



**Research Project Proposal**  
Academic year 2021-2022  
**Máster en Investigación Biomédica**

**Project Nº 25**

Title: RNA aptamers for cancer immunotherapy

Department/ Laboratory Laboratory where the project will be carried out indicating Department, CIMA Molecular Therapy Department

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Cancer Immunotherapy is improving the life expectancy of cancer patients. RNA based therapeutics are emerging as feasible platform to this end. We are proposing the generation of an immunomodulatory RNA aptamer toolbox to modulate the immune response against tumour antigens and transform the tumour immunosuppressive milieu. Some of these RNA aptamers will target receptors on T lymphocytes such as CD3, ICOS or CD28; and some other aptamers will target receptors on tumour cells. These aptamers will not only trigger T cell activation, but also utilized as RNA delivery systems to regulate different key pathway enhancing tumour immunogenicity and counteracting immunosuppression. This project aims to develop an RNA aptamer platform with no toxicity and good bioavailability to promote tumour immunity. The master student will be educated on: (i) RNA aptamer selection using a variant of SELEX, high throughput sequencing and aptamer bioinformatics analysis. (ii) Evaluation of the functionality of enriched aptamers in culture cells and animal models. (iii) Proof of concept of the best-in-class candidate aptamers using different immunological assays and different omics. (iv) Evaluation of toxicity-free antitumor activity.

yes	<input checked="" type="checkbox"/>
no	<input type="checkbox"/>

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