PET-based biological imaging for radiation therapy treatment planning
Hybrid PET/MR imaging is in early development for treatment planning. This article briefly reviews research and clinical applications of PET/MR imaging in radiation oncology. With improvements in workflow, more specific tracers, and fast and robust MR imaging acquisition protocols, PET/MR imaging will play an increasingly important role in better target delineation for treatment planning and have clear advantages.

- The high initial investment and maintenance costs raise questions of whether PET/MR imaging for radiation therapy treatment planning is superior to that of PET/computed tomography.

- There are ongoing improvements in PET/MR imaging workflow, more specific PET tracers, and fast and robust MR imaging acquisition protocols. PET for radiation treatment planning of brain tumours. Radiother Oncol 2010;96:325–7.

- The use of imaging to better delineate the radiation treatment target is a particular example of personalized treatment [8]. In fact, instead of using a prior established eld, the radiation dose is shaped on the tumour for each single patient. The advantage of functional imaging with PET is the possibility of further increasing the accuracy of target delineation including only metabolic active tissue.


- Biological characteristics of amino acid-based tracer. Amino acid tracers were initially developed with the intention to measure protein synthesis rates.