



Automated Semen Analysis Using Holographic Imaging

Tech ID: 24674 / UC Case 2011-044-0

SUMMARY

UCLA researchers in the department of electrical engineering have developed a compact and lightweight platform for conducting automated semen analysis using a lens-free on-chip microscope.

BACKGROUND

Semen analysis is an important and extensively routine for evaluating male fertility and preparing artificial insemination. Current approaches include manually counting sperm through an optical microscope, utilizing complex algorithms to analyze images recorded from microscopes or indirectly qualifying sperm concentration through electrical or chemical means. These approaches fall short of ideal because they are labor-intensive, prohibitively expensive or not sufficiently discriminating of sperm motility. Demand therefore exists for a system that is easy to use while sufficiently fast and accurate.

INNOVATION

The innovation described here is a lightweight, compact and cost-effective platform for conducting automated semen analysis on a chip. The platform leverages a lens-free holographic on-chip microscope and software that is capable of accurately distinguishing and counting motile and immotile sperm.

APPLICATIONS

Fertility testing for fertility clinics, personal fertility testing or veterinary medicine.

ADVANTAGES

- Lightweight, compact and cost-effective
- Automated analysis requiring little manual effort

STATE OF DEVELOPMENT

The method has been prototyped and successfully demonstrated.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8842901	09/23/2014	2011-044

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Extended Depth-Of-Field In Holographic Image Reconstruction Using Deep Learning-Based Auto-Focusing And Phase-Recovery
- ▶ Detection and Spatial Mapping of Mercury Contamination in Water Samples Using a Smart-Phone
- ▶ Computational Cytometer Based On Magnetically-Modulated Coherent Imaging And Deep Learning
- ▶ Lensfree Tomographic Imaging
- ▶ Single Molecule Imaging and Sizing of DNA on a Cell Phone
- ▶ Cross-Modality Deep Learning Brings Bright-Field Microscopy Contrast To Holography

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INVENTORS

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OTHER INFORMATION

KEYWORDS

semen analysis, male fertility, fertility, artificial insemination, sperm concentration, sperm count, sperm motility

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Health
- ▶ **Medical**
 - ▶ Devices
 - ▶ Diagnostics
 - ▶ Imaging
 - ▶ Research Tools
- ▶ **Veterinary**
 - ▶ Diagnostics

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