

# Abstract

**Presentation title:** PIWI-interacting RNA-YBX1 inhibits proliferation and metastasis by the MAPK signaling pathway via YBX1 in triple-negative breast cancer

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## **Abstract (250-300 words):**

Breast cancer is the second leading cause of death in women worldwide, with triple-negative breast cancer (TNBC) having the worst prognosis. Although there are numerous studies on TNBC, there is no effective treatment for it, and it is still a major problem today. Studies on PIWI-interacting RNAs (piRNAs) are increasing and investigating the mechanism of piRNAs in the proliferation and metastasis of TNBC may lead to new potential treatment targets. Here, we identified a novel piRNA, piR-YBX1, which was downregulated in TNBC compared to matched normal breast tissue. Then, we identified its function in vitro firstly. And we found that overexpression of piR-YBX1 significantly inhibited the proliferation, migration, invasion ability of TNBC cells. We implanted the cells orthotopically into the fat pads of mice, and observed a significant inhibition of tumor growth in the piR-YBX1 overexpression group. Additionally, the ability of cells overexpressing piR-YBX1 to metastasize to the lungs after tail vein injection was markedly reduced. Mechanistically, piR-YBX1 could bind directly to mRNA of Y-box binding protein 1 (YBX1) and overexpression of piR-YBX1 downregulated YBX1 in both mRNA and protein levels, while the function of piR-YBX1 could be partly rescued by overexpression of YBX1. In addition, YBX1 could bind to RAF1 which is the key molecule in the MAPK signaling pathway, and overexpression of piR-YBX1 inhibited the p-MEK and p-ERK1/2 which can be reverted by YBX1. In conclusion, our findings discovered that the piR-YBX1/YBX1/MAPK axis suppresses the proliferation and metastasis of TNBC and therefore piR-YBX1 has the potential to be an effective therapeutic agent for breast cancer.

## **Biography (150-200 words):**

Weige Tan, a doctor from The First Affiliated Hospital of Guangzhou Medical University, Guangzhou, China, embodies a multifaceted role as a clinical doctor, educator, and scientific researcher. In her capacity as an educator, she not only assumes responsibility for her students but also dedicates herself to guiding their learning and development, assisting them in overcoming obstacles and



realizing their aspirations. Within clinical practice, she adeptly translates encountered clinical challenges into scientific inquiries, actively engaging in comprehensive exploration and research. Her overarching objective is to enhance patient well-being by leveraging scientific research to improve medical services and treatment outcomes. Continuously committed to learning and exploration, she aspires not only to address immediate clinical issues but also to contribute meaningfully to the advancement of the medical field and the promotion of human health initiatives.