

Innovative Facility for Isotope GENeration with Efficient Ion Accelerator

IFIGENEIA General presentation



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them. Grant Agreement No: 101186921.



IFIGENEIA Presentation

- > Project Overview
- Our Goals and Key Activities
- Geographical Focus
- > IFIGENEIA Work Packages & Gantt Chart
- The concept
- The IFIGENEIA Team
- Connect with us



Project overview

- Project title: Innovative Facility for Isotope GENeration with Efficient Ion Accelerator
- Acronym: IFIGENEIA
- > Programme: Horizon Europe WIDERA-2023-ACCESS-07
- Duration: March 2025 February 2029 (48 months)
- > Total Budget: €6,000,000
- Coordinator: Aristotle University of Thessaloniki (AUTH), Greece
- > Project motto: "IFIGENEIA: Scientific knowledge for the health of tomorrow."





































Our Goals

Implement Linear Accelerator (LINAC) technology in Europe to improve healthcare by:

- Designing sustainable facilities for radionuclide therapy, diagnostics, and theranostics.
- Establishing Centres of Excellence in Greece, Slovenia, and Cyprus to operate LINAC facilities that produce a wide range of medical radioisotopes.
- Strengthening collaboration between science, industry, and healthcare.

Key Activities

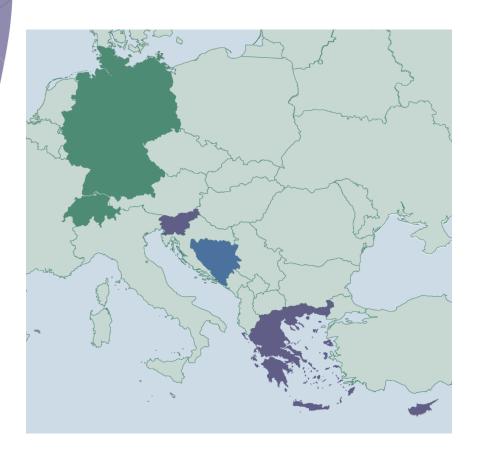
- Technical design and safety studies for a unique LINAC facility targeting to societal and medical applications in Europe.
- Design and develop laboratory infrastructure fully compatible with current Good Manufacturing Practices (cGMP) for production of a wide range of mainstream and emerging radiopharmaceuticals.
- Tailor training programs, exploiting innovative virtual training tools, and support researcher exchanges to build technical capacity across Europe, via inclusive participation, mentoring and regional collaboration.
- Create an investment strategy and plan towards the sustainable future of the LINAC Excellence Hubs.
- Communicate project outcomes and share knowledge widely through targeted dissemination efforts.

Define and prioritize a LINAC-based portfolio of diagnostic, therapeutic, and theranostic radionuclides to meet the current and future needs of the Balkan region.





Geographical Focus



Main Hubs

Greece LINAC design, Beam dynamic studies, Beam parameters and HW

specifications, Safety and radiation protection requirements,

Small scale LINAC prototype, Pilot in health and culture.

Slovenia Controls, Lab condition development, Isotopes identification,

Ligands investigation, Pilot pre-clinical studies.

Cyprus Exploitation Strategies, Business Plan, Investment Plan, Private Equity.

Mentorship for Western Balkans

Bosnia and Support for future excellence hubs: Mentoring activities,

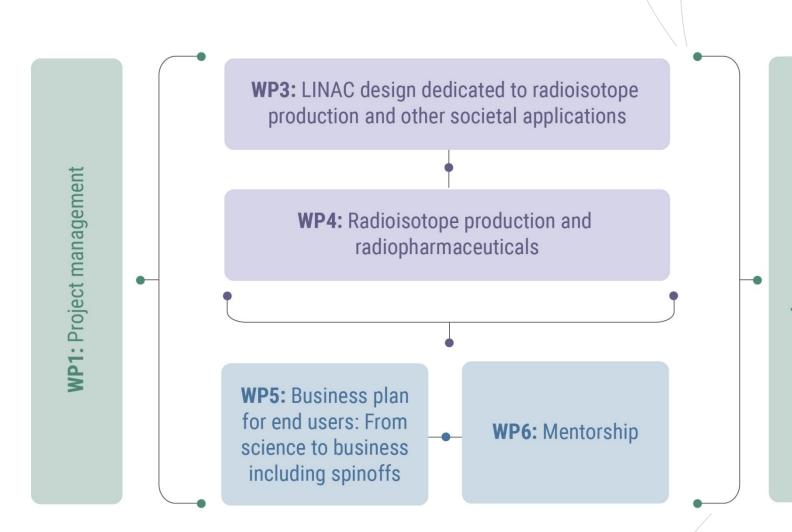
Herzegovina Knowledge transfer.

