Cancer immunotherapy has made enormous progress in offering safer and more effective treatments for the disease. However, due to the complexity and heterogeneity of tumors, as well as the diversity in patient response, immunotherapies have only a 30% success rate, at most; moreover, the efficacy of the therapy can be evaluated only two months after start of treatment. Therefore, early identification of potential responders and non-responders to therapy, using noninvasive means, is crucial for improving treatment decisions. In this talk, I will describe a straightforward approach for image-guided prediction of therapeutic response to cancer immunotherapy. This is achieved using gold nanoparticles as contrast agents for computed tomography imaging. We demonstrate the capabilities of this approach with an antibody named αPDL1, designed to perform immune check-point blockade, which is now considered a pillar in cancer immunotherapy.