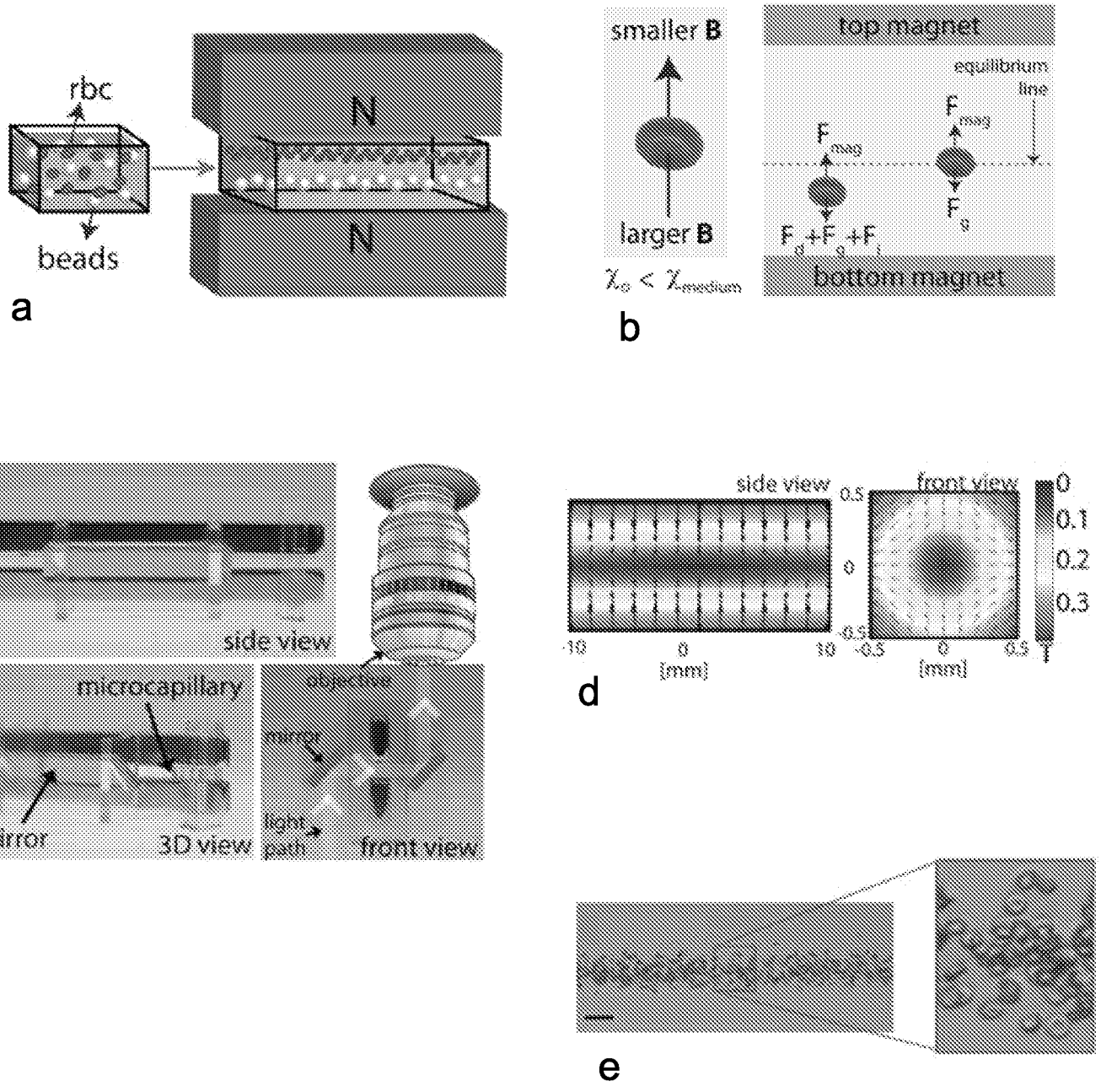

rbc
beads
N
N
a
smaller B
larger B
$\chi_o < \chi_{medium}$
top magnet
equilibrium line
F_{mag}
F_g
$F_d+F_g+F_i$
bottom magnet
b
side view
microcapillary
mirror
3D view
objective
light path
front view
c
side view
front view
0.5
0
-0.5
-10
0
10
[mm]
-0.5
0
0.5
[mm]
0
0.1
0.2
0.3
T
d
e

FIG. 1

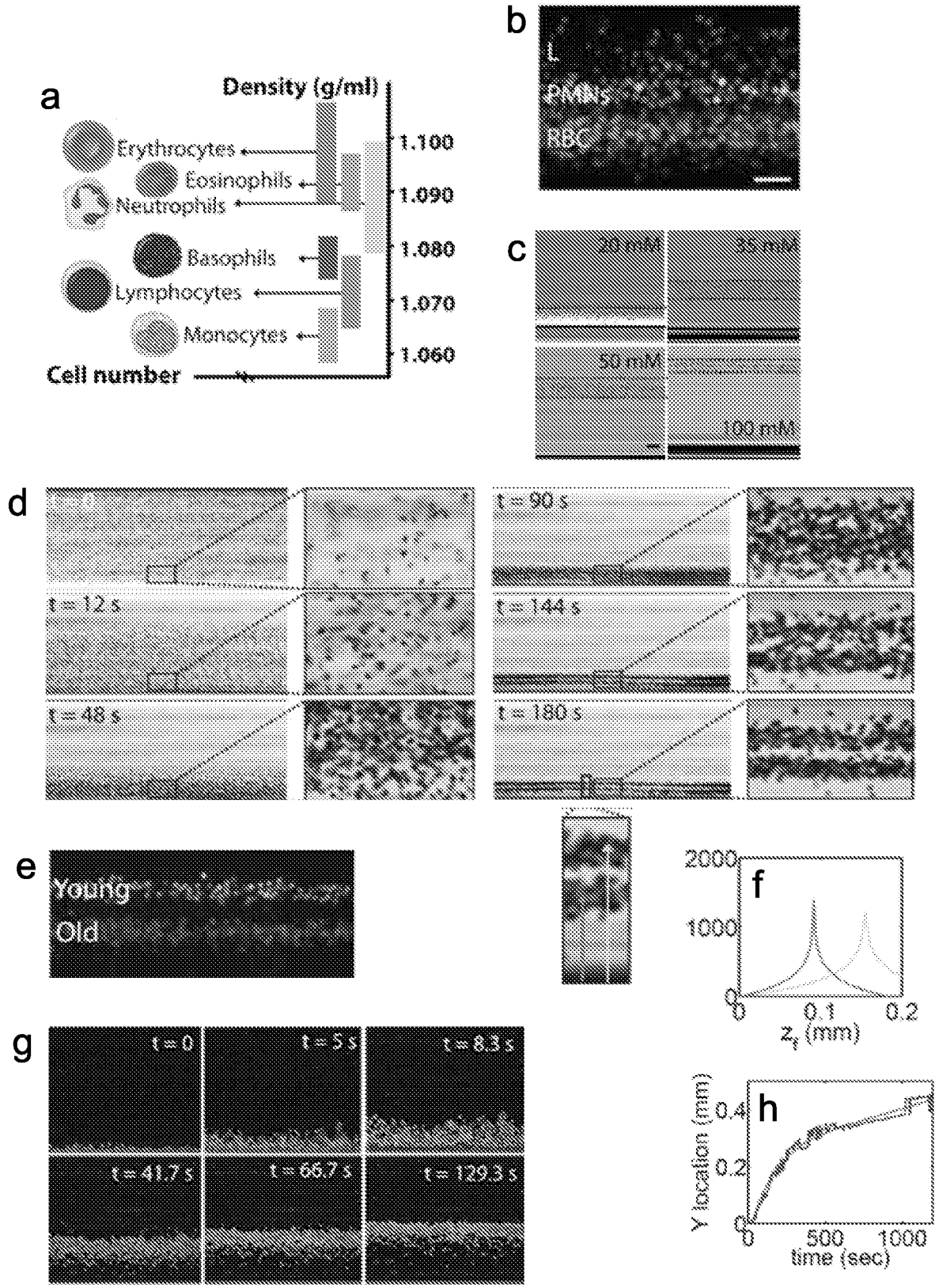

a
Density (g/ml)
Erythrocytes
Eosinophils
Neutrophils
Basophils
Lymphocytes
Monocytes
Cell number
1.100
1.090
1.080
1.070
1.060
b
L
PMNs
RBC
c
20 mM
35 mM
50 mM
100 mM
d
t = 0 s
t = 12 s
t = 48 s
t = 90 s
t = 144 s
t = 180 s
e
Young
Old
f
2000
1000
0
0
0.1
0.2
z_f (mm)
g
t = 0
t = 5 s
t = 8.3 s
t = 41.7 s
t = 66.7 s
t = 129.3 s
h
Y location (mm)
0.4
0.2
0
0
500
1000
time (sec)

