Video captures cellular 'workhorses' in action

April 28 2011

Scientists at Yale University and in Grenoble France have succeeded in creating a movie showing the breakup of actin filaments, the thread-like structures inside cells that are crucial to their movement, maintenance and division.

Actin filaments are the muscular workhorses of our cells — pushing on membranes to move cells to the proper location within tissues and applying pressure within the interior to keep all working parts of the cell where they need to be. These filaments do their jobs through a mysterious process of continual splitting and reassembly.

Actin filaments are assembled and disassembled in a complex series of molecular events, known to be influenced by the protein cofilin. However, it was not known exactly where these breaks occur along the filaments, made up of actins monomer, which are as strong as commercial plastic.

Enrique De La Cruz, associate professor of molecular biophysics and biochemistry at Yale, and his French colleagues used fluorescent stains of cofilin which enabled them to create movies of this molecular disassembly. They used technology called total internal reflection fluorescence microscopy peer into the inner workings of the cell.

More information: The work is published in the April 28 issue of *Current Biology*.

Provided by Yale University