

Several functional MR techniques, including dynamic contrast agent enhanced MRI (DCE-MRI), dynamic susceptibility change MRI (DSC-MRI), diffusion MRI, blood oxygen level dependent (BOLD) MRI, and *in vivo* spectroscopy, have been proposed and utilized to monitor the effects of conventional and targeted therapies in a longitudinal, non-invasive manner. This symposium session will briefly review the physical basis of each of these techniques and then will review representative pre-clinical and clinical trial findings obtained using these methodologies to assess response to treatment by radiation and/or chemotherapy.

Objectives:

- 1) Review the physical basis of DCE-MRI, DSC-MRI, diffusion MRI, BOLD MRI, and MR spectroscopy techniques
- 2) Review representative applications of the techniques described above to pre-clinical and clinical trial applications for early assessment of radiation therapy, both as a single regimen as well as in combination with chemotherapeutic and/or targeted therapies.