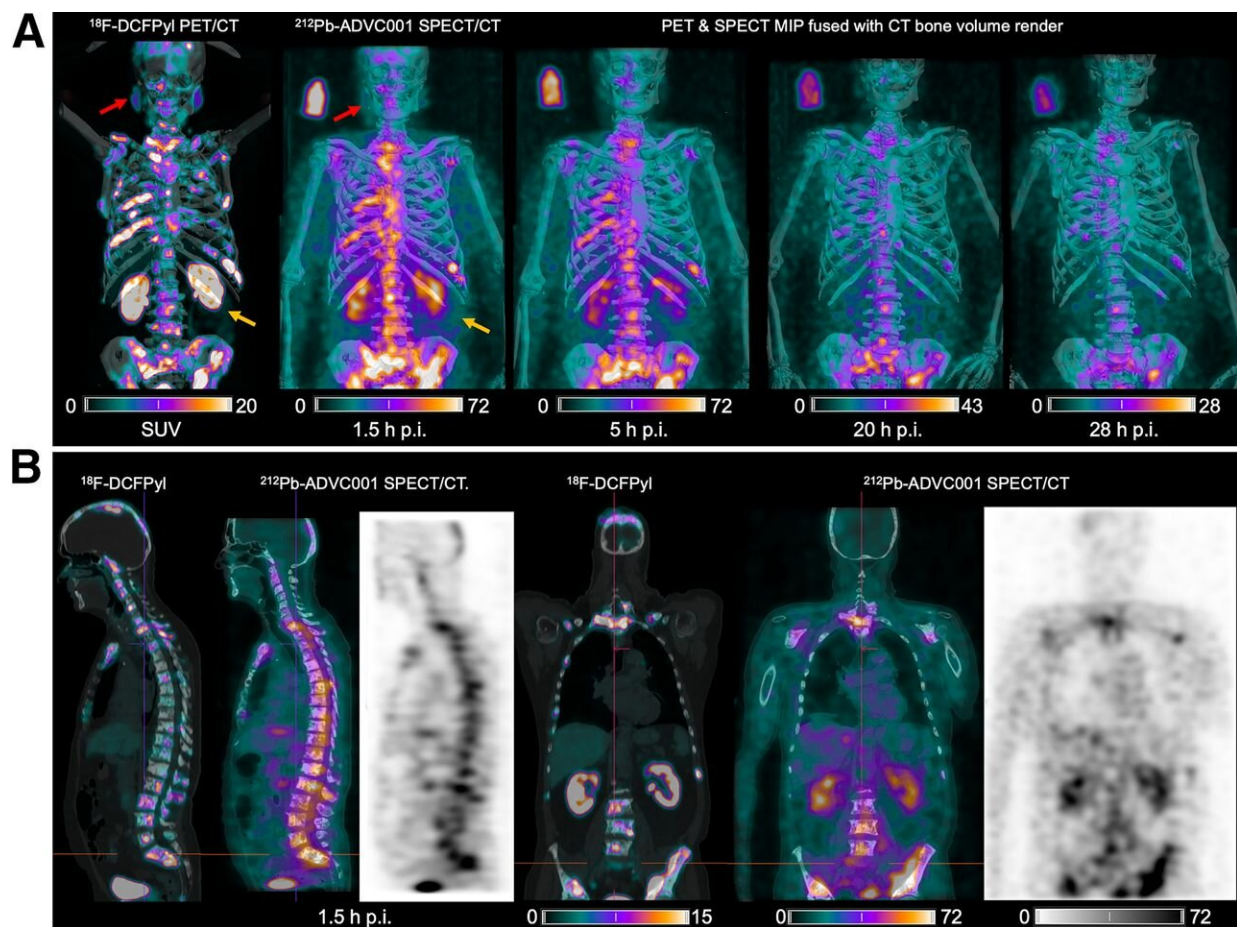


# New SPECT/CT technique shows impressive biomarker identification, offers increased access for prostate cancer patients

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(A) <sup>18</sup>F-DCFPyl PET/CT and <sup>212</sup>Pb SPECT/CT images showing concordant

tumor biodistribution with low salivary gland uptake (red arrow) and rapid kidney clearance of 60 MBq of  $^{212}\text{Pb}$ -ADVC001. A 3-MBq standard solution (100 mL) was included. (B) Sagittal and coronal images at 1.5 h after injection (p.i.). MIP 5 maximum-intensity projection. Credit: *Journal of Nuclear Medicine* (2024). DOI: 10.2967/jnumed.123.267189

A novel SPECT/CT acquisition method can accurately detect radiopharmaceutical biodistribution in a convenient manner for prostate cancer patients, opening the door for more personalized treatment. Utilizing lead-212 ( $^{212}\text{Pb}$ ), the new imaging technique has the potential to change practice and increase access for patients around the world. The first-in-human images from this method are [published](#) in the *Journal of Nuclear Medicine*.

There is significant interest in the development of  $^{212}\text{Pb}$ -PSMA-based targeted alpha therapy (TAT) for patients with metastatic castration-resistant prostate cancer. However,  $^{212}\text{Pb}$  is a challenging isotope to image because of the high-energy gamma rays generate significant scatter.

"The ability to acquire imaging of an alpha-emitter with a standard SPECT camera and standard collimator within a convenient acquisition time for the patient could provide more precision in how we treat patients with prostate cancer, and patients with other cancers, in the future. Confirming the presence of the drug in the target is important because it serves as a [quality assurance](#) and can be used to derive an understanding of the biodistribution and pharmacokinetics of the drug," said Stephen Rose, PhD, head of Translational Medicine and Clinical Science at AdvanCell.

In the study, researchers administered 60 MBq of  $^{212}\text{Pb}$ -ADVC001 to a 73-year-old man with metastatic castration-resistant prostate cancer. SPECT/CT imaging occurred at 1.5, 5, 20, and 28 hours after infusion.

Representative  $^{212}\text{Pb}$  SPECT/CT images showed rapid tumor uptake of  $^{212}\text{Pb}$ -ADVC001 in agreement with tumor burden shown on the pretreatment  $^{18}\text{F}$ -DCFPyl PET/CT images. Images acquired after 20 hours showed persistent tumor uptake despite low counts due to  $^{212}\text{Pb}$  decay.

"In the future, this imaging technique can help to streamline the drug development process, driving conviction in the agents we bring to larger scale trials. In addition, the ability to image  $^{212}\text{Pb}$  with a standard SPECT camera in a relatively short timeframe means that  $^{212}\text{Pb}$  is a true theranostic alpha-emitter and could be a valuable in selecting patients for targeted alpha-therapies," said Rose

He continued, "What's more, access to PET imaging is a bottleneck, in the United States and globally. SPECT cameras are more widely available and may address this critical issue, as SPECT imaging can be used for patient selection, therapy decision making, and guiding adaptive dosing strategies based on changes of target expression and tumor volume during treatment."

**More information:** Matthew R. Griffiths et al, First-in-Human  $^{212}\text{Pb}$ -PSMA–Targeted  $\alpha$ -Therapy SPECT/CT Imaging in a Patient with Metastatic Castration-Resistant Prostate Cancer, *Journal of Nuclear Medicine* (2024). [DOI: 10.2967/jnumed.123.267189](https://doi.org/10.2967/jnumed.123.267189)

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