FIG. 2

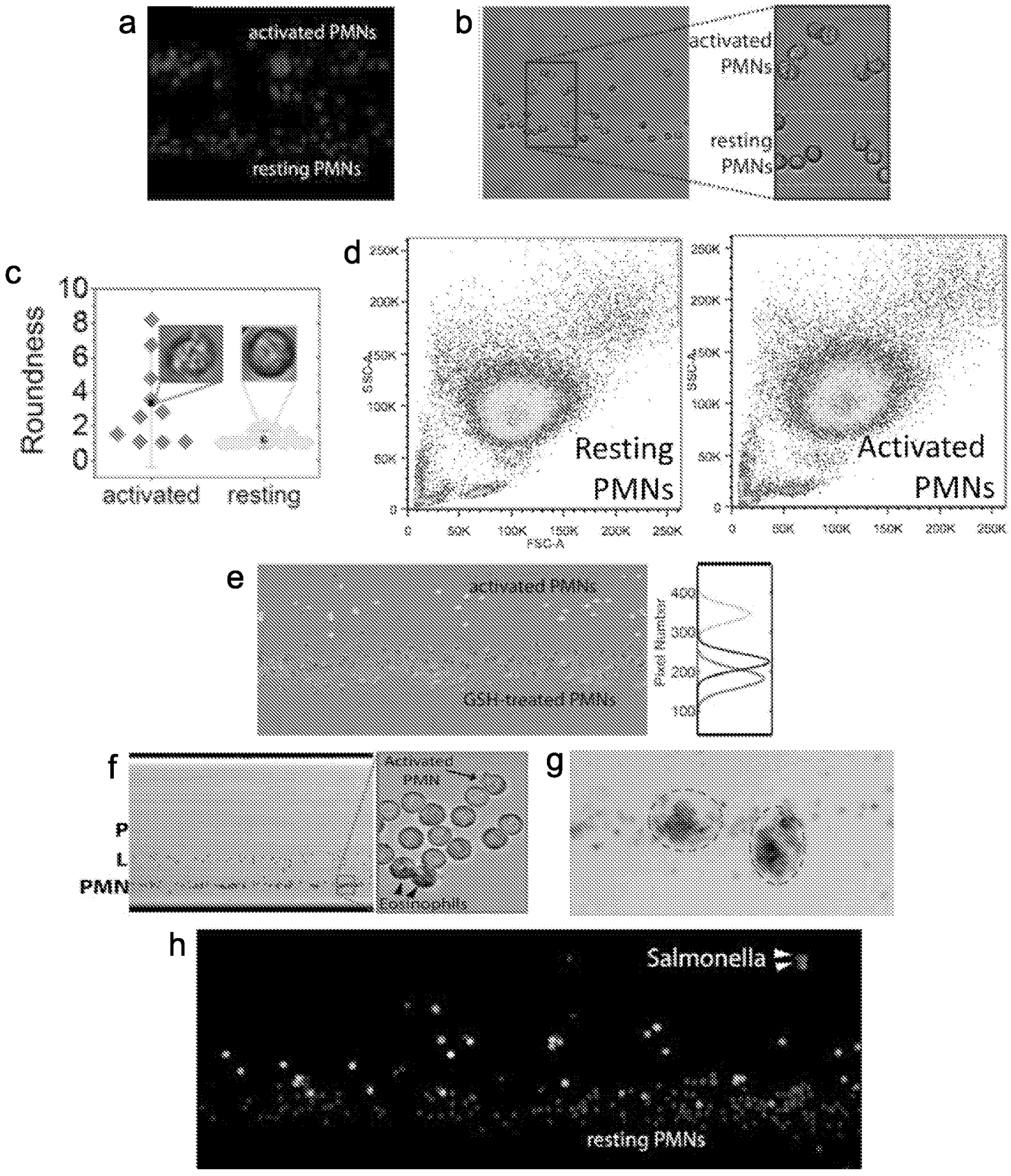

a
activated PMNs
resting PMNs
b
activated PMNs
resting PMNs
c
Roundness
activated
resting
d
SSC-A
FSC-A
Resting PMNs
Activated PMNs
e
activated PMNs
GSH-treated PMNs
Pixel Number
f
PMN
Activated PMN
Eosinophils
g
h
Salmonella
resting PMNs

FIG. 3

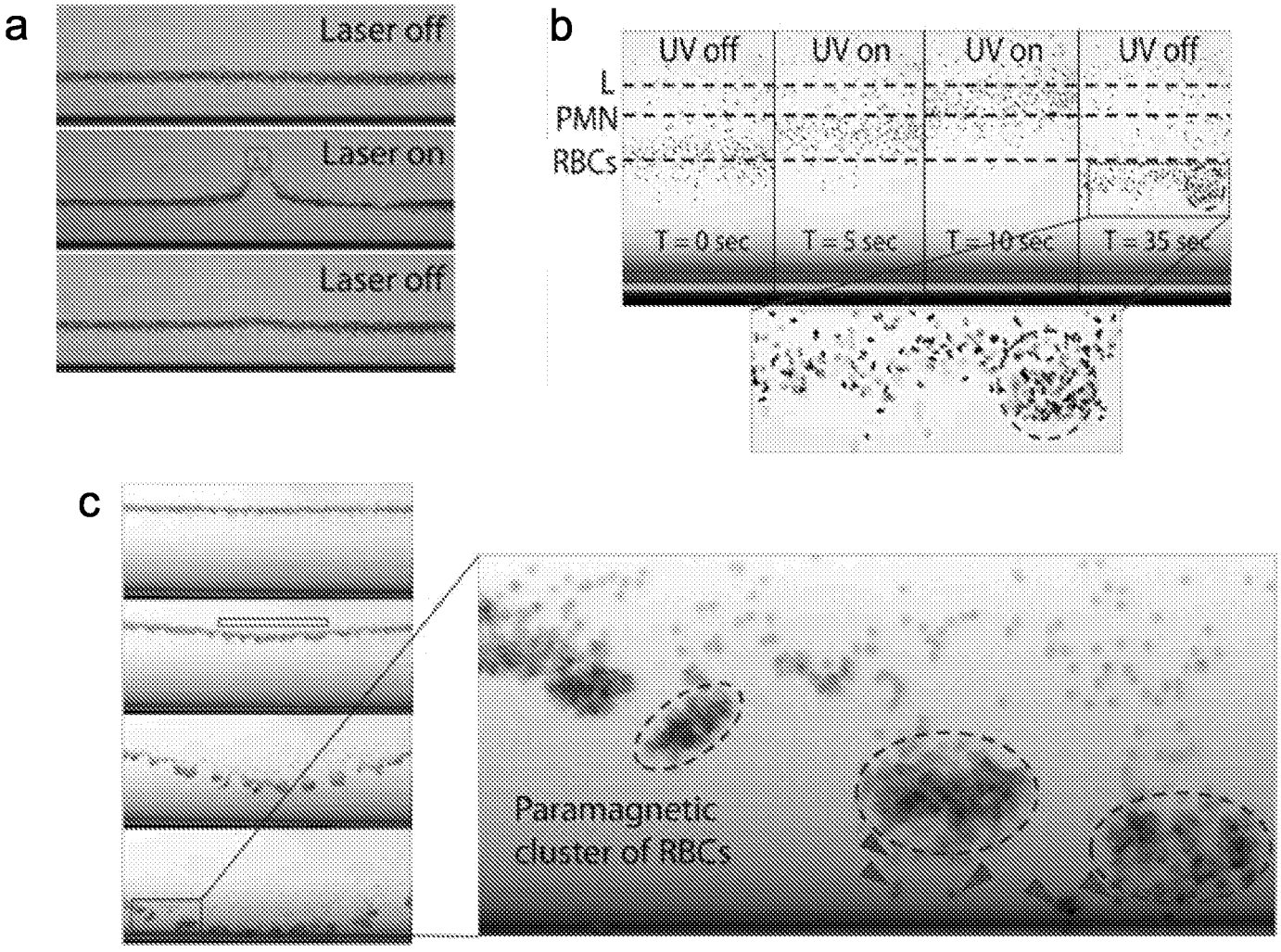

a
Laser off
Laser on
Laser off
b
UV off
UV on
UV on
UV off
L
PMN
RBCs
T = 0 sec
T = 5 sec
T = 10 sec
T = 35 sec
c
Paramagnetic
cluster of RBCs

