The expression levels of circ_0058124, microRNA-940 (miR 940) and mitogen-activated protein kinase 1 (MAPK1) were assessed by quantitative polymerase chain reaction (q-PCR). The circular characteristic of circ_0058124 was identified by oligo (dT)18 primers, Ribonuclease R (RNase R) and Actinomycin D (ActD), and its localization were determined by nuclear-cytoplasmic separation assay. Also, cell proliferation was detected by colony formation assay, and cell migration and invasion were assessed by transwell assay. Further, Seahorse XF Extracellular Flux Analyzer was used to measure the oxygen consumption rate (OCR) of cells. Besides, dual-luciferase reporter, RNA immunoprecipitation (RIP) and RNA pull-down assays were used to identify the mechanism of circ_0058124. Western blot (WB) analysis was used to test the MAPK1 protein level. In addition, mice xenograft models were constructed to test the effect of circ_0058124 on Thyroid Cancer (TC) tumor growth in vivo.

Circ_0058124 was highly expressed in TC and is a stable cyclic transcript, mainly located in the cytoplasm. Circ_0058124 knockdown suppressed proliferation, migration, invasion and metabolic abilities in TC cells. MiR-940 could be absorbed by circ_0058124, and the inhibition effect of its overexpression on TC progression could be reversed by overexpressed-circ_0058124. MAPK1 was a target of miR-940, and the suppression effect of its silencing on TC progression could be inverted by miR-940 inhibitor. Besides, MAPK1 expression was regulated by circ_0058124 and miR-940. Interference of circ_0058124 also reduced TC tumor growth in vivo.

Circ_0058124 might play a carcinogenic role in TC progression by regulating the miR-940/MAPK1 axis, which might provide a new idea for the treatment of TC [1].

1)
Sun D, Chen L, Lv H, Gao Y, Liu X, Zhang X. Circ_0058124 Upregulates MAPK1 Expression to Promote Proliferation, Metastasis and Metabolic Abilities in Thyroid Cancer Through Sponging miR-940. Onco Targets Ther. 2020 Feb 19;13:1569-1581. doi: 10.2147/OTT.S237307. eCollection 2020. PubMed PMID: 32110054; PubMed Central PMCID: PMC7037104.