Decreased miR-134 expression and its tumor-suppressive function in human osteosarcoma

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ABSTRACT. Dysregulation of microRNA (miR) is often associated with cancer development and progression. Aberrant expression of miR-134 has been found in some types of cancer. However, its expression and function in osteosarcoma remain unclear. The aim of this study was to explore the effects of miR-134 in osteosarcoma tumorigenesis and development. The expression level of miR-134 was quantified by real-time reverse transcription-polymerase chain reaction in human osteosarcoma cell lines and tissues. The effects of miR-134 on MG-63 cell phenotypes and tumorigenicity *in vivo* were observed using flow cytometry, 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide, transwell invasion, migration, and scratch migration assays. MiR-134 was significantly downregulated in osteosarcoma cell lines and clinical specimens. Decreased miR-134 expression was significantly associated with large tumor size, positive distant metastasis, and advanced clinical stage. Low miR-134 expression in osteosarcoma was an independent

predictor of poor survival. Overexpression of miR-134 inhibited MG-63 cell proliferation, invasion, and migration, promoted cell apoptosis *in vitro*, and suppressed tumorigenicity *in vivo*. These findings indicate that miR-134 may act as a tumor suppressor in osteosarcoma and could serve as a novel therapeutic agent for miRNA-based therapy.

Key words: MiR-134; Osteosarcoma; Prognosis; Proliferation; Metastasis

