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Lateral Cavity Acoustic Transducer (LCAT) for Shear-Induced Cell Transfection

Tech ID: 29831 / UC Case 2019-078-0

BRIEF DESCRIPTION

Inventors at UC Irvine have developed a new technique for inserting materials, such as genes, into cells that uses a lateral cavity acoustic transducer (LCAT). This technology is efficient, does not result in lasting damage to cells, and the device is portable.

SUGGESTED USES

- » Gene therapy
- » Molecular biology research

FEATURES/BENEFITS

- » Efficient (with further optimization work planned)
- » Low risk of permanent damage to cell's structural integrity
- » Portable

TECHNOLOGY DESCRIPTION

Cell transfection, or the insertion of exogenous material into a cell, is critical to gene therapy. In gene therapy, corrective pieces of genetic material are inserted into cells to repair damaged or missing DNA segments. The ultimate goal is to restore the cells to normal function. Gene therapy may be used to correct genetic disorders or to treat malignancies. Current methods of cell transfection are either inefficient or risk irreparably damaging the cell.

Researchers at University of California, Irvine have invented a new method of cell transfection that is both efficient and avoids permanently damaging the integrity of the cell. This new technique utilizes a lateral cavity acoustic transducer (LCAT) to momentarily trap and disrupt the membrane of cells. This gives the cells a chance to uptake external material. If this material is DNA, the cells will have the opportunity to incorporate the new material into its sequence.

STATE OF DEVELOPMENT

Prototype has been developed and preliminary results demonstrate successful transfer of exogenous material (kDa dextran) to cells with an efficiency of about 20%.

Next steps include:

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
- » Devices
- » Gene Therapy
- » Research Tools

RELATED CASES

2019-078-0

» Optimization for higher transfection efficiency

» Commercialization

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,052,395	07/06/2021	2019-078
United States Of America	Published Application	20210291185	09/23/2021	2019-078
Patent Cooperation Treaty	Published Application	WO 2020/041463	02/27/2020	2019-078

RELATED TECHNOLOGIES

- ▶ Lateral Cavity Acoustic Transducer As An On-Chip Cell/Particle Switch
- ▶ Lateral Cavity Acoustic Transducer Based Microfluidic Switch

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