



Business area

Discovery

Market sector

Oncology

Medical Indication

Thyroid cancer

### Research goal

Use of a molecule to inhibit the expression of the PIAS2 $\beta$  protein for the treatment of several types of cancer, including poorly differentiated thyroid carcinoma (PDTC) and anaplastic thyroid carcinoma (ATC).

### Problem to solve

Differentiated carcinomas of the follicular epithelium of the thyroid gland have become one of the most common cancers in women. The therapy is effective, although no patient can be considered cured due to the possibility of recurrence, as well as persistence and regrowth, up to many years later. Additionally, poorly differentiated carcinomas and recurrent differentiated carcinomas are part of the group of advanced carcinomas considered Orphan diseases since they represent a very small number of cases, but with a lethal prognosis in a few months. Common treatment options, such as surgery, or radioactive iodine, have shown poor or no results in those cases and the current treatments come from the individual compassionate use of other drugs. Therefore, there is a need to provide new, more effective treatments to address follicular epithelial carcinomas of the thyroid gland, in particular undifferentiated / anaplastic carcinomas.

The present invention is based on the finding that inhibition of PIAS2 $\beta$  protein expression results in specific inhibition of proliferation and induction of death of undifferentiated or poorly differentiated carcinoma cells of the thyroid gland. Therefore, the inhibition of PIAS2 $\beta$  would lead to a reduction in the growth of this type of carcinoma.

### Innovation

Treatment with a molecule complementary to a target region of the PIAS2 $\beta$  mRNA that together with its target sequence produces the inhibition of the expression of PIAS2 $\beta$  mRNA. Our studies suggest that this could be an alternative for the treatment of PDTC and ATC thyroid cancers. Besides, this therapy would have lower side effects, as normal cells have not been affected in the assays performed. There could be a potential application of this treatment for other anaplastic or undifferentiated types of cancer (undifferentiated pancreatic, lung and gastric carcinomas).

### Market opportunity

The global thyroid cancer market size is estimated to be worth USD 1072 million by 2026 from USD 345 million in 2021, growing at a CAGR of 25.45% during the forecast period. Anaplastic thyroid carcinoma, also known as undifferentiated carcinoma accounts for 1% to 2% of all thyroid gland neoplasms, whereas poorly differentiated thyroid carcinoma (PDTC), accounts for 4–7% of all thyroid malignancies.

### Research team

Neoplasia & Endocrine Differentiation Research Group – Center for Research in Molecular Medicine and Chronic Diseases (CIMUS).

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### Intellectual property

Patent Application: **P 201930743**

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Owners: University of Santiago de Compostela (USC) and Servizo Galego de Saúde

### Development stage (TRL3):



Available for: *Licensing, co-development*