



# CONSORTIUM MEETING 4

## UNIQUE SELLING POINTS WP3 MEDICAL FACILITIES

DTU, CHUV, SCK CEN, TUM, NCBJ

Koen Vermeulen

23 - 24 November 2022

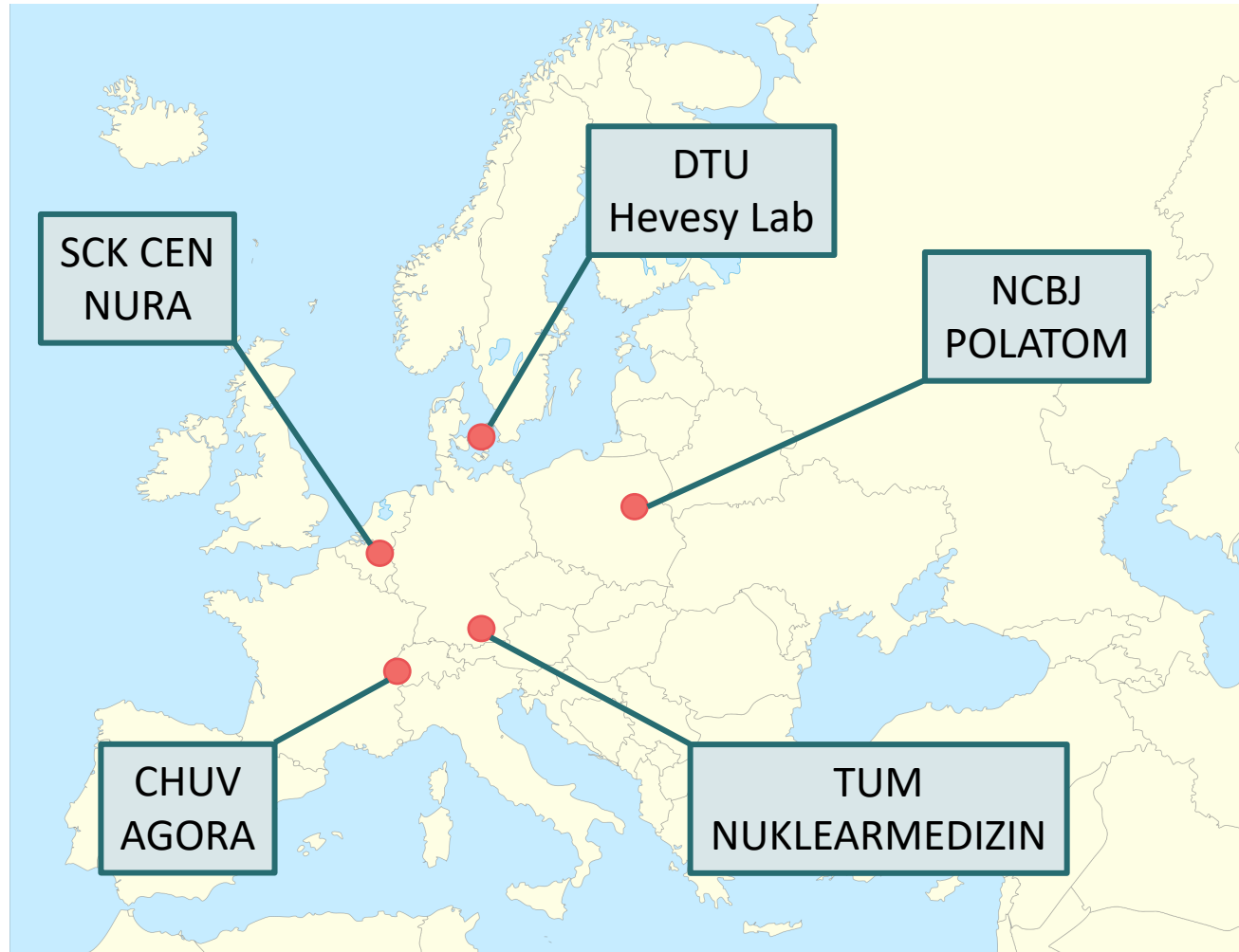
# WP3-TNA3 objective

Laboratory access to develop preclinical and clinical research projects with radionuclides from WP2-TNA2

