

## Special Issue

# Regulation and Biological Role of Mitochondrial DNA Architecture and Topology

### Message from the Guest Editor

Nearly 20 years ago, it was discovered that vertebrates have genetically-conserved enzymes dedicated at modifying and controlling mtDNA topology, which indicates that DNA topology and architecture must play a crucial role in mitochondrial function. The above finding raised many questions—to name just a few: How is mtDNA-topology regulated, how does mtDNA replication and transcription impact on mtDNA-topology and vice versa; what role plays DNA topology in mitochondrial stability and mtDNA maintenance; to what extent is regulation of mtDNA topology relevant for mitochondria-delimited etiologies and aging? Meanwhile, a great deal of data germane to these issues have been gathered, and it seems that we are finally approaching a point where clarity emerges from chaos. This Special Issue aims at taking stock of the accumulated knowledge and making an effort to draw a coherent picture of our current understanding of the issue. **Keywords**

- mitochondrial DNA-topoisomerases
- mtDNA transcription
- mtDNA replication
- mtDNA maintenance
- mtDNA structure
- mtDNA topology
- mitochondrial ageing
- mitochondrial diseases

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### Guest Editor

Prof. Dr. Fritz Boege

Institut für Klinische Chemie und Laboratoriumsdiagnostik  
Universitätsklinikum Düsseldorf (UKD), Moorenstraße 5, Geb. 13.51  
(MNR-Klinik), D-40225 Düsseldorf, Germany

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Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[ijms@mdpi.com](mailto:ijms@mdpi.com)

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Department of Physiology, Institute of Nutrition and Food Technology  
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