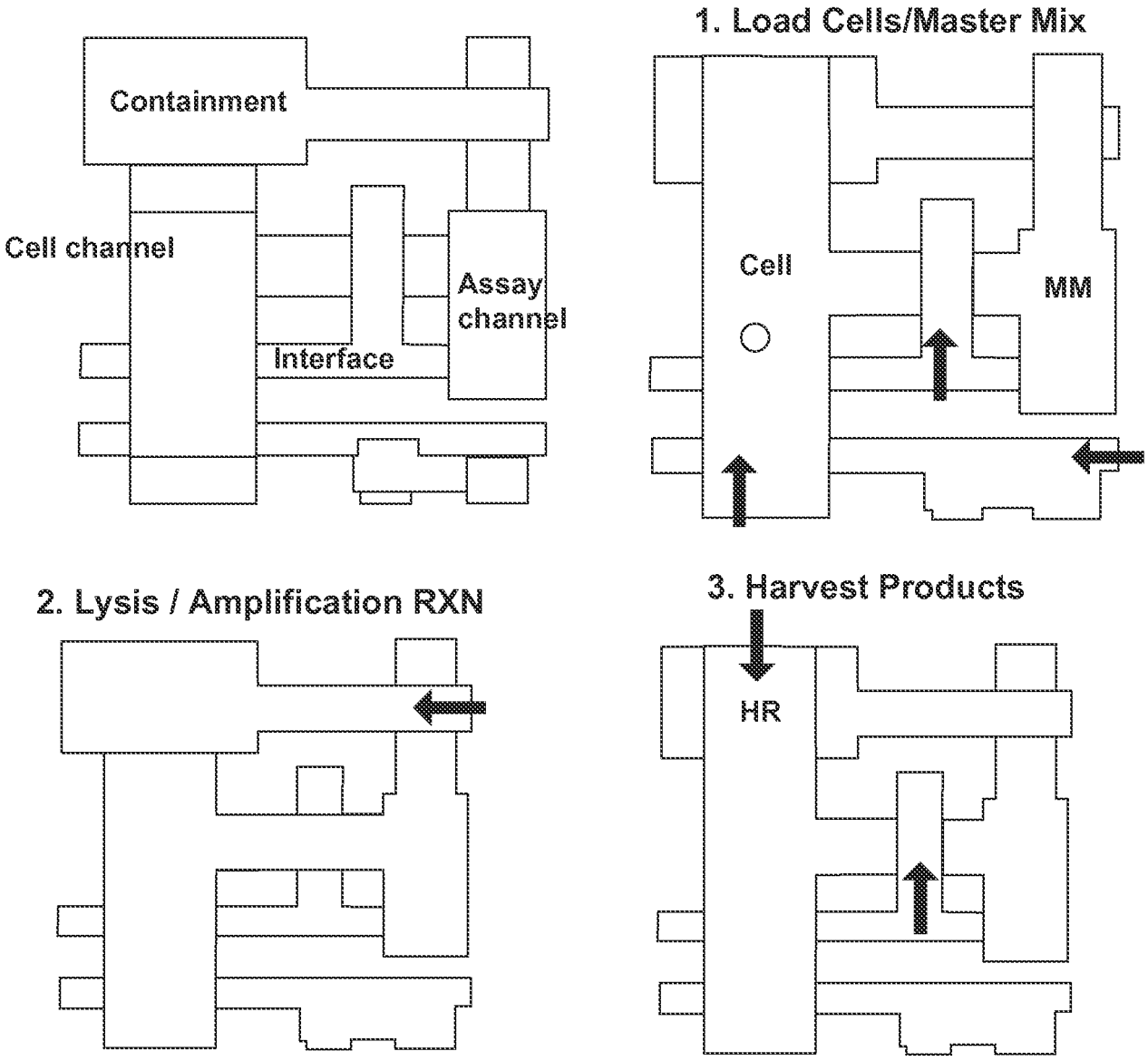
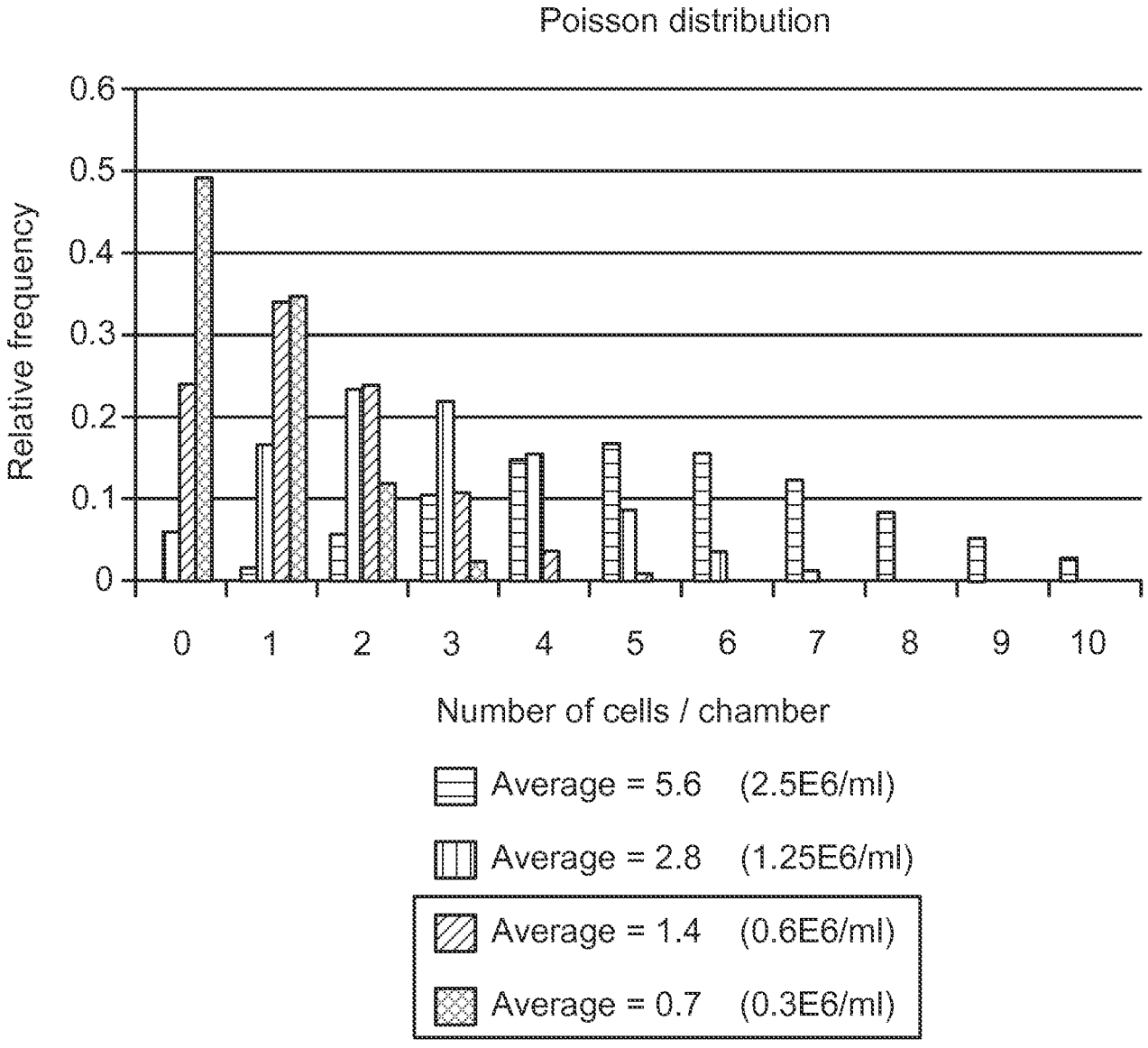


	(nl)	Ratio
Cell Channel	2.4	
Assay Channel	8.9	~4:1 Chamber 1: Cell Channel

FIG. 1



The “best” theoretical cell density for single cells:
~1 per chamber on average = 1 / 2.4 nl = ~ 0.5E6/ml

FIG. 2

Measured:

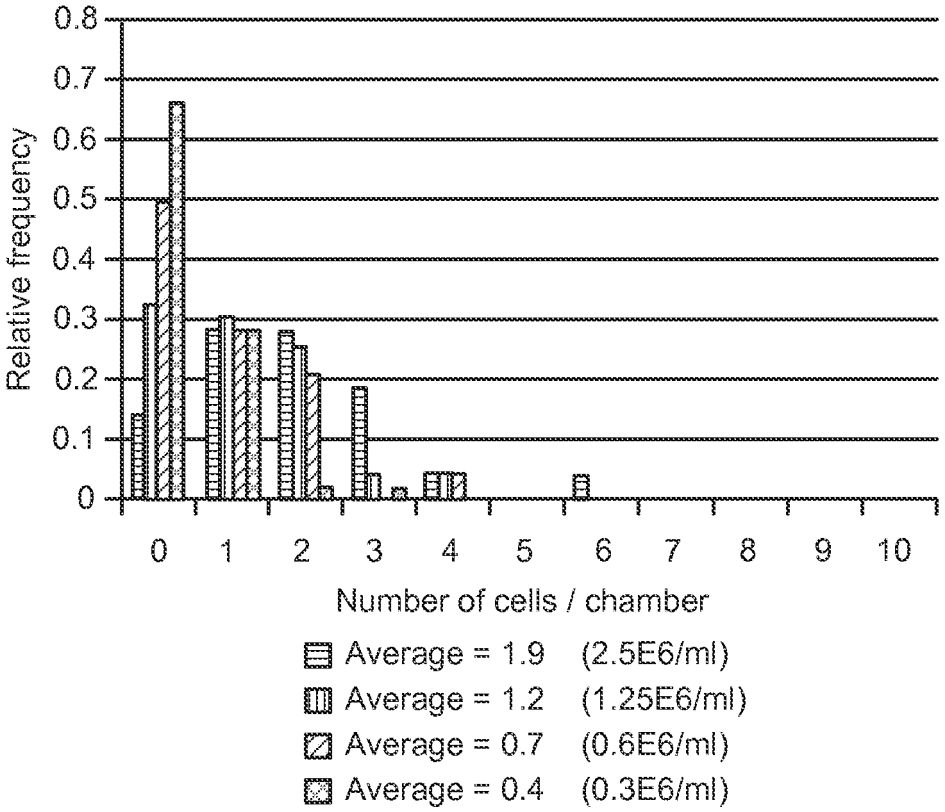


FIG. 3A

Theoretical:

