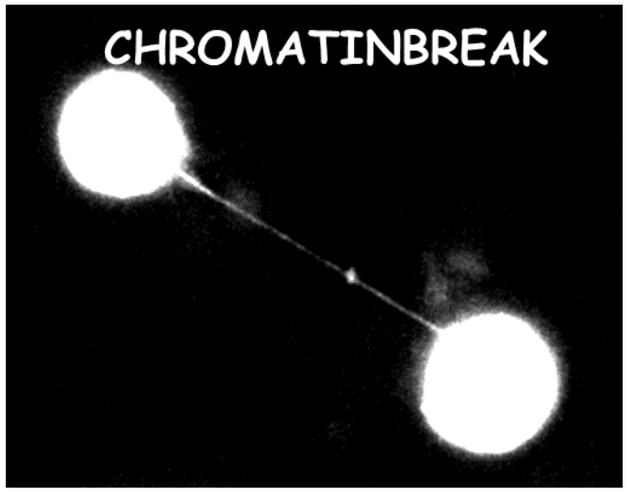
H.F.R.I.
Hellenic Foundation for Research & Innovation

Description of the funded research project

2nd Call for H.F.R.I. Research Projects to Support Post-Doctoral Researchers

Title of the research project:

Investigating mechanisms that prevent chromatin bridges from breaking in cytokinesis



Principal Investigator:

Dr Eleni Petsalaki

Reader-friendly title:

Investigating mechanisms of cell division that prevent tumorigenesis

Scientific Area:

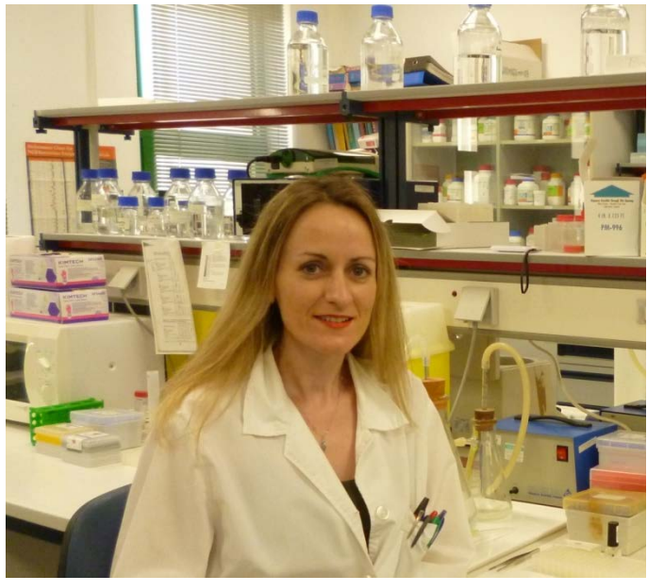
S.A. 3 - Life Sciences

Institution and Country:

University of Crete, Greece

Host Institution:

Department of Biology, University of Crete



Budget: €179 476

Duration: 36 months

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Research Project Synopsis

Each time the tiny cells in our body proliferate, they divide their DNA accurately from the mother to the two daughter cells in a process called “cell division”. This process usually works fine, however, some times the long strands of DNA in our cells become tangled and give rise to DNA (chromatin) bridges that connect the two daughter cells. Without support, these chromatin bridges will break and produce damaged DNA, which can lead to tumor formation.

With funding from H.F.R.I., we will identify novel proteins that prevent chromatin bridges from breaking and describe the molecular mechanisms involved. This research project will therefore help us understand basic mechanisms of carcinogenesis that may be common for many tumor types.

Project originality

This is the first study describing that inhibition of specific cellular proteins we have identified leads to chromatin bridge breakage in human cells. This study also investigates how the above proteins function to prevent DNA damage and describes basic mechanisms of tumorigenesis that may be involved in several types of tumors.

Expected results & Research Project Impact

Faithful cell division is crucial for organism development and work in the last decade has revealed the existence of a complex regulatory machinery that prevents chromatin bridges from breaking during cell division. With funding from the H.F.R.I., we will further investigate the molecular mechanisms by which the novel proteins we have identified prevent DNA breakage and protect against cancer formation or progression. Because DNA breakage can kill cancer cells, this study may also identify novel protein targets that we could pharmacologically inhibit to sensitize cancer cells to killing, and may help us develop novel strategies for cancer therapy.

The importance of this funding

Funding from the H.F.R.I. will provide me with essential resources to continue my research in the exciting field of Cancer Cell Biology, and will also give me the opportunity to form my own small research team and mentor a PhD student. This will give me the necessary training and experience on how to independently direct a research project both scientifically and financially, and the chance to improve my teaching and man-management skills which are essential for becoming a successful group leader. I therefore believe this grant will be important for the development of my career towards becoming an independent researcher.

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COMMUNICATION

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