Basic research

As surrogate markers of tumour progression. Our studies

We are interested in understanding how

cell-cell communication have become as a

mechanisms of cell-cell

and extracellular vesicles. These mechanisms of cell-cell

important at all

steps of the metastatic process, for which the recruitment of a

variety of stromal cells is crucial. Secreted factors play an

essential role in this mechanism including soluble factors

and extracellular vesicles. These mechanisms of cell-cell

communication in breast cancer cells.

and its influence in follicular lymphoma. We are also exploring

how alterations in the lymph node

and prostate cancer metastasis. We found that nerve growth

factor receptor (NGFR) is overexpressed in metastatic

melanoma cells, secreted in EVs, and that it is shunted to

lymphoendothelial cells inducing lymphangiogenesis and

metastasis. We are also studying the use of NGFR inhibitors

as a new strategy to block melanoma metastasis. Finally, we

are defining the role of secreted EVs in prostate cancer lymph

node metastasis.

Impact of high fat diet in metastasis

We are currently analysing how obesity influences metastasis

through systemic and local changes in melanoma and breast

cancer. We are interested in defining how obesity impacts

breast cancer lung metastasis by reinforcing pro-coagulant

activities. We are testing novel approaches to reduce tumour-

platelet interactions and develop anti-metastatic therapies.

RESEARCH HIGHLIGHTS

Novel approaches in liquid biopsies

We are developing state-of-the-art technologies to implement

EV-based liquid biopsies in the diagnosis and prognosis of

patients with melanoma. We have found that the detection of

BRAFV600E mutation in circulating EVs from the lymphatic

exudate obtained post-lymphadenectomy can be used to

identify melanoma patients at risk of relapse (FIGURE).

Novel mechanisms driving in local and distal metastasis

We are investigating the mechanisms involved in melanoma

and prostate cancer metastasis. We found that nerve growth

factor receptor (NGFR) is overexpressed in metastatic

melanoma cells, secreted in EVs, and that it is shunted to

lymphoendothelial cells inducing lymphangiogenesis and

metastasis. We are also studying the use of NGFR inhibitors

as a new strategy to block melanoma metastasis. Finally, we

are defining the role of secreted EVs in prostate cancer lymph

node metastasis.

Impact of high fat diet in metastasis

We are currently analysing how obesity influences metastasis

through systemic and local changes in melanoma and breast

cancer. We are interested in defining how obesity impacts

breast cancer lung metastasis by reinforcing pro-coagulant

activities. We are testing novel approaches to reduce tumour-

platelet interactions and develop anti-metastatic therapies.

Overview

Our Group aims to understand the crosstalk between

tumour cells and their microenvironment during metastatic

progression. Microenvironmental cues are important at all

steps of the metastatic process, for which the recruitment of a

variety of stromal cells is crucial. Secreted factors play an

essential role in this mechanism including soluble factors

and extracellular vesicles. These mechanisms of cell-cell

communication have become as a novel language of cancer that

we aim to decode. We are interested in 1) understanding how

tumour cells crosstalk with stromal cells involved in lymph

node and distal metastasis in melanoma, lymphoma, prostate

cancer and malignant peripheral nerve sheath tumours; 2)

the influence of obesity in melanoma and breast cancer

metastasis; and 3) the use of secreted extracellular vesicles

(EVs) as surrogate markers of tumour progression. Our studies

are focused on deciphering novel biomarkers of metastatic

progression and the molecular mechanisms involved, with the

aim to define novel therapeutic targets to block metastatic

spread.

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