

Flagship Research Action
“Epidemiological study in Greece through extensive testing for virus and antibody detection, viral genome sequencing and genetic analysis of patients, in response to the SARS-CoV-2 crisis”

The evolving pandemic caused by the **novel SARS-CoV-2 virus** constitutes a major global public health problem. International experience has demonstrated that full understanding of disease outbreaks caused by viral infections depends largely on a thorough knowledge of the biological characteristics of viruses and their hosts (human) and, more specifically, the functioning of, and interactions between, their genomes. Viruses propagate in extremely high rates in human cells and, as a result, accumulate mutations, most of which inactivate, or have no effect on, the virus. In some cases, however, a mutation can increase infectivity or cell toxicity of the virus, with harmful effects, not only for the carrier acquiring the mutation but primarily for the persons subsequently contaminated by this carrier.

The Flagship Research Action ***“Epidemiological study in Greece through extensive testing for virus and antibody detection, viral genome sequencing and genetic analysis of patients, in response to the SARS-CoV-2 crisis”*** is expected to provide answers to the following questions:

1. Given the global spread of the virus and the possible shortage of reagents, will Greece be able to respond successfully to the increased demand for virus detection tests as well as antibody tests, particularly as containment measures are gradually lifted?
2. Despite identification of high-risk groups (seniors and people with underlying conditions), predictability of outcome for individual patients remains relatively low. Are there factors like genetic susceptibility which could help in this regard?
3. Which are the transmission patterns of the virus and which are the predominant virus strains among the Greek population?
4. Which will be the immunity levels of the population and of each patient after the pandemic?

Successful completion of the Action is expected to have the following beneficial effects:

- Promotion of research to understand the SARS-CoV-2 infection;
- Development of predictive models and identification of therapeutic goals with a view to developing effective antiviral treatments through combined effort by the research/academic community and the pharmaceutical industry;
- Contribution to shaping public health policies;
- Participation of Greece in international flagship initiatives on genomics;
- Promotion of computer science and bioinformatics;
- Practical implementation of study findings in the fields of medical biotechnology, biomolecular diagnostics as well as information science and artificial intelligence;
- Enhanced international visibility for the Greek scientific community;
- Development of innovative entrepreneurship in the fields of life sciences and computer science.

The Flagship Research Action will be implemented under the supervision of the GSRT and funded with € 2.475 m under the Ministry of Development & Investments public investments programme (PIP).

The Action will be implemented by four (4) higher education institutions and six (6) research centres. Greek research centres and university laboratories, working together with the medical community, have the privilege to be ideally positioned, at international level, to conduct this study, which is expected not only to have a direct impact within Greece in the immediate future, but also to put Greece at the vanguard of global advances in understanding and tackling SARS-CoV-2.

The bodies to undertake implementation of the Action are the following:

HIGHER EDUCATION INSTITUTIONS	RESEARCH CENTRES
<ul style="list-style-type: none">• National and Kapodistrian University of Athens (UoA), Department of Medicine• Aristotle University of Thessaloniki (AUTH), School of Medicine• University of Crete, School of Medicine• University of Ioannina	<ul style="list-style-type: none">• Biomedical Research Foundation (BRFAA) of the Academy of Athens• Centre for Research and Technology-Hellas (CERTH), Institute of Applied Biosciences (INAB)• Hellenic Pasteur Institute• Biomedical Sciences Research Center “Alexander Fleming”• Foundation for Research and Technology –Hellas (FORTH)• National Centre for Scientific Research “Demokritos”