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

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| **Project Nº 48** | |
| Title: *Development of RNA viral vectors able to express new immunostimulatory molecules for cancer gene therapy* | |
| Department/ Laboratory *Gene Therapy and Regulation of Gene Expression Program. CIMA. Laboratory 4.06 and 4.05* | |
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Summary:

In our laboratory we have previously demonstrated significant antitumor effects when using a self-amplifying RNA viral vector based on Semliki Forest virus (SFV). In particular, we have used SFV vectors to express immunostimulatory cytokines, like interleukin-12, or antibodies against immune checkpoints, like PD-L1. One of the main mechanisms involved in the antitumor responses generated by SFV vectors is based on the induction of type I interferon (IFN) responses, due to RNA replication in tumor cells. In the present project we aim to increase the antitumor potential of SFV vectors by expressing proteins able to stimulate IFN responses. These proteins will be expressed alone or in combination with other immunostimulatory molecules.

For that purpose the following partial objectives are proposed:

- Construction and production of SFV viral vectors able to express proteins with IFN-inducing properties

- Testing expression and functionality of the recombinant proteins in vitro

- Testing the antitumoral activity of these vectors in an animal model of cancer

The project will involve the use of many different techniques, including molecular biology, cell culture, virus production, analysis of protein expression, immunological techniques, animal models of cancer etc.


Note: There is the possibility of performing a PhD thesis after the TFM provided a fellowship is obtained (minimun score required in universty studies: 2 in the scale 1-4)

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| yes | X | Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator? |
| no | | |