FIG. 4

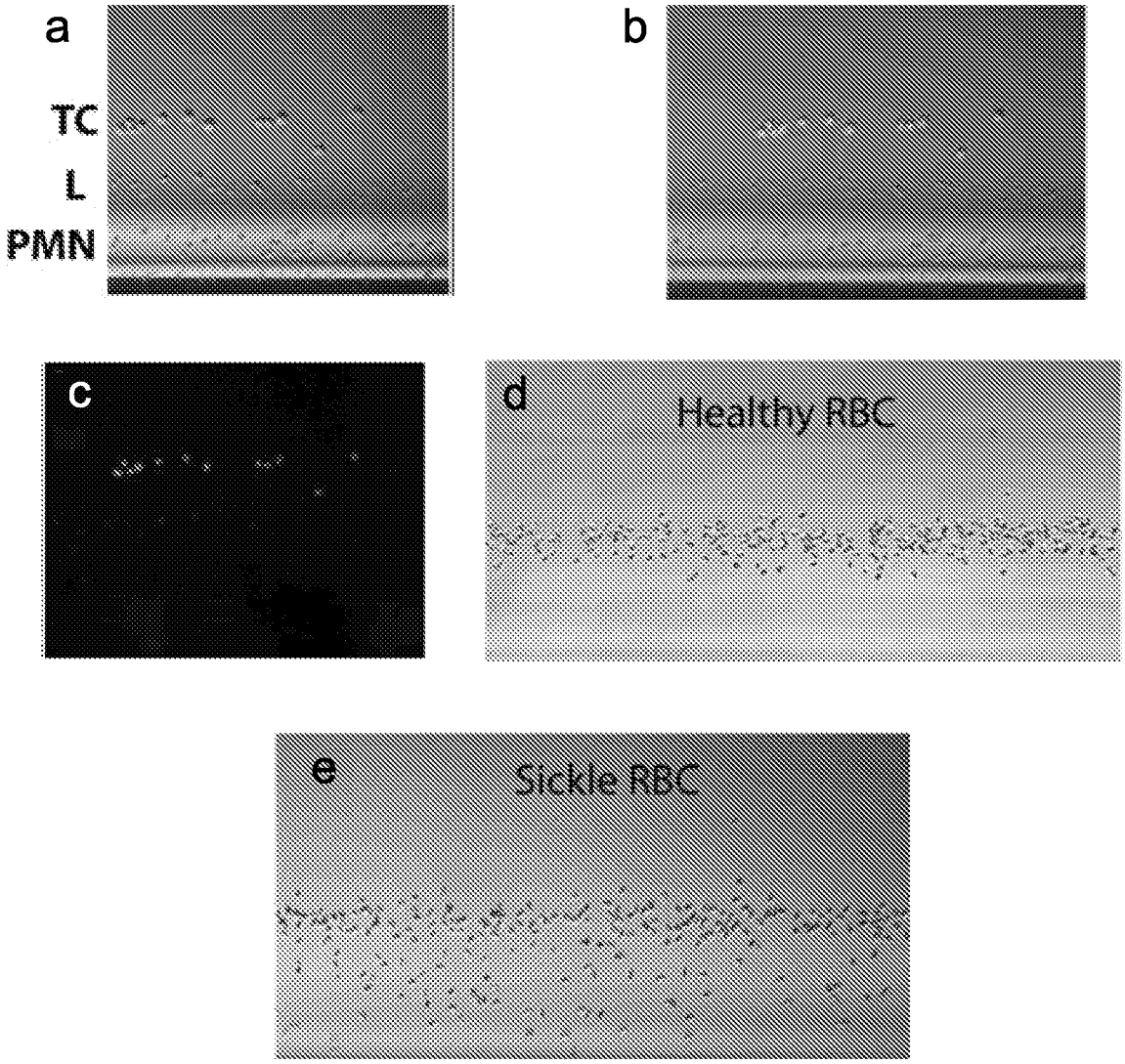


FIG. 5

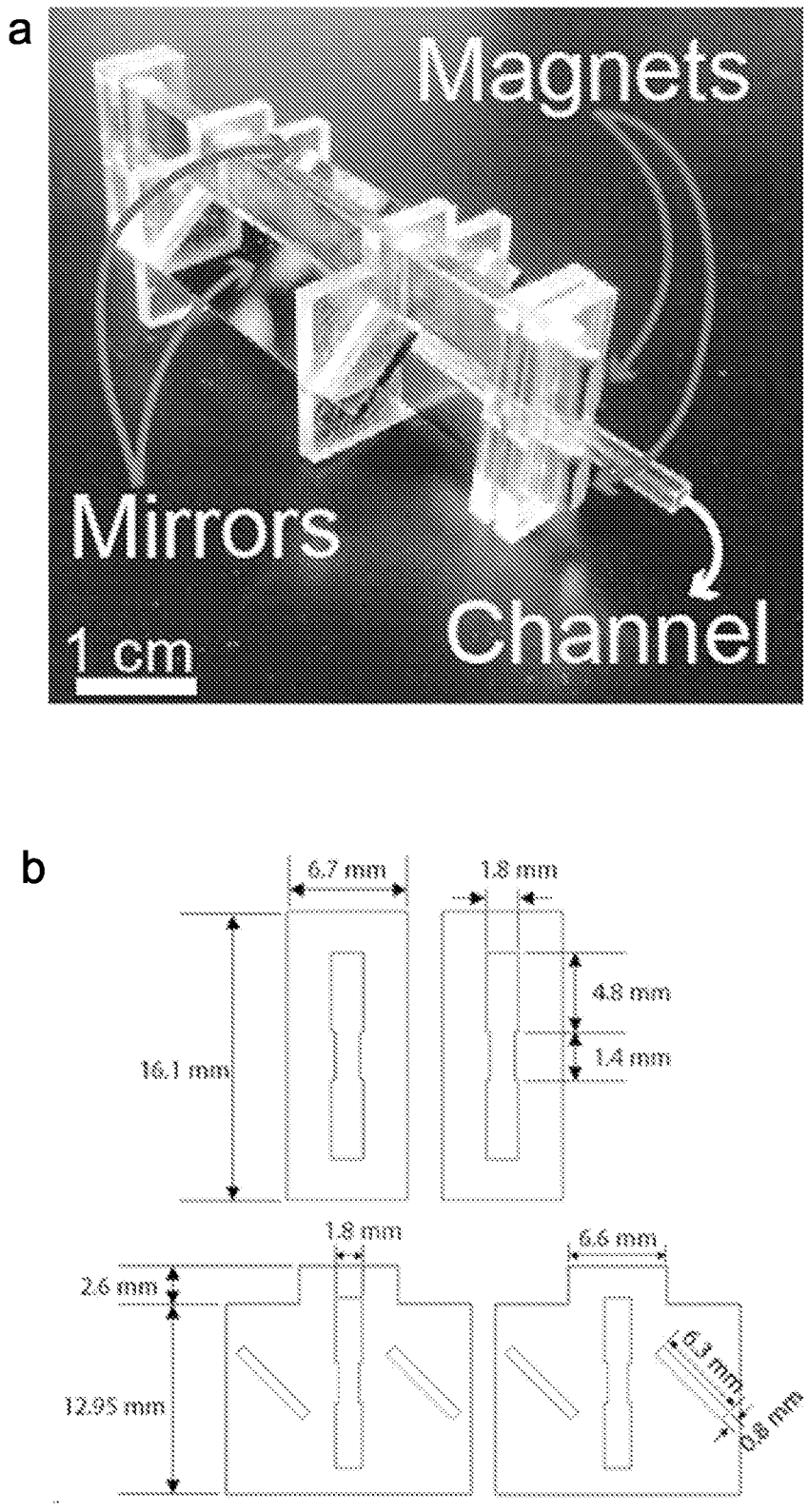

a
Magnets
Mirrors
Channel
1 cm
b
6.7 mm
1.8 mm
4.8 mm
1.4 mm
16.1 mm
1.8 mm
6.6 mm
2.6 mm
12.95 mm
0.3 mm
0.8 mm

FIG. 6

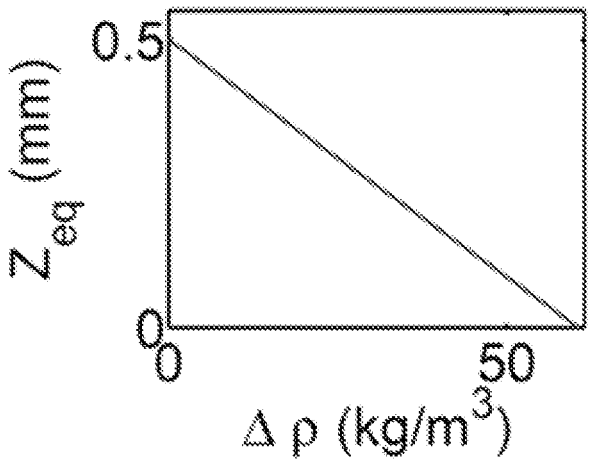


FIG. 7

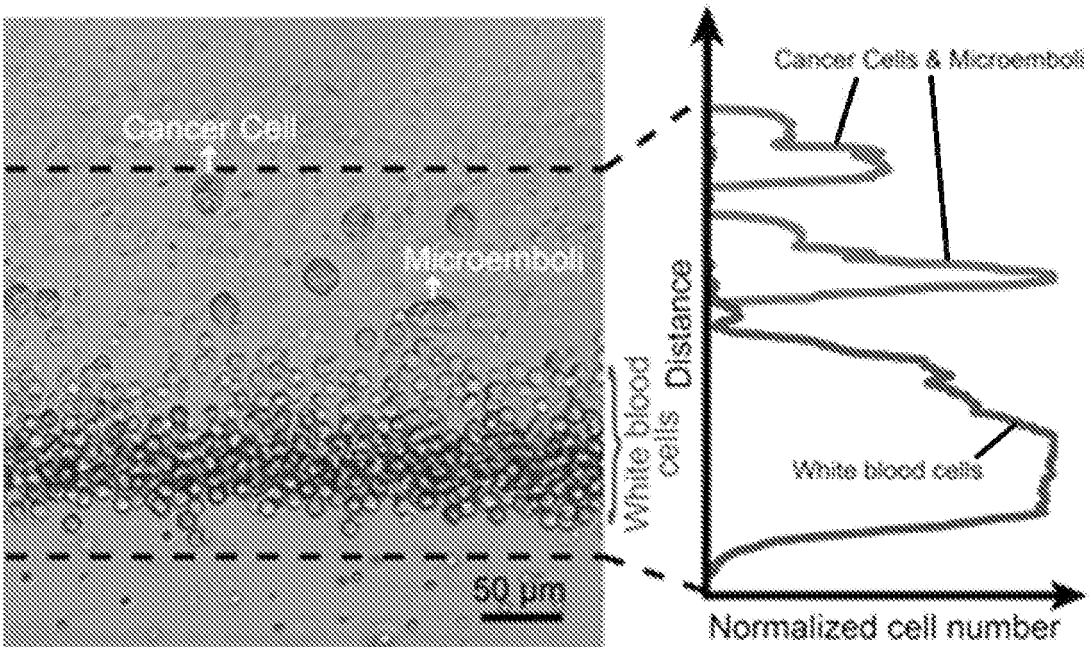

Cancer Cell
Microemboli
50 µm
White blood cells
Distance
Cancer Cells & Microemboli
White blood cells
Normalized cell number

