



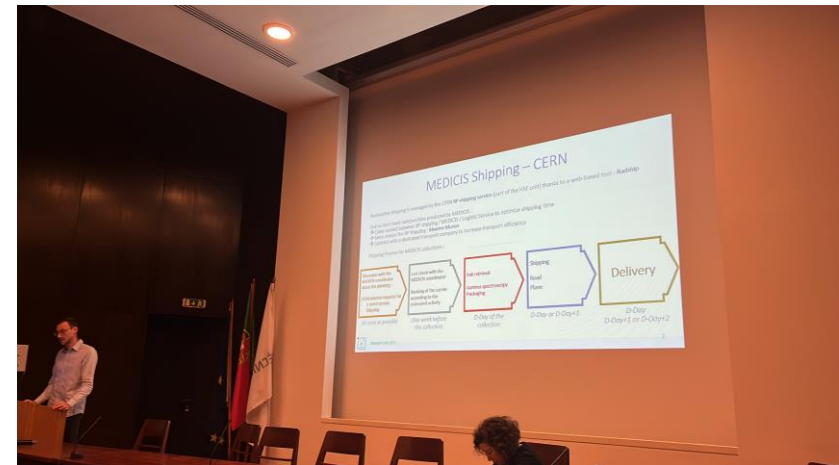
FEEDBACK FROM PRISMAP

MEDICIS Board

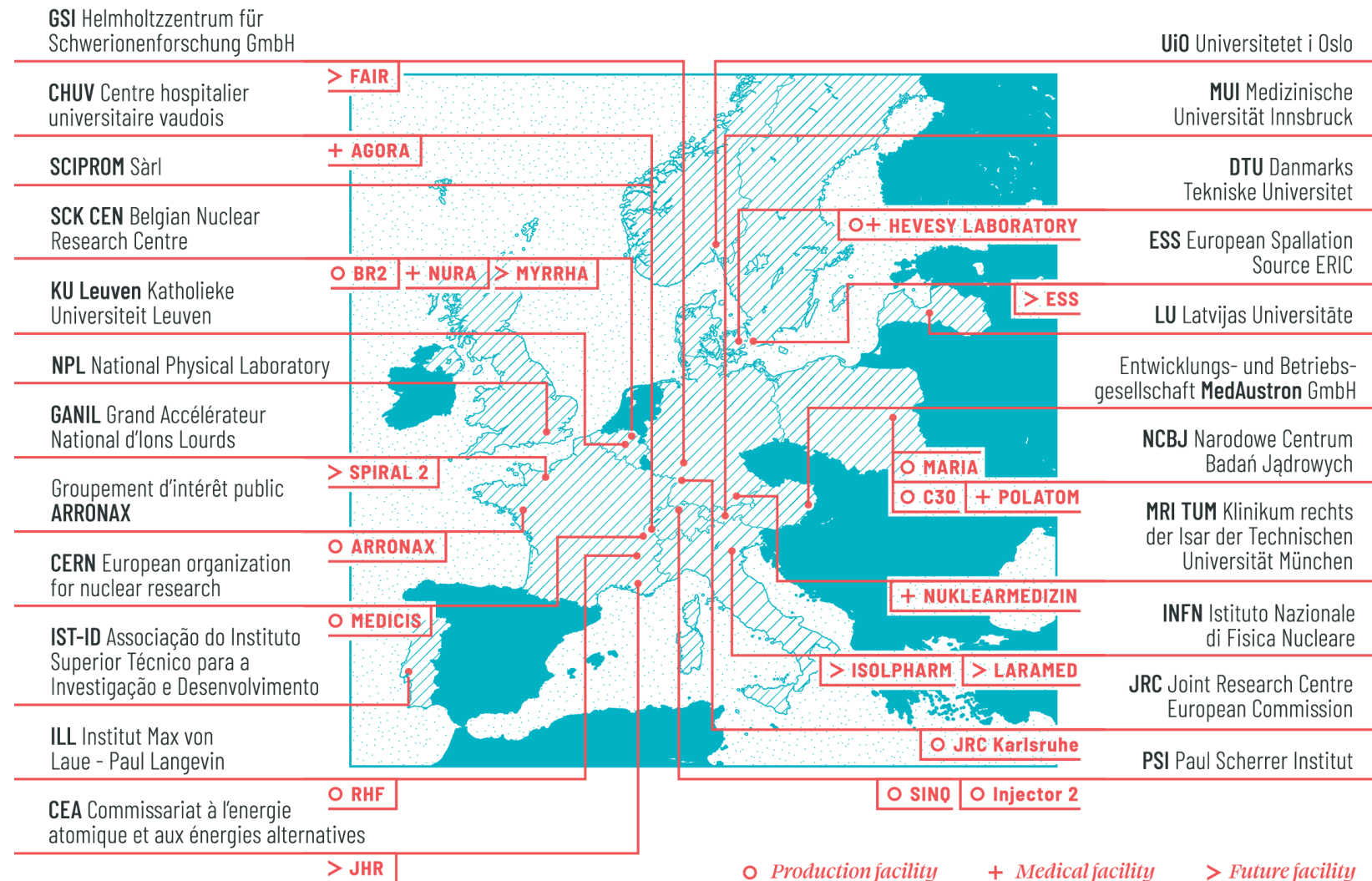
Thierry Stora, CERN

06 Dec 2023

6th Consortium meeting last week at CTN-medical faculty - Lisbon



PRISMAP Consortium : a mix of production sites, biomedical institutes and “support” institutes

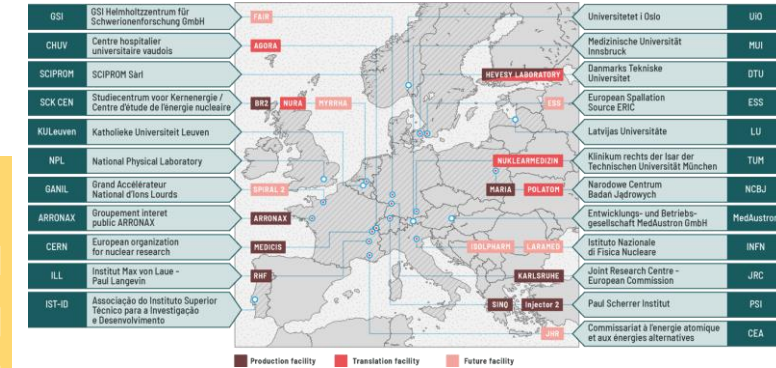


The European medical radionuclides programme in a nutshell (PRISMAP.EU : Infra project from H2020)

