

Description of videos

Movie 1: EB-3 Microtubules

About the movie

This movie shows dynamics of a protein called End-binding protein 3, EB3. It is found on the ends of microtubules, part of the cells protein cytoskeleton network. This is in a HCT-116, a human cell originally derived from a human colorectal tumor but now widely used as a model for normal cell function. The footage was acquired at Applied Precision's HQ in Issaquah, Washington using samples provided by Linda Wordeman from the University of Washington.

What area of research is it related to?

Linda Wordeman's lab is interested in the dynamics of microtubules and motor proteins as they perform a wide variety of critical functions within the cells. Not only do microtubules provide structural support for the cell, they are critical for movement of the whole cell and materials within the cell itself. They are highly dynamic structures constantly growing, shrinking and changing direction. They also play a pivotal role in cell division and growth and it is the uncontrolled replication and growth of cells that leads to cancer.

Are the cells we can see related to a particular disease or condition?

Not specifically. The cell line is derived from human colorectal tumour cells but it largely serves as a model system for normal cell function. However by treating these cells with various drugs that effect the behaviour of the microtubules the researchers can determine potentially effective methods for disrupting a cancer cell's ability to replicate, and use this information to inform the design of new potential cancer treatments.

Movie 2: *Drosophila* Macrophages JupiterGFP

About the movie

This movie is from the macrophage of the fruit fly *Drosophila melanogaster*. *Drosophila* is one of the primary model organisms used by researchers for biological research and genetic studies. In this case these fruit flies have been genetically modified to make a naturally fluorescent protein fused to another protein called Jupiter. Jupiter protein is shown binding to microtubules in macrophages which is a cell that forms part of the flies immune system from the fruit flies. The footage was created using material provided by Professor Ilan Davis at Oxford University in Oxford, England.

Are the cells we can see related to a particular disease or condition?

Not in this case, but we show them because they're important proteins in understanding both the normal processes and how disruption of these processes that can ultimately lead to diseases such as cancers.

Movie 3: *Drosophila* Macrophages JupiterGFP+Red beads.

About the movie

This movie is from the macrophage of the fruit fly *Drosophila melanogaster*. *Drosophila* is one of the primary model organisms used by researchers for biological research and genetic studies. In this case these fruit flies have been genetically modified to make a naturally fluorescent protein fused to another protein called Jupiter. Jupiter protein is shown binding to microtubules in macrophages from the fruit flies. In this case the cells have also taken up red fluorescent beads. These beads are trapped in internal compartments known as vesicles and can be seen moving along the microtubule network. The footage was created using material provided by Professor Ilan Davis at Oxford University in Oxford, England.

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