



Research Project Proposal

Academic year 2019-2020

Project Nº 43

Title:

Study of the mechanism of lncRNA function in cancer cells

Department/ Laboratory *Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.*

Regulation of Gene Expression and Gene Therapy department of CIMA/ Laboratory of lncRNAs and genome regulation in cancer

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Summary

The postgenomic era has revealed that mammalian cells encode thousands of mysterious long RNA molecules that lack protein-coding capacity. Although thousands of these long noncoding RNAs (lncRNAs) exist, only few of them have been functionally characterized. The few that have show biological roles as regulators of gene expression, often through epigenetic mechanisms.

We hypothesize that some of these lncRNAs act as oncogenes or tumour suppressors. The goal of the project is to investigate the role of candidate lncRNAs in the regulation of gene expression in cancer cells.

Molecular biology techniques, such as different variants of CRISPR/Cas9 methodologies will be used to perturb the expression and/or the sequence of lncRNAs and the effect in the cell phenotype and gene expression will be analysed.

Bibliography:

- Marchese FP, Raimondi I, **Huarte M.**(2017) The multidimensional mechanisms of long noncoding RNA function. Genome Biol. 2017 Oct 31;18(1):206
- **Huarte M** (2015) *The emerging roles of lncRNAs in cancer.* Nat Med. 2015 Nov;21(11):1253-61

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|-----|---|
| yes | x |
| no | |

Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?