

Now playing -- Cell migration LIVE!

June 8 2007

Johns Hopkins researchers have found a way to directly observe cell migration -- in real time and in living tissue. In a report in the June 5 issue of *Developmental Cell*, the scientists say their advance could lead to strategies for controlling both normal growth and the spread of cancer, processes that depend on the programmed, organized movement of cells across space.

"The stars of our live show are a cluster of fruit fly cells that literally crawl across the length of an egg chamber while it is maturing," says Denise Montell, Ph.D., professor of Biological Chemistry and director of the Center for Cell Dynamics. "What these border cells are doing resembles what cancer cells do when they migrate from the main growth to other tissues."

The historic problem, Montell says, is that it's been impossible to watch this process inside the ovarian tissue –no microscope can do that – and worse, the cells stop moving if they're outside the ovaries. In a years-long effort, Montell and her team figured out just what to feed these cells to keep them alive and doing their thing without their ovarian homes.

"We were stuck having to watch this through a series of still pictures and losing a lot of the story, "Montell says. "Now with real-time movies, we're deciphering the nuances behind organized cell movement that should offer opportunities for hopefully regulating the process."

Among the nuances identified is that just like migrating geese or a pack of bicyclists, individual border cells in the cluster each take turns as the



"leader" during their journey across the egg chamber. Another discovery is that a protein called Kuzbanian is necessary to help border cells detach from the egg wall and begin their journey. "We used to think that Kuzbanian allowed border cells to squeeze themselves between other cells as they moved," Montell says, "but only now do we understand the real reason cells couldn't move. We can see them valiantly trying to detach from the wall but unable to pull away."

Montell and her team tediously worked out a recipe for a liquid culture medium that gave the fly eggs the ability to grow outside ovaries. The list of ingredients included acidity, and a little bit of insulin.

Because many border cell proteins in flies have counterparts in humans, Montell's studies should translate to a better understanding of clinically useful cell migrations, such as when immune cells move en masse to an open wound or cancer cells detach from a tumor to metastasize.

Source: Johns Hopkins Medical Institutions

Citation: Now playing -- Cell migration LIVE! (2007, June 8) retrieved 5 May 2024 from <u>https://medicalxpress.com/news/2007-06-cell-migration.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.