

Development of Theranostic Agents for Improvement of Outcomes of Latinas with Breast and Ovarian Cancer

What is the research problem?

Outcomes are often poorer for Latinas with breast and ovarian cancers due to a high incidence of certain genetic mutations. Therapeutics directed to biochemical pathways to breast cancers have been developed, but population-specific targets for Latinas have not been evaluated in detail. Moreover, methods for directing therapeutics specifically to such cancers need to be developed. We propose to develop agents that will provide targeted therapy, and analysis of therapeutic response, in breast and ovarian cancers within the Latina population.

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What is your proposed solution?

In recent years there has been substantial focus on coupling diagnostic and therapeutic agents for combined treatment and analysis of therapeutic response. At the University of Arizona, significant enhancements in directed imaging using unique techniques and tools have focused on developments in MRI of breast cancer, ultrasound delivery and localized drug delivery and release, micro-endoscopic detection of early stage ovarian cancer, as well as both preclinical and clinical advances in PET/SPECT for drug pharmacokinetics and improved signal resolution. These independent research efforts are often coupled to a significant effort on targeted contrast agent development.

The following are required to develop theranostic agents for improvement in outcomes of Latinas with breast and ovarian cancer: target identification and validation, agent synthesis with iterative testing, pre-clinical deposition and pharmacokinetic analysis, and finally, image acquisition optimization and selection of quantitative endpoints for analysis. The UA has substantial expertise in each of these required technologies which need to be aligned and energized for the initiation and progress in this quest.

How will your solution make a difference?

Understanding mutations in Latina breast and ovarian cancer, providing personalized therapy, and monitoring of the therapeutic response are critical to improving outcomes for this population. Theranostic advances that align

target identification, personalized agent development, and advanced analysis of therapeutic effect can achieve this goal.