ..... <i>Biji T. Kurien and R. Hal Scofield</i>	55
9. Slice Blotting..... <i>Graeme Lowe</i>	67
10. <i>Localizing Proteins by Tissue Printing</i> ..... <i>Rafael F. Pont-Lezica</i>	75
11. Dot-Immunobinding Assay ..... <i>S. Sumi, A. Mathai, and V.V. Radhakrishnan</i>	89
12. Capillary Blotting of Glycosaminoglycans on Nitrocellulose Membranes After Agarose Gel Electrophoresis Separation ..... <i>Nicola Volpi and Francesca Maccari</i>	95
13. Quantitative Computerized Western Blotting ..... <i>Dalit Talmi-Frank, Charles L. Jaffe, and Gad Baneth</i>	103

14.	Cationic Electrophoresis and Eastern Blotting .....	115
	<i>Engelbert Buxbaum</i>	
15.	A Miniaturized Blotting System for Simultaneous Detection of Different Autoantibodies.....	129
	<i>Ulrich Canzler, Holger Bartsch, Kai Großmann, Werner Lehmann, Karsten Conrad, Biji T. Kurien, Yaser Dorri, R. Hal Scofield, and Michael Bachmann</i>	
16.	Transfer and Multiplex Immunoblotting of a Paraffin Embedded Tissue .....	139
	<i>Joon-Yong Chung and Stephen M. Hewitt</i>	
17.	Multistrip Western Blotting to Increase Quantitative Data Output.....	149
	<i>Anatoly Kiyatkin and Edita Aksamitiene</i>	
18.	Western Blotting/Edman Sequencing using PVDF Membrane .....	163
	<i>Setsuko Komatsu</i>	
19.	Blotting from PhastGel to Membranes by Ultrasound .....	173
	<i>Joseph Kost</i>	
20.	Ultrarapid Electrophoretic Transfer of High and Low Molecular Weight Proteins Using Heat .....	181
	<i>Biji T. Kurien and R. Hal Scofield</i>	
21.	Strip Immunoblotting of Multiple Antigenic Peptides to Nitrocellulose Membrane .....	191
	<i>Biji T. Kurien</i>	
22.	Affinity Purification of Autoantibodies from an Antigen Strip Excised from a Nitrocellulose Protein Blot .....	201
	<i>Biji T. Kurien</i>	
23.	Double-Blotting: A Solution to the Problem of Nonspecific Binding of Secondary Antibodies in Immunoblotting Procedures .....	213
	<i>Françoise Lasne</i>	
24.	Efficient Electroblothing of Very Large Proteins Using a Vertical Agarose Electrophoresis System.....	221
	<i>Marion L. Greaser and Chad M. Warren</i>	
25.	Semi-Dry Protein Transfer and Immunodetection of P-Selectin Using an Antibody to its C-terminal Tag .....	229
	<i>Padmaja Mehta</i>	
26.	The Multiple Antigen Blot Assay: A Simple, Versatile and Multipurpose Immunoenzymatic Technique .....	237
	<i>Oscar Noya Sandra Losada, Marilyn Toledo, and Belkisyolé Alarcón de Noya</i>	
27.	Blotting from Immobilized pH Gradient Gels: Application to Total Cell Lysates .....	253
	<i>Harry Towbin</i>	
28.	Immunoprecipitation-Western Blot for Proteins of Low Abundance .....	259
	<i>Edward P. Trieu, Joanne K. Gross, and Ira N. Targoff</i>	

