Study identifies breast cancer patients who would benefit from metastasis-specific treatment

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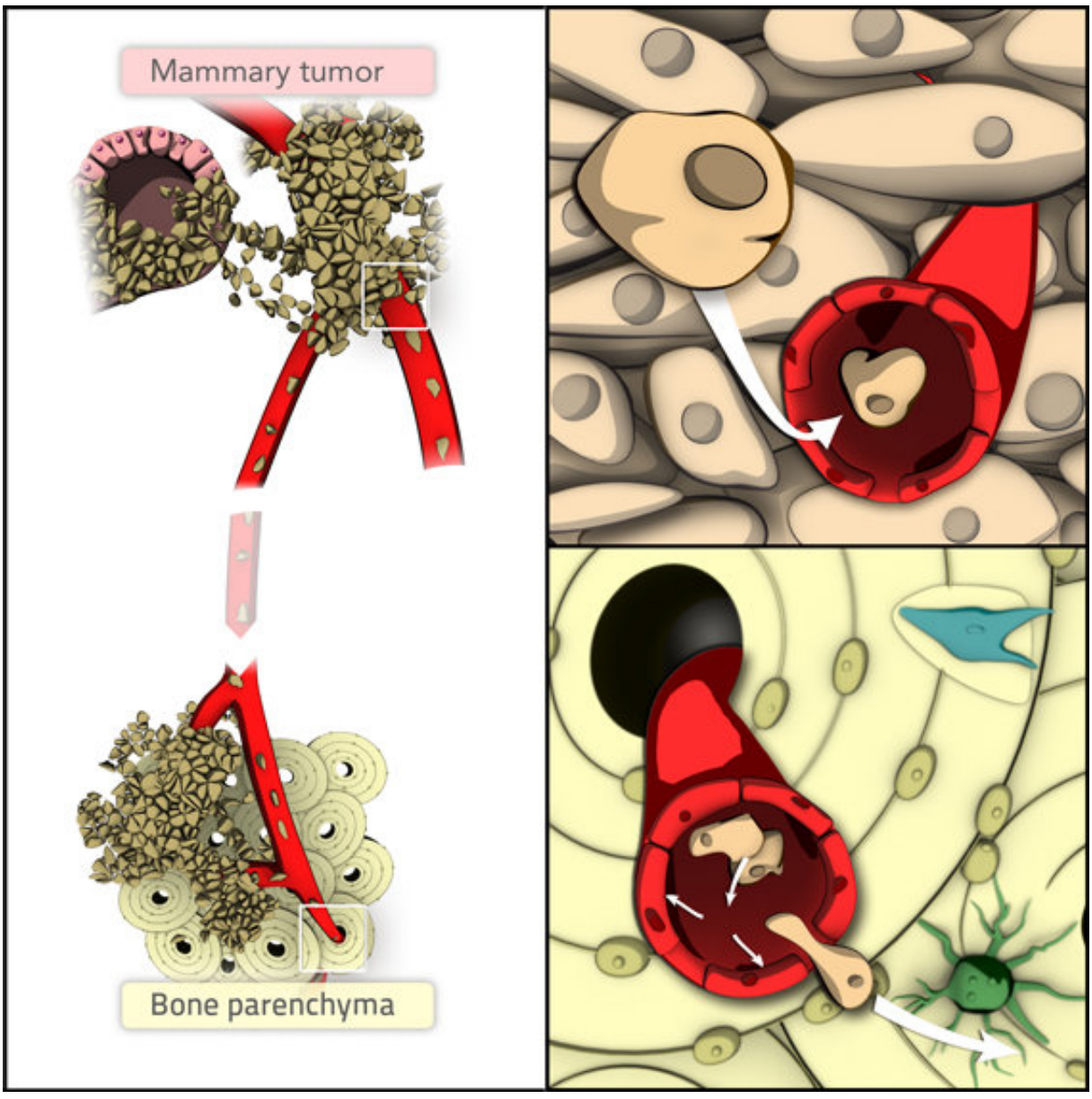


The metastasis of a primary breast tumor to bone. Credit: Author: Formas Naturales by Inbiomotion, IRB Barcelona