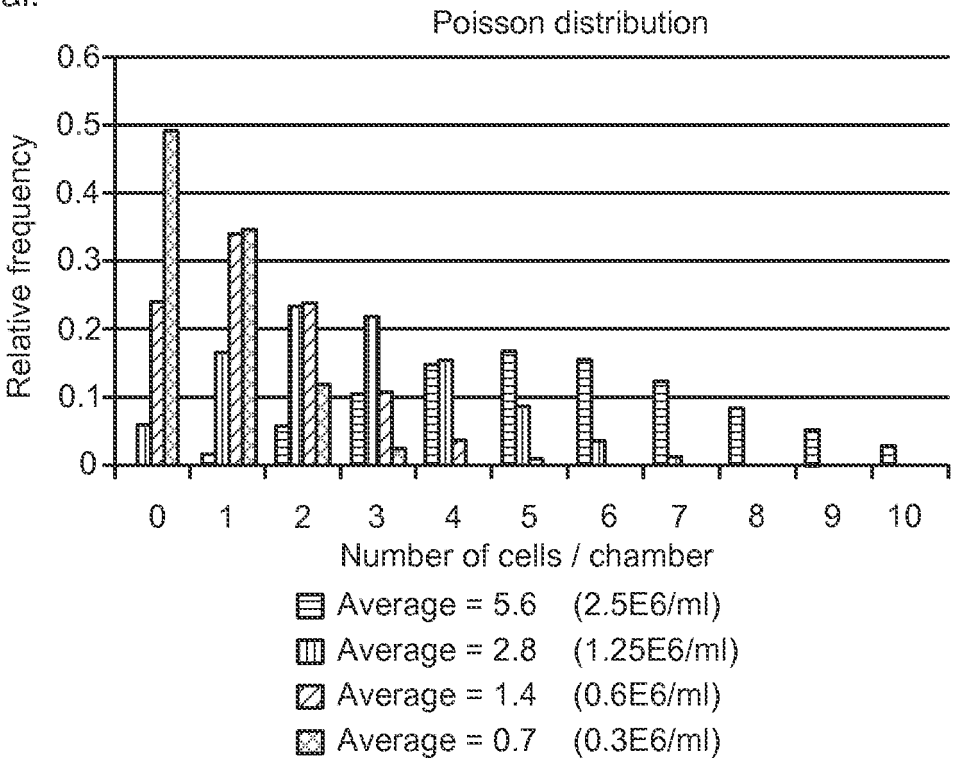
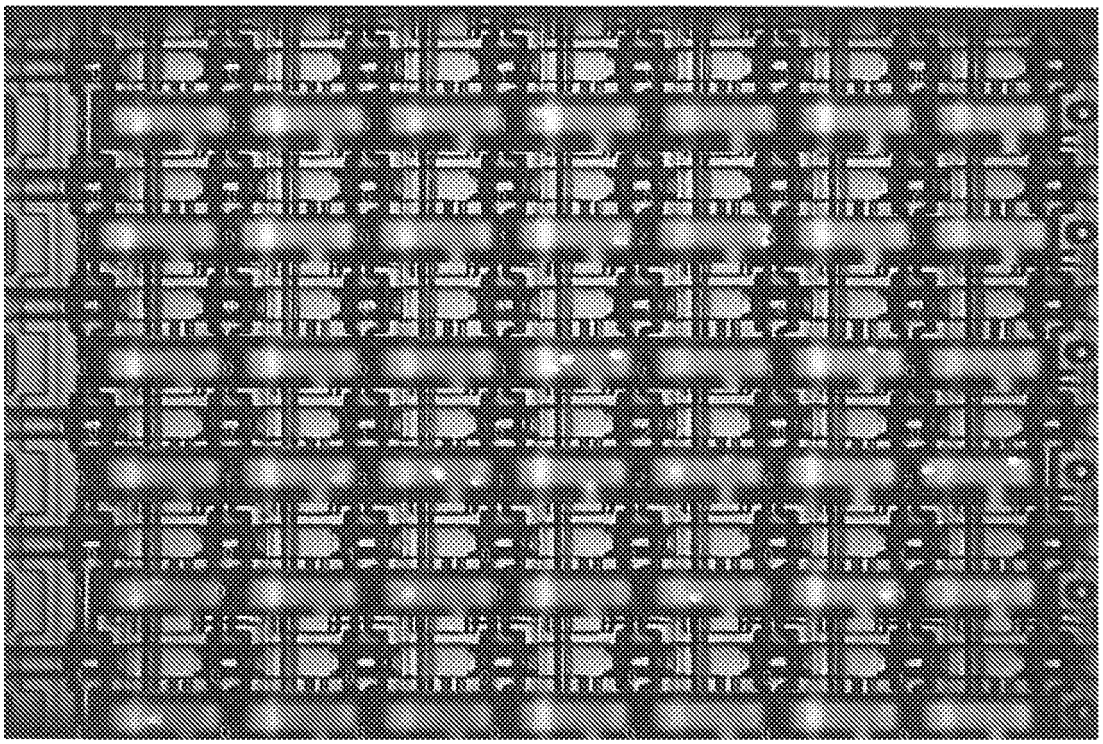


FIG. 3B

0.15E6 /ml

Expect
0-1
chamber



	Brightfield	Fluorescence
Average cells/ chamber	0.29	0.52

FIG. 4A

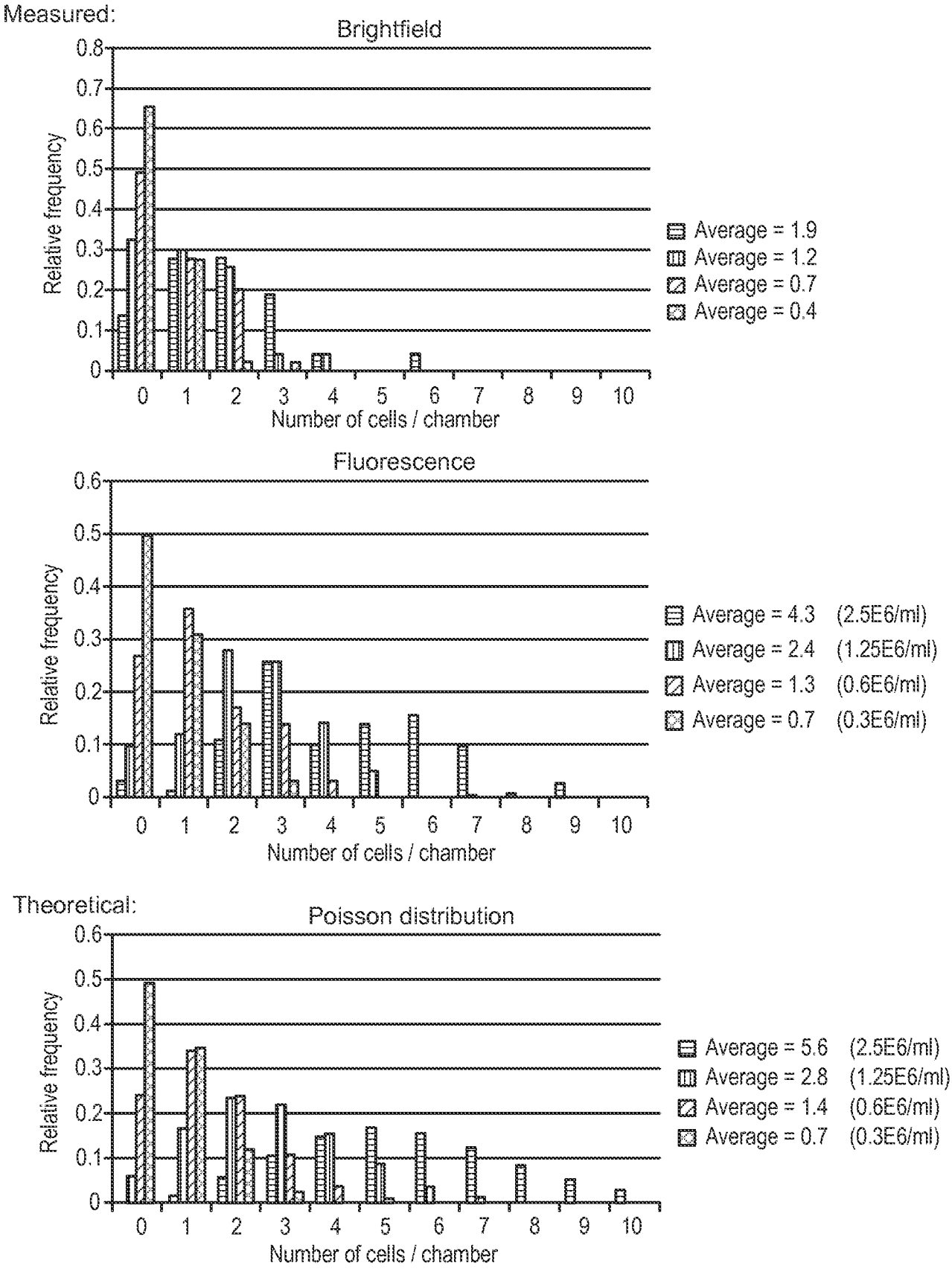

Measured:
Brightfield
Relative frequency
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 1 2 3 4 5 6 7 8 9 10
Number of cells / chamber
Average = 1.9
Average = 1.2
Average = 0.7
Average = 0.4
Fluorescence
Relative frequency
0.6
0.5
0.4
0.3
0.2
0.1
0
0 1 2 3 4 5 6 7 8 9 10
Number of cells / chamber
Average = 4.3 (2.5E6/ml)
Average = 2.4 (1.25E6/ml)
Average = 1.3 (0.6E6/ml)
Average = 0.7 (0.3E6/ml)
Theoretical:
Poisson distribution
Relative frequency
0.6
0.5
0.4
0.3
0.2
0.1
0
0 1 2 3 4 5 6 7 8 9 10
Number of cells / chamber
Average = 5.6 (2.5E6/ml)
Average = 2.8 (1.25E6/ml)
Average = 1.4 (0.6E6/ml)
Average = 0.7 (0.3E6/ml)

