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By enhancing EGFR signaling, PRMT1-mediated H4R3me2a recruits SMARCA4 to promote colorectal cancer progression.

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Abstract: ((

Cancer progression is aided by abnormal changes in epigenetic pathways such as histone modifications. PRMT1, which causes asymmetric dimethylation of histone H4 on arginine 3 (H4R3me2a) and is required for cell proliferation, is increased in human colorectal cancer (CRC). However, it is unclear how this deregulated alteration may contribute to CRC malignant transitions. To investigate the potential genomic recognition pattern of H4R3me2s in CRC cells and its effect on CRC progression, we combined biochemical assays such as protein interaction studies and chromatin immunoprecipitation (ChIP), cellular analysis such as cell viability, proliferation, colony formation, and migration assays, clinical sample analysis, microarray experiments, and ChIP-Seq data. PRMT1 and SMARCA4, an ATPase subunit of the SWI/SNF chromatin remodeling complex, work together to promote colorectal cancer (CRC) progression, according to new research. SMARCA4 is discovered to be a novel PRMT1-mediated H4R3me2a effector molecule. We show that through boosting EGFR signaling, H4R3me2a directly recruited SMARCA4 to improve the proliferative, colony-forming, and migratory properties of CRC cells. We discovered that EGFR and TNS4 were key direct downstream transcriptional targets of PRMT1 and SMARCA4 in colon cells, and that they promoted CRC cell proliferation in a PRMT1 methyltransferase activity-dependent manner. In the C57BL/6 J-ApcMin/+ CRC mouse model, knocking down or inhibiting PRMT1 significantly slowed the development of CRC cells in vivo. Importantly, higher PRMT1 or SMARCA4 expression in CRC patients was linked to EGFR and TNS4 expression, and CRC patients had lower overall survival. These data imply that SMARCA4 is a novel essential epigenetic regulator of CRC advancement, revealing a vital interplay between epigenetic and transcriptional regulation during CRC growth. As a result, our data point to PRMT1/SMARCA4 inhibition as a possible CRC therapeutic intervention method. SMARCA4 is recruited by PRMT1-mediated H4R3me2a, which promotes colorectal cancer progression by increasing EGFR signaling.



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Biography: (200 Words)

Victoria Serrano is a dedicated and caring Doctor of Biotechnology with over a decade of experience in the field. General practice is a field to which I am dedicated. Is motivated to work as a proactive member of successful multidisciplinary teams with the goal of developing and improving medical practice standards via the application of medical education and technological advancements. A gifted and accomplished biotechnology leader who has made a direct contribution to the personal and professional development of medical students and trainees. Now seeking a challenging employment in medical/pharmaceutical biotechnology, in where I can put my existing talents and expertise to good use while also allowing for future personal and professional development.

About University: (200 Words)

The Institution of Cape Town (UCT) is a public research university in Cape Town, South Africa. It is located in the Western Cape Province.



