



Medical-Radionuclides.eu

Hevesy Laboratory/DTU Roskilde & Lyngby, Denmark

Radiochemistry, radio analytical and radiation
biology laboratories, small animal facility, clean
rooms/GMP suite with manufacturing and IMPD
licenses, shipping expertise



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PRISMAP+ Biomedical Facility DTU

Hevesy Laboratory is part of the Department of Health Technology at the Technical University in Denmark. The laboratory is a research lab but also both a radionuclide production site with cyclotrons and a routine manufacturer of radiopharmaceuticals. As such, Hevesy Laboratory is both a PRISMAP+ production site and a biomedical facility. Hevesy Lab is situated in rural conditions 40 km from Copenhagen. We make daily supplies of PET radiopharmaceuticals to eastern Denmark and more special radiopharmaceuticals to all of Denmark and some sites in Sweden. We have strong tradition for research, development and supply of radionuclides and radiopharmaceuticals, both from our own accelerators and from foreign reactors. We have now our own small animal imaging facility located on the Lyngby Campus, in Copenhagen.

The radionuclides from the PRISMAP+ portfolio that are already approved in the Hevesy Laboratory/DTU biomedical facility are listed in Table 1. Additional radionuclides can be made available upon request.

Table 1. Radionuclides from the PRISMAP+ portfolio that can be used at the Hevesy Laboratory/DTU facility.

Radionuclide	Max. Activity, MBq	Remarks
F-18	500000	
Sc-43	200	At small animal facility (0 MBq)
Sc-44	200	At small animal facility (0 MBq)
Ti-45	6000	At small animal facility (0 MBq)
Mn-52	6000	At small animal facility (1000 MBq)
Cu-64	60000	At small animal facility (2500 MBq)
Cu-67	60000	At small animal facility (1500 MBq)
Ga-67	5000	At small animal facility (0 MBq)
Pd-103	60000	At small animal facility (7500 MBq)
Ag-111	1100	At small animal facility (4000 MBq)
Ba-131	500	At small animal facility (0 MBq)
Cs-131	500	At small animal facility (0 MBq)
La-135	15000	At small animal facility (3000 MBq)
Er-165	4000	At small animal facility (1000 MBq)
At-211	200 MBq	At small animal facility (100 MBq)

The permission for handling Ag-111 and Cs-131 will be extended soon. The license for radionuclides used at the small animal facility can also be extended.

Infrastructure and experiments available

The Hevesy Laboratory/DTU facility is fully equipped to conduct radiolabelling studies, cell culture studies as well as animal imaging and therapy studies.

The Hevesy Laboratory/DTU has its own target development, target manufacture and target separation facilities. In addition to our normal radiochemical separation of products from target, we have a preparative (hot-lab) HPLC.

Radioactivity can be quantified by:

Two HPGe gamma spectrometers (Canberra/Mirion/Genie2) with broad activity (0.1 kBq-50 GBq) and energy ranges (60-3000 keV), with traceable calibrations. In conjunction with this a germanium X-ray detector 4 – 80 keV, dose calibrators, triple-double coincidence TLC and alpha counting are available. We have two broad range dose calibrators with traceable Capintec and Veenstra settings.

Our analytical capability includes three general purpose HPLCs (under GMP) and two additional research HPLCs, three TLC scanners, pH, endotoxin and freezing point instruments, and two ICP-OES instruments approved for work with radioactive samples.

The GMP manufacturing facility contains two large class C clean rooms with hot cells (class C) and LAF work benches (A in C) and in addition airlocks, ante rooms and autoclavation room. The clean rooms are at present licensed to work with F-18, Cu-64 and Lu-177, but other radionuclides can be added to the license.

Hevesy laboratory has the approval as a radiopharmaceutical manufacturing site with some additional analytical permissions – including sterility control on radioactive samples. The laboratory also has an IMPD manufacturing license for clinical trials.

The in-house bio-lab has permissions to work with radioactivity up to 1% of the above limit. It has one CO2 incubator, LAF flow bench, cell counters (Millipore MUSE and Scepter), HIDEX LSC and gamma counting. Cells can be stained and visualized, a ZEISS Axiomat fluorescence microscope. Several standard cell lines are available. Cells and tissues can for comparison be externally irradiated on site with electrons, MV (Linac), and using Cs-137 and Co-60 beams in carefully calibrated facilities from few uGy/h up to several kGy/h.

The PET/SPECT laboratory located in Lyngby is a new state-of-the-art radionuclide imaging facility for conducting preclinical PET, SPECT and CT imaging studies in mice and rats on a high resolution NanoScan PET/SPECT/CT scanner from Mediso. The laboratory is a part of a larger imaging core facility, The Translational Imaging Centre which includes preclinical μ CT, and optical imaging facilities for imaging pigs, mice and rats. Small animal radiotherapy studies are also available on a range of animal models.

Details regarding the equipment available for imaging at the Hevesy Laboratory/DTU biomedical facility can be found in Table 2.

Table 2. Imaging equipment details.

Equipment	Modality	Remarks
MiLabs U-CT/U-OI	CT, Optical imaging, BLT, FLT	
Mediso NanoScan	PET/SPECT/CT	

Also available: fluorescent microscope, multimode plate reader for ELISA, luminescence, and viability assays.

Animal models available

- Rats: Healthy, nude, tumour-bearing
- Mice: Healthy, nude, tumour-bearing
- Cell lab available for establishing own tumour models

External suppliers:

- <https://janvier-labs.com/en/research-model-catalog/>
- <https://www.taconic.com/products>
- <https://www.inotiv.com/research-models>

Support available

The support available to the users before, during and after their visit at the Hevesy Laboratory/DTU biomedical facility can be found in Table 3.

Table 3. Support available at the Hevesy Laboratory/DTU biomedical facility.

Support	Remarks
Help/supervision with radiolabelling	
Help/supervision with radiolabelling quality control	
Help/supervision with labelled compound stability studies	
Help/supervision during cell studies setup	
Help/supervision during cell studies follow-up and results reading	
Help/supervision with animal handling	
Help/supervision with animal scanning	
Help/supervision with image generation and analysis	
Help with results processing and interpretation	
Help with publication writing	

Specific housing condition available for mice and rats via: <https://www.scanbur.com/>

Services available

The services available at the Hevesy Laboratory/DTU biomedical facility (without the presence of the user) can be found in Table 4.

Table 4. Services available at the Hevesy Laboratory/DTU biomedical facility.

Service	Remarks
Activity measurement, dose calibrator	
Activity measurement, gamma spectrometry	
Radiolabelling according to protocol provided by the user	
Formulation of radiolabelled compound for cell incubation or animal injection	
Radiolabelling quality control TLC	
Radiolabelling quality control HPLC	
Growing cell lines available in house	
Growing cell lines provided by user	
Radiopharmaceutical stability in non-biological media	
Radiopharmaceutical stability in biological media	
Cell studies setup	
Cell studies follow up (after setting up with user)	
Animal preparation (healthy animals)	
Animal preparation (tumour-bearing animals, in house model)	
Animal handling (injection, scanning process, sacrifice)	
Animal handling follow-up	