

**PI:** Chunqing Guo, PhD

**Academic Rank:** Assistant Professor

**Title:** Blockade of Scavenger Receptor A to Enhance Cancer Immunotherapy and Radiotherapy

The knowledge gained from decades of cancer research has significantly improved treatment options and clinical outcomes in patients. However, the challenges continue to remain in those with advanced diseases due to cancer resistance or relapse during or after standard treatments including immunotherapy and radiotherapy (RT). Built on our extensive research of scavenger receptor A (SRA) or CD204, which is predominantly expressed on the host myeloid cells, in antitumor immunity and cancer radiation response, we propose to develop a novel SRA blockade therapy to potentiate cancer responsiveness to immune checkpoint inhibitors and to reduce tumor recurrence after RT. Using various clinically relevant model systems including SRA-knockout mice, our investigative team will characterize the biological and therapeutic activities of anti-SRA monoclonal antibodies (mAb) derived from three hybridoma clones already created. Mechanistic studies will be performed to understand the immunological and biochemical basis of the SRA-targeting therapies including Ab blockade therapy. Additionally, we will sequence these mAb and engineer single-chain variable fragment (scFv) for functional blockade of this receptor and for the next stage of biologics development. The successful development and testing of these antibodies including scFv will provide important biological tools to decipher the function of SRA during cancer-host interplay and its impact on cancer progression and invasion, immune evasion, therapeutic responses to treatment modalities. More importantly, the positive results from this pilot project will help lay the groundwork for developing a full research proposal for submission to a national funding organization, and to facilitate the potential translation of SRA-targeting antibody therapy, which is anticipated to improve the response rates in patients undergoing immunotherapy (e.g., immune checkpoint inhibitors) as well as ionizing RT.