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An investigation in the role of MicroRNA146a and novel Rhenium compounds on prostate cancer cell lines derived from African Americans and Caucasian patients--an *in vitro* study of racial disparity in morbidity and mortality from prostate cancer

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African American men have disproportionately high incidence and mortality rates of prostate cancer when compared to other ethnic groups in the United States. The identification of molecular factors that contribute to this disparity could improve diagnosis and therapeutic intervention. MicroRNA-146a suppresses prostate cancer transformation from androgen-dependent to -independent cells, suppresses a kinase coding gene which reduces cell proliferation, invasion, and metastasis to human bone marrow endothelial cell monolayers, and is dysregulated by latent membrane protein 1 (LMP1) which contributes substantially to the oncogenic potential of Epstein-Barr virus. It is projected that microRNA-146a and other microRNAs may one day become biomarkers for clinical diagnosis and prognosis of several types of cancer including prostate. Novel rhenium compounds have shown anti cancer properties specially in prostate cancer. Therefore, the purpose of this study was to determine the miRNA 146a expression profile in novel African American and Caucasian prostate cell lines at each clinical stage of prostate cancer progression and also to study the anti cancer properties of two novel organorheniumpentylcarbonate (RPC) compounds. The miR-146a expression profile was investigated using novel African American and Caucasian prostate cell lines representing each pathological stage: benign, androgen dependent and independent tumors. Relative miRNA expression was determined by qRT-PCR,miRNA plate assay and smart flare technology after isolating total RNA from the cells and the exosomes from the tumor microenvironment. Cytotoxicity studies of the RPC compounds were done by using MTT and Trypan Blue assay. Our initial data showed a several fold increase for miR-146a in African American prostate cancer cell line in comparison to the benign and Caucasian prostate cancer cell lines. The RPC compounds showed bioactivity in all the lines and significant anti cancer effects. To date, we are unaware of any studies that compare the miRNA146a profile of prostate cancer among two racial groups. Our study suggests that miRNA146a is upregulated in prostate cancer cell line derived from African American(AA) patient than Caucasians(CA) and could possibly contribute to the aggressiveness associated in African American patients with prostate cancer. We also found out that the novel organorhenium compounds are bioactive and have anti prostate cancer properties. Farther studies are currently getting conducted in our laboratory on the anti cancer role of these rhenium compounds and investigations on miR146a expression in other prostate cancer cell lines derived from AA and CA patients.

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Biography:

Dr. HirendraNath Banerjee received his BS with honors and MD degree from Calcutta University, India, MS in Molecular Biology from Conolly College of Pharmacy and Health Sciences at Long Island University, NY and Ph.D. in Molecular Biology from Howard University Cancer Center, Washington, D.C. Dr. Banerjee did his post doctoral training at Yale University Medical School and Medical University of South Carolina before joining Elizabeth City campus of the University of North Carolina where he is now a tenured Professor in the department of Natural, Pharmacy and Health Sciences. Dr. Banerjee did a sabbatical at Rockefeller University under the mentorship of nobel laureate Dr. Gunter Blobel in studying the cell biology of nuclear pore complex's. Dr. Banerjee's current research involves cancer biology and Efferocytosis.