■ The web interface : <https://www.prismap.eu/radionuclides/portfolio/>

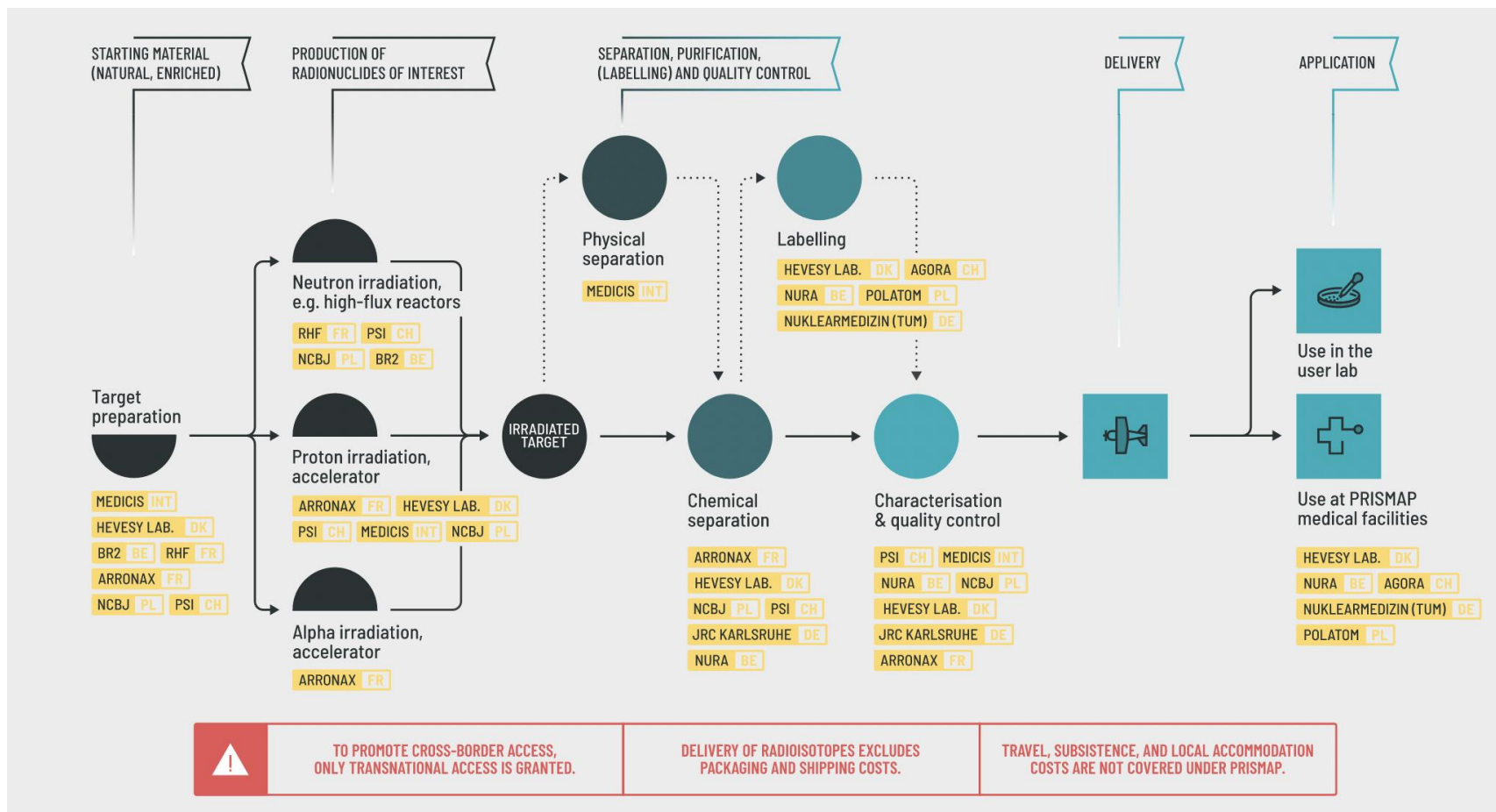
43 Sc Scandium	44 Sc Scandium	47 Sc Scandium	52 Mn Manganese	64 Cu Copper	67 Cu Copper	103 Pd Palladium
111 Ag Silver	128 Ba Barium	128 Cs Caesium	135 La Lanthanum	153 Sm Samarium	149 Tb Terbium	152 Tb Terbium
155 Tb Terbium	161 Tb Terbium	165 Tm Thulium	165 Er Erbium	169 Er Erbium	175 Yb Ytterbium	199 Au Gold
203 Pb Lead	211 At Astatine	213 Bi Bismuth	223 Ra Radium	224 Ra Radium	225 Ac Actinium	227 Th Thorium

Parameter	Specification
Half-life	4.04 h
Daughter	Stable Ca-44
Branching Ratio/Decay	94.3% β^+ , 5.7% EC
Production	Ca-44(p,n)Sc-44 [or Ca-44(d,2n)Sc-44 at ARRONAX]
Purification	1 or 2 steps column separation
Chemical Form	In 0.05 M HCl, 0.1 M HCl, 4.85 M NaCl/0.13 M HCl or 1 M NaOAc
Specific Activity	2 GBq/mg
Radionuclidic Purity	99.8% (0.2% Sc-44m)
Radiochemical Purity	Labelling up to 25 MBq/nmol DOTANOC or DOTATATE
Identification	1157 keV gamma line present
Appearance	Clear and colourless solution
pH	Depends on chemical form
Activity available	Up to 1 GBq
Availability	On demand
Grade	Research grade or preclinical grade, n.c.a.



