
Contents

Preface	v
Contributors	xiii
Technical Notes	xvii
1 Isolation of Mutagen-Sensitive Chinese Hamster Cell Lines by Replica Plating Malgorzata Z. Zdzienicka	1
2 Complementation Assays Adapted for DNA Repair-Deficient Keratinocytes Mathilde Fréchet, Valérie Bergoglio, Odile Chevallier-Lagente, Alain Sarasin, and Thierry Magnaldo	9
3 Cytogenetic Challenge Assays for Assessment of DNA Repair Capacities William W. Au and Salama A. Salama	25
4 Evaluating the Delayed Effects of Cellular Exposure to Ionizing Radiation Shruti Nagar, James J. Corcoran, and William F. Morgan	43
5 Inhibition of DNA Synthesis by Ionizing Radiation: <i>A Marker for an S-Phase Checkpoint</i> Nicolaas G. J. Jaspers and Malgorzata Z. Zdzienicka	51
6 Analysis of Inhibition of DNA Replication in Irradiated Cells Using the SV40-Based In Vitro Assay of DNA Replication George Iliakis, Ya Wang, and Hong Yan Wang	61
7 Cytometric Assessment of Histone H2AX Phosphorylation: <i>A Reporter of DNA Damage</i> Xuan Huang and Zbigniew Darzynkiewicz	73
8 Detection of DNA Strand Breaks by Flow and Laser Scanning Cytometry in Studies of Apoptosis and Cell Proliferation (DNA Replication) Zbigniew Darzynkiewicz, Xuan Huang, and Masaki Okafuji	81
9 In Vitro Rejoining of Double-Strand Breaks in Genomic DNA George Iliakis and Nge Cheong	95
10 Detection of DNA Double-Strand Breaks and Chromosome Translocations Using Ligation-Mediated PCR and Inverse PCR Michael J. Villalobos, Christopher J. Betti, and Andrew T. M. Vaughan	109

11	Plasmid-Based Assays for DNA End-Joining In Vitro George Iliakis, Bustanur Rosidi, Minli Wang, and Huichen Wang	123
12	Use of Gene Targeting to Study Recombination in Mammalian Cell DNA Repair Mutants Rodney S. Nairn and Gerald M. Adair	133
13	Gene-Specific and Mitochondrial Repair of Oxidative DNA Damage R. Michael Anson, Penelope A. Mason, and Vilhelm A. Bohr	155
14	Quantitative PCR-Based Measurement of Nuclear and Mitochondrial DNA Damage and Repair in Mammalian Cells Janine H. Santos, Joel N. Meyer, Bhaskar S. Mandavilli, and Bennett Van Houten	183
15	Measuring the Formation and Repair of DNA Damage by Ligation-Mediated PCR Gerd P. Pfeifer	201
16	Immunochemical Detection of UV-Induced DNA Damage and Repair Marcus S. Cooke and Alistair Robson	215
17	A Dot-Blot Immunoassay for Measuring Repair of Ultraviolet Photoproducts Shirley McCready	229
18	Quantification of Photoproducts in Mammalian Cell DNA Using Radioimmunoassay David L. Mitchell	239
19	DNA Damage Quantitation by Alkaline Gel Electrophoresis Betsy M. Sutherland, Paula V. Bennett, and John C. Sutherland	251
20	The Comet Assay: A Sensitive Genotoxicity Test for the Detection of DNA Damage and Repair Günter Speit and Andreas Hartmann	275
21	Fast Micromethod DNA Single-Strand-Break Assay Heinz C. Schröder, Renato Batel, Heiko Schwertner, Oleksandra Boreiko, and Werner E. G. Müller	287
22	³² P-Postlabeling DNA Damage Assays: PAGE, TLC, and HPLC Shinya Shibutani, Sung Yeon Kim, and Naomi Suzuki	307
23	Electrophoretic Mobility Shift Assays to Study Protein Binding to Damaged DNA Vaughn Smider, Byung Joon Hwang, and Gilbert Chu	323

24	Construction of MMR Plasmid Substrates and Analysis of MMR Error Correction and Excision Huixian Wang and John B. Hays	345
25	Characterization of Enzymes that Initiate Base Excision Repair at Abasic Sites Walter A. Deutsch and Vijay Hegde	355
26	Base Excision Repair in Mammalian Cells Yoshihiro Matsumoto	365
27	In Vitro Base Excision Repair Assay Using Mammalian Cell Extracts Guido Frosina, Enrico Cappelli, Monica Ropolo, Paola Fortini, Barbara Pascucci, and Eugenia Dogliotti	377
28	Biochemical Assays for the Characterization of DNA Helicases Robert M. Brosh, Jr. and Sudha Sharma	397
29	Repair Synthesis Assay for Nucleotide Excision Repair Activity Using Fractionated Cell Extracts and UV-Damaged Plasmid DNA Maureen Biggerstaff and Richard D. Wood	417
30	Assaying for the Dual Incisions of Nucleotide Excision Repair Using DNA with a Lesion at a Specific Site Mahmud K. K. Shivji, Jonathan G. Moggs, Isao Kuraoka, and Richard D. Wood	435
31	Analysis of Proliferating Cell Nuclear Antigen (PCNA) Associated with DNA Excision Repair Sites in Mammalian Cells A. Ivana Scovassi and Ennio Prosperi	457
32	Analysis of DNA Repair and Chromatin Assembly In Vitro Using Immobilized Damaged DNA Substrates Jill A. Mello, Jonathan G. Moggs, and Geneviève Almouzni	477
	Index	489



<http://www.springer.com/978-1-58829-513-2>

DNA Repair Protocols

Henderson, D.S. (Ed.)

2006, XVIII, 498 p., Hardcover

ISBN: 978-1-58829-513-2

A product of Humana Press