In 2022, we established a novel research line in Cancer Neuroscience, aiming to understand the biology underlying the neurocognitive impact of brain metastasis.

Among other activities, additional single cell approaches (i.e., spatial transcriptomics) were incorporated into our experimental pipeline.

We also consolidated research findings, with an impact on various aspects relevant for brain metastasis, such as novel strategies for immunotherapy, new cellular targets within the pro-metastatic microenvironment, and an unexpected avenue for preventing metastasis.

And, finally, we consolidated our scientific strategy as a productive source of findings to be translated from bench to bedside. The most recent examples are the clinical studies following from the discovery of a biomarker of radiosensitivity compatible with liquid biopsy (now part of a prospective observational multicentric clinical study) and the clinical trial combining a RAGE inhibitor and radiotherapy (now in phase 1/II trial).

FIGURE (a) The microenvironment enhances the secretion of S100A9 from cancer cells that binds to RAGE, which could be targeted with a specific inhibitor. (b) Targeting of S100A9 blocks brain metastasis radiosensitivity. (c) S100A9 is a biomarker of radioresistance from liquid biopsy.