



# MICROFLUIDIC DEVICE FOR DETECTING TARGET GENE

**Affiliation :** Korea university

**Type of Partnership :** Open for negotiation

**Cost :** Open for negotiation

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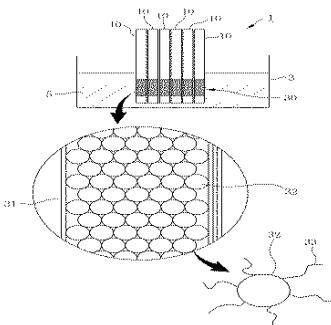
## Abstract

It relates to a microfluidic device for detecting a target gene which is detecting by using the phenomenon that a void formed by microbeads is blocked or a size of the void is reduced by the target gene amplification.

## Problems with Existing Technology

Solving the problem of time and cost for the devices is needed.

- It is disadvantageous that devices are complex and cost for the devices is increasing.
- It spends lots of time and requires expensive devices and labor.
- The existing technology has the disadvantages in that they have a relatively low accuracy of quantitative measurement It is particularly getting worse when it is needed to analyze more than one target simultaneously.



[A view illustrating a microfluidic device for detecting a target gene]

## Technology Readiness Level

TRL 5 : Technology validated in relevant environment

TRL1	TRL2	TRL3	TRL4	TRL5	TRL6	TRL7	TRL8	TRL9
Basic Technology Research	Technology Concept formulated	Experimental Proof of Concept	Technology validated in lab	Technology validated in relevant environment	Technology demonstrated in relevant environment	System Prototype in operational environment	System complete & qualified	Full commercial application

## Differentiation and Effect

### Differentiation

**It can detect different target genes**

- The probe linkers of each microbead packing can detect different target genes.

### Effect of Technology

**Decreasing detection time**

- The target gene is detected by phenomenon in which voids generated by the microbeads are blocked or a size of the voids is reduced by the amplification of the target gene.
- It is possible to quantitatively analyze the target gene according to the detection based on various methods.



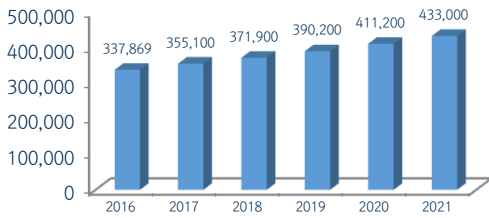
**MICROFLUIDIC DEVICE FOR DETECTING TARGET GENE**

**Technology Application Field**

It can be used in detecting various pathogens such as genetic detection of medical and biotechnology.



**Market Trends**



Ministry of Food and Drug Safety

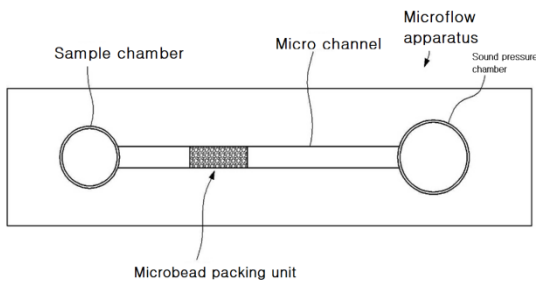
<Prospects of global medical devices market, million USD>

- The global market for medical devices reached USD 337.869 billion in 2016, and is expected to rise 5.1 percent annually to USD 433 billion in 2021.
- The market for medical devices in Korea reached KRW 5.8 trillion in 2016, and it is expected to grow at an annual rate of 3.6 percent to KRW 6.921 trillion in 2021.

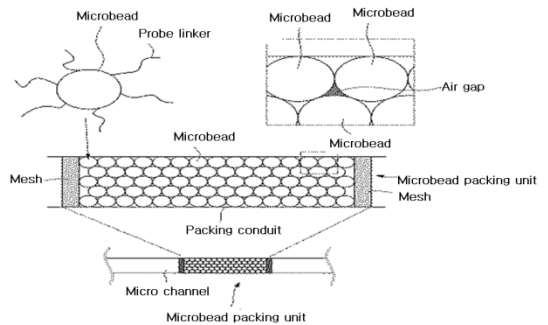
**Technology Implementation**

**Detecting method of micro-fluidic apparatus for detecting a target gene**

- The hydrogel formed with the amplification through the complementary binding of the probe linker formed on the surface of microbead prevents or reduce a void. The sample solution prevents the rising or reducing the speed by the capillary phenomena and the target gene is possible to be detected.



<A view illustrating a microfluidic device>



<A view illustrating a microbead packing of a microfluidic device>

**List of related patents**

No.	Title of Invention	Patent No./ Application No.
1	MICROFLUIDIC DEVICE FOR DETECTING TARGET GENE	PCT/KR2017/001694
2	EXTRACTION APPARATUS FOR EXTRACTING TARGET MATERIAL	PCT/KR2018/011027
3	EXTRACTION DEVICE, EXTRACTION METHOD AND EXTRACTION SYSTEM FOR EXTRACTING TARGET SUBSTANCE	PCT/KR2018/011026
4	MICROFLUIDIC PUMP HAVING INTERNAL PUMPING STRUCTURE	PCT/KR2018/013494