Hospital del Mar Research Institute Barcelona

NOTA DE PREMSA

Researchers identify a key mechanism that promotes colorectal cancer metastasis

- ***The absence of a protein, the kinase IKKα, enables tumor cells to cluster and survive during dissemination***
- ***The findings, published in Nature Communications, open the door to new prognostic markers and potential therapeutic strategies.***
- ***Targeting tumor cell adhesion impairs their ability to migrate and form metastases. The study was conducted using a preclinical mouse model***

Barcelona, March 13th, 2026 – A team led by researchers from the Hospital del Mar Research Institute (HMRIB) and the Pathology Department at Hospital del Mar has identified a mechanism that may explain how colorectal cancer develops liver metastases. The results, published in Nature Communications, reveal the unexpected role of the **protein IKKα** in the process that allows tumor cells to cluster, migrate, and re-establish tumors at distant sites.

L'estudi mostra que l'èxit de la migració del tumor del còlon al fetge es basa en el fet que les **cèl·lules tumorals s'agrupin** per sobreviure al procés. En cas de fer-ho de forma individual, les cèl·lules que arriben al torrent sanguini són eliminades pel sistema immunitari. I aquí destaca el paper de *IKKα*. En la seva absència, les cèl·lules tumorals es poden agrupar i sobreviure a la migració. ***"Quan no hi ha IKKα aquestes unions són més potents i les cèl·lules formen grups molt més eficients a l'hora de fer metàstasi"***, explica el Dr. Lluís Espinosa, autor principal de l'estudi i investigador del Grup de Recerca en Mecanismes Moleculars del Càncer i de les Cèl·lules Mare de l'HMRIB.

The study shows that successful migration of colorectal tumors to the liver depends on the ability of **tumor cells to cluster** in order to survive the dissemination process. When circulating individually, tumor cells that reach the bloodstream are eliminated by the immune system. This is where IKKα plays a key role. In its absence, tumor cells are able to cluster and survive migration. "**When IKKα is absent, these cell–cell interactions become stronger and the cells form much more efficient clusters for generating metastases,"** explains Dr. Lluís Espinosa, senior author of the study and Group Leader of the Molecular Mechanisms of Cancer and Stemness Research Group at HMRIB.

A potential new prognostic factor

The study was conducted using organoids derived from colorectal cancer patient cells in which the IKKα kinase had been removed. Subsequently, in preclinical mouse models, the researchers demonstrated that "**there is a specific subpopulation of tumor cells, characterized by particularly robust cell junctions, that is responsible for generating liver metastases**," notes Dr. Espinosa. This cell population was clearly enriched in the absence of IKKα, which explains why tumors deficient in this protein exhibited greater metastatic capacity. Paradoxically, although

this protein had previously been described as a tumor promoter in other contexts, the new study reveals that it may also act as a metastasis suppressor in colorectal cancer.

The researchers also showed that inhibiting certain proteins involved in these cell junctions, such as claudin-2, significantly reduces the tumor cells' ability to produce metastases.

The work is now continuing with patient samples, where the team aims to replicate the results obtained. The researchers hope that their findings will lead in the near future to prognostic markers for colorectal cancer patients and potentially to new approaches to treat metastasis. **"We hope that our results will help identify patients at higher risk of developing metastases and, eventually, open the door to new therapeutic strategies aimed at preventing them**," explains Lluís Espinosa.

The study involved collaboration with the Bellvitge Biomedical Research Institute (IDIBELL), University College Dublin (Ireland), and researchers from the CIBER Cancer Area (CIBERONC).

Reference article

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More information

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