MEDICIS European organization for nuclear research - CERN	PSI Paul Scherrer Institute - PSI	Heyes Laboratory Copenhagen Technical University - DTU	BR2 Belgian Nuclear Research Centre - SCK CEN	ARRONAX Groupement eventuel public ARRONAX - ARRONAX
RHF Institut Max von Laue - Paul Langevin - ILL	JRC Karlsruhe Joint Research Centre - European Commission - JRC	NCBJ Narodowe Centrum Badan Jądrowych - NCBJ		

Organisation of the radionuclide production and users in the consortium



User projects and services : Call for projects every 6 months, likely only targeted calls for next 18 months

- In vivo cellular & molecular imaging lab (ICMI)
VU Brussels
- Imaging and Pathology
KU Leuven
- Molecular Imaging Center
Antwerp
- Pharmaceutical Radiochemistry
TU Munich
- Radiopharmaceutical Cancer Research
Dresden (/CZ)
- UGA – Inserm
La Tronche
- Radiopharmacy
Bordeaux
- CEMHTI Radiochemistry
Orleans
- Radiochemistry
Hopital Frederic Joliot
- Inserm
Orsay
- Montpellier (/PT)
- Fondazione IRCCS Istituto Nazionale dei Tumori
Milano
- Dep Molecular Biotechnology Health Sciences,
Torino
- Radiochemistry unit,
Hospital Gregorio Marañón
Madrid
- Biomedical Engineering and Imaging Science
London

BELGIUM

CZECH Rep.