FIG. 8

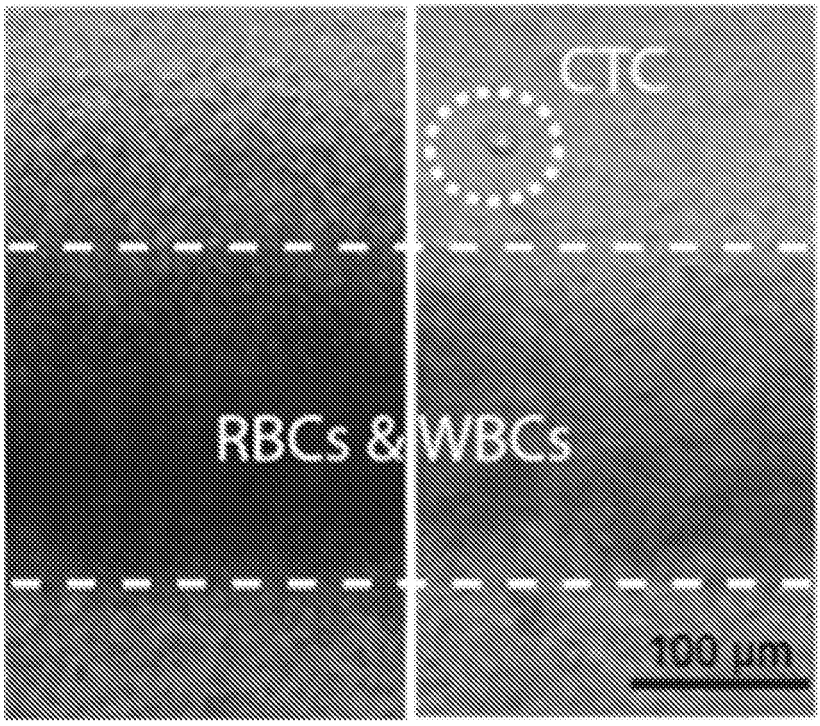
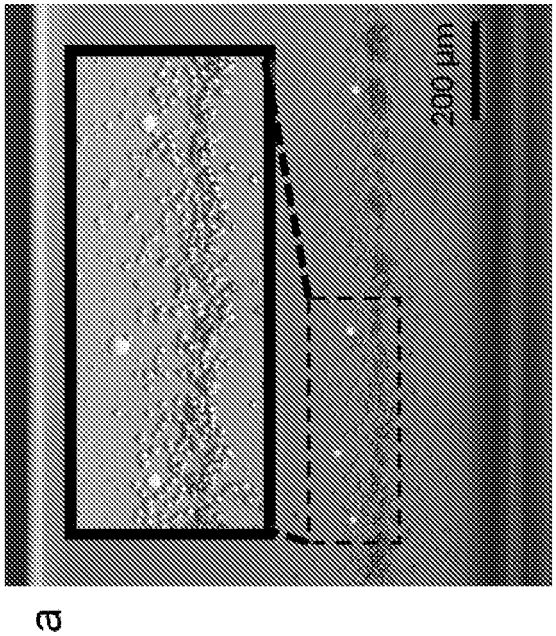

CTC
RBCs & WBCs
100 µm

FIG. 9


a
200 μm

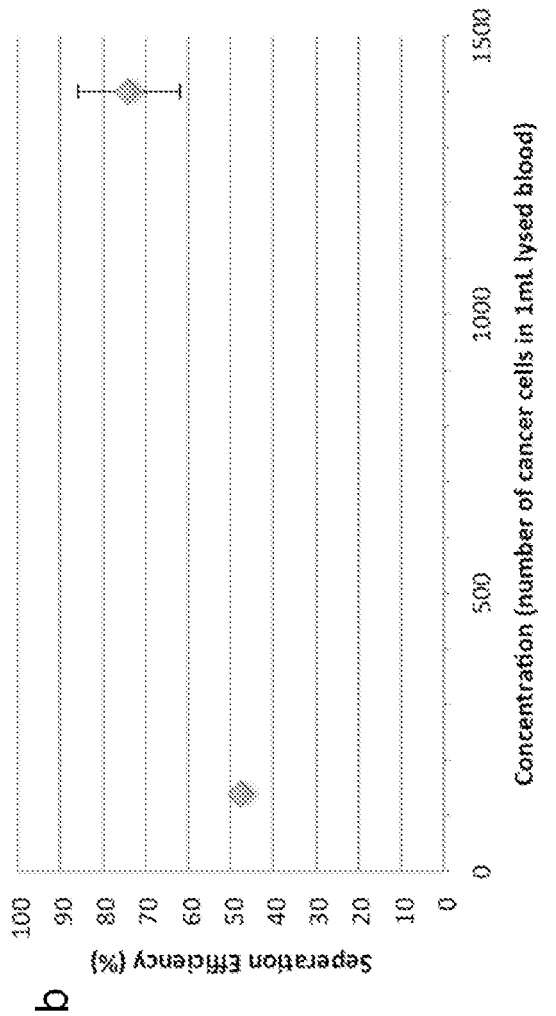

b
Seperation Efficiency (%)
100
90
80
70
60
50
40
30
20
10
0
0
500
1000
1500
Concentration (number of cancer cells in 1mL lysed blood)

FIG. 10

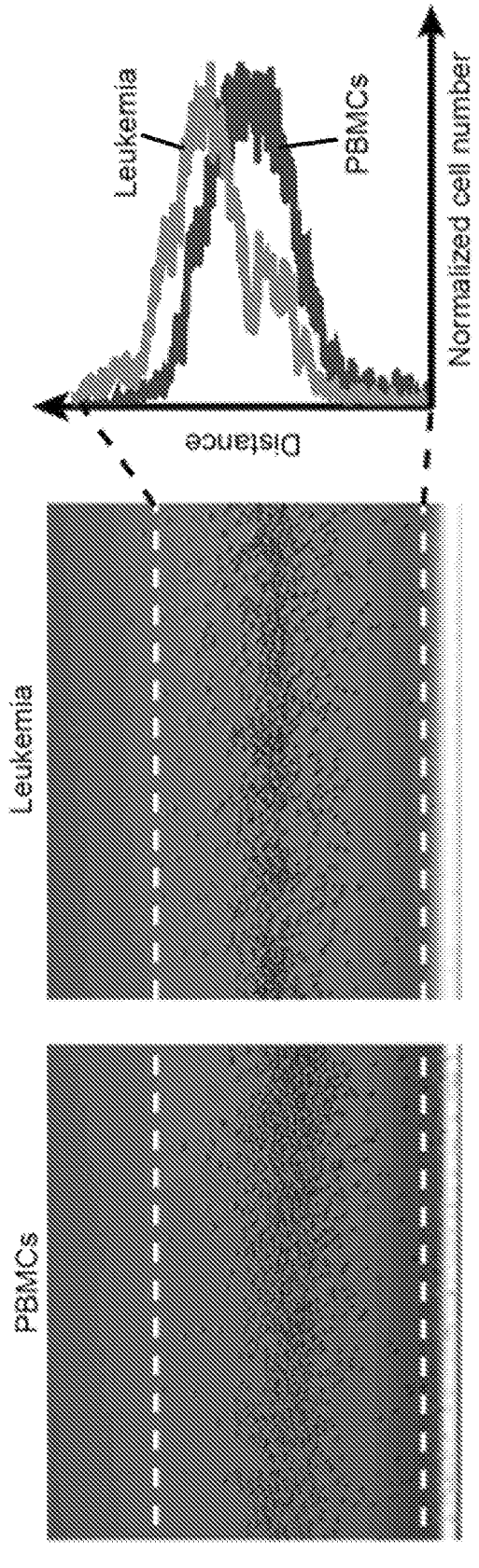

PBMCs
Leukemia
Leukemia
PBMCs
Distance
Normalized cell number

FIG. 11

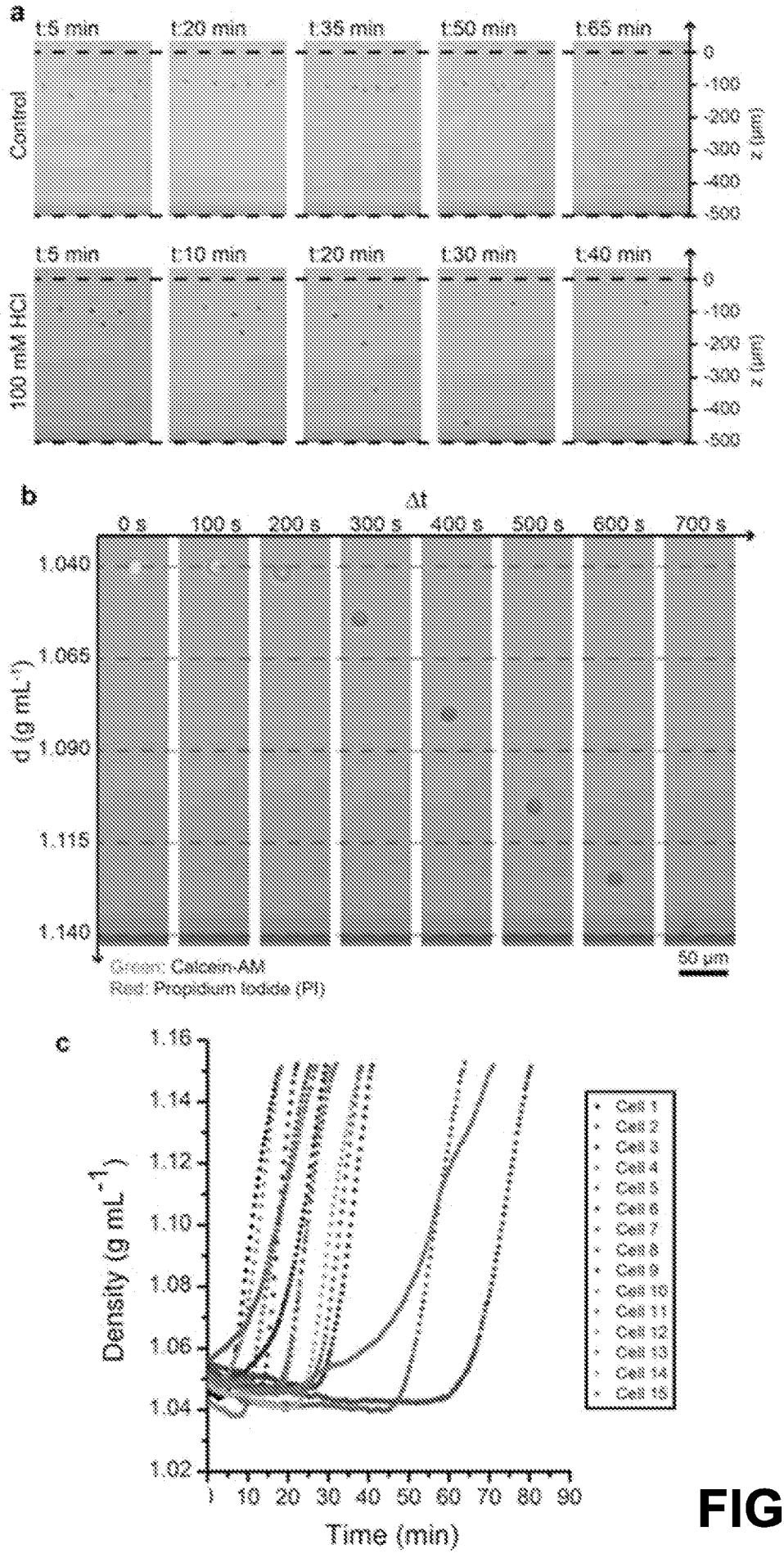

a
t:5 min
t:20 min
t:35 min
t:50 min
t:65 min
Control
0
-100
-200
-300
-400
-500
z (µm)
t:5 min
t:10 min
t:20 min
t:30 min
t:40 min
100 mM HCl
b
Δt
0 s
100 s
200 s
300 s
400 s
500 s
600 s
700 s
1.040
1.065
1.090
1.115
1.140
d (g mL-1)
Green: Calcein-AM
Red: Propidium Iodide (PI)
50 µm
c
1.16
1.14
1.12
1.10
1.08
1.06
1.04
1.02
Density (g mL-1)
10 20 30 40 50 60 70 80 90
Time (min)
Cell 1
Cell 2
Cell 3
Cell 4
Cell 5
Cell 6
Cell 7
Cell 8
Cell 9
Cell 10
Cell 11
Cell 12
Cell 13
Cell 14
Cell 15

