

Video: Finding the key to cancer metastasis

2 October 2015, by Judy Fortin

The capacity of cancer cells to spread throughout the body and invade new tissues — to become metastatic — makes them deadly. What makes metastatic cells different?

Provided by Emory University

Scientists at Winship Cancer Institute of Emory University have developed a technique for isolating [individual cells](#) displaying metastatic behavior out of a large group in culture.

The idea of precision medicine is based on the observation that [cancer cells](#) in two different people may respond differently to treatment, based on the mutations that drive the cells' growth, even though they may come from the same organ and even look similar under the microscope.

Winship researchers are extending that concept to highlight how even in a single tumor, not all the cells are the same. Some may divide or migrate faster than others. A few cells might survive chemotherapy that kills the rest.

The isolation technique developed by cell biologist Adam Marcus and graduate student Jessica Konen seeks to probe these differences in cellular behavior. In the accompanying video, Marcus and Konen explain how they came up with the combination of labeling one or a few cells in culture, by changing them from fluorescent green to fluorescent red, and sorting out the labeled cells. The technique allows them to ask and answer questions such as:

Is the property of migrating faster (being a "leader cell") long-lasting and stable?

And, is that property connected with changes in the cell's DNA? Do leader cells and follower [cells](#) need each other to cause [metastatic disease](#)?

This approach is expected to yield new insights into cancer cell biology, which may lead to new treatments that hamper metastasis.

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