

# Microscopes at microscopic size

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Traditionally if scientists wanted to look at something small they would put a sample under a microscope but now researchers have managed to shrink the [microscope](#) itself to the size of a single human cell. An interdisciplinary research team, funded by the Biotechnology and Biological Science Research Council (BBSRC) and the Engineering and Physical Sciences Research Council (EPSRC) have developed optical biochips no larger than a single cell that could lead to faster development of new drugs and quicker medical tests.

The research team moved away from the idea that a microscope is something you have to look through to create optical biochips onto which scientists can place biological samples. Special fluorescent chemicals are then used together with tiny light emitting lasers to allow the scientists to analyse the cells or targets within the cells. Researchers can use this capability to examine cellular conditions for certain diseases or to develop new treatments by studying the way cells react to a drug.

The biochips also raise the possibility of a micro-laboratory, the size of a credit card, which would be able to perform medical diagnostics, improving patient treatment by reducing the number of hospital visits needed for tests.

The initial research has led to the creation of a spin-out company, BioStatus Ltd, supported by a BBSRC Small Business Research Initiative grant. BioStatus has developed the research to refine the fluorescent probe technology and also to make the analysis of biological samples more sophisticated.

Professor Paul Smith, the research group leader, said, "Our research and the outcomes from the spin-out company could help to revolutionise how we examine biological samples. Our next step will be to develop simple, small diagnostic devices. Future generations may be able to use these as the basis for hand-held systems that will be able to perform diagnostic functions in the field that currently require a laboratory test."

Professor Julia Goodfellow, Chief Executive of BBSRC, said, "The success of the research into biochips and the development of the science through the spin-out company shows how cutting edge research in the biosciences can meet real world challenges. Biochips have the potential to make a real difference in medical diagnostics and drug development."

The research is being carried out at the Wales College of Medicine and involves researchers at Cardiff University, University of Bangor, the Gray Cancer Institute in London and collaboration with the University of Warwick and laboratories in the United States.

Source: Biotechnology and Biological Sciences Research Council

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