

Received date: 01 April, 2022 | Accepted date: 09 April, 2022 | Published date: 23 May, 2022

Role of miRNA in regulating Matrix Metalloproteases for Prognosis in Gynecological Cancer: An Insight into Therapeutic Avenue

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Small non-coding RNA molecules, such as microRNAs (miRNAs), can influence gene expression by acting as cellular mediators required for growth, differentiation, proliferation, apoptosis, and metabolism. MiRNA dysregulation is common in many human cancers, acting both tumor-promoting and tumor-suppressing, and their aberrant expression is connected to uncontrolled cellular proliferation, metastasis, and DNA damage as well as cell cycle disruption. Matrix Metalloproteases (MMPs) have critical roles in both normal growth and tissue remodeling, as well as in cancer formation and metastasis. We address an integrated interactive research including multiple MMPs and miRNAs, as well as how these communications influence malignant development, migration, and metastasis. The current study focuses on significant miRNAs that may have an influence on gynecological cancer progression either directly or indirectly through modulating MMPs. In addition, we approach how miRNA-mediated MMP modulation and their downstream signaling pathways might be used to build a viable therapy for gynecological malignancies. Upregulation of MMP-7, -9, -3 and -13 has been well correlated with endometriosis development and progression. Presently,

my lab is focused on investigating the role of miR-34a in regulating endometriosis progression via MMP-2 modulation.

Recent Publications

1. Anuradha Pandit, Pramathes Das Mahapatra, Priyanka Saha, Amit Kumar Srivastava, Snehasikta Swarnakar, Interleukin-1 β activated c-FOS transcription factor binds preferentially to a specific allele of the matrix metalloproteinase-13 promoter and increases susceptibility to endometriosis. *J Cell Physiol.* 2022 Jul;237(7):3095-3108. doi: 10.1002/jcp.30773. Epub 2022 May 27
2. Anirban Manna, Tapasi Roy, Tanusree Das, Santu Bandyopadhyay, Snehasikta Swarnakar, POTENCY OF PHYTOCOMPOUNDS AS HYDROXYCHAVICOL AND PLUMBAGIN IN COMBINATION TO FIGHT AGAINST LEUKEMIA VIA ACTIVATION OF MAPK-MEDIATED APOPTOTIC PATHWAY: AN IN VITRO APPROACH. HCH and PLB in combination to combat leukemia. *Int. J. Pharm. Sci. Drug Res.* <https://doi.org/10.25004/IJPSDR.2022.140116>.

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