Benjamin Schrank, MD, PhD
MD Anderson Cancer Center

Triple-negative breast cancer (TNBC) is an especially aggressive form of breast cancer with limited treatment options and, too often, a poor prognosis. Although therapies like immune checkpoint inhibitors have offered hope for some patients, many with advanced TNBC do not respond to these treatments. This challenge underscores the urgent need for new therapies to help the immune system better recognize and attack TNBC.

A key factor in the progression of breast cancer is the amplification of oncogenes on extrachromosomal circular DNA (ecDNA). These small pieces of DNA, found outside of chromosomes, can fuel tumor growth by encoding genes that make cancer cells divide uncontrollably and hide from the immune system. While researchers are beginning to understand the role of ecDNA in cancer biology, much remains unknown about how ecDNA forms, how it influences the surrounding tumor environment, and how it might be targeted with new treatments.

Dr. Schrank's research seeks to address this knowledge gap by exploring how ecDNA interacts with the immune system. He is developing an innovative therapy that combines an anti-CD47 antibody with Listeriolysin O (LLO), a pore-forming protein, to deliver tumor-derived ecDNA directly into the cytoplasm of macrophages and dendritic cells. This approach activates the Stimulator of Interferon Genes (STING) pathway and enhances the immune system's ability to recognize and attack tumors. Through preclinical models, Dr. Schrank is working to bring this new therapy from the lab to the clinic.

Dr. Schrank is a chief resident in the Department of Radiation Oncology at the University of Texas MD Anderson Cancer Center. He completed a transitional year internship at Memorial Sloan Kettering Cancer Center. He holds an M.D. from Columbia Vagelos College of Physicians and Surgeons and a Ph.D. from the Columbia University Graduate School of Arts & Sciences. He received his undergraduate degree with honors from Brown University. Dr. Schrank's research centers on the intersection of genome instability, tumor immunology, and novel therapeutic development with the goal of improving outcomes for patients with metastatic breast cancer.