

Cell Chip

1.

(DNA , RNA ,) Neural Cell Chip , DNA
Cell Chip cell
, , ,
Cell Chip
가
Cell Chip 가 가 Cell
Chip . Cell Chip
Dendrite
axon . axon
가
neurotransmitter . chemical
signal synaptic cleft Dendrite
가 .
Neural network , network
가
Cell Chip
가 가 , 가 Cell . Cell
protein, RNA
Cell Cell cycle,
metabolism Cell , Cell , Patterning

2.

Cell Chip ,
100 Harrison 가

2.1

Stem cell totipotent, pluripotent mutipotent stem cell
 , totipotent
 ,
 cell line stem cell
 가 pluripotent extraembryonic lineage
 ,
 inner cell mass ES cell(embryonic stem cell),
 (primordial germ cell) EG cell (embryonic germ

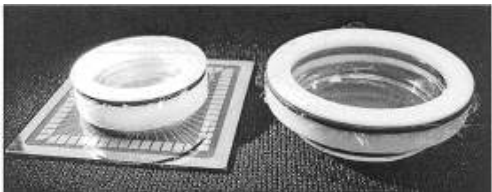
cell)

Stem Cell Long-term maintenance ,
 Ca²⁺ Mg²⁺ free PBS(CMF-PBS), Trypsin-EDTA solution(0.05% trypsin, 0.02%EDTA),
 falcon cell strainer(70µm Nylon mesh) Collagenase(Sigma type or type)

가 , stem cell
 confluent passage . CMF-
 PBS 3 Trypsin-EDTA 3 5
 37 incubator 가 10%
 FCS Trypsin 50mlconical tube .
 media cell strainer
 hemocytometer
 subculture 5 × 10³ 5 × 10⁴

cells/cm²가 . ascorbic acid 가 ,
 ascorbic acid collagen 가 Trypsin-EDTA
 subculture 가 가 . Trypsin 25 U/ml purified
 collagenase 2 37 incubation . PBS 2
 Trypsin-EDTA

Caltech Potter membrane ()
 1) Cell 가



1. membrane

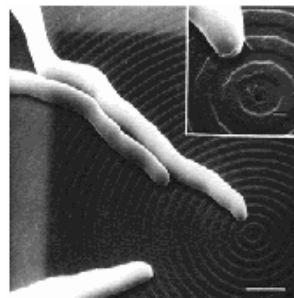
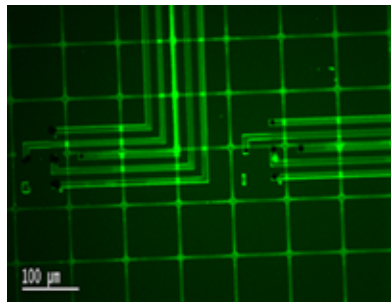


Cell

membrane O₂ CO₂ ,
 .
 incubator 가 .
 hyperosmolality pH가 7.3 .
 Illinois Neuronal Pattern Analysis
 Polyethylene glycol(PEG) film
 protein cell ,
 biofilm 가 .

2.2

patterning sensor
 , Blood-Barrier .
 Bioselective surfaces program Barbara Baird
 (2).



2. Bioselective surfaces program

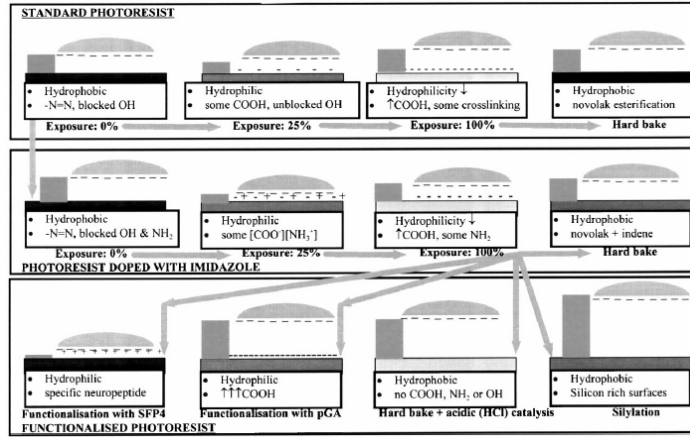
microelectrodes 가

2.3

Patterning 가
 Patterning network 가
 diazo-
 naphtho-quinone(DNQ)/novolak resist UV Patterning .
 diazo-naphtho-quinone(DNQ)/novolak
 amino carboxyl 가 ,

hydrophilic or hydrophobic

가

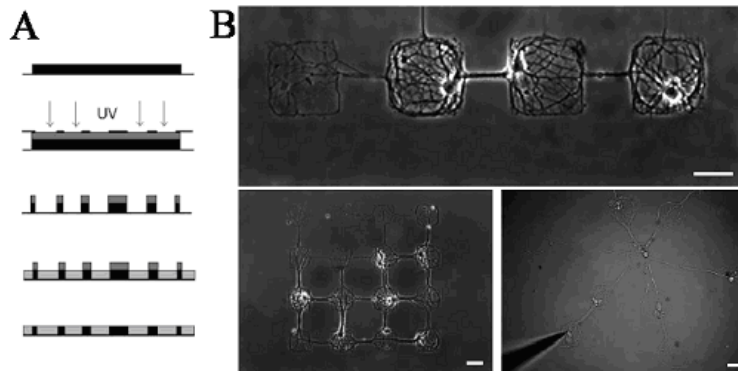


3. Patterning using diazo-naphto-quinone/novolak resist

Laboratoire de Dynamique des Fluides Complexes

patterning

가



4.

A photolithography

fluorosilane

UV

channel

polylysine

B

network

80µm

2-

4µm

3.

sensor

network

가

Darren W. Branch, Bruce C. Wheeler, Gregory J. Brewer, Deborah E. Leckband, 2001, Long-term stability of grafted polyethylene glycol surfaces for use with microstamped substrates in neuronal cell culture, *Biomaterials* 22 ,1035-1047.

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