

DNA Repair Protocols

Mammalian Systems

SECOND EDITION

Edited by

Daryl S. Henderson*Pharmacological Sciences, SUNY Stony Brook, Stony Brook, NY***From Reviews of the First Edition...***"...a valuable laboratory companion for researchers in the area..." —RADIATION RESEARCH**"...recommend[ed]...to the readers of Mutagenesis who may wish to possess an easy-to-access manual to hand either in the laboratory or as part of their collection." —MUTAGENESIS**"...important for daily work in the laboratory." —ARZNEIMITTEL-FORSCHUNG/DRUG RESEARCH*

In this second edition of a much praised laboratory manual devoted to eukaryotic systems, Daryl S. Henderson has refocused the book on mammalian cells, adding fourteen entirely new chapters and extensively revising many of the remaining chapters. The authors address a broad range of questions about practical mammalian DNA repair, including such arcana as "what is radioresistant DNA synthesis and how is it measured?" The techniques presented are readily reproducible and offer cutting-edge methods for cytogenetic analysis, measuring the cellular response to ionizing radiation, detecting single-strand (nicks) and double-strand DNA breaks, detecting the presence of "adducted" bases in DNA, and preparing mismatch repair (MMR) plasmid substrates. Among the highlights are excellent coverage of both base excision repair (BER) and nucleotide excision repair (NER), useful assays for identifying and quantifying UV-induced DNA lesions and DNA breakage, gene therapy, environmental mutagenesis and cancer, and gene targeting. The protocols follow the successful *Methods in Molecular Biology*™ series format, each offering step-by-step laboratory instructions, an introduction outlining the principles behind the technique, lists of the necessary equipment and reagents, and tips on troubleshooting and avoiding known pitfalls.

Authoritative and highly practical, *DNA Repair Protocols: Mammalian Systems, Second Edition*, offers investigators a wide variety of productive methods to explore and make new discoveries in the world of mammalian DNA repair.

FEATURES

- Cutting-edge techniques to study DNA repair in mammalian systems
- Insight into the genetics, biochemistry, and cell biology of mammalian DNA repair
- Methods for cytogenetic analysis and quantifying levels of DNA damage
- Coverage of both base excision repair (BER) and nucleotide excision repair (NER)
- Assays for identifying and quantifying radiation-induced DNA lesions and breakage
- Chapters on gene therapy, environmental mutagenesis and cancer, and gene targeting
- Step-by-step instructions to ensure successful results
- Tricks of the trade and notes on troubleshooting and avoiding known pitfalls

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