

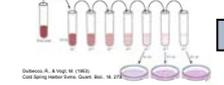
柔軟なマイクロゲルグリッパで1細胞を掴む！

Background

Single Cell Separation for Single Cell Assay

- Immunosay
- Stem cell analysis
- Cancer cell analysis

Current standard: Limiting dilution method

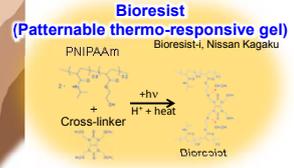
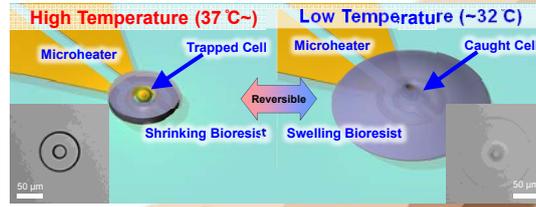


Labor intensive protocol



Purpose

To realize low initial cost and easy to handle single cell separation and dispense chip.



Bioresist Single Cell Gripper

Fabrication Process

- Spin coating of Bioresist
- Exposure
- Development

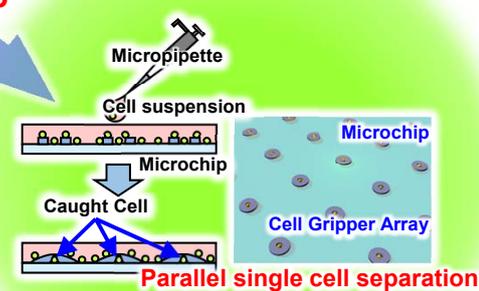
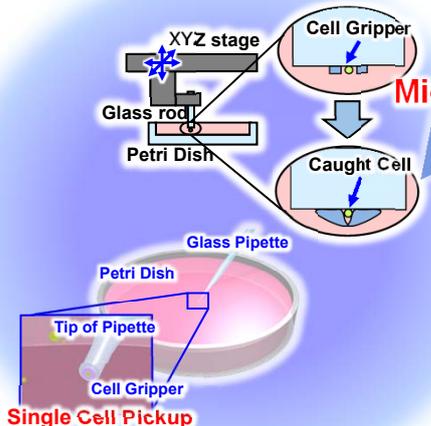
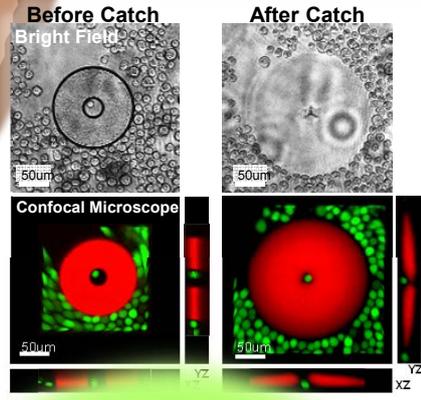


Max. Aspect ratio of Bioresist: ≈ 0.5

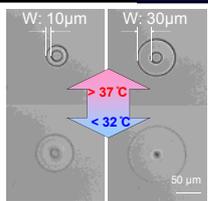
Thickness [μm]	Hole Diameter [μm]	
	Design: 30	Design: 20
9.0±0.5	24.3±0.5	12.5±2.8
20.8±2.2	24.5±1.5	NG

ゲル製マイクログリッパで広がる応用

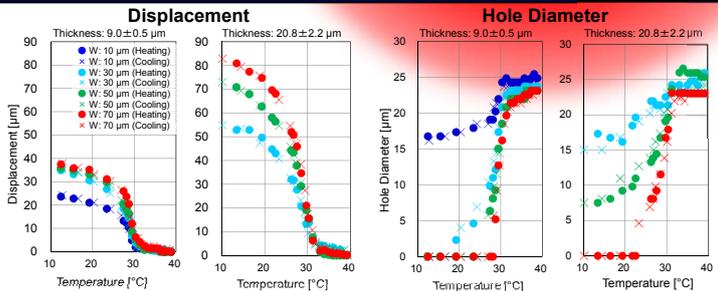
3D Observation of Cell Grip



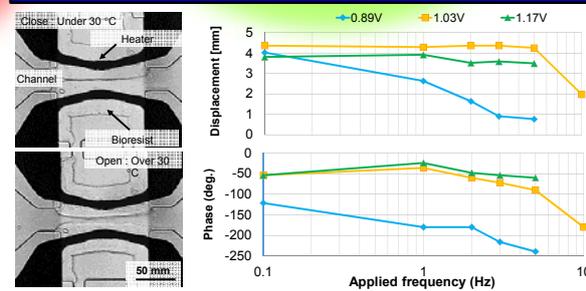
Pattern Dependence of Expansion Rate



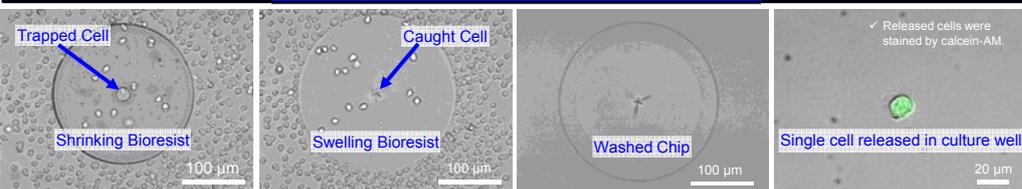
Expansion rate can be controlled by changing pattern width.



Frequency Response with Microheater



Single Cell Catch & Release



• Sample was MDCK (Madin-Darby canine kidney) cell suspension. • Cell concentration was approximately 1.0 x 10⁵ cell/mL.

Conclusions

We succeeded in single cell separation and dispense to culture well by one chip.
Success rate of single cell separation: 50 %
single cell dispense: 75 %
total: 38 %