

### Mutiscale Modeling of Breast Conservative Therapy (BCT):

The goal of BCT is to achieve local control of the cancer as well as to preserve a breast that satisfies the woman's cosmetic concerns. While most women undergo partial mastectomy with satisfactory cosmetic results, in many patients the remaining breast is left with major cosmetic defects including concave deformities, distortion of the nipple areolar complex, asymmetry and changes in tissue density characterized by excessive density associated with parenchymal scarring. There are currently no tools, other than surgical experience and judgment, that can predict the impact of partial mastectomy on the contour and deformity of the treated breast. The objectives of this study are to determine if a computational model can allow prediction of the breast contour, surface features and tissue density after partial mastectomy and potentially identify targets for intervention to improve cosmetic results.