

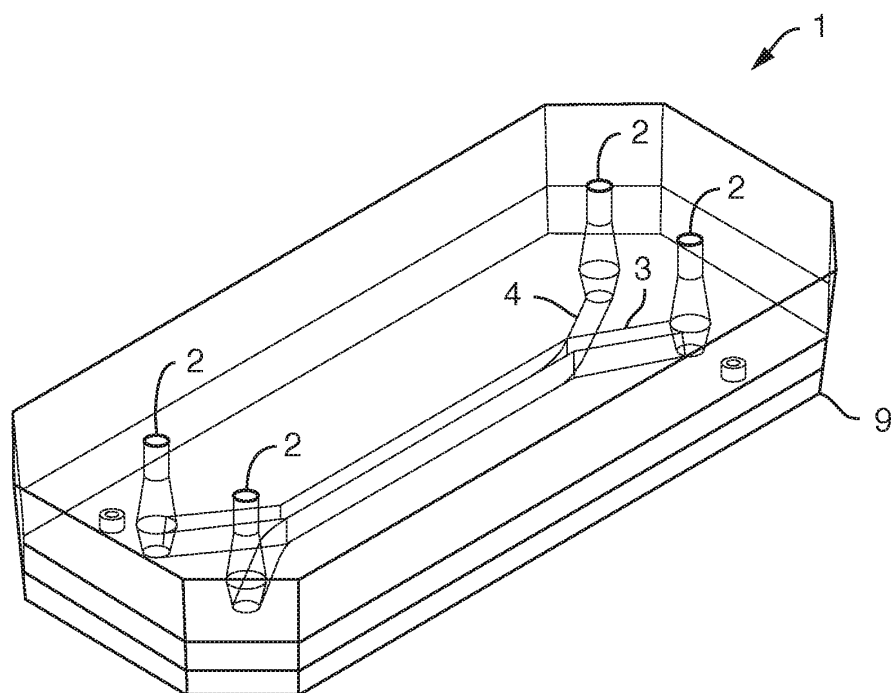


FIG. 1

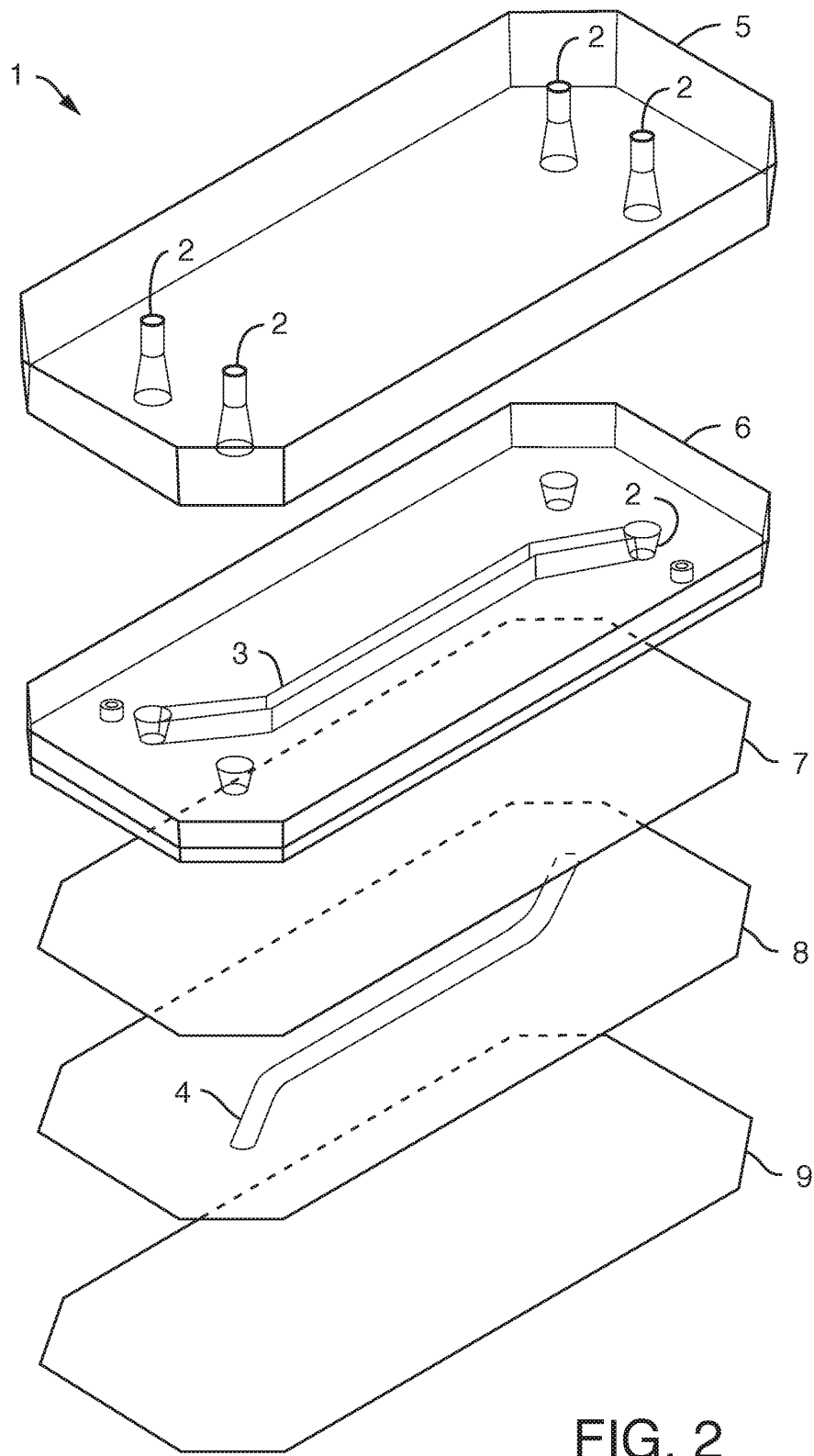


FIG. 2

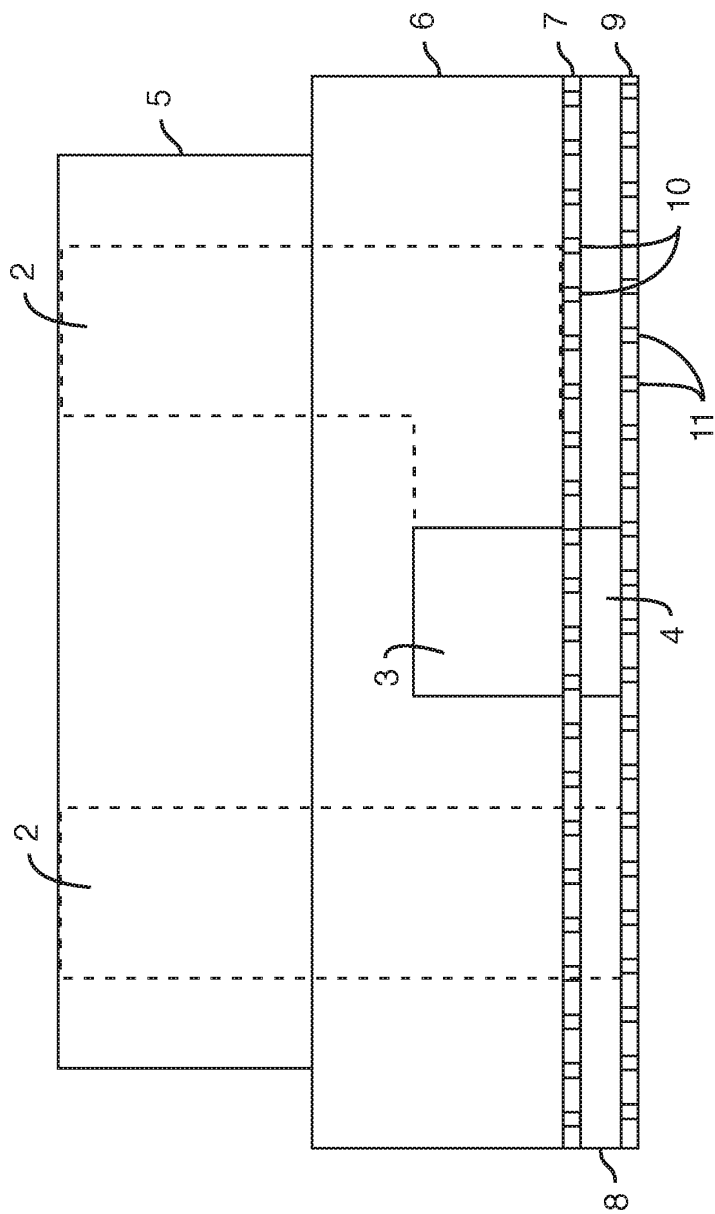


FIG. 3

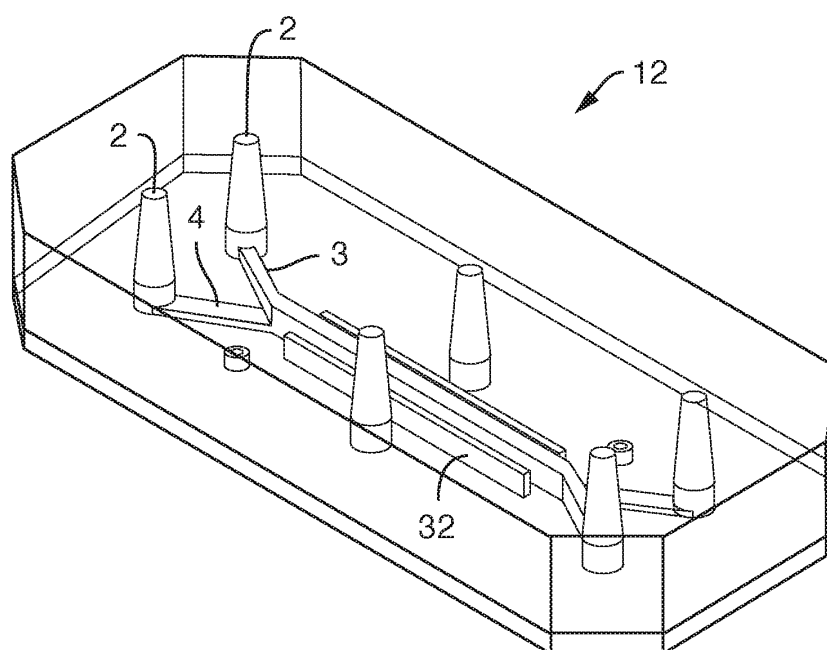


FIG. 4

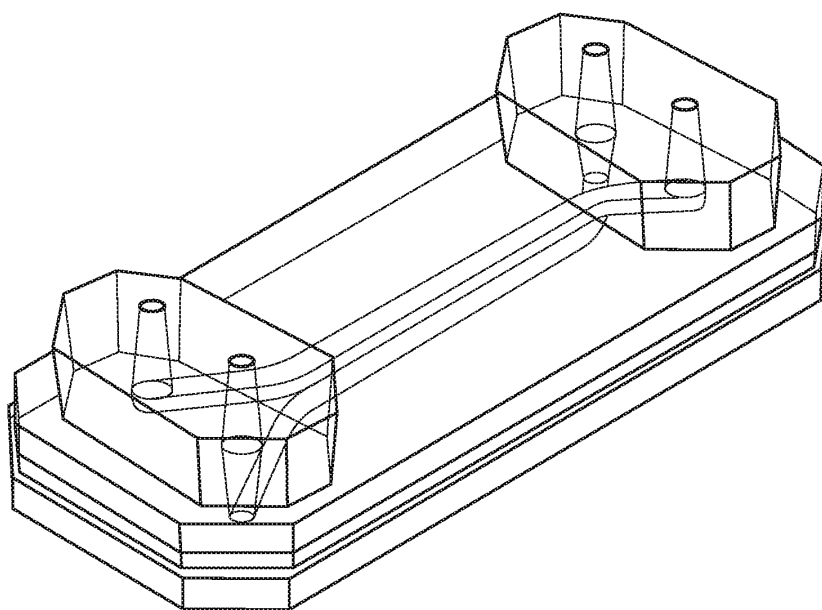
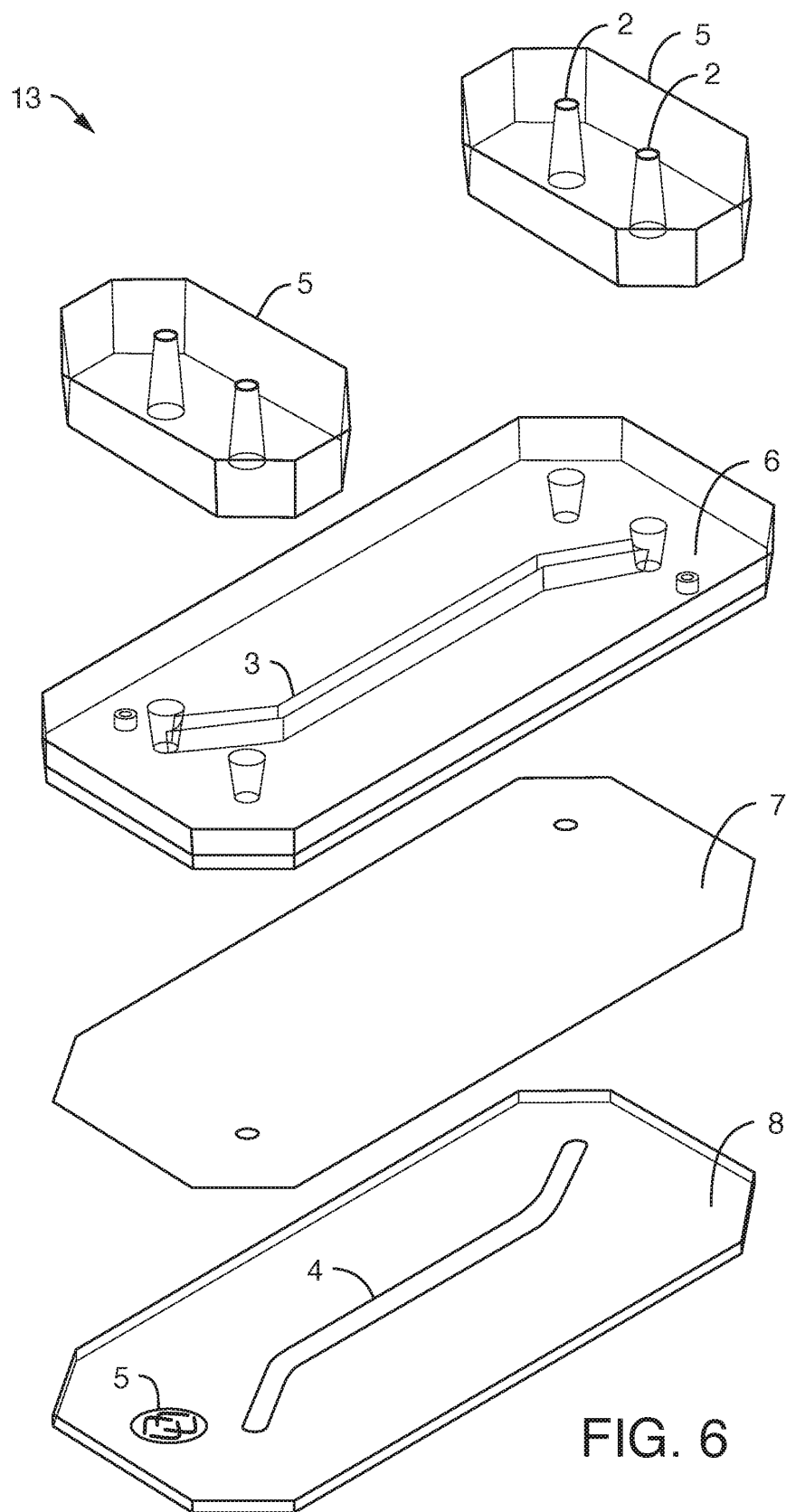