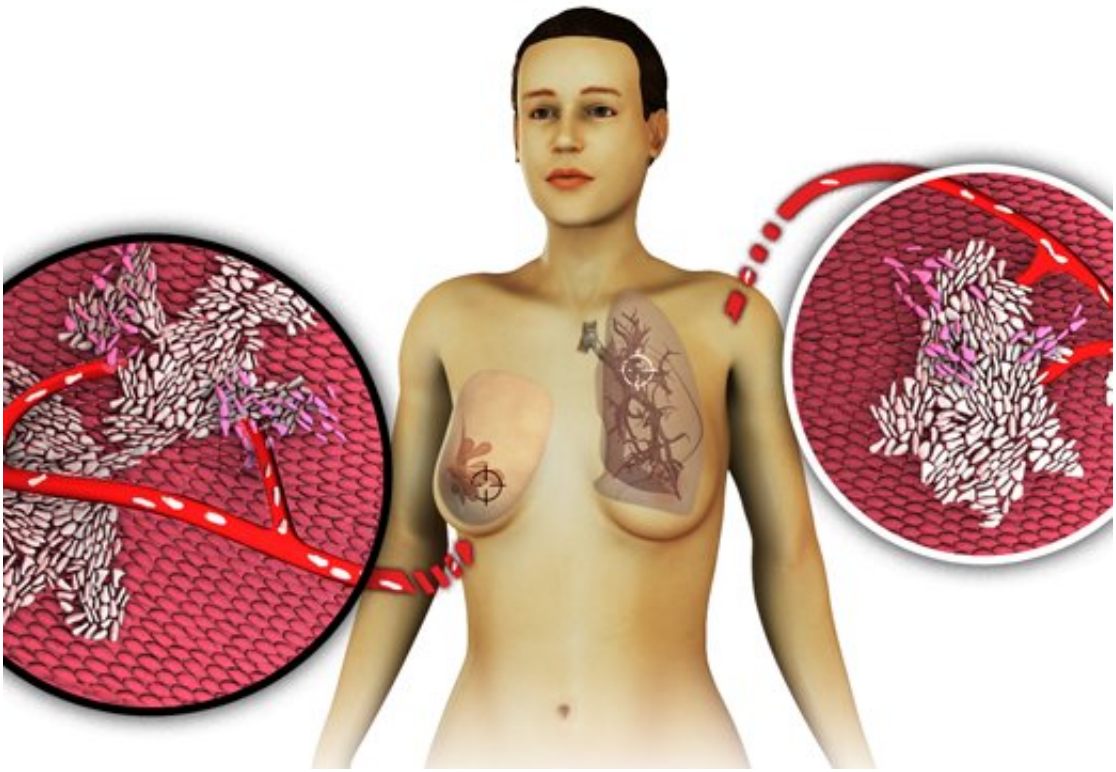
Physicians currently have no tools to help them detect breast cancer patients who will suffer metastasis, a process that occurs in 15 to 20 percent of cases. In particular, they are unable to identify those patients that may benefit from metastasis-specific treatments such as zoledronic acid.

A study led by Professor Robert E. Coleman at the University of Sheffield, and ICREA researcher Roger Gomis at the Institute for Research in Biomedicine has uncovered MAF amplification as an approach that allows the identification of breast cancer patients who would benefit from the use of zoledronic acid in the adjuvant setting (MAF negative) from those that may be harmed by the treatment (MAF positive and non postmenopausal). Their results have been published in *Lancet Oncology*.

Bone metastasis is the only type of metastasis that can be controlled, though not cured, by drugs. Treatment is only administered once the metastasis has been identified, which is normally too late. Preliminary studies indicate that the same drugs used to treat metastasis could also be used to prevent it, and identifying those patients who would benefit is therefore very important. "This is where the discovery validated by the current study could be of great use to clinicians and would avoid unnecessary treatment of patients who would not benefit or could be harmed by the treatment," says Prof. Gomis.

About 1 million new cases of breast cancer are diagnosed each year.

Preventive treatments can have unwanted side effects and are expensive, making broad administration of the drugs an unviable option—even less so, considering that 4 percent of patients are likely to be harmed by the treatment. "In order to implement a companion diagnostic, we first need to know which patients may benefit and which ones will not. Our discovery offers a way to distinguish what wasn't possible before," confirms Prof Gomis.



Breast cancer metastasis to the lung. Credit: R Gomis laboratory, IRB Barcelona

MAF stratifies zoledronic acid treatment in breast cancer patients

This study focuses on the association between treatment benefit, MAF amplification and outcome. In MAF-negative patients, the inclusion of

zoledronic acid in the adjuvant setting was associated with improved outcomes irrespective of menopausal status. In contrast, in non-postmenopausal MAF-positive patients at the start of the treatment, increased adverse outcomes and mortality were observed. Assessment of MAF status has the potential to become an objective approach to select breast cancer patients for the inclusion of adjuvant bisphosphonate (i.e. zoledronic acid) treatment.

Dr. Joan Albanell, head of Medical Oncology at Hospital del Mar, says: "The present study provides novel evidence to support MAF as the first clinically actionable predictive biomarker to select patients with early breast cancer for adjuvant zoledronic acid. If the results are confirmed in an independent ongoing study, MAF should be incorporated for routine testing in early breast cancer and would have an impact in the life of thousands of patients that would benefit from a personalized selection."

Additional clinical trial underway

Confirming this finding in an independent trial is the next step. If confirmed, it could modify the standard of care of early-stage breast cancer and improve the quality of life of these patients. "This is exactly what we are currently doing. Inbiomotion has now delivered the technology and has begun the second prospective /retrospective clinical trial to validate the marker in early-stage breast cancer patients," explains the Prof Gomis.

Provided by Institute for Research in Biomedicine (IRB Barcelona)