Partners

Our project ecosystem combines 3 operational hubs (Greece, Cyprus, Slovenia), and a dedicated mentoring hub (Bosnia and Herzegovina), supported by the expertise and strategic guidance of three parenting institutes, CERN, DKFZ, and GSI, which will ensure scientific excellence and regional impact. Together, we are establishing a sustainable platform for radiopharmaceutical production, training, and innovation across the Balkans and Europe in general.

Funding

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IFIGENEIA

Scientific knowledge for the health of tomorrow

Innovative Facility for Isotope GENeration with Efficient Ion Accelerator

Advancing Nuclear Medicine in Europe

Discover how innovation in science powers better health!

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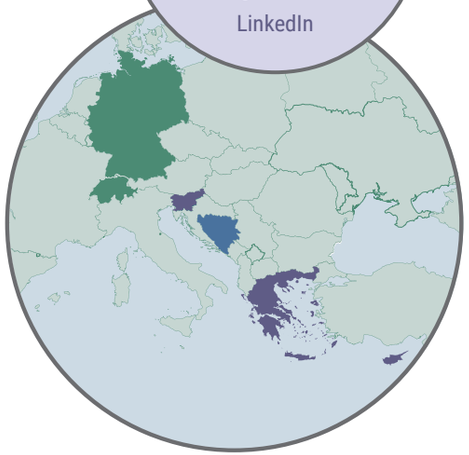

IFIGENEIA is a European Union-funded research project that develops innovative LINAC (linear accelerator) technology for producing medical radioisotopes. These isotopes are key to modern diagnostic imaging and cancer therapy.

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.

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 ageing 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.

Key Activities:

- Technical design and safety studies for a unique LINAC facility targeting 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 prioritise a LINAC-based portfolio of diagnostic, therapeutic, and theranostic radionuclides to meet the current and future needs of the Balkan region.

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 applications, 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.