Big size multitouch display turned into a microscope (w/ video)

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The multitouch microscope integrates two Finnish innovations and brings new dimensions into teaching and research.

Researchers at the Institute for Molecular Medicine Finland (FIMM) have in collaboration with the Finnish company Multitouch Ltd created a hand and finger gesture controlled microscope. The method is a combination of two technologies: web-based virtual microscopy and a giant-size multitouch display.

The result is an entirely new way of performing microscopy: by touching a table- or even wall-sized screen the user can navigate and zoom within a microscope sample in the same way as in a conventional microscope. Using the touch control it is possible to move from the natural size of the sample to a 1000-fold magnification, at which cells and even subcellular details can be seen.

"The giant size, minimum 46" screen looks somewhat like an iPad on steroids," says researcher Johan Lundin, one of the creators of the method.

Biological samples are digitized using a microscopy scanner and stored on an image server. Samples displayed on the screen are then continuously read from the server over the internet and the size of a single sample can be up to 200 gigabytes

"The sample viewing experience is like a combination of Google Map

and the user interface from the movie Minority Report," Lundin describes.

The developers think that the method will revolutionize microscopy teaching: a group of students can stand around the display together with the teacher and examine the same sample. The multitouch microscope can recognize the hands of multiple users at the same time.

"The multitouch microscope brings a new dimension into interactive teaching and the learning curve is practically zero as compared to conventional microscopy which can be quite challenging for students," Lundin says.

Web-based virtual microscopy – the WebMicroscope – was developed a few years ago by researchers at the universities of Helsinki and Tampere and has been well received among students. The multitouch microscope builds upon this technology and makes it even more useful for teaching.

"At scientific meetings this technology is excellent in a situation where a group of users need to simultaneously view a microscopy sample, for example when a consensus needs to be reached concerning a new disease entity or a rare case," Lundin explains.

Provided by University of Helsinki