FIG. 4B

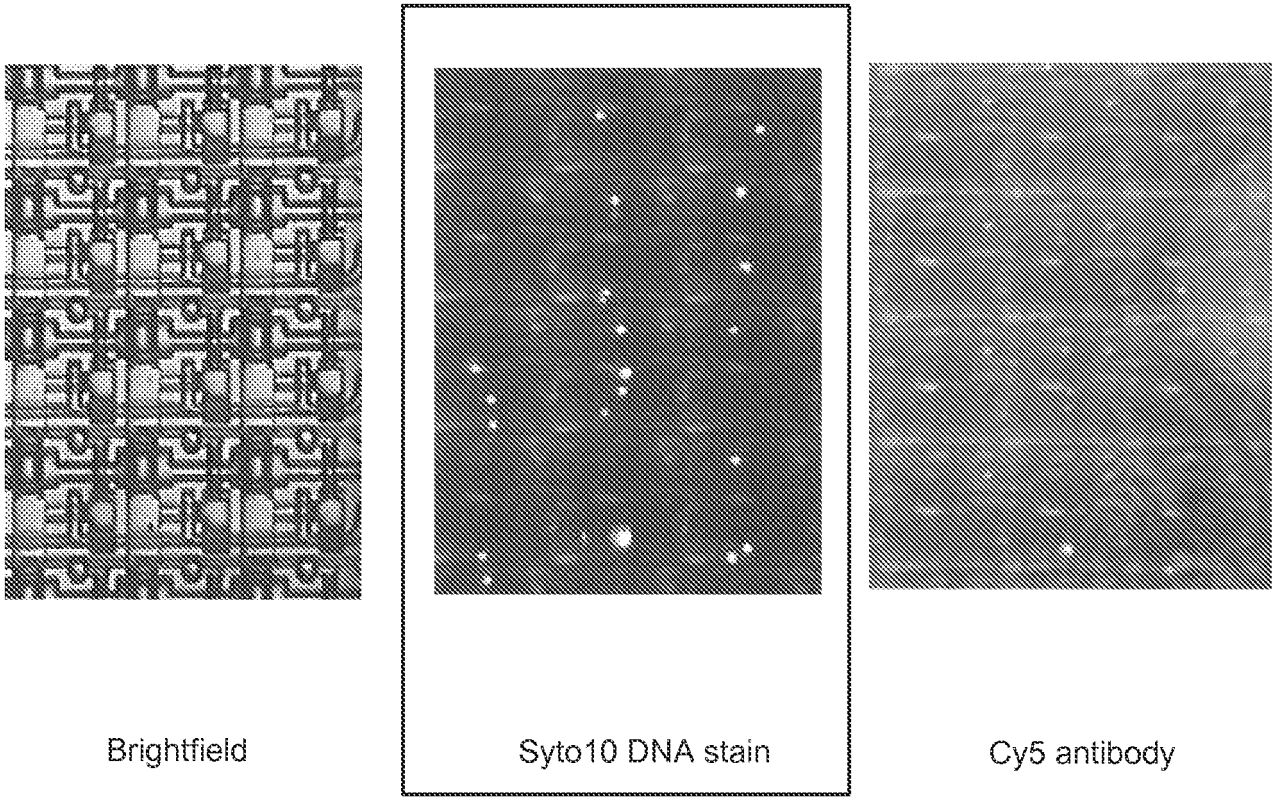


FIG. 5

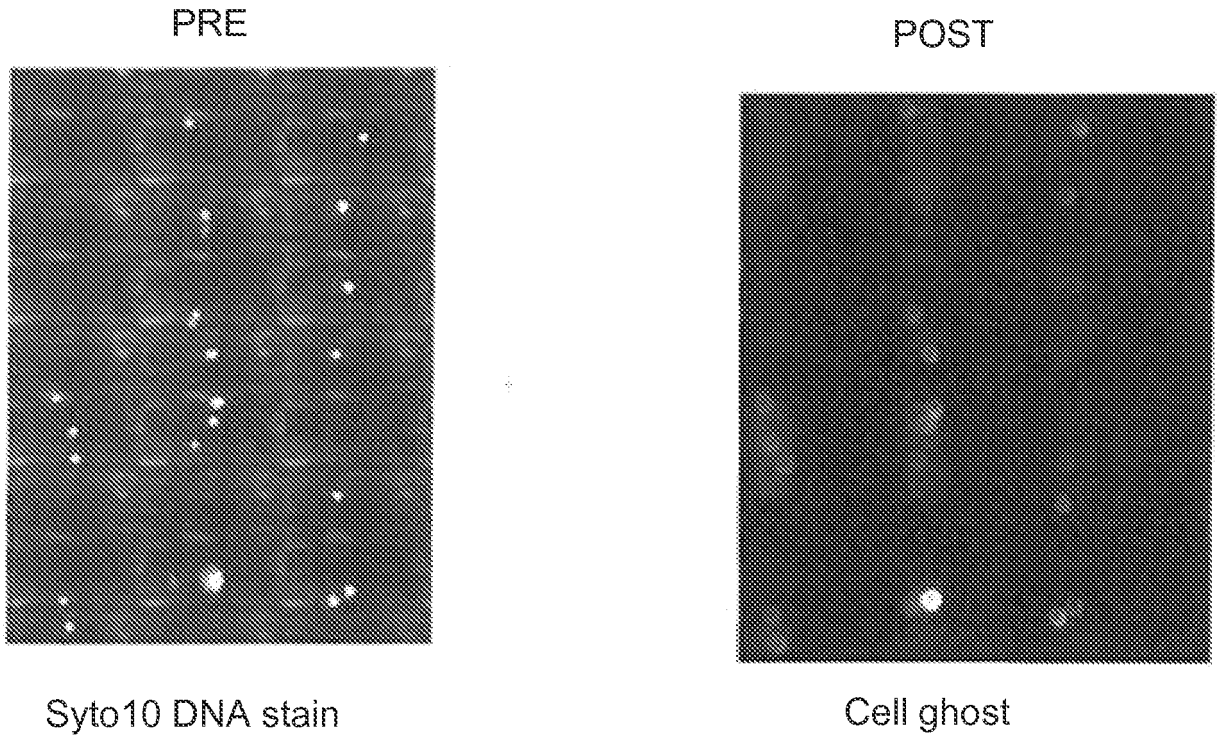

PRE
POST
Syto10 DNA stain
Cell ghost

FIG. 6A

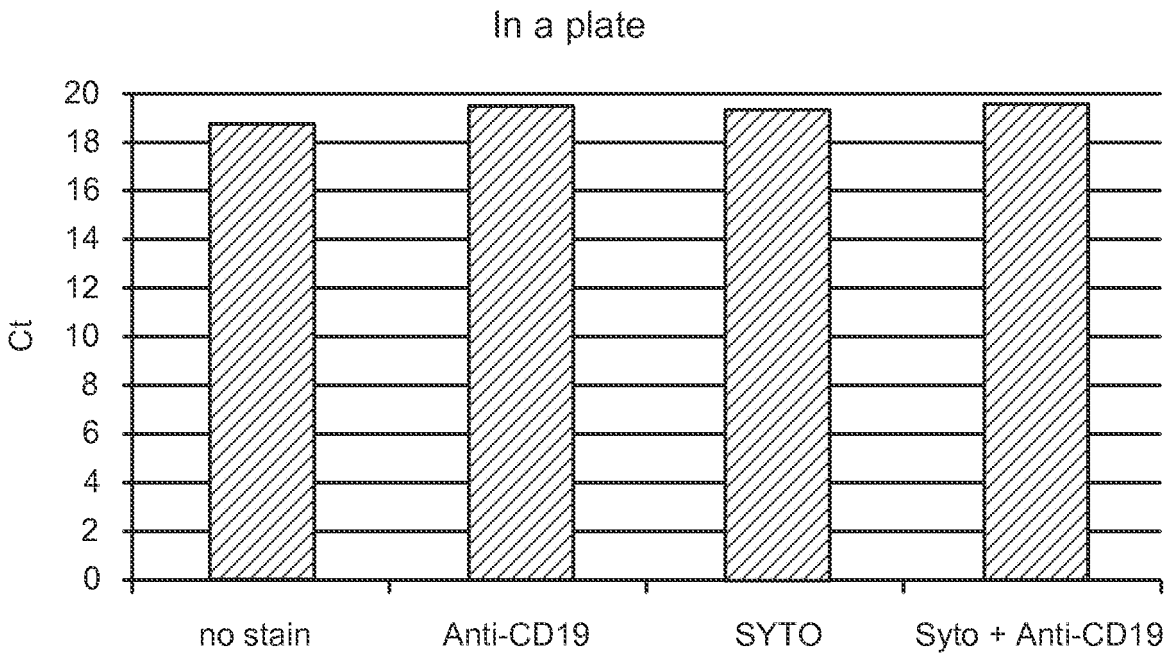

In a plate
Ct
20
18
16
14
12
10
8
6
4
2
0
no stain
Anti-CD19
SYTO
Syto + Anti-CD19

FIG. 6B

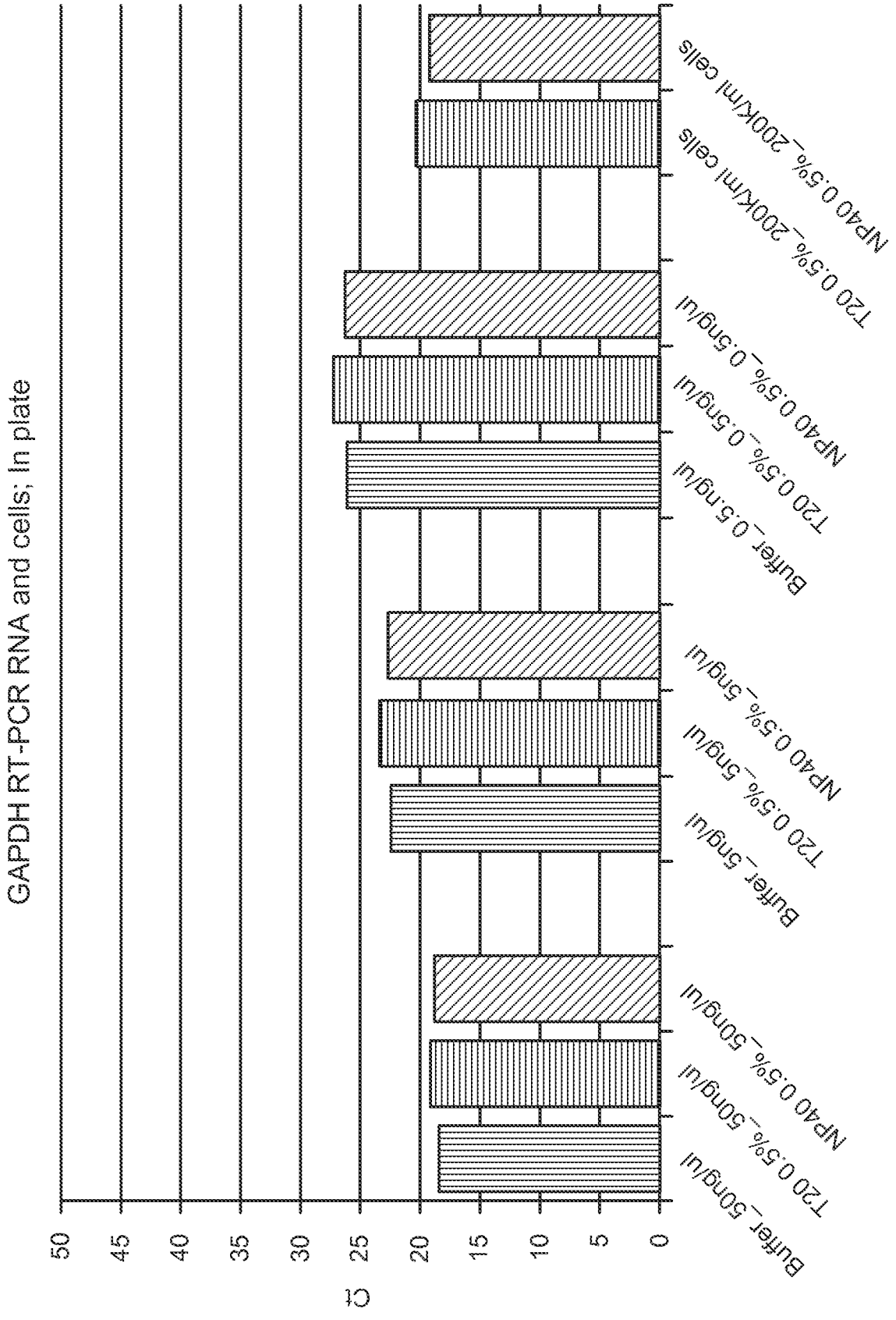
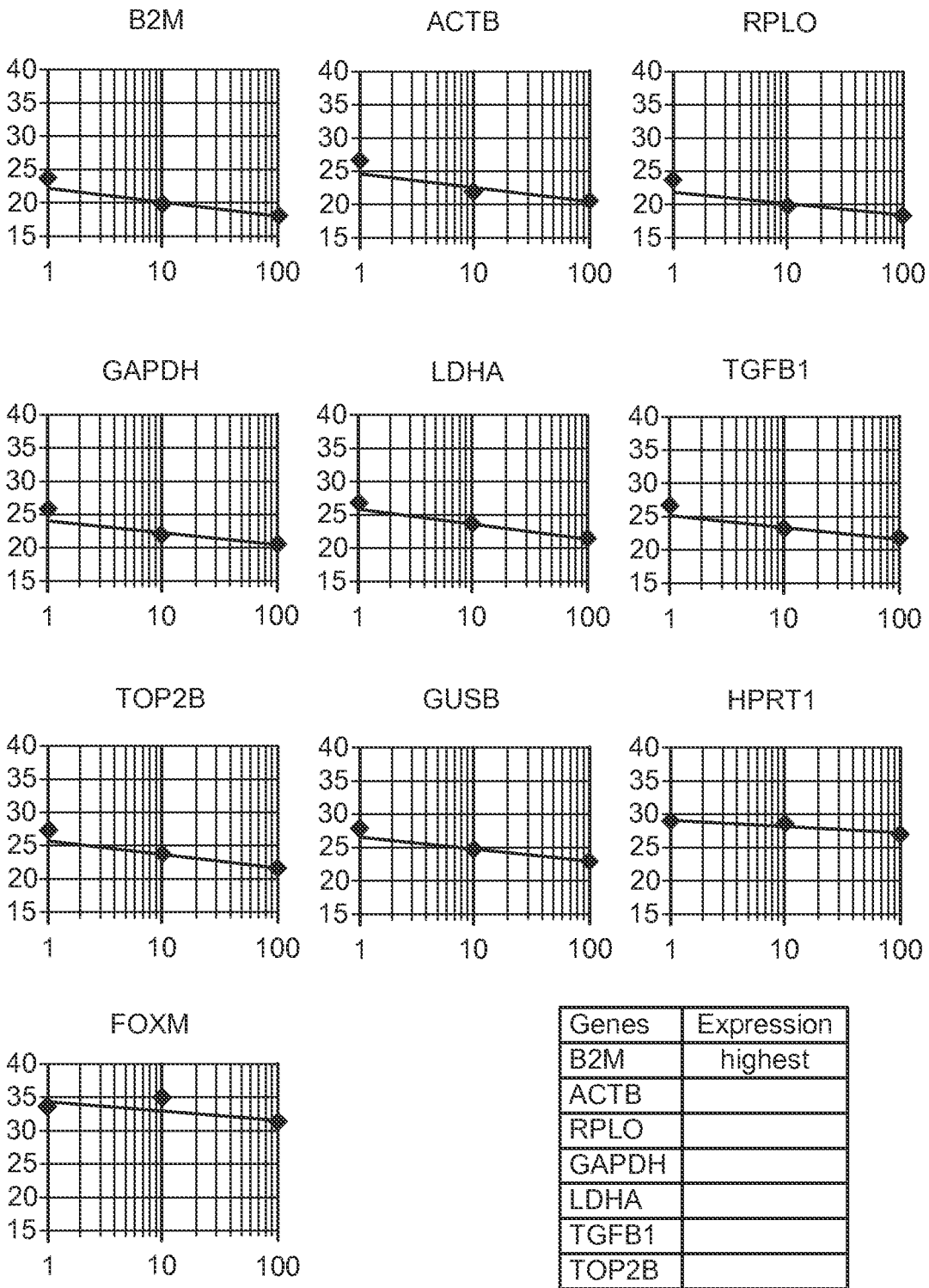

GAPDH RT-PCR RNA and cells; In plate
Ct
50
45
40
35
30
25
20
15
10
5
0
Buffer_50ng/ul
T20 0.5%_50ng/ul
NP40 0.5%_50ng/ul
Buffer_5ng/ul
T20 0.5%_5ng/ul
NP40 0.5%_5ng/ul
Buffer_0.5ng/ul
T20 0.5%_0.5ng/ul
NP40 0.5%_0.5ng/ul
T20 0.5%_200K/ml cells
NP40 0.5%_200K/ml cells

FIG. 7



Genes	Expression
B2M	highest
ACTB	
RPLO	
GAPDH	
LDHA	
TGFB1	
TOP2B	
GUSB	
HPRT1	
FOXM	
TFRC	lowest

FIG. 8

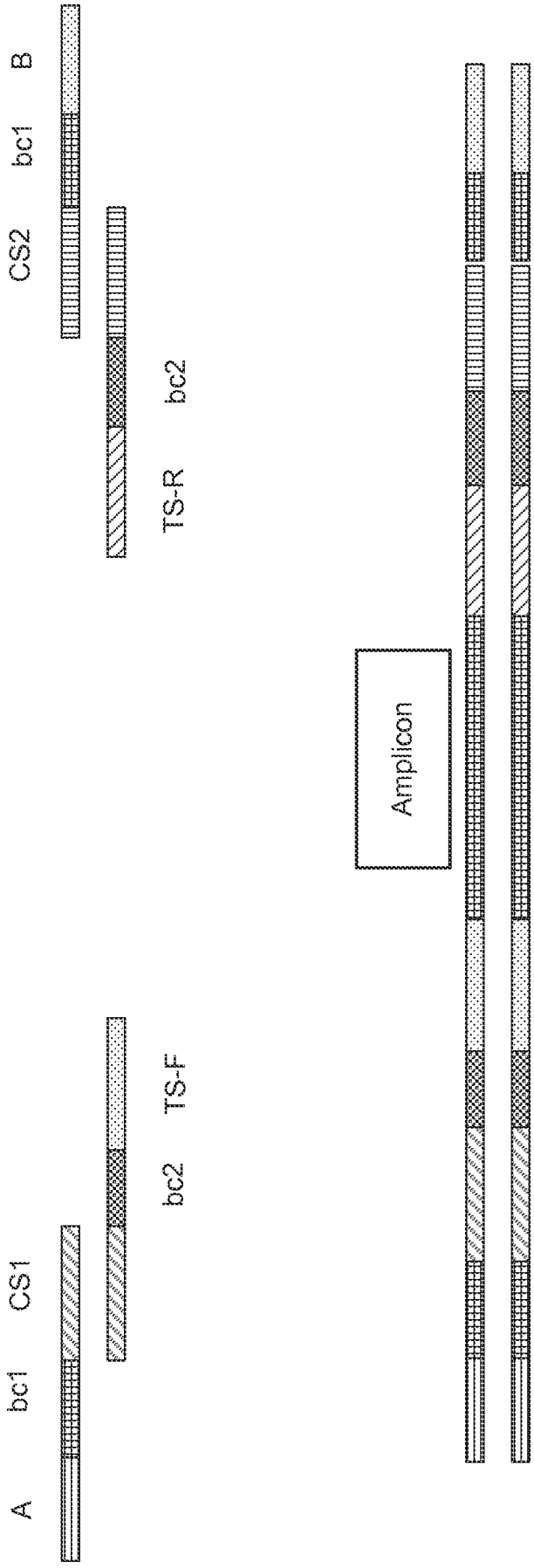


FIG. 9

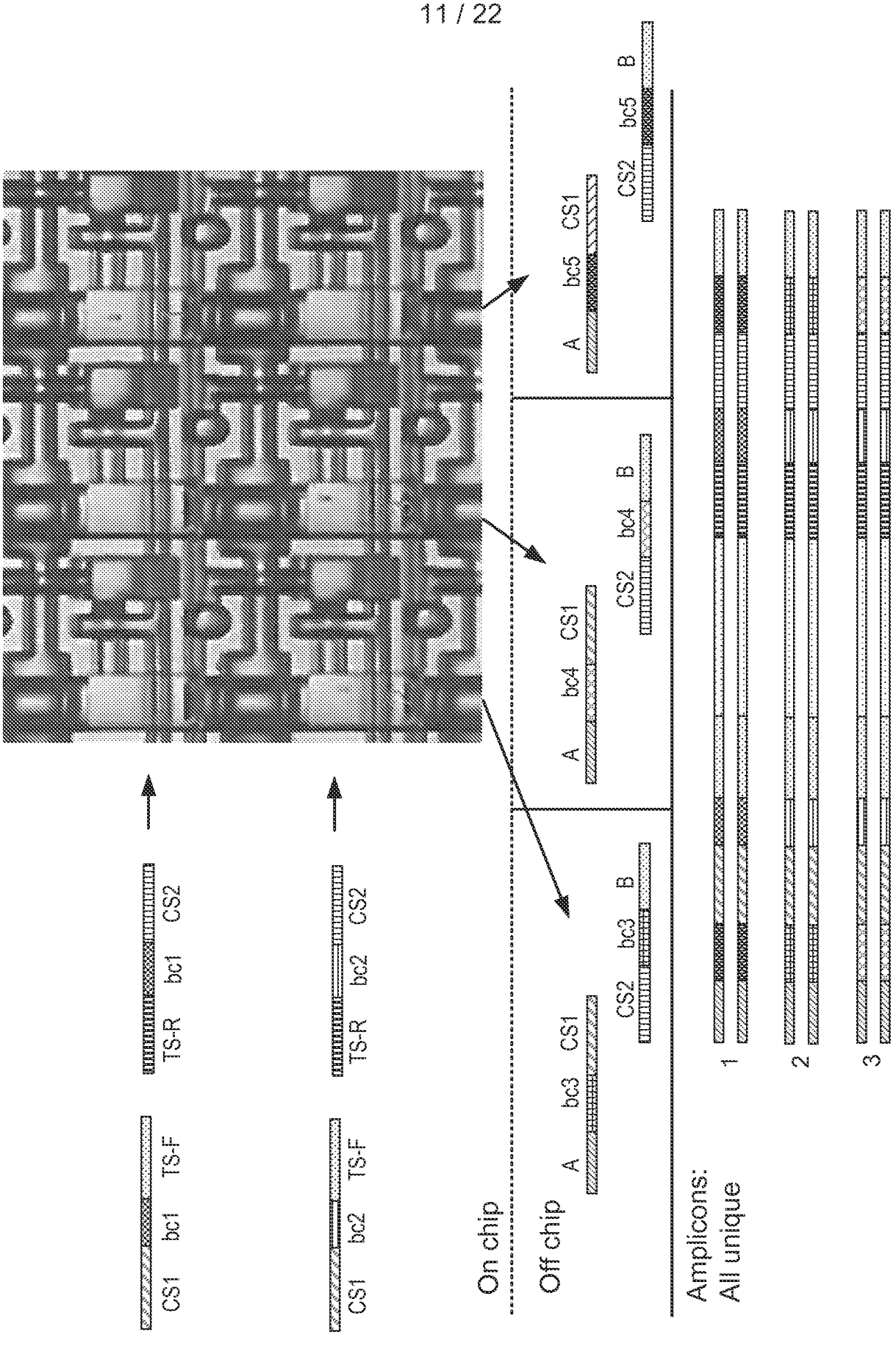

CS1 bc1 TS-F
TS-R bc1 CS2
CS1 bc2 TS-F
TS-R bc2 CS2
On chip
Off chip
A bc3 CS1
CS2 bc3 B
A bc4 CS1
CS2 bc4 B
A bc5 CS1
CS2 bc5 B
Amplicons:
All unique
1
2
3

FIG. 10A

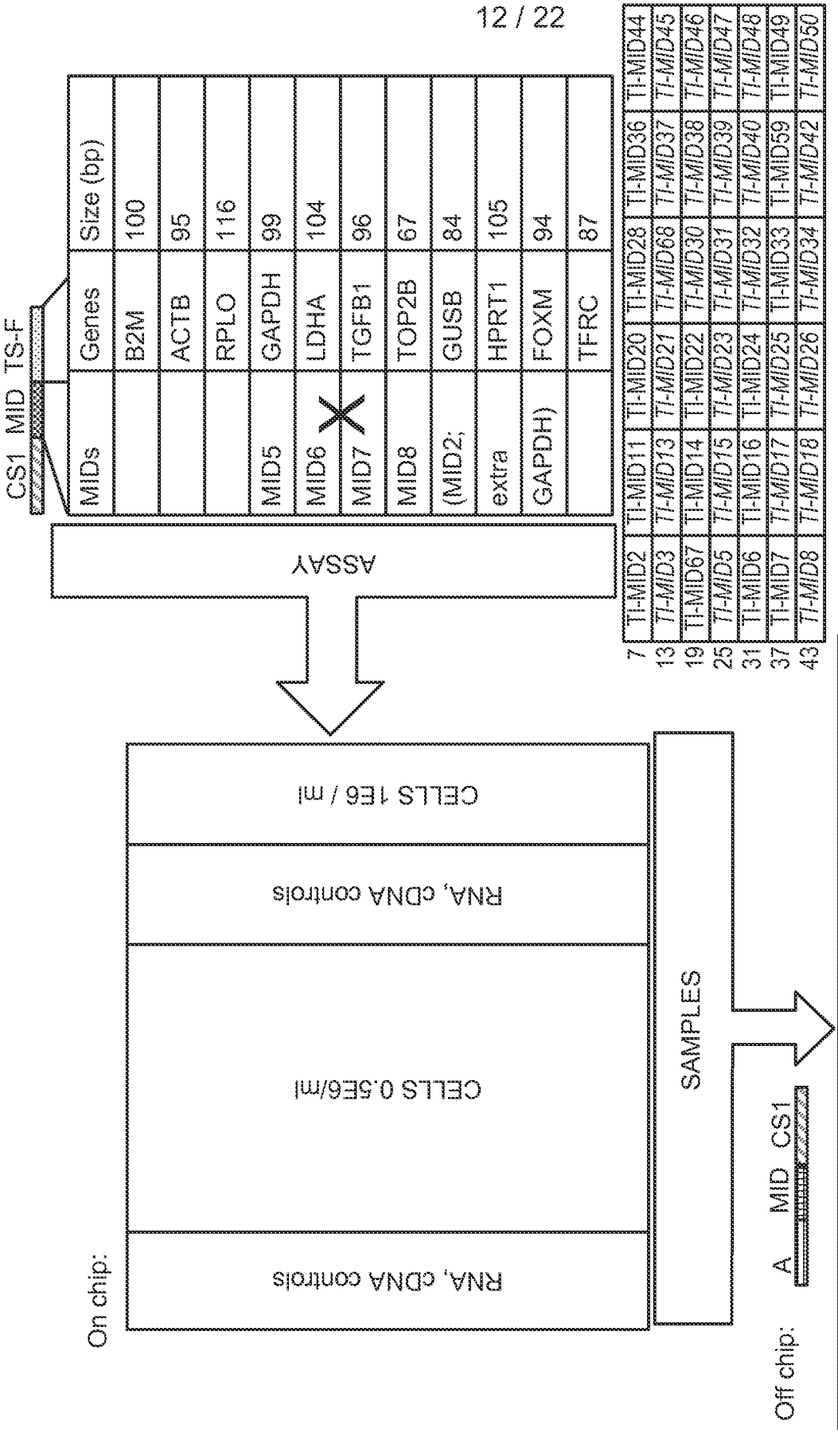

CS1 MID TS-F
MIDs
Genes
Size (bp)
B2M 100
ACTB 95
RPLO 116
MID5 GAPDH 99
MID6 LDHA 104
MID7 TGFB1 96
MID8 TOP2B 67
(MID2; GUSB 84
extra HPRT1 105
GAPDH) FOXM 94
TFRC 87
ASSAY
7 TI-MID2 TI-MID11 TI-MID20 TI-MID28 TI-MID36 TI-MID44
13 TI-MID3 TI-MID13 TI-MID21 TI-MID68 TI-MID37 TI-MID45
19 TI-MID67 TI-MID14 TI-MID22 TI-MID30 TI-MID38 TI-MID46
25 TI-MID5 TI-MID15 TI-MID23 TI-MID31 TI-MID39 TI-MID47
31 TI-MID6 TI-MID16 TI-MID24 TI-MID32 TI-MID40 TI-MID48
37 TI-MID7 TI-MID17 TI-MID25 TI-MID33 TI-MID59 TI-MID49
43 TI-MID8 TI-MID18 TI-MID26 TI-MID34 TI-MID42 TI-MID50
On chip:
RNA, cDNA controls
CELLS 0.5E6/ml
RNA, cDNA controls
CELLS 1E6 / ml
SAMPLES
Off chip:
A MID CS1
7 RNA100ng/ul RNA10ng/ul RNA1ng/ul cDNA10ng/ul cDNA1ng/ul NTC AA
13 Cells0.5E6 Cells0.5E6 Cells0.5E6 Cells0.5E6 Cells0.5E6 Cells0.5E6
19 Cells0.5E6 Cells0.5E6 NTC B5A Cells0.5E6 Cells0.5E6 Cells0.5E6
25 Cells0.5E6 Cells0.5E6 Cells0.5E6 Cells0.5E6 Cells0.5E6 Cells0.5E6
31 Cells0.5E6 Cells0.5E6 NTC B5A Cells0.5E6 Cells0.5E6 Cells0.5E6
37 RNA100ng/ul RNA10ng/ul RNA1ng/ul cDNA10ng/ul cDNA1ng/ul NTC AA
43 Cells1E6 Cells1E6 Cells1E6 Cells1E6 Cells1E6 Cells1E6

