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DESCRIPTION

**Mutation Research (MR)** provides a platform for publishing all aspects of DNA mutations and epimutations, from basic evolutionary aspects to translational applications in genetic and epigenetic diagnostics and therapy. Mutations are defined as all possible alterations in DNA sequence and sequence organization, from point mutations to genome structural variation, chromosomal aberrations and aneuploidy. Epimutations are defined as alterations in the epigenome, i.e., changes in DNA methylation, histone modification and small regulatory RNAs.

**MR** publishes articles in the following areas: Of special interest are basic mechanisms through which DNA damage and mutations impact development and differentiation, stem cell biology and cell fate in general, including various forms of cell death and cellular senescence. The study of genome instability in human molecular epidemiology and in relation to complex phenotypes, such as human disease, is considered a growing area of importance. Mechanisms of (epi)mutation induction, for example, during DNA repair, replication or recombination; novel methods of (epi)mutation detection, with a focus on ultra-high-throughput sequencing. Landscape of somatic mutations and epimutations in cancer and aging. Role of de novo mutations in human disease and aging; mutations in population genomics. Interactions between mutations and epimutations. The role of epimutations in chromatin structure and function. Mitochondrial DNA mutations and their consequences in terms of human disease and aging. Novel ways to generate mutations and epimutations in cell lines and animal models.


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Other *Mutation Research* sections:
- DNA Repair
- Mutation Research - Genetic Toxicology and Environmental Mutagenesis (MRGTEM)
- Mutation Research - Reviews (MRR)

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Carcinogens, molecular epidemiology
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DNA methylation, cancer mutations, 5-hydroxymethylcytosine, epigenetics, tobacco carcinogenesis

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DNA recombination, genomic instability, DNA structure, mutagenesis mechanism, genome structure, genetic disease, genetics, bacterial genetics, mutagenesis, nucleic acid structure, DNA damage, neurodegenerative disease, DNA topoisomerase, chromatin structure, trinucleotide repeat disease, molecular genetics, DNA, Huntington disease

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Mutagenesis, DNA repair, ionizing radiation, epigenetic gene silencing, environmental epigenetics

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DNA damage, Xeroderma pigmentosum, cell transformation, neoplastic, ovarian cancer, breast cancer, Li-Fraumeni syndrome

Kandace Williams, The University of Toledo, Toledo, Ohio, United States of America
DNA damage and repair, mismatch repair, mammalian cell cycle, chemotherapy resistance, glioblastoma

Niels de Wind, Leiden University Medical Centre Center for Human and Clinical Genetics, Leiden, Netherlands
DNA damage responses, mutagenesis, DNA translesion synthesis, DNA mismatch repair

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INTRODUCTION

Mutation Research: Fundamental and Molecular Mechanisms of Mutagenesis broadly encompasses all aspects of research that address the detection of mutations, the mechanisms by which mutations in genes and chromosomes arise, and the modulation of mutagenesis by mutation avoidance pathways such as DNA repair, cell cycle control and apoptosis. It includes the role of genetic variation in the genesis and manifestation of mutations, ranging from the variable manner in which xenobiotics are metabolized to variations in the capacity of cells to replicate and repair damaged DNA. It also includes the contributions of these mechanisms, when perturbed, to animal disease models and to human disease, with particular emphasis on carcinogenic mechanisms. The Journal will publish articles on the genesis of aneuploidy and isodisomy, including the roles played by recombination, cell cycle checkpoints, spindle microtubules, centrosomes and kinetocore proteins, and agents that might disrupt them. Submission of appropriate epidemiological studies as well as consequences, including methods for high throughput SNP detection, whole genome and exonic sequencing, DNA microarrays, RNaseq approaches and proteomics are welcome. Submission of preliminary epidemiological studies that associate SNPs with a phenotype but provide no mechanistic insight is discouraged. The broader scope of the journal is a reflection of the rapid advances in the field of mutation research and the recognition that understanding of the mutagenic process requires full knowledge of the cellular response to DNA damage including DNA repair, cell cycle checkpoint arrest and apoptosis.

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Mutation Research - Fundamental and Molecular Mechanisms of Mutagenesis publishes the following types of article: (I) Research papers - papers reporting results of original, fundamental research. (II) Short communications of up to 5 printed pages. (III)Rapids - are accelerated publications - research papers identified by the Editor as being of significant quality and thereby qualifying for rapid reviewing, and publication within 8-10 weeks of acceptance. (IV) Current issues are generally short, 1-2 page comments on a topical theme, and are published within 10 weeks of acceptance. (V) Volunteered and invited Mini-reviews of less than 10 printed pages, using references generally no later than 2 years old.

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