Engineering next-gen T cell based immunotherapies for breast cancer

Synopsis

A form of cancer immunotherapy termed adoptive T cell transfer (ACT) can induce durable complete remissions in patients with advanced hematologic malignancies. However, a similar approach has thus far failed to work in most patients with solid malignancies, including breast cancer. Two critical gaps in knowledge have limited the ability of ACT to be successfully applied to solid cancers: 1) understanding which antigens on the surface of cancer cells can be targeted by T cells that do not have the potential to cross react and injure normal tissues, and 2) insight into what factor(s) limit the ability of transferred T cells to infiltrate, expand, and persist within a solid tumor mass. In this lecture, I will summarize my laboratory’s efforts to use a gene therapy approach to overcome the barriers which currently limit the full potential of ACT in breast cancer patients.