GERMANY

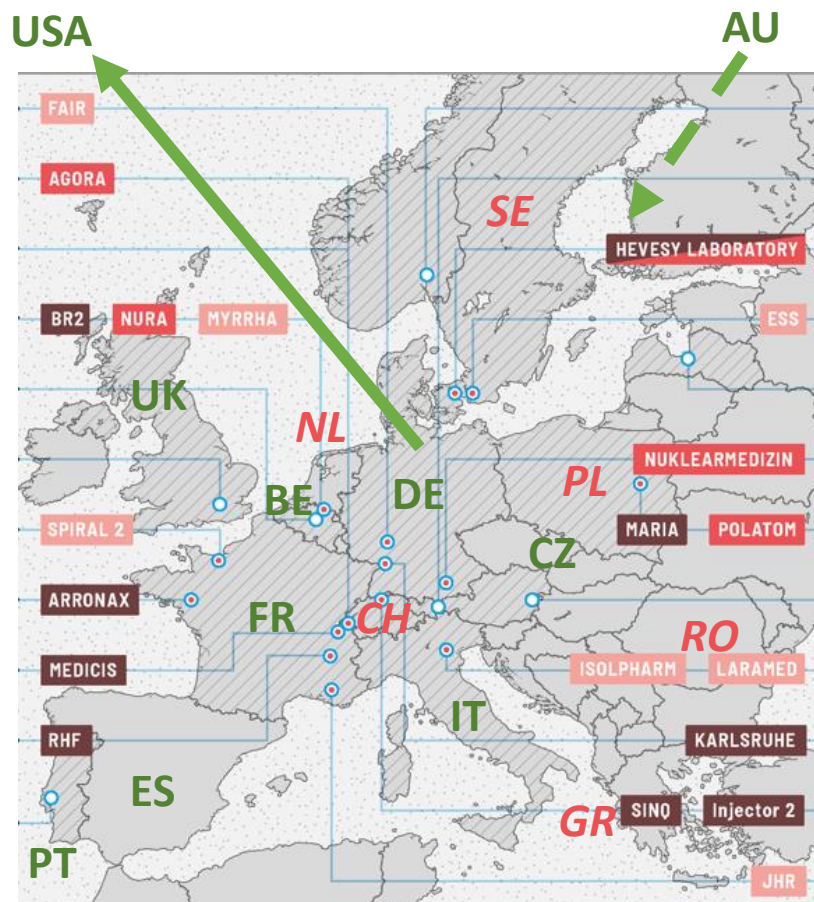
FRANCE

PORTUGAL

ITALY

SPAIN

UK



<https://www.prismap.eu/access/user-projects/>

First publication from a granted project:

Title: Preclinical Evaluation of GRPR Antagonists Labeled with Terbium-161 and Lutetium-177: a Comparative Study
Dr. Guenther et al, J Nucl Med /2023/266233

After call 4 :

x2 projects (16 → 33) 1 → US

+50% countries (8 → 12 UK/CH)

Southern & Eastern () EC country*

(W → W,S,E+ Sweden most N)

35() research teams*

	Call #1	Call #2	Call #3	Call #4
submitted projects	12	8	5	20
Success rate	75%	75%	20%	85%

PRISMAP projects are streamlined through MED-32 PRISMAP



Project proposal to the MEDICIS Collaboration board



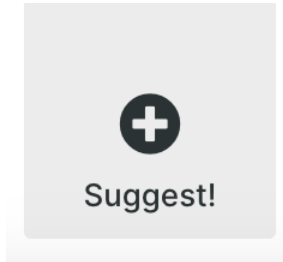
PRISMAP – The European medical radionuclide programme: CERN-MEDICIS contribution

Year	Mode of operation	Radionuclides	Activity collected (total – in MBq)	Max. coll. efficiency (%)	#batch delivered
2022	CERN PSB External sources	Ra-225/Ac-225, Hg-195/Hg-197, Tm-165/Tm-167, Tb-155, Sm-153 , Ba/Cs-128, Sc-47, Sc-44	840	5.9	11
2023	CERN PSB External sources	Ra-225/Ac-225, Ra-224, Er-169, Tm-165/Tm-167, Tb-155, Sm-153, Cs-129, Ba/Cs-128, Sc-47, Sc-44	Last Er-169 ongoing 4 GBq ?	40.0	25 (including 169Er)

In bold : parts contribute to PRISMAP projects as deliveries or developments (WP2, WP9, WP10, WP12).

The project goes beyond services “only” offered in prismap.eu

Our web interface : <https://www.prismap.eu/>



helpdesk@prismap.eu

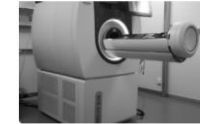
Our biomedical facilities:

<https://www.prismap.eu/radionuclides/medical-facilities/>

Hevesy Laboratory
Danmarks Tekniske
Universitet – DTU



AGORA
Centre hospitalier
universitaire vaudois
— CHUV



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



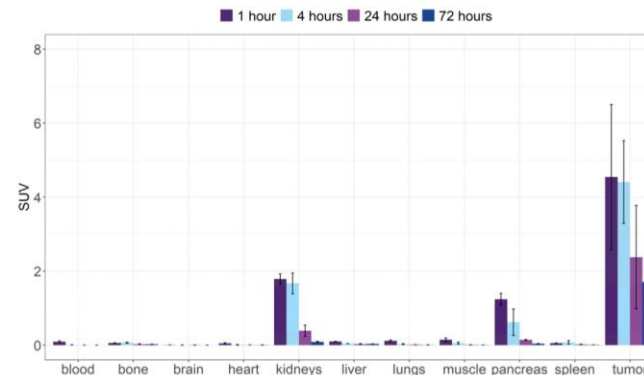
Nuklearmedizin
Klinikum rechts der Isar der
Technischen Universität
München — TUM



