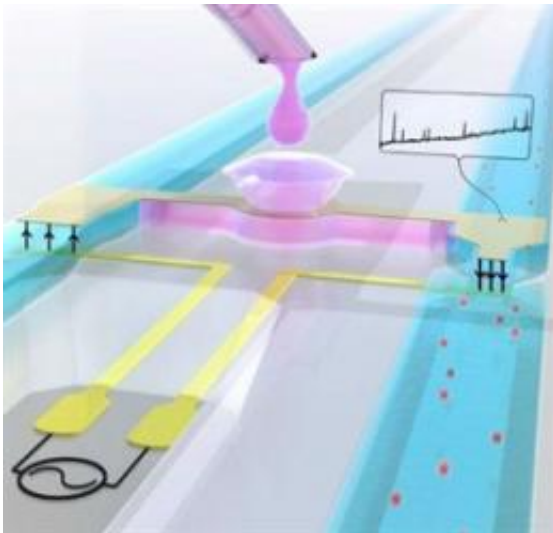


# 'Fertility chip' determines concentration and mobility of semen

October 31 2011

---



Loes Segerink, a researcher at University of Twente's MESA+ Institute for Nanotechnology, has developed a "fertility chip" that can accurately count sperm and measure their motility. The chip can be inserted into a compact device for one-off use. A future home test kit will make it possible for men to test their sperm in a familiar environment. As a result, there is a greater chance of obtaining a correct diagnosis, also the method is simple and inexpensive.

The lab-on-a-chip developed by Segerink measures sperm [concentration](#): the fertility standard states that a millilitre of ejaculate should contain at

least 20 million sperm. A second important aspect of fertility is motility. This too can be measured using the lab-on-a-chip. Simple home test kits are already commercially available. These indicate whether the concentration is "above or below the standard value". These tests are too limited, however, as they do not give accurate concentration readings.

On the chip, sperm flow through a liquid-filled channel, beneath electrode "bridges". When a cell passes beneath one of these electrodes, there is a brief fluctuation in the electrical resistance. These events are counted. To test the reliability of her concentration measurements, Segerink added microspheres (tiny balls) to the liquid. Would the system only count sperm, or would it also register other particles? She found that the method was selective enough to distinguish sperm from microspheres. The system was also able to reliably distinguish white blood cells from other bodies. In addition to being an indicator of sperm quality, the white cell count provides important additional information to gynaecologists.

Finally, sperm movement (motility) is another important measure of quality. A small adjustment of the lab-on-a-chip is all that is needed to sort motile sperm from non-motile sperm, after which both can be counted separately. By measuring [sperm](#) motility in this way, the chip offers a truly complete test.

Segerink developed the "fertility chip" in the BIOS Lab-on-a-Chip research group of Prof. Albert van den Berg, in collaboration with the Twente Medical Spectrum. The research group is part of the MESA+ Institute for Nanotechnology of the University of Twente. Various companies (PigGenetics, Blue4Green, R&R Mechatronics, Menzis, and Lionix) also participated in this project, which was funded by the STW Technology Foundation in The Netherlands.

**More information:** Segerink's doctoral defence will take place on 4

November 2011.

Provided by University of Twente

Citation: 'Fertility chip' determines concentration and mobility of semen (2011, October 31)  
retrieved 3 May 2024 from <https://phys.org/news/2011-10-fertility-chip-mobility-semen.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.