

PUBLIC/LAY ABSTRACT

Many breast cancer patients have their cancer cells spread beyond the breast to other parts of the body. Approximately 50% of breast cancer spreads to the liver. For estrogen receptor positive (ER+), HER2 negative (HER2-) breast cancer patients, they are often treated with drugs that target cancer cells. However, prognosis remains dismal. A recent exciting development in cancer therapy involves using patients own immune system to attack cancer cells. This is called immunotherapy. However, it is not yet available for this group of women. Liver contains a high number of immune cells called the Natural-Killer (NK cells), comprising 50% of the liver lymphocyte population. NK cells have innate ability to kill tumor cells. Our goal is to harness NK cells as a novel immunotherapy to treat patients with ER+/HER- breast cancer cells in the liver.

To design an effective NK-cell based immunotherapy, we need to know how NK cells function in this setting. Unfortunately, knowledge in this area remains sparse because this type of study often requires large quantity of human liver – inaccessible in most living patients due to safety concerns. At City of Hope National Medical Center, the Legacy Project for Rapid Tissue Donation Program in Metastatic Breast Cancer Patients provides us with a unique opportunity to harvest sufficient quantity of immediate post-mortem liver tissue to advance this understudied area. Our team consists of an experienced pathologist, clinicians, and immunologists – strategically positioned to undertake the above study and to expand the field of NK cell cancer immunology.