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Major Professor: Dr. Manish Patankar

Degree Objective: Endocrinology and Reproductive Physiology

Background: BS Biology, Elizabeth City State University

Current Research Project: Ovarian cancer is one of the deadliest gynecological cancers. Its diagnosis does not occur until the latter stages of progression, decreasing the receptivity of first and second line chemotherapeutics and increasing the likelihood of relapse and/or death. Current treatment options available to patients aren't helpful. There is an increased need to find a biomarker for ovarian cancer so that it can be diagnosed earlier in its progression to increase survival rates and to improve drug response. The extracellular matrix (ECM) has been studied extensively and its remodeling has been implicated in the pathogenesis and progression of other cancers. To recapitulate the establishment of the tumor microenvironment and to elucidate the role collagen remodeling plays in its establishment, in vitro and in vivo studies will be conducted utilizing ovarian cancer cell lines, tumor transplant studies in mice, and bi-gradient microstructures containing ECM components. Second Harmonic Generation Imaging (SHG) will be employed to distinguish between normal and abnormal tissue in the ovary based on collagen composition differences. SHG may be a new diagnostic tool for ovarian cancer development and progression may help in the inhibition of its progression. Visualizing areas with abnormal collagen deposition would allow clinicians to directly target and deliver cancer fighting drugs, decrease metastatic potential, and ultimately, increase the survival rates and drug response of patients diagnosed with ovarian cancer.

Currently, I am utilizing SHG to analyze the differences in collagen structure in serous tubal in situ carcinoma (STIC) tissues at different progression stages. Previous research indicated that cancer cells from the fallopian tube may migrate to the peritoneum, which become precursors and initiators of tumors on the ovary. The goal of this is to analyze collagen structural changes and associate it with the progression stage of the cancer. Further, I will compare these findings to normal and tumorigenic ovarian tissues. What does the tumor benefit when collagen is remodeled? Can we pinpoint the cancer stage based on what we see in collagen?

Honors:

Grants Received: National Institute of General Medical Sciences of the National Institutes of Health, TEAM Science R25GM083252

Publications:

National Presentations:

Other Presentations:

Teaching and Mentorship:

ERP Service: