

GALLAECIA

PET technologies

POCTEP project



LABORATÓRIO DE INSTRUMENTAÇÃO
E FÍSICA EXPERIMENTAL DE PARTÍCULAS
partículas e tecnologia



INSTITUTO DE
CIÊNCIAS NUCLEARES
APLICADAS À SAÚDE
UNIVERSIDADE DE
COIMBRA



universidade
de aveiro



**Politécnico
de Coimbra**



Universidade de Vigo



GALARIA
EMPRESA PÚBLICA DE
SERVIZOS SANITARIOS



ciMUS

Centro Singular de Investigación
en Medicina Molecular e
Enfermidades Crónicas

In the **follow up** of a successful local (Portuguese) project: **HiRezBrainPET**

- Institute of Nuclear Sciences Applied to Health (**ICNAS**) Pharma
- Laboratory for Instrumentation and Experimental Particle Physics, (**LIP**)
- Polytechnic Institute of Coimbra, (**IPC**)

HiRezBrainPET

Cofinanciado por:



UNIÃO EUROPEIA
Fundo Europeu
de Desenvolvimento Regional

Projeto N° POCI-01-0247-FEDER-039808

Designação do Projeto: HiRezBrainPET - Imagiologia cerebral por Tomografia de Emissão de Positrões (PET) de elevada resolução

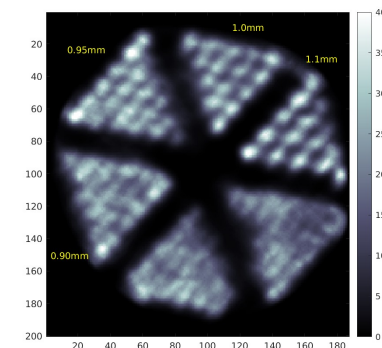
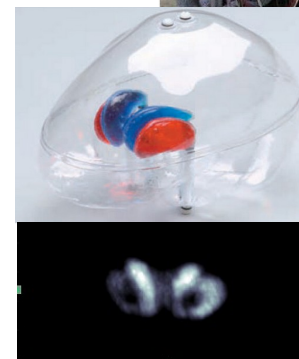
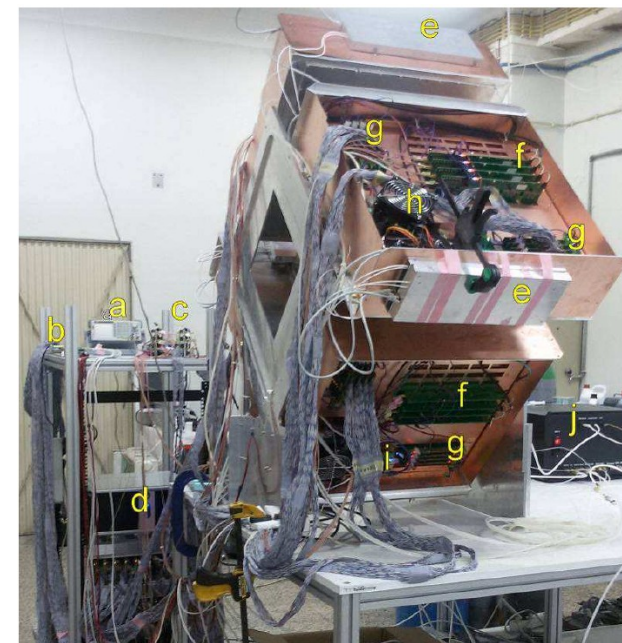
Apoio no âmbito do Sistema de Incentivos: POCI-COMPETE 2020

Objetivo principal: Reforçar a investigação, o desenvolvimento tecnológico e a inovação

Região de Intervenção: Centro

Entidade beneficiária: ICNAS Pharma Unipessoal, Lda (Promotor), LIP-Laboratório de Instrumentação e Física Experimental de Partículas (CoPromotor), Instituto Politécnico de Coimbra (CoPromotor)

HiRezBrainPET scanner
based on RPC technology
with < 1 mm spatial resolution
uniform on the FOV.



We teamed with Spanish institutes to complete the development, NeuroRPCPET in La Caixa Research Health Call.

- Laboratory for Instrumentation and Experimental Particle Physics, **(LIP)**
- Polytechnic Institute of Coimbra, **(IPC)**
- Clínic Foundation for Biomedical Research **(Clínic)**
- Foundation Institute for Health Research of Santiago of Compostela **(FIDIS)**
- University of Vigo **(UVigo)**



"la Caixa" Foundation

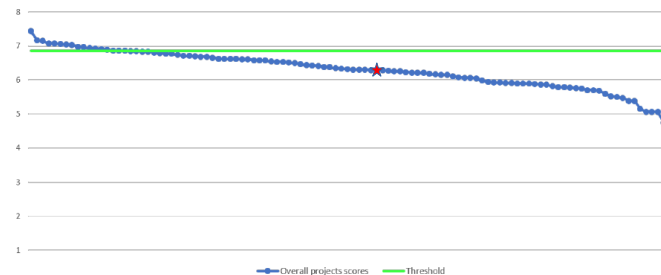
The seed of
cross-border
cooperation

CaixaResearch Health

Subcriteria scores of the project compared to the mean for the thematic area



Final scores for Enabling Technology projects



Reasonable well scored,
but not in the top 6%.

