OIM2 SYMPOSIUM
Talk Abstract Submission

Complete all fields marked with an asterisk (*).

Talk Title *

IFIGENEIA: Advancing medical radioisotope production and radiopharmaceutical innovation through accelerator technologies

Authors (underline the presenting/speaking author) *

Fanouria Antoniou[1,2], Charikleia Petridou[1,3], Dimos Sampsonidis[1,3], Yannis Papaphilipou[2], Joao Seco[4,5], on behalf of the IFIGENEIA collaboration

Affiliation(s) *

[1]Aristotle University of Thessaloniki: University Campus, Thessaloniki, 54124, Greece;
[2]CERN, CH-1211 Geneva 23, Switzerland;
[3]Center for Interdisciplinary Research and Innovation (CIRI-AUTH), Thessaloniki 57001, Greece;
[4]Division of Biomedical Physics in Radiation Oncology, German Cancer Research Center (DKFZ), Heidelberg, Germany
[5]Department of Physics and Astronomy, Heidelberg University, Heidelberg, Germany

ABSTRACT

The increasing importance of targeted radionuclide therapy and molecular imaging in precision medicine is driving the demand for reliable, sustainable, and innovative production routes for medical radioisotopes. Meeting this demand requires integration of accelerator technologies, nuclear physics, radiochemistry, and clinical research.

IFIGENEIA (Innovative Facility for Isotope GENeration with Efficient Ion Accelerator) is a Horizon Europe Excellence Hubs project bringing together 22 partners from six countries to establish the scientific and technological foundations for an innovative, compact, accelerator-based radioisotope production facility. The project aims to strengthen European capabilities in medical radioisotope production while fostering collaboration between academia, healthcare institutions, industry, and public authorities.

A central objective of IFIGENEIA is to translate clinical needs into technical requirements for radioisotope production. This approach encompasses the identification and prioritization of medically relevant radionuclides, the evaluation of the existing production routes, the target material and irradiation requirements, and the development of an integrated linear accelerator concept. Particular attention is given to Lutetium-177, an important therapeutic radionuclide for targeted cancer treatment, and the investigation of the new alternative, accelerator-based, production pathways.

Beyond accelerator development, IFIGENEIA addresses radiopharmaceutical research, knowledge transfer, and the establishment of interconnected regional Excellence Hubs in Greece, Slovenia, Cyprus, and Bosnia and Herzegovina. These activities aim to create a sustainable innovation ecosystem supporting the translation of research outcomes into future biomedical applications.

The presentation will introduce the IFIGENEIA project, its main research activities and vision, the progress achieved, and the scientific and technological challenges ahead, highlighting its potential contribution to radioisotope availability, radiopharmaceutical innovation, and precision medicine.

Keywords *

Accelerator technologies, Medical radioisotopes, Radiopharmaceuticals, Lutetium-177, Precision medicine

For queries, contact the OIM2 Symposium organising committee at secretary@oim2.eu.