FIG. 12

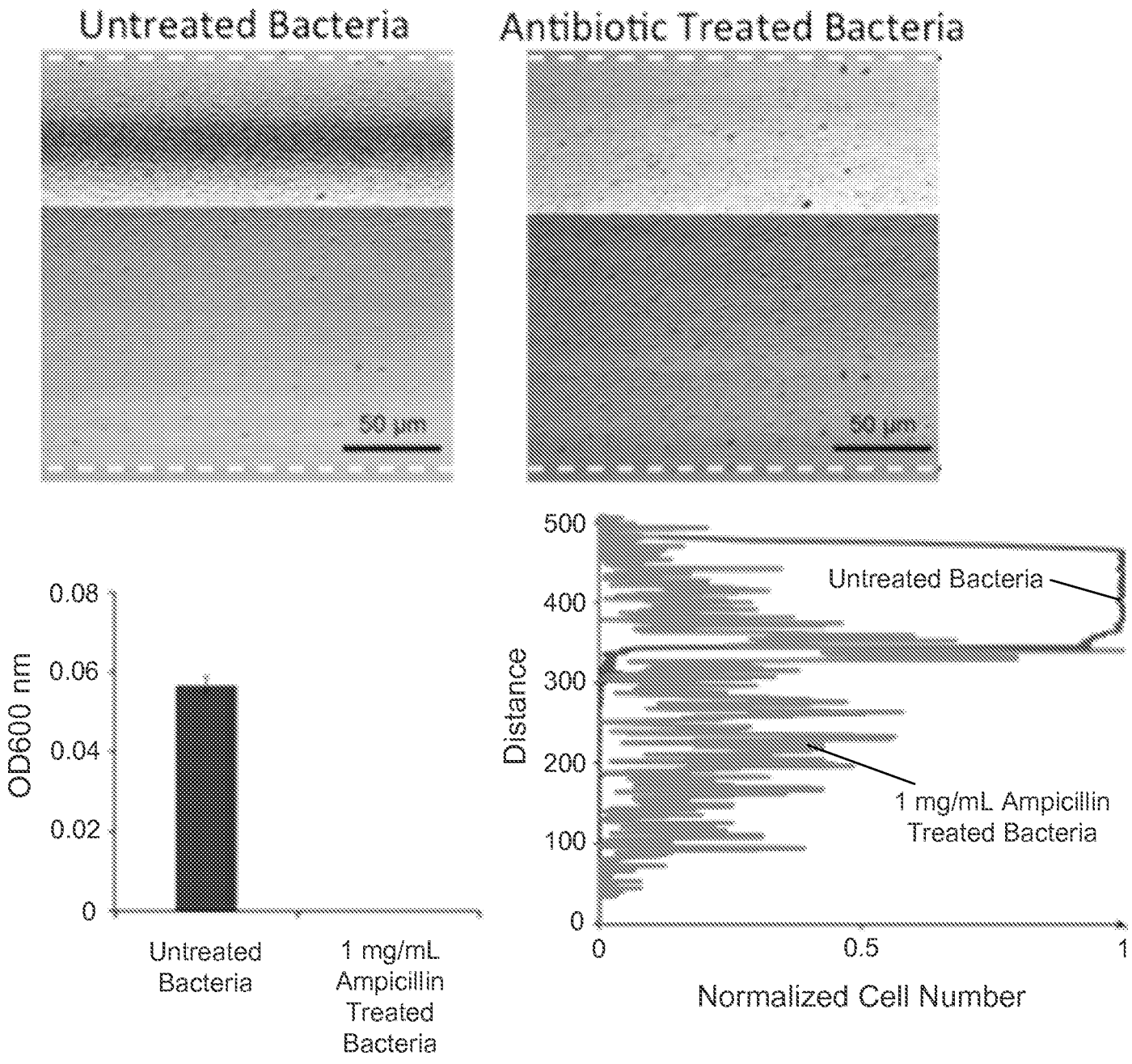

Untreated Bacteria
Antibiotic Treated Bacteria
50 µm
50 µm
OD600 nm
0.08
0.06
0.04
0.02
0
Untreated Bacteria
1 mg/mL Ampicillin Treated Bacteria
Distance
500
400
300
200
100
0
0
0.5
1
Normalized Cell Number
Untreated Bacteria
1 mg/mL Ampicillin Treated Bacteria

FIG. 13

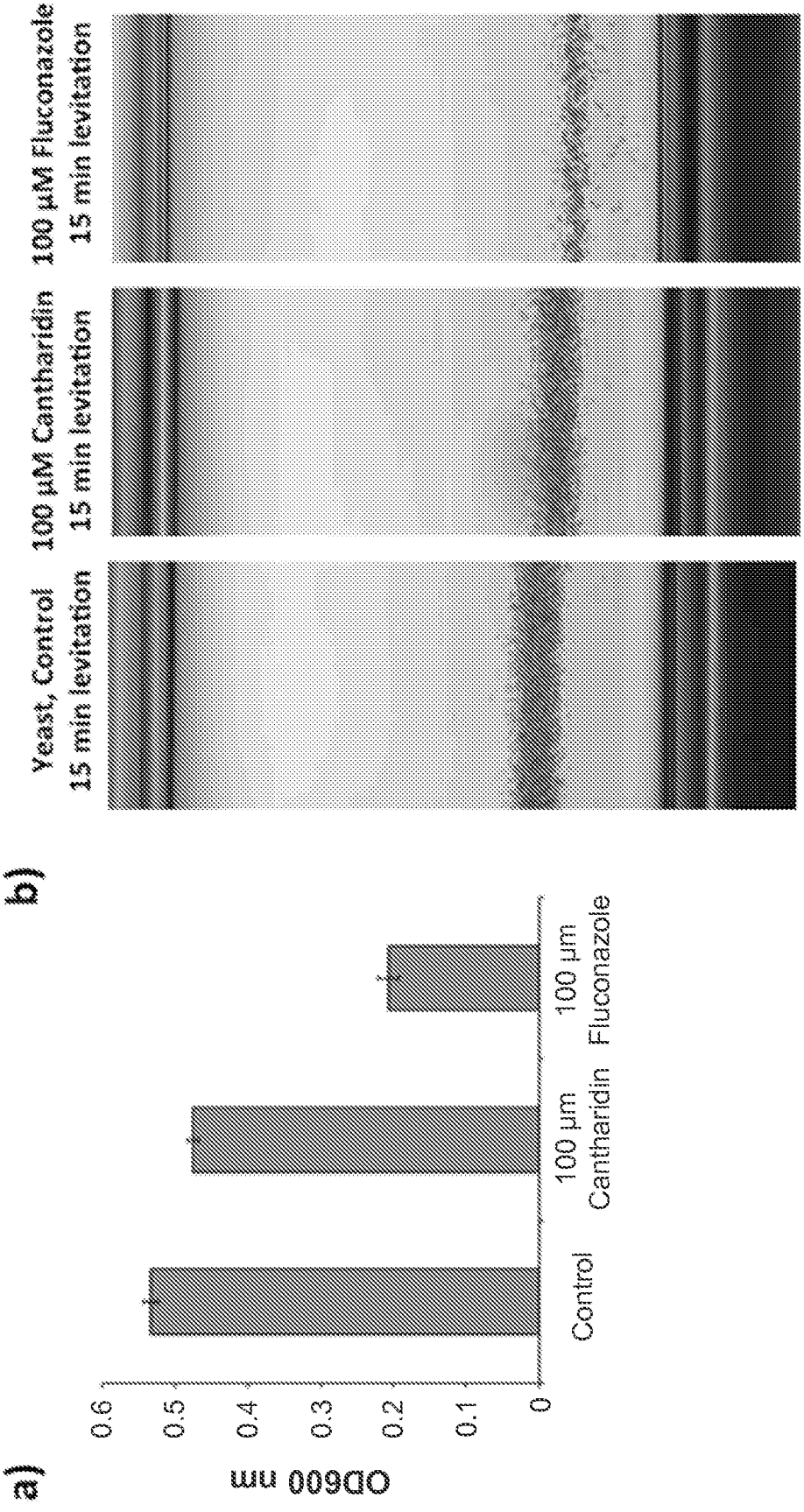

a)
OD600 nm
0.6
0.5
0.4
0.3
0.2
0.1
0
Control
100 µm Cantharidin
100 µm Fluconazole
b)
Yeast, Control 15 min levitation
100 µM Cantharidin 15 min levitation
100 µM Fluconazole 15 min levitation

