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TGF-β-induced STAT3 overexpression promotes human head and neck squamous cell carcinoma invasion and metastasis through *malat1*/miR-30a interactions

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Abstract

Aberrant signal transducer and activator of transcription 3 (STAT3) signaling is a critical factor that drives the invasion and metastasis of head and neck squamous cell carcinoma (HNSCC). However, the underlying mechanisms of STAT3 overexpression and regulation of HNSCC metastasis remain unknown. In the current study, we demonstrated that upregulated TGF-β may promote epithelial-mesenchymal transition (EMT) through STAT3 activation. In addition, we explored the contributions of STAT3 to HNSCC with a specific focus on its transcriptional regulation and its interaction with the long noncoding RNA (lncRNA) *metastasis associated lung adenocarcinoma transcript 1 (malat1)*. Chromatin immunoprecipitation (ChIP) and luciferase reporter assays revealed that STAT3 could bind to the *malat1* promoter region and transcriptionally activate *malat1* expression; then, *malat1* interacted reciprocally with miR-30a, inducing EMT and accelerating HNSCC metastasis. In summary, our discoveries illuminate how aberrant STAT3 activation confers an oncogenic function in HNSCC and therefore may provide a theoretical foundation for STAT3 as a therapeutic target in HNSCC.