International collaboration

CERN, DKFZ, GSI Ensuring scientific excellence and regional impact.

IFIGENEIA Work Packages

- WP1 Leader: Aristotle University of Thessaloniki
- WP2 Leader: Jožef Stefan Institute
- WP3 Leader: Aristotle University of Thessaloniki
- WP4 Leader: University of Ljubljana
- WP5 Leader: RTD TALOS Limited
- WP6 Leader: University of Cyprus



Gantt Chart



	Year 1	Year 2	Year 3	Year 4
WP1 Project Management				
T1.1 Project coordination & financial management				
T1.2 Quality assurance, risks, ethics and IPR management				
T1.3 Scientific, innocation & technical managementy				
T1.4 Capacity Building				
T1.5 Data management				
WP2 Education, Dissemination, Inclusion and Diversity				
T2.1 Communication and dissemination activities and planning				
T2.2 Skills training and Trainers' training				
T2.3 Secondments and good practices exchange				
T2.4 Inclusion strategies and activities				
WP3 LINAC design dedicated to radioisotope production and other societal applications				
T3.1 LINAC/RFQ design and beam dynamics studies				
T3.2 Beam parameters and hardware specifications for different operational scenarios				
T3.3 Targets' optimization and handling for different isotope production scenarios				
T3.4 Control system development project plan				
T3.5 Study of the Safety and Radiation protection requirements				
T3.6 Development of Computational tools				
WP4 Radioisotope production and radiopharmaceuticals				
T4.1 Develop Lab conditions (radiation protection) needed for producing these isotopes				
T4.2 Identify best isotopes for production with LINAC				
T4.3 Investigate best Ligands for development within excellent hub				
T4.4 Perform the development and testing of ligand-isotope compound				
T4.5 Conduct "Pilot" Pre-Clinical Studies through Experimental Design				
WP5 Business plan for end users: From science to business including spinoffs				
T5.1 Management of Key Exploitable Results (KERs)				
T5.2 Development of Business Plan(s) for Seeking Financing beyond the Project				
T5.3 Basic Sustainability for the Excellence Hubs				
WP6 Mentorship				
T6.1 Accelerator School				
T6.2 Master Classes in Particle Therapy				
T6.3 Implementation of a Virtual Interactive Radioisotope production unit				



The Concept

Motivation and Current Status



Cyclotrons



Nuclear Reactors

In Europe, more than 10 million people each year need nuclear medicine procedures for diagnosis or treatment. At the moment, cyclotrons and aging nuclear reactors are the only sources of the radioisotopes needed to make radiopharmaceuticals, but both have well-known limitations.

The IFIGENEIA Project

Our project introduces advanced LINAC technology as a complementary approach to cyclotrons and nuclear reactors, offering a safer, more flexible, and sustainable way to make a wide range of radioisotopes.

By designing modern production facilities and establishing Excellence Hubs in Greece, Slovenia, and Cyprus, we aim to strengthen regional capabilities and ensure patients across Europe can access life-saving treatments without delays.

Through new laboratories, virtual training tools, and strong partnerships between science, healthcare, and industry, this initiative will help build a more resilient and innovative radiopharmaceutical landscape for the future.

Our Vision

Introduce the Linear Accelerator technology in Europe to provide access to diagnostic, targeted therapies and theranostic radiopharmaceuticals.

A LINAC system designed for the production of a wide range of medical radioisotopes, including:

- **Diagnostic isotopes** (for imaging),
- Therapeutic isotopes (for treatment),
- Theranostic isotopes
 (for both diagnosis
 and therapy),
- Generator-produced isotopes,
- Other emerging medical isotopes.

- 1. To generate multiple medical isotopes simultaneously, creating a sustainable supply at commercial scale to support next-generation cancer diagnostics and therapies.
- 2. A compact and sustainable facility, designed with advanced shielding and safety standards, located close to hospitals for direct patient benefit.
- 3. Multipurpose facility (Cultural heritage and industrial pplications, irradiation facility for clinical tests).
- 4. In the long term, the facility could evolve to include proton therapy (>50 MeV), broadening its impact in cancer treatment.



The IFIGENEIA Team



Connect with us

Coordinator: Aristotle University of Thessaloniki (AUTH), Greece

- sampson@physics.auth.gr
- https://ifigeneia.eu/
- https://www.linkedin.com/company/ifigeneia/



Thank you for your attention



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

Grant Agreement No: 101186921.

www.ifigenia.eu