

# A microscope that sees live cells in 3D

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EPFL spin-off Nanolive has launched the 3D Cell Explorer, a microscope for observing living cells in 3D. This new tool could be a real boon for researchers in such areas as infertility.

On December 14, Nanolive will launch a new type of [microscope](#). For the first time, this new tool will allow researchers to peer inside [living cells](#) without damaging them – i.e. without having to prepare the sample in advance or stain them. The company will launch its new microscope on Monday at the world's largest cellular biology conference that will be held in San Diego, in the United States.

3D Cell Explorer is a new type of microscope that will add another dimension to our understanding of how [cells](#) work. Thanks to its specially designed software, users can tint various parts of a living cell and observe the cell's behavior and reactions in real time at a resolution of 200 nanometers. That's three times smaller than what current microscopes offer. The device works like an MRI scanner: it takes images at different depths in the cell, which it then reassembles using its smart holographic software which can tint any part of the scanned cell based on its refractive index.

## Medically assisted procreation

The success rate of medically assisted procreation is currently around 30%. This rate could improve with this new microscope. These days, the only way to observe spermatozoids and eggs with the same resolution is to stain them, and that kills the cells. So it is impossible to know what

would have happened if these cells had been put into contact. The new microscope could offer promising prospects because it makes it possible to observe the various parts of the ovules and spermatozoids in detail before, during and after they come together. This type of longitudinal study could also be useful in other fields of research, including research on cancer, stem cells, cell therapy and histopathology.

Nanolive was launched two years ago on the basis of a technology developed by its founder, Yann Cotte, during his doctoral studies at EPFL. Since then, the company has grown with the help of some start-up funds and crowdfunding. Among the first customers for the microscope will be Universities and biotech, medtech, pharmaceutical and cosmetics companies.

Nanolive is also developing applications for use by doctors, and these are expected to hit the market in the medium term. A number of laboratory tests, such as the smear test for uterine cancer, could be considerably sped up if they were conducted in the doctor's office with this microscope. "The human body contains 210 types of cells that differ in the structure of the cell envelope and their morphology," said Lisa Pollaro, who is in charge of communications at Nanolive. "Our microscope can distinguish between all these features."

Provided by Ecole Polytechnique Federale de Lausanne

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