

## CELL LINES OF LEIOMIOSARCOMA-INITIATING MESENCHYMAL STEM CELLS FOR DRUG SCREENING AND TOXICOLOGY

### Abstract of the Offer

The technology applies to the field of biomedicine and relates to cell systems that are useful for identifying compounds with pharmacological activity and/or utility in the medical field.

### Description of the Offer

Sarcoma is a tumour of mesenchymal origin that affects bone, cartilage, fat, muscle or blood vessels, etc. Depending on the tissue where it originates, sarcoma has a specific pathophysiology, based on which the most appropriate lines of treatment are developed.

Leiomyosarcoma, specifically, is a solid tumour that affects smooth muscle. At present, its original target cell is unknown. Therefore, efforts to develop new therapies for leiomyosarcomas currently focus on understanding its transformation mechanisms. Leiomyosarcoma represents 32.55% of soft tissue sarcomas (according to an article published in the Postgraduate Medical Bulletin. Vol. XIII No. 3-4, “prevalence of soft tissue tumours diagnosed through biopsies in the pathological anatomy unit of the Hospital Central Antonio María Pineda”).

There is increasing evidence indicating that cancer imitates normal tissue development maintaining the hierarchical cell organization. According to the hierarchical model of cancer, a negligible cell population presents or is capable of acquiring the capacity to divide asymmetrically resulting in the generation of an identical daughter cell and another different daughter cell, through which, by means of numerous divisions, the tumoral mass is generated.

This technology provides new leiomyosarcoma-initiating cell lines that adjust to cancer’s hierarchical model. Specifically, the inventors have proven that the inactivation of certain genes leads to the generation of a leiomyosarcoma in vivo. Both mesenchymal stem cells (MSC), from adipose tissue and genetically modified, as well as cell lines obtained from primary tumours are capable of generating leiomyosarcoma. Therefore, they are a very useful tool for screening therapeutic agents capable of treating leiomyosarcoma or to determine at least one therapeutic target directed against a leiomyosarcoma.



## Advantages of the Offer

These tumour lines maintain all the morphological, phenotypic and functional properties of the mesenchymal stem cells from which they originate and are capable of giving rise to leiomyosarcomas in an aggressive manner. Therefore, they can be used in numerous studies aimed at understanding the cell and molecular bases responsible for the etiology and pathogenesis of these type of sarcomas, and also as an *in vivo* platform for testing different therapeutic agents capable of destroying specifically tumoral MSCs but not normal MSCs by carrying out “*high-throughput screening*” tests.

Another of the relevant benefits is that the source of these transformed MSCs is adipose tissue, which simplifies obtaining them, since this type of tissue contains abundant amount of MSCs.

Recent studies by this research group have confirmed this data and verified that if leiomyosarcoma-initiating transformed mesenchymal stem cells have a specific fusion oncogene introduced, we obtain liposarcomas (fat sarcoma) instead of leiomyosarcoma. This result reveals how the fusion gene associated to liposarcoma is capable of redirecting the tumour’s genesis from a leiomyosarcoma to a liposarcoma.

## What are we looking for?

This research group is seeking to establish a licence agreement or public-

private collaboration agreement in order to develop the technology.

## Key words

Category: Stem Cells; Laboratory Materials & Reactives.

Subcategory: Cancer or oncology.

