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Research Journal Highlights

On the outside, looking in

Nature Nanotechnology, December 19, 2011

A combination of a silicon nanowire and a silicon dioxide nanotube that can be used to measure the electrical activity inside a cell is reported online this week in *Nature Nanotechnology*. Charles Lieber and co-workers joined a nanotube and the nanowire together to form a T-shaped structure. The hollow nanotube was able to penetrate the membranes of a cell, thus bringing the fluid inside the cell (the cytosol) into contact with the nanowire. A voltage was then applied across the nanowire, which allowed it to operate as a field-effect transistor (FET) and detect electrical signals inside the cell. The researchers use the device, which is called a branched intracellular nanotube-FET (BIT-FET), to record intracellular signals in embryonic chicken cardiomyocyte cells. BIT-FETs can be made much smaller than the micropipettes and microelectrodes that are currently used to measure electrical signals in cells, although at present BIT-FETs have a worse signal-to-noise ratio.

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Original article (<http://nature.com/uidfinder/10.1038/nnano.2011.223>) DOI: 10.1038/nnano.2011.223

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