

*In vivo* biomedical imaging for assessment of therapeutic response is becoming an increasingly important field. Early assessment and prediction of treatment response allow for individualized re-optimization of therapy, which represents a novel concept and a paradigm shift from conventional clinical trials. Recent Phase I/II trials have shown that biomedical imaging, including CT, MRI, PET, can provide an indication of therapeutic response, and possibly prior to the radiographic changes. *In vivo* biomedical imaging for assessment of therapeutic response is a dynamic and fast growing field. Many new trials are ongoing or in the design phase. The complicity of imaging technologies provides an opportunity for more AAPM members to engage in either single center trials or multi-center trials in coming years. This symposium will provide overviews on PET/SPECT, MRI/MRS and the integration of multimodality imaging in clinical trials for assessment of treatment response.

The objectives of this symposium are:

- (1) What imaging modalities have shown potential value in phase I/II trials for assessment of therapeutic responses;
- (2) What are the advantages and limitations of using *in vivo* functional and metabolic imaging in clinical trials compared to conventional paradigms;