



PARTENARIATO ESTESO “HEAL ITALIA – HEALTH EXTENDED ALLIANCE FOR INNOVATIVE THERAPIES, ADVANCED LAB-RESEARCH, AND INTEGRATED APPROACHES OF PRECISION MEDICINE” – PE_00000019

SPOKE 3: UNIVERSITÀ DEGLI STUDI DI PALERMO – CUP B73C22001250006

PREDICTION MODELS - Modelli avanzati di predizione per la prognosi e la risposta terapeutica

BAC Linea di ricerca 1 - Validation of preclinical models for the study of the mechanisms of cellular mechanotransduction

Dipartimento di Medicina Molecolare dell'Università degli Studi di Padova (Prof. Dupont, Prof. Montagner)
Istituto TIGEM della Fondazione Telethon (Prof. Grumati)

Progetto MECHANOMET

Tracing, studying, and disabling and cross talk between mechanotransduction, cancer cells, and CAFs in the metastatic breast cancer tumor microenvironment

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Objectives of the project:

- to exploit organotypic cell culture systems to study how the composition and mechanical properties of the ECM modulate the biology of metastatic breast cancer cells and of tumor-associated fibroblasts
- to generate new genetically-modified models of metastatic breast cancer cells and new transgenics to test the functional impact of mechanotransduction on preclinical mouse models
- develop a synthetic biology approach to generate new transgenic lines to visualize and map the interaction between metastatic cells and the cell populations within the tumour microenvironment
- generate new tools to visualize the response of cells to mechanical cues in experimental or diseased tissues
- characterize new small-molecule modulators of mechanotransduction, the interaction between metastatic breast cancer cells and tumor-associated fibroblasts mediated by ECM remodeling, and the resistance to chemotherapy to eradicate metastasis relapse

Contributi alla ricerca dello spoke e alla medicina di precisione:

- develop and use of new systems to understand the multiple interactions between cancer cells, the extracellular matrix and the cells of the tumour microenvironment during metastatic dormancy
- develop model systems to study metastatic recurrence and the relevance of mechanotransduction
- identify new mechanotransduction markers
- provide proof-of-principle evidence for new therapeutic approaches targeting mechanobiology