POLATOM
Narodowe Centrum Badań
Jądrowych – NCBJ



Standardized radionuclides specifications, intercomparison, new data



MEDICIS Impact on Shipping across EU (and beyond)

PRISMAP Shipping Highlights : Transport by dedicated flight

From CERN to DTU
Tm-165 Half-Life 1.25 day

→ Classic transport :
- Expected departure on Friday 20/11 at 09:00
- Expected delivery on Monday 23/11 at 14:00
Delivery on **D+3.2** → 83 % loss of activity
Price : **2984 €**

→ Dedicated flight
Transporter : World Infinity Services
- Departure from CERN on Friday 20/11 at 11:05
- Arrival at DTU on Friday 20/11 at 15:30
Transport time from CERN to DTU : **4h25min**
Price : **15432 €** (ex. VAT)

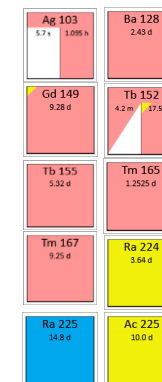
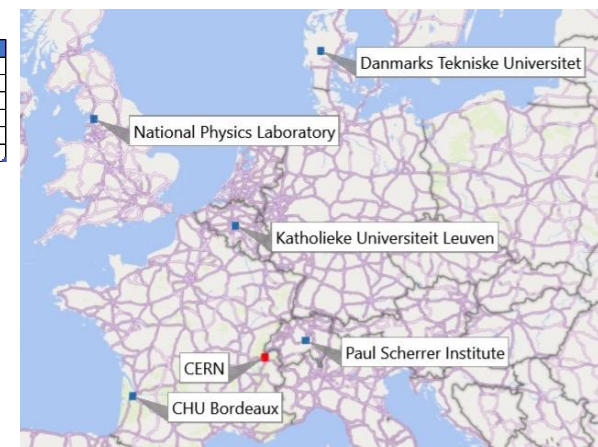
Transport time divided by 17.4
Price multiplied by 5.2



Institute	Shipping
NPL, UK	6
CHUV, CH	2
Hevesy Lab, DK	2
KU Leuven, BE	1
PSI, CH	1
CHU Bordeaux, FR	1

RN	Shipping
Ac-225	3
Tm-167	2
Ag-103	1
Ba-128	1
Gd-149	1
Tb-152	1
Tb-155	1
Ra-224	1
Tm-165	1
Ra-225	1

Shipping CERN- PRISMAP



This also creates difficulties : needs to provide framework for deliveries outside of MEDICIS partners

“Key Performance Indicators” (do not mix up with those started for MEDICIS)

- to provide at least 10 emerging radionuclides at Day 1 : 16 to be delivered
- four calls for projects per year will be organised, and the radionuclide production and their medical translation scheduled
 - So far , 2x/year seems to be more appropriate – need to keep up until 04-2025 (or extended)
- The access provided to at least 20 research teams across Europe. Fund 50 user projects for radionuclide production (25 for biomedical research) : 23 projects
- centralised through the platform and the USP, and the capacity of the consortium to react to the requests will be managed by the Coordination Team
 - 4 additional radionuclides offered;
- radionuclides from PRISMAP consortium will be supported for use in early-stage research programmes. For more advanced research, supply from PRISMAP should also be supported by specific research grants or industrial financial schemes obtained by the research groups
 - Interactions with EFPIA/ Industry started

PRISMAP objectives

- Provide access to new radionuclides and new purity grades for medical research
- Create a common entry port and web interface for the starting research community
- Enhance clarity and regulatory procedures to promote research with radiopharmaceuticals
- Unlock the biomedical research through better data on radionuclides
- Ensure the long-term sustainability of PRISMAP