FIG. 10B

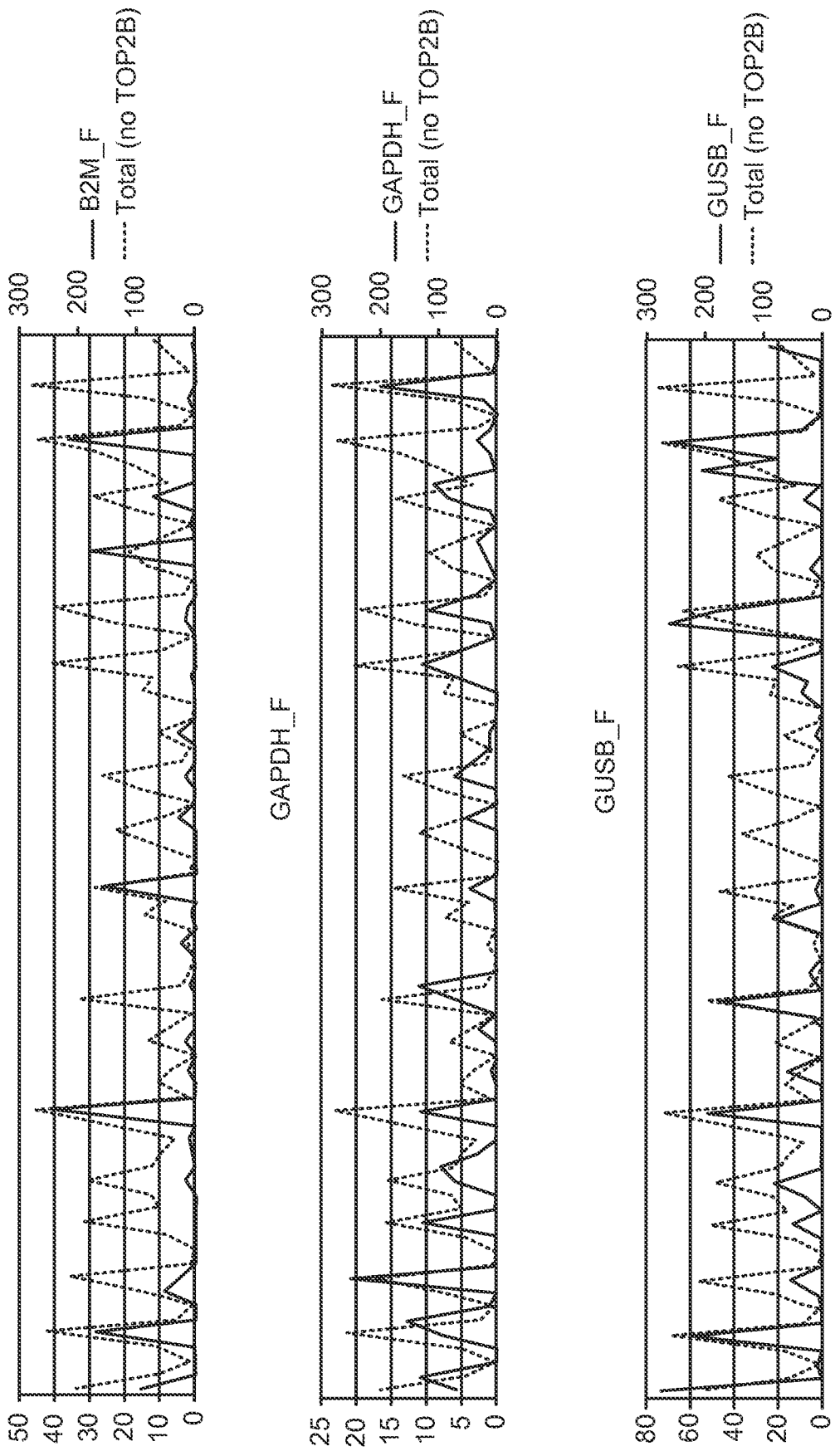


FIG. 11

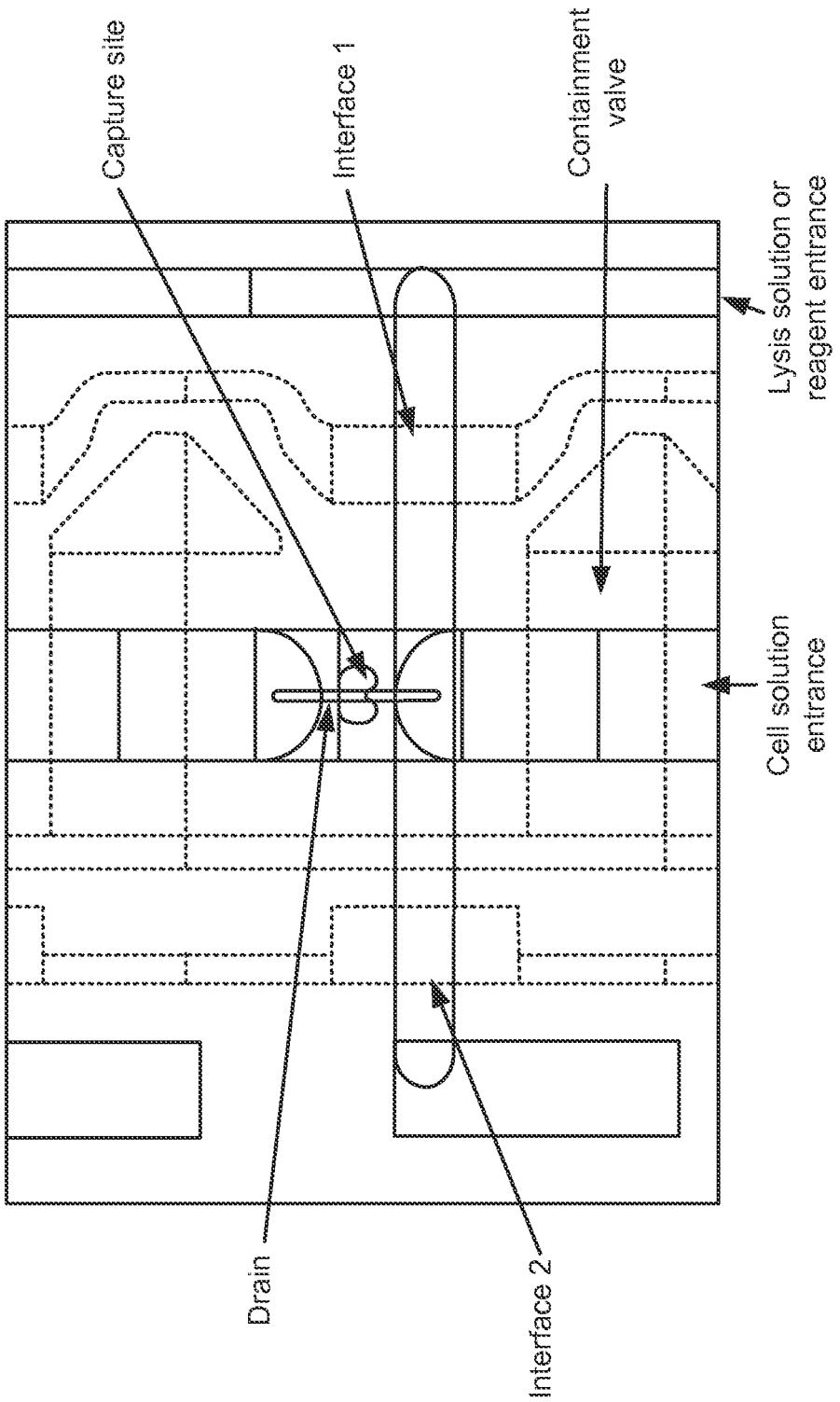

Capture site
Interface 1
Containment valve
Lysis solution or reagent entrance
Cell solution entrance
Drain
Interface 2

FIG. 12A

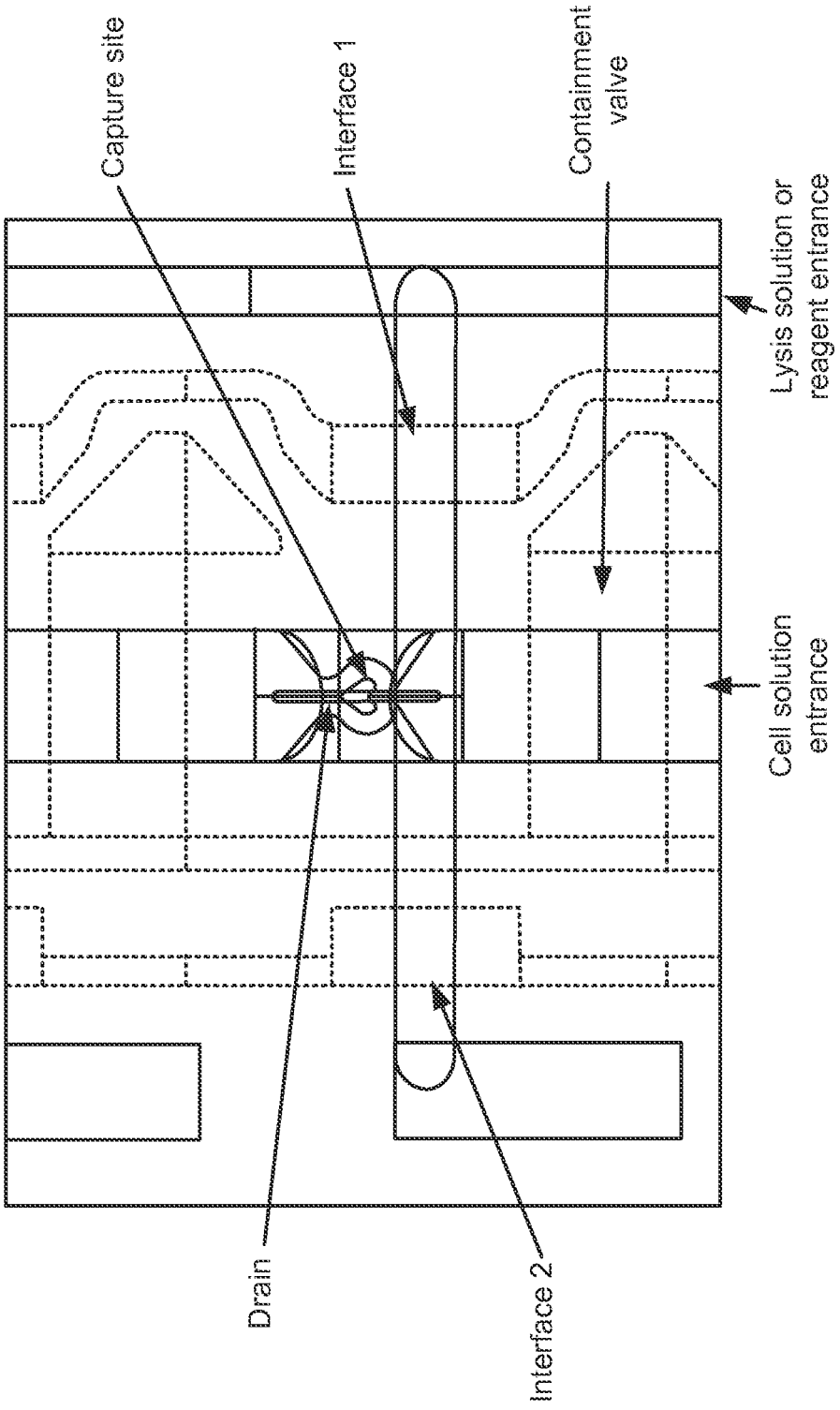

Capture site
Interface 1
Containment valve
Lysis solution or reagent entrance
Cell solution entrance
Drain
Interface 2

