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Nanofluidic Device For Single Mitochondria Analysis

Tech ID: 22999 / UC Case 2013-063-0

BRIEF DESCRIPTION

Researchers at the University of California, Irvine have developed a nanofluidic device that may be used to trap and analyze single mitochondria.

FULL DESCRIPTION

The mitochondrial membrane potential is used to generate and regulate energy in living systems, driving the conversion of ADP to ATP, regulating ion homeostasis and controlling apoptosis, all central to human health and disease. Therefore, there is a need for tools to study its regulation in a controlled environment for potential clinical and scientific research applications.

To date, to measure mitochondrial membrane potential, researchers and technicians must use fluorescent probes or electrochemical methods such as patch clamping which has proven to be challenging.

This new nanofluidic device may be used to analyze the bioenergetics of individual mitochondria.

ADVANTAGES

There is growing evidence of heterogeneity within mitochondrial populations; however existing methods do not allow sustained, high throughput interrogation of isolated mitochondria to various chemical conditions. This device overcomes the limitation of current methods that requires large sample size of mitochondria for analysis. Also the precise control of the delivery of chemicals to study the bioenergetics of mitochondria is realized with this device.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,895,312	11/25/2014	2013-063

STATE OF DEVELOPMENT

A prototype has been made and tested.

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OTHER INFORMATION

KEYWORDS

Mitochondria, Microfluidic, Sensor

CATEGORIZED AS

- » **Biotechnology**
 - » Other
- » **Medical**
 - » Devices
 - » Diagnostics
 - » Disease: Metabolic/Endocrinology
 - » Research Tools
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