xenograft, the mice were sacrificed. The cells were counted using fluorescent stereo microscopy (FSM). Percent attachment was calculated based on the number of cells visualized by FSM divided by the number of transfected cells injected. Unpaired student t-test was performed to analyze differences in the percent attachment of the cells. RESULTS/ANTICIPATED RESULTS: The majority of cells were attached to the peritoneum. There was increased attachment of hESCs with OE of CD44v6 compared to control (p=0.03). CD44v6 OE did not change attachment of iEECs. There was no difference in attachment in iEECs or hESCs with OE of CD44s or CD44v3. DISCUSSION/SIGNIFICANCE OF IMPACT: Overexpression of CD44v6 increases attachment of ESCs to PMCs in an in vivo xenograft model. Menstrual endometrial cell type and CD44 variants play a complex role in the development of the early endometriotic lesion.

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## Predictive biomarkers of platinum-based chemotherapy response in Puerto Rican Hispanics with high-grade serous ovarian cancer.

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OBJECTIVES/SPECIFIC AIMS: High-grade serous ovarian carcinoma (HGSOC) is the most common and malignant histological subtype of epithelial ovarian cancer. While the majority of HGSOC patients initially respond to platinum-based chemotherapy, they often present with recurrent chemoresistant disease, which is extremely fatal. Therefore, there is an urgent need to identify predictive biomarkers of platinum response and to develop rational, targeted therapies to improve the outcome of patients with HGSOC. The objectives of the present study are to profile and assess the clinical significance of MYC network dysregulation in HGSOC. METHODS/STUDY POPULATION: We will conduct a retrospective cohort study of Puerto Rican Hispanics with HGSOC who underwent surgery followed by platinum-based chemotherapy at clinical institutions in Puerto Rico. Medical records, pathology reports, and cancer registries will be reviewed to extract data on clinicopathological features, disease recurrence, and death. For eligible patients, formalin-fixed, paraffin-embedded (FFPE) tissue samples will be processed and analyzed by quantitative Real Time PCR (qRT-PCR) and immunohistochemistry (IHC). RESULTS/ANTICIPATED RESULTS: Expression levels of MYC and MYC-related molecules are expected to correlate with clinicopathological features and prognosis of HGSOC. DISCUSSION/SIGNIFICANCE OF IMPACT: The identification and validation of clinically-relevant alterations in HGSOC, such as dysregulation of the MYC network, will be crucial to guide therapy regimen, maximize clinical benefit, and improve patient outcome.

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## PRMT5 is a novel therapeutic target to enhance radiation therapy for cancer treatment

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OBJECTIVES/SPECIFIC AIMS: Prostate cancer is the second leading cause of cancer-related death among men in the U.S. and over half of all prostate cancer patients receive radiation therapy (RT). RT induces double-strand breaks (DSBs) in DNA which are lethal to cells if not repaired. While potentially curative, 10% of low-risk patients and 50% of high-risk patients treated with RT still experience tumor recurrence. Thus, identification of novel therapeutic targets to enhance RT will likely reduce prostate cancer mortality. The only clinical approach to enhance RT is androgen deprivation therapy, which targets androgen receptor (AR) signaling; however, its use is limited due to systemic side effects. We recently reported that PRMT5 epigenetically activates AR which led us to investigate if targeting PRMT5 sensitizes prostate cancer to RT. The goal of this project is to determine if PRMT5 is a therapeutic target for prostate cancer radiosensitization and analyze its mechanistic role in response to radiation. METHODS/STUDY POPULATION: To evaluate if targeting PRMT5 may sensitize prostate cancer cells to radiation, we performed a clonogenic assay of irradiated cells. To determine if PRMT5 is required for repair of radiation-induced DSBs, we performed foci analysis via immunocytochemistry. We then used RNA-seq, qPCR, western blot, and ChIP to evaluate a potential epigenetic role of PRMT5 in activating the expression of genes critical to DSB repair. To extend our findings, we analyzed clinical data from around 18,000 of cancer patients encompassing 43 cancer types to assess if PRMT5 expression correlates with the expression of its putative target genes. RESULTS/ANTICIPATED RESULTS: Targeting PRMT5 sensitizes prostate cancer cells to radiation independently of AR status. RNA-seq analysis revealed putative PRMT5 target genes including several involved in DSB repair and G2 arrest. Mechanistically, PRMT5 functions as a master epigenetic activator of DNA damage response (DDR) genes: PRMT5 maintains the basal expression of several DDR genes including BRCA1, BRCA2, and RAD51 and is recruited upon radiation to DDR gene promoters to activate their expression via histone methylation. Targeting PRMT5 decreases expression of these genes at the protein level and hinders repair of radiation-induced DSBs in multiple cancer and non-cancer cell types. Clinically, PRMT5 expression positively correlates with the expression of these DDR genes across all 43 cancer types analyzed. DISCUSSION/SIGNIFICANCE OF IMPACT: PRMT5 acts as a master epigenetic activator of genes involved in DDR and is critical for cells to survive radiation treatment. Importantly, PRMT5 epigenetically activates multiple genes that encode for well-characterized core repair proteins involved in HR (RAD51, RAD51AP1, RAD51D, BRCA1 and BRCA2) and NHEJ (NHEJ1, Ku80, XRCC4, and DNAPKcs), which may explain why PRMT5 is essential to repair IR-induced DSBs in several cell lines. As PRMT5 is overexpressed in many human cancers and its overexpression correlates with poor prognosis, our findings suggest that more efficient DSB repair via PRMT5 overexpression in these cancers may confer survival advantages particularly following DNA damaging treatments. Lastly, because targeting DSB repair is a clinically validated therapeutic approach for cancer treatment, our findings also suggest that PRMT5 targeting may be explored as a monotherapy or in combination therapy with radiation therapy or chemotherapy for cancer treatment.

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## Renin-Angiotensin System Inhibitors Do Not Improve Survival in Fibrillin-1 Hypomorphic Mice with Established Aortic Aneurysm

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OBJECTIVES/SPECIFIC AIMS: Drugs to attenuate aortic growth are usually not initiated in patients with Marfan syndrome until

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