

## **PSMA Theranostics: Transforming Prostate Cancer Care**

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Prostate cancer (PCa) is the most commonly diagnosed malignancy and the second leading cause of cancer-related death among men in the United States, with 1 in 10 men developing PCa during their lifetime. Furthermore, up to 40% of men with localized PCa subsequently develop metastatic tumor recurrence. This relapse is due in part to the limitations of conventional imaging in detecting PCa metastasis. Theranostics is defined as a combination of THERApy and DiagNOSTICS, and prostate specific membrane antigen (PSMA) is at the center of this novel treatment modality. Theranostics is becoming a real “game changer” because PSMA is used as a molecular target for both imaging and therapy of PCa. PSMA is a transmembrane protein that is overexpressed in prostate tumors up to 1000 times higher than in normal prostate. Also, high PSMA expression on PCa tissue increases the risk of PCa recurrence, meaning that higher PSMA predicts aggressive PCa. The advantage of PSMA targeted therapy for PCa is that it has minimal to no collateral damage to normal tissues. Also, given the specificity of PSMA imaging we can detect PCa very early, allowing for better management of the disease and optimal patient outcomes. The Food and Drug Administration recently approved the use of <sup>177</sup>Lu-PSMA-617 (Lu-PSMA) to treat metastatic PCa, given its overall survival benefit compared to the current standard of care. We are currently pioneering the use of Lu-PSMA Theranostics earlier in the disease course, and in combination with proton therapy, for the primary treatment of metastatic PCa.

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