29.	Native Electrophoresis and Western Blot Analysis: Method and Applications .....	277
	<i>Ioannis N. Manoussopoulos and Mina Tsagris</i>	
30.	Grid-Immunoblotting .....	289
	<i>Olga Yeliosof and R. Hal Scofield</i>	
31.	Sequential Use of Immunoblots for Characterization of Autoantibody Specificities .....	293
	<i>Holger Bartsch and Michael Bachmann</i>	
32.	Renaturation of Recombinant Ro 60 Autoantigen by Calcium Ions on PVDF Membrane .....	299
	<i>Biji T. Kurien and Michael Bachmann</i>	
33.	Intermittent Microwave Irradiation Facilitates Antigen–Antibody Reaction in Western Blot Analysis.....	307
	<i>Yu-Ting Liu and Shinya Toyokuni</i>	
34.	Detection of Protein–Protein Interactions by Far-Western Blotting.....	313
	<i>Kazuya Machida and Bruce J. Mayer</i>	
35.	On-Membrane Tryptic Digestion of Proteins for Mass Spectrometry Analysis .....	331
	<i>Jose L. Luque-Garcia and Thomas A. Neubert</i>	
36.	Western Blot Analysis of Adhesive Interactions under Fluid Shear Conditions: The Blot Rolling Assay .....	343
	<i>Robert Sackstein and Robert Fuhlbrigge</i>	
37.	ELISPOT Assay on Membrane Microplates .....	355
	<i>Alexander E. Kalyuzhny</i>	
38.	A Brief Review of Other Notable Protein Blotting Methods .....	367
	<i>Biji T. Kurien and R. Hal Scofield</i>	
39.	Phosphoprotein Detection on Protein Electroblot Using a Phosphate-Specific Fluorophore.....	385
	<i>Lee Broderick Bockus and R. Hal Scofield</i>	
40.	Rapid, Antibody-Free Detection of Recombinant Proteins on Blots Using Enzyme Fragment Complementation.....	395
	<i>Neil W. Charter, Joe Horecka, Chin-Yee Loh, Albert Doan, Tom Wehrman, and Keith R. Olson</i>	
41.	Fluorescent Labeling of Proteins and Its Application to SDS-PAGE and Western Blotting.....	407
	<i>F. Javier Alba, Salvador Bartolomé, Antonio Bermúdez, and Joan-Ramon Daban</i>	
42.	Whole and Strip Nitrocellulose Membrane as well as New Line Immunoblotting of Antigen Using the Chemiluminescence Technique.....	417
	<i>Yaser Dorri, Ali W. Khalili, and R. Hal Scofield</i>	
43.	Protein Stains to Detect Antigen on Membranes .....	433
	<i>Anil D'souza and R. Hal Scofield</i>	

44.	Use of Nonradioactive Detection Method for North- and Southwestern Blot .....	441
	<i>Claudia Franke, Daniel Gräfe, Holger Bartsch, and Michael Bachmann</i>	
45.	Immunoblotting Using Radiolabeled Reagents for Detection .....	451
	<i>Holger Bartsch, Claudia Franke, and Michael Bachmann</i>	
46.	Detection of Protein Carbonyls by Means of Biotin Hydrazide–Streptavidin Affinity Methods .....	457
	<i>Kenneth Hensley</i>	
47.	“Rainbow” Western Blotting .....	463
	<i>Stan (Stanislaw) Krajewski</i>	
48.	Multiple Antigen Detection Western Blotting .....	473
	<i>Stan Krajewski, Xianshu Huang, and Maryla Krajewska</i>	
49.	Detection of Calcium Binding by Ro 60 Multiple Antigenic Peptides on PVDF Membrane Using Quin-2 .....	483
	<i>Biji T. Kurien and Michael Bachmann</i>	
50.	Detection of La/SS-B by Western Blot Using Nanogold-Tagged Antibodies and Silver Enhancement .....	491
	<i>Shannon Maier, Sherry Hubbell, and R. Hal Scofield</i>	
51.	Imaging Systems for Westerns: Chemiluminescence vs. Infrared Detection .....	499
	<i>Suresh T. Mathews, Eric P. Plaisance, and Teayoun Kim</i>	
52.	A Fluorescent Codetection System for Immunoblotting and Proteomics Through ECL-Plex and CyDye Labeling .....	515
	<i>Ciara A. McManus, Pamela M. Donoghue, and Michael J. Dunn</i>	
53.	Visualization of Unstained Protein Bands on PVDF .....	527
	<i>Jun Park, Masaharu Mabuchi, and Ajay Sharma</i>	
54.	Improved Protein Detection Using Cold Microwave Technology .....	533
	<i>Aaron G. Smith, Jyothi Jayaram, Carol B. Johnson, E. Ann Ellis, Stanislav Vitha, Ellen W. Collisson, and Andreas Holzenburg</i>	
55.	TLC Blot (Far-Eastern Blot) and Its Applications .....	545
	<i>Takao Taki, Tania Valdes Gonzalez, Naoko Goto-Inoue, Takahiro Hayasaka, and Mitsutoshi Setou</i>	
56.	A Brief Review of Other Notable Protein Detection Methods on Blots .....	557
	<i>Biji T. Kurien and R. Hal Scofield</i>	
57.	Sending Secret Messages on Nitrocellulose Membrane and the Use of a Molecular Pen for Orientation in ECL Membrane Assays .....	573
	<i>Biji T. Kurien</i>	
	<i>Index</i> .....	583

**Protein Blotting and Detection**

**Methods and Protocols**

Kurien, B.T.; Scofield, R.H. (Eds.)

2009, XIV, 588 p. 141 illus., 6 illus. in color., Hardcover

ISBN: 978-1-934115-73-2

A product of Humana Press