The Role of Alternative Splicing of Immune Response Genes in Cancer Aggression

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Abstract

Genetic information is transformed from DNA to RNA and eventually to proteins. The protein phenotype is largely dependent on the mRNA produced during transcription. Isoform switching is a series of events that occurs after DNA is successfully transcribed into pre-mRNA, which can generate different transcripts from the same gene, leading to both structurally and functionally different and usually pathogenic proteins. Although alternative splicing regulates normal cell stability, it also plays a crucial role in tumor cells under pathological conditions, affecting cancer progression, metastasis, and rapid proliferation by aberrant splicing. Alternative splicing events are found to be linked to at least 15% of cancers and other fatal diseases. This review provides insights into various alternative splicing events that occur with respect to the immune system, immune escape, and immune therapy and how these events can eventually lead to the development of fatal diseases such as cancer. This review may help to identify key biomarkers for the potential prognostic, diagnostic, and therapeutic activities of a disease.

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