



## Can piRNAs change the fate of breast cancer cells?

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### Abstract

piR-651 is a member of small non-coding RNAs which is called PIWI Interacting RNAs. piRNAs can regulate the function of transposons by both epigenetic and posttranscriptional silencing. Several studies indicated that piR-651 might be useful for diagnostic of cancer cases according to its oncogenic characteristics. In this study, we aimed to determine the effect of piR-651 on the molecular characteristics of MCF-7 breast cancer cells. Anti-piR-651 sequence was transfected to MCF-7 cells and then the effect of piR-651 on proliferation, adhesion and motility characteristics of cells were detected by using XTT kit procedure at 24th, 48th and 72nd hours. After determining the cellular behaviour changes, to determine the cellular changes of proliferation Ki-67; adhesion MMP-2 and MMP-9 gene expressions were determined by using RT-PCR. According to obtained data, inhibition of piR-651 caused to a decrease on proliferation and adhesion of MCF-7 cells ( $p < 0.001$ ). Ki-67 and MMP-9 gene expressions are also supported the cellular behaviour assays of piR-651 inhibited MCF-7 cells ( $p < 0.001$ ). Moreover, motility assay showed that the migration rate of piR-651 inhibited MCF-7 cells were more Notes: slowly compared to untreated and non-target treated cells. In benign breast cancer cells line, piR-651 inhibition can change both cellular characteristics and gene expressions which were related to these characteristics. Especially, adhesion and proliferation are the important cellular marks of MCF-7 cells. piR-651 inhibition cause to decrease both proliferation and adhesion of cells, these results have shed on light whether we can mitigate the effects of cancer cells on the organism with piRNA inhibition. Our results indicated that changing the expression patterns of piRNAs might cause to change the fate of benign breast cells.

### Biography

Cagri ONER has completed his PhD at 2015 from Eskisehir Osmangazi University, TURKEY. He has been Assistant Professor of Maltepe University, Medical Faculty, Department of Medical Biology and Genetics, TURKEY since 2017. He has publications about cancer biology and genetics. He is interested in small non-coding RNAs and their relationships with cancer cells. He has non-coding RNAs and cancer development related projects which are funded by Maltepe University Scientific Research Committee (MUAR) and The Scientific and Technological Research Council of Turkey (TUBITAK).



### Publications

1. Çağrı Öner, Didem Turgut Cosan, Ahu Soyocak (2020) Inhibition of voltage-gated potassium channels affect expressions of miR-126 and miR-126\* in breast cancer cell lines, Bratislavske lekárske listy
2. Çağrı Öner, Deniz Marangoz, Martin Schicht, Didem Turgut Cosan, Friedrich Paulsen, Erdost Yıldız, (2019) The Effect of Androgens on Proinflammatory Cytokine Secretion from Human Ocular Surface Epithelial Cells, Ocular Immunology and Inflammation
3. Çağrı Öner, Ecem Sabiha UÇAR, Ertugrul Colak (2019) Investigation of the Effect of 4-OH Coumarin on Genetic Properties of HePG2 Cells, Tıbbi Biyoloji ve Genetik Kongresi-Uluslararası Katılımı,
4. Çağrı Öner, Hatice İSAN, Ranan Gulhan Aktas, Ertugrul Colak (2019) VİTAMİN D'NİN HEPATOSELÜLER KARSİNOM ÜZERİNDEKİ ETKİSİ, OSMANGAZI Journal OF Medicine
5. Çağrı Öner (2019) Two different mechanisms of two different non-coding RNAs—MicroRNAs and PIWI-interacting RNAs: From origin to cancer, AGO- Driven Non-Coding RNAs Codes to Decode the Therapeutics of Diseases (pp.387) Edition: First Edition Chapter : 1

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