Description of Funded Research Projects
1st Call for H.F.R.I. Research Projects to support Post-Doctoral Researchers

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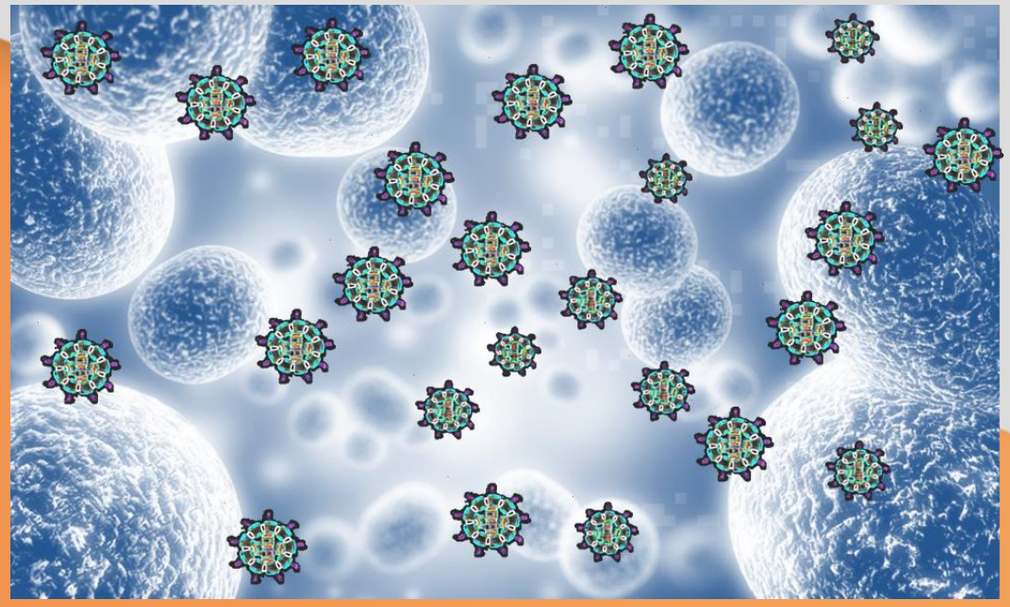
Research Project Title:

Engineering Gene-based Nanoparticles: A computer-aided study toward Targeted Cancer Therapeutics (ENGETACT)

Principal Investigator:
Evangelia Pantatosaki



Popular Title:

In silico design of next-generation anticancer therapeutics

Scientific Field:
Medical Engineering, Chemical Engineering

Host Institution:
National Technical University of Athens (NTUA),
School of Chemical Engineering

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The treatment of cancer through conventional chemotherapy involves the administration of cytotoxic drugs, that destroy both cancerous and healthy cells causing severe side effects. Alternatively, use of targeted and immune therapies have limited positive effects and function in a very small range of cancers. One of the most promising forms of targeted therapy nowadays, includes specifically designed gene-based drugs that target explicitly cancer cells, at the same time leaving normal cells intact. However, despite the pioneering clinical experiments in this field, the factors that affect the mechanism of their action at the molecular level with respect to their in vivo efficacy, are still unexplained.

The research project "ENGETACT" aims at the detailed investigation of the relationship chemical structure-biological action of innovative gene-based drugs synthesized at the MIT, by virtue of computational modeling carried out at the NTUA (ENGIMATER research team) based on statistical physics and thermodynamic processes of chemical engineering at the microscopic level toward the design of successful gene-based therapeutics.

Project Impact on Society

The field of computational modeling and simulation of biological systems toward the development of targeted anticancer therapies, is a new and fast developing area of research in the field of Chemical and Medical Engineering.
The proposed modeling scheme constitutes a promising complementary tool to the molecular design of novel gene-based therapeutics, capable of targeting selectively cancer cells, thereby reducing the conventional anti-cancer medication accompanied by their severe side-effects on the human organism.

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To me, H.F.R.I. funding would mean...

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The funding of my research proposal provides the support and freedom to conduct timely research in the field of my keen interest, while residing in my country. It allows me to implement my ideas as the Principle Investigator of the project, and at the same time further develop my skills through the collaboration with pioneering research groups. In addition, the individual fellowship adds a valuable recognized distinction in my CV.

The Principal Investigator,
Evangelia Pantatosaki

Funding

Amount: **119,500 €**

Duration: **36 months**

Foundation: **H.F.R.I.**

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