Ackert Hall, Room 120
Wednesday, November 13, 2024
4:00 P.M.

Coffee and Cookies
Chalmers Hall, Room 168
3:45 P.M.

Biochemistry & Molecular Biophysics Seminar

GC1qR is a Novel Therapeutic Target for Cancer

Berhane Ghebrehiwet

Rheumatology, Allergy and Immunology
Stoney Brook University

According to the American Cancer Society statistics, approximately 1 in 8 women will be diagnosed with invasive breast cancer and 1 in 43 will die from the disease. Despite treatment advances, however, cancer recurrence and metastasis still represent major challenges. Therefore, novel agents directed against diverse tumor targets are needed for the development of tumor specific combination therapies that will deepen disease response and improve patient outcomes.

The complement system, and in particular, C1q and its receptor, gC1qR, are emerging as important novel targets in cancer therapy, because of their ability to mark cancer cells for immune recognition, and to support malignant transformation and metastasis via generation of inflammatory mediators. C1q, which is expressed on various types of tumor cells, is recognized as a tumor promoting factor, enhancing cancer cell adhesion, migration, and proliferation, independent of its role in complement activation. More importantly, gC1qR, the multifunctional and multicompartmental cellular protein which recognizes the globular heads of C1q, is expressed and upregulated by many epithelial cell-derived cancers including breast cancer. Because of its ability to activate both the complement and kinin systems, thereby generating vasoactive factors that promote vascular permeability and metastasis, gC1qR plays a major role in tumor development and survival. In addition, we have generated and characterized several monoclonal antibodies (mAb) including mAb 60.11, which is directed against the C1q binding domain of gC1qR, and this antibody is able to inhibit the proliferation of breast cancer cells *in vitro*, in a dose dependent manner.

In this presentation, I will discuss recently obtained proof-of-concept data in support of developing monoclonal antibody-based therapy against *a novel molecular target, gC1qR* in a murine orthotopic xenotransplant model of triple negative breast cancer.