Chasing invasive cancer cells with a laser

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What makes invasive cancer cells behave differently than the other cells in the tumor from which they arise? Let's turn them red with a laser and find out.

That's the experimental approach taken by scientists from Winship Cancer Institute of Emory University who will present their work on Sunday, December 13, 2015 at the American Society for Cell Biology meeting at San Diego Convention Center.

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.

Cell biologist Adam Marcus and graduate student Jessica Konen 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.

In the accompanying video (see below), Marcus and Konen explain how they came up with the combination of labeling a few lung cancer cells in culture, by changing them from fluorescent green to fluorescent red, and sorting out the labeled cells. The technique, which the researchers call spatiotemporal genomic analysis or SAGA, seeks to probe differences in cellular behavior.

This technique allows scientists to ask and answer questions such as: Is

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

This November, a video featuring Marcus and Konen won first prize in the 2015 GRAND Basic Research video contest sponsored by the Association of American Medical Colleges.

Konen's presentation is scheduled for Minisymposium 1: Cell Migration in Tissues, 4 pm to 6:25 pm PST, Ballroom 20D.

More information: ascb.org/files/2015ASCBOralAbstracts.pdf [To find Konen and Marcus' abstract, search for SAGA]

Provided by Emory University