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Sound waves can identify cancers that have spread

16:07 01 June 2011 by [Lucas Laursen](#)

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A device that filters cancer cells from human blood using sound could help to identify tumour cells that have spread.

Finding tumour cells in the blood indicates a cancer has metastasised – but the molecular markers that are used to identify the cells can modify them and make them unsuitable for studying how treatment is proceeding and for performing basic cancer research.

So Itziar González at the Institute for Acoustics in Madrid, Spain, and colleagues developed an alternative: a tiny vibrating plastic chamber through which a blood sample flows. The vibrations create a standing wave that deflects cells in the blood to a different degree depending on their size. Tumour cells are often larger than blood cells and so collect in a different region of the device. The process does not alter the cells.

The prototype can reliably differentiate cancer cells 70 per cent of the time, and a modified version that exposes the blood to the acoustic waves for a longer amount of time should be able to differentiate a cancer cell from a normal cell 95 per cent of the time.

That's important, because identifying just two or three tumour cells in a typical 7-millilitre sample of blood is enough to determine that a cancer is metastasising, González says. Miss that small number of cells because of problems with the sensitivity of a device and "we won't be able to make that diagnosis", says González.

[David Beebe](#) at the University of Wisconsin, Madison, thinks the technique has potential. "Not labelling the cells is an advantage" for cultivating and studying them, he says.

González presented the work at the [International Conference on Microtechnologies in Medicine and Biology](#) in Lucerne, Switzerland, last month.

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