



Microsatellite Instability: From Molecular Mechanisms to Repeat Expansion Diseases

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Message from the Guest Editor

Microsatellites are simple repetitive DNA sequences present in prokaryotic and eukaryotic genomes. Due to their high instability, consisting of the addition or deletion of repeated units, they have been referred to as dynamic mutations.

Although they have been classically used as molecular markers, microsatellite instability is assumed to play a relevant role in the evolution of genomes. Moreover, the instability of repeated sequences can be a source of phenotypic variation in bacterial pathogens, be linked to neurodegenerative diseases in humans, or be a major feature in certain types of cancer. Large expansions of trinucleotide repeats, as observed in more than 50 repeat expansion diseases including Huntington's disease, multiple spinocerebellar ataxias or fragile X syndrome, and are not uniquely explained by the DNA slippage model but more complex mechanisms including the formation of R-loops.

This Special issue welcomes manuscripts including the molecular mechanistic details of DNA microsatellite instability from in vitro model systems to Bacteria and Eukaryotes, their role as biomarkers and their relationship to Repeat Expansion Diseases.





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Message from the Editor-in-Chief

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