FIG. 14

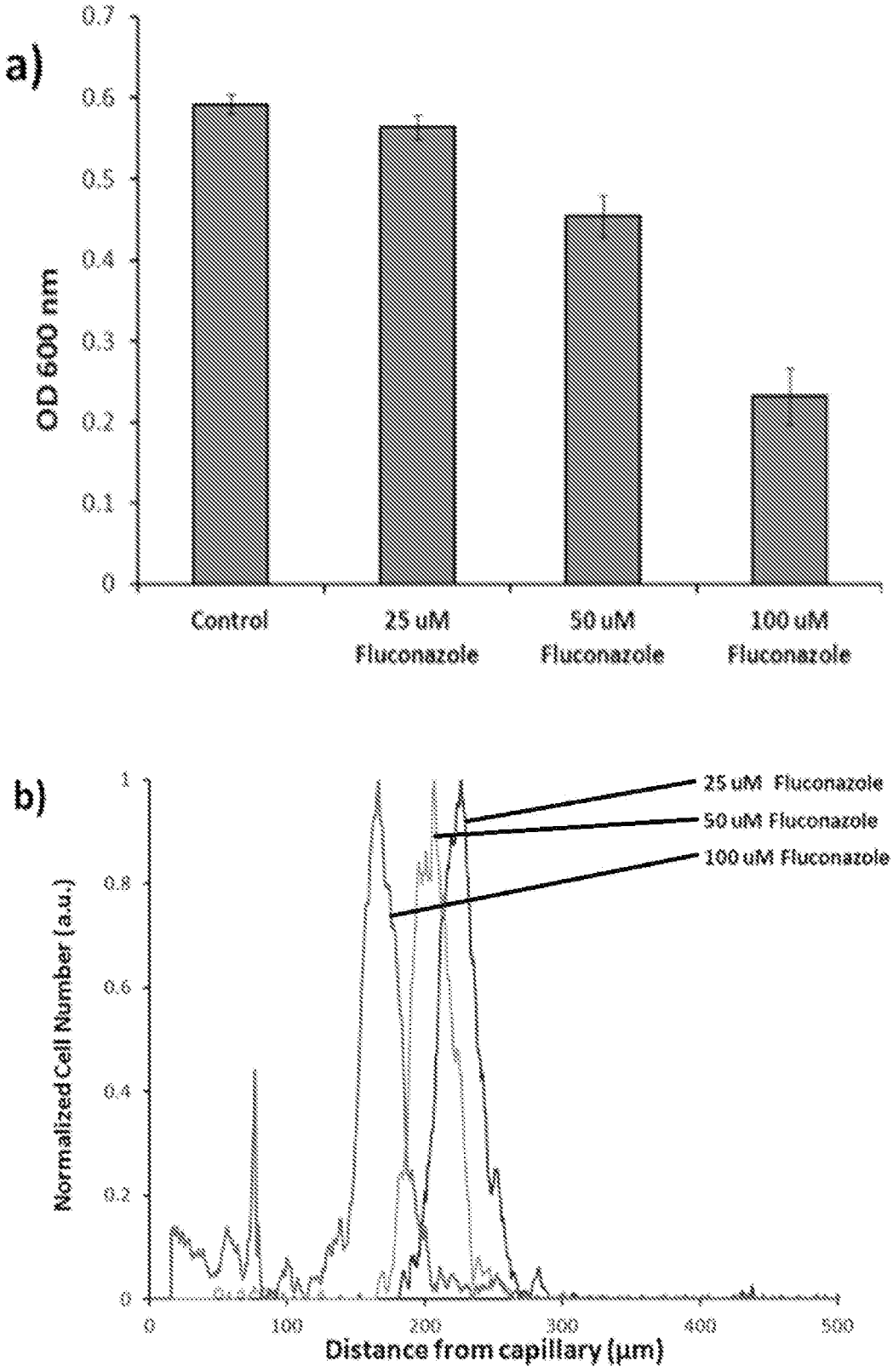

a)
OD 600 nm
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Control
25 uM Fluconazole
50 uM Fluconazole
100 uM Fluconazole
b)
Normalized Cell Number (a.u.)
1
0.8
0.6
0.4
0.2
0
0
100
200
300
400
500
Distance from capillary (µm)
25 uM Fluconazole
50 uM Fluconazole
100 uM Fluconazole

FIG. 15

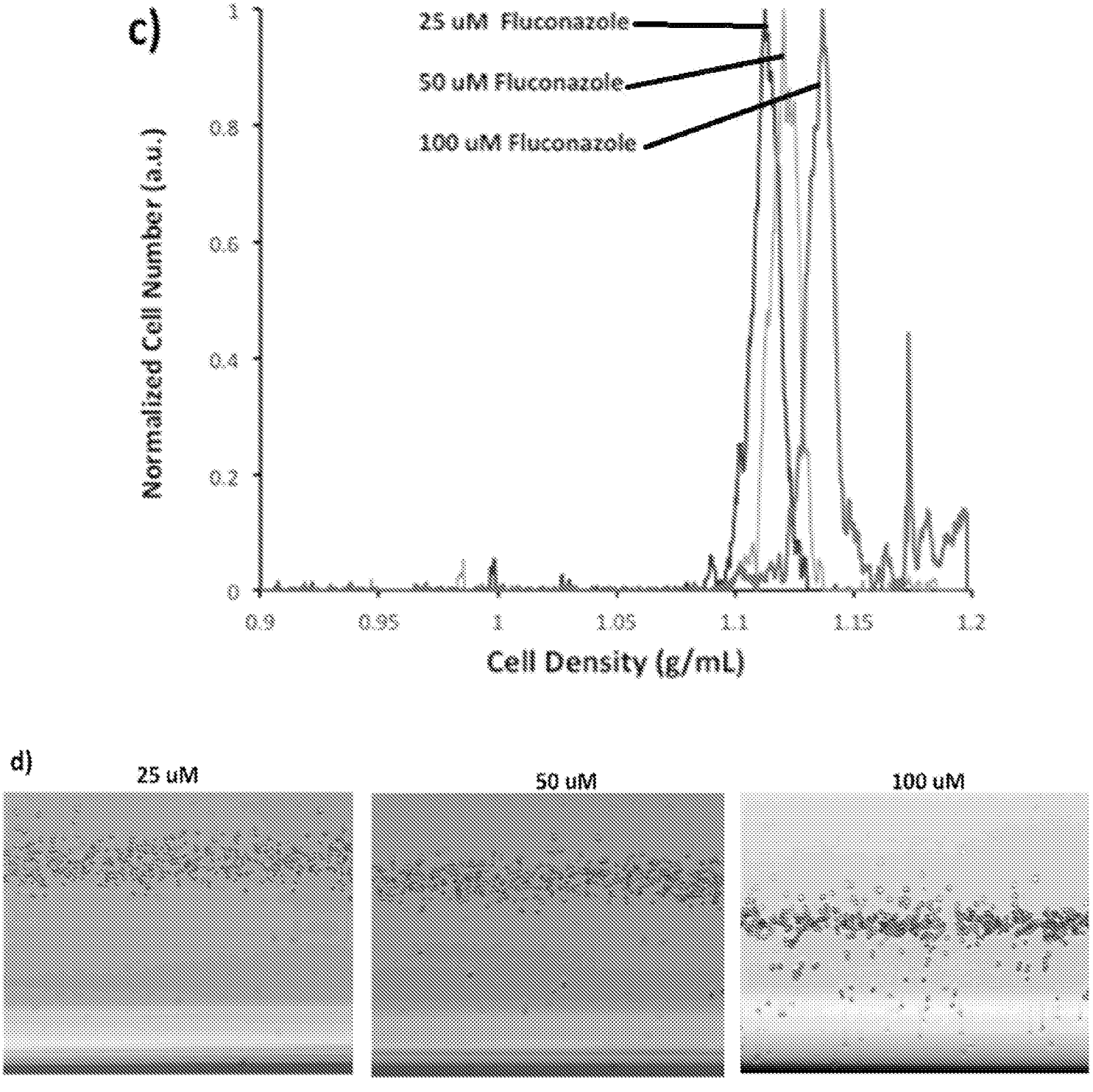

c)
25 uM Fluconazole
50 uM Fluconazole
100 uM Fluconazole
Normalized Cell Number (a.u.)
0
0.2
0.4
0.6
0.8
1
0.9
0.95
1
1.05
1.1
1.15
1.2
Cell Density (g/mL)
d)
25 uM
50 uM
100 uM

