

## **Shifting gears in Imaging - how PSMA-PET is about to Change Prostate cancer diagnostics**

Tobias Maurer

Department of Urology

Technical University of Munich, Germany

Current imaging procedures for detection or staging of prostate cancer (PCa) depend mainly on morphology or bone metabolism and do not always meet the diagnostic needs. In recent years, the prostate-specific membrane antigen (PSMA), a transmembranous protein that shows significant over-expression on most PCa cells, has gained increasing interest as target molecule for imaging. So far, several small compounds directed against PSMA have been developed and are currently investigated as imaging probes for positron emission tomography (PET) with the <sup>68</sup>Gallium-labelled PSMA inhibitor Glu-NH-CO-NH-Lys(Ahx)-HBED-CC being the most widely studied agent. <sup>68</sup>Ga-PSMA-PET imaging in combination with multiparametric magnetic resonance tomography (MR) might provide additional molecular information useful for PCa localization within the prostate for e.g. fusion biopsy or targeted boost-radiation. In primary intermediate to high-risk PCa, PSMA-based imaging has been reported to improve detection of metastatic disease as compared to computed tomography (CT) or MR rendering additional cross-sectional imaging or bone scintigraphy unnecessary. These findings could significantly influence further treatment (e.g. extent of lymph node dissection templates, targeted therapies,...). Furthermore, in biochemical recurrent PCa, <sup>68</sup>Ga-PSMA-PET imaging has been shown to increase detection of metastatic sites even at low PSA values in comparison to conventional imaging or PET examination with different tracers creating the possibility

of targeted salvage approaches. Thus, although current knowledge is still limited and derived from retrospective series, PSMA-based imaging holds great promise to advance PCa management.