**Abstract:** As new options for breast cancer screening, early detection and treatment become available it is essential to provide accurate, clinically relevant methods to identify women that would benefit most from specific approaches. An emerging approach to improve individualized risk assessment in clinical decision making for breast cancer is the incorporation imaging biomarkers. Our studies with multi-modality breast imaging suggest that imaging can play an important role for personalizing patient care. Quantitative measures of breast density and parenchymal texture can improve the prediction accuracy of breast cancer risk estimation models and potentially, help guide personalized breast cancer screening protocols. Tumor phenotypic characteristics, such as shape, morphology, and heterogeneity of contrast enhancement kinetics from magnetic resonance imaging are indicative of molecular subtypes of breast cancer and correlate with the probability of future recurrence. Such phenotypic tumor imaging markers can also be used as surrogates for treatment response, including neo-adjuvant chemotherapy, and help identify earlier patients that are most likely to respond to treatment. This emerging evidence therefore suggests a new clinical paradigm that will necessitate integrating multi-modality imaging biomarkers with genomics, histopathology, and clinical risk factors to assess individualized patient risk and help better guide clinical decisions for breast cancer. This talk will provide an overview of investigations currently on-going at our institution that include digital mammography, digital breast tomosynthesis and magnetic resonance imaging biomarkers and their potential clinical utility in guiding personalized screening, prevention, and treatment approaches for breast cancer.

**Bio:** Dr. Despina Kontos, is an Associate Professor of Radiology, and director the Computational Breast Imaging Group (CBIG) in the Center for Biomedical Image Computing and Analytics (CBICA) at the Radiology Department of the University of Pennsylvania. Dr. Kontos received her C.Eng. diploma in Computer Engineering and Informatics from the University of Patras in Greece and her MSc and PhD degrees in Computer Science from Temple University in Philadelphia. She completed her postdoctoral training in radiologic physics and biostatistics at the University of Pennsylvania, where she was the recipient of two RSNA postdoctoral fellowship awards, a Susan Komen for the Cure Foundation fellowship, and a DOD Concept Award. Her current research interests focus on investigating the role of quantitative imaging as a predictive biomarker for guiding personalized clinical decisions in breast cancer screening, prognosis and treatment. She has been the recipient of the ECOG-ACRIN Young Investigator Award of Distinction for Translational Research and is currently leading several on-going research studies, funded both by the NIH/NCI and private foundations, to incorporate novel quantitative multi-modality imaging measures of breast tumor and normal tissue composition into cancer risk prediction models.