Radiomics is an emergent technology based on high-throughput extraction and quantification of features from medical images. Data support the use of radiomics for cancer prognosis and treatment; however, there is a fundamental gap in understanding how image acquisition parameters affect imaging features, a lack of unified statistical methodology to analyze these data, and virtually no external validation. Our long-term goal is to harness robust quantitative imaging phenotypes for personalized cancer treatment. The rationale for developing quantitative CT imaging features is to move beyond simple morphologic descriptors of tumors such as “homogeneous” and “heterogeneous” to a quantitative imaging phenotype capable of capturing subtle and informative variations inherent in cancer populations. This talk will describe development of novel imaging biomarkers to inform treatment and management of cancer patients and to provide new insights into cancer biology.