

Introduction To The Molecular Basis Of Osteosarcoma

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Osteosarcoma is the most common primary malignancy of bone in children. There is distinct correlation between periods of rapid bone growth and development of this disease. It is more commonly affecting males and often arise in the metaphyses of long bones such as the femur or tibia. Osteosarcoma disseminates rapidly throughout the body and 90% of such metastases are found in the lungs. The standard of care generally involves wide surgical resection with either neoadjuvant or adjuvant chemotherapy regimen. It has one of the lowest survival rates among pediatric cancers and imparts a 5-year survivorship of 70% in patients treated for localized disease, but only 30% when metastases are present. The bone remodelling cycle maintains the integrity of the skeleton through the balanced activities of its constituent cell types and defects in osteogenic differentiation leading to osteosarcoma development. Understanding bone development and pathogenesis at cellular is important. More important is also to understand the complex nature of osteosarcoma at molecular and microenvironment. We hope to better understand the interplay between various signaling and differentiation pathways, identifying the most critical molecular targets for the then allow for a bench-to-bedside approach involving potential therapeutics.