HELLENIC REPUBLIC
MINISTRY OF DEVELOPMENT AND INVESTMENTS
GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY
HELLENIC FOUNDATION FOR RESEARCH AND INNOVATION

Postal Address: Sygrou Avenue 185 & Sardeon 2 127, 115 21, N. Smyrni
Webpage: www.elidek.gr
Department of Administrative Services
Contact tel.: 210-6412410/420, Fax: 210-6412429
Web Address: info@elidek.gr, communication@elidek.gr

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PRESS RELEASE

HFRI AND SNF COLLABORATION FOR SUPPORTING EXCELLENCE IN RESEARCH ACTIVITY OF GREEK SCIENTISTS

In September 2019, the Hellenic Foundation for Research and Innovation (HFRI) and the Stavros Niarchos Foundation (SNF) joined forces with the aim of supporting young Greek Scientists and their research activity in Greece. The ultimate goal of this collaboration is to limit and possibly reverse the brain drain phenomenon for Greece.

The HFRI and SNF collaboration pertains to funding research proposals which received a 'grade A' from the European Research Council (ERC) but failed to receive funding, on account of limited available funding. Through the second HFRI Action of "Science and Society" entitled "Αιέν Αριστεύειν – Theodore Papazoglou", dedicated to the memory of the prematurely deceased Dr. Theodore Papazoglou, who contributed decisively to its realization, excellent researchers held the opportunity to submit their proposals anew and claim funding amounting to as much as €250.000. The joint fund by HFRI and SNF is €10 million, with 5 million coming from HFRI and another 5 million from SNF.

Results for the first Call of the Action were recently announced, listing the first five beneficiaries. The first five proposals include the following research projects:

- ***New methods for the temporal and local analysis of proteolysis (ΝΕΣΤΩΡ/NESTOR)***
  (Principal Investigator: Panayiotis Moschou, Host Institution: Foundation for Research and Technology)
  Population growth and possible food and bio-material shortages or even sudden surges in human, animal and plant pathogens, render finding new biological pathways usable in

biotechnological applications a necessity. One such pathway is limited proteolysis. Limited proteolysis resembles general proteolysis, except that it does not destroy proteins but produces new, smaller proteins. The project's aim is to develop technologies by which such proteins can be detected in biological systems and be utilized, or in the design of drugs that can affect production of said proteins. Technologies to emerge from this study shall be usable by researchers active in a range of research fields, such as medicine, biology, chemistry and agriculture.

- ***Is the Endogenous Retrovirus K active in the human population?*** (Principal Investigator: Gkikas Mayiorkinis, Host Institution: National and Kapodistrian University of Athens)

  Endogenous retroviruses (ERV) are retroviruses inherited through the host's genital sequence. HERV-K HML-2 is one of human retroviruses, which according to recent research may be multiplying in the cellular sequence of human population, causing 1 new inlay for every 1200 births approximately. The aim of this project on the one hand, is to analyze the modern activity of HK2 in the human genital sequence by describing the frequency of HK2 inlays per 10,000 genomes, and on the other to study HK2 functionality in expandible stem cells. The study will help us understand whether this human retrovirus still multiplies and aids in shielding and securing stem cell developed therapies.

- ***The atlas of circulating cancer fibroblasts for predicting the response of patients with solid tumors to immunotherapy: "liquid biopsy" development***

  (Principal Investigator: Panagiotis Verginis, Host Institution: Foundation for Research and Technology)

  The discovery of immunotherapy which targets immune system control points revolutionized cancer treatment, highlighting the immune system's prominent role in eradicating it. Despite its clinical success immunotherapy remains ineffective for a large percentage of patients, while for patients found to be responsive, autoimmune manifestations as a side effect are shown in frequent. Understanding the mechanisms responsible for the limited effectiveness of immunotherapy and autoimmunity manifestation is necessary for characterizing predictor biomarkers and applying individualized therapeutic approaches.

  The project's aim is proposing an innovative alteration of immunotherapy and cancer diagnosis through: a) developing a multifactorial atlas of circulating cancer fibroblasts CAF (STRO-MAP) based on unit cell mass cytometry and transcript analysis of peripheral CAFs with the aim of establishing a liquid biopsy to predict immunotherapy response, b) studying the use of STRO-MAP signatures-fingerprints as therapeutic targets in humanized cancer models carrying patient tumor grafts. Characterizing peripheral CAFs in cancer patients and locating action mechanisms leading to tumor growth, will contribute significantly to individualized biomarker discovery and targeted therapy implementation.

- ***Why is it that the peripheral nervous system can regenerate after trauma, contrary to the central nervous system?***

  (Principal Investigator: Marina Vidaki, Host Institution: Institute of Molecular Biology and Biotechnology, IMBB-FORTH)

  Injury to the central nervous system (CNS) leads to the destruction of axes and connections regulating its smooth operation. This can result in permanent problems of neurological or functional nature, with significant impact for both the individual and society as a whole. Axial regeneration is very important for restoring neural connections and CNS functionality following trauma, which relies heavily on their endogenous ability to synthesize proteins locally and independently of the cell body (e.g. at the wound site). However, while peripheral nervous system (PNS) axes hold very good protein synthesis and regeneration abilities, corresponding CNS axes lose this ability as they mature. This project shall focus on questions concerning axial protein synthesis (e.g. regulation modes and control mechanisms in the adult nervous system), which plays an important part in axis regeneration, and through molecular level comparisons of different axes shall identify differences explaining the lack of regenerative capability in CNS axes, thus contributing to the knowledge and understanding of axis biology. In parallel, it may reveal important molecules and molecular mechanisms of therapeutic importance for post-trauma CNS regeneration, connection and function restoration.

- ***In searching of the densest objects in the Universe***

  (Principal Investigator: Ioannis Antoniadis, Host Institution: Institute of Astrophysics, Foundation for Research and Technology)

  Neutron stars constitute the densest form of matter in the observable universe. Their mass spectrum contains important information regarding the final stages of astral evolution, the properties of supernova explosions and the statutory equation of hyper-concentrated matter. Despite their importance, accurate mass measurements for neutron stars remain extremely rare. This project will carry out the most detailed to-date study on neutron stars orbiting white dwarfs. These systems will provide accurate neutron star mass measurements, allowing for the separating line between neutron stars and black holes to be located, offering important information on the formation and evolution of neutron stars, as well as hyper-dense matter properties.

Through the funding of above research projects, Principal Investigators will be able to support their project development, their international competitiveness and position improvement for claiming resources in future ERC actions.

This action will remain active until the available budget is exhausted and shall be re-Called each time respective ERC results have been announced.

About HFRI

The Hellenic Foundation for Research and Innovation (Law 4429/2016) was founded out of the vital need to support the Greek research ecosystem. It is a private-law legal entity, supervised by the Greek Ministry of Development and Investments. The H.F.R.I. aims to promote research and innovation in Greece, and specifically to evaluate and fund research projects and research infrastructure and technical applications, without any restrictions on topics or geographical location, with the sole criterion being quality scientific research and excellence.

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