

## Special Issue

# Therapeutic Radionuclides in Nuclear Medicine

### Message from the Guest Editors

Sodium iodide is the first example of a theranostic radiopharmaceutical. Recently, the theranostic principle has been used with tumor receptor-specific radiopharmaceuticals containing therapeutic nuclides, such as  $^{161}\text{Tb}$ ,  $^{177}\text{Lu}$ ,  $^{188}\text{Re}$ ,  $^{212}\text{Pb}$ ,  $^{225}\text{Ac}$ . The production mode, availability, and costs of radionuclides have a significant impact on their clinical use and is often a bottleneck for broad application. Therefore, cyclotron-produced neutrons could open a new era for producing relevant radionuclides. Combining radiotherapeutics with the body's immune system or immunotherapeutics raises hopes for immunization against cancer and could explain the success of targeted alpha therapy vs. targeted beta therapy. The value of diverse radiation qualities including options such as photodynamic therapy using Cherenkov light must be systematically investigated in vitro and in preclinical models before they can be used in clinical trials and patient care. The path from radioisotope to targeted radionuclide therapy encompasses a multitude of aspects like availability, costs, dosimetry, waste management, which will be highlighted in this issue.

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### Deadline for manuscript submissions

closed (31 January 2024)



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Impact Factor 4.8  
CiteScore 7.7  
Indexed in PubMed



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