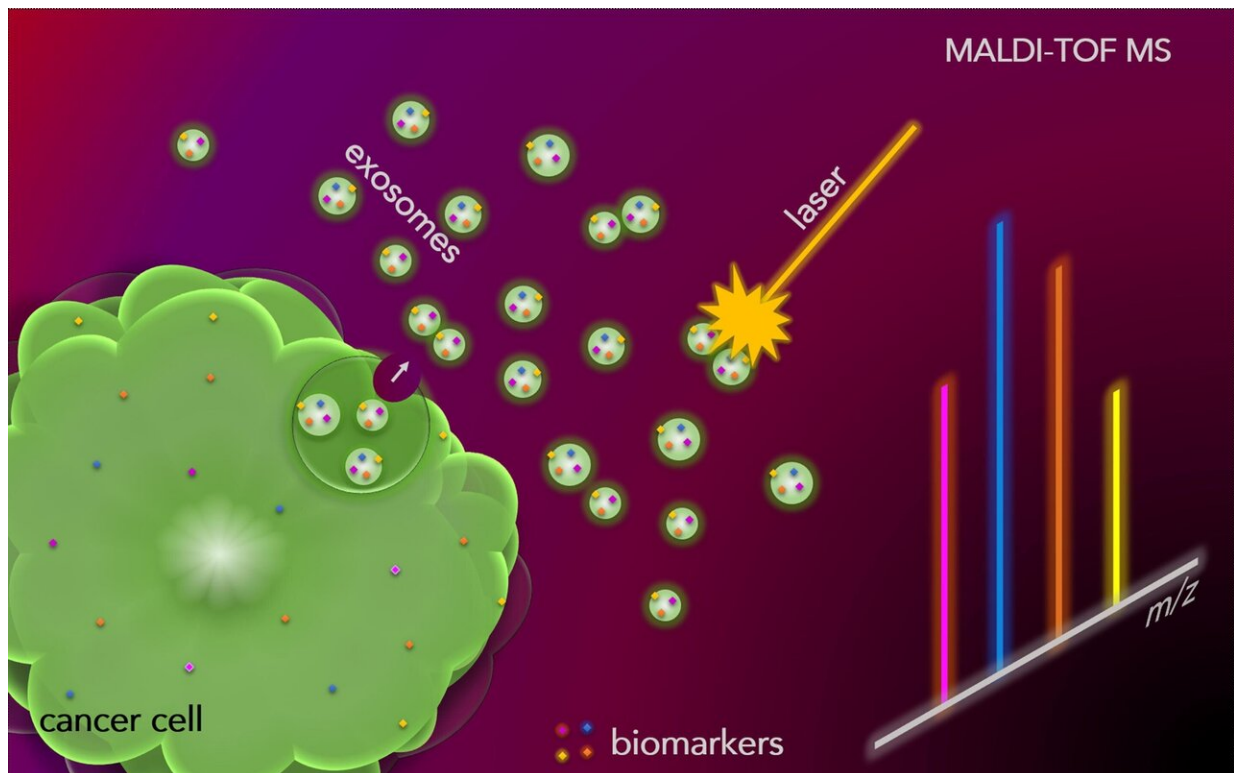


# Cancer cells can communicate over longer distances within the body

May 10 2019, by Sandy Evangelista



Credit: Ecole Polytechnique Federale de Lausanne

EPFL researchers have discovered that cancer cells use exosomes to communicate with each other and send information through the bloodstream. This breakthrough opens up new possibilities for the use of cancer immunotherapy techniques.

"It was a huge surprise, we didn't expect to find so many melanoma [cancer](#) cell markers in blood exosomes," explains Hubert Girault, who heads up the Laboratory of Physical and Analytical Electrochemistry at EPFL Valais Wallis. Professor Girault and his team made the discovery almost by accident. Their findings, which have been published in the journal *Chem*, offer insight into how cancer cells communicate with each other and send information around the body.

All biological cells excrete exosomes, microscopic spheres or vesicles that are less than 100 nanometers in size and contain a wealth of information in the form of nucleic acids, proteins and markers. Exosomes perform cell-to-cell signaling, conveying information between cells. Under the supervision of Senior Scientist Dr. Horst Pick, EPFL doctoral assistant Yingdi Zhu used cell culture and [mass spectrometry](#) to isolate melanoma cancer cell exosomes. She was able to identify cancer cell markers in exosomes for each stage of melanoma growth.

When analyzing the blood exosomes of melanoma patients, the researchers were surprised to discover large quantities of cancer cell markers. The blood collects and transports all the exosomes that the body generates. While healthy cells usually produce exosomes in small quantities, cancer cells produce many more. But it was previously thought that these would be so diluted in the blood that they would be hard to detect. For Professor Girault, the discovery of large quantities of cancer cell markers in blood exosomes raises numerous questions about signaling between cancer [cells](#), which until now were not thought to communicate over longer distances within the body.

## Indicating the stage of a tumor

This intercellular communication is thought to facilitate the spread of [cancer cells](#) by preparing tissue for metastasis. Professor Girault's team also found that the markers offer an indication of how developed the

tumor is. Being able to identify these markers means that a simple [blood](#) test, rather than a biopsy, could provide information about the presence of a tumor and its stage and perhaps even be used to predict therapeutic responses. This would help to speed up the diagnostic process. At the Ludwig Institute for Cancer Research at UNIL/Department of Oncology UNIL CHUV, Dr. Ping-Chih Ho is exploring the [exosome](#) trail in order to develop new approaches to vaccine design and cancer immunotherapy. He was also very surprised by the findings: "I didn't think it would be possible to use exosomes to detect melanoma incidence so accurately. This breakthrough opens up new possibilities for the use of the cancer immunotherapy technique that I'm currently developing with Professor Girault."

Provided by Ecole Polytechnique Federale de Lausanne

Citation: Cancer cells can communicate over longer distances within the body (2019, May 10) retrieved 9 April 2024 from

<https://phys.org/news/2019-05-cancer-cells-longer-distances-body.html>

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