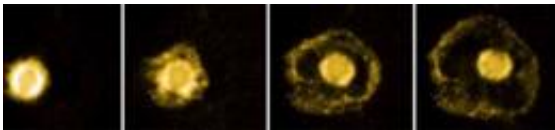


# Team develops new method for filming the release of medicine inside cells

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Researchers at the University of Twente (The Netherlands) have developed a method to allow them to watch close-up how medicines are released in cells and to monitor their absorption at the level of individual cells. The method makes use of the fastest camera in the world, which can film at a rate of 25 million images per second. This new method is an important step forward for research into how medicines could be directed to a specific part of the body using microscopic bubbles.

There are various ways in which medicine can be taken – orally, in an injection or through a drip, for example. In all these methods, it is the blood that takes the medicine to its ultimate destination – such as the site of an infection or tumour. But of course, the blood takes the medicine all around the body indiscriminately, which can actually lead to damage elsewhere. The drugs used in chemotherapy, for example, attack both healthy [cells](#) and tumour cells.

So the University of Twente has been working on new methods for

targeting medicines on very specific sites in the body. One of these methods involves using [microscopic bubbles](#) containing medicine. When these bubbles are injected into the patient's bloodstream, they can be activated using ultrasound when they reach a specific part of the body (such as the site of a tumour). The vibrations cause the bubbles to release the medicine, which can also be absorbed more easily by the cells because the bubbles can actually pass through tiny holes in the cell walls.

This method of administering medicine has considerable potential, but more research is still required. One limiting factor has been that – until now – it was not possible to see how medicines were being absorbed, simply because the whole process happened too quickly and the bubbles were too small to see using normal microscopes. This is why researchers of the University of Twente's Physics of Fluids research group, together with researchers from the Erasmus MC, set out to develop a new method for viewing the [absorption](#) of medicines at the cellular level. The [method](#), which has been dubbed 'ultra-high-speed fluorescence microscopy', makes use of the Brandaris 128 camera – which was also developed at Twente. The camera can film at a speed of at least 25 million [images](#) per second, making it the fastest camera in the world. Various other clever adaptations have made this not only the fastest camera in the world, but also one of the most sensitive of its kind.

**More information:** Erik Gelderblom of the Faculty of Science and Technology defended his PhD thesis on this subject on Friday 20 April.

Provided by University of Twente

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