

Contents

<i>Preface</i>	v
<i>Contributors</i>	xiii
1 Filter-Binding Assays <i>Peter G. Stockley</i>	1
2 Electrophoretic Mobility Shift Assays for the Analysis of DNA-Protein Interactions <i>Manon Gaudreault, Marie-Eve Gingras, Maryse Lessard, Steeve Leclerc, and Sylvain L. Guérin</i>	15
3 DNase I Footprinting <i>Benoît Leblanc and Tom Moss</i>	37
4 Exonuclease III Footprinting on Immobilized DNA Templates <i>Patrizia Spitalny and Michael Thomm</i>	49
5 Hydroxyl Radical Footprinting of Protein-DNA Complexes <i>Indu Jagannathan and Jeffrey J. Hayes</i>	57
6 The Use of Diethyl Pyrocarbonate and Potassium Permanganate as Probes for Strand Separation and Structural Distortions in DNA <i>Brenda F. Kahl and Marvin R. Paule</i>	73
7 Uranyl Photofootprinting <i>Peter E. Nielsen</i>	87
8 Identification of Protein/DNA Contacts with Dimethyl Sulfate: Methylation Protection and Methylation Interference <i>Peter E. Shaw and A. Francis Stewart</i>	97
9 Ethylation Interference Footprinting of DNA-Protein Complexes <i>Iain W. Manfield and Peter G. Stockley</i>	105
10 Site-Directed Cleavage of DNA by Protein-Fe(II) EDTA Conjugates Within Model Chromatin Complexes <i>David R. Chafin and Jeffrey J. Hayes</i>	121
11 Identification of Nucleic Acid High-Affinity Binding Sequences of Proteins by SELEX <i>Philippe Bouvet</i>	139
12 Identification of Sequence-Specific DNA-Binding Proteins by Southwestern Blotting <i>Simon Labbé, Jean-François Harrison, and Carl Séguin</i>	151
13 Footprinting DNA-Protein Interactions in Native Polyacrylamide Gels by Chemical Nucleolytic Activity of 1,10-Phenanthroline-Copper <i>Athanasios G. Papavassiliou</i>	163
14 Determination of a Transcription Factor-Binding Site by Nuclease Protection Footprinting onto Southwestern Blots <i>Athanasios G. Papavassiliou</i>	201

15	Use of a Reporter Gene Assay in Yeast for Genetic Analysis of DNA-Protein Interactions	219
	<i>David R. Setzer, Deborah B. Schulman, Cathy V. Gunther, and Michael J. Bumbulis</i>	
16	Chromatin Immunoprecipitation in Mammalian Cells	243
	<i>Amy Svtetelis, Nicolas Gévry, and Luc Gaudreau</i>	
17	Sequential Chromatin Immunoprecipitation Protocol: ChIP-reChIP	253
	<i>Mayra Furlan-Magaril, Héctor Rincón-Arano, and Félix Recillas-Targa</i>	
18	Profiling Genome-Wide Histone Modifications and Variants by ChIP-chip on Tiling Microarrays in <i>S. cerevisiae</i>	267
	<i>Alain R. Bataille and François Robert</i>	
19	Nucleosome Mapping	281
	<i>Nicolas Gévry, Amy Svtetelis, Marc Larochelle, and Luc Gaudreau</i>	
20	In Cellulo DNA Analysis (LMPCR Footprinting).	293
	<i>Régen Drouin, Nathalie Bastien, Jean-François Millau, François Vigneault, and Isabelle Paradis</i>	
21	Atomic Force Microscopy Imaging and Probing of DNA, Proteins, and Protein-DNA Complexes: Silatrane Surface Chemistry	337
	<i>Yuri L. Lyubchenko, Luda S. Shlyakhtenko, and Alexander A. Gall</i>	
22	Two-Dimensional Crystallisation of Soluble Protein Complexes	353
	<i>Patrick Schultz, Corinne Crucifix, and Luc Lebeau</i>	
23	Assays for Transcription Factor Activity.	369
	<i>Douglas Browning, Nigel Savery, Annie Kolb, and Stephen Busby</i>	
24	Ultraviolet Crosslinking of DNA-Protein Complexes via 8-Azidoadenine	389
	<i>Rainer Meffert, Klaus Dose, Gabriele Rathgeber, and Hans-Jochen Schäfer</i>	
25	Static and Kinetic Site-Specific Protein-DNA Photocrosslinking: Analysis of Bacterial Transcription Initiation Complexes	403
	<i>Nikolai Naryshkin, Sergei Druzhinin, Andrei Revyakin, Younggyu Kim, Vladimir Mekler, and Richard H. Ebright</i>	
26	Use of Site-Specific Protein-DNA Photocrosslinking of Purified Complexes to Analyze the Topology of the RNA Polymerase II Transcription Initiation Complex	439
	<i>Diane Forget, Céline Domecq, and Benoit Coulombe</i>	
27	Site-Directed DNA Crosslinking of Large Multisubunit Protein-DNA Complexes.	453
	<i>Jim Persinger and Blaine Bartholomew</i>	
28	Functional Studies of DNA-Protein Interactions Using FRET Techniques	475
	<i>Simon Blouin, Timothy D. Craggs, Daniel A. Lafontaine, and J. Carlos Penedo</i>	
29	Single-Molecule FRET Analysis of Protein-DNA Complexes	503
	<i>Mike Heilemann, Ling Chin Hwang, Konstantinos Lympieropoulos, and Achillefs N. Kapanidis</i>	

