

# KEYNOTE TALK

Tuesday, October 12, 2021 at 1:30pm

## Towards optimizing therapy on a patient specific basis via imaging-based mathematical modeling

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**Abstract:** The ability to accurately predict the response of tumors to therapy, and then use this information to optimize treatment on an individual patient basis, would dramatically transform oncology. In an attempt to move in this direction, we have developed a clinical-mathematical framework that integrates quantitative magnetic resonance imaging (MRI) data into mechanism-based mathematical models to predict the response of locally advanced breast cancer to neoadjuvant therapy. We will present our recent efforts on this topic and then discuss how these methods can be extended to enable patient-specific simulations of treatment response to a range of therapeutic regimens, thereby providing a pathway for optimizing therapy on a patient-specific basis.



**Speaker Bio-Sketch:** Tom Yankeelov is the W.A. "Tex" Moncrief Chair of Computational Oncology and Professor of Biomedical Engineering, Diagnostic Medicine, and Oncology at The University of Texas at Austin. Dr. Yankeelov is the founding Director of the Center for Computational Oncology, and also serves as co-Director for the Quantitative Oncology Research Program and Director of Cancer Imaging Research within the Livestrong Cancer Institutes at UT Austin. The overall goal of Dr. Yankeelov's research is to develop tumor forecasting methods by integrating advanced imaging technologies with predictive, multi-scale models of tumor growth to optimize therapy. This is accomplished by dividing his efforts into approximately equal parts mathematical modeling, pre-clinical development, and implementation in clinical trials.