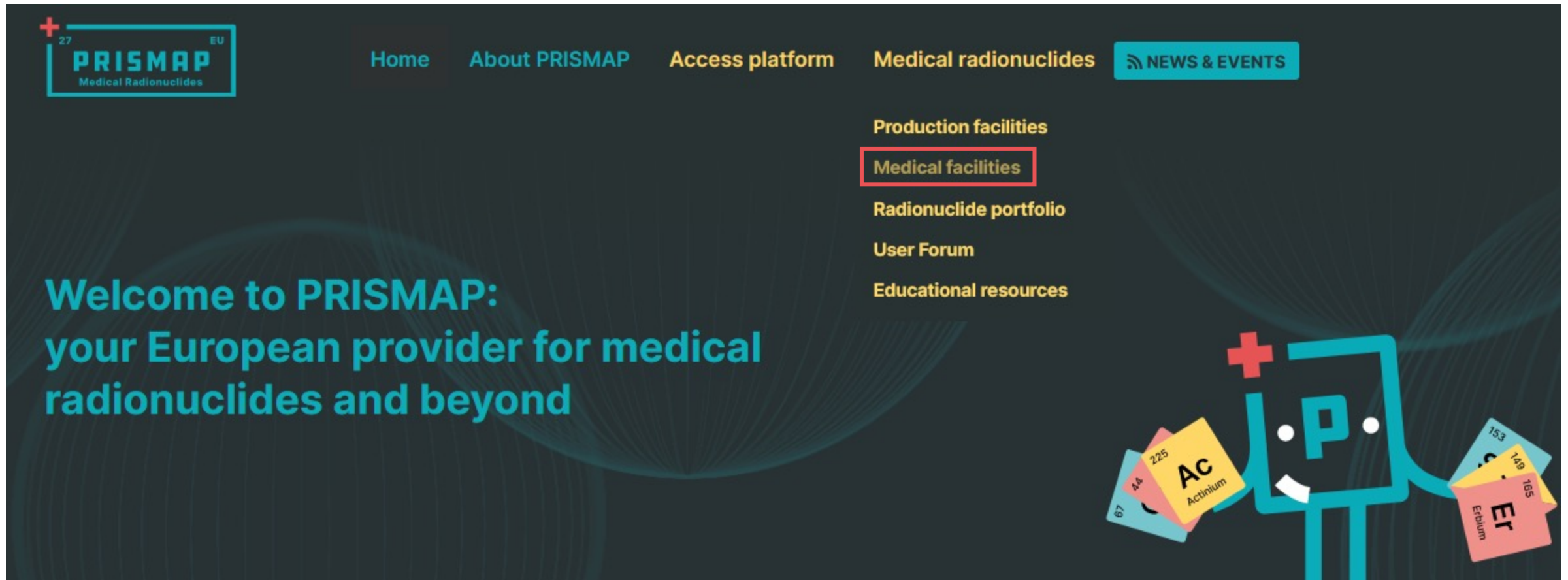
## DTU, CHUV, SCK CEN, TUM & NCBJ



## WP3 medical facilities



# Services available at facilities

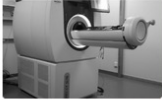




Medical facilities

The PRISMAP medical facilities offer access for the selected users of PRISMAP who request to be hosted in key facilities equipped for preclinical and clinical studies and located within suitable transport range of the radionuclide production facilities.

**Hevesy Laboratory**  
 Danmarks Tekniske Universitet – DTU
 

**AGORA**  
 Centre hospitalier universitaire vaudois — CHUV
 

**NURA**  
 Studiecentrum voor Kernenergie / Centre d'étude de l'énergie nucléaire — SCK CEN
 

**Nuklearmedizin**  
 Klinikum rechts der Isar der Technischen Universität München — TUM
 

**POLATOM**  
 Narodowe Centrum Badań Jądrowych – NCBJ
 

The NURA program focuses on enhancing targeted radionuclide therapies by producing innovative radionuclides and innovative radiopharmaceuticals.

The unique infrastructure of NURA includes fully equipped radiopharmacy laboratories for radiolabelling quality control and small-scale radionuclide production development. An additional hot cell facility to produce R&D radionuclides is currently being built. Other research infrastructure includes non-radioactive chemical synthesis laboratories for chelator development and a small-scale animal facility for preclinical evaluation of radiopharmaceuticals. A large-scale hot animal facility is currently under construction. When completed, this facility will enable SCK CEN to cover all fields of radiopharmaceutical development, from the isotope to preclinical evaluation supported by radiobiology and dosimetry research.

NURA R&D has developed production routes to ensure access to promising radionuclides like the well-known <sup>177</sup>Lu and the future candidates <sup>161</sup>Tb, <sup>188</sup>Re and <sup>153</sup>Sm for research purposes. Our radiopharmaceutical R&D stretches from chelator development to preclinical evaluation of radiopharmaceuticals. Furthermore, we have several research projects running within the radiopharmaceutical field linked to fundamental research within radiobiology and dosimetry.

