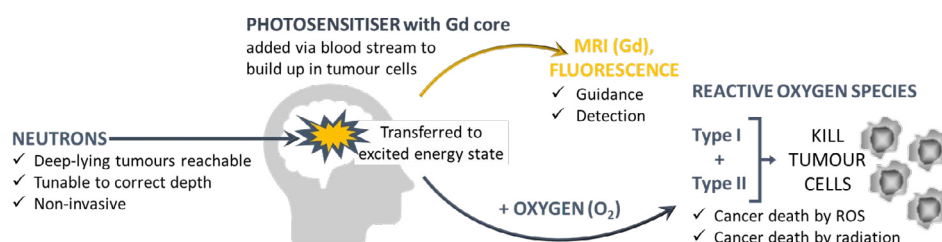


Fluorescence and Reactive oxygen Intermediates by Neutron Generated electronic Excitation as a foundation for radically new cancer therapies

Background

Brain tumours such as glioblastoma multiforme (GBM) remain difficult, if not impossible, to cure due to their location deep inside the brain and their aggressive characteristics. Current standard treatment involves surgery, followed by radiotherapy and/or chemotherapy.

However, these therapies show limited chances of success for long-term survival. Indeed, the relative survival rate for adults diagnosed with GBM is less than 30% within one year of diagnosis, and only 3% of patients live longer than five years after initial diagnosis. With worldwide over 240,000 patients each year, FRINGE aims to deliver proof-of-principle for a new therapeutic approach.



Objectives

The overall aim of FRINGE is to provide proof-of-principle for the neutron-activated generation of fluorescence and reactive oxygen species from photosensitive drugs. In addition, the project aims to validate the application of the new technology in the eradication of tumour cells and neoplastic tissues. The specific objectives are:

- To synthesise a library of novel organometallic photosensitisers
- To fine-tune and select the photosensitisers for optimal function as part of the FRINGE technology
- To theoretically calculate and optimise the set up for experiments
- To perform the initial proof-of-concept experiments in solutions and anthropomorphic phantoms
- To validate the FRINGE technology in cell cultures
- To validate the FRINGE technology in GBM animal models

Funding Programme:



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 828922.

Project Duration:
01/05/2019-30/04/2024

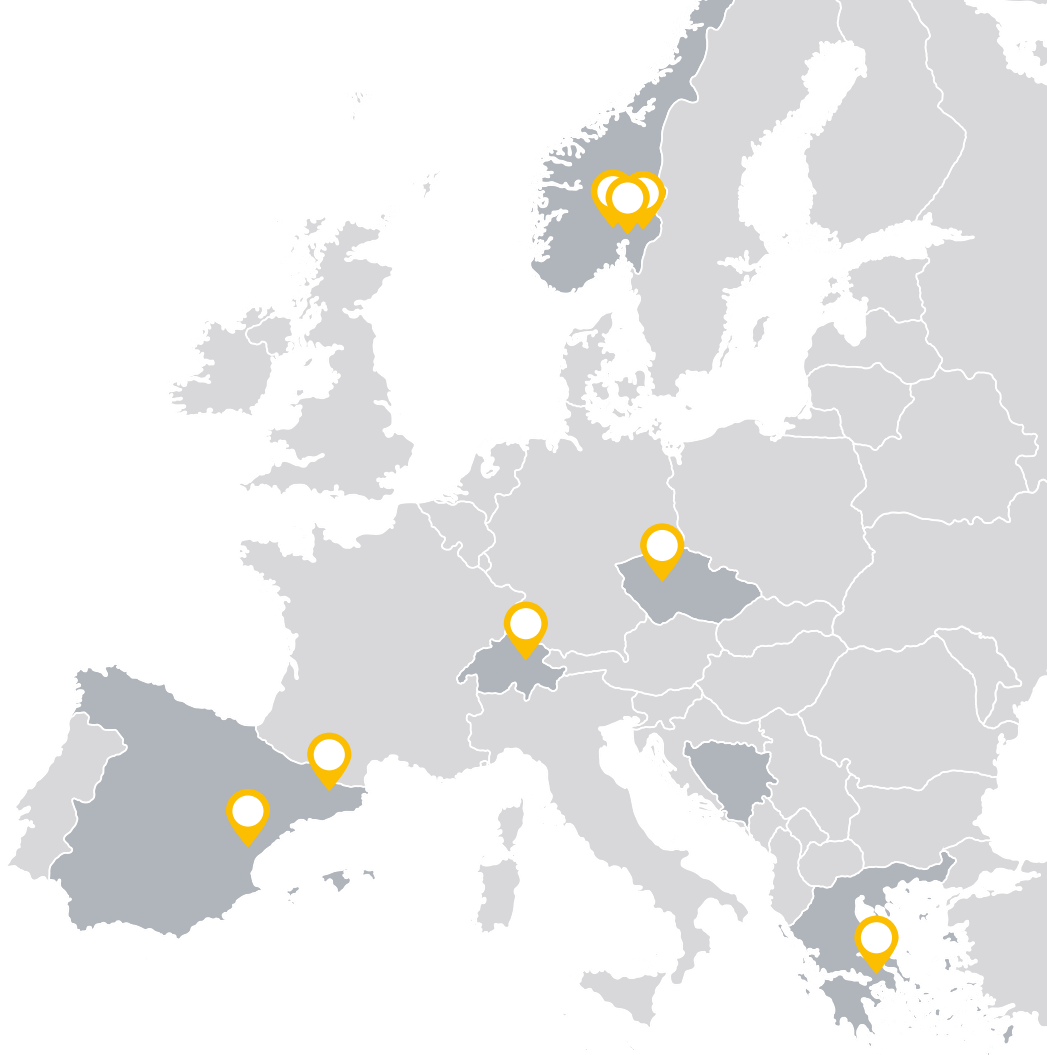
Project Budget:
3.9 million euro

Project Coordinator:

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Project Partners:

- Vysoká škola chemicko-technologická v Praze, Czech Republic
- Synthetica AS, Norway
- Universitat de Girona, Spain
- Institutt for Energiteknikk, Norway
- Universitat Politècnica de Valencia, Spain
- National Center for Scientific Research "Demokritos", Greece
- accelopment Schweiz AG, Switzerland



Activities

The FRINGE project proposes a genuinely new hybrid-technology concept, combining the efficiency of photomedical therapies with the advantages of neutron-based therapies (large penetration depth) to lay the foundation for a novel, curative cancer therapy.

The main scientific breakthrough of this project will be to establish experimental proof-of-principle of this novel neutron-activated therapy, which requires the concerted action of conventionally non-interacting disciplines: synthetic chemistry, photochemistry, photobiology, photo-medicine, computational chemistry, neutron physics and nuclear medicine.

Impact

FRINGE will lay the foundation for a new therapy. Once in the clinic, this therapy is expected to eliminate most of the disadvantages and negative side effects of current treatment options. We envision the FRINGE technology to become the new gold standard for brain tumour therapy.

**For more information
please visit our website**

www.fringe-fetopen.eu