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28 **Site-specific labeling of cysteine-tagged Nanobodies for use in molecular imaging**
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29 **Development of a hybrid probe for specific imaging of bacterial infections**
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30 **Development of radiotracers for PET imaging of CB2 receptor**
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31 **Clinically-relevant, customizable agents for multimodal imaging**
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32 **The Development of Nuclear Receptor Imaging Agents**
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33 **Synthesis and preclinical evaluation of ^{18}F-labelled F3 derivatives for the PET imaging of Tumour Angiogenesis**
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34 **Nanoplatforms for Bimodal Imaging of Sentinel Lymph Node**
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Introduction
Sentinel Lymph Node Detection (SLND) is very important for cancer management [1]. The preoperative detection of SLN requires an intradermal injection of a radiolabeled colloid, whereas its intraoperative localization depends on the acoustic signal coming from the hand-held gamma probe as well as on visual confirmation of the radioactive node stained with a blue dye. Although widely used in the clinical setting for SLND, the properties of ^{99m}Tc-based colloids and blue dyes are far from ideal, hampering the surgeon's ability to identify and excise the SLN in a minimal invasive way [2, 3]. The presence of two imaging reporters (radioisotope and fluorophore) in the same probe would enable fast and accurate excision of SLN by radio- or near-infrared (NIR) guided surgery. Therefore, herein we report on new fluorescent radiolabeled mannosylated dextran-based probes for preoperative visualization of SLN by SPECT and PET, respectively, as well as on their use for real-time guidance during surgical excision by NIR optical imaging.
Methods
We have prepared bimodal imaging probes containing a radiometal, ^{99m}Tc or ^{68}Ga, a NIR fluorophore and mannose units for Mannose Receptor (MR) targeting. The pharmacokinetics and SLN mapping of the probes were evaluated in a Wistar rat model using nuclear and optical imaging.
Results
The probes, obtained with high radiochemical yield (> 95%) and specific activity, are stable *in vitro*. The biodistribution studies have shown that both probes presented an increased accumulation in the popliteal node with minimal spread to other organs after subcutaneous injection. Moreover, both probes enabled real time optical-guided excision of the SLN.
Conclusions
The new bimodal probes exhibit suitable biological properties for pre- and intraoperative mapping and excision of the SLN.
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35 **Gold nanoparticles for targeted delivery of radiometals**
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