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Alternative Splicing: From Dissection of Molecular Mechanisms to Development of New Therapeutic Tools

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Deadline for manuscript submissions:
closed (30 June 2022)

Message from the Guest Editor

Almost all transcribed human genes undergo alternative RNA splicing, which allows the cells to expand the diversity of the coding and non-coding cellular landscape. Alternative splicing is regulated by cis-elements located in the affected gene and trans-splicing factors that are usually cell type specific. Moreover, an extra layer of complexity is related to the interplay among splicing, transcription, and chromatin remodeling processes. The resultant gene products might have distinctly different and, in some cases, even opposite functions. Although our knowledge of splicing is advancing, efforts are still required to dissect the specific molecular mechanims involved in both normal and pathological conditions for the development of innovative molecules for therapeutic purposes. In this context, research has developed a broad spectrum of therapeutic tools to modulate splicing, including AON, engineered UsnRNA, RNA editing, trans-splicing molecules, chemical splicing factors, and so on. Overall, there is strong interest in the dissection of splicing mechanisms in normal and pathological conditions, which will lay the foundation for the development of new therapeutic options.

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