FIG. 12B

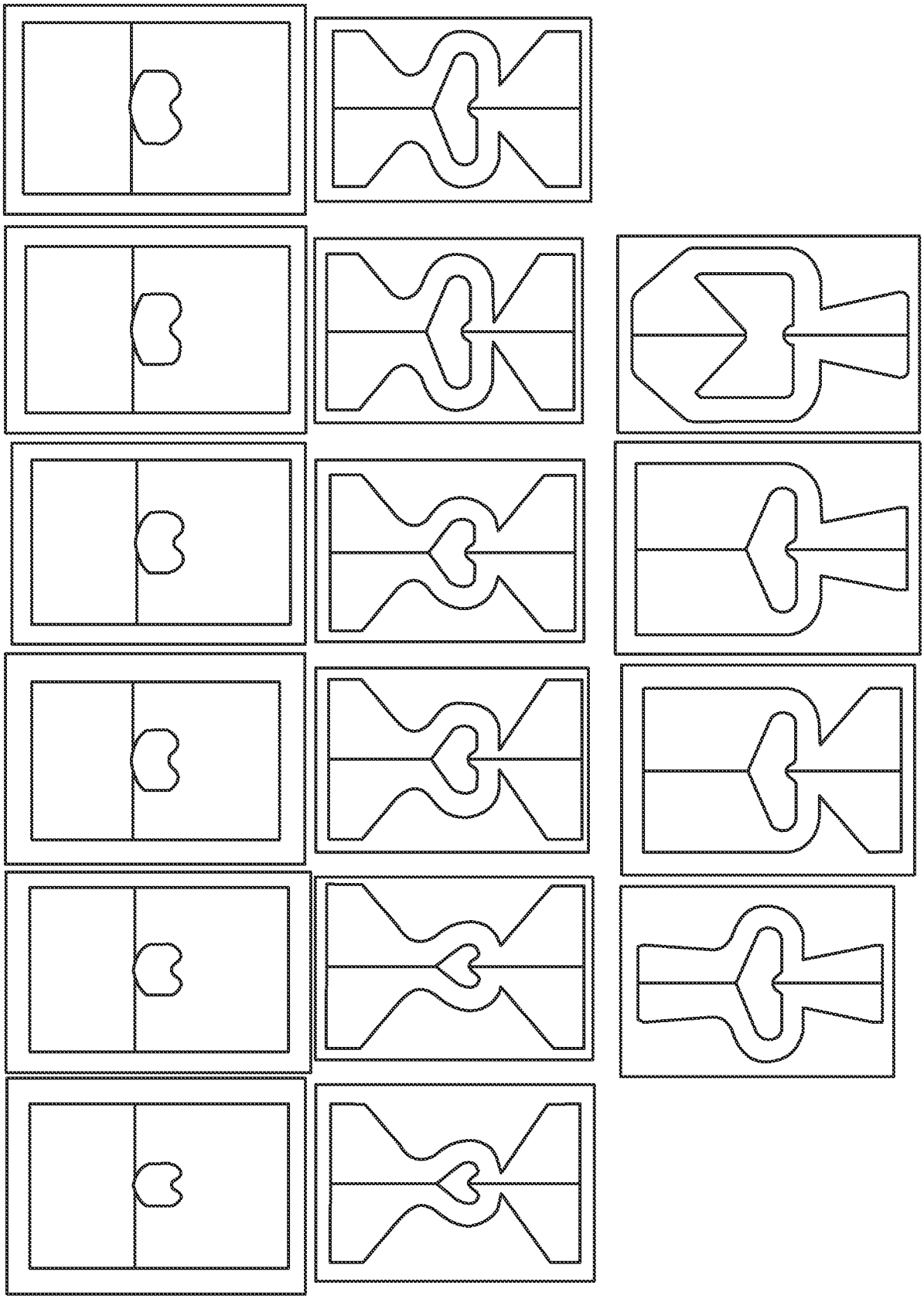


FIG. 13

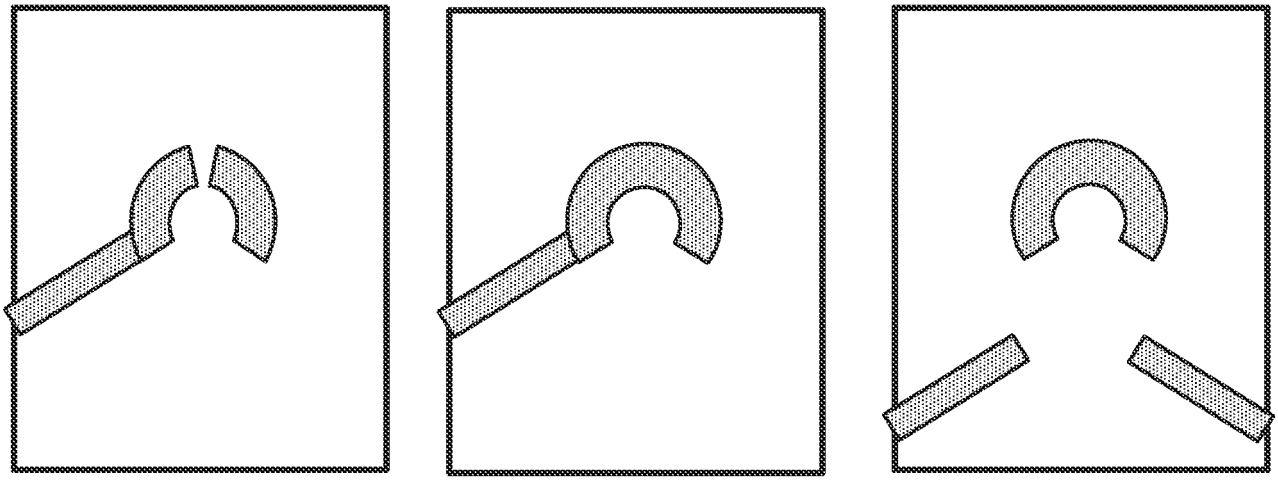


FIG. 14A

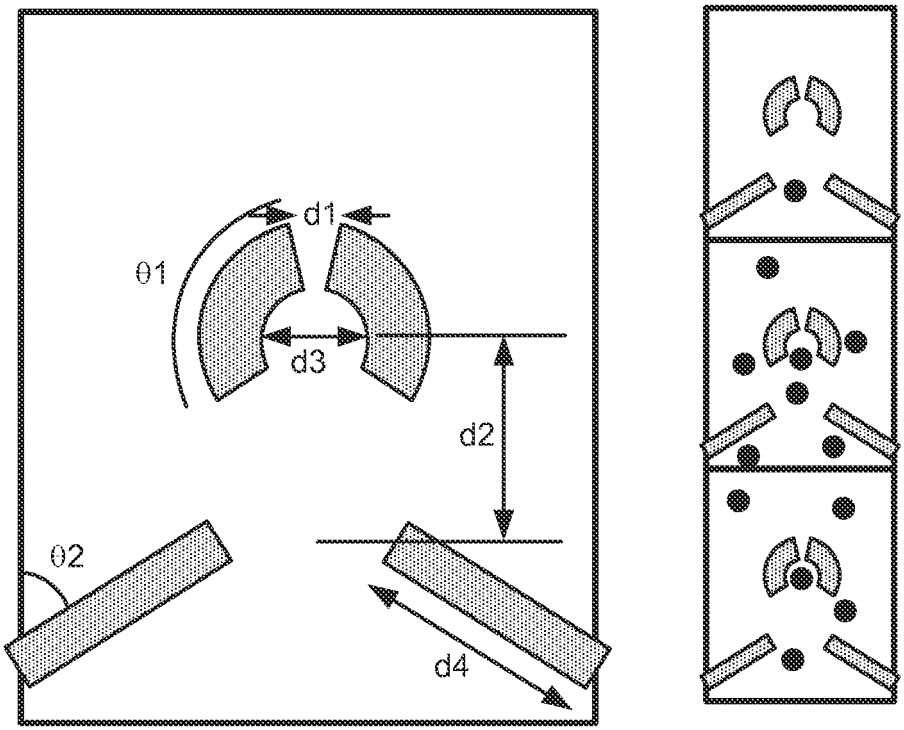


FIG. 14B

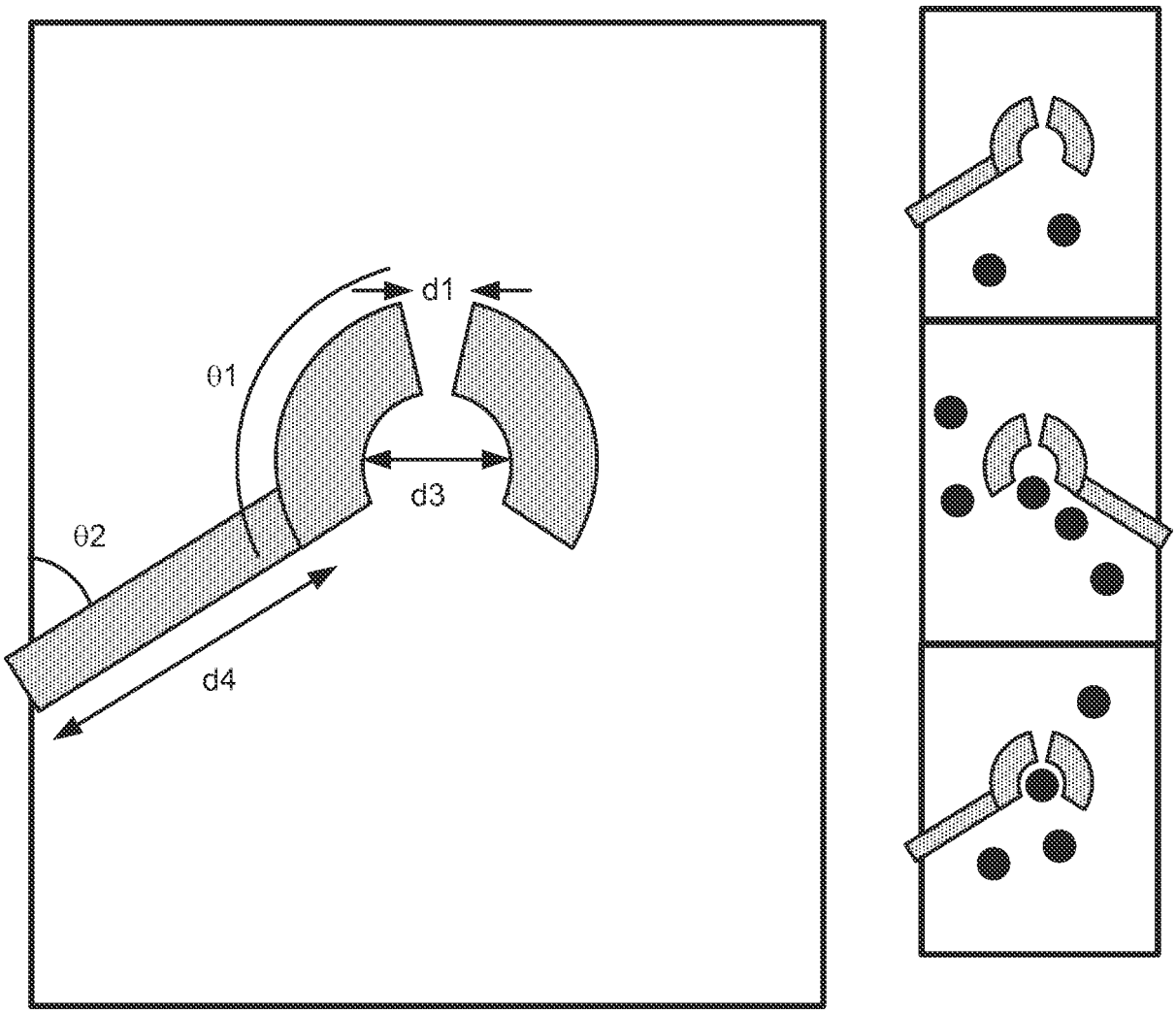


FIG. 14C

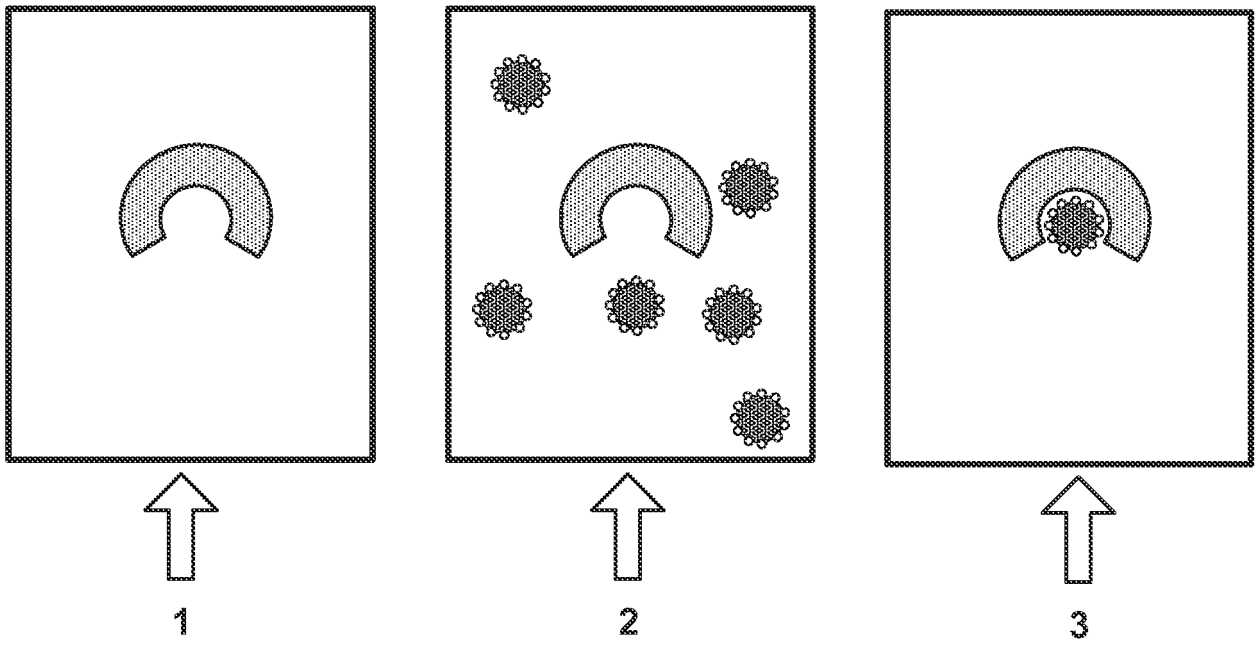


FIG. 15A

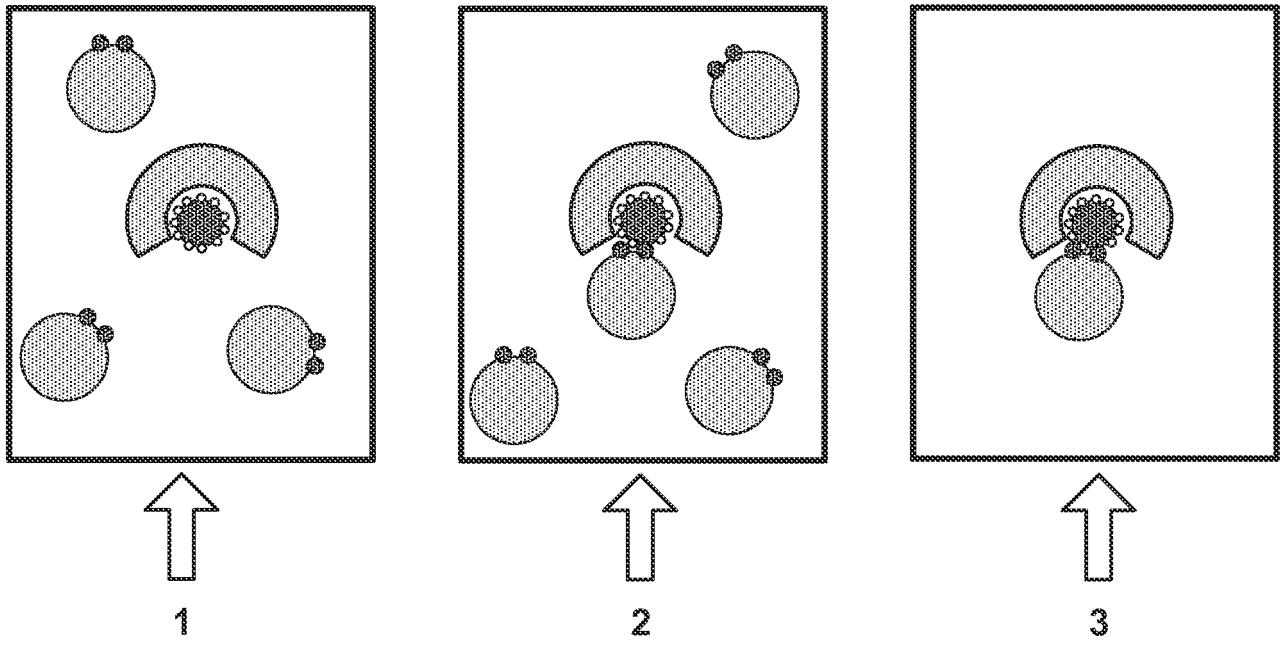


FIG. 15B