FIG. 15

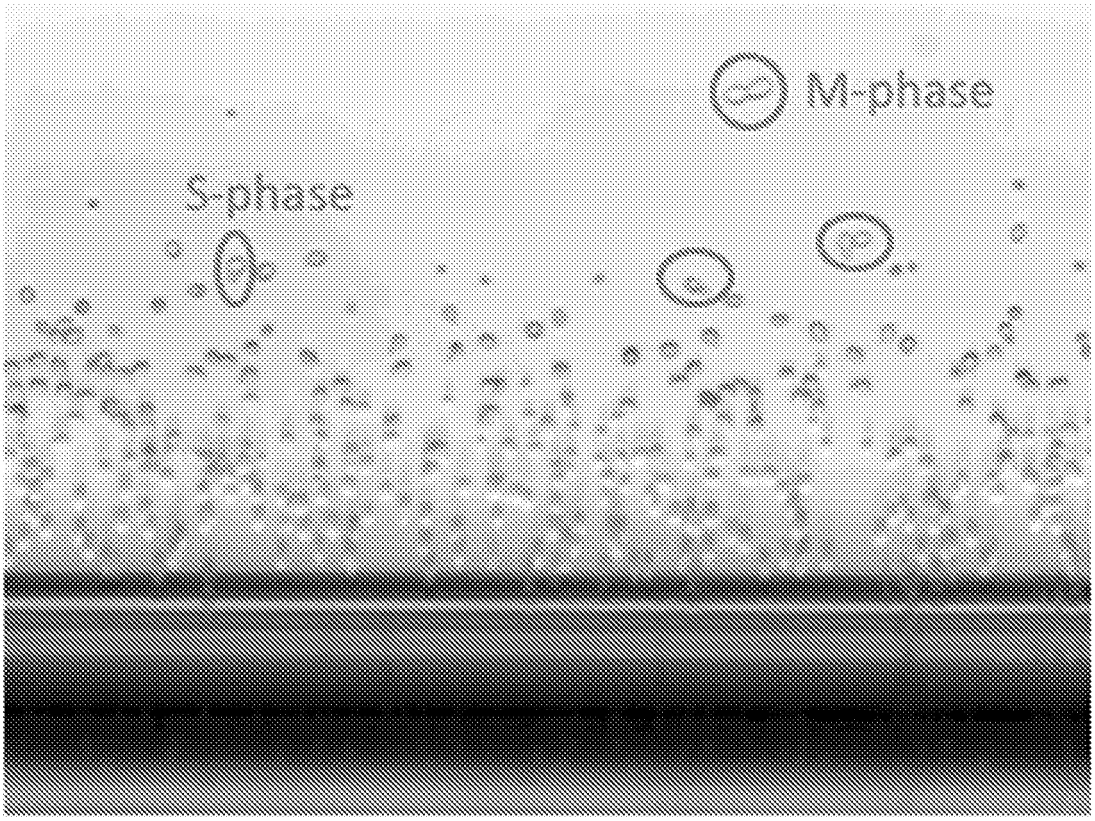

M-phase
S-phase

FIG. 16

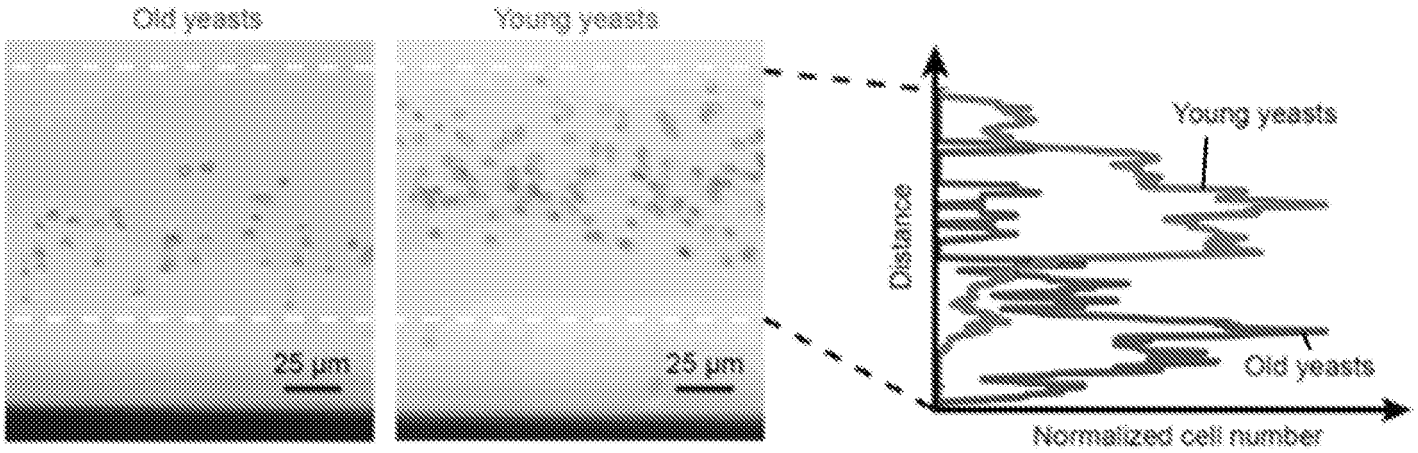

Old yeasts
Young yeasts
25 μm
25 μm
Young yeasts
Distance
Old yeasts
Normalized cell number

FIG. 17

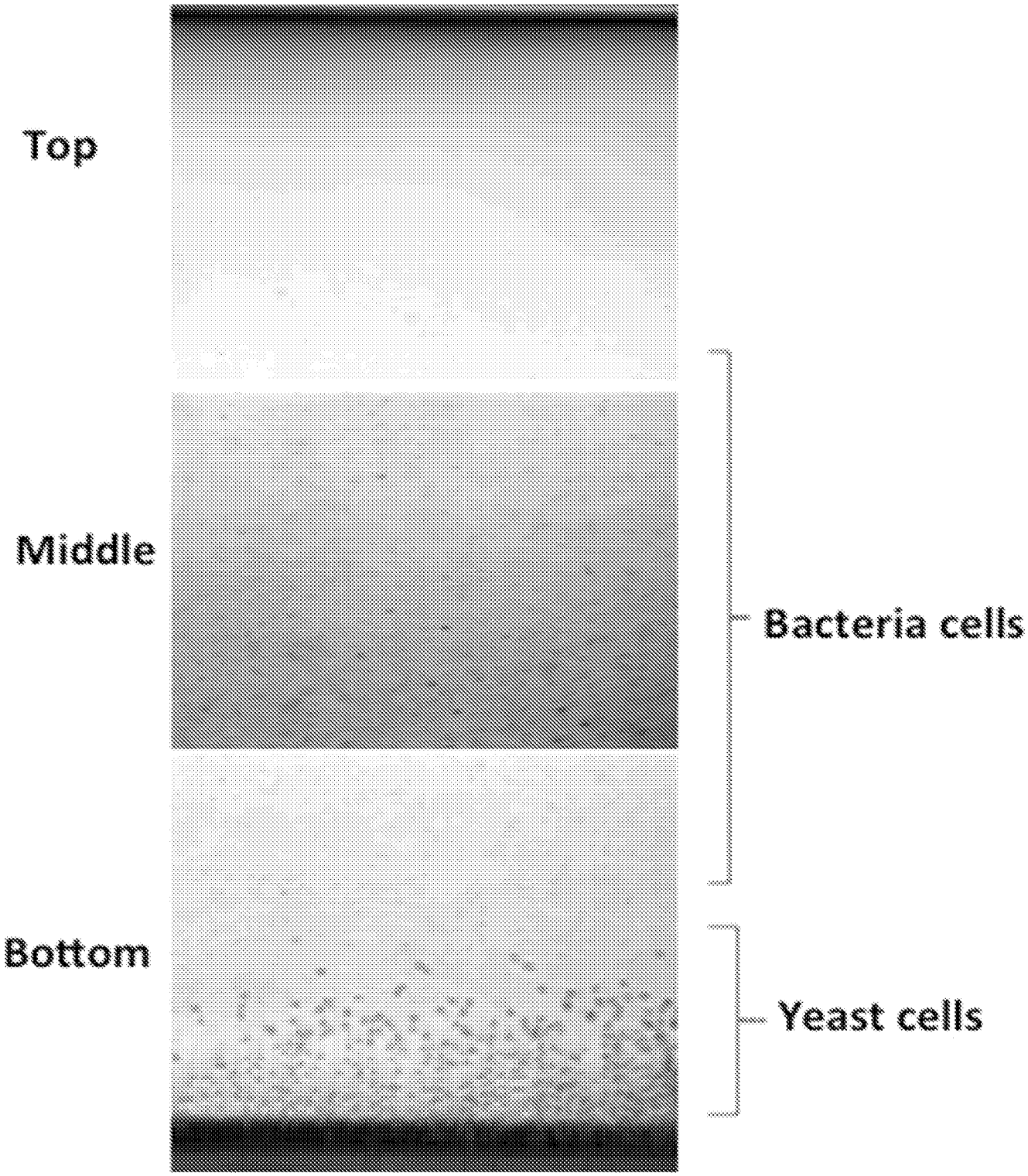


FIG. 18

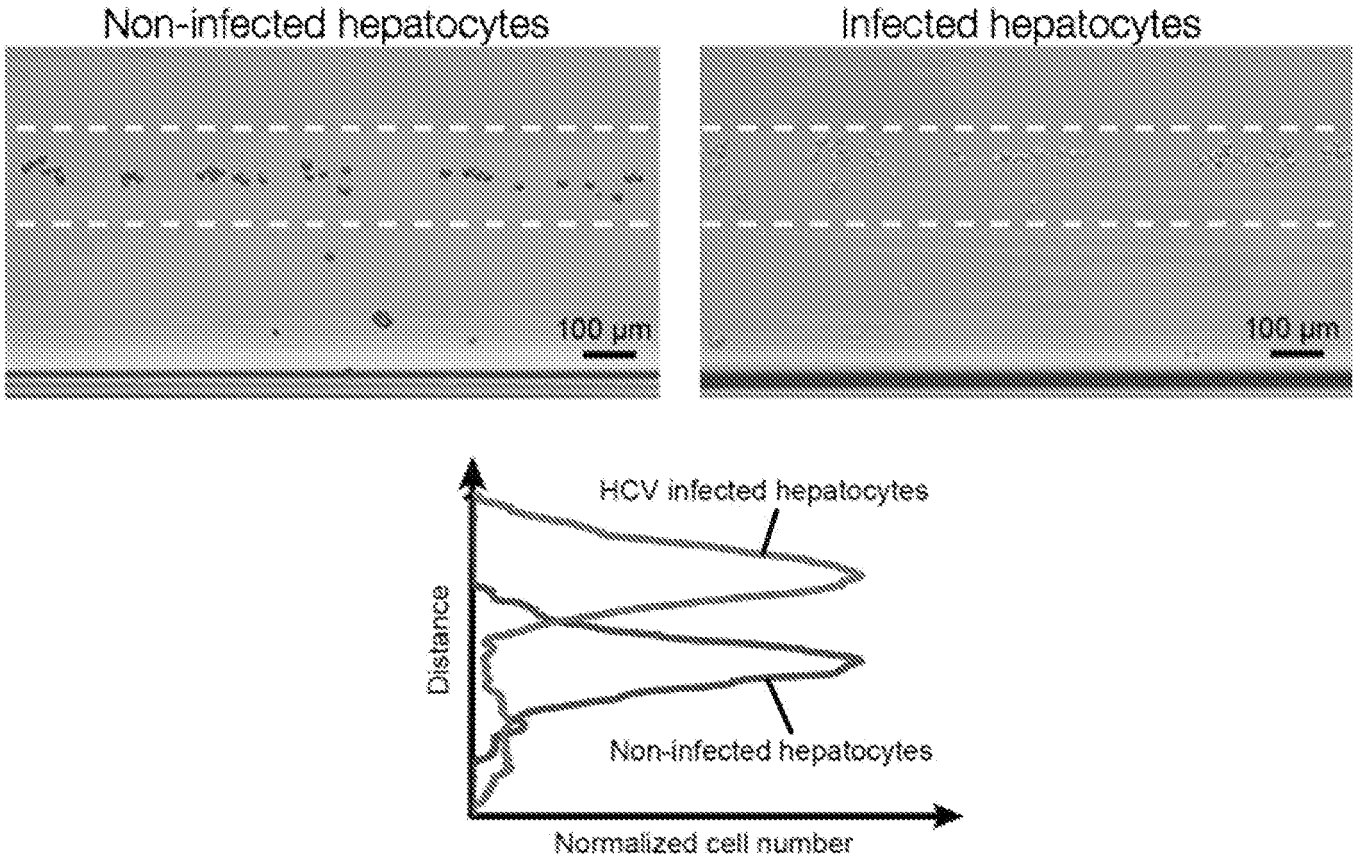

Non-infected hepatocytes
Infected hepatocytes
100 µm
100 µm
HCV infected hepatocytes
Distance
Non-infected hepatocytes
Normalized cell number

