ABSTRACT

Immunotherapy or immunomodulation as a means of cancer therapy has been studied in the laboratory for decades. From a clinical trial standpoint, cell and biologic based treatments such as CAR-T and checkpoint inhibitors have made great strides in the past decade. However this success has primarily been highlighted in blood-based cancers; where the boundaries to overcome the immunosuppressive nature of tumors are less burdensome in comparison to solid tumors. A recent report on the Mystic trial for combined immunotherapy drugs in patients with advanced lung cancer highlights how even proven checkpoint inhibitors can fail to show increased efficacy when utilized for solid tumor treatment.

From a medical device perspective, the creation of countless cell based and biologic treatments for solid tumor immunotherapy raises interesting research and development questions regarding how medical devices can augment the immunosuppressive tumor microenvironment to result in greater efficacy. While traditional thermal ablation technologies have shown promise for enhancing immunotherapies through the induction of damage associated molecular patterns (DAMPs) and necrotic cell death, novel ablation techniques are envisioned to create both a thermal destruction and pro-apoptotic induction resulting in the greatest modulation of cancer immunotherapies. In this seminar Dr. DeWitt will focus on Boston Scientific's recent work investigating both delivery and energy based medical devices to help overcome the immunosuppressive solid tumor microenvironment, induce an abscopal effect, and reduce off target immune effects. The goal of these therapies is to develop a product independent of the “winner” of the cancer immunotherapy race in order to one day create solid tumor treatments that could potentially turn into cures.