



**MÁSTER EN INVESTIGACIÓN BIOMÉDICA**

**Research Project Proposal**

Academic year 2026-2027

**Project Nº 46**

**Title:** *Impact of siRNA-Mediated GLUT12 Silencing and Adipocyte Co-Culture on GLUT12 Expression and Activity in MCF-7 Cells*

**Department/ Laboratory**

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**Summary**

In Spain, breast cancer is the leading cause of cancer death in women. Obesity is associated with numerous comorbidities, including an increased risk of developing breast cancer in postmenopausal women and a lower survival rate. Dysregulation of glucose metabolism has been pointed out as a factor that associates obesity and breast cancer, contributing to tumor development. The Warburg effect in tumor cells is a mechanism that contributes to tumor development and is increased under conditions of hyperinsulinemia and hyperglycemia, characteristic of obesity. GLUT12 is an insulin-sensitive glucose transporter whose expression is increased in breast tumors. Preliminary data from our laboratory indicate an increase in GLUT12 activity with increased extracellular glucose in a luminal breast cancer cell line, as well as greater expression of the transporter in cells adjacent to peritumoral adipocytes in tumorectomies of breast cancer patients.

This project will use the MCF-7 luminal breast cancer cell line and peritumoral samples from postmenopausal patients with luminal breast cancer (ONCOBEGlut/RESOLBE cohort). The main objectives are:

1. To evaluate the effect of specific siRNA-mediated silencing of GLUT12 on its expression and activity in MCF-7 cells.
2. To compare GLUT12 expression and activity in MCF-7 monocultures versus co-culture with peritumoral adipocytes derived from postmenopausal patients with luminal breast cancer (ONCOBEGlut/RESOLBE cohort).

yes	
no	X

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