

Spanish researchers patent new methods that allow to identify the cells causing metastasis in cancer

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Researchers have patented a new method that identifies the cells causing metastasis in cancer, with a simple blood analysis.

This research, first of its kind in the world, has been presented on the occasion of World Cancer Day, and opens the gate to the development of new anti-tumoral drugs and more personalized treatments against this disease.

During the presentation, José Antonio Lorente Acosta, GENYO scientific manager and lead researcher of the Group of Liquid Biopsy and Metastasis, stressed the clinical significance that monitoring the metastatic process in cancer has.

"More than 80 percent of cancer-related deaths are due to metastasis, not the primary tumor. That's why precisely understanding how this mechanism works is fundamental for developing new, more efficient drugs against it", the UGR professor says.

The most complete radiography of Circulating Tumor Cells (CTCs)

GENYO researchers Juan José Díaz Mochón and María José Serrano Fernández have explained that the new, patented markers "identify, for the first time, all of the existing CTCs sub-populations, the cells responsible for the metastatic process, in which they travel through the blood and the lymphatic system and colonize organs far from the primary tumor."

GENYO researchers have made the most complete radiography of CTCs to date, "with which we can make a diagnosis and prognosis of the cancer with just a blood analysis, and which will allow us to monitor, in real time, both the efficacy of the treatments and the occurrence of metastasis, even when the primary tumor has already been removed."

The authors of this research, which include oncologists José Luis García

Puche and José Expósito Hernández, stated that "nowadays, there are few studies that analyze this 'valley of the death' that spans from the origination of the [primary tumor](#) to the metastatic process in another organ due to the action of the CTCs. That's why it's mandatory to further study how these tumor cells work and to establish therapeutic targets against them".

On liquid biopsy

The concept of liquid biopsy has been recently introduced in the biomedical context for the personalized monitoring of cancer patients. According to the researchers at GENYO, "the main goal of [liquid biopsy](#) is the detection of the potential virulence of the disease with just a [blood analysis](#) and, based on the biological markers found in the test, decide what treatment could be the most effective for each patient."

These personalized tests make it possible to obtain biological information about the tumor in cases in which a solid biopsy is not possible, as is the case of patients with metastatic lung cancer. Moreover, they give us vital information, complementary to that obtained by solid biopsies, given that liquid biopsies allow to detect if the therapeutic targets identified keep constant throughout time.

"This information is vital, as [cancer](#) is not a stable disease: Tumor cells are capable of changing their genetic characteristics throughout the tumoral process," professor Lorente said.

Therefore, the importance of liquid biopsies lies in the nature of the disease, which implies genetic changes in [tumor cells](#), which additionally allow said cells to avoid the influence of both the immune system and the treatment given to the patient.

The application of these tests in the clinical practice is an unavoidable

necessity which offers access not only to the establishment of more personalized treatments, but also to a reduction in health spending. This could be possible thanks to earlier identification of the response to the treatment, thus avoiding over-treatment and the high toxicity associated with these therapies.

More information: Francisco G. Ortega et al. miRNA in situ hybridization in circulating tumor cells - MishCTC, *Scientific Reports* (2015). [DOI: 10.1038/srep09207](https://doi.org/10.1038/srep09207)

Serrano, MJ et al. EMT and EGFR in CTCs cytokeratin negative non-metastatic breast cancer *Oncotarget*, 5(17), 7486-7497. EP13382436.7

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