The 5 projects funded by the European Research Council in Cyprus

Elena ANDREOU – Starting Grant
Host institution: University of Cyprus, Nicosia

Macroeconomic structural changes
This project will contribute to research into the efficacy of structural break tests, which are widely used in econometric and statistical modelling. The new tests developed during this project will be valuable in numerous empirical applications, and for the purposes of policy analysis, as they tackle the relatively limited alternatives predicted in current models. The aim is to evolve a quality control procedure for the management of financial risk which demonstrates the importance of early warning signs for an efficient risk structure. This improvement in the quality of sequential tests will reduce delays in the detection of errors and enable a reasonable calculation of any likely structural changes.

ERC Project: New Results on Structural Change Tests: Theory and Applications (CHANGE-POINT TESTS)
ERC Call: ERC Starting Grant 2007
ERC Funding: € 517 200 for four years
Links:
Project on CORDIS
Researcher's website
University of Cyprus

Johannes LELIEVELD – Advanced Grant
Host institution: The Cyprus Research and Educational Foundation, Lefkosia

Fighting climate change in the Mediterranean region
How are clouds and precipitation formation influenced by atmospheric chemical composition changes? Can aerosol pollution in the Mediterranean region exacerbate climate change? This project focuses on the Mediterranean region because it is exposed to drying and air pollution, and is therefore a hot spot for climate change. The research team has developed a new numerical method to consistently compute atmospheric trace gas, aerosol chemistry and cloud processes that can be used in climate models. Simulating realistic meteorological conditions at high spatial resolution enables a straightforward test against observed phenomena. Central to this research are questions such as: How does the simulated haze-cloud continuum compare with remote sensing measurements? What is the consequence of abandoning the traditional and artificial distinction between aerosols and clouds? How are cloud and precipitation formation influenced by atmospheric chemical composition changes? The model system is user-friendly and will facilitate air quality and climate studies and, more widely, contribute to climate impact assessments.

ERC Project: Consistent computation of the chemistry-cloud continuum and climate change in Cyprus (C8)
ERC Call: ERC Advanced Grant 2008
ERC Funding: € 2.2 million for five years
Links:
Project on CORDIS
Researcher's website
Euro Mediterranean: Feature on this project in 'Investing in European Success' Commission publication

Marios AVRAAMIDES – Starting Grant
Host institution: University of Cyprus, Nicosia

Spatial representations
The goal of this project is to examine the way we form, maintain and use spatial memories, in our immediate environment - for example, remembering whilst at home where we left our keys - but also memories of more distant places and objects such as the route in a city we are about to revisit. Existing empirical findings on spatial cognition seem conflicting at first glance. This research aims to reconcile the different findings by gathering empirical data to test the predictions of various theoretical models. First results tend to show that the representations we form are different in memories of our immediate and distant environments. This research could have implications for navigation systems for blind people and human-machine communication.

ERC Project: Multiple Systems of Spatial Memory: Their role in Reasoning and Action (OSSMA)
ERC Call: Starting Grant 2007
ERC Funding: € 500 000 for four years
Links:
Project on CORDIS

Marios POLYCARPOU – Advanced Grant
Host Institution: University of Cyprus, Nicosia

Improving critical infrastructures
The emergence of networked embedded systems and sensor/actuator networks has given rise to advanced monitoring and control applications, where a large amount of sensor data is collected and processed in real-time in order to activate the appropriate actuators and achieve the desired control objectives. However, in situations where a fault arises in some of the components, or an unexpected event occurs in the environment, this may lead to a serious degradation in performance or to an overall system failure. This project will contribute to the development of a framework which can be applied to critical infrastructure systems (e.g., power, water, telecommunications and transportation systems). This will allow real-time local information to be integrated into a large-scale "picture" of the health of the infrastructure. The research has the potential to open up new horizons in fault diagnosis research and to instigate methods leading to a new generation of smarter critical infrastructures.

ERC Project: Fault-Adaptive Monitoring and Control of Complex Distributed Dynamical Systems (FAULT-ADAPTIVE)
ERC Call: Advanced Grant 2011
ERC Funding: € 2.04 million for five years
Links:
Project on CORDIS
Researcher's webpage

Antonis KIRMIZIS – Starting Grant
Host institution: University of Cyprus, Nicosia

Chromatin modifying enzymes to tackle cancer
Chromatin modifying enzymes play a fundamental role in the control of gene expression and their deregulation is often linked to cancer. These enzymes are considered as potential targets for cancer therapy, but the understanding of their involvement in the cellular signalling pathways and regulatory circuits remains incomplete. This study uses yeast model and state-of-the-art genomic and proteomic approaches in order to identify protein networks and pathways associated with protein arginine methyltransferases (PRMTs), a family of chromatin modifying enzymes. The study will establish global cellular wiring diagram of PRMTs that may serve as a paradigm for other chromatin modifying enzymes. This will be instrumental to the assessment of these enzymes as therapeutic targets.

ERC Project: Functional and regulatory protein networks of chromatin modifying enzymes (CHROMATINMODWEB)
ERC Call: Starting Grant 2010
ERC Funding: € 1.5 million for five years
Links:
Project on CORDIS
University of Cyprus