Cell Cycle & Cancer Biology Group

PhD PROJECT

"Dissecting the genetic and molecular control of cell proliferation"

GRUPO: CICLO CELULAR E BIOLOGIA DO CANCRO
SUPERVISOR: ÁLVARO TAVARES

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Colaboration project with **David Glover, dept of genetics, University of Cambridge.** Part of the project is to be done in Cambridge, so it is desirable that the student is willing to spend a period abroad.

HTTP://ALVAROTAVARE.WIXSITE.COM/MITOSISGROUP

HTTP://CBMR.UALG.PT/RESEARCH/ONCOBIOL/ALVARO/

HTTP://DMGWEB.GEN.CAM.AC.UK/

HTTPS://WWW.GEN.CAM.AC.UK/RESEARCH-GROUPS/GLOVER

LAB SKILLS TO DEVELOP

Human cells culture o; gene suppression by CRISPr; confocal microscopy (live imaging); purification and manipulation of DNA and proteins; Drosophila genetics techniques.

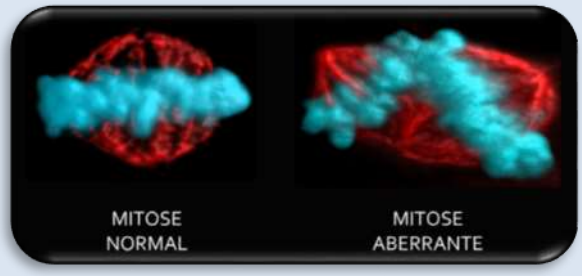
PROJECT BRIEF SUMARY

Correct organ size is determined by the balance between cell death and proliferation. Perturbation of this delicate balance leads to cancer formation. The Hippo pathway controls both cell death and proliferation, and dysregulation of the pathway leads to aberrant cell growth and neoplasia. The core of the Hippo pathway consists of a kinase cascade, transcription coactivators, and DNA-binding partners.

We, and others, have shown that Mob proteins, components of the Hippo pathway, act as kinase-activating subunits. Interestingly, different Mob proteins function in different cellular pathways. For example, Mob1 is involved in the mitotic exit network and is required for proper cytokinesis, whereas Mob2 is required for proper cell morphology. Despite implicated roles of deregulated Mobs over cell proliferation, a clear genetic association or unique mutational link to the disease (cancer) is still missing.

This project aims to dissect the genetic and molecular cell cycle role of the yet uncharacterized Mob genes. To achieve these goals a combined approach of genetics and cell biology techniques will be used.

This project, the continuation of a long standing collaboration between Tavares and Glover labs, ultimately aims to use Drosophila melanogaster and in vitro human cells to study the way Mob proteins, and their interacting proteins, regulate cell proliferation and apoptosis.



BIBLIOGRAFIA

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- Florindo C, Perdigão, J., Fesquet, D., Schiebel, E., Pines, J. and Tavares A.A. (2012) J. Cell Sci 125: 3085-3090.
- - Carmo Avides, Álvaro Tavares and David Glover. 2001. Nature Cell Biology 3:421..
- Bury et al. 2017. J Cell Biol. 216:3571-3590