FIG. 19

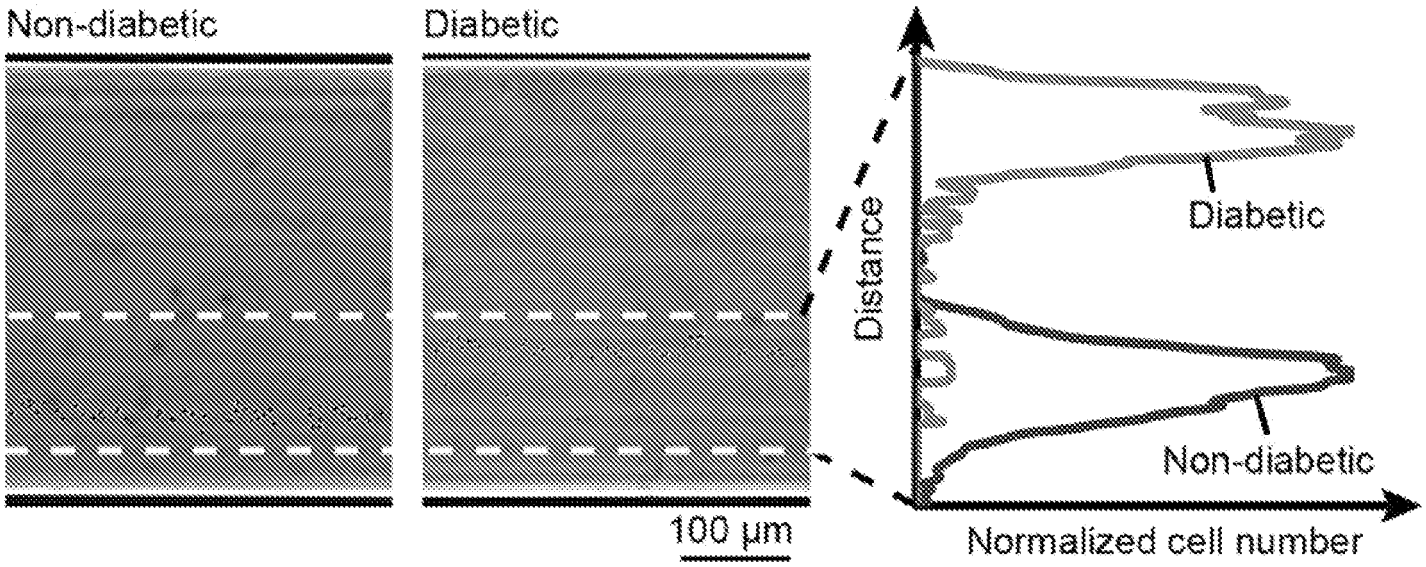

Non-diabetic
Diabetic
100 µm
Distance
Diabetic
Non-diabetic
Normalized cell number

FIG. 20

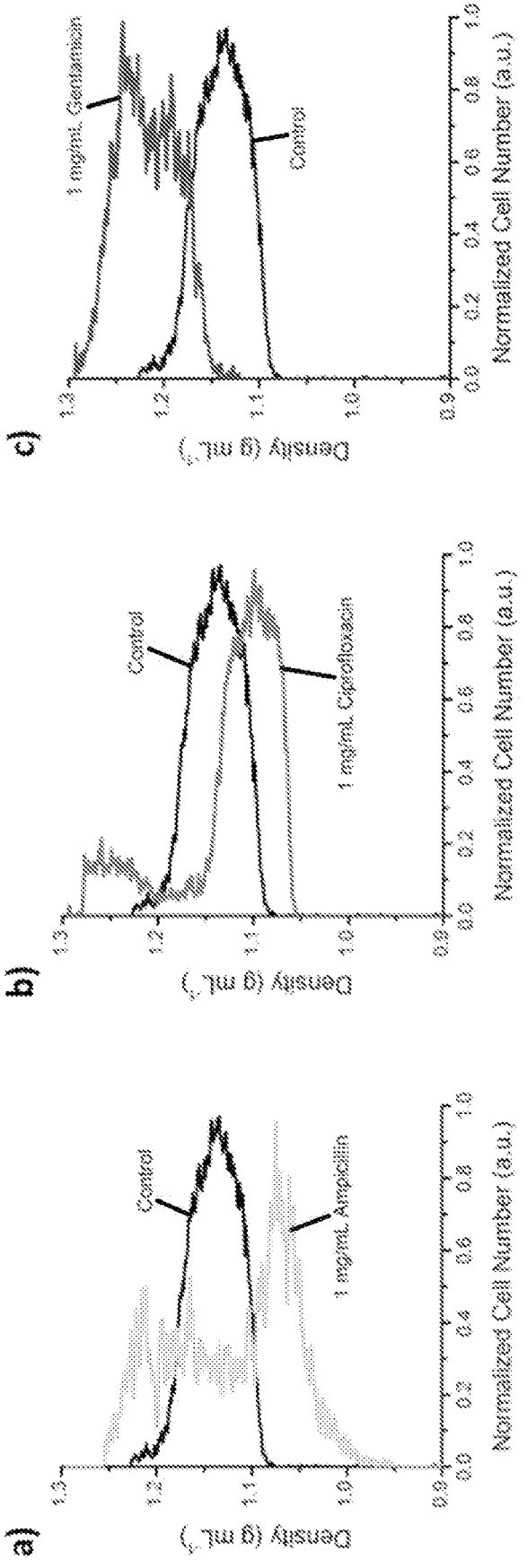

a)
b)
c)
Density (g mL⁻¹)
Normalized Cell Number (a.u.)
Control
1 mg/mL Ampicillin
1 mg/mL Ciprofloxacin
1 mg/mL Gentamicin

FIG. 21

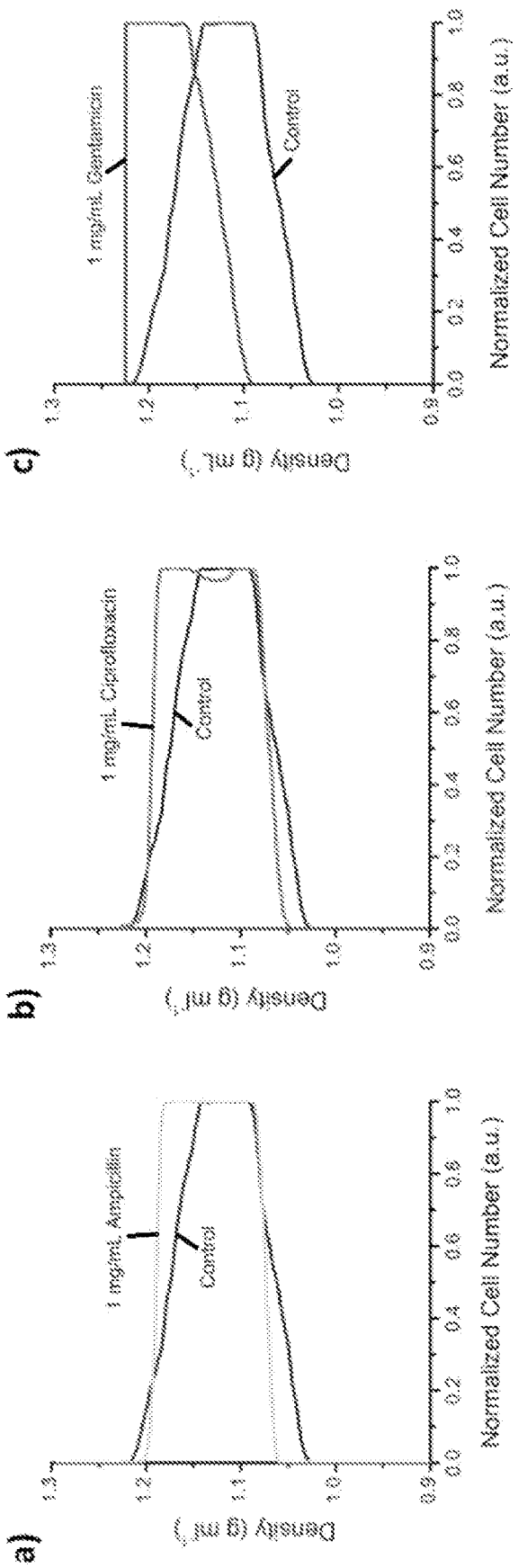

a)
b)
c)
Density (g mL⁻¹)
Normalized Cell Number (a.u.)
Control
1 mg/mL Ampicillin
1 mg/mL Ciprofloxacin
1 mg/mL Gentamicin

FIG. 22