The POCTEP opportunity.

POCTEP, Operational Programme for **Cross-border Cooperation Spain-Portugal**
<https://www.poctep.eu/>. It is the EU's largest cross-border cooperation programme, with a total budget of 427 million €.

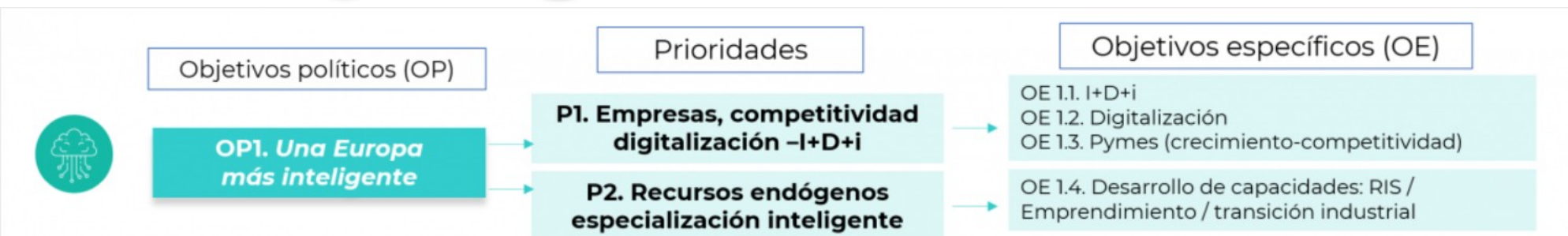
Objectives and priorities



OP1 - A smarter Europe
OP2 - A greener, low-carbon Europe
OP3 - A more social Europe
OP4 - A more citizen-friendly Europe
OP5 - Better governance of cooperation



Interreg Cofinanciado por la Unión Europea
Cofinanciado pela União Europeia
España - Portugal



Our call =>

Phase	Call	Priorities (OP) OE	Budget* (FEDER)	Open	Close	Est. resolution
	3ª (CERRADA)	Prioridades 1, 2, 3 y 4 (OP1 y OP2)	134,8 M€	12/12/2022	15/02/2023	Jul 2023

Gallaecia: Creation of a Luso - Galician collaboration network for the development of PET imaging equipment and services.

P1 - Exploit the potential of cooperation to consolidate the innovation ecosystem, scientific and technological, fostering the creation of cooperation networks.

ACRÓNIMO			
GALLAECIA			
TÍTULO DEL PROYECTO			
Creación de una red de colaboración Luso-Galaica para el desarrollo de equipamiento y servicios de imagen			
PRIORIDAD			
P1 - Aprovechar el potencial de la cooperación para consolidar el ecosistema de innovación, científico y tecnológico, potenciar la creación de redes de co			
Fecha de inicio	01/07/2023	Fecha de fin	31/12/2026
Total:			2.299.667,97



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Main objective.

- Create a **Portuguese-Galician collaborative network** for the development of equipment and services **related to PET** tomographic imaging.

We will concentrate (but not only) on **imaging technologies focused on the early detection of neurological diseases** associated with ageing => High spatial resolution systems.

And actions.

- **Start-up of new PET services**, from the production of PET radiopharmaceuticals to the launch of new pre-clinical research units.
- **Development of new equipment**, with a particular emphasis on high spatial resolution systems, essential in the detection and monitoring of neurological diseases associated with ageing.
- **Software implementation**, applied to the basic signal processing of the equipment (reconstruction), up to the software associated with the interpretation of the images (quantification).
- **Communication and training.**

The project is structured in **5 work packages / activities** (two of which must be dedicated, by POCTEP rules, to coordination and communication).

Activity		Lider	Parttners	Star t	End
A1	IMPROVE THE CAPABILITIES OF PARTICIPANTS TO CARRY OUT PET-RELATED ACTIVITIES AND SERVICES	<u>USC</u>	<u>LIP, RITE, UA, USC, IDIS, UV, GALARIA, Oubiotech, ATI-sistemas</u>	01-07-2023	31-12-2026
A2	EQUIPMENT DEVELOPMENT	<u>LIP</u>	<u>LIP, IPC, ATI, ICNAS, UV, RITE, UA</u>	01-07-2023	31-12-2026
A3	SOFTWARE DEVELOPMENT	<u>USC</u>	<u>USC, LIP, IPC, UA, RITE, OuBio</u>	01-07-2023	31-12-2026
A4	MANAGEMENT AND COORDINATION	<u>LIP</u>	<u>LIP, IPC, ICNAS, RITE, UA, USC, IDIS, UV, GALARIA, Oubiotech, ATI-sistemas</u>	01-07-2023	31-12-2026
A5	VISIBILITY, TRANSPARENCY AND COMMUNICATION	<u>IDIS</u>	<u>IDIS, UA, RITE, LIP, UV, ICNAS</u>	01-07-2023	31-12-2026