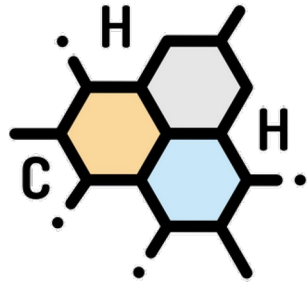
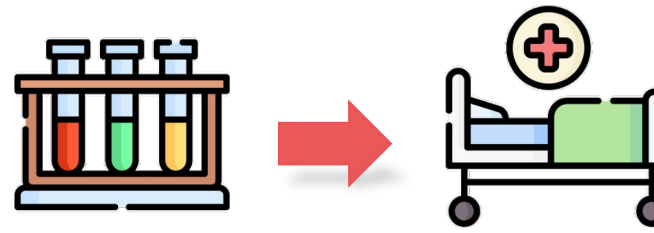
SCK CEN  Mol, Belgium

Experiments available

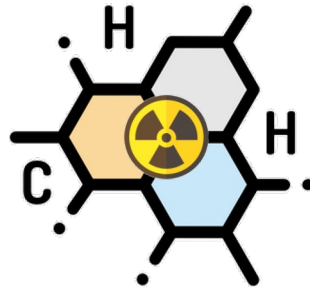
Support for targeting agent and chelator development	
Preclinical studies	
Chemical and radiochemical characterisation of the tracers selected	
In vitro characterisation	
In vivo characterisation	



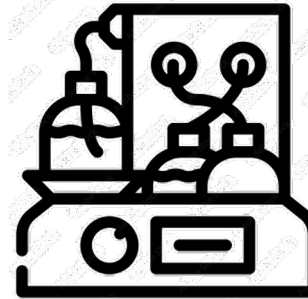
# Experimental services



Vector & chelator  
(Support)



Radiolabelling & QC



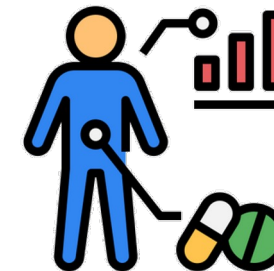
Preclinical studies



Regulatory documents for  
clinical studies

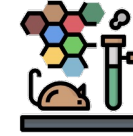
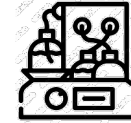
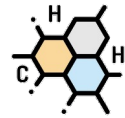


GMP manufacturing and  
documentation



Clinical trial  
(Support)

# DTU - Hevesy Laboratory



## 2 cyclotrons

### PETtrace

16.5 MeV protons  
8.4 MeV deuterons

### GENtrace

Prototype  
7.8 MeV protons

$^{52}\text{Mn}$

$^{64}\text{Cu}$

$^{103}\text{Pd}$

$^{111}\text{Ag}$

$^{135}\text{La}$

$^{165}\text{Er}$

$^{199}\text{Au}$

## GMP

Qualified and validated manufacturing site with GMP compliant manufacturing authorisations (including IMPD manufacture).

## Research

Accelerator target development

Microdosimetry

Auger-Meitner emitting therapeutic nuclides

$^{58\text{m}}\text{Co}$

$^{119}\text{Sb}$

$^{135}\text{La}$

# CHUV - AGORA

## (Pre)-Clinical practice of nuclear medicine

Translational Radiopharmaceutical Sciences Lab

GMP Radiopharmacy

Nuclear Medicine dpt.

## Network of academic excellence

3 Universities

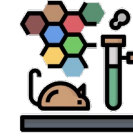
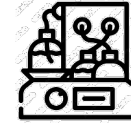
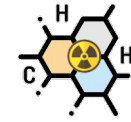
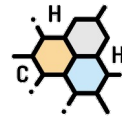
2 Hospitals

AGORA

2 Research Foundations

# core facilities

MRI, CT, OI, dual photon microscopy,  $\mu$ PET/SPECT/CT



clinical practice



clinical needs

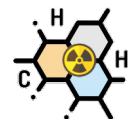
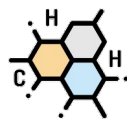
CHUV - AGORA

