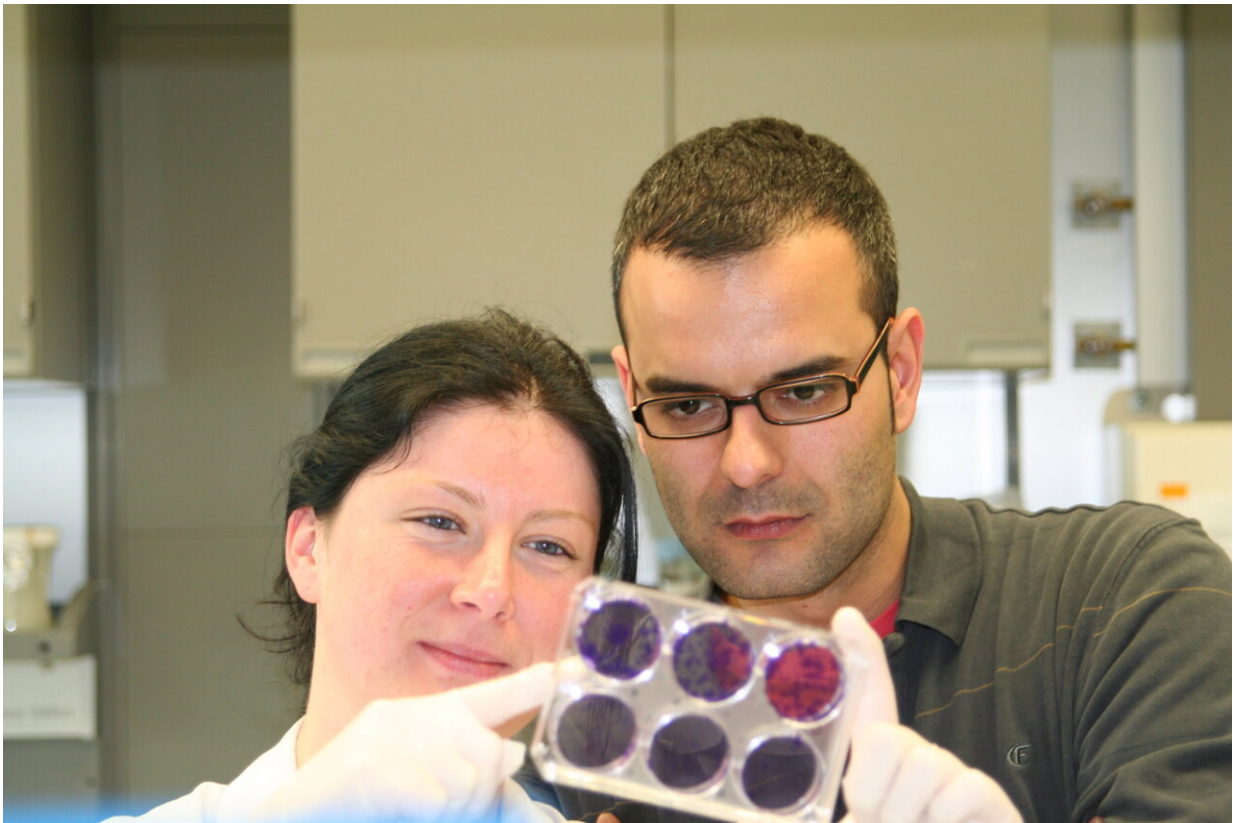


Researchers discover link between dietary fat and the spread of cancer

November 10 2021



Professor Salvador Aznar-Benitah. Credit: Worldwide Cancer Research

The study, published in the journal *Nature* and part-funded by the UK charity Worldwide Cancer Research, uncovers how palmitic acid alters the cancer genome, increasing the likelihood the cancer will spread. The

researchers have started developing therapies that interrupt this process and say a clinical trial could start in the next couple of years.

Metastasis—or the spread—of [cancer](#) remains the main cause of death in cancer patients and the vast majority of people with metastatic cancer can only be treated, but not cured. Fatty acids are the building blocks of fat in our body and the food we eat. Metastasis is promoted by [fatty acids](#) in our diet, but it has been unclear how this works and whether all fatty acids contribute to metastasis.

Newly published findings, led by researchers at IRB Barcelona, Spain, reveal that one such fatty acid commonly found in palm oil, called palmitic acid, promotes metastasis in oral carcinomas and melanoma skin cancer in mice. Other fatty acids called [oleic acid](#) and linoleic acid—omega-9 and omega-6 fats found in foods such as olive oil and flaxseeds—did not show the same effect. Neither of the fatty acids tested increased the risk of developing cancer in the first place.

The research found that when palmitic acid was supplemented into the diet of mice, it not only contributed to metastasis, but also exerts long-term effects on the genome. Cancer cells that had only been exposed to palmitic acid in the diet for a short period of time remained highly metastatic even when the palmitic acid had been removed from the diet.

The researchers discovered that this "memory" is caused by epigenetic changes—changes to how our genes function. The epigenetic changes alter the function of metastatic [cancer cells](#) and allow them to form a neural network around the tumor to communicate with cells in their immediate environment and to spread more easily. By understanding the nature of this communication, the researchers uncovered a way to block it and are now in the process of planning a clinical trial to stop metastasis in different types of cancer.

The drugs that are in development for the clinical trial are antibodies being developed by ONA Therapeutics, a start-up co-founded by senior author of the study Professor Salvador Aznar-Benitah, ICREA researcher and head of the Stem Cells and Cancer lab at the Institute for Research in Biomedicine (IRB Barcelona). The company recently secured 30million Euro from private investors to develop this first-in-class treatment of metastatic cancer. The researchers hope the trial is on track to start in the next couple of years to test their new antibody in several different types of cancer.

Professor Salvador Aznar-Benitah, Senior Group Leader at IRB Barcelona and ICREA research professor, and senior author of the paper, said: "I think it is too early to determine which type of diet could be consumed by patients with metastatic cancer that would slow down the metastatic process. That said, based on our results one would think that a diet poor in [palmitic acid](#) could be effective in slowing down the metastatic process, but much more work is needed to determine this.

"We are not concentrating on this direction of research; instead, we are focusing on new potential therapeutic targets that we could inhibit and that could have a real therapeutic benefit for the patient irrespective of their diet.

"If things keep on going as planned, we could start the first clinical trial in a couple of years. I am very excited about this and we are investing a lot of effort to generate the best possible therapy that [cancer patients](#) will hopefully be able to benefit from in the nearby future."

Dr. Helen Rippon, Chief Executive at Worldwide Cancer Research said: "This discovery is a huge breakthrough in our understanding of how [diet](#) and cancer are linked and, perhaps more importantly, how we can use this knowledge to start new cures for cancer.

"Metastasis is estimated to be responsible for 90% of all cancer deaths—that's around 9 million deaths per year globally. Learning more about what makes cancer spread and—importantly—how to stop it is the way forward to reduce these numbers.

"Discovery research like this is incredibly exciting because it marks the beginning of a journey that will ultimately lead to more lives saved and more time spent with loved ones. We are all very excited to see the results from this clinical trial and the future impact these findings might have on people with [metastatic cancer](#)."

More information: Salvador Benitah, Dietary palmitic acid promotes a prometastatic memory via Schwann cells, *Nature* (2021). [DOI: 10.1038/s41586-021-04075-0](#).
www.nature.com/articles/s41586-021-04075-0

Provided by Worldwide Cancer Research

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