



## BIG SIZE MULTITOUCH DISPLAY TURNED INTO A MICROSCOPE

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 between 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 a remote image 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 all can 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 webmicroscopy technology and makes it even more useful within 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.

### **Additional information:**

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**Video:**

[www.youtube.com/user/multitouchfi?feature=mhum#p/a/u/1/ihaM3DvyUHE](http://www.youtube.com/user/multitouchfi?feature=mhum#p/a/u/1/ihaM3DvyUHE)

**Press photos:**

[multitouch.fi/about-2/photos/](http://multitouch.fi/about-2/photos/)

**Background Information**

**Virtual and web microscopy:**

In virtual microscopy a digital copy of a sample on a glass slide is created. A virtual slide can consist of up to 50 000 separate digital images aligned into a mosaic representing the whole sample at high magnification. The image mosaic can be viewed over the internet using a common web browser and the user can select any area or magnification as in conventional microscopy. The WebMicroscope is used at more than ten universities in Finland and other European countries, and in addition in many countries for laboratory quality assurance. [www.webmicroscope.net](http://www.webmicroscope.net).

Additional information on webmicroscopy: Researcher Mikael Lundin, e-mail: [mikael.lundin@helsinki.fi](mailto:mikael.lundin@helsinki.fi)

**About MultiTouch Ltd.**

MultiTouch Ltd. provides professional multitouch displays and software platforms. Displays are modular Full HD LCDs, stackable into any size table or wall and support multiuser environments. Software provides unlimited touch points, hand recognition, and object recognition on Windows, Linux and OS X. MultiTouch products are currently in use in more than 40 countries around the world. The products are used for retail, exhibitions, marketing, museums, education, design, medical and military use. The company is headquartered in Helsinki, Finland, with U.S. offices in Santa Clara, California and New York City.

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**Institute for Molecular Medicine Finland (FIMM)**

The Institute for Molecular Medicine Finland FIMM is an international research institute focusing on building a bridge from discovery to medical applications. FIMM is part of the Nordic EMBL Partnership for Molecular Medicine, together with the European Molecular Biology Laboratory (EMBL), the Centre for Molecular Medicine Norway (NCMM, University of Oslo) and the Laboratory for Molecular Infection Medicine Sweden (MIMS, Umeå University). At the national level FIMM is a joint research institute of the University of Helsinki, the Hospital District of Helsinki and Uusimaa (HUS), the National Institute for Health and Welfare (THL) and the VTT Technical Research Centre of Finland.

FIMM investigates molecular mechanisms of disease using genomics and medical systems biology in order to promote human health. FIMM is a multi-disciplinary institute combining high-quality science with unique patient materials, and state-of-the-art technologies. [www.fimm.fi](http://www.fimm.fi)