

Public Abstract

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Title:Phage Display Peptides for Breast Cancer Targeting

Breast cancer is one of the most common types of cancer for women and over 40,000 die annually from this disease. Currently, early detection comes from self-examinations and mammograms, but these tests can miss up to 40% of early breast cancer, especially among young women with quickly growing tumors. Therefore, a new method of early detection would greatly reduce the number of deaths by breast cancer. Peptides, or small pieces of protein, are a potential detection agent for cancer cells. We identified two peptides for use as breast cancer imaging agents. One peptide, called G3-C12, had preliminary tests done to determine which points in the sequence were important for interaction with one part of a cancer cell, called gal 3. It was determined that 3 positions were important for interaction with gal 3. Another peptide, KCCYSL, has already had these preliminary tests done, and this peptide was turned into two potential imaging agents for another part of cancer cells, ErbB-2. Two different types of linkers were used to attach a radioactive metal, technecium-99m, to the peptide. These were then used to detect breast cancer tumors in mice. More study will need to be done to determine if these peptides can be used on humans. These two peptides have potential to be used as imaging agents that would be more sensitive and accurate than traditional cancer screenings. This would allow for the more correct and earlier detection of cancer, which could result in more women successfully fighting breast cancer.