

5th WORLD FORUM ON BREAST AND CERVICAL CANCER

April 29-30, 2025 | VIENNA, AUSTRIA



Cai Jiahui

Beijing Hospital, China

The mechanism of transcription factor GATA3 in esophageal squamous cell carcinoma

Abstract:

GATA3 is a transcription factor. In this study, a comprehensive analysis of whole transcriptome data from ESCC and adjacent tissues revealed a significant enrichment of GATA3 and its regulatory pathway in ESCC. Validation from multiple ESCC gene expression datasets confirmed the upregulation of GATA3, underscoring its pivotal role in ESCC. Subsequent functional experiments further substantiated that GATA3 plays a crucial role in promoting the proliferation of ESCC cells both in vitro and in vivo. To further elucidate the molecular mechanisms, ChIP-seq was performed to define the GATA3 cistrome. The enriched motif was discovered by MEME. The differential expressed genes were analyzed by whole-transcriptome sequencing. Interactions between GATA3 and co-factors were verified with co-immunoprecipitation. The binding of GATA3 and co-factors at same genomic location was examined by sequential ChIP. The transcriptional regulation of GATA3 on target genes was validated by ChIP-qPCR, RT-qPCR and Western Blot. Clinical sample analysis indicated that the high transcriptional activity of the GATA3/ATF4/target gene regulatory axis not only closely correlates with the degree of malignancy in tumor cells but also exhibits a significant association with the activation of cancer-associated fibroblasts (CAFs), suggesting a potential oncogenic role for this regulatory axis, likely through its modulation of tumor-microenvironment interactions.

In summary, this study revealed the critical roles of GATA3 in driving the malignant phenotypes of ESCC. We systematically elucidated the molecular mechanisms by which the GATA3/ATF4/target gene regulatory axis drive the proliferation of ESCC cells. This finding provides new potential therapeutic targets for ESCC patients and is expected to serve as an important basis for the development of novel targeted treatment strategies for ESCC.

Keywords: esophageal squamous cell carcinoma, GATA3, oncogene, CAFs

Biography :

I am currently serving as an Assistant Researcher at Beijing Hospital since 2024. I earned her Bachelor's degree from Peking University between 2015 and 2019, followed by a Ph.D. at Cancer Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College from 2019 to 2024. With a strong foundation in medical research, I am committed to advancing healthcare practices and contributing to the development of innovative solutions in cancer research. My focus remains on improving patient care and furthering the scientific understanding of medical conditions through my ongoing work.