



H.F.R.I.
Hellenic Foundation for
Research & Innovation

Description of the funded research project
1st Call for H.F.R.I. Research Projects to Support Faculty
Members & Researchers and Procure High-Value
Research Equipment

Title of the research project: Exploring the key biological drivers of a major invasive pest: Adaptive and plastic responses of the Mediterranean fruit fly to environmental stress

Principal Investigator: Prof. Nikolaos Papadopoulos

Reader-friendly title: MEDFLY

Scientific Area: Agricultural Sciences - Food
Institution and Country: University of Thessaly,
Greece

Host Institution: University of Thessaly

Collaborating Institution(s): University of Florida
Gainesville, USA, University of Stellenbosch, South
Africa

Budget: 180.000€

**Project webpage
(if applicable):** under construction

Duration: 36 months

Research Team



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Research Project Synopsis

MEDFLY brings a novel model system, the Mediterranean fruit fly, *Ceratitidis capitata* (Diptera: Tephritidae), and a strong research group with long experience in the biology, ecology, evolution, and physiology of insects to understand the invasion dynamics of the Mediterranean fruit fly and the biological traits that regulate success of establishment with emphasis on northern, more temperate areas of Greece and Europe.

Project originality

The project will use a multidisciplinary approach, combining state-of-the-art knowledge from the fields of thermal biology, behavior and demography with cutting edge –OMICS techniques that enable us to examine thermal responses to a level of precision not possible for virtually any other organism, and thus answer our questions. The proposed work on invasiveness and climate change is timely and novel, and addresses questions of importance to the scientific community and to public alike.

Expected results & Research Project Impact

- To identify physiological and molecular mechanisms that regulate plastic and adaptive responses to stressful conditions
- To better understand the genetics and physiological strategies regulating adult dispersal
- To provide new, much needed, data for building better predictive models

Impact

The holistic and comprehensive approach we propose is expected to be followed and adopted in other model systems addressing questions regarding seasonal adaptation and potential for range expansion of invasive species, as well as species of conservation importance (e.g., beneficial insects including pollinators). Results of the current project will be published (at least 6 peer-reviewed papers) in high impact journals, across different disciplines including, entomology, invasion biology, animal physiology, and ecology.

The importance of this funding

The financing of the project by HFRI, offers much added value towards the development and application of innovative technologies in Entomology, based on the pre-existing scientific knowledge. The project will, after its completion, offer opportunities to disseminate results and possible connections with other scientific and social stakeholders.



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