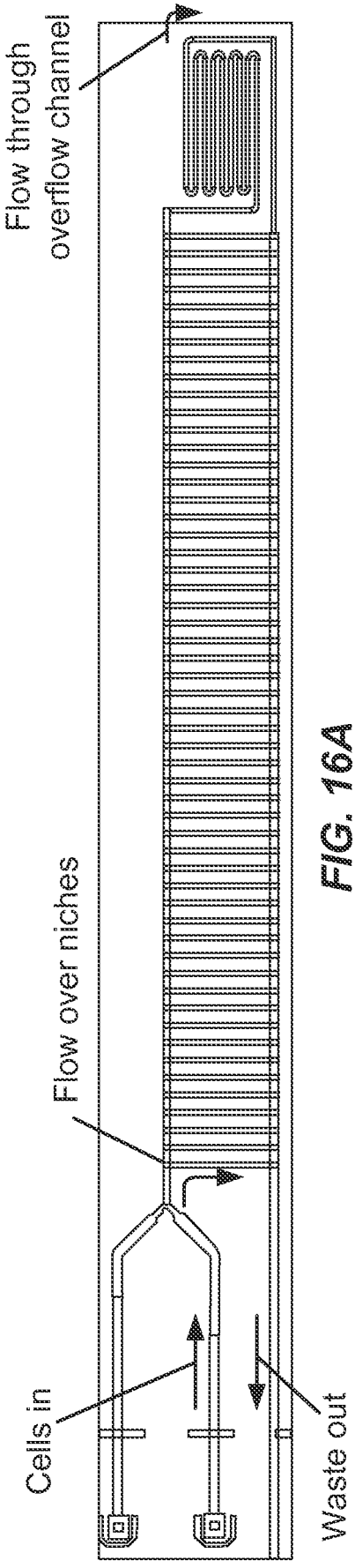


FIG. 16A

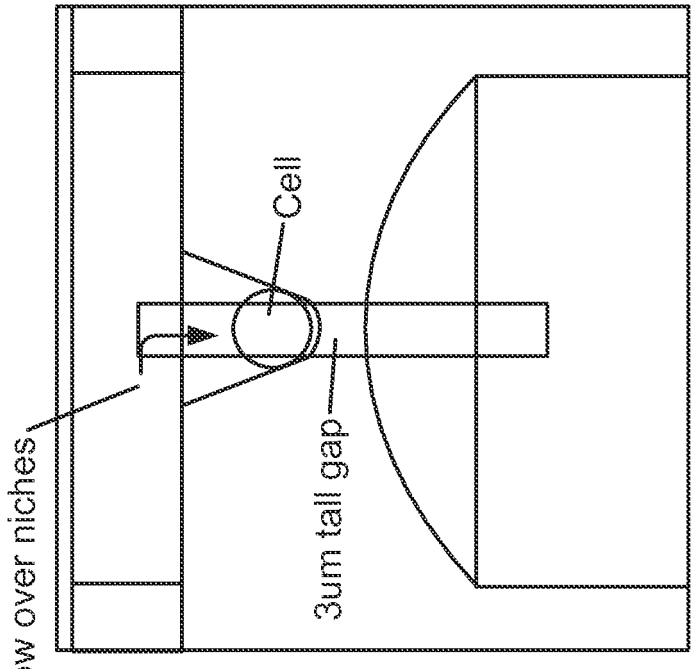


FIG. 16B

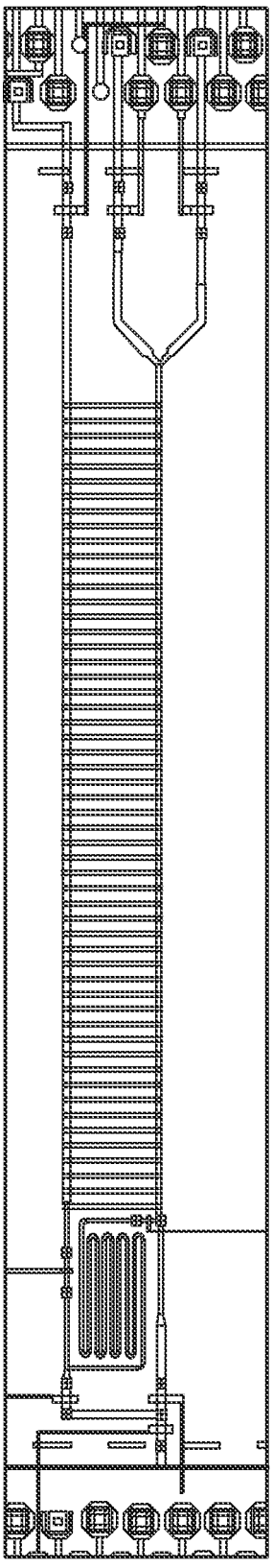


FIG. 16C

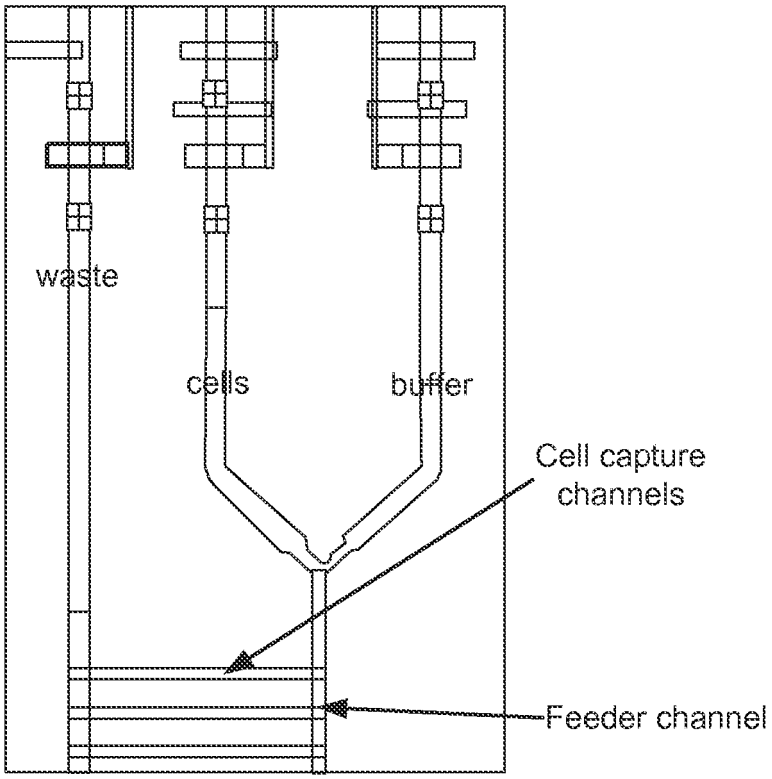


FIG. 16D

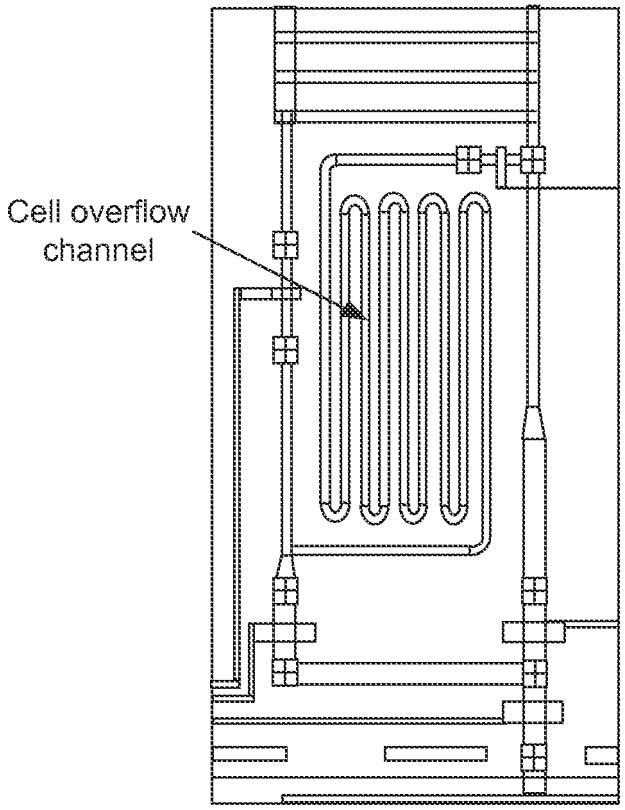


FIG. 16E

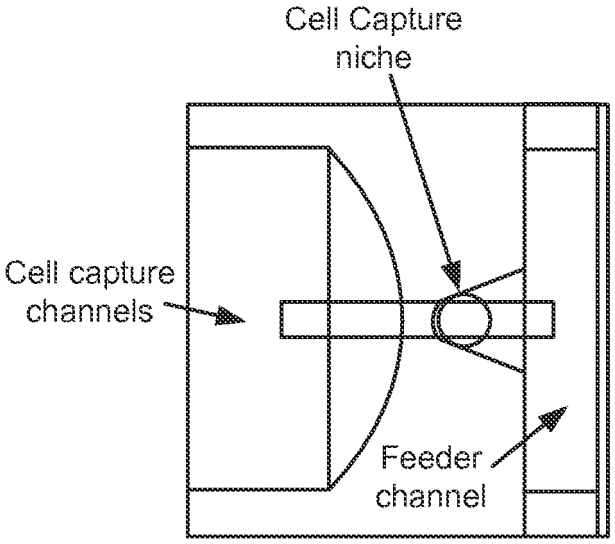


FIG. 16F

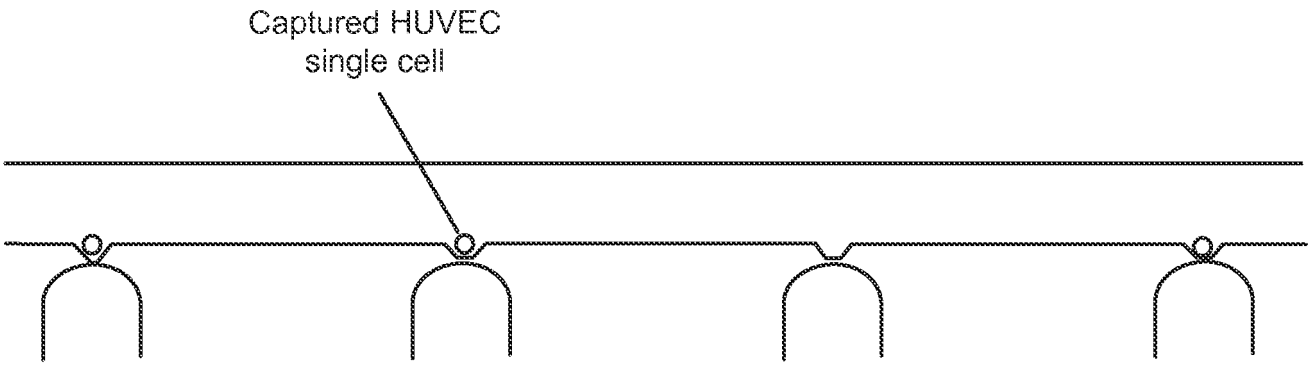


FIG.16G