30	Analysis of DNA Supercoiling Induced by DNA-Protein Interactions.	523
	<i>David J. Clark and Benoît Leblanc</i>	
31	The Cruciform DNA Mobility Shift Assay: A Tool to Study Proteins that Recognize Bent DNA	537
	<i>Victor Y. Stefanovsky and Tom Moss</i>	
32	Plasmid Vectors for the Analysis of Protein-Induced DNA Bending	547
	<i>Christian Zwieb and Sankar Adhya</i>	
33	Analysis of Distant Communication on Defined Chromatin Templates In Vitro	563
	<i>Yury S. Polikanov and Vasily M. Studitsky</i>	
34	A Competition Assay for DNA Binding Using the Fluorescent Probe ANS.	577
	<i>Ian A. Taylor and G. Geoff Kneale</i>	
35	Fluorescence Spectroscopy and Anisotropy in the Analysis of DNA-Protein Interactions	589
	<i>Rosy Favicchio, Anatoly I. Dragan, G. Geoff Kneale, and Christopher M. Read</i>	
36	Circular Dichroism for the Analysis of Protein-DNA Interactions.	613
	<i>P.D. Cary and G. Geoff Kneale</i>	
37	Defining the Thermodynamics of Protein/DNA Complexes and Their Components Using Micro-calorimetry	625
	<i>Colyn Crane-Robinson, Anatoly I. Dragan, and Christopher M. Read</i>	
38	Surface Plasmon Resonance Assays of DNA-Protein Interactions	653
	<i>Peter G. Stockley and Björn Persson</i>	
	<i>Index.</i>	671

PETER D. CARY • Institute of Biomedical and Biomolecular Sciences, School of
Biological Sciences, University of Portsmouth, Portsmouth, UK

DAVID R. CHAIKIN • Ventana Medical Systems Inc., Tucson, AZ, USA

DAVID J. CLARK • National Institute of Child Health and Human Development,
National Institutes of Health, Bethesda, MD, USA

BENOÎT COULOMBE • Institut de Recherches Cliniques de Montréal, Montréal, QC,
Canada

TIMOTHY D. CRAGES • School of Physics and Astronomy, University of St. Andrews, St.
Andrews, UK

COLYN CRANE-ROBINSON • Biophysics Laboratories, School of Biological Sciences,
University of Portsmouth, Portsmouth, UK

CORINNE CRUCIFIX • Institut de Génétique et de Biologie Moléculaire et Cellulaire,
Illkirch-Graffenstaden, France

CÉLINE DOMBOU • Institut de Recherches Cliniques de Montréal, Montréal, QC,
Canada

KLAUS DOSE • Institut für Biochemie, Johannes Gutenberg-Universität, Mainz,
Germany

ANATOLY I. DRAGAN • Department of Biology, Johns Hopkins University, Baltimore,
MD, USA