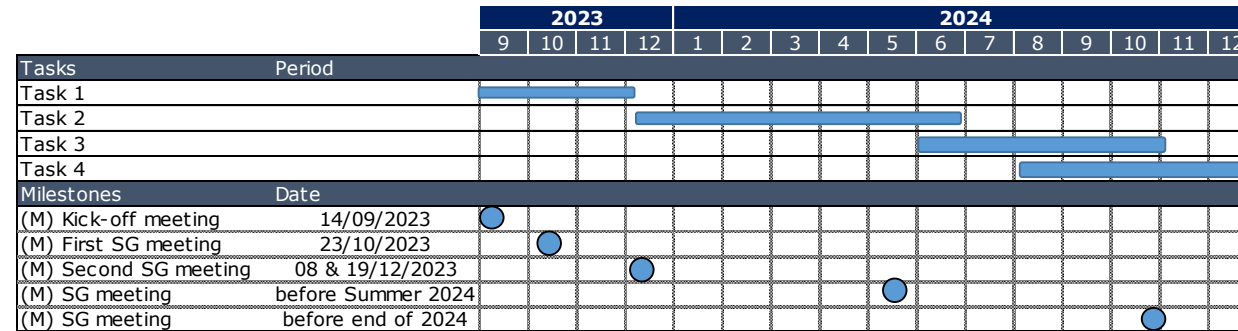
All are ongoing !!

Our future

- Mike Lamont invited by the EC to participate in high level round table early this year with Commissioner Marya Gabriel :
 - PRISMAP brings together key European, national and regional isotope production infrastructures, of important research infrastructures in large laboratories
 - A **sustainable source of high purity novel radionuclides** for medical research targeting the development of a **new generation of radioisotopes for medicine.**
 - A **single entry point for the pioneering research community using standardised access procedures.**
 - There is a relatively short product lifecycle of around a decade for diagnostic, therapeutic and indeed “theranostic” treatments
 - Means of upscaling the production of these novel radionuclides are being explored, in the form of **innovative production technology, new purification methods, new data and proof-of-concept investigations** to facilitate the development of new treatments from test bench to patient care
 - CERN-MEDICIS facility, takes advantage of the proton beam delivered to ISOLDE to irradiate targets-also received from external institutes - for non-conventional radionuclides to be extracted from the targets by mass separation
 - It is a **long game and a long-term commitment; support will be required to reach the appropriate level of integration** and maintain it for the **evolving needs** of the community and help it unlock the potential of this **fast-evolving research area.**

Our future : “European Radioisotope Valley Initiative” plan from EC

ERVI Feasibility study indicative schedule & SG involvement



ERVI SG will be deeply involved in the study, first in Task 1. SG consultations for the next phases will be defined later.

Short-term / Task1

Brain-storming sessions

The project team is conducting individual brain-storming sessions to define the tentative sets of scenarios + projects + alternatives + EU intervention options. Several SG members have already been solicited. If other members are interested, please volunteer.

4/12/2023: Transmission to ERVI SG of the 6 preliminary sets of scenarios/projects/alternatives/EU intervention options for further screening and discussion on 8/12/2023 (face-to-face in Luxembourg)

19/12/2023 (TBC): Finalisation with ERVI SG of the 6 retained scenarios/projects/alternatives (or combination thereof)

PRISMAP White paper under elaboration : Towards PRISMAP-Plus (PRISMAP⁺)

- A few striking points :

MEDICIS is the 1st mass separation facility dedicated to biomedical research (implications on organisation and mode of operation, safety, programme, traceability, QA, etc) worldwide

Europe is the only region where a network of redundant mass separation facilities for biomedical research is foreseen to shape in the next 2 years (SPES, ISOL@Myrrha hot separator) and 7 years (ISOL@Myrrha online, TATOO@PSI, SMILE @ Nantes, possible option in Romania)



WWW.PRISMAP.EU



[@MEDRADIONUCLIDE](https://twitter.com/MEDRADIONUCLIDE)



[PRISMAP PROJECT](#)



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