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Osteosarcoma: Current Advances from Molecular and Cellular Mechanisms to Therapy

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Message from the Guest Editors

Osteosarcoma is a rare aggressive primary bone cancer. The tumors are highly heterogeneous with complex genomic landscape involving numerous structural and copy number alterations. Alterations in *TP53* are the most frequently somatic changes, while pathogenic germline mutations in *RB1, TP53, RECQL4, BLM,* and *WRN* are associated with an increased risk of osteosarcoma. Tumor heterogeneity and a lack of recurrent driver mutations make it difficult to identify effective molecularly targeted therapies. Recent multi-omics studies have enhanced our understanding of the molecular pathways in osteosarcoma pathogenesis and are opening up new opportunities for biomarker-driven precision therapies based on molecular subtypes or altered genomic or cellular pathways such as PI3K-ATK-mTOR signaling, homologous recombination repair pathway, or therapies based on the immune profile/response of tumors. This Issue will compile recent research on various cellular and molecular processes involved in osteosarcoma growth, progression, and drug sensitivity/resistance, which could lead to the identification of new drug targets and improvements in osteosarcoma treatment.

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Message from the Editor-in-Chief

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