

**Title:**

Discovery of novel mechanisms of centrosome amplification and their therapeutic value in cancer

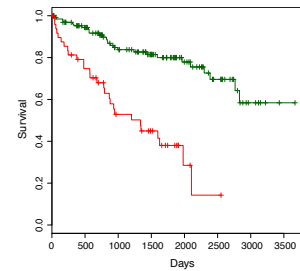
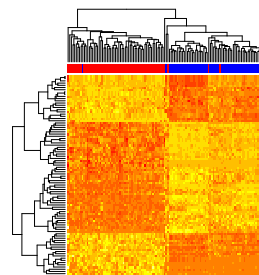
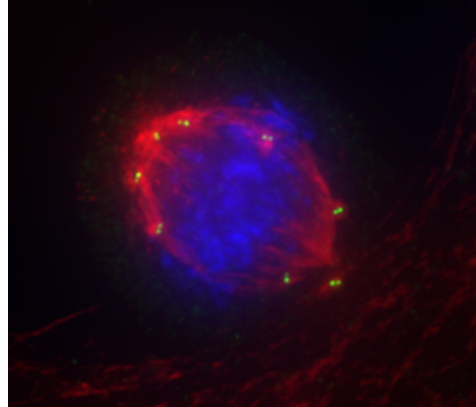
**Synopsis:**

Centrosomes are the major microtubule organising centre in animal cells. Centrosome number deregulation accelerates tumourigenesis and is a target for cancer drug development. The laboratory of Mónica Bettencourt Dias at Instituto Gulbenkian de Ciência (IGC) has recently screened a panel of 60 different tumour cell lines for alterations in centrosomes. These cell lines are profiled for RNA and protein expression, mutations and drug sensitivity.

The goal of the proposed project is to explore those data to discover both novel mechanisms of centrosome amplification and adaptation of cancer cells to those abnormalities and new drugs that selectively kill cells with abnormal centrosomes. The clinical potential of the most promising molecular targets will also be evaluated through the integrated analysis of different types of genome-wide molecular profiles (genotypes, transcriptomes, proteomes) of hundreds of clinically annotated tumour samples for selected types of cancer, benefiting from the experience in computational biology of the laboratory of Nuno Barbosa Morais at IMM.

The results of these analyses may lead to novel diagnostic and treatment directions and to new mechanisms in cell biology.

In summary, this project will use a combination of computational and cell biology approaches, combining the skills of two different research groups: Nuno Barbosa Morais at IMM and Mónica Bettencourt Dias at IGC. The student will be trained in both laboratories and exposed to the scientific environment of both institutes.



**Supervisors:**

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**Remunerated or volunteer training:** Volunteer