Abstract: Image-guided therapy (IGT), a central concept of 21st century medicine, is the use of medical imaging to plan, perform, and evaluate surgical procedures and therapeutic interventions. High-intensity focused ultrasound (HIFU) is a non-invasive therapeutic technology with the potential to transform the treatment of many medical disorders by using ultrasonic energy to target tissue deep in the body without incisions or radiation. Innovative therapeutic techniques have been developed using HIFU as a technology platform. This talk will address technology development and clinical translation of image-guided ultrasound therapy, including both imaging-guided ultrasound brain drug delivery and image-guided hyperthermia.