



**INSTITUTE
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The Institute for Research in Biomedicine (IRB Barcelona) is an independent, non for-profit research center engaged in basic and applied biomedical science. The convergence of biology, chemistry, medicine, physics and computer science at IRB Barcelona provides a unique opportunity for the translation of basic biomedical research into innovation.

p38MAM

A new therapy
for breast
tumours based
on genomic
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p38MAM is a new therapeutic approach for breast cancer patients based on modulation of the genomic integrity of cancer cells. The therapeutic effect is based on the combination of a chemotherapeutic drug and a p38 inhibitor. p38MAM gains strong relevance, for the triple-negative breast cancer subtype, against which there is no directed therapy.

p38MAM will be also applicable for predicting the prognosis of treatments and selecting patients for new clinical assays.

CHALLENGE

One out of eight women is or will be diagnosed for breast cancer, according to the International Agency for Research in Cancer. This is the leading type of cancer in women, accounting for around 25% of all cases, and **more than 420,000 new cases are diagnosed each year in Europe.**

Breast tumours are classified by several grading systems based on the expression of different biochemical markers (hormone receptors).

Tumours classified as **Triple Negative or basal-like (TNBC)**, lack the expression of three key hormone receptors (ER-; HER2-; PR-), thus being non-responsive to the directed hormone therapies and are usually treated with some combination of general methods such as surgery, radiotherapy and chemotherapy. Therefore, there is an **urgent unmet medical need to develop new therapies** (and corresponding companion diagnostics), which ensure effective treatment for the different breast cancer subtypes, particularly the TNBC subgroup.

TECHNOLOGY

Advances in oncology research require an increase in the capacity to run early evaluation tests of new anti-cancer compounds based on tumor biology and target validation.

p38MAM is a new therapy for Triple Negative Breast Cancer (TNBC) based on the combination of a particular type of chemotherapeutic drug and a p38 inhibitor. Moreover, the business package includes the license for the use of the therapeutic combinations and the companion diagnostic (CDx) test to predict the group of patients more likely to benefit from the treatment.

p38MAM provides evidence that pharmacological inhibitors of p38 potentiate the effect of certain chemotherapeutic drugs, reducing the size of mammary tumours in both murine models and human patient-derived xenografts of TNBC and Luminal subtypes.

COMMERCIAL OPPORTUNITY

The breast cancer therapy market was worth \$7.1 billion EUR in 2013 among eight major nations – UK, Canada, France, USA, Germany, Spain, Italy, and Japan. This **market is expected to reach \$10.3 billion EUR by 2020**, according to the GBI Research report.

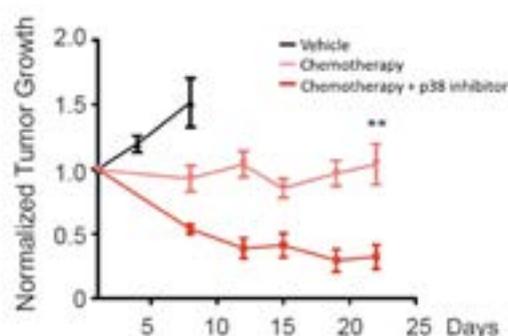
TNBC and Luminal subtypes account for over 75% of this market envisioning high return of investment (RoI). Costs associated to treatment (hospitalization, palliative care, work absence, etc.), are estimated by the NCI (US) to reach 17.9 billion EUR in 2020 (only considering US market), according to a report from the same institution. A rough extrapolation for the same aforementioned eight markets gives over 53 billion EUR by 2020 costs other than therapy for breast cancer.

p38MAM is covered by a recent international patent application and available for out-licensing.

CURRENT STAGE OF DEVELOPMENT

p38MAM has been validated using both genetic tools and a set of human patient derived xenograft models of breast cancer. Concordant results have been found following both strategies. In terms of pharmacological inhibitors of p38, results have been validated using several ATP competitor-like chemical compounds.

Future experiments envision the validation of the p38MAM using a larger cohort of xenograft models of breast cancer.



Inhibition of p38 potentiates the effect of a chemotherapeutic drug in mammary tumours. Growth curve of PyMT-induced mammary tumours in mice treated with a chemotherapeutic drug either alone or together with a p38 inhibitor. Vehicle-treated animals are also represented.

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