Activity		Lider	Parttners	Star t	End
A1	IMPROVE THE CAPABILITIES OF PARTICIPANTS TO CARRY OUT PET-RELATED ACTIVITIES AND SERVICES	USC	LIP, RITE, UA, USC, IDIS, UV, GALARIA, Qubiotech, ATI-sistemas	01-07-2023	31-12-2026
A.1.1	Analysis of existing capacities in PET imaging technology and services, and commercialization study.	USC	LIP, RITE, UA, USC, IDIS, UV, GALARIA, Qubiotech, ATI-sistemas	01-07-2023	31-06-2024
A.1.2	Launch of new PET imaging services for <u>preclinical</u> and clinical research	USC	USC, IDIS	01-09-2023	31-06-2024
A.1.3	Start-up of new production services for PET radio-pharmaceuticals for research	GALARIA	GALARIA, USC, IDIS	01-09-2023	31-12-2026

A.1.1 Prepare a complete and detailed **capability map**.

Market study on two different applications developed in the project. Brain PET and Preclinical PET.

A.1.2 **New preclinical** PET/SPECT, PET/CT and PET/MRI **imaging services** will be launched for studies in rats and mice animal models. In addition, PET/CT imaging services for medium-sized animal models and for veterinary use will be launched.

A.1.3 Actions will be developed to **increase the production capacity of PET radiopharmaceuticals**.

A2	EQUIPMENT DEVELOPMENT	LIP	LIP, IPC, ATI, ICNAS, UV, RITE, UA	01-07-2023	31-12-2026
A.2.1	Development of PET equipment components	LIP	LIP, IPC, ATI, ICNAS	01-07-2023	31-06-2025
A.2.2	Preparation of PET equipment development proposals	UA	LIP, UV, IPC, RITE, UA	01-07-2023	31-12-2026

A.2.1 Will be focused on development on the **RPC Brain PET**. Lack of sensitivity of the trigger system, which results in a loss of 30% of the events (photons) available in the test. And on the other hand, the study of the high rate response of the system.

A.2.2 Studies and **design of PET systems**, in particular:

- The design of a **high TRL Brain RPC-PET tomograph** will be studied.
- The study of the upgrade of a **pre-clinical PET, RPC-APET**, will be carried out.
- The possibility of applying the **EasyPET concept** in the application **of brain PET** will be studied.

A3	SOFTWARE DEVELOPMENT	USC	USC, LIP, IPC, UA, RITE, QuBio	01-07-2023	31-12-2026
A.3.1	Develop Monte Carlo simulation tools for modelling PET equipment based on new sensing technologies.	USC	USC, LIP	01-07-2023	31-12-2026
A.3.2	Develop and integrate tomographic reconstruction software into new PET equipment and prototypes developed in the region.	USC	USC, UA, RITE, LIP, Qubiotech	01-01-2024	31-12-2026
A.3.3	PET image analysis software development	Qubiotech	Qubiotech, USC	01-07-2024	31-12-2026

A.3.1 Development of **simulation tools**, which will allow both the optimization of the system design and constitute the basic tool for subsequent reconstruction and quantification tools. Special emphasis will be given to the systems proposed in the project. RPC-PET and Easy-PET

A.3.2 Implement **adaptive tomographic reconstruction methods** for the different geometries of the prototypes under development in this consortium.

A.3.3 Implement **PET image processing and analysis tools** in different applications, but mainly in the field of brain PET. These tools are aimed at **extracting biomarkers** that have proven to be of high value for the early diagnosis of neurodegenerative diseases.

A5	VISIBILITY, TRANSPARENCY AND COMMUNICATION	IDIS	IDIS, UA, RITE, LIP, UV, ICNAS	01-07-2023	31-12-2026
A.5.1	Communication activities with other potential network partners	UA	UA	01-04-2024	31-12-2026
A.5.2	PET technology training activities	IDIS	IDIS, RITE	01-07-2023	31-06-2026
A.5.3	Generation and dissemination of digital content	IDIS	IDIS, LIP	01-07-2023	31-12-2026

A.5.1 Contact and **establish relationships with entities external to the consortium**, state bodies and/or companies, that can **reinforce the consortium or complement it** with capacities that do not exist at the moment. **Search for funding** for the realisation of specific PET-related projects not covered by this project.

A.5.2 Developing **training activities and workshops** in the different areas of PET imaging. Operation of the equipment and software, interpretation of the images (quantification) ...

A.5.3 **Dissemination.**

- We have the opportunity to **make a difference on the PET field** in this Euroregion.
- **The network is created**, but we want to expand it as much as possible.
- We are **waiting for financial resources through the POCTEP call**, answer in July 2023.