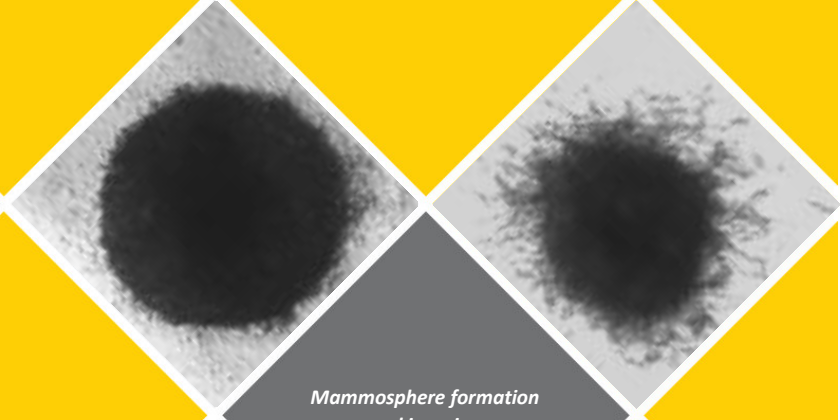
Cancer

BREAST CANCER



Mammosphere formation and invasion

Background

Breast cancer is the second most common cancer in women. It can occur in both men and women, but it is very rare in men. Each year there are about 2,300 new cases of breast cancer in men and about 230,000 new cases in women. Many solid tumor types, including breast cancer, exhibit a functional hierarchy of cancer cells of which only a small subpopulation of replenishing stem-like cells (CSCs) can give rise to the differentiated cells that comprise the bulk tumor. The treatments today available for breast cancer are not able to deplete CSCs population in breast cancer. This could be one of the main reasons for the failure of pharmacological treatments in most cases.

Pathology Model

Human breast cancer cells will be cultured in presence or absence of CLIENT's compounds. After treatment with the compounds, cells will be cultured in a specialized Spheroid Formation ECM to drive spheroid formation of cells. Upon completion of spheroid formation, the spheroid is embedded in an invasion matrix composed of basement membrane proteins.

This matrix forms a hydrogel network on which invasive cells can travel. This model of 3D spheroid culture will allow to evaluate the CLIENT's compounds effect on spheroid formation (index of tumour growth) and invasion (index of metastatic potential).

Readouts

The following parameters will be evaluated:

Step 1 - Sphere formation and invasion

- Quantification of size of neurospheres as index of tumour formation
- Quantification of cell invasion by image analysis software

Step 2 - GSCs characterization after sphere disgregation

FACS analysis for GSCs markers ($CD44^{+}/CD24^{-/low}/ESA^{+}$)