

R&D of High-performance Technology for Biomarker Sensing

< Program for Fostering Regional Innovation (Global Type) >

Project Team

Project manager

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Project collaborators

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International project collaborators

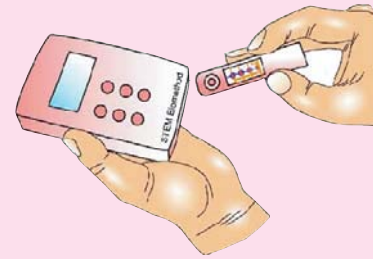
Bernard Juskowiak
(Professor, Adam Mickiewicz University, Poland)

Collaborating company

Nihon Millipore K.K.

Research Purpose

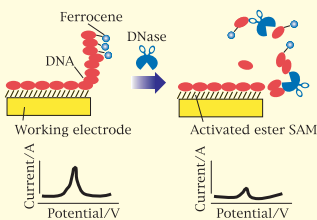
We are going to establish a new technology combined with electro-chemical and optical biosensing, cell manipulation, MEMS, and LSI in order to develop inexpensive, easy-to-use, miniaturized devices for biomarker detection.



Research Overview

■ Sensing technology

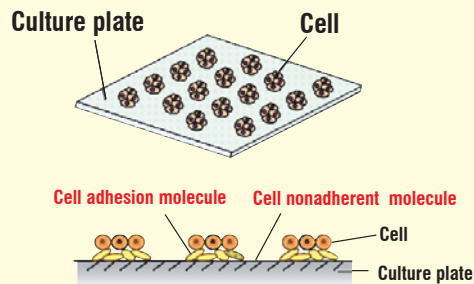
Establishment of a rapid electrochemical detection of nuclease or protease with high sensitivity.



Measurement of the decreasing current between before and after DNA cleavage by a specific nuclease

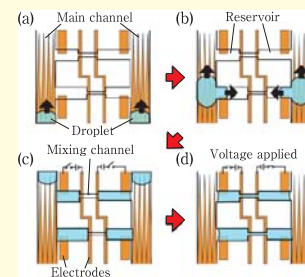
■ Cell manipulation technology

Establishment of a micro patterning technology to realize the effective expression of cell functions.



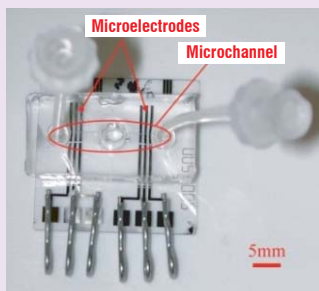
■ MEMS technology

Establishment of techniques for microfluidic handling and electrochemical measurement in microchannels.

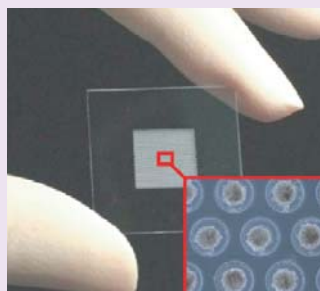


Research Outcomes

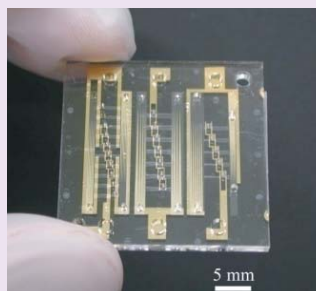
Nuclease detecting chip



Cell array chip



Microfluidic dispensing device



Expected application areas

- Diagnosis systems for autoimmune disease, metabolic syndrome, allergic disease, and infectious or related disease
- Physical checkup
- Drug evaluation by cell-based assay
- Nuclease assay in test water
- Evaluation of special food with health-promoting benefits
- Testing of virus, bacteria, and the related organism



Information

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Information

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