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Novel long noncoding RNA NMR promotes tumor progression via NSUN2 and BPTF in esophageal squamous cell carcinoma

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Abstract:

Long noncoding RNAs (lncRNA) have been implicated in cancer but most of them remain largely unstudied. Here, we identified a NSUN2 methylated lncRNA (NMR), which is significantly upregulated in esophageal squamous cell carcinoma (ESCC), functions as a key regulator of ESCC tumor metastasis and drug resistance. Upregulation of NMR correlated with tumor metastasis and indicated poor overall survival in ESCC patients. Functionally, NMR could promote tumor cell migration and invasion, inhibit cisplatin-induced apoptosis and increase drug resistance in ESCC cells. Mechanistically, transcription of NMR could be upregulated by NF-κB activation after IL-1β and TNF-α treatment. NMR was methylated by NSUN2 and might competitively inhibit methylation of potential mRNAs. NMR could directly bind to chromatin regulator BPTF, and potentially promote MMP3 and MMP10 expression by ERK1/2 pathway through recruiting BPTF to chromatin. Taken together, NMR functions as an oncogenic gene and may serve as new biomarker and therapeutic target in ESCC.