Nuklearmedizin
Klinikum rechts der Isar der TUM
Munich, Germany

Hot and cold chemistry labs, small animal imaging facility and GMP radiopharmacy for the development of innovative theranostic tools

1. PRISMAP biomedical facility: TUM

The Nuclear Medicine department at the Klinikum rechts der Isar of the Technical University of Munich is one of the main centres of preclinical and clinical research in Germany. It is located in Munich, (Bayern, Germany) at ~590 km from CERN and ~340 km from PSI; which are the two closest PRISMAP productions centres.

The radionuclides from the PRISMAP portfolio that are already approved in the Nuklearmedizin facilities are listed in Table 1. Additional radionuclides can be made available upon request. A complete list can be requested at helpdesk@prismap.eu.

Table 1: PRISMAP radionuclides already approved for use in the Nuklearmedizin facilities.

Radionuclide	Remark
Sc-47/Sc-44	Immediately usable.
Cu-64	Immediately usable. Dose calibrator, gamma counter and microPET normalized and calibrated for this radionuclide.
Cu-67	Immediately usable.
Ba/Cs-128	Immediately usable. Dose calibrator, gamma counter and microPET normalized and calibrated for this radionuclide.
Tb-161	Immediately usable.
Tb-152	Request of usage easy to get for specific projects. Dose calibrator, gamma counter and microPET normalized and calibrated for this radionuclide.
Tb-155	Immediately available.
Bi-213	Immediately available through 225Ac/213Bi generator.
Ac-225	Immediately available.

Our department is fully equipped to support guest researchers in the chemical and radiochemical development on new tools for SPECT and PET imaging. Furthermore, we conduct preclinical research with novel radionuclides and radiotracers. Three premises are available:

i) The chemical and biological research labs consist in cold and hot chemistry labs, cell culture rooms and rooms dedicated for biodistributions. The cold chemistry labs are equipped for the synthesis of small molecules such as chelators or peptides as well as for the production of protein-based molecules such as for example, antibody fragments. Here two rotary evaporators, a lyophiliser, analytical and preparative HPLC systems (Shimadzu), a mass spectrometer (Shimadzu) and small lab equipment can support your research in the very early stage.
On the same floor, the two hot labs include a radio-HPLC (Shimadzu with a Gabi radiodetector; Raytest), a radio-TLC scanner, a gamma counter (PerkinElmer), a scintillation counter (Perkin Elmer), an autoradiography scanner, dose calibrators, two automatic/semi-automatic synthesis modules (Scintomics and Eckert & Ziegler). Several fume hoods and laminar flow hoods are available in the labs.

ii) The imaging core facility (PICTUM) is located in the control area of the animal facility of TranslaTUM building inside the Klinikum rechts der Isar. The facility currently consists of a Mediso PET/MRI and Mediso SPECT/CT scanner and also contains equipment to aid in nuclear medicine research, such as a Perkin Elmer gamma counter, two dose calibrators and appropriate spaces to perform biodistribution studies. The facility is fully equipped to safely work with radiation according to local radiation protection regulations. To facilitate the workflow a pneumatic tube transport system is available to send radioactivity from the production site at the -2 floor of the nuclear medicine department GMP hot labs to the imaging facility in less than 1 minute. Consult the PICTUM website for more information.

iii) The GMP accredited radiopharmacy is equipped with high and low energy hot cells (Comecer, Von Galen), modules for automated synthesis (Scintomics, FastLab and Eckert&Ziegler), QC laboratory with radio-iTLC

(miniGita; Raytest) and radioHPLC (Shimatzu; radiodetector Raytest). Gamma counter (PerkinElmer). Gas chromatography system (6850, Agilent Technologies).

The Nuclear Medicine department and the PICTUM imaging facility can offer support for the advancement of your radiotracers into first in human clinical trials.

To get further information about all the specifications of the small animal nanoScan PET/MRI[1] and nanoScan SPECT/CT[2], visit the Mediso website.

Table 2 summarises the microPET and SPECT detector specifications.

Table 2: microPET and SPECT detector specifications.

Scanner	Modality	Detector technology	Collimators	File type	Reconstruction algorithm	Animal	Gating
nanoScan PET/MRI 3T (PET/MRI, Mediso)	PET	LSO (1.12 x 1.12 x 13 mm)	NA	List mode or raw data	MLEM, OSEM, MAP Photopeaks and energy windows can be modified by the user	1-3 animals. ECG, respiration temperature monitoring. Heating pad. Isoflurane	Cardiac and respiratory
nanoScan (SPECT/CT, Mediso	SPECT	Multi-pinhole by proprietary M^3-pinhole™ technologySingle-pinholeParallel-hole **Energy range" from ^{125}I to theranostic isotopes (^{131}I, ^{213}Bi, ^{225}Ac)**	9.5 mm NaI(Tl)	SPECT (3D): helical, circular, semi-stationary and full stationaryPlanar (2D): static, dynamic	OSEM Photopeaks and energy windows can be modified by the user	1-3 animals. ECG, respiration temperature monitoring. Heating pad. Isoflurane	Cardiac or respiratory

For further technical details, please contact our helpdesk at: helpdesk@prismap.eu.

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[1] https://mediso.com/global/en/product/pre-clinical-products/nanoscanr-petmri-3t-and-7t
[2] https://mediso.com/global/en/product/pre-clinical-products/nanoscanr-spectct