



Astrocyte Elevated Gene-1: Unraveling the Journey from Oncogene to Colon Cancer Stem Cell Therapeutic Target

Sushmitha Sriramulu

Chettinad Hospital and Research Institute, India

Abstract:

Colon cancer originates from the gastrointestinal epithelium, which undergo subsequent mutations in specific DNA sequences that interrupt normal mechanisms of cell proliferation and self-renewal. Such mutations are caused due to genetic alterations, alcohol, smoking, environmental carcinogens and chronic inflammatory states, where these pathological changes lead to transformation of a healthy colonic mucosa into an invasive colon cancer. Owing to their long life and their capacity for self-renewal, stem cells residing in the gastrointestinal tract represent the natural target of tumorigenic mutations where it might take only a few mutations for a colon cell to lose control over its self-renewal and growth, thereby transforming into colon cancer stem cells (CCSCs). These CCSCs are a subset of cancer cells with distinctive properties of self-renewal, infinite division and differentiation potential. Recent studies have emphasized the involvement of CCSCs in metastasis, tumor relapse and chemoresistance. Astrocyte Elevated Gene-1 (AEG-1), a well-known oncogene and a crucial mediator of metastasis, contributes widely to colon cancer tumor growth, drug resistance, relapse, and metastasis, but its molecular mechanisms of action are not well elucidated. Previous studies suggest that AEG-1 is upregulated in most types of cancers, including colon cancer, plays a significant role linking various signaling pathways in tumorigenesis. Currently, the validated therapies against colon cancer have various limitations that frequently lead to failure of treatments where resistance to chemotherapy and radiotherapy are the prime causes of treatment failures. As the current therapies fail to eliminate CCSCs leading to metastasis and tumor recurrence, therefore, eliminating CCSCs is crucial in order to treat malignant colon cancer. Recently, multiple targets are being identified and potential agents are being developed that could specifically target CCSCs. Thus, deepening the understanding of AEG-1 function in colon cancer helps us to unravel how AEG-1 acts as a novel therapeutic target in eliminating CCSCs.

Biography:

Sushmitha Sriramulu is presently working in the Department of Biotechnology, Chettinad Academy of Research and Education, Chennai, India. Her research focuses on study of



multi-functional protein Astrocyte Elevated Gene-1 in Colon Cancer. She is the recipient of Scientific Research Scholarship from Lady Tata Memorial Trust (2019 – present) for her current research project. She is working along with Prof. Surajit Pathak, who have published more than 70 research articles in peer-reviewed international journals of repute with 1500 citations and 24 h-index. Projects from their lab are supported by grants from Department of Science and Technology – Science and Engineering Research Board, India.

Publication of speakers:

- Sushmitha Sriramulu et al ; Concise Review on Clinical Applications of Conditioned Medium Derived from Human Umbilical Cord-Mesenchymal Stem Cells (UC-MSCs), 2018 Jul 1
- Sushmitha Sriramulu et al ; Role of Hippo Pathway Effector Tafazzin Protein in Maintaining Stemness of Umbilical Cord-Derived Mesenchymal Stem Cells (UC-MSC), 2018 Apr 1
- Sushmitha Sriramulu et al ; A review on role of ATM gene in hereditary transfer of colorectal cancer, 2018 Aug 1
- Sushmitha Sriramulu et al ; An Update on Interleukin-9: From Its Cellular Source and Signal Transduction to Its Role in Immunopathogenesis, 2019 May; 20
- Sushmitha Sriramulu et al ; Steroid-induced Glaucoma: An Avoidable Irreversible Blindness, 2017 May 11

[Webinar on Stem Cell Research , November 23, 2020; Dubai , UAE.](#)

Citation: Sushmitha Sriramulu; Astrocyte Elevated Gene-1: Unraveling the Journey from Oncogene to Colon Cancer Stem Cell Therapeutic Target; Stem Cell 2020; November 23; Dubai , UAE