70 km

MEDICIS-CERN



# NURA - SCK CEN



BR2 in backyard

$^{47}\text{Sc}$

$^{111}\text{Ag}$

$^{153}\text{Sm}$

$^{161}\text{Tb}$

$^{169}\text{Er}$

$^{175}\text{Yb}$

Pantera

Spin-off (5y)  
 $^{225}\text{Ac}$

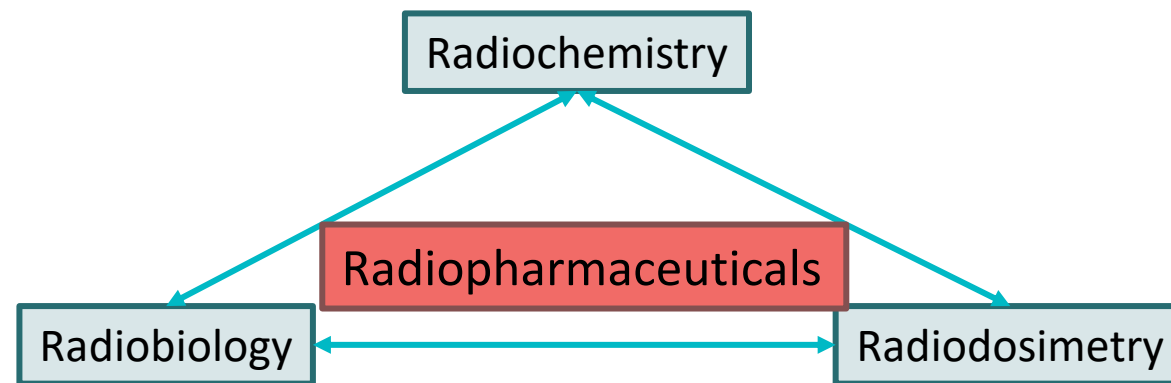
Nuclear field

Effects on environment  
Radioprotection  
Recycling  
Etc...

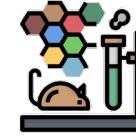
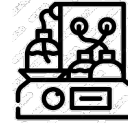
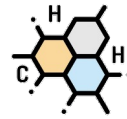
Newcomer

Building infrastructures to tailor needs

Brand new preclinical facility (2023)



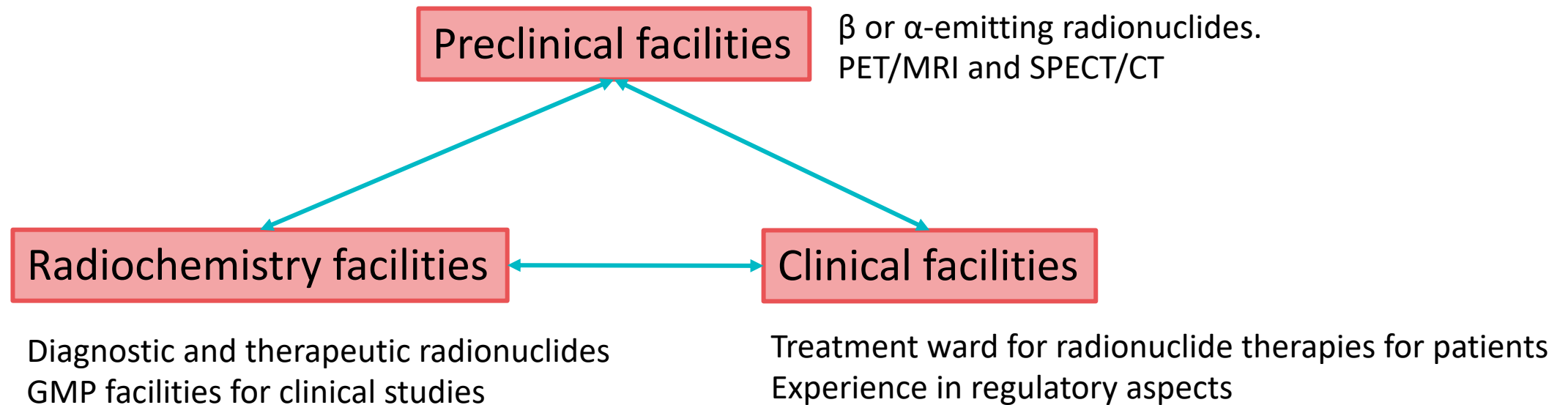
Expertise in external radiation  
Mechanistic studies of effects of ionizing radiation



## (Pre)-Clinical practice of nuclear medicine

Long-standing experience

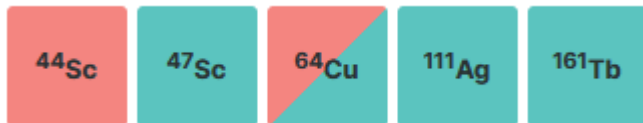
Rapid translation novel molecular imaging technologies to the clinic



# POLATOM - NCBJ



## Production of radioisotopes



MARIA

Research reactor

C30 cyclotron

28.4 MeV

Multiparticle cyclotron 30XP

End 2022

30 MeV proton beams, deuterons,  $\alpha$ -particles

$^{211}\text{At}$

$^{43}\text{Sc}$

$^{44}\text{Sc}$

## Advanced analytical instruments

HPLC (UV, MS, radiometric detectors)

ICP-Optical Emission Spectrometry

Electronic autoradiography systems

Optical microscopes

$\gamma$ -spectrometry, and liquid scintillation counters.

## Radioactivity measurements

$\alpha$ ,  $\beta$  and  $\gamma$  emitters by absolute methods.



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101008571 (PRISMAP).