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Long non-coding RNA OR3A4 promoted the metastasis and tumorigenicity in gastric cancer

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The contribution of long non-coding RNAs (lncRNAs) to metastasis of gastric cancer remains largely unknown. In this study lncRNAs that were differentially expressed between normal gastric tissues and gastric cancer tissues were identified by microarray and validated using quantitative real-time polymerase chain reaction (qRT-PCR). Our data showed that the expression level of olfactory receptor, family 3, subfamily A, member 4 (OR3A4) was significantly associated with lymphatic metastasis, depth of cancer invasion and distal metastasis in 130 paired gastric cancer tissues. The effects of OR3A4 were assessed by over-expressing and silencing the lncRNA in gastric cancer cells. We found that OR3A4 promoted cancer cell growth, angiogenesis, metastasis, and tumorigenesis *in vitro* and *in vivo*. Using global microarray analysis combined with RT-PCR, RNA immunoprecipitation and RNA pull-down analysis after OR3A4 transfection, we showed that OR3A4 influenced biologic function in gastric cancer cells by regulating the activation of PDLIM2, MACC1, NTN4 and GNB2L1. Together, our results indicate that OR3A4 is an oncogenic lncRNA that promotes tumor progression and led us to propose that lncRNAs might function as key regulatory hubs in gastric cancer progression.

Biography

Xiaobo Guo has completed his PhD from Ruijin Hospital Affiliated to Shanghai Jiao Tong University and Post-doctoral studies from Provincial Hospital Affiliated to Shandong University. He is an Associate Professor in the department of gastrointestinal surgery, Shandong Provincial Hospital affiliated to university. He has published more than 15 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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