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Peptide-displaying phage technology in breast cancer diagnosis

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Phage display is a molecular technique by which foreign proteins are expressed at the surface of phage particles. This is an extremely powerful tool for selecting peptides with specific binding properties from vast numbers of variants. Considering tumors, is a promise technology in selecting targets with clinical relevance, able in recognize molecular diversity of cancer. It has been characterized by phage display a new FabC4 antibody with clinical relevance in diagnostics, disease staging, and prognosis. However, further characterization of its target is essential for BC management. In this study, a biopanning assay against FabC4 using PH.D-12 library was performed. To isolate peptides that recognize our FabC4 antibody, a subtractive selection procedure was applied against an irrelevant Fab, and the elution of ligands was performed in two steps: with non-malignant proteins, which were discarded, and with BC proteins, which were amplified. It was shown, by Phage-ELISA, that six clones differentiated sera samples from 50 patients with BC, benign disease, and from health women. Chemically synthesized peptides were specifically direct against FabC4, and tested against 150 patients. Absorbance for sera from patients with BC was significantly higher than samples from benign disease and health women. Obtained results open new perspectives in BC diagnostic, target therapy and demonstrate the selective of the applied procedure. The use of synthetic peptides proved to be an excellent assay that was reproducible, simple, fast, and inexpensive, and it can be applied in diagnostic and therapeutic programs.

Biography

Thaise Gonçalves Araujo has completed her PhD at Federal University of Uberlandia, Brazil in 2012, working with breast cancer and phage display technology. She collaborated with NIH developing projects with phage display and HIV antibodies. She has published papers incancer areas and is professor of the Federal University of Uberlandia.

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