

Journal: Biomaterials Research, 2022

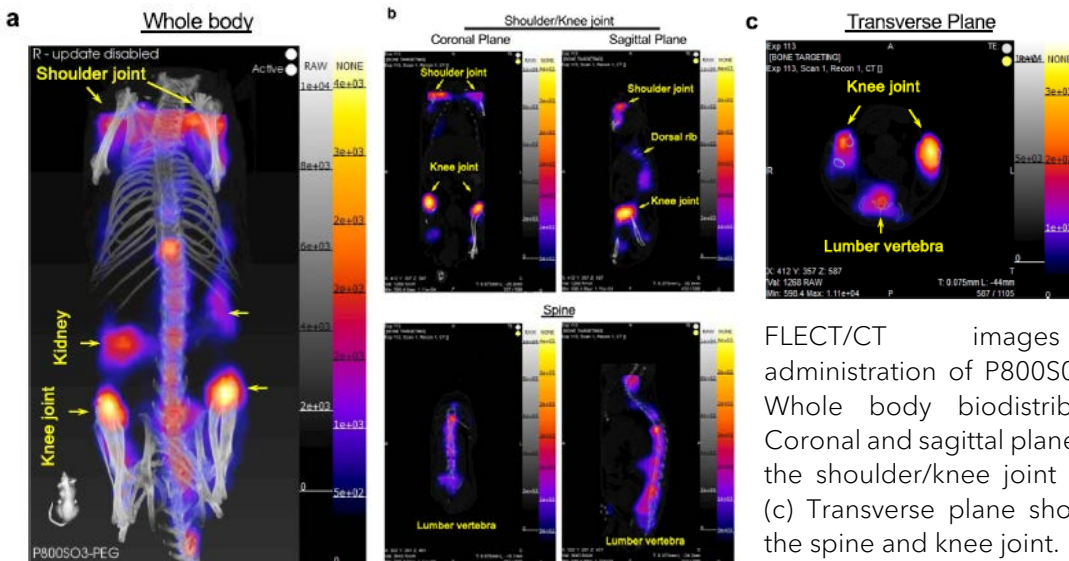
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Title: P800S03-PEG: a renal clearable bone-targeted fluorophore for theranostic imaging

Link: <https://doi.org/10.1186/s40824-022-00294-2>

Keywords: Bone targeting, NIR fluorescence

Summary: Bone imaging is typically performed to assess bone growth and development due to fractures and injuries, as well as in image-guided surgical procedures. Well established imaging modalities for bone imaging include X-ray radiography and X-ray CT, as well as PET and MRI. Optical imaging of bone is uniquely advantageous as this offers a functional, targeted imaging modality during preclinical studies of disease progression and therapeutic response. To date, there are no bone-specific optical imaging agents that have been reported. In this publication, the authors report on their efforts to develop a bone-specific imaging agent with NIR-I and NIR-II fluorescence for optical imaging. The team incorporated a structure-inherent targeting strategy, where the targeting moiety is incorporated into the chemical structure of a fluorophore and modified a previously developed NIR fluorophore to target bones and clear through the renal system. This agent, P800S03-PEG, is described in detail and its in vivo imaging ability assessed using both NIR-I and NIR-II fluorescence imaging.



FLECT/CT images after administration of P800S03-PEG. (a) Whole body biodistribution. (b) Coronal and sagittal plane images of the shoulder/knee joint and spine. (c) Transverse plane showing both the spine and knee joint.

InSyTe FLECT/CT Spotlight: Using the InSyTe FLECT/CT, the research team obtained in vivo biodistribution images of P800S03-PEG 4 days after intravenous administration in nu/nu mice. The FLECT/CT images show preferential accumulation of the P800S03-PEG agent in metabolically active bone regions (spine, bone joints). In addition, the lower signal in the kidneys versus joints shows steady renal clearance of the agent over time.