FIG. 5



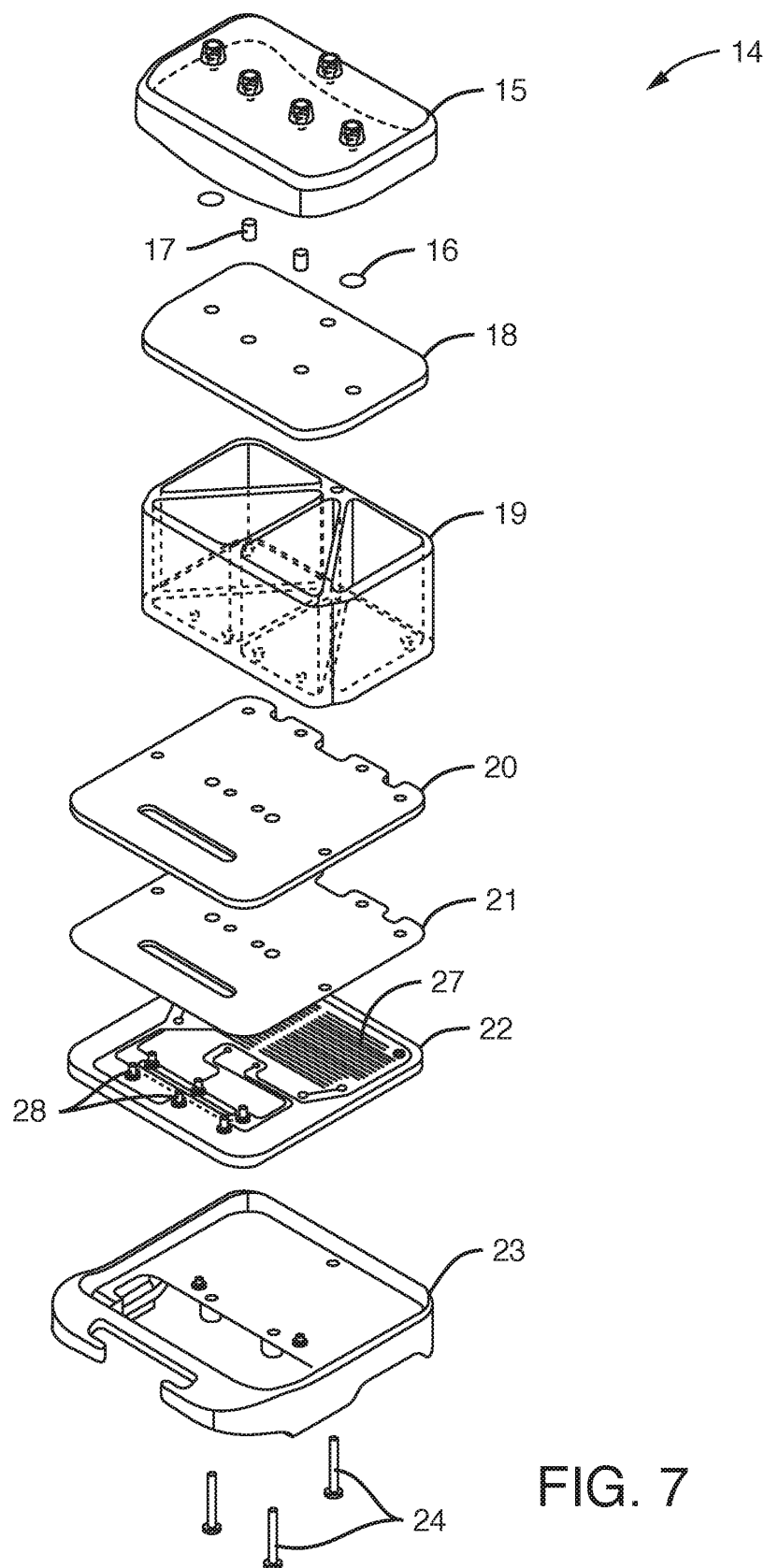


FIG. 7

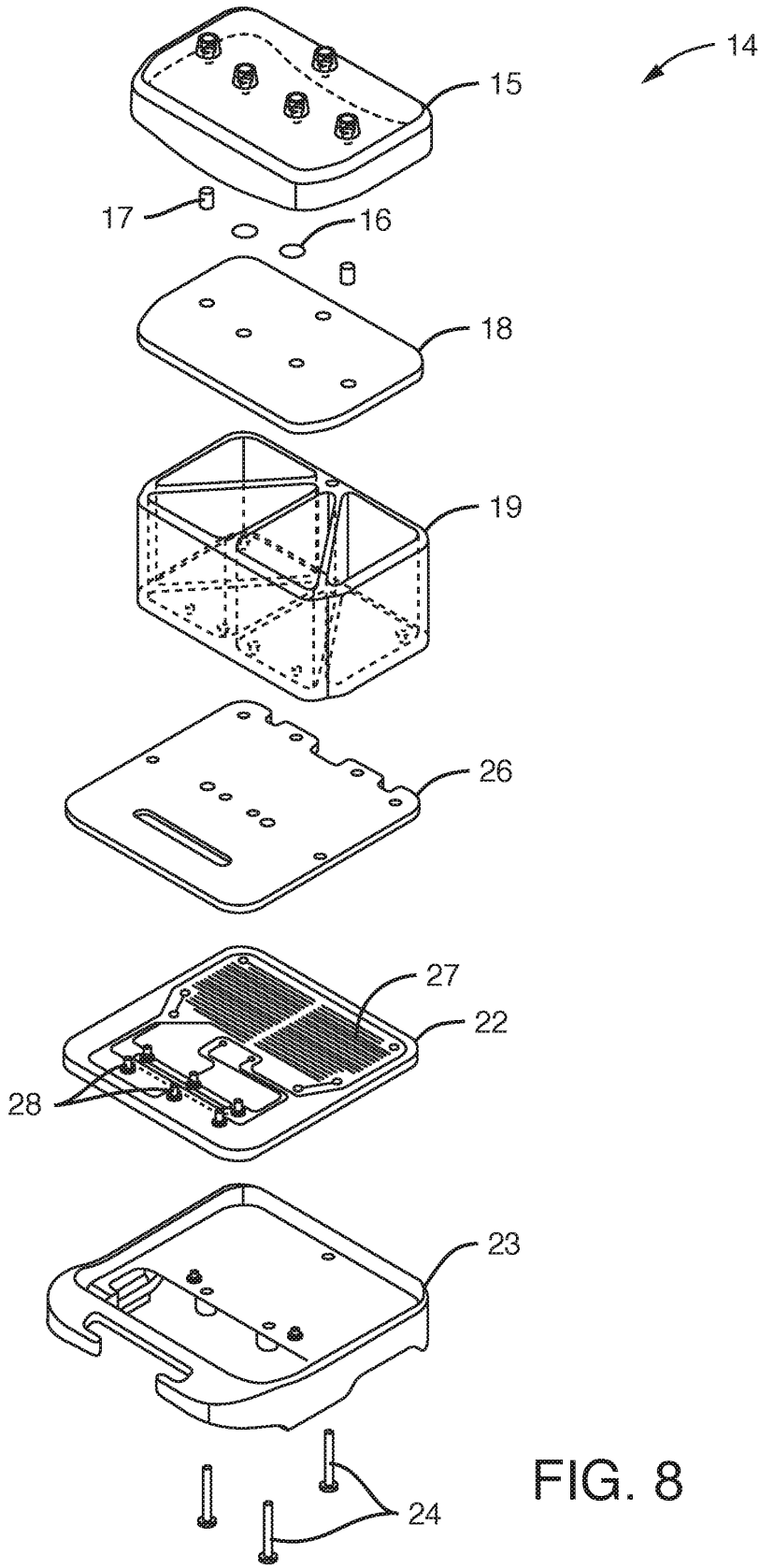


FIG. 8

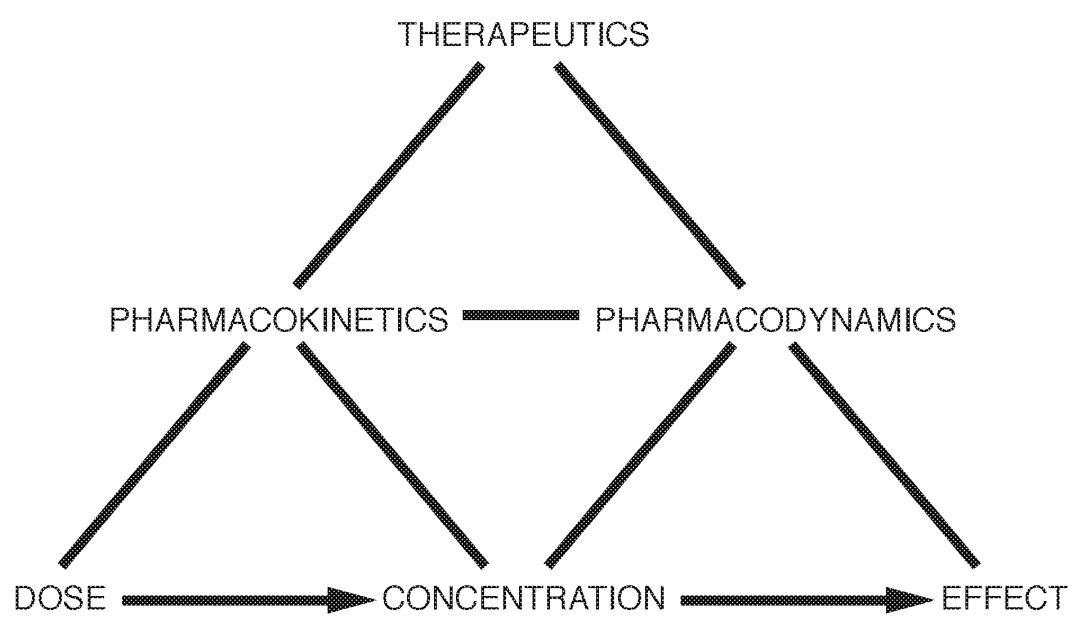


FIG. 9

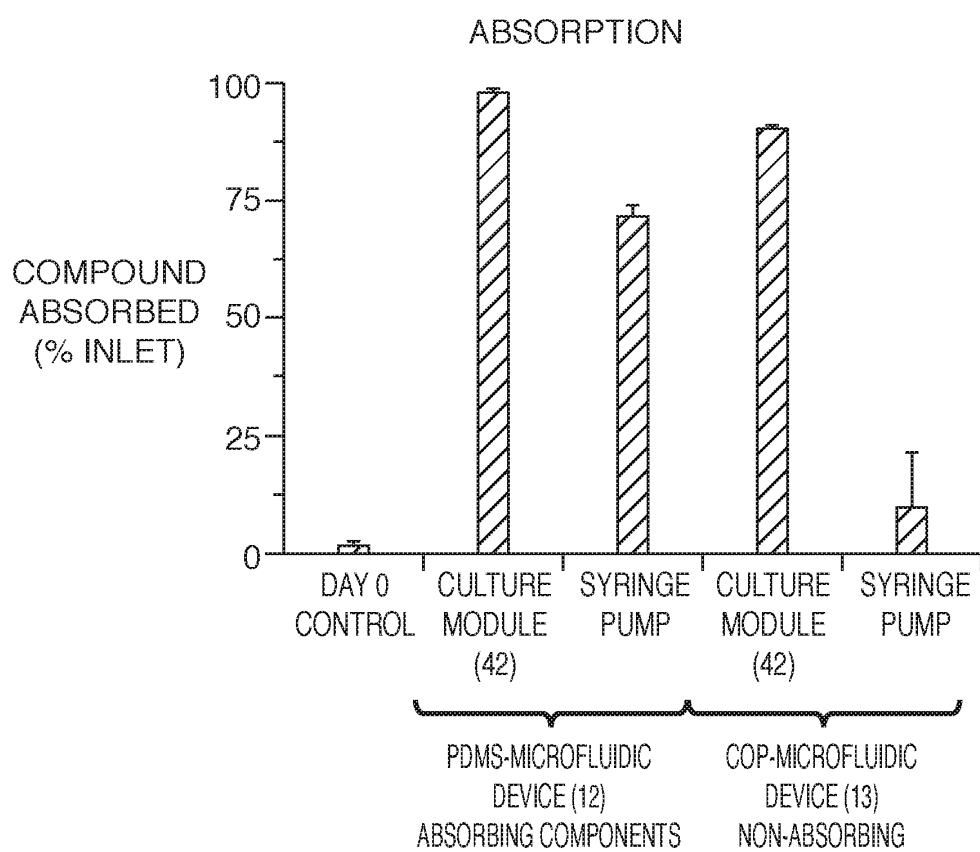


FIG. 10A

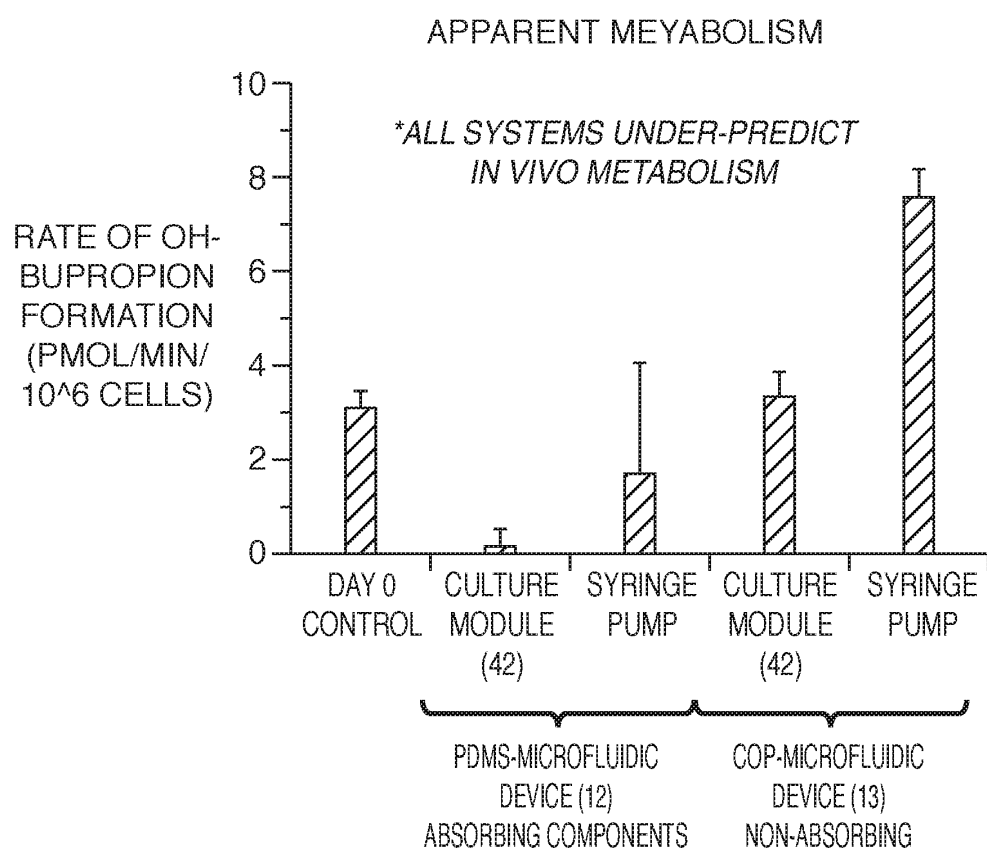


FIG. 10B

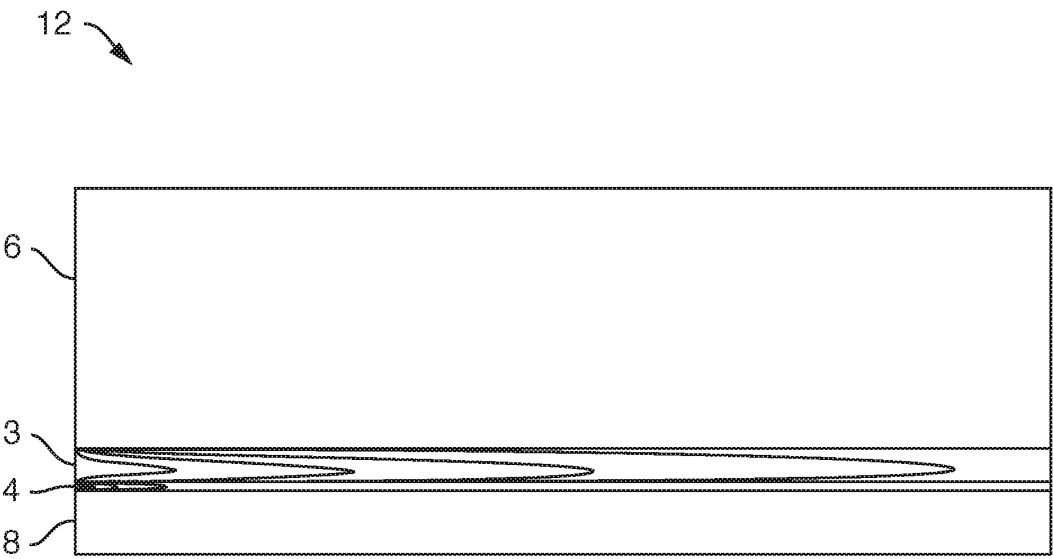


FIG. 11

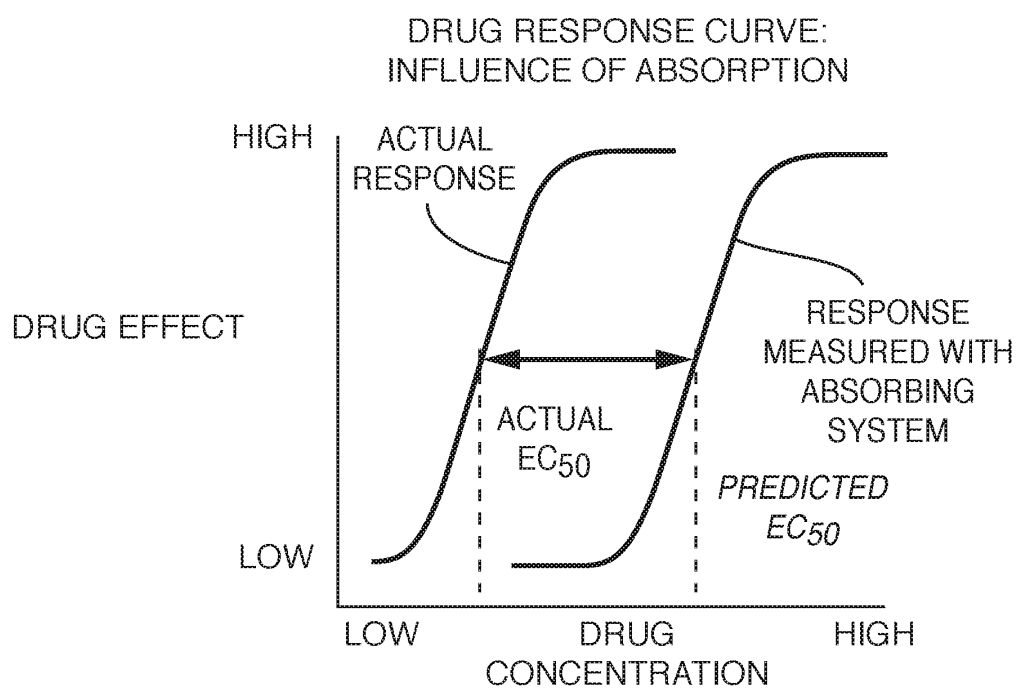


FIG. 12

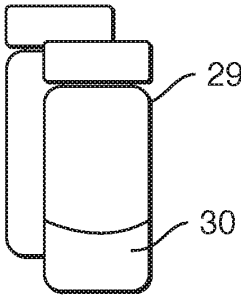


FIG. 13A

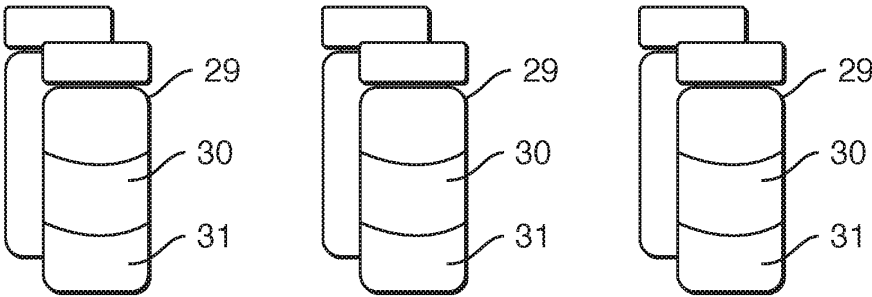


FIG. 13B

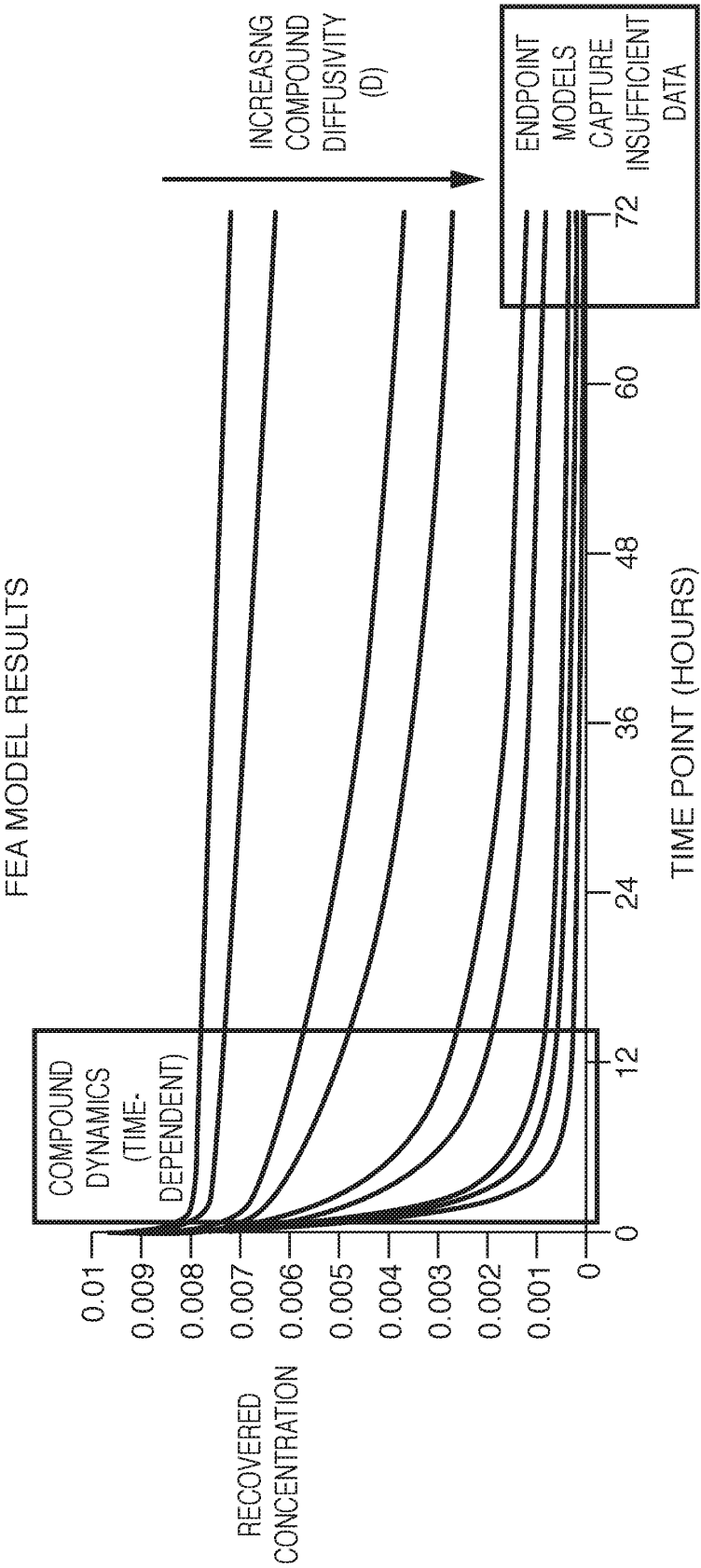


FIG. 14

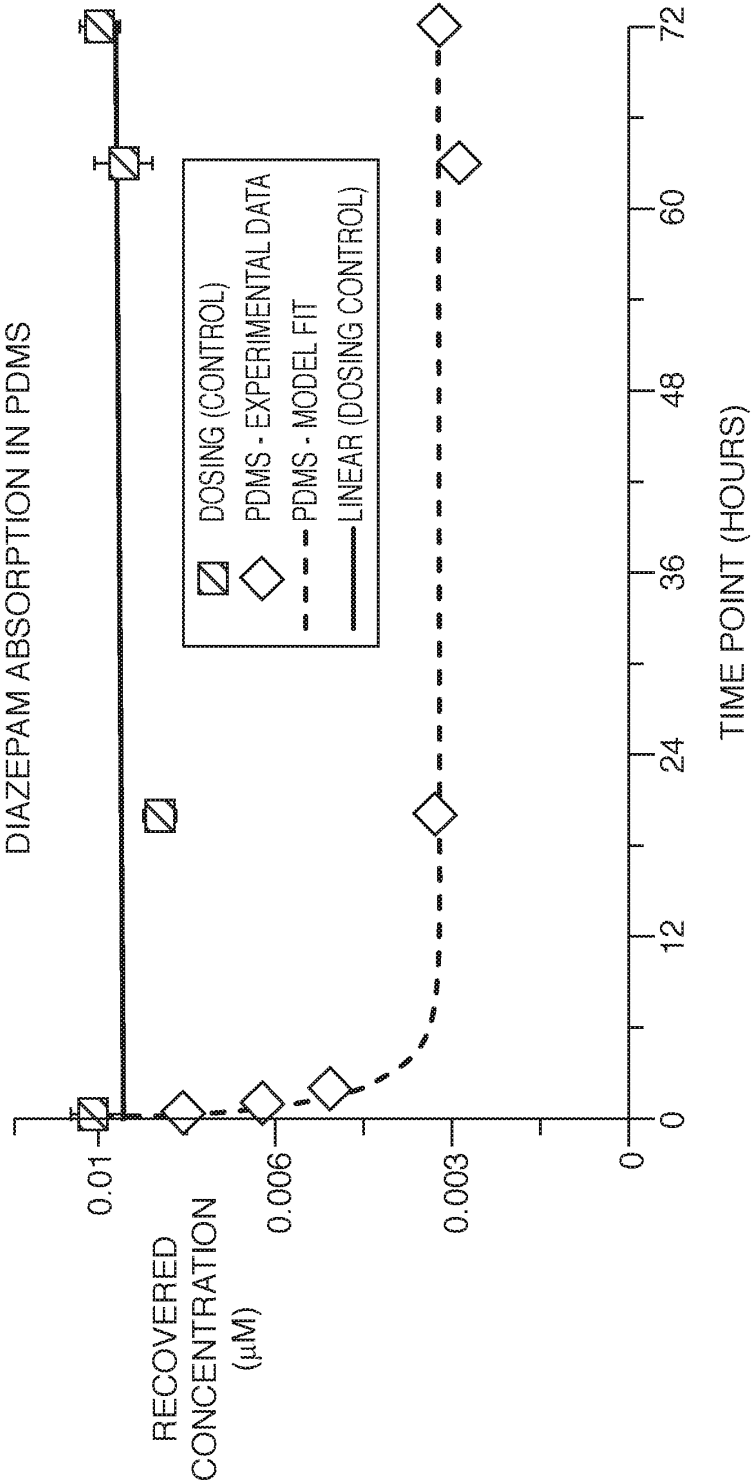


FIG. 15A

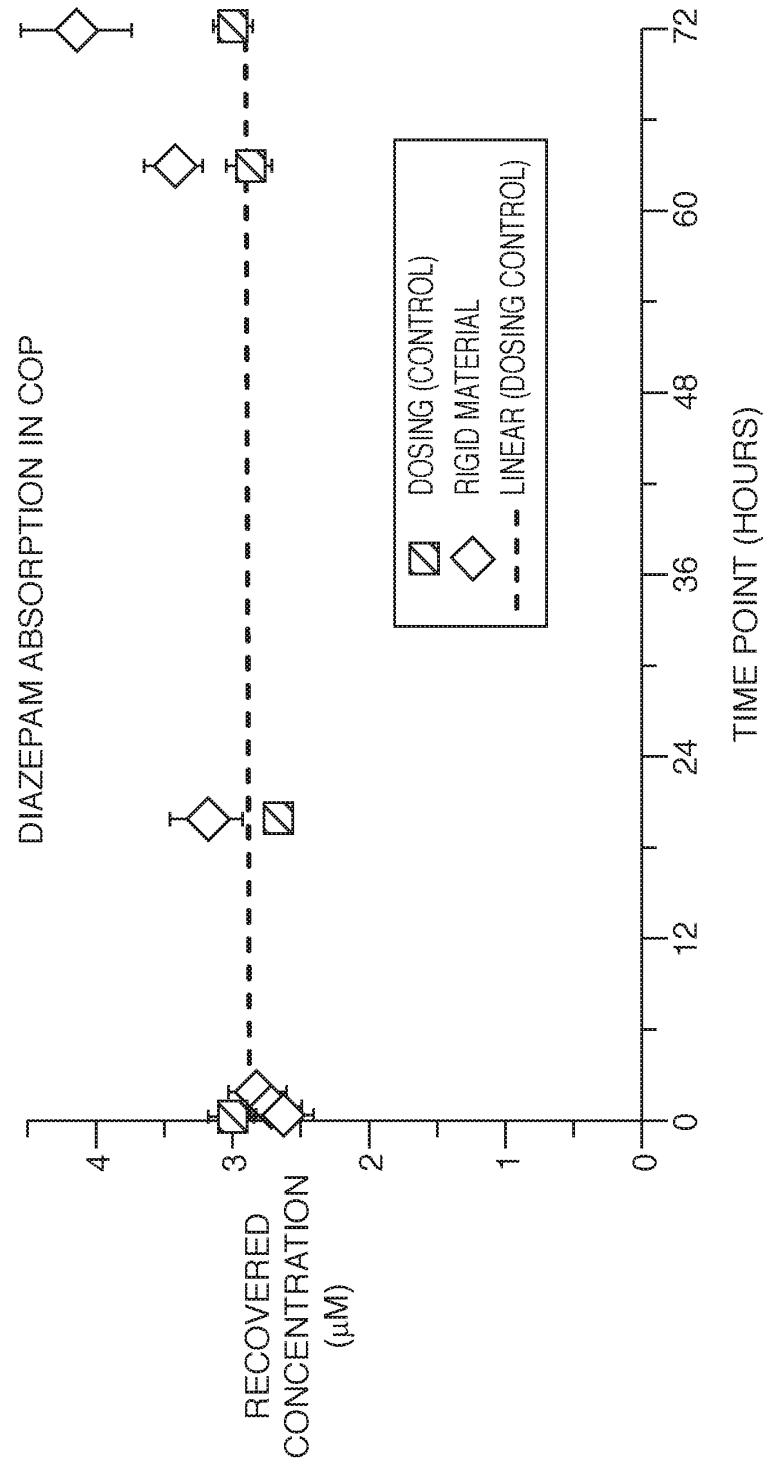


FIG. 15B

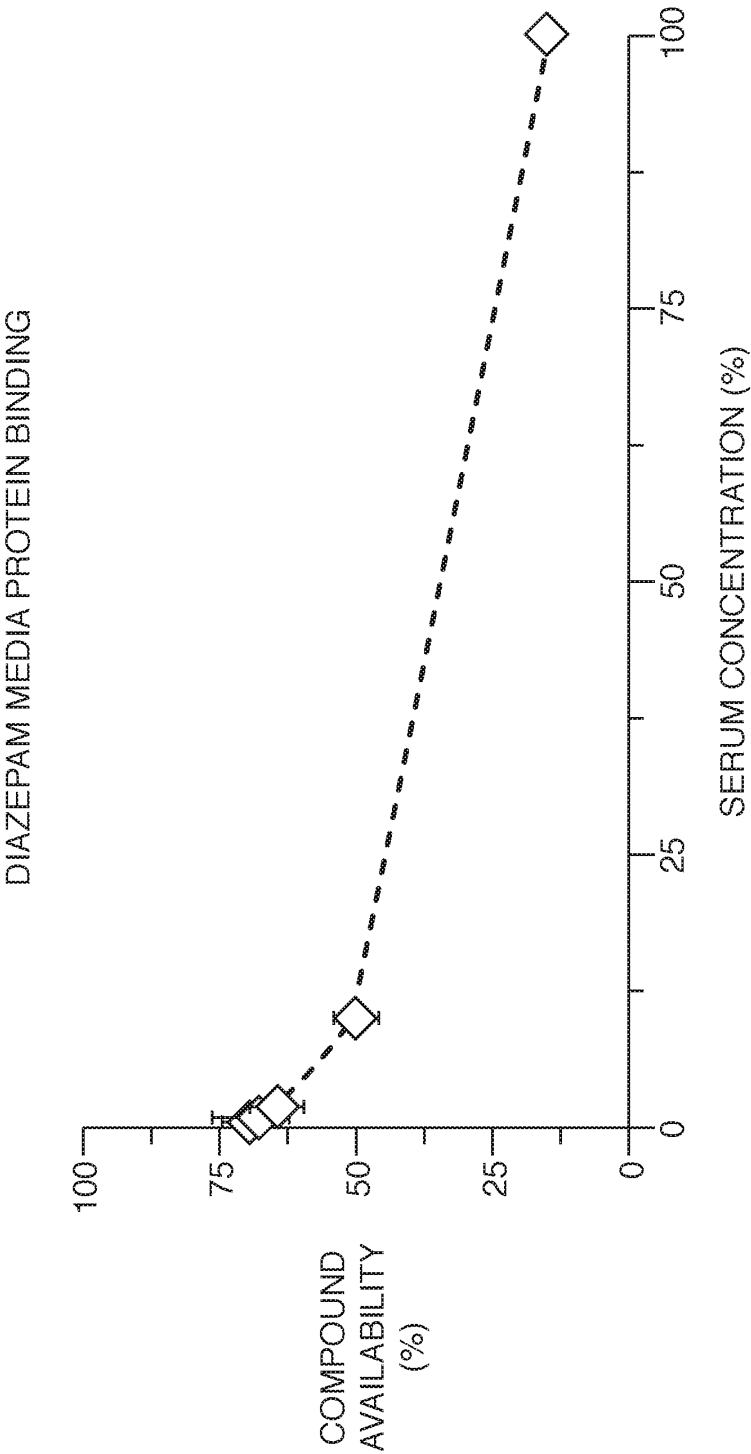


FIG. 16

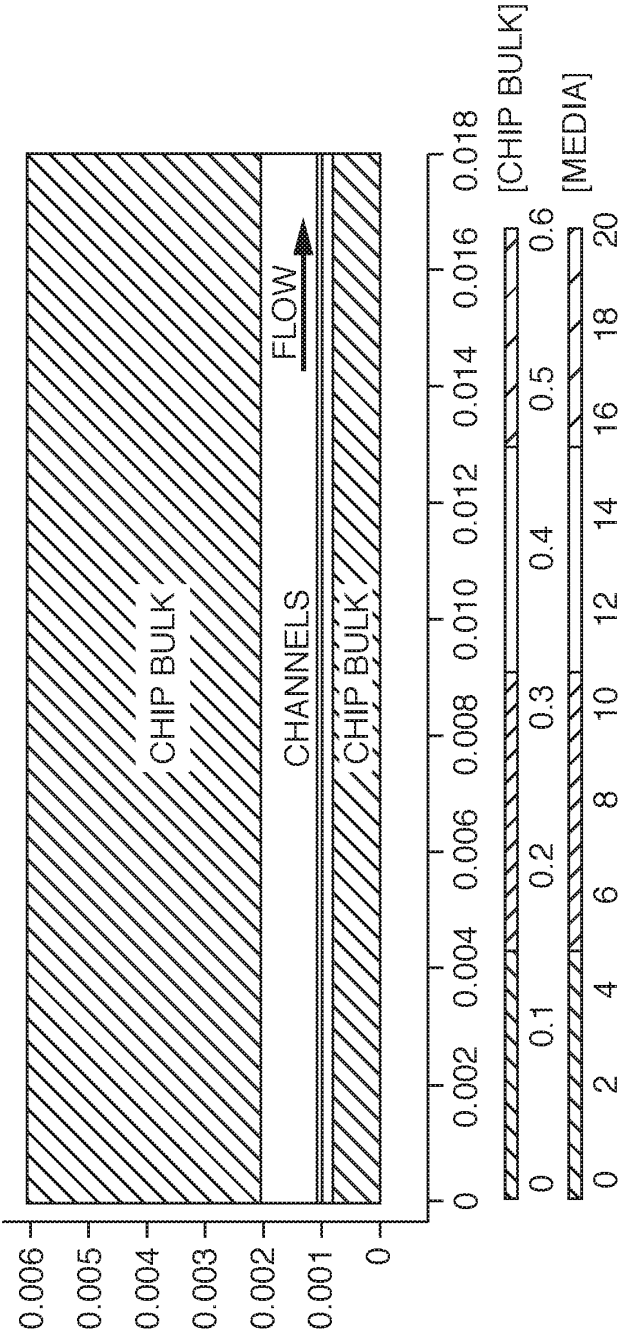


FIG. 17

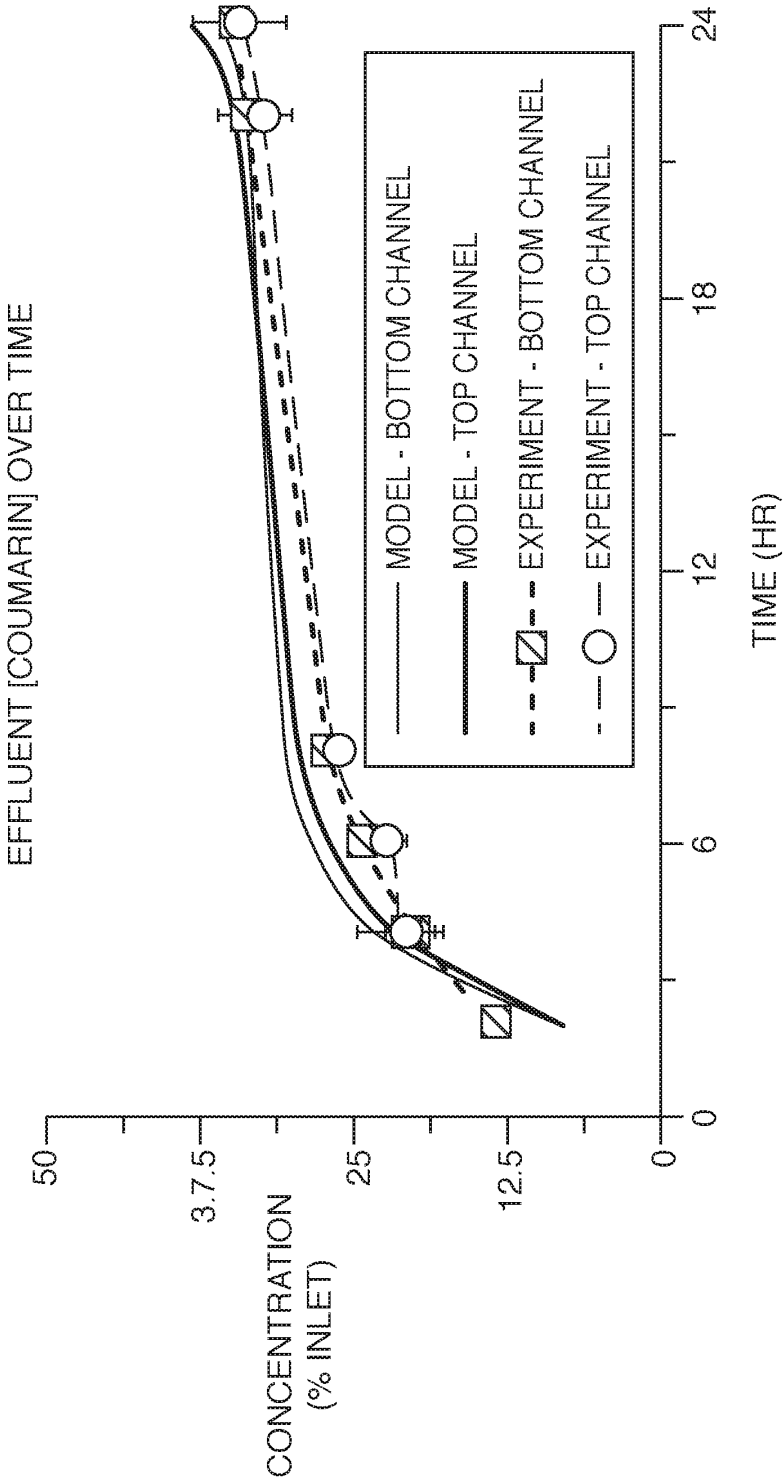


FIG. 18A

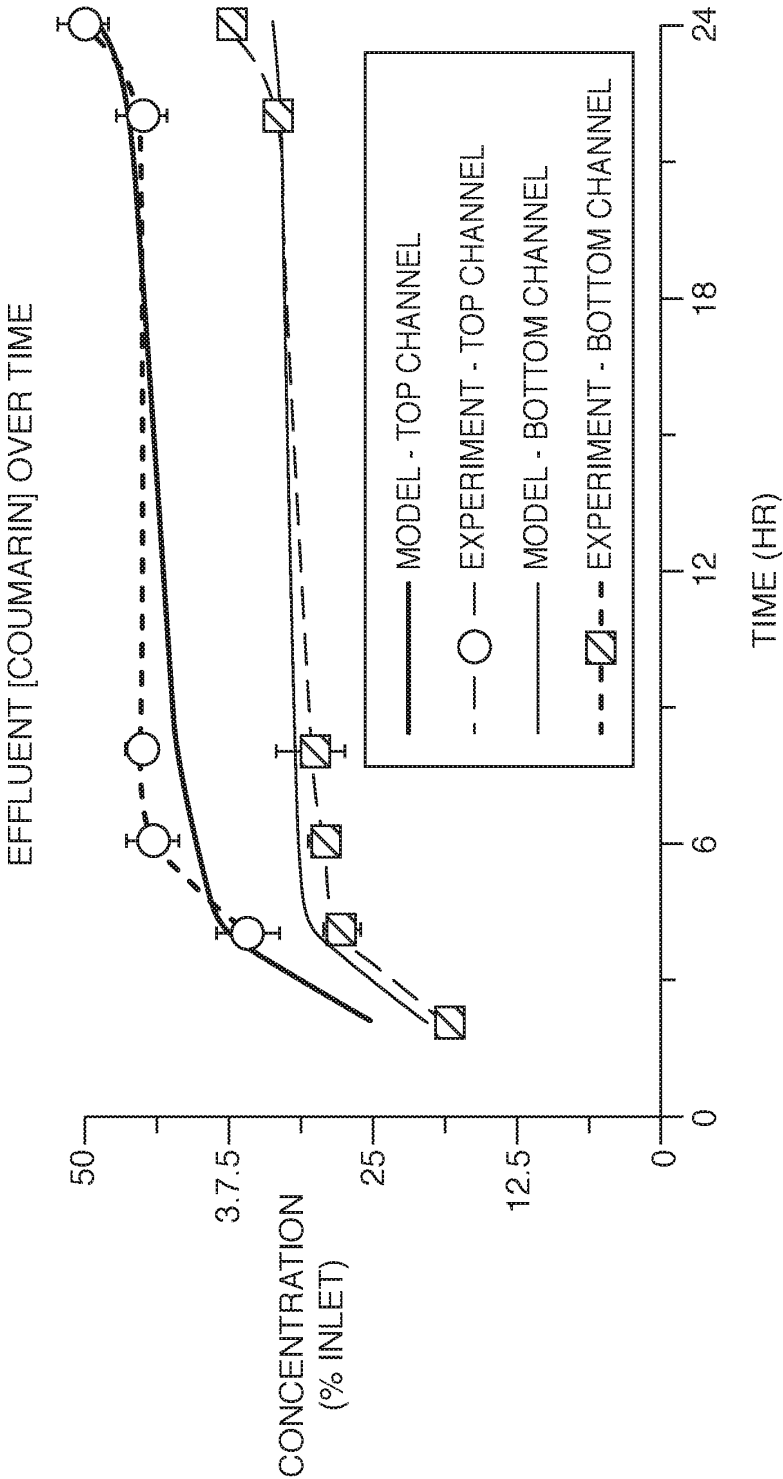


FIG. 18B

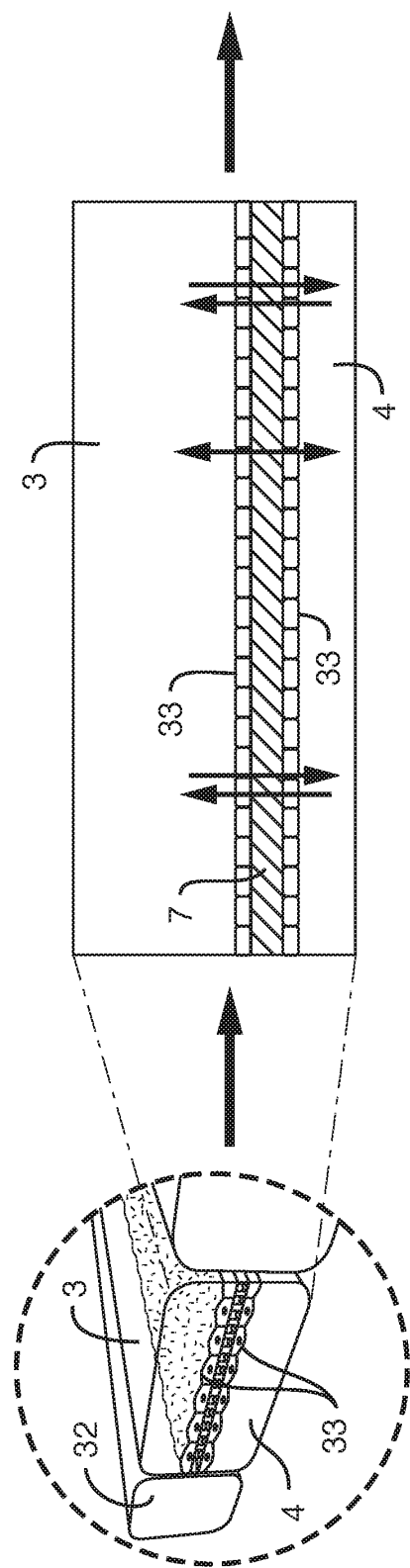


FIG. 19

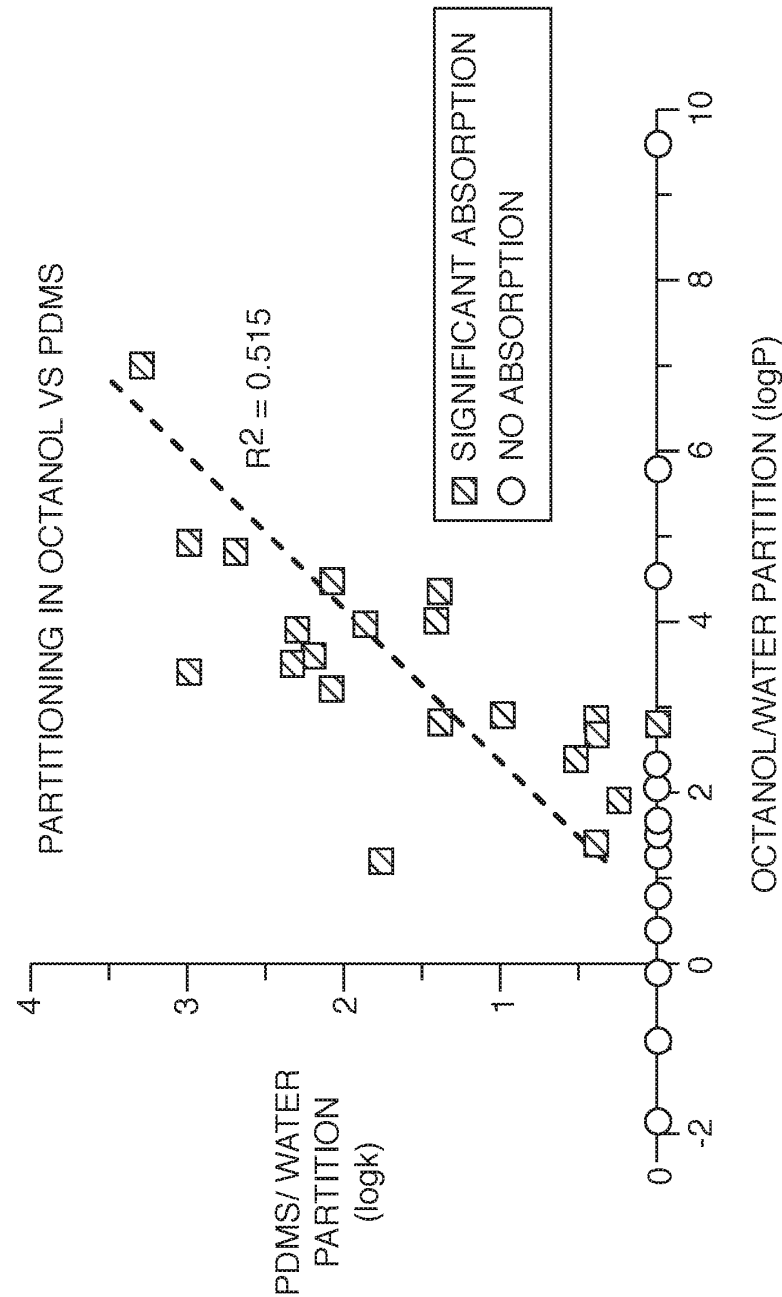
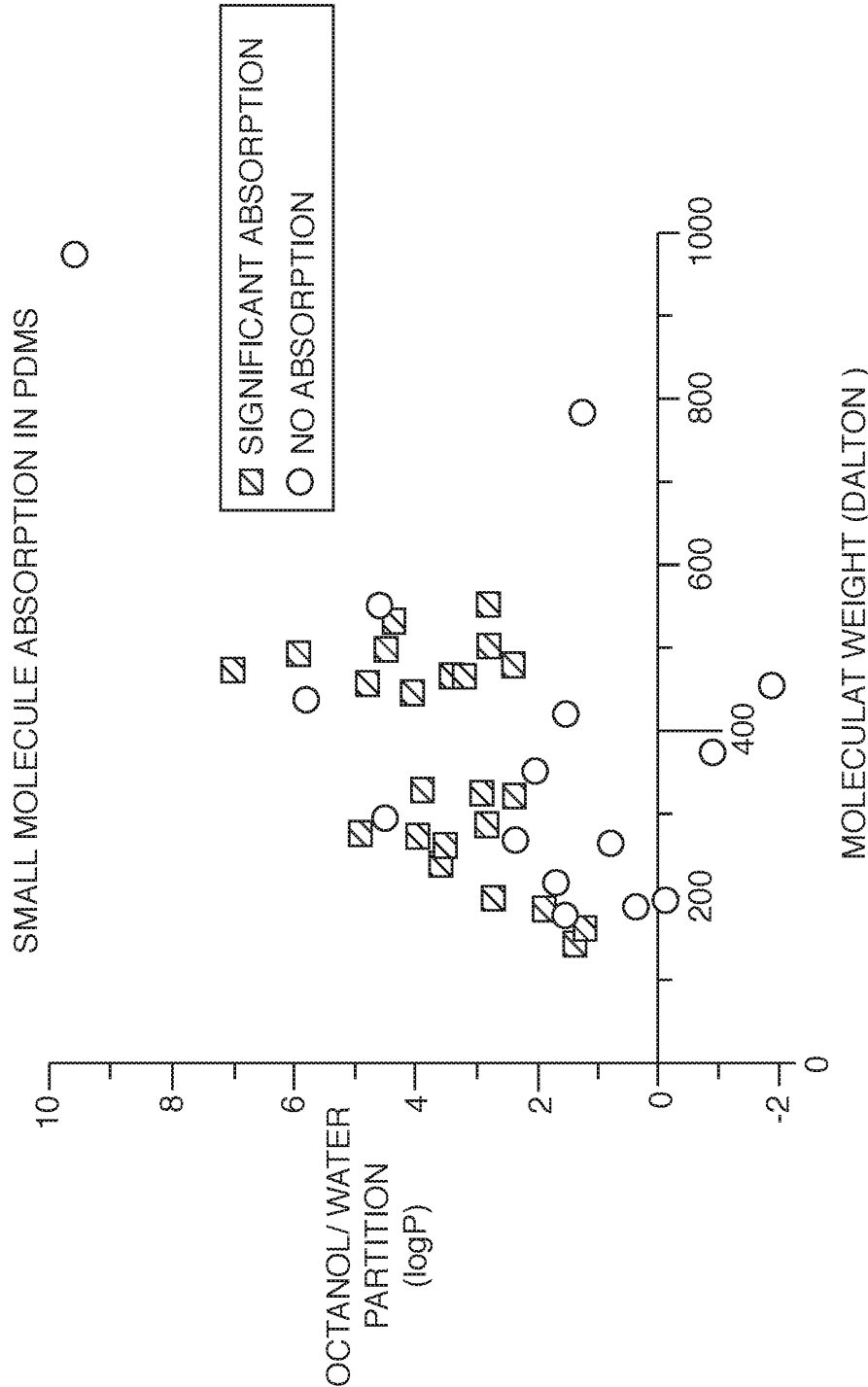


FIG. 20A



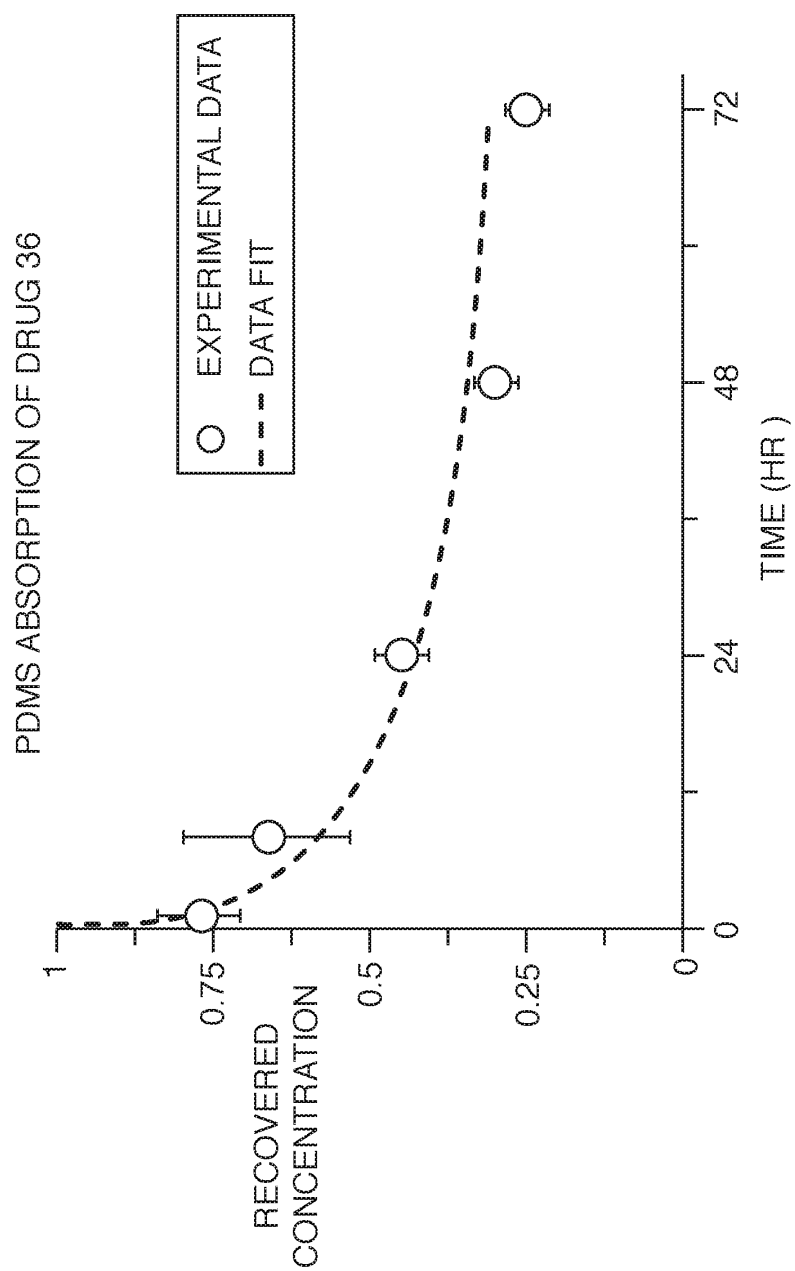


FIG. 21A

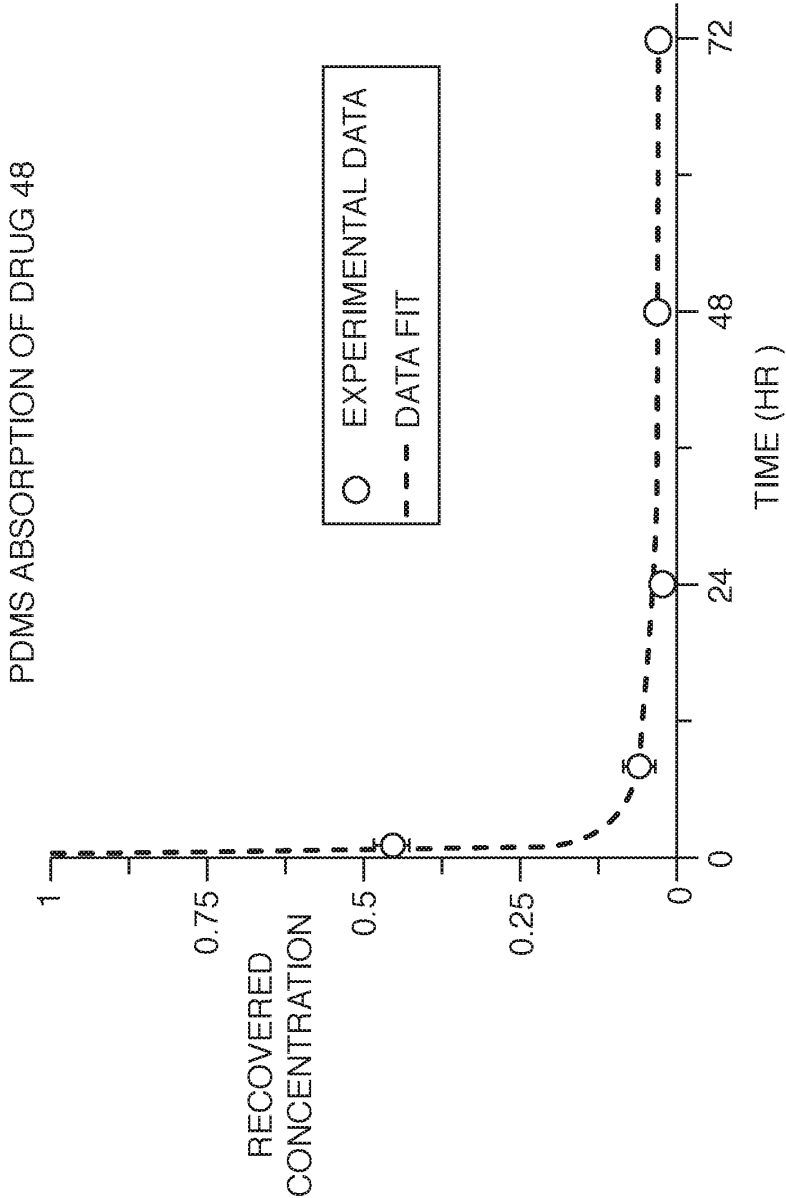


FIG. 21B

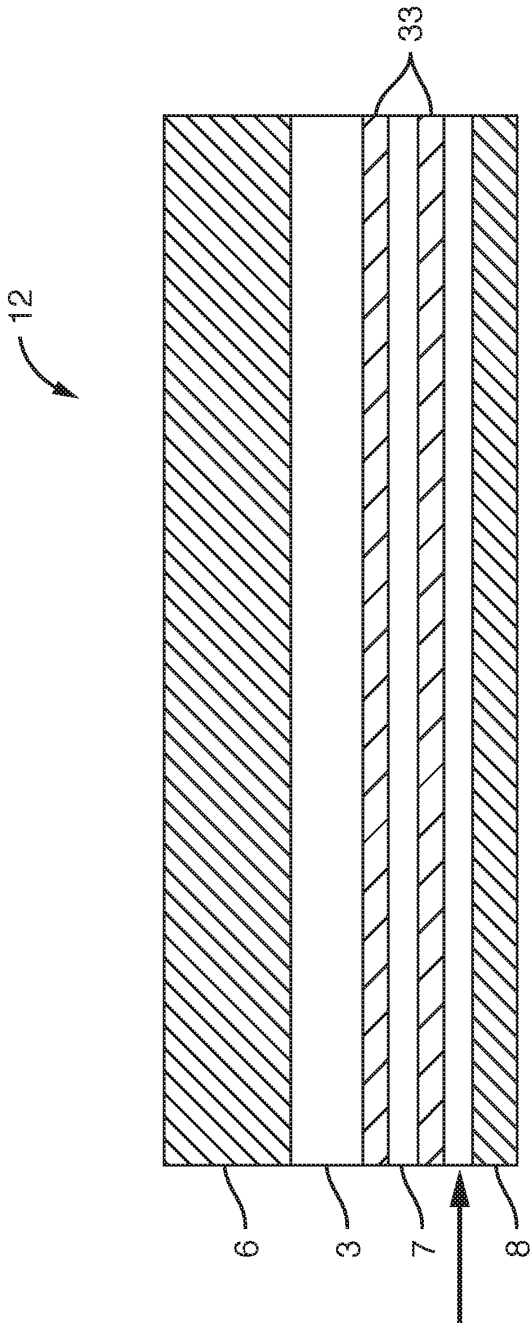


FIG. 22

TABLE 1.1 MECHANICAL PROPERTIES OF POLYMERS						
POLYMER	TENSILE STRENGTH (MPA)	FLEXURAL MODULUS/ (MODULUS OF ELASTICITY) (GPA)	ELONGATION/ AT BREAK (%)	STRAIN AT YIELD (%)	NOTCHED IZOD IMPACT STRENGTH	SURFACE HARDNESS
CARBON/HYDROGEN -CONTAINING POLYMERS						
LOW - DENSITY POLYETHYLENE (LDPE)	10	0.25	400	19	1.064	SD 48
HIGH - DENSITY POLYETHYLENE (HDPE)	32	1.25	150	15	0.15	SD 68
CROSSLINKED POLYETHYLENE (PE)	18	0.5	350	NY	1.064	SD 58
POLYPROPYLENE (PP)	26	2	80	NIY	0.05	RR 85
ETHYLENE- PROPYLENE	26	0.6	500	NIY	0.15	RR75
POLYMETHYL PENTENE	28	1.5	15	6	0.04	RR 70
STYRENE- BUTADIENE	28	1.6	50	NIY	0.08	SD 75
STYRENE- ETHYLENE- BUTYLENE- STYRENE	6	0.02	800	NIY	1.064	SA 45
HIGH - IMPACT POLYSTYRENE (PS)	42	2.1	2.5	1.8	0.1	RM 30
PS, GENERAL PURPOSE	34	3	1.6			RM 80

FIG. 23

OXYGEN - CONTAINING POLYMERS						
EPOXIES, GENERAL	600	80	1.3	N/A	0.5	RM 113
ACETAL (POLYOXYMETHYLENE)	50	27	20	8	0.10	RM 109
POLYESTERS (BISPHENOL), POLYESTER LAMINATE	280	16	1.5	N/A	1.064	RM 125
POLYESTER (ELECTRICAL GRADE)	40	9	2	N/A	0.4	RM 125
POLYBUTYLENE PHTHALATE	52	2.1	250	4	0.06	RM 70
POLYETHYLENE TEREPHTHALATE (PET)	55	2.3	300	3.5	0.02	RM 30
POLYETHER ETHER KETONE (PEEK)	92	3.7	SO	4.3	0.083	RM 99
DIALLYLISOPHTHALATE	82	11.3	0.9	N/A	0.37	RM 112
DIALLYL PHTHALATE	70	10.6	0.9	N/A	0.41	RM 112
ALKYD RESIN GLASS FIBER, REINFORCED	72	8.6	0.8	N/A	0.24	RM 125
POLYARYLATES	68	2.2	50	8.8	0.29	RR 125
POLYCARBONATE (PC)	SO	2.1	200	3.S	0.05	RM 70
POLYPHENYLENE OXIDE	65	2.5	60	4.5	0.16	RR 119
PHENOL - FORMALDEHYDE	45	6.5	1.2	N/A	0.024	RM 114

FIG. 23.1
cont.

STYRENE - MALEI C	52	3	1.8	2	0.03	RL 105
CELLULOSE ACETATE	30	1.7	60	4	0.26	RR 71
CELLULOSE PROPIONATE	35	1.76	60	4	0.13	RR 94
CELLULOSE ACETATE BUTYRATE	70	2.9	2.5	N/A	0.02	RM 92
ETHYLENE VINYL ACETATE	17	0.02	750	N/A	1.064	SA 85
NITROGEN-CONTAINING POLYMERS						
POLYATNIDE (PA) 6	40	1	60	4.5	0.25	SD 7S
PA 4,6	100	1	30	11	0.1	SD 85
PA 11	52	0.9	320	20	0.05	RR 105
PA 6,9	SO	1.4	15	10	0.06	SD 78
PA 12	SO	1.4	200	6	0.06	RR 105
PA 6,6	59	1.2	60	4.5	0.11	RR 90
PA 6, 12	51	1.4	300	7	0.04	RR 105
NYLON/ACRYLONITRILE - BUTADIENE - STYRENE (ABS) ALLOY	47	2.14	270	6	0.85	RR 99
PA - IMIDE	185	4.58	12	8	0.13	RM 109
POLYIMIDE	72	2.45	8	4	0.08	RM 100
POLYETHERIMIDE	105	3.3	60	8	0.1	RM 109

FIG. 23.2
cont.

POLYURETHANE (PU) THERMOPLASTIC ELASTOMER	24	0.003	700	NY	1.064	SA 70
ETHER ESTER AMIDE ELASTOMER	57	10	0.6	N/A	0.02	RM 115
UREA FORMALDEHYDE						
STYRENE ACRYLONITRILE	72	3.6	2.4	3.5	0.02	RM 80
ABS	34	2.1	6	2	0.18	RR 96
ACRYLATE - STYRENE ACRYLONITRILE	35	2.5	10	3.3	0.1	RR 106
FLUORINE-CONTAINING POLYMERS						
POLYTETRAFLUOROETHYLENE	25	0.70	400	70	0.16	RM 69
POLYVINYLFLUORIDE	40	1.4	150	30	0.18	SD 80
POLYVINYLIDENE FLUORIDE	100	5.5	6	N/A	0.12	SD 90
PERFLUOROALKOXYETHYLENE	29	0.7	300	85	1.064	SD 60
ETHYLENE TETRAFLUORO ETHYLENE	28	1.4	150	15	1.064	RR 50
ETHYLENE CHLOROTRIFLUORO ETHYLENE	30	1.7	200	5	1.064	RR 93
FLUORINATED ETHYLENE PROPYLENE	14	0.6	150	6	1.064	RR 45
CHLORINE-CONTAINING POLYMERS						

FIG. 23.3 cont.

CHLORINATED (POLYVINYL CHLORIDE) PVC	58	3.1	30	5	0.06	SA 70
UNPLASTICIZED PVC (UPVC)	51	3	60	3.5	0.08	RR 110
PLASTICIZED PVC	14- 20	0.007 0.03	280-9S	NY	1.05+	SA 85
SULFUR - CONTAINING POLYMERS						
POLYPHENYLENE SULFIDE	91	13.8	0.6	N/A	0.6	RR 121
POLYSULFONE	70	2.6S	80	5.5	0.07	RM 69
POLYETHERSULFONE	84	2.6	60	6.6	0.084	RM 85
SILICON - CONTAINING POLYMERS						
SILICONES	28	3.5	2	N/A	0.02	RM 80
POLYDIMETHYLSILOXANE		0.001 - 0.002				
*THESE ARE TYPICAL ROOM - TEMPERATURE VALUES OF NOTCHED IZOD IMPACT STRENGTH. A MATERIAL THAT DOES NOT BREAK IN THE IZOD TEST IS GIVEN A VALUE OF 1.06 + KJ/M; THE + INDICATES THAT IT HAS A HIGHER IMPACT ENERGY THAN THE TEST CAN GENERATE. N/A = IF MATERIAL IS BRITTLE AND DOES NOT EXHIBIT YIELD POINT NY = IF MATERIAL IS DUCTILE AND DOES NOT EXHIBIT YIELD POINT RM = ROCKWELL M 123 HARDNESS (HARD) RR = ROCKWELL R 112 HARDNESS SA 65 = SHORE A 65 HARDNESS (SOFT) SD 75 = SHORE D75 HARDNESS						

FIG. 23.4 cont.

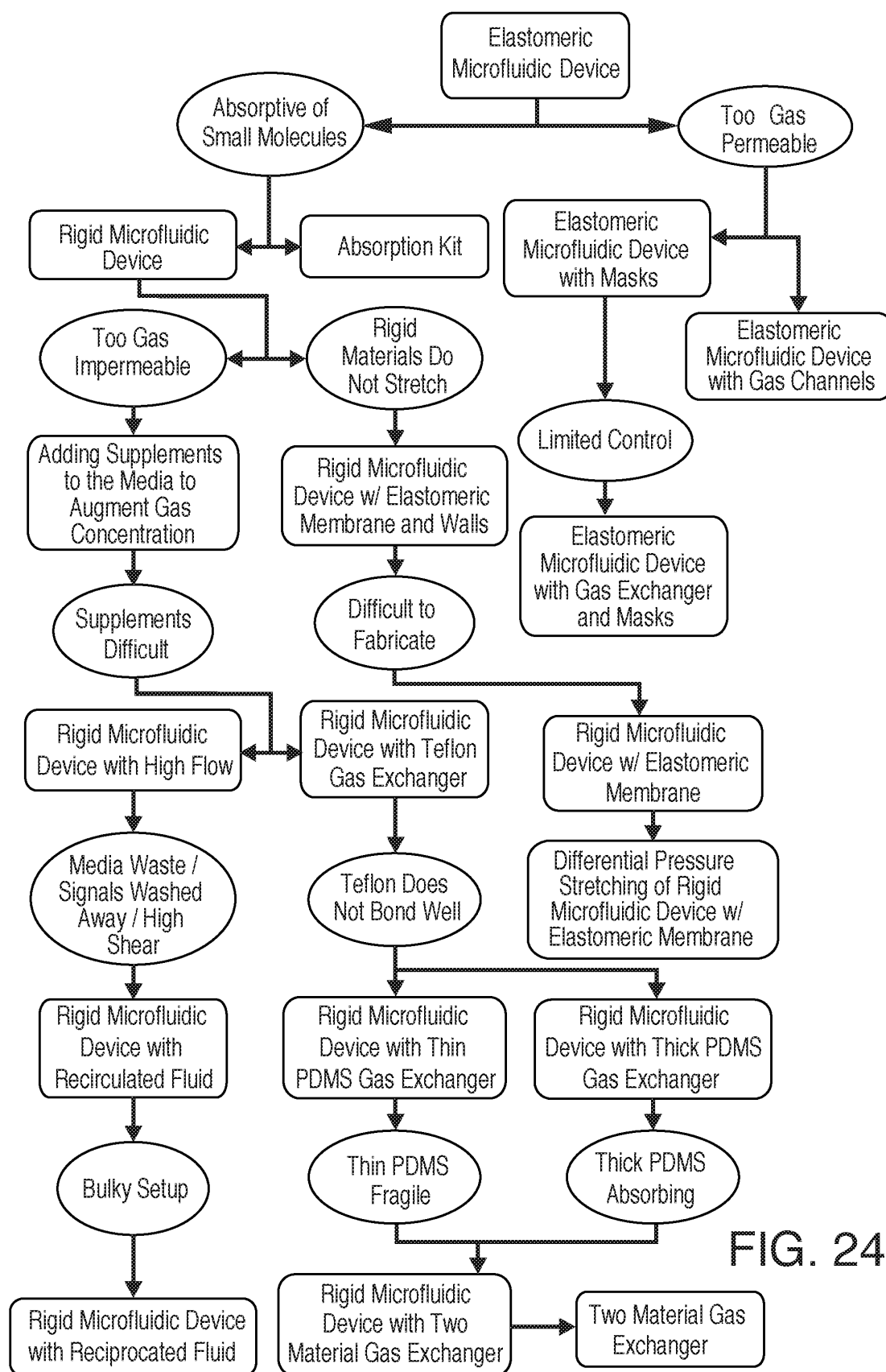


FIG. 24

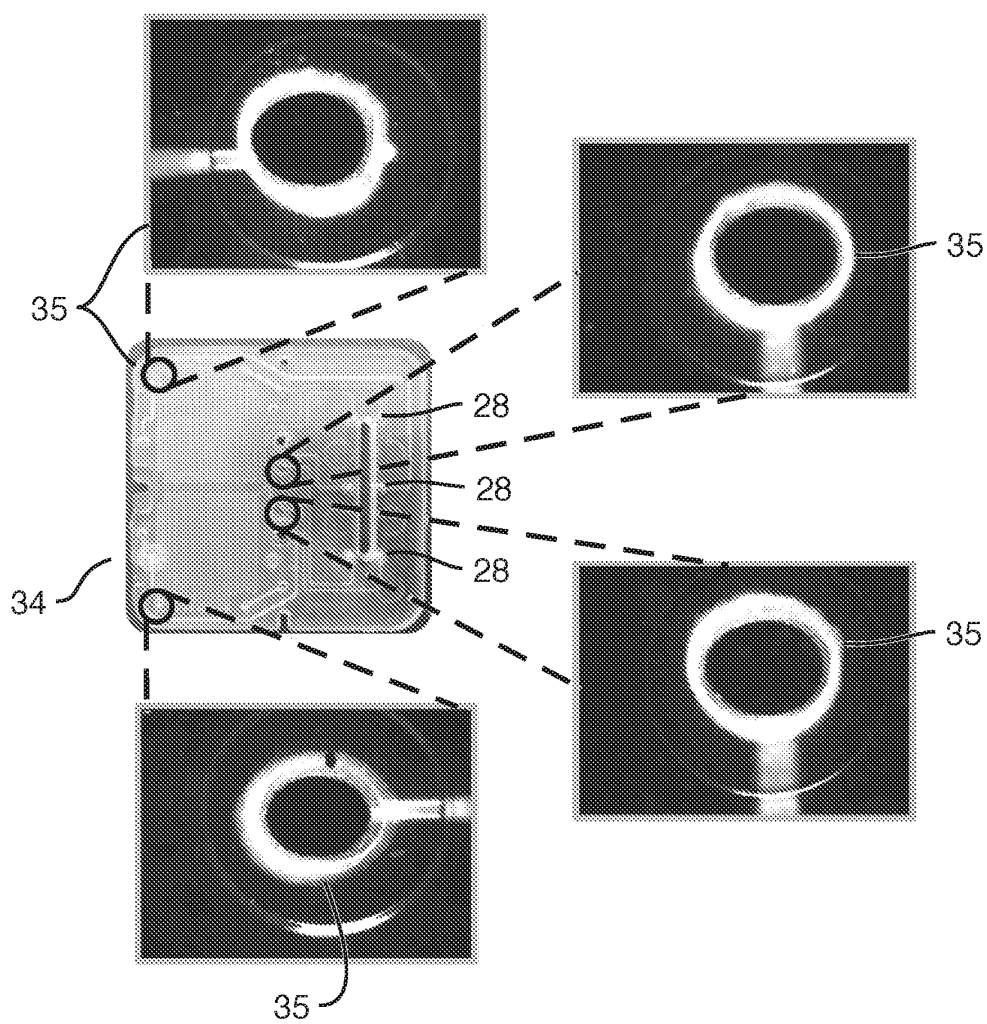


FIG. 25A

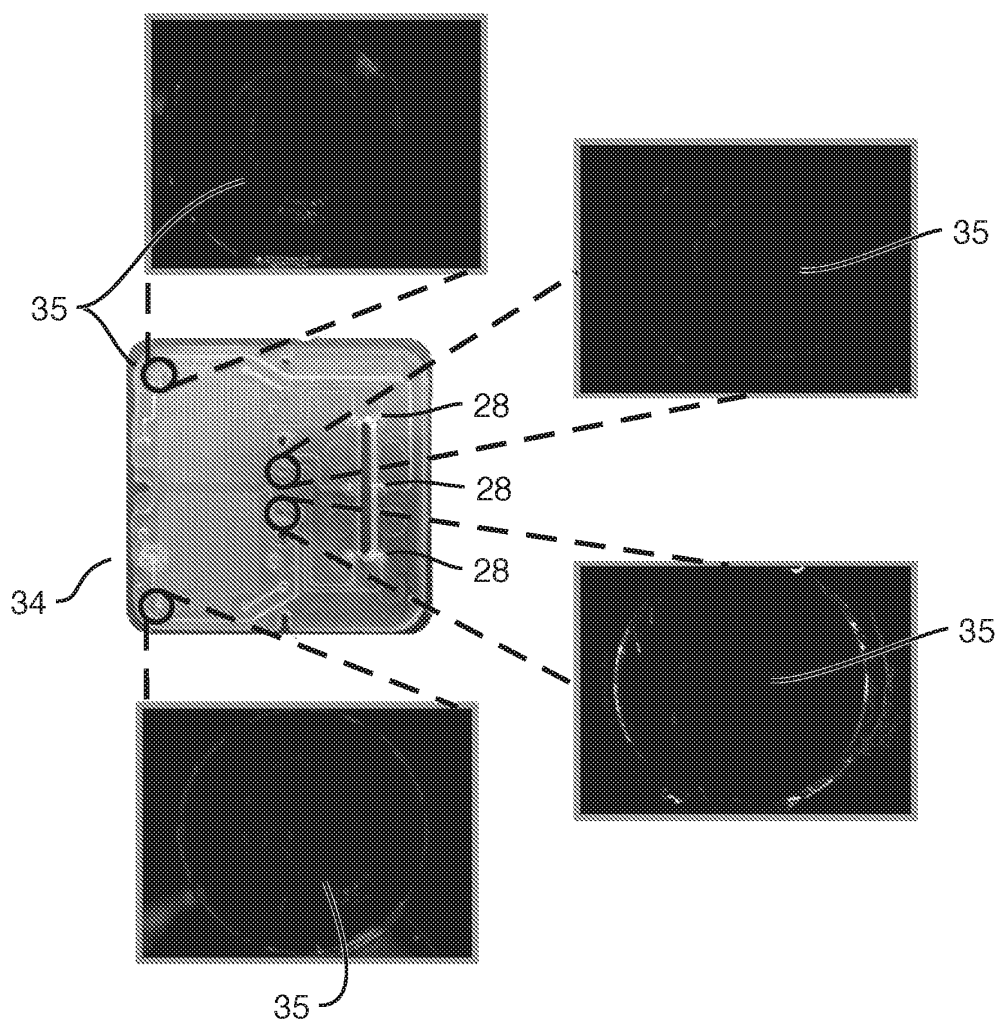
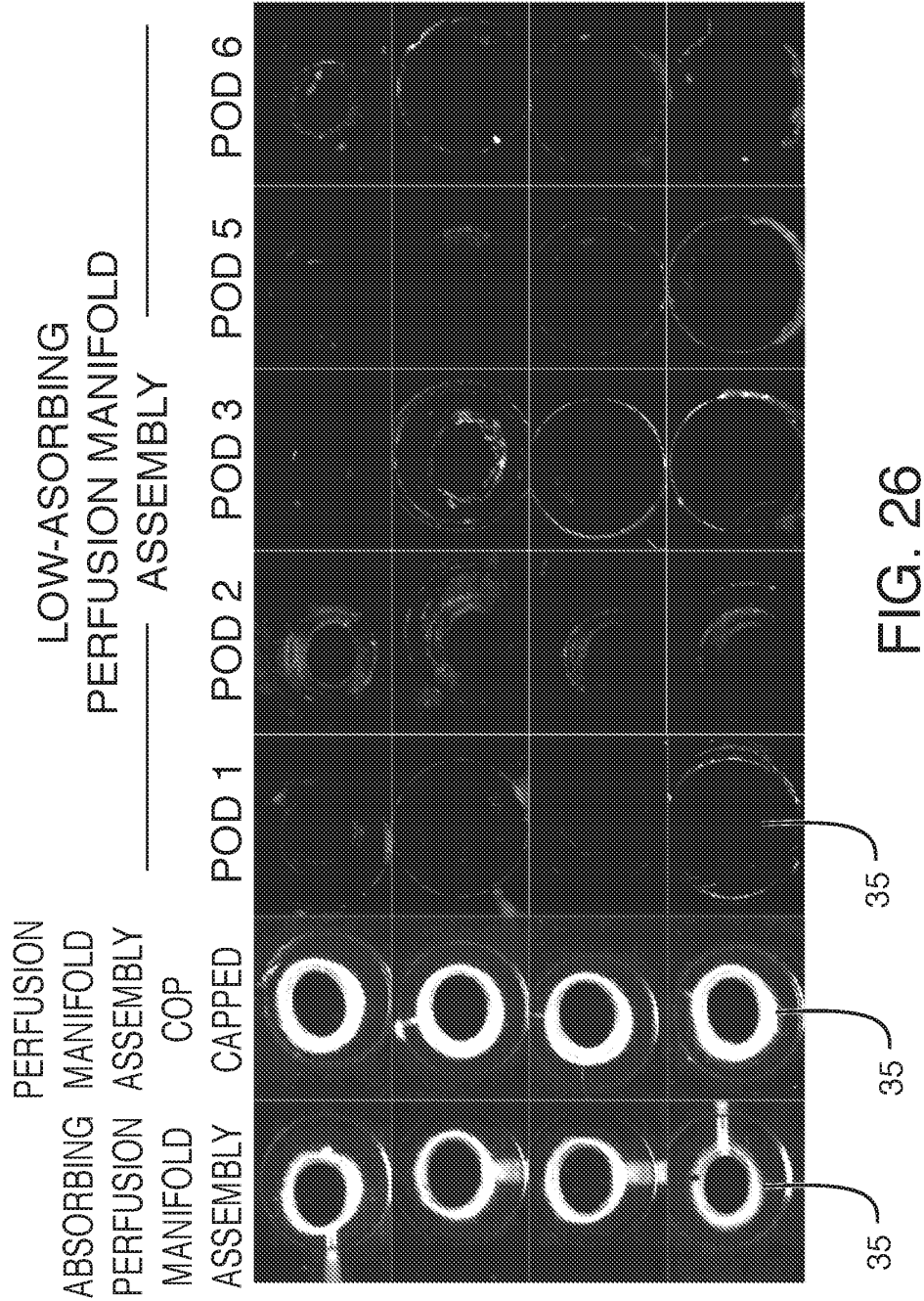


FIG. 25B



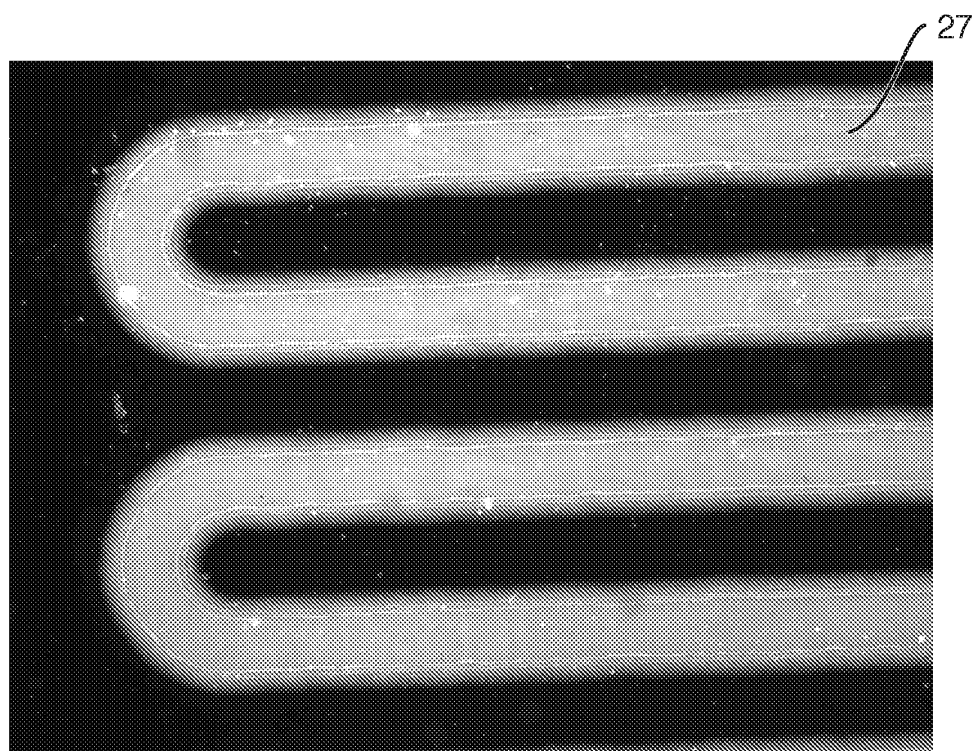


FIG. 27A

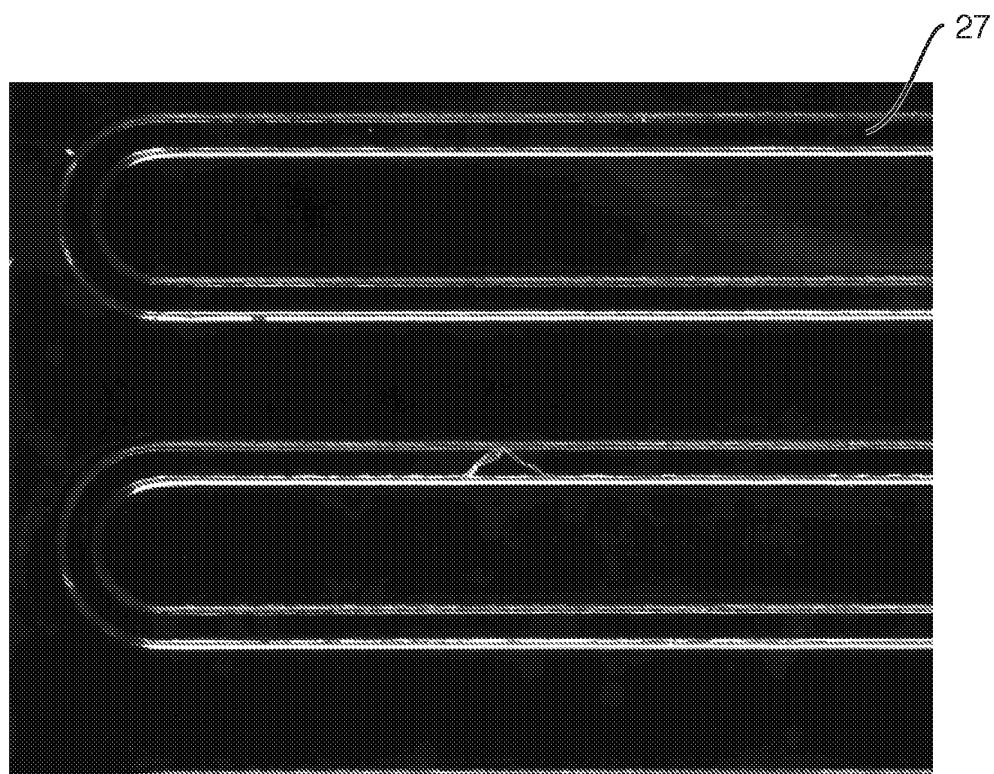


FIG. 27B

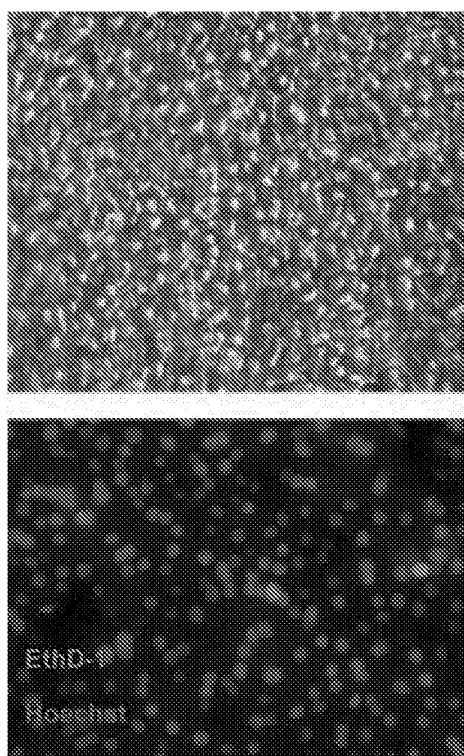


FIG. 28A

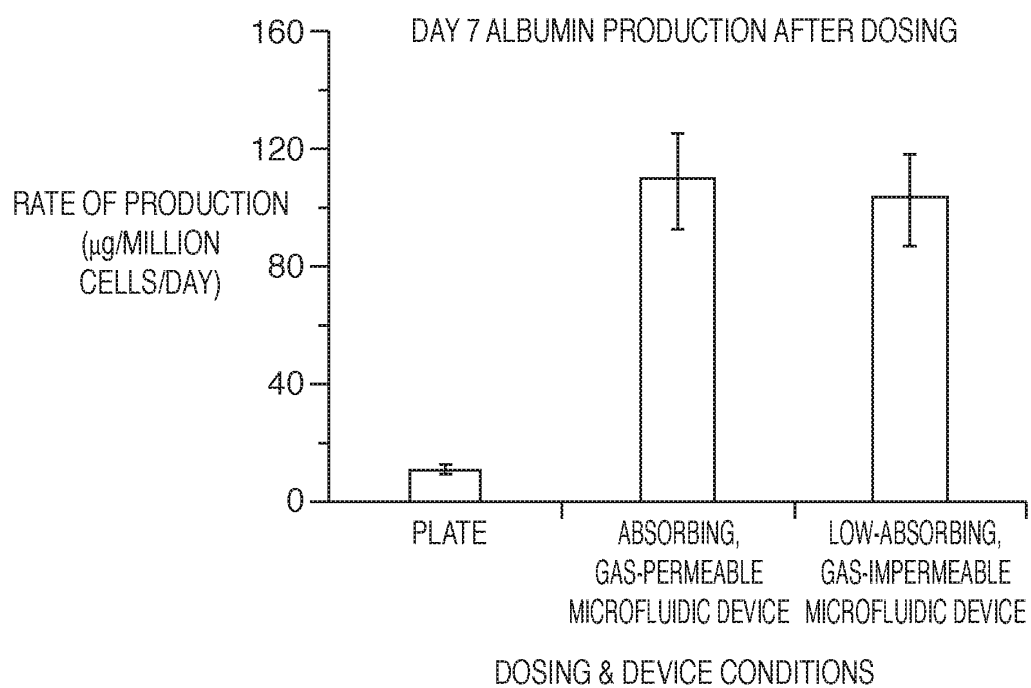


FIG. 28B

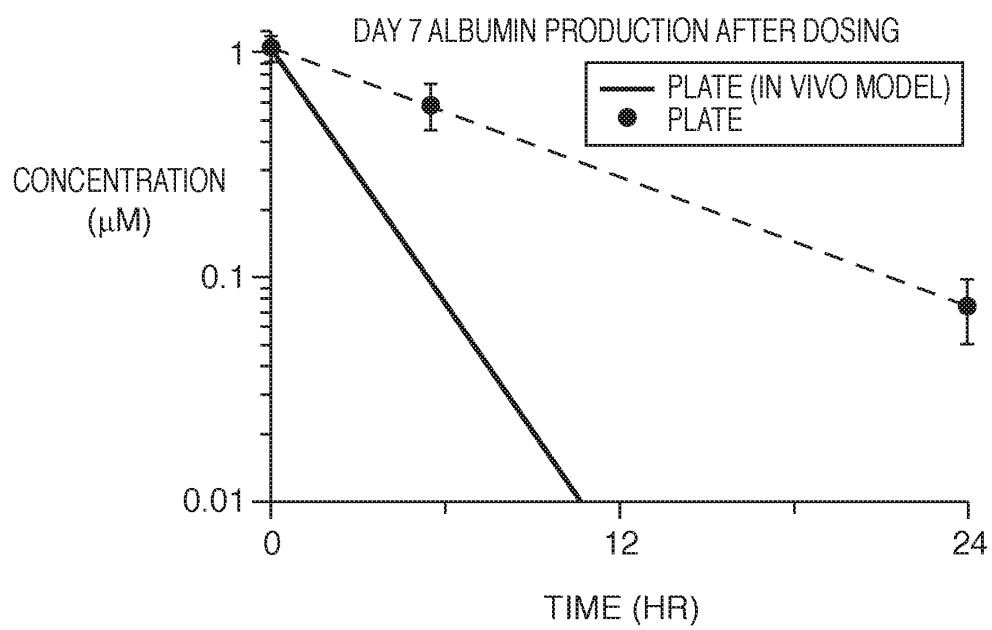


FIG. 29A

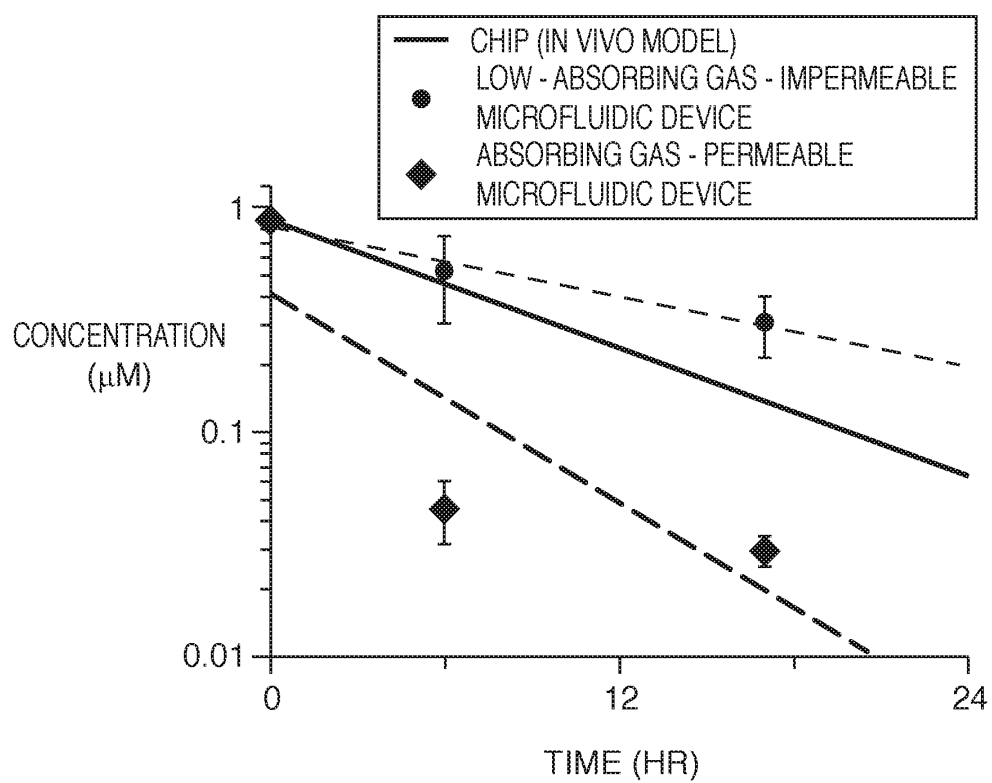


FIG. 29B

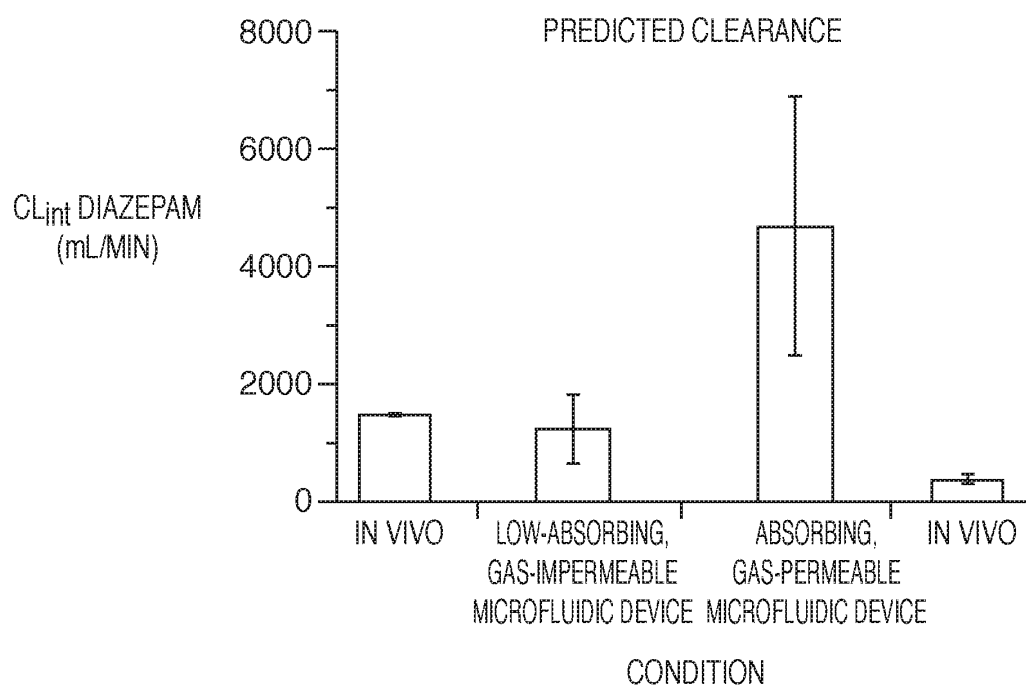


FIG. 30

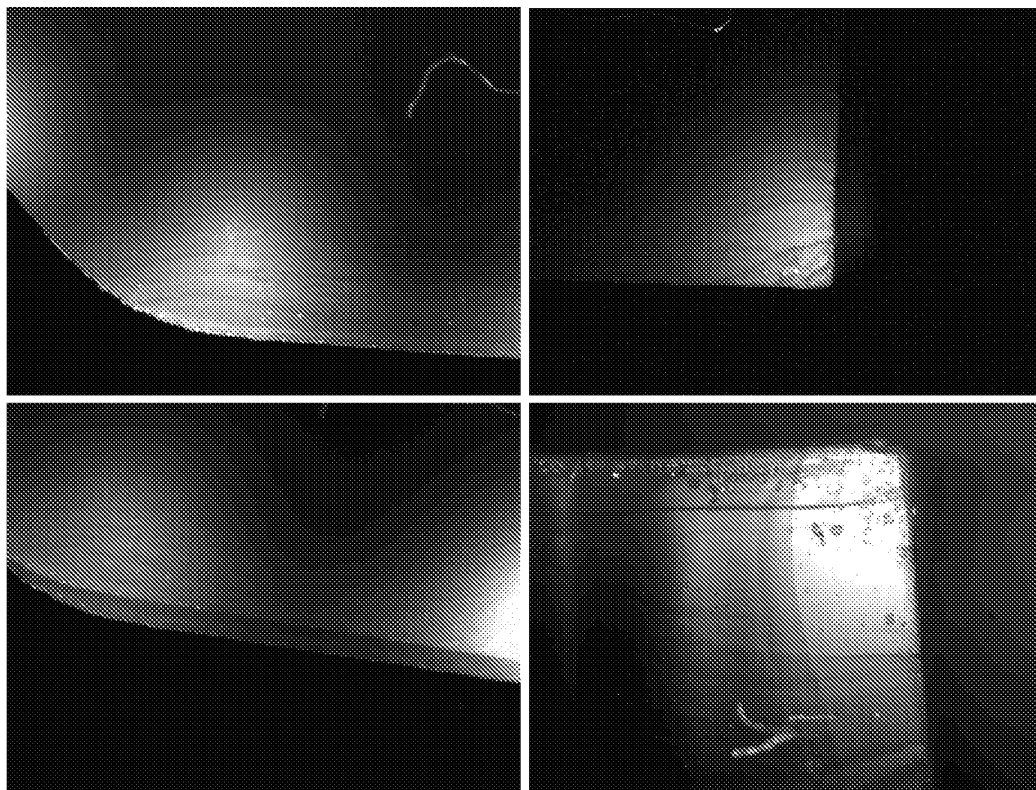


FIG. 31

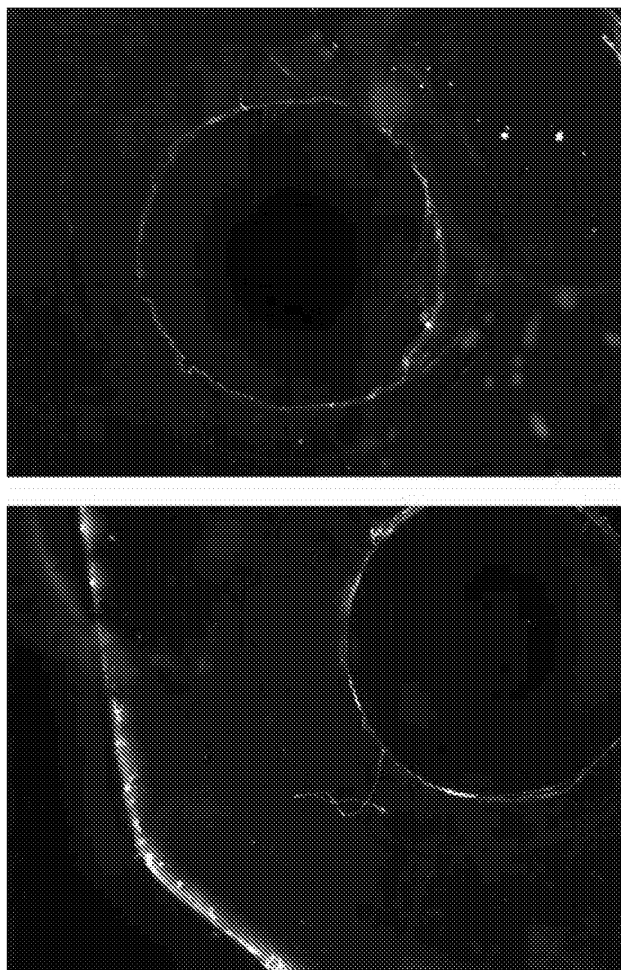


FIG. 32

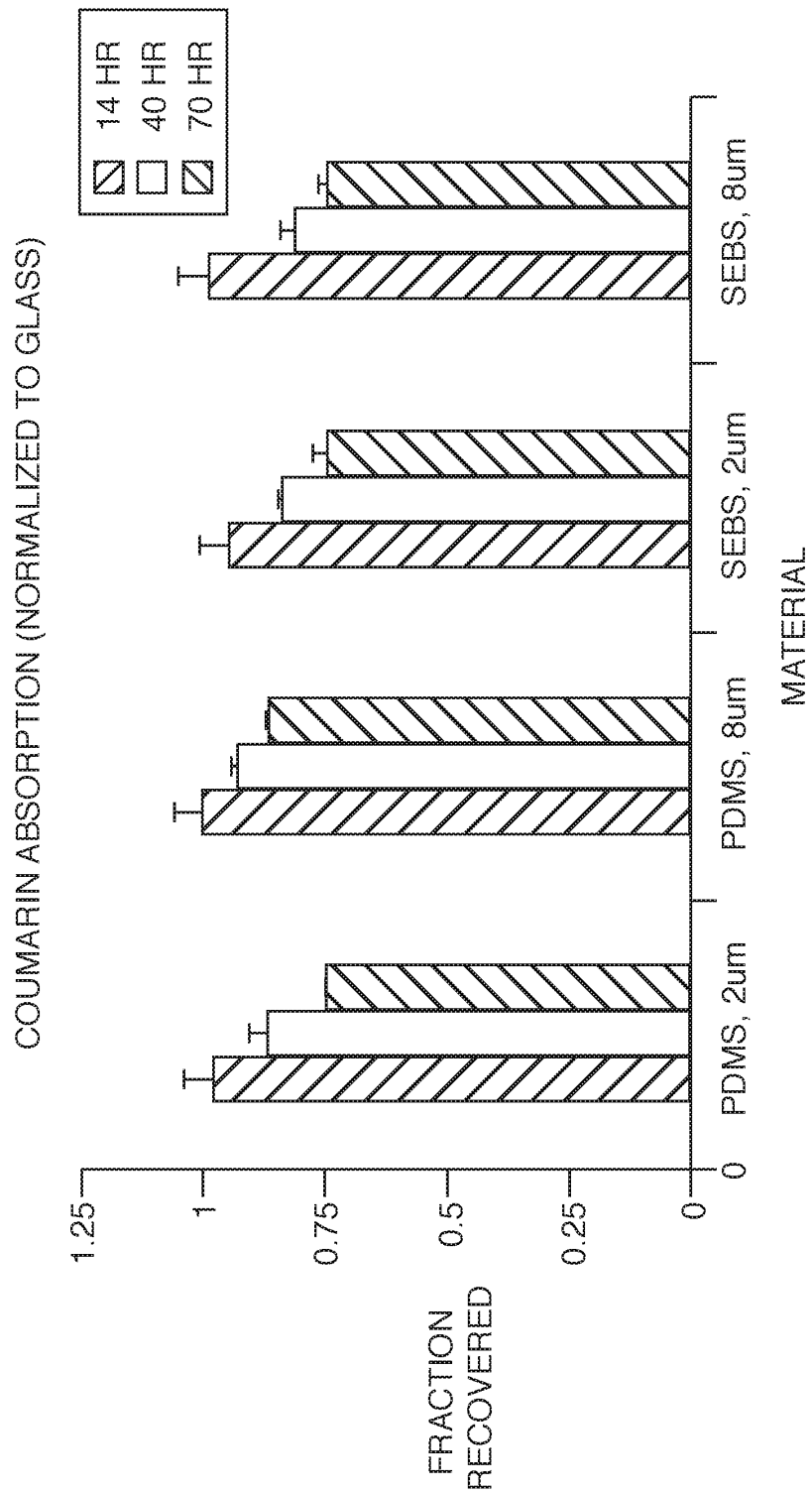


FIG. 33A

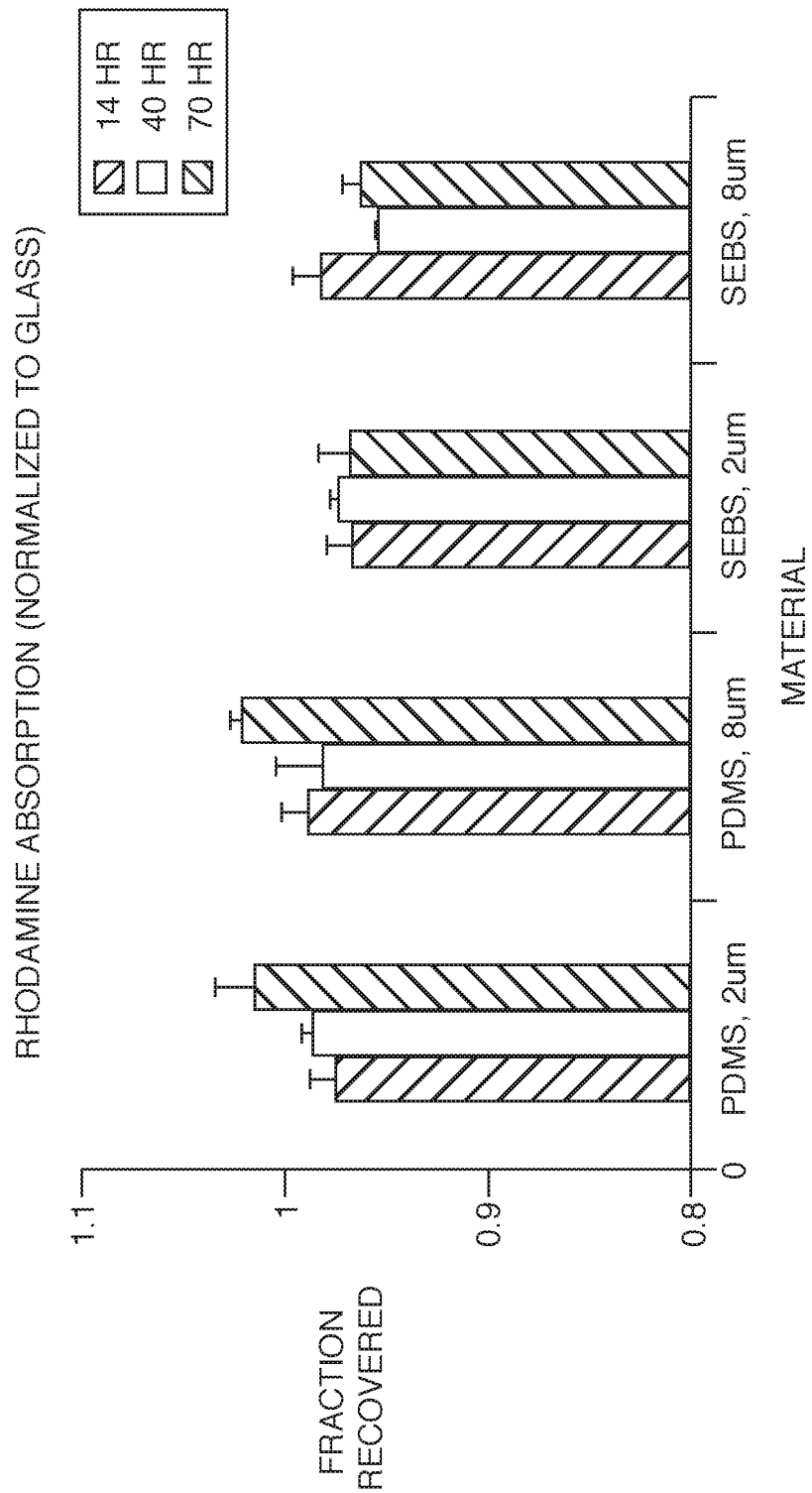


FIG. 33B

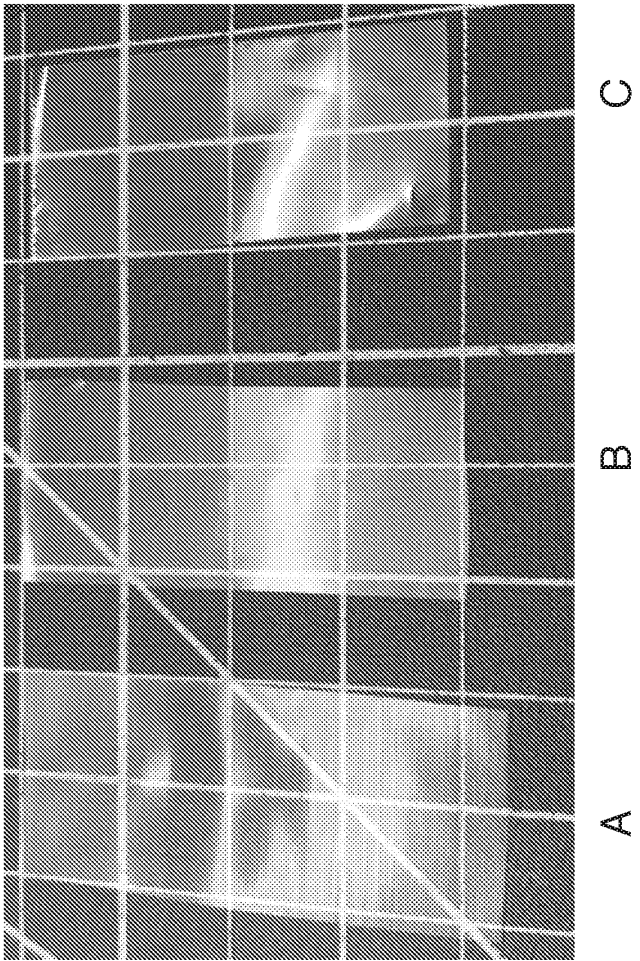


FIG. 34

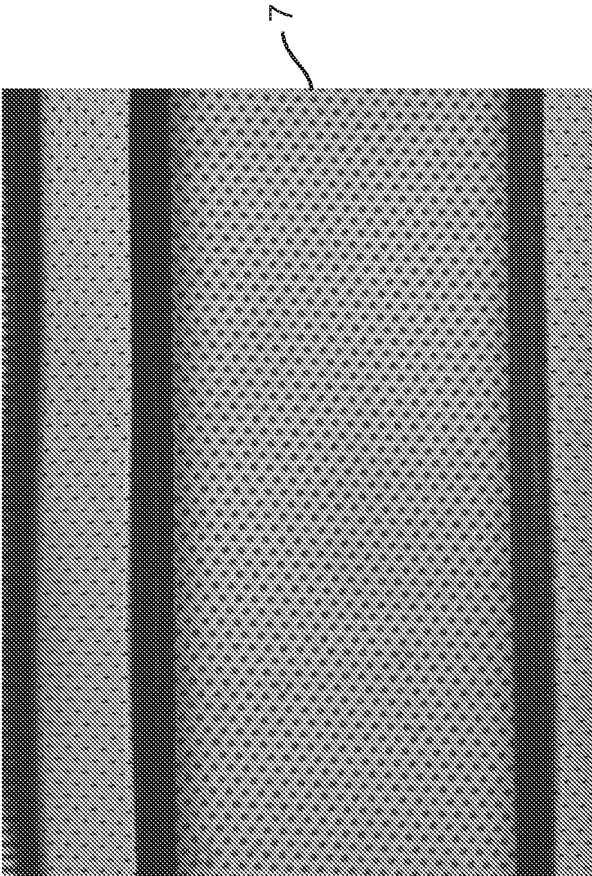


FIG. 35A

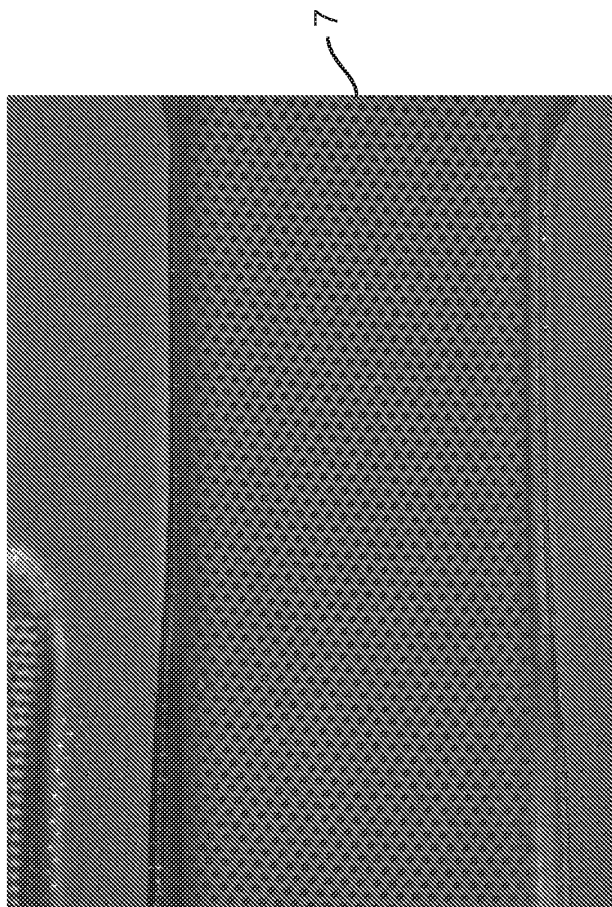
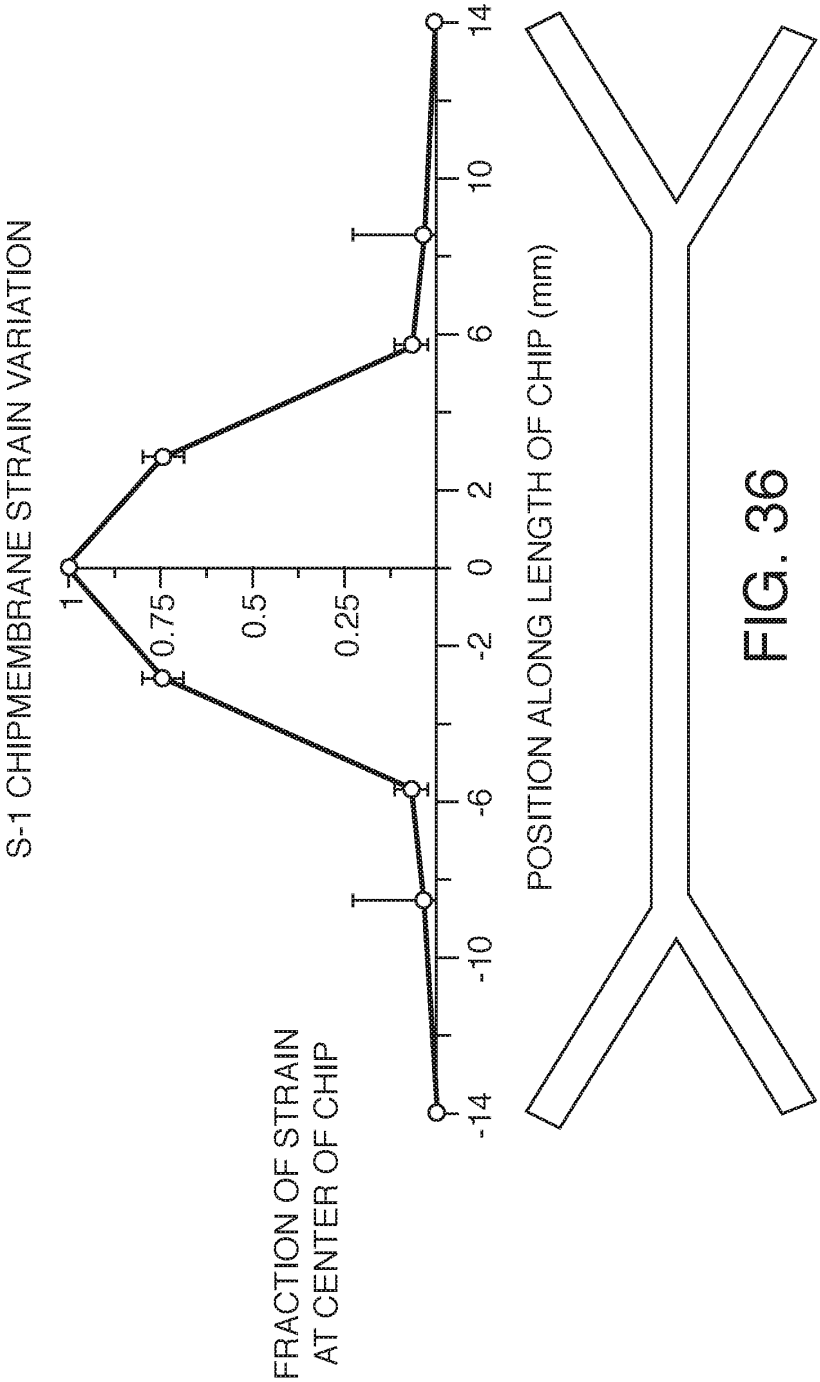


FIG. 35B



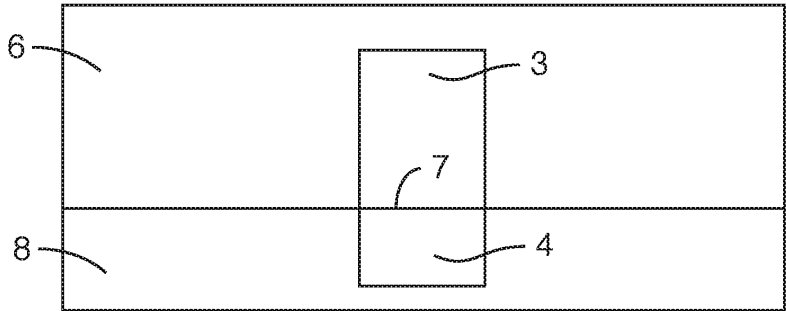


FIG. 37A

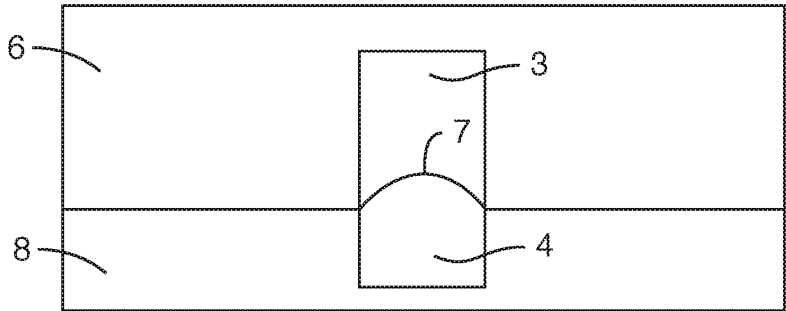


FIG. 37B

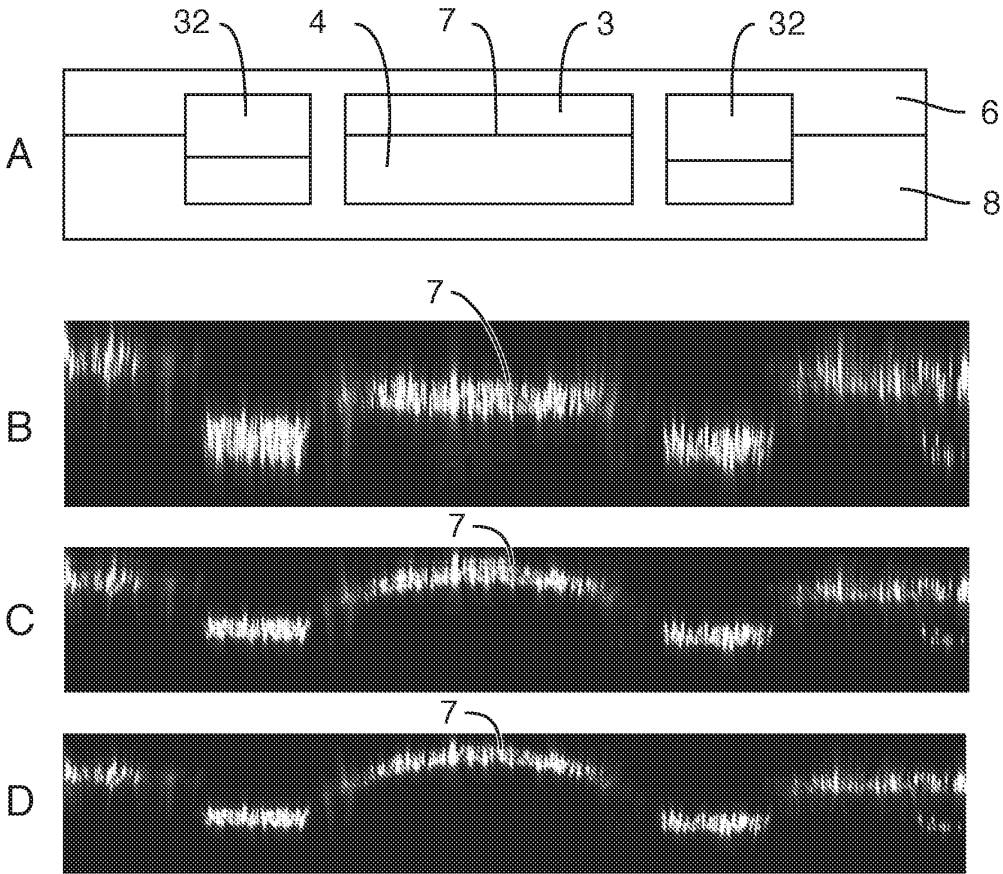


FIG. 38

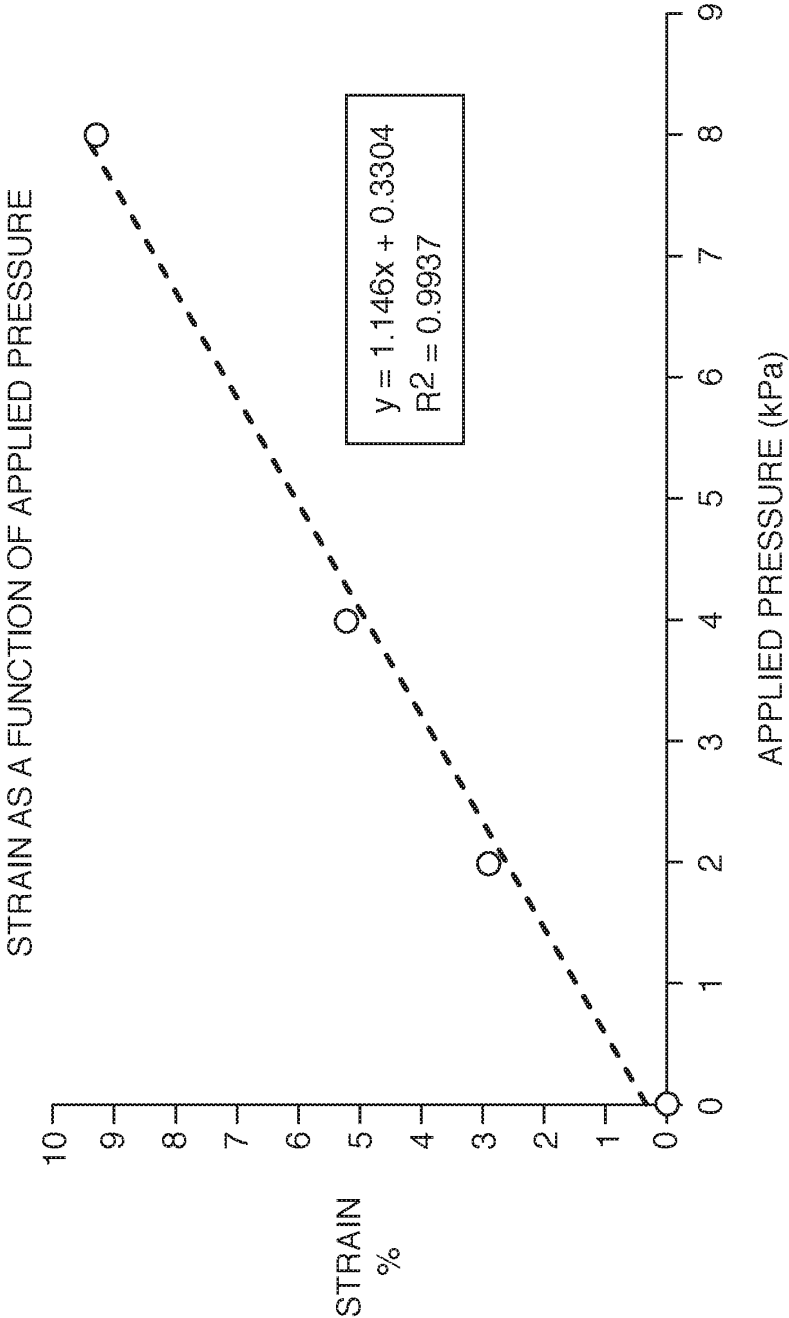


FIG. 39

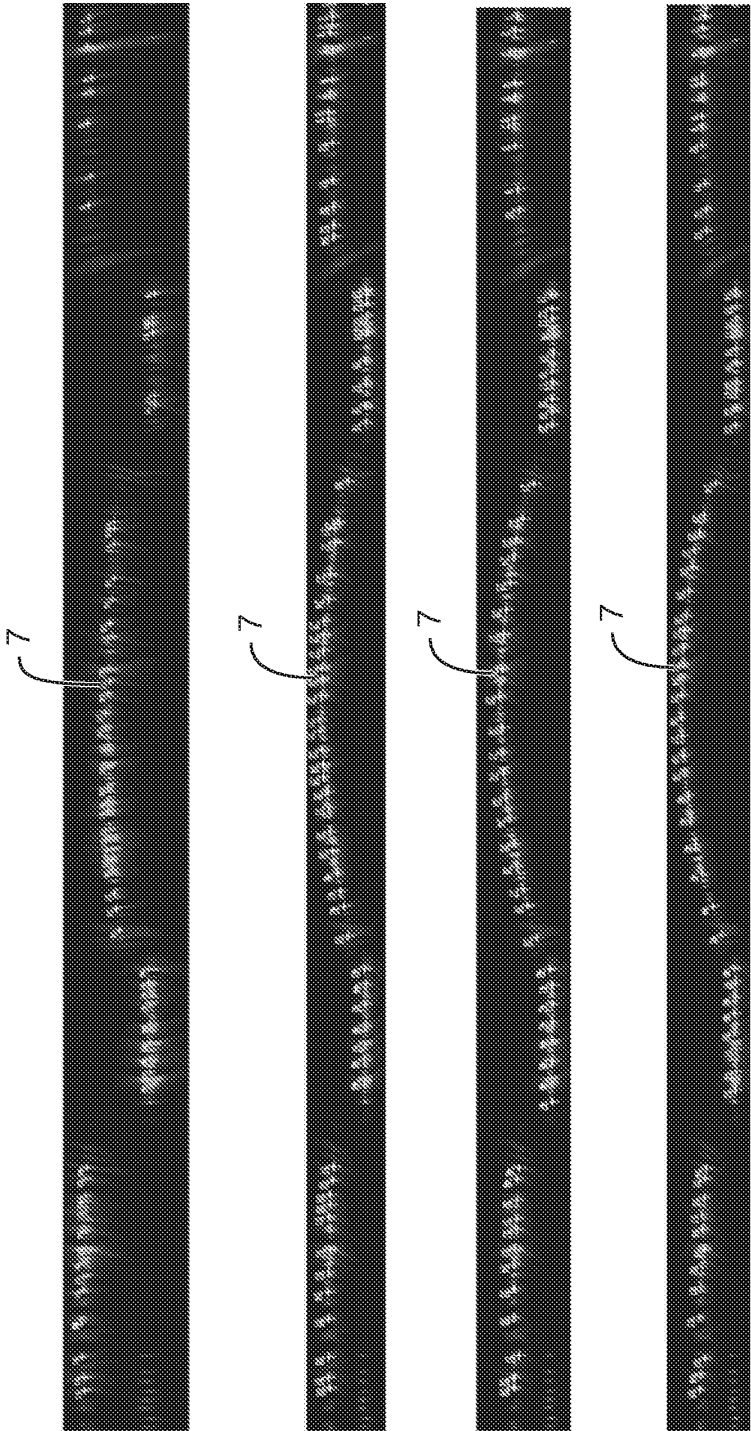


FIG. 40

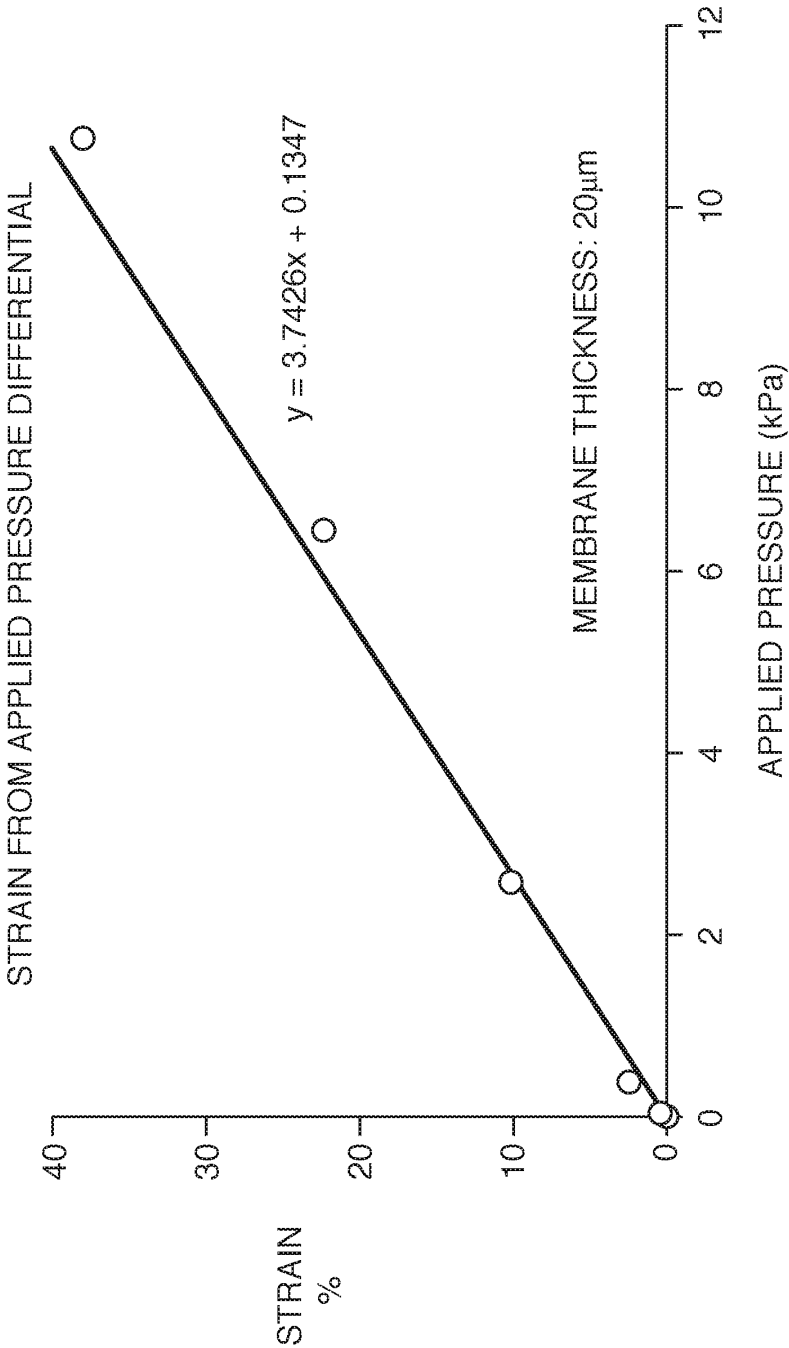


FIG. 41

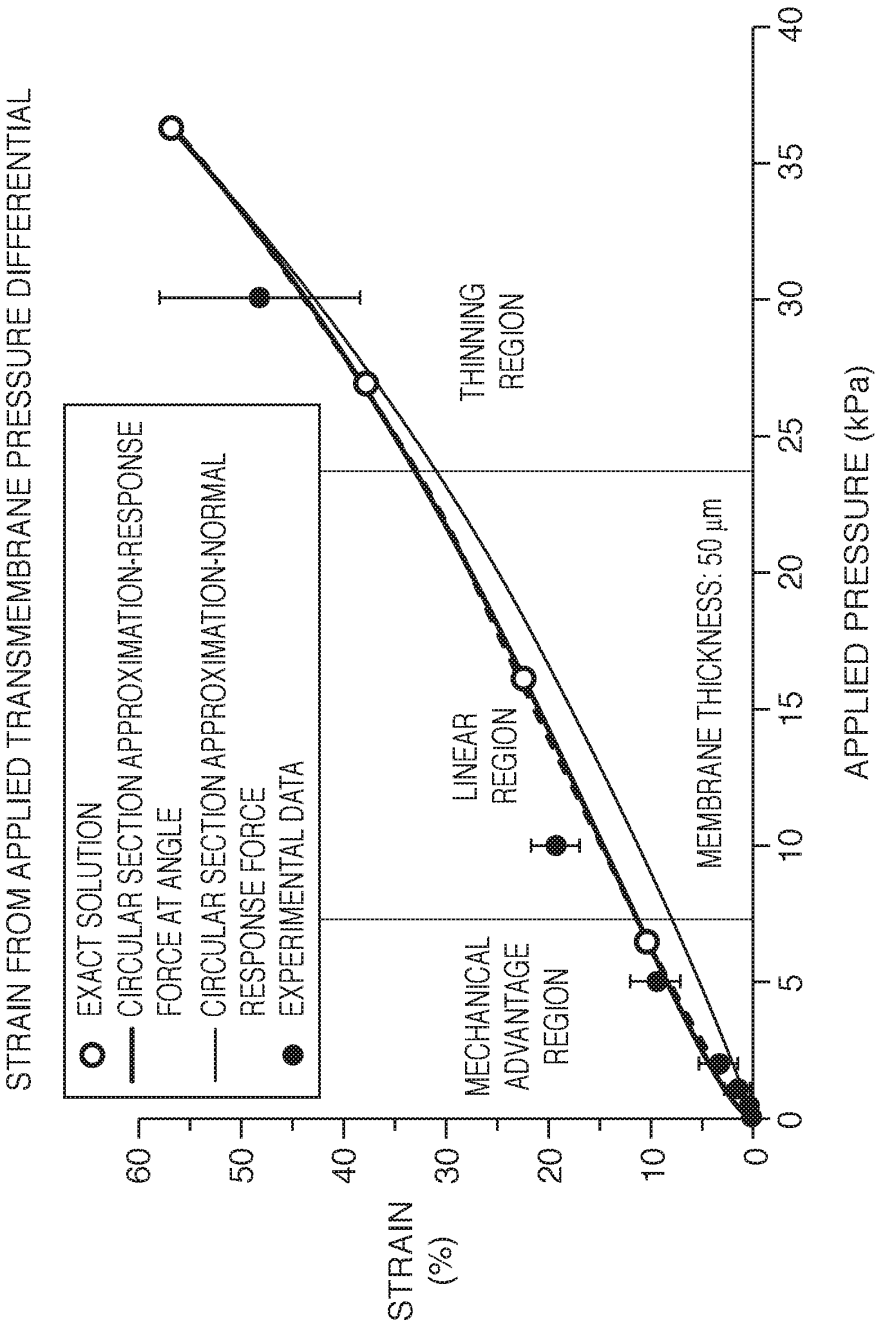


FIG. 42

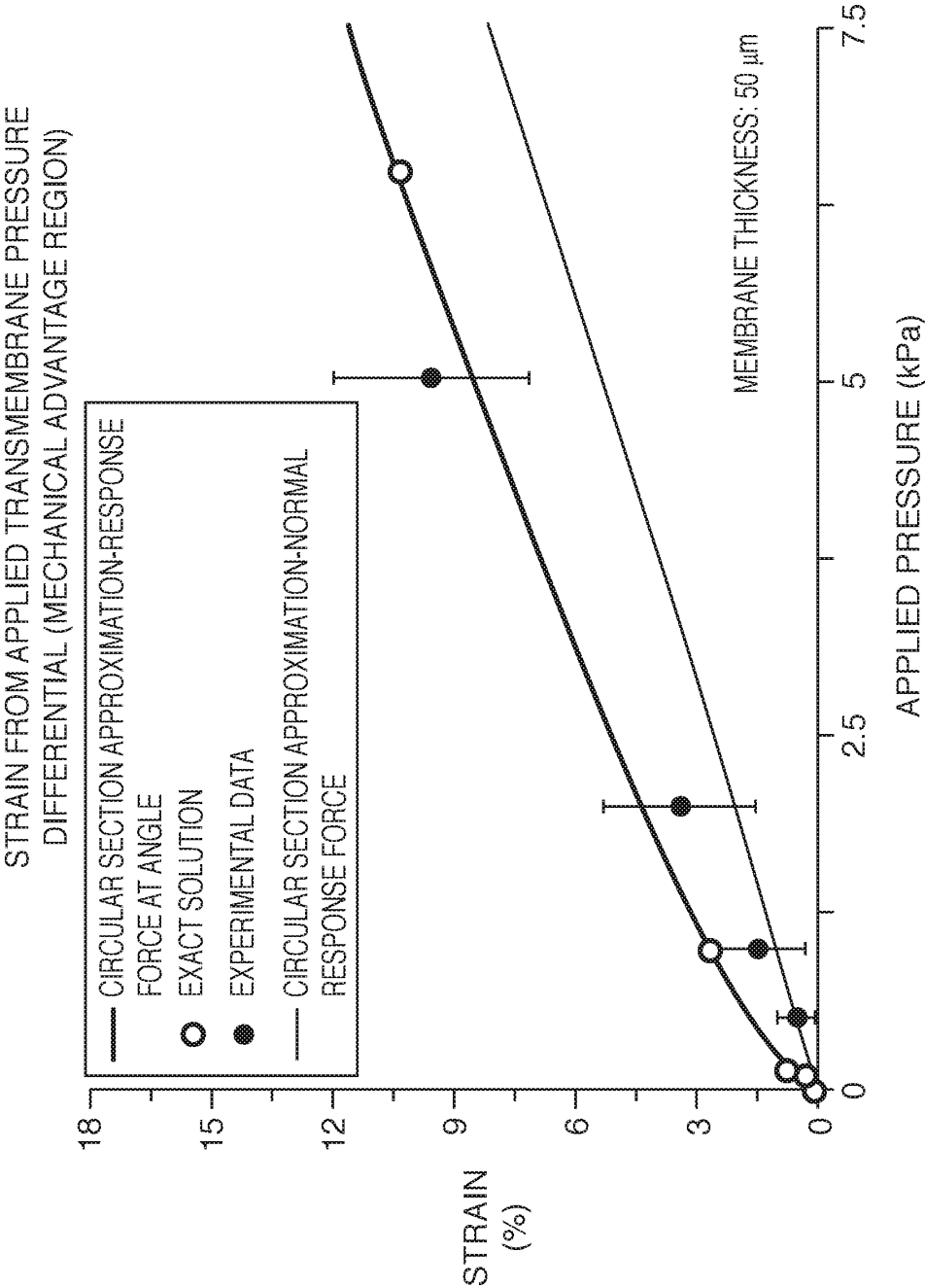


FIG. 43

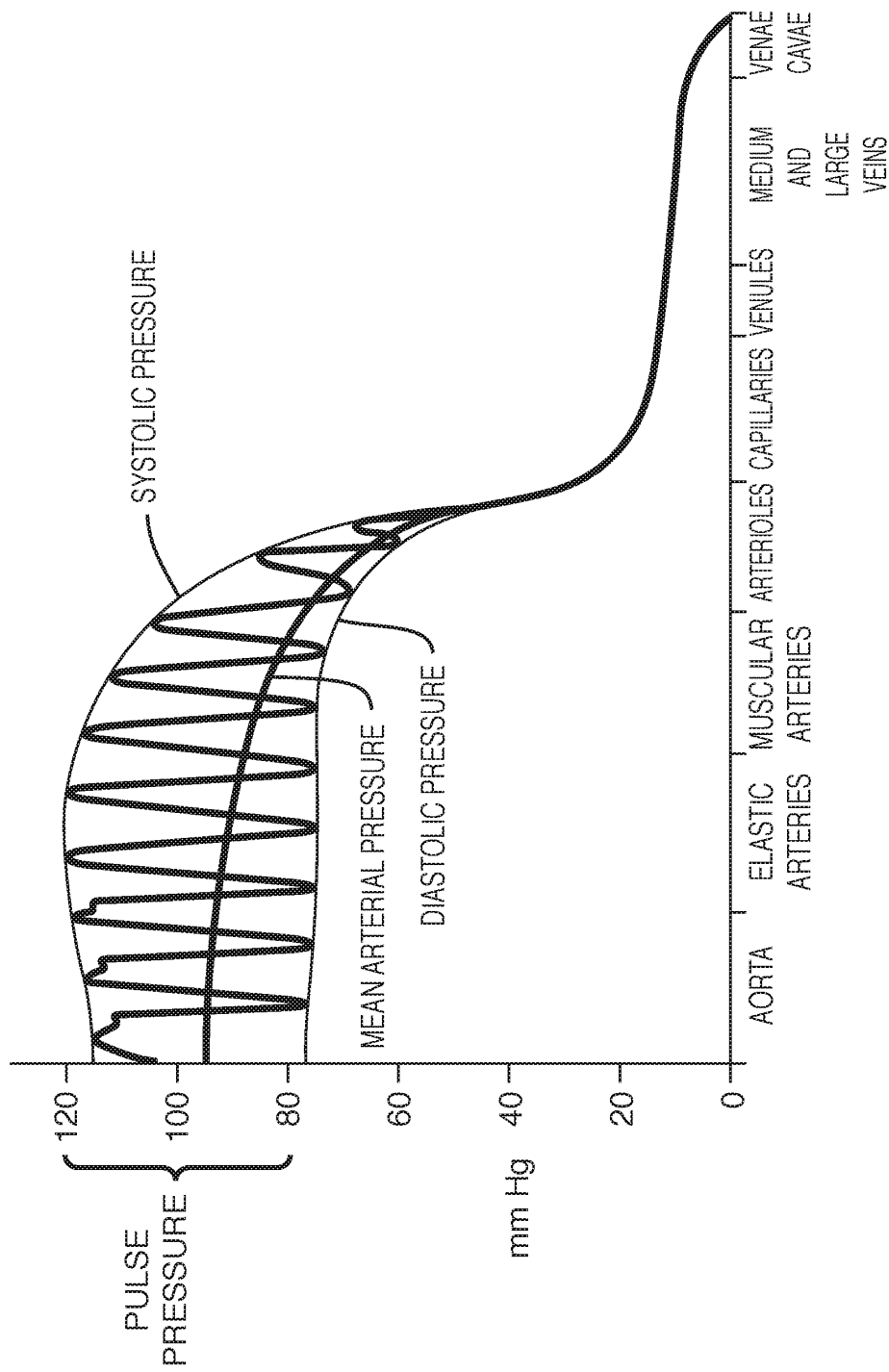


FIG. 44

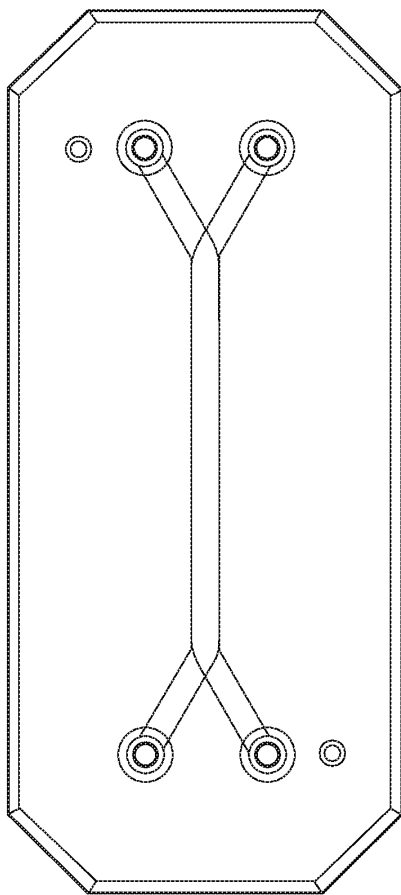


FIG. 45A

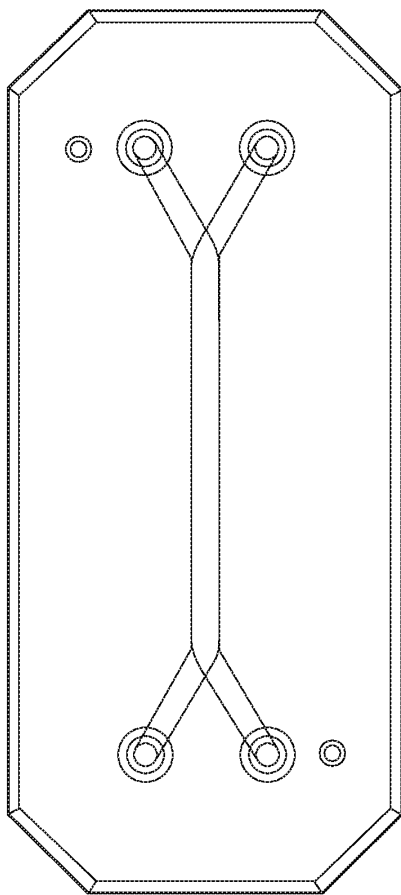


FIG. 45B

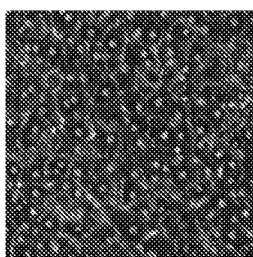


FIG. 46A

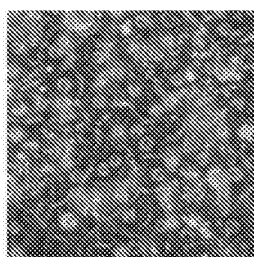


FIG. 46B

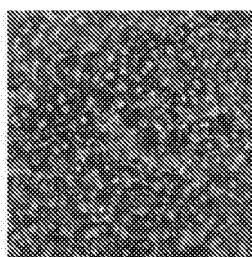


FIG. 46C

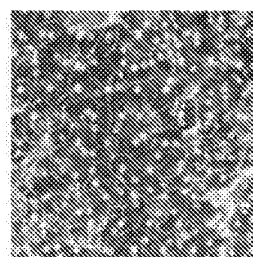


FIG. 46D

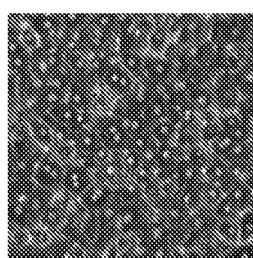


FIG. 47A

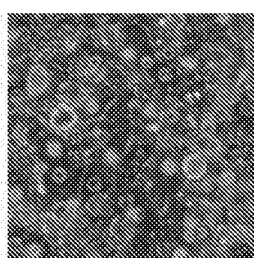


FIG. 47B

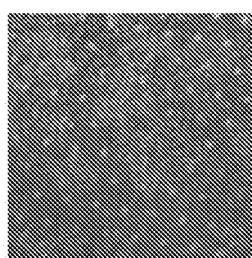


FIG. 47C

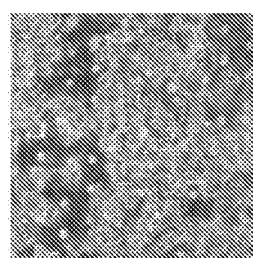


FIG. 47D

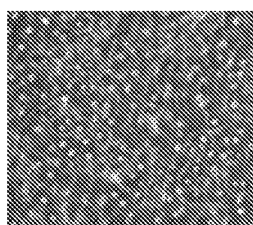


FIG. 48A

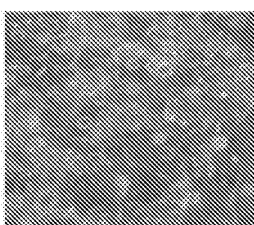


FIG. 48B

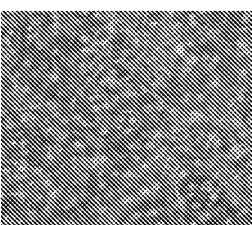


FIG. 48C

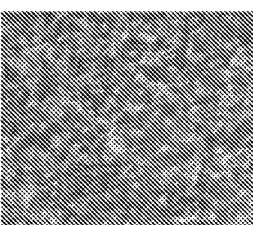


FIG. 48D

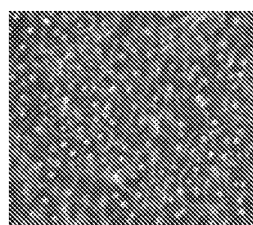


FIG. 49A

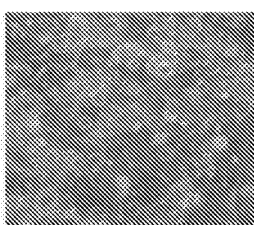


FIG. 49B

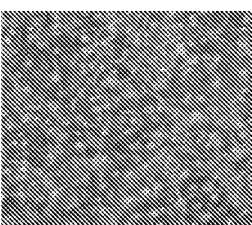


FIG. 49C

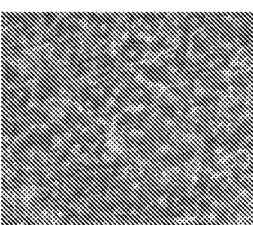


FIG. 49D

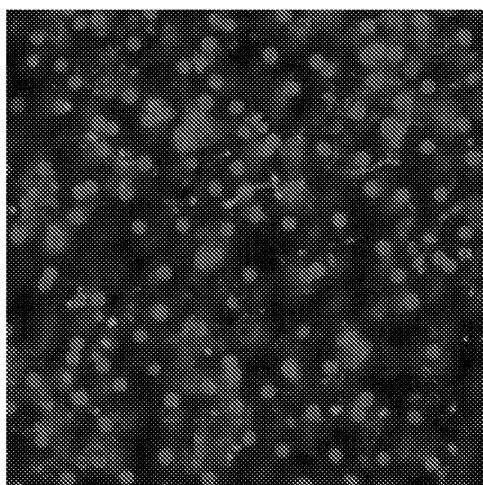


FIG. 50A

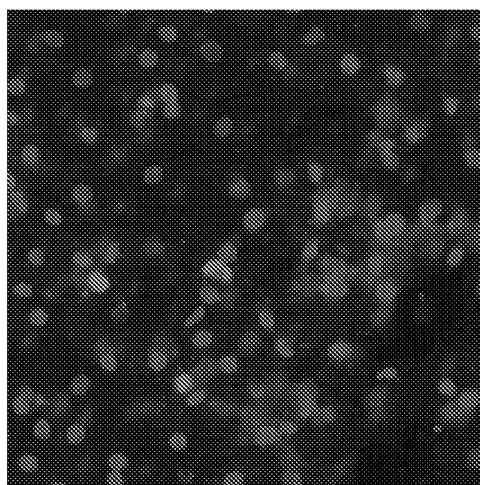


FIG. 50B

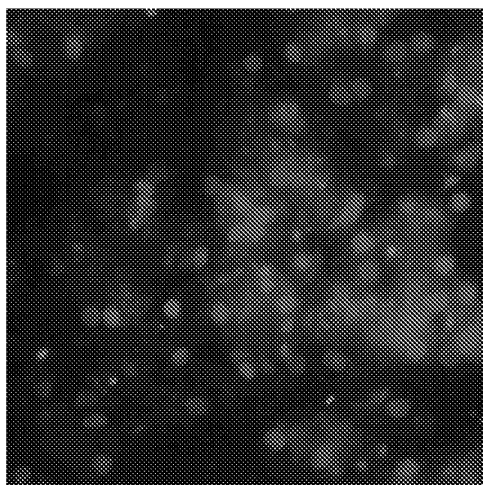


FIG. 50C

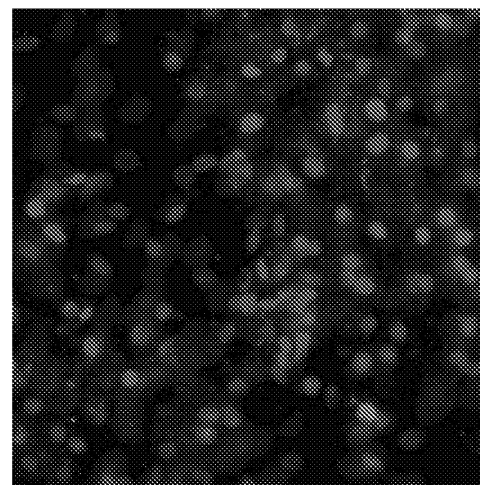


FIG. 50D

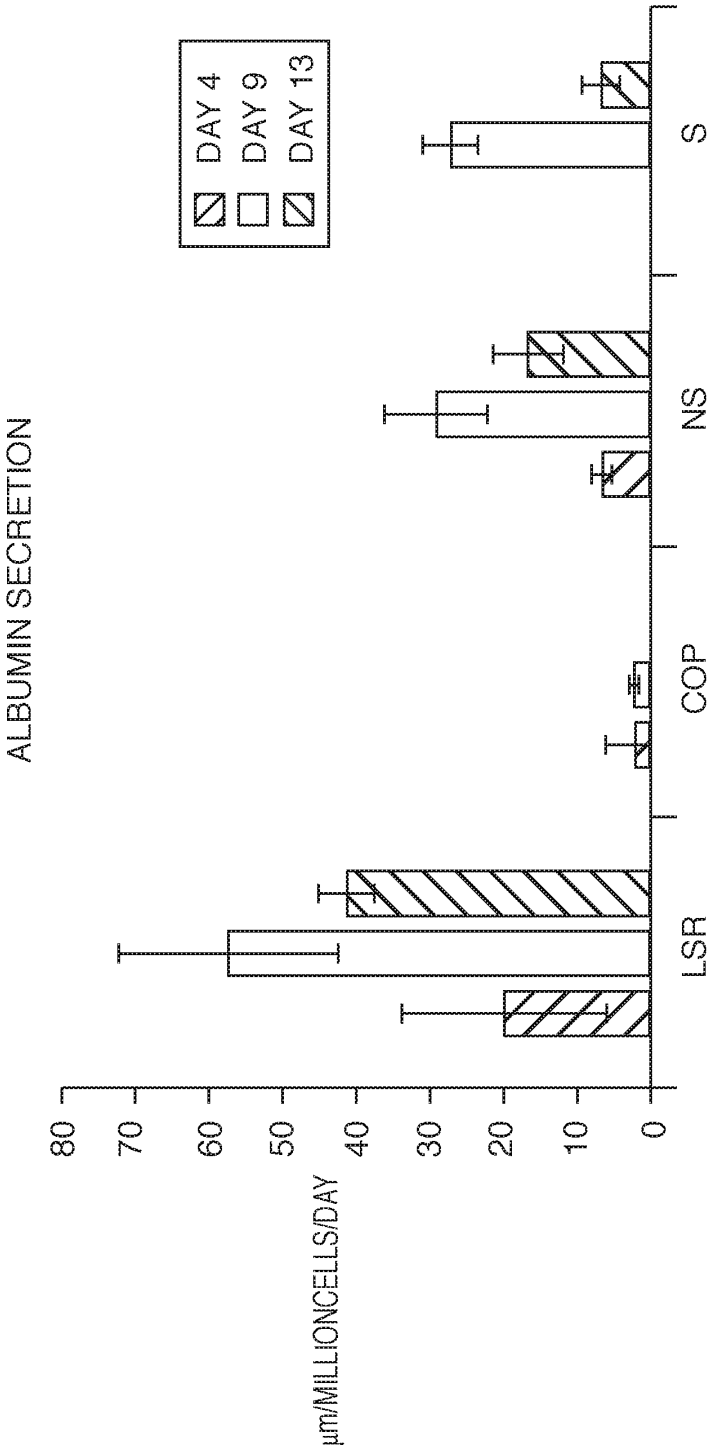


FIG. 51A

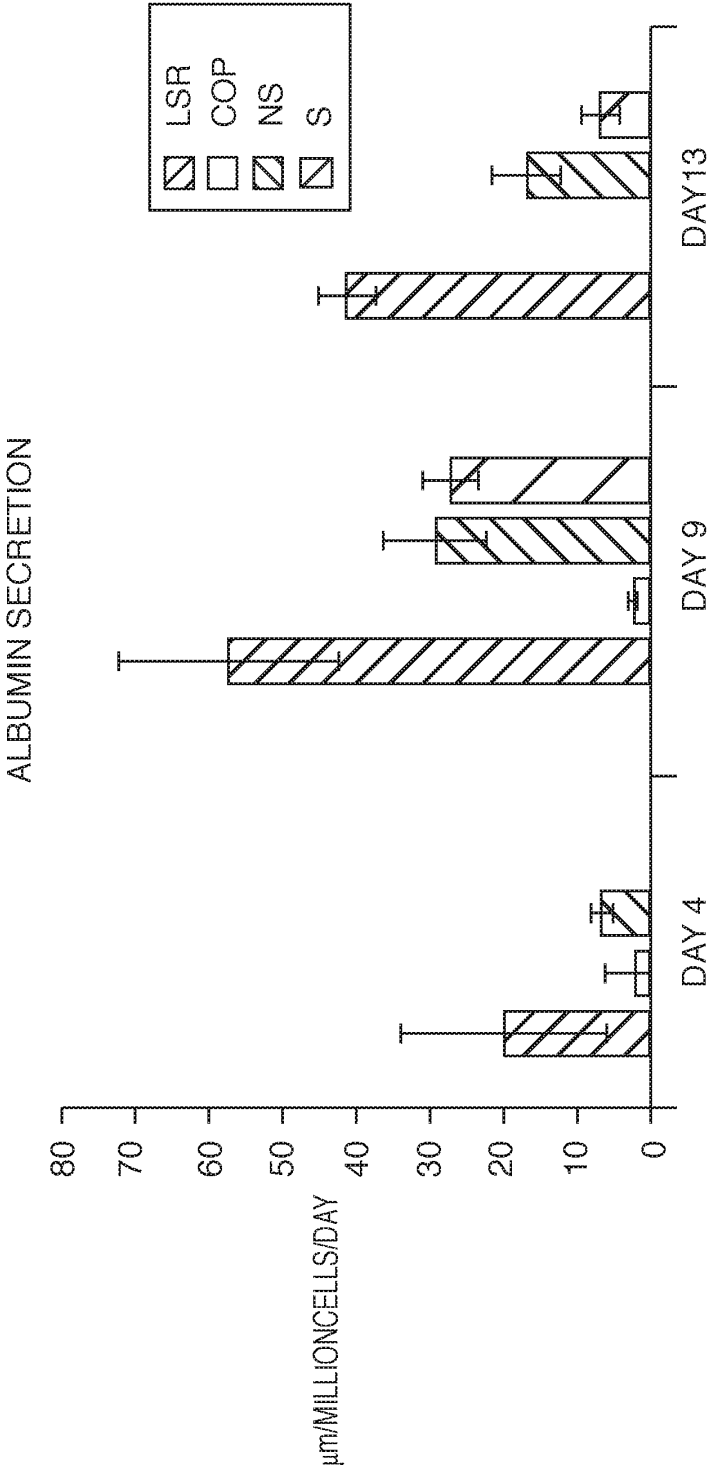


FIG. 51B

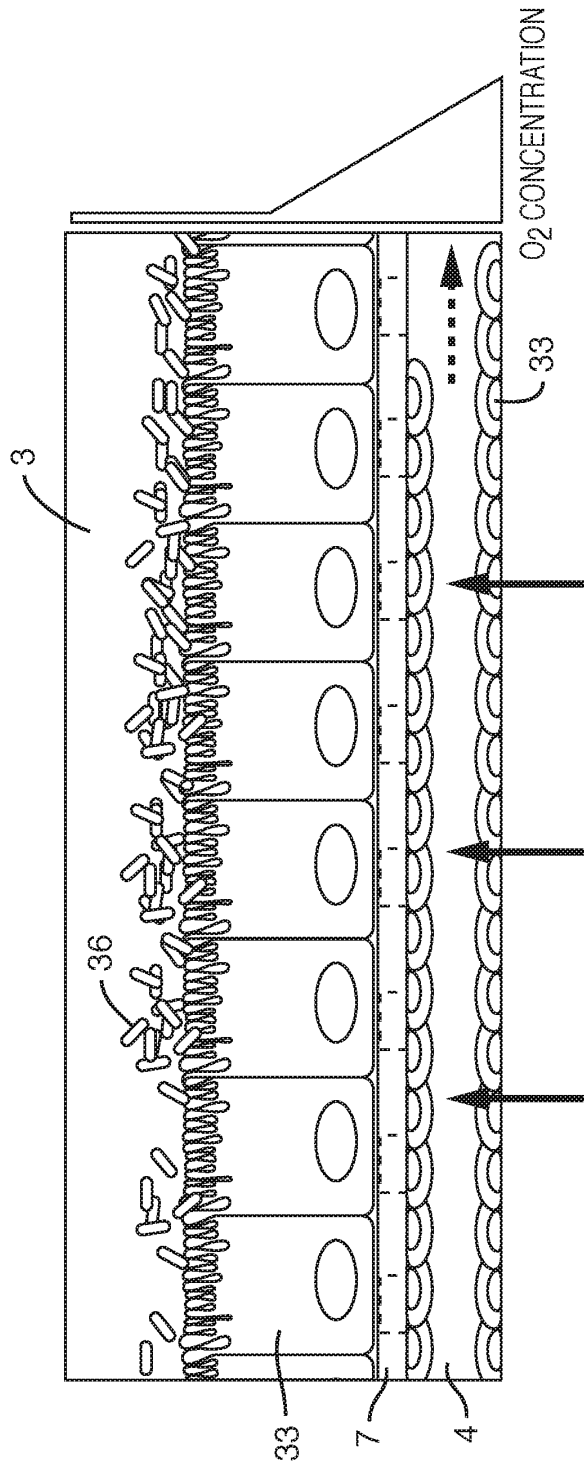


FIG. 52

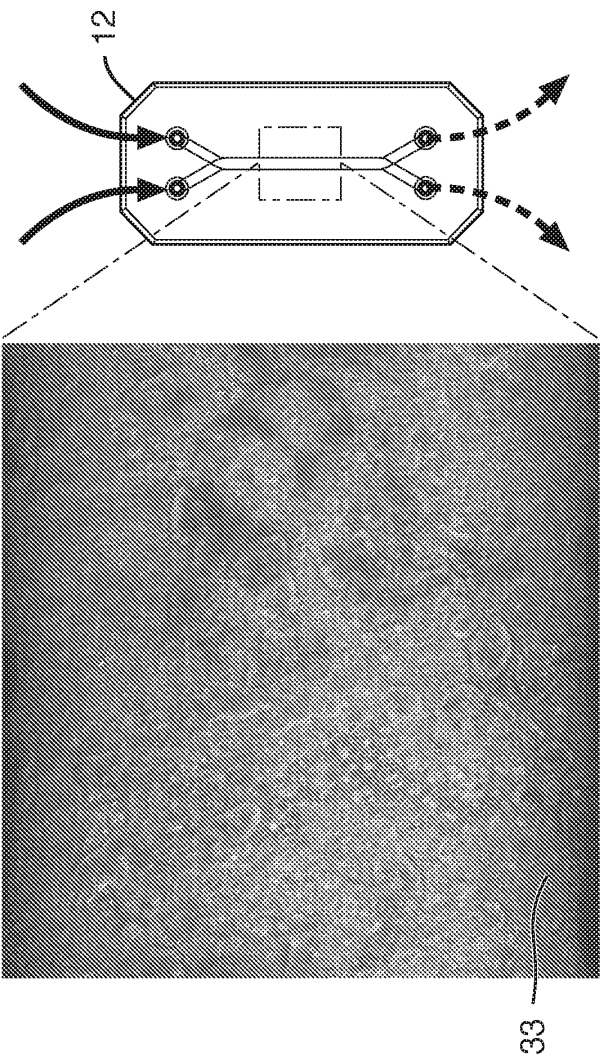


FIG. 53

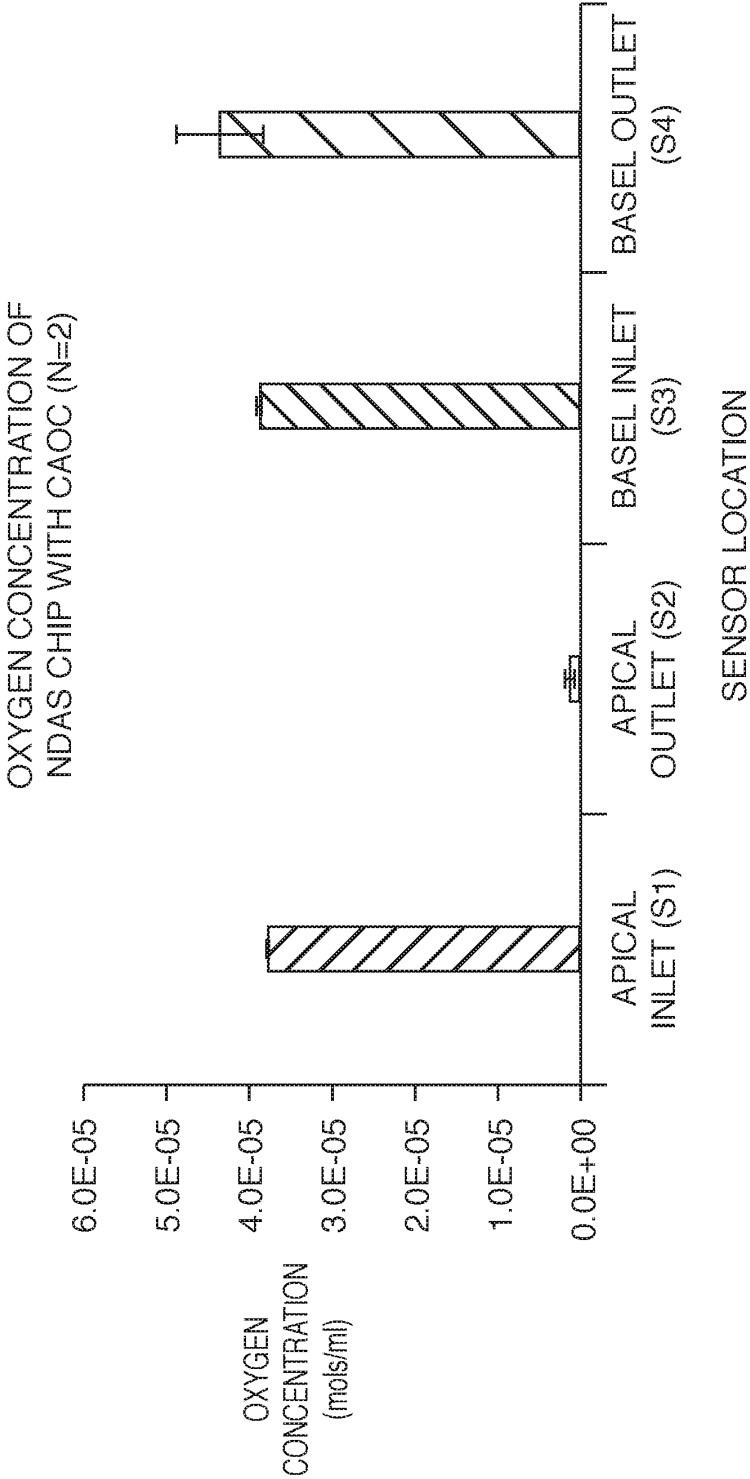


FIG. 54

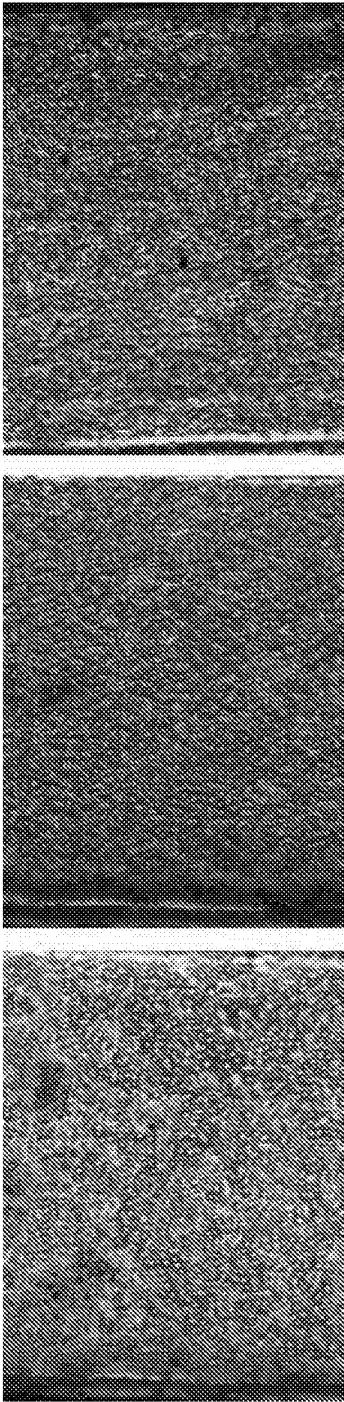


FIG. 55C

FIG. 55B

FIG. 55A

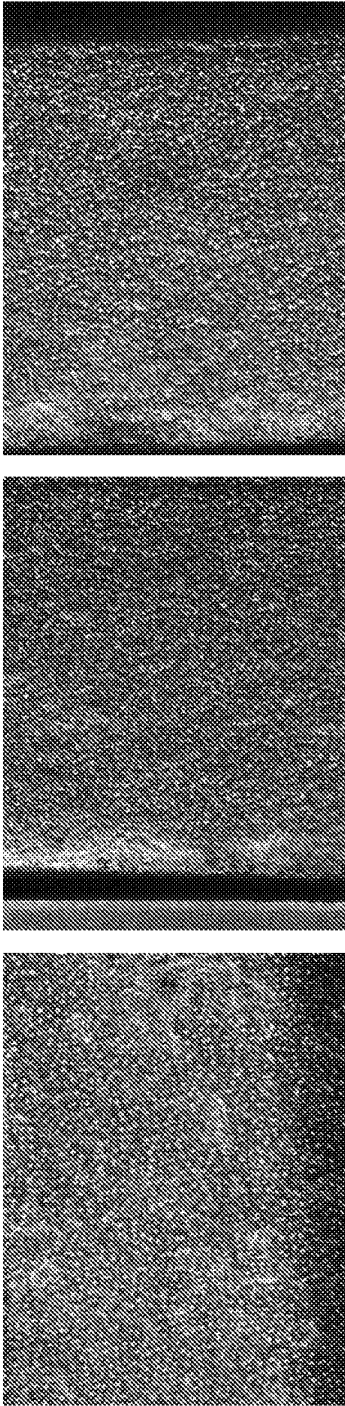


FIG. 56C

FIG. 56B

FIG. 56A

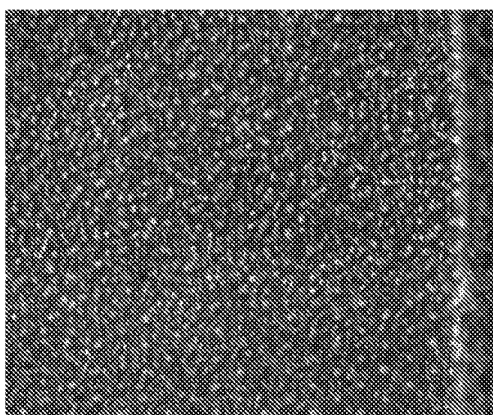


FIG. 57A

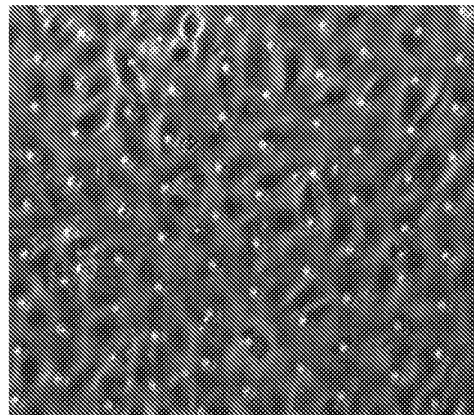


FIG. 57B

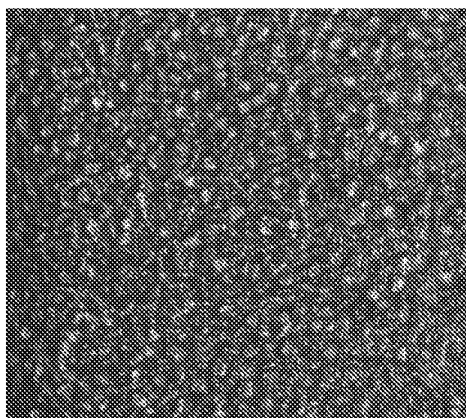


FIG. 58A

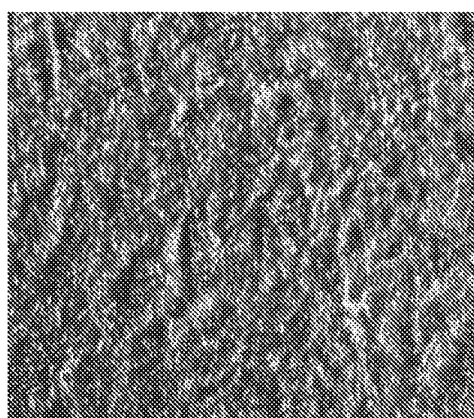


FIG. 58B

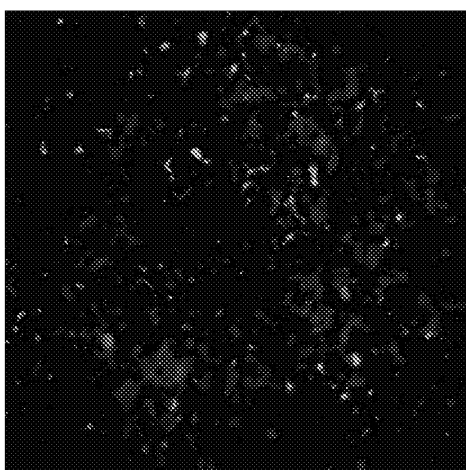


FIG. 59A



FIG. 59B

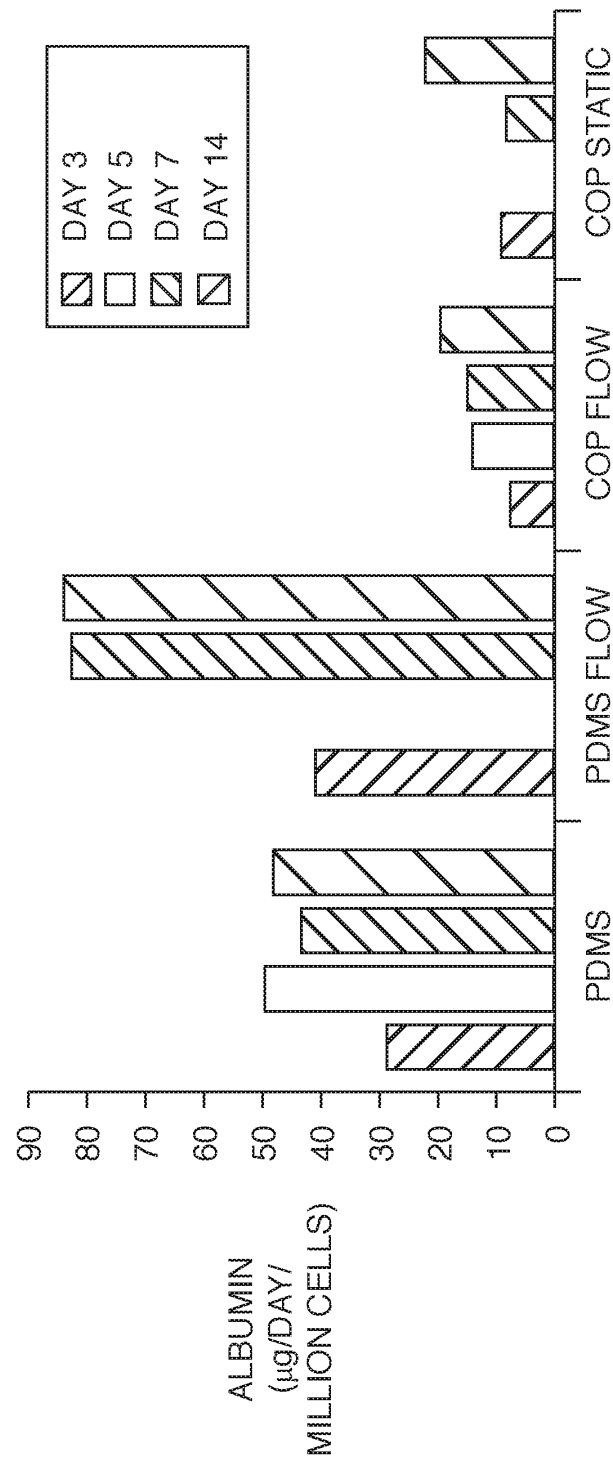


FIG. 60

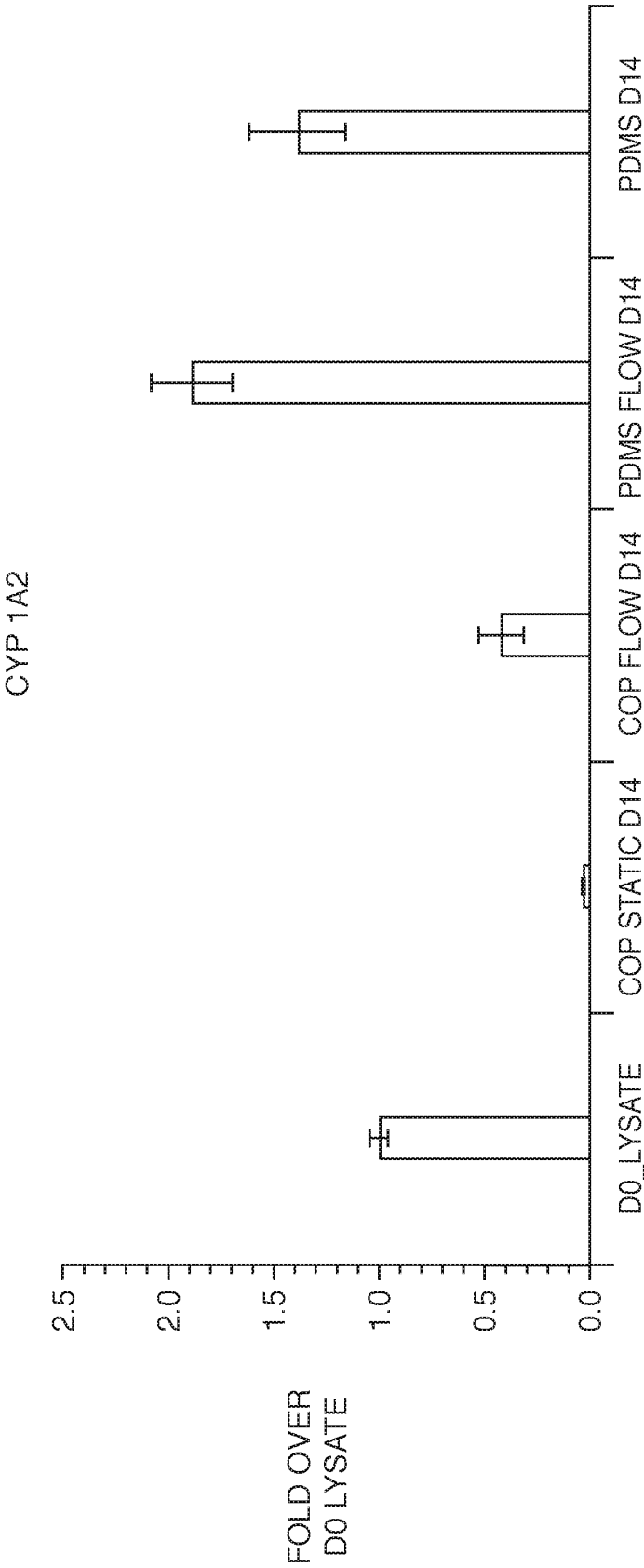


FIG. 61

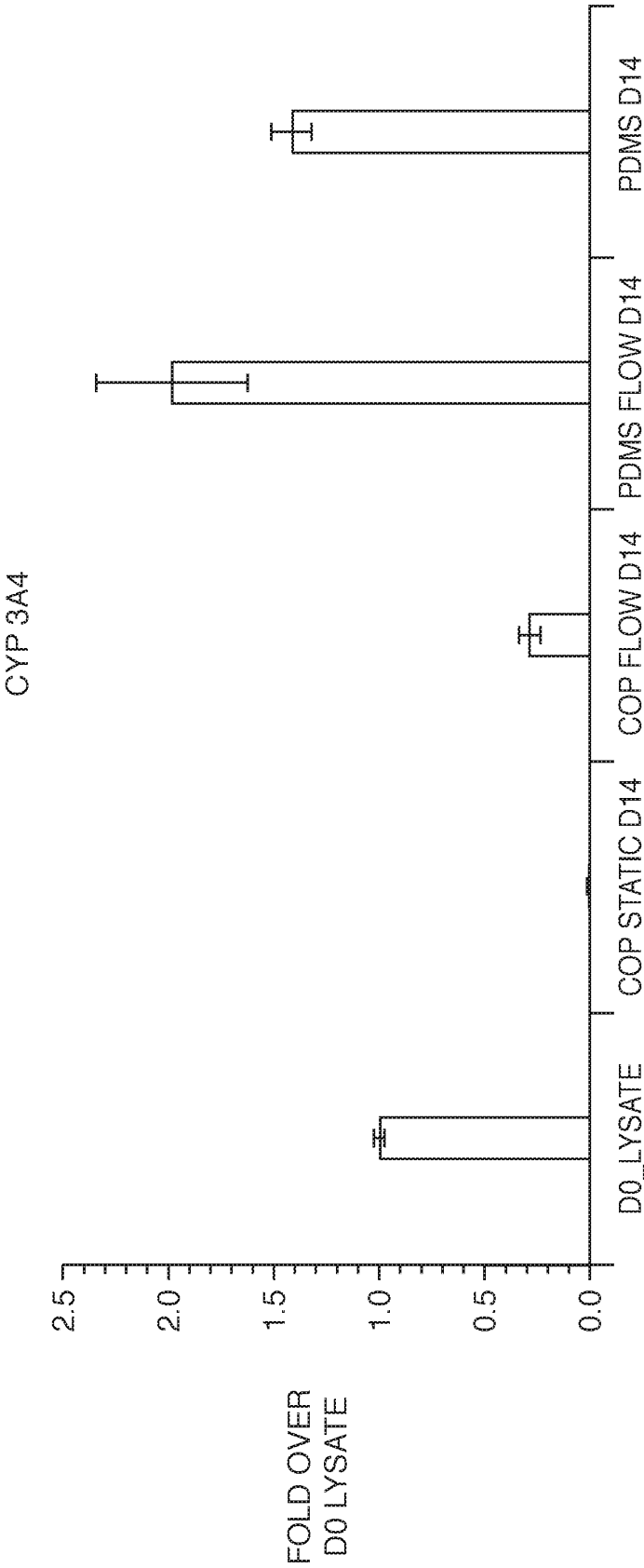


FIG. 62

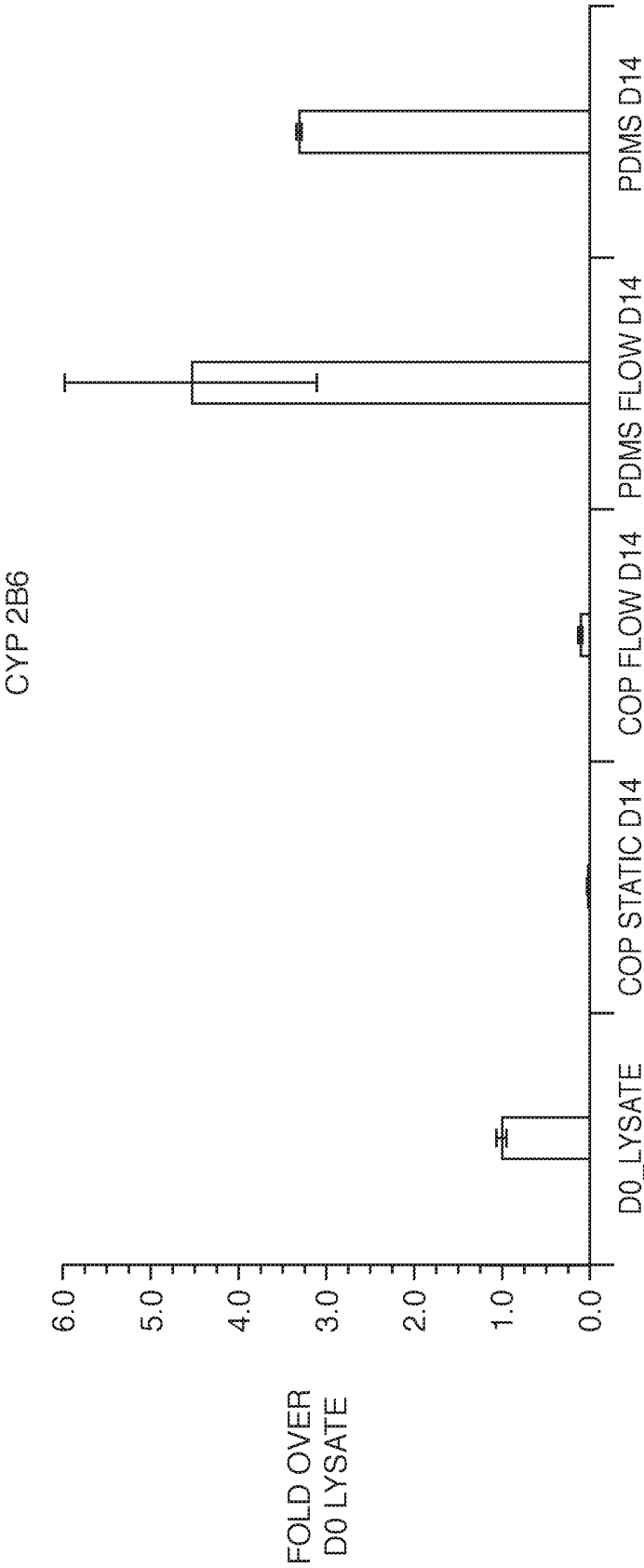


FIG. 63

n	CHIP	CONDITIONS	FLOWRATE [μL/hr]	CELL TYPE	INSTRUMENT
3	COP	100% O2 HIGH FR	T: 150 B: 150	T: HEPATOCYTES B: LSEC	CULTURE MODULE
3	COP	5% CO2 HIGH FR	T: 150 B: 150	T: HEPATOCYTES B: LSEC	CULTURE MODULE
3	COP	5% CO2 15mM HEPES HIGH FR	T: 150 B: 150	T: HEPATOCYTES B: LSEC	CULTURE MODULE
3	COP	5% CO2 HIGHER FR	T: 300 B: 300	T: HEPATOCYTES B: LSEC	SYRINGE PUMP
2	PDMS	5% CO2 HIGHER FR	T: 300 B: 300	T: HEPATOCYTES B: LSEC	SYRINGE PUMP
3	PDMS	5% CO2 CONTROL	T: 30 B: 30	T: HEPATOCYTES B: LSEC	CULTURE MODULE

FIG. 64

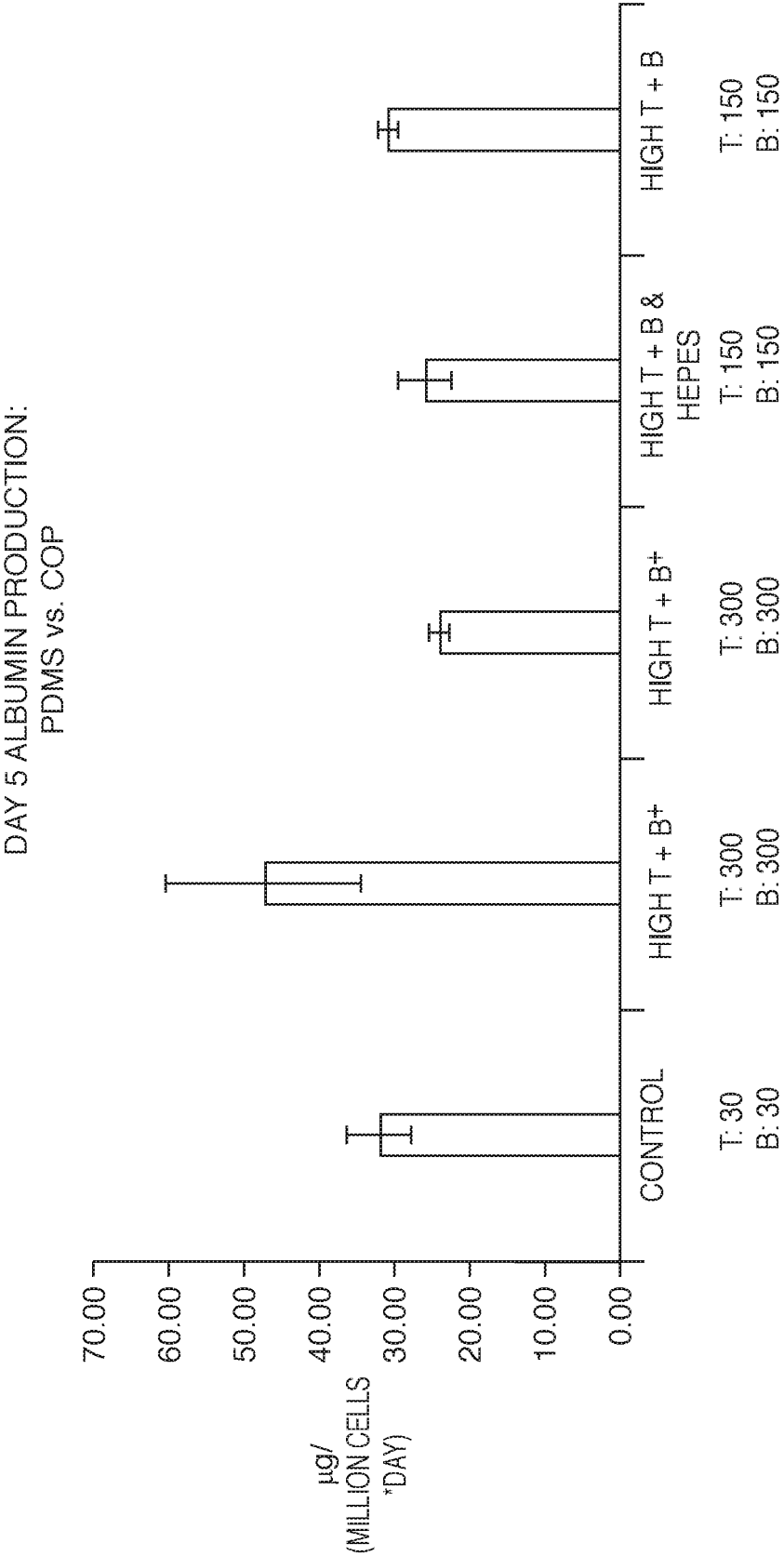


FIG. 65

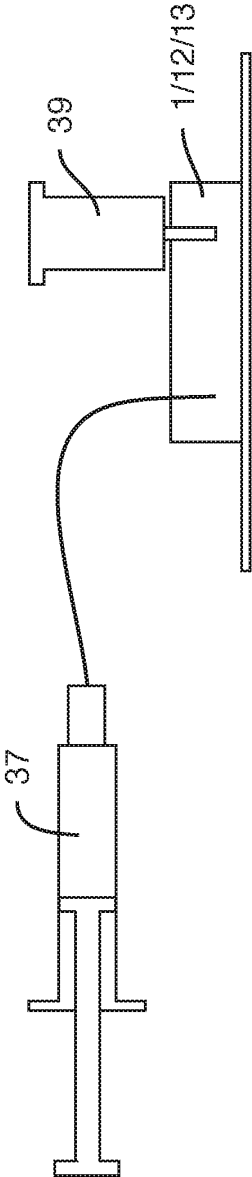


FIG. 66A

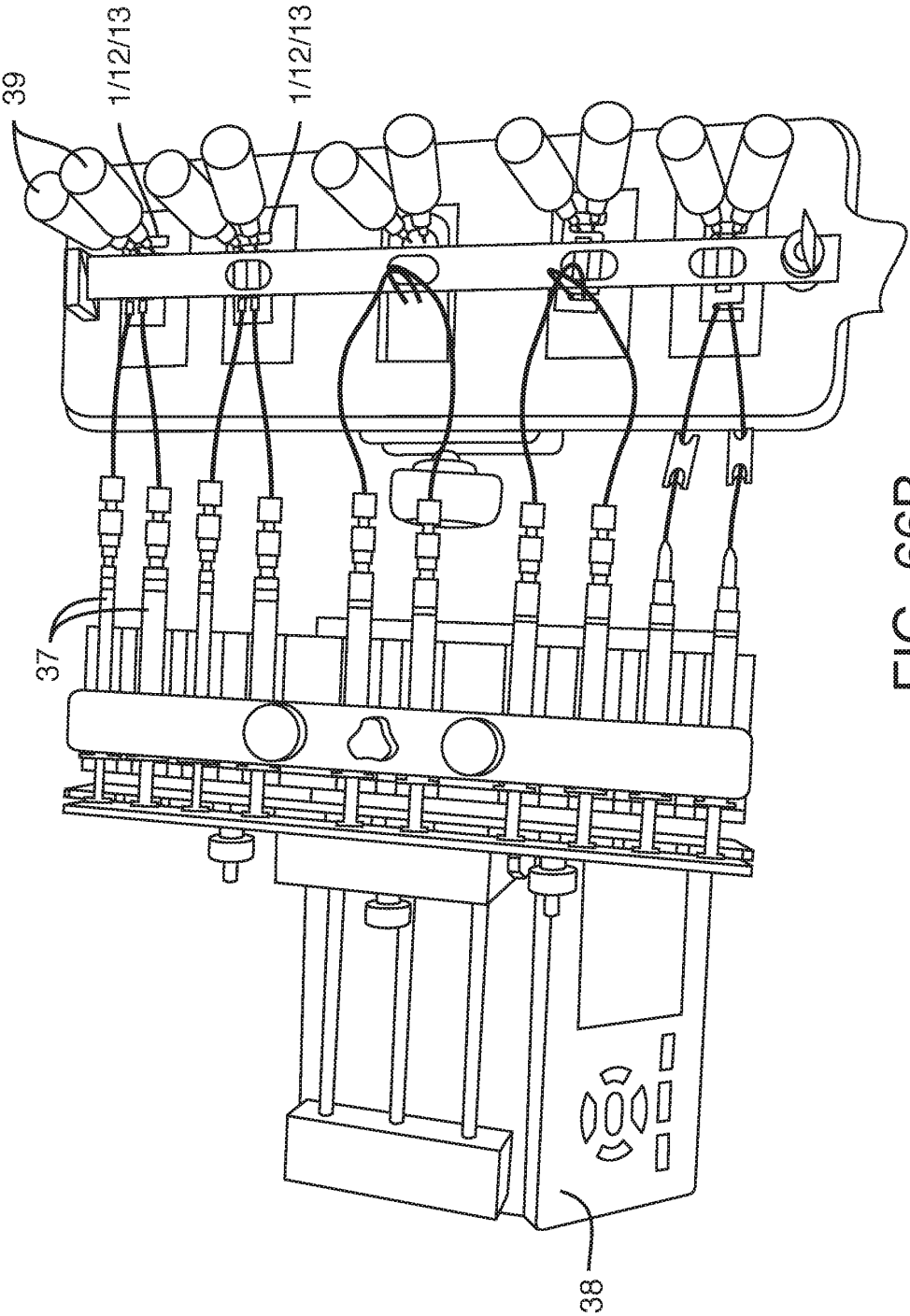


FIG. 66B

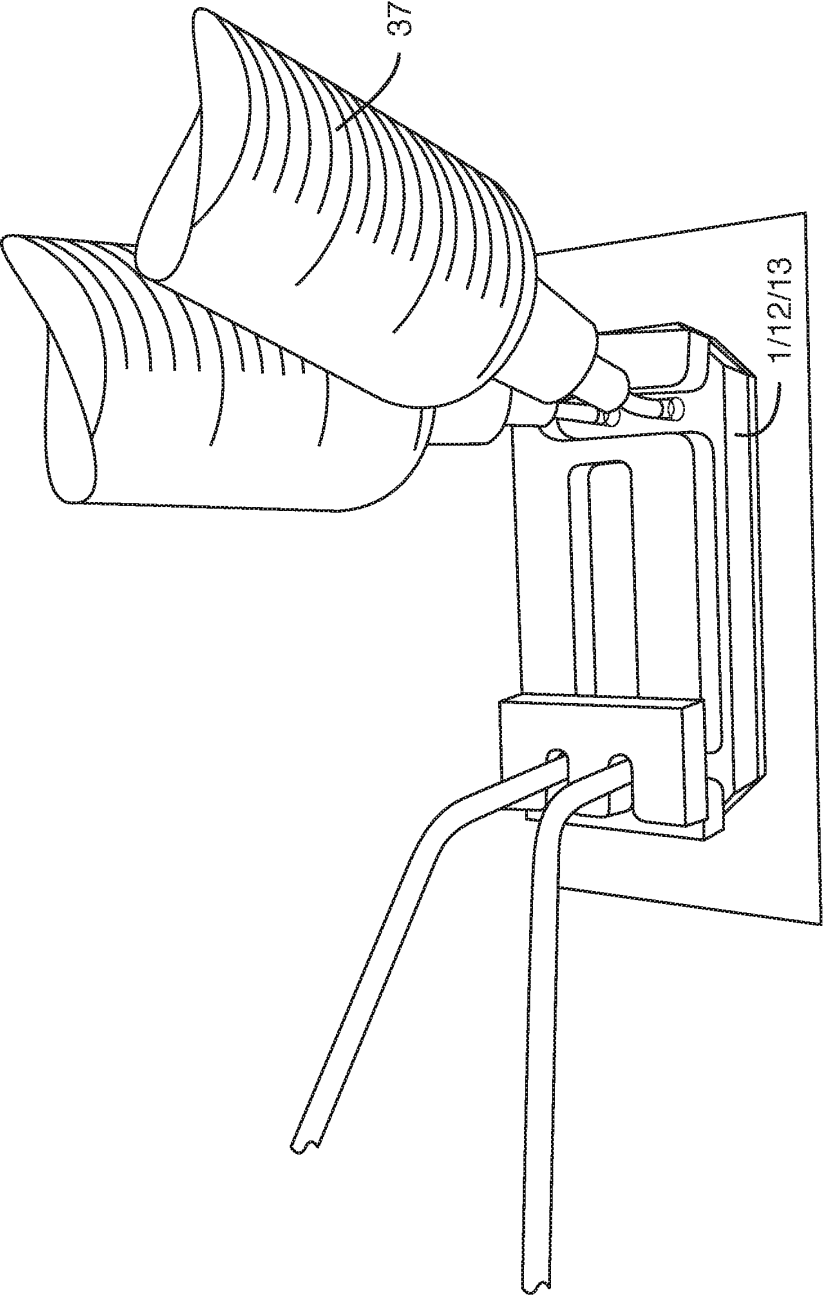


FIG. 66C

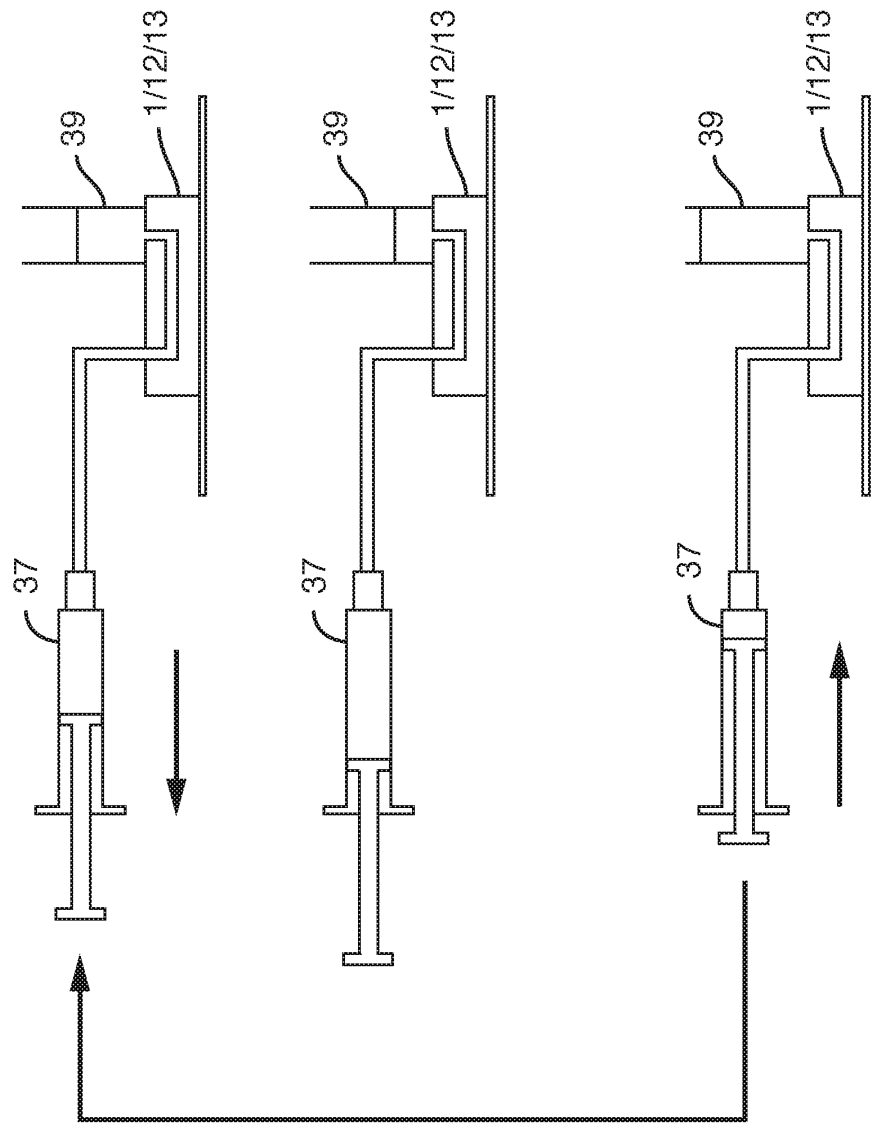


FIG. 67

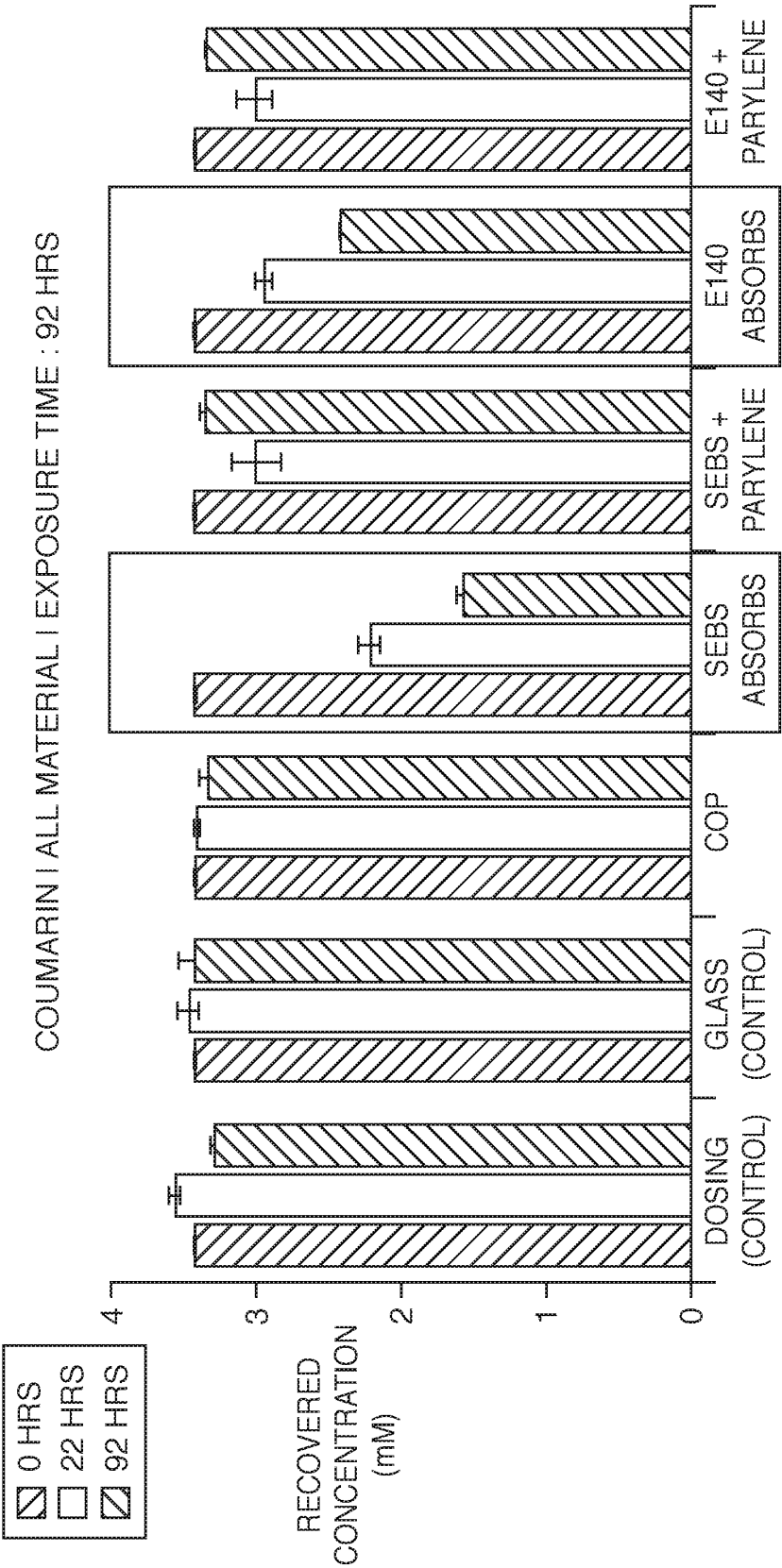


FIG. 68

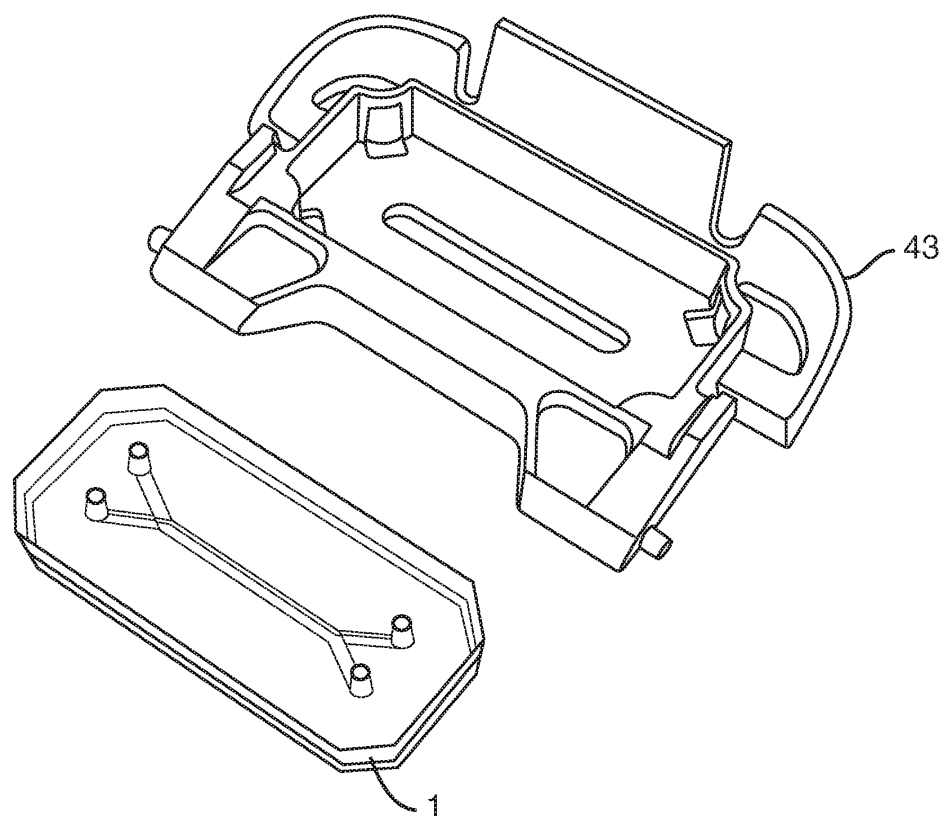


FIG. 69

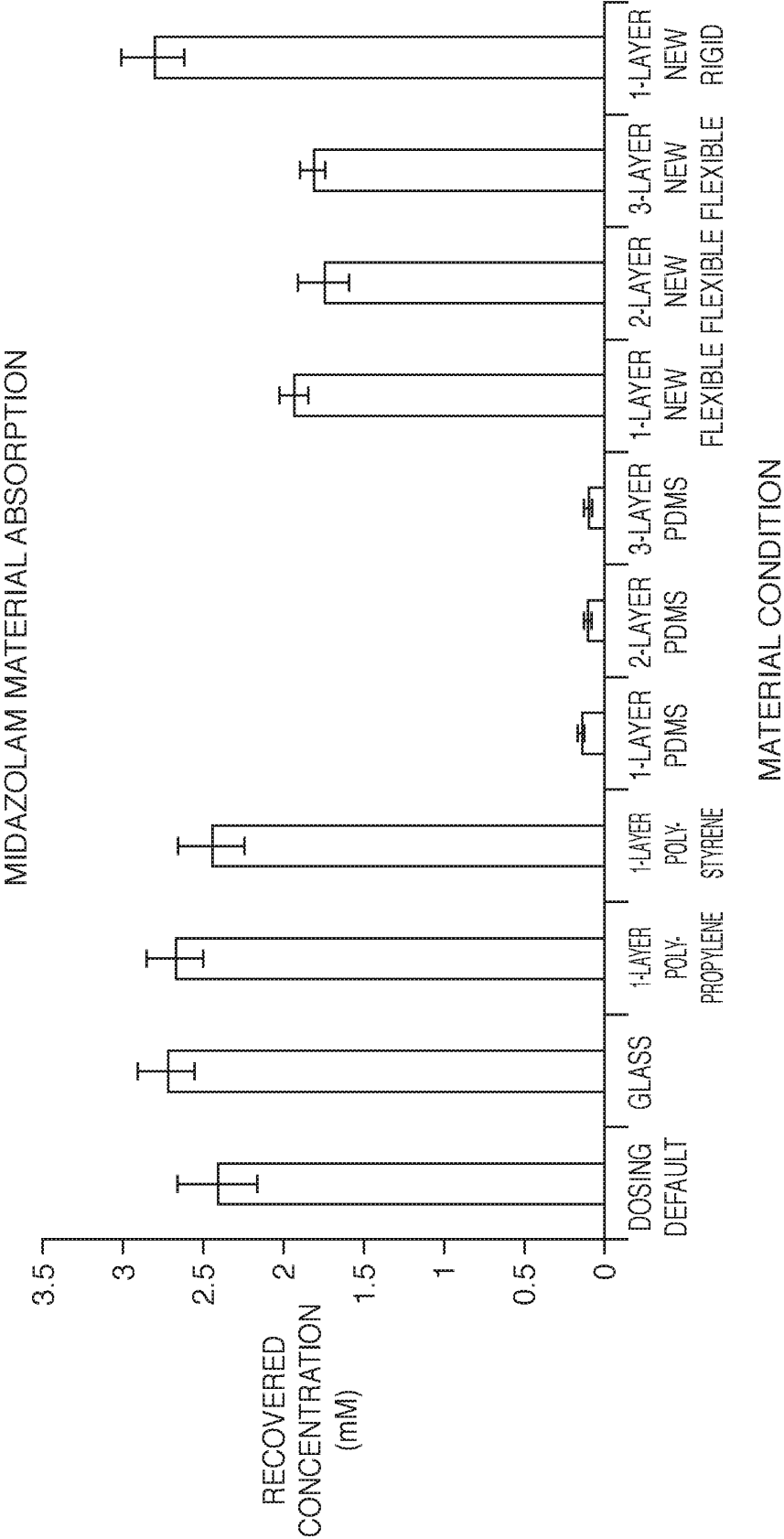


FIG. 70

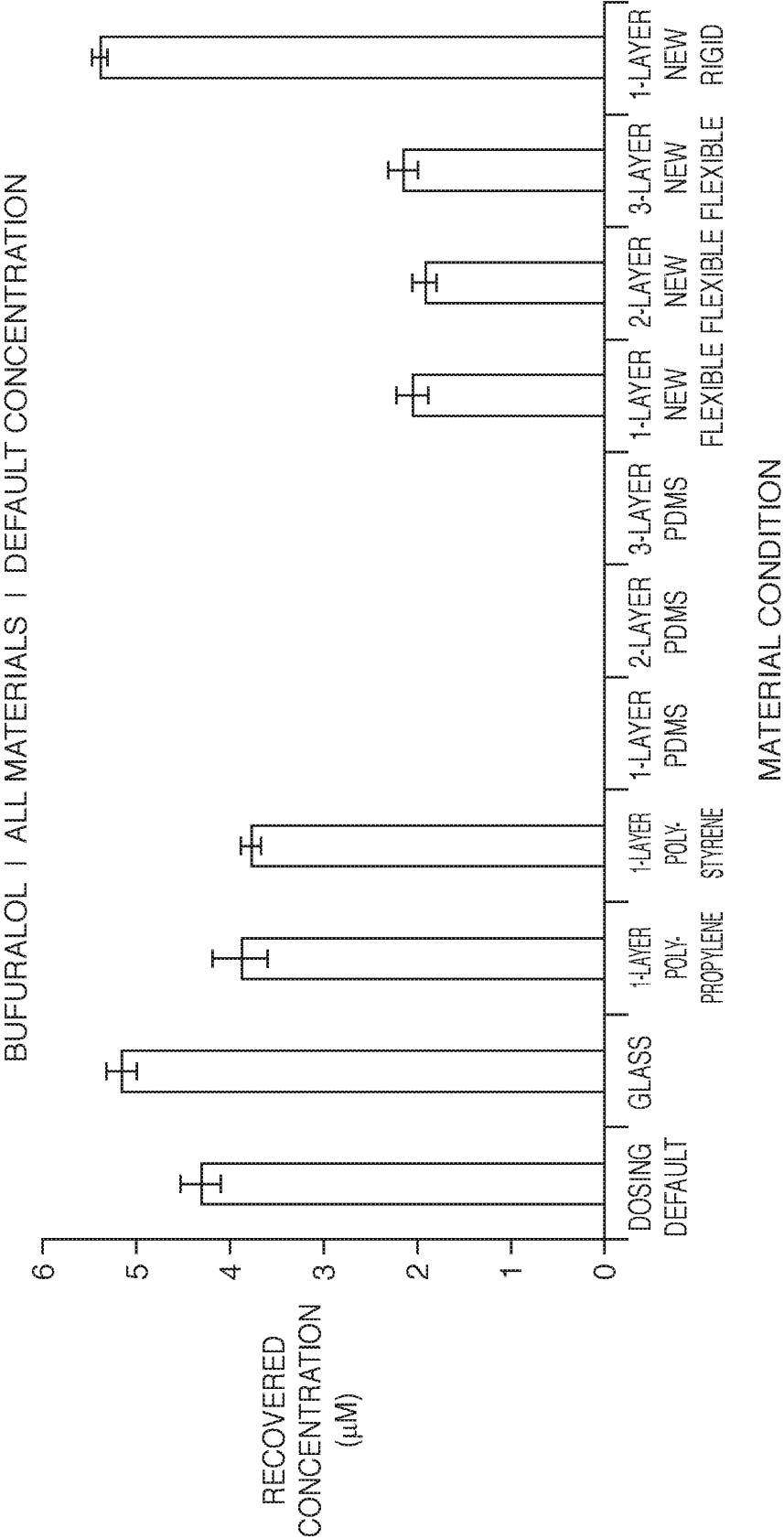


FIG. 71

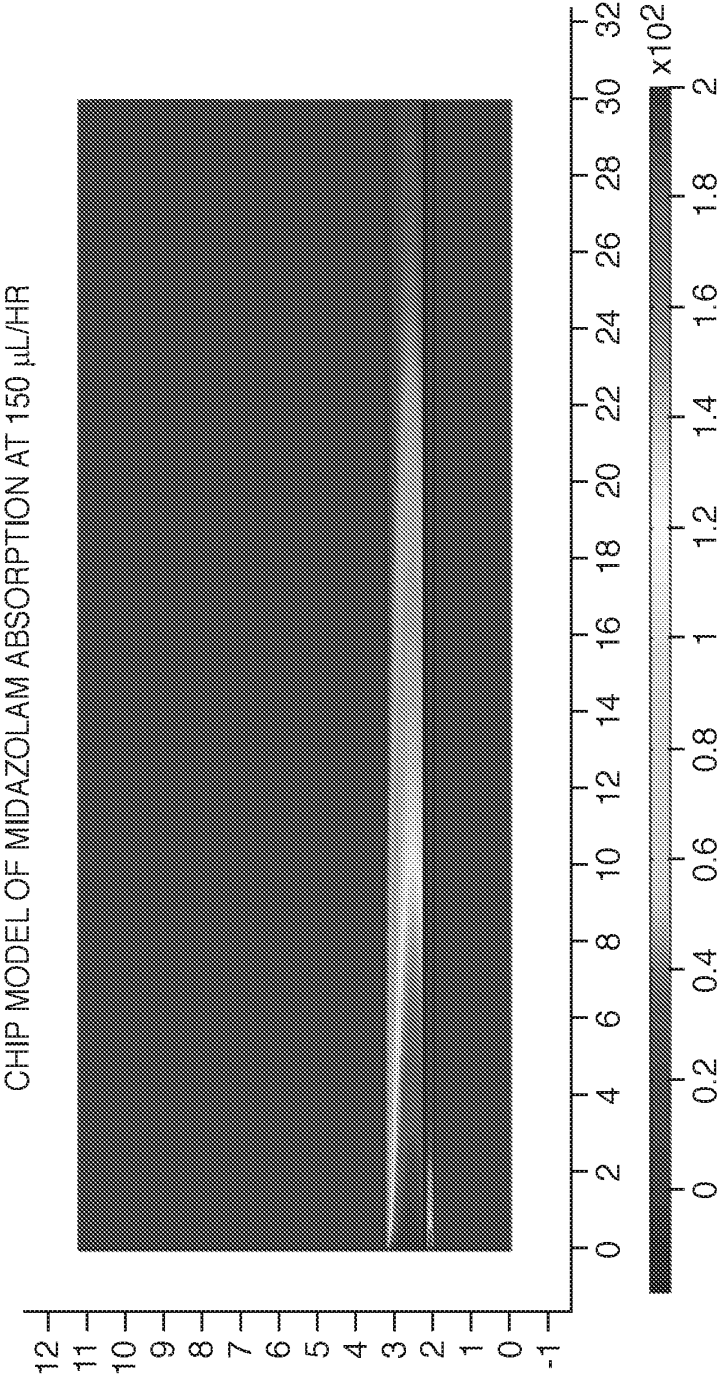


FIG. 72

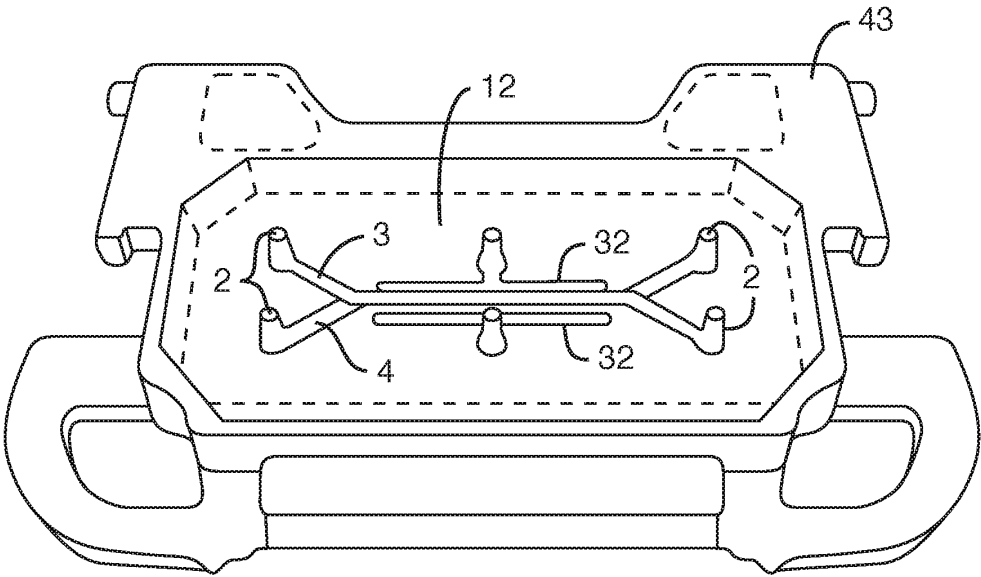


FIG. 73

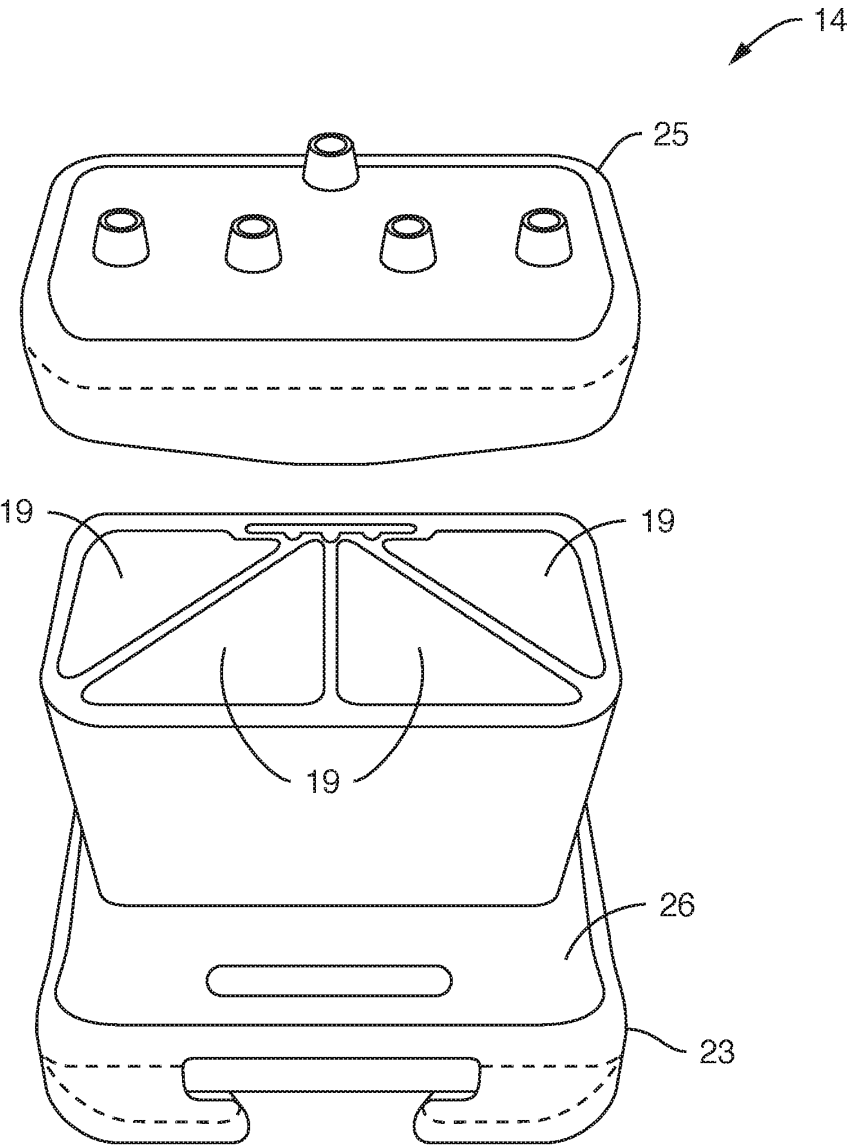


FIG. 74

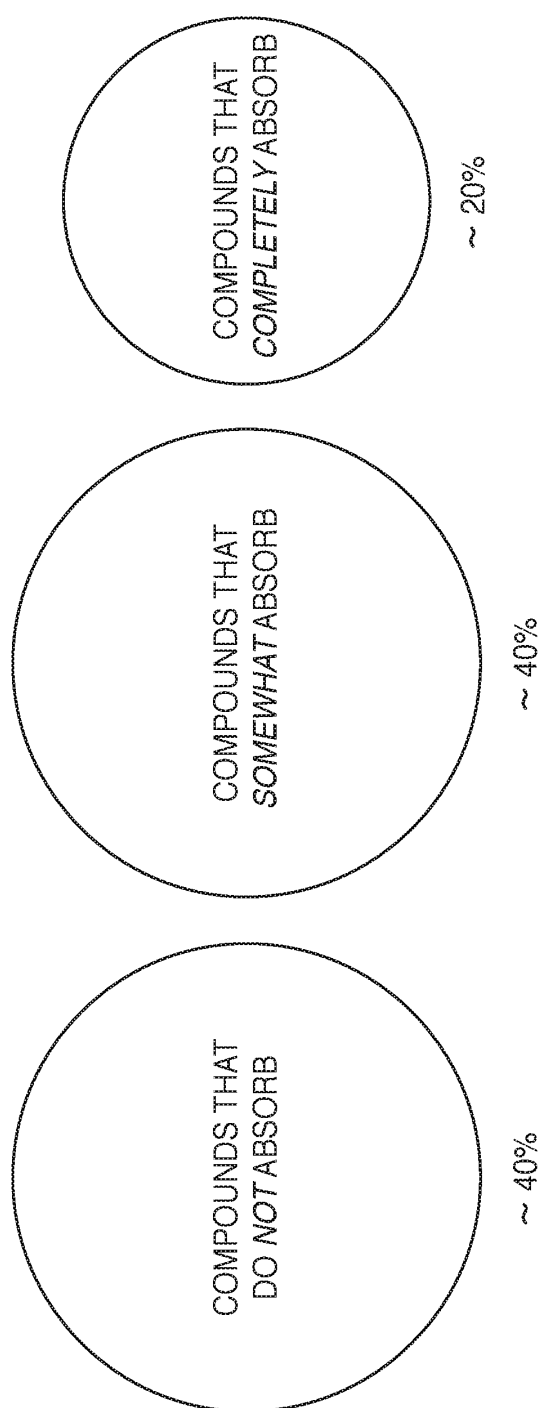


FIG. 75

COMPOUND	MW	logP	PDMS - CHIP MATERIAL (PARTITION COEFFICIENT)	POD MATERIAL (PARTITION COEFFICIENT)
METHOTREXATE	454	-1.85	MINIMAL	NOT TESTED
FIALURIDINE	372	-0.9	MINIMAL	NOT TESTED
CAFFEINE	194	-0.1	MINIMAL	MINIMAL
CYCLOPHOSPHAMIDE	261	0.8	MINIMAL	MINIMAL
ANTIPYRINE	188	0.38	MINIMAL	MINIMAL *
DIGOXIN	781	1.26	MINIMAL	MINIMAL
TOPOTECAN	421	1.52	MINIMAL	MINIMAL
PