Characterization of Five Novel Osteosarcoma Cell Lines and One Chondrosarcoma Cell Line Derived from Primary Tumors


* Tulane Center for Gene Therapy, Tulane University Health Sciences Center, JBJ Building, 1324 Tulane Ave, SL-99, New Orleans, LA, 70112 ** Ochsner Medical Center, Department of Orthopaedics, 1514 Jefferson Hwy, New Orleans, LA, 70121. *** Department of Pharmacology, Tulane Medical School, New Orleans

Background: Osteosarcoma (OS) is the most common primary malignancy of bone in children and adults. In recent years, a significant improvement in the prognosis of localized osteosarcoma of the extremities has been observed. Despite these results, approximately 30–40% of patients will relapse, mostly within the first 3 years from diagnosis. The prognosis of patients with recurrent disease or metastases at diagnosis is poor. This poor prognosis can be partially attributed to lack of good in vitro models to study novel therapeutic options. Materials and methods: One conventional central high grade chondrosarcoma tumor and five conventional central high grade osteosarcoma tumors were obtained from primary tumors that were surgically removed. Cells were disassociated from the tumor, phenotypically characterized for cell surface marker expression and maintained in culture. These cell lines were further characterized for growth pattern, sensitivity to standard chemotherapy drugs and differentiation assays for bone. Conclusion: The tumor derived cell lines that we have obtained from osteosarcoma patients have varying sensitivities to cisplatin and doxorubicin, commonly used chemotherapeutic agents against osteosarcoma. They have all displayed positive bone differentiation and a number of these lines have shown adequate proliferative ability making them good potential candidates for a rare in vitro model. Because most of the established OS lines being used today are so far removed from the patients after several decades of use, their utility in identifying novel therapeutic options has diminished. The cell lines described in this study will be valuable for further studies on identifying novel therapeutic targets.

This research is supported by the Louisiana Cancer Research Consortium, HCA the Health Care Company; and the Louisiana Gene Therapy Research Consortium to R.P.