Device and Method for Controlled Ablation of Microscopic Objects

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CONTACT

Alvin Viray
aviray@uci.edu
tel: 949-824-3104.

TECHNOLOGY DESCRIPTION

Researchers at the University of California, Irvine, have developed a device and method that uses a spatially shaped laser beam for micro-dissection, alteration/ablation, and excitation of living/non-living microscopic objects with high throughput. The purpose of this invention is to develop a device for fast patterned linear ablation of microscopic objects, which is simple to operate and provides high throughput in a uniform manner.

APPLICATIONS

The method developed by the University of California, Irvine researchers provides a new modality that offers distinct advantages to previous methods. The advantages of the present invention include:

- fast, patterned linear ablation of microscopic objects,
- simple operation,
- high throughput in a uniform manner, and
- is less expensive.

The invention can be used in both research and clinical settings and makes an effective tool available to researchers for the study of molecular mechanisms of biological systems.

BACKGROUND

Laser scissors use lasers to alter and/or to ablate intracellular organelles, cellular and tissue samples, and today has become an important tool for cell biologists to study the molecular mechanism of complex biological systems. Single cells or groups of cells have been perforated for injection of exogenous materials, induction of DNA damage in cells, micro-dissection of neuronal processes, as well as other intra-cellular organelles such as chromosomes or microtubules. Clinically, laser scissors have been used to reduce the thickness of the zona pellucida layer of the ovum in order to improve human in vitro fertility. In these applications, either a scanning stage or scanning mirror was used to scan a region in a single cell or group of cells for micro-processing. This method is expensive and requires complex control of the scanning beam via computer. In addition, the processing time can be lengthy and reduces the throughput of the laser microbeam system.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,571,365	10/29/2013	2008-813

OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Devices
- **Optics and Photonics**
  - All Optics and Photonics
- **Research Tools**
  - Other

RELATED CASES

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5270 California Avenue / Irvine,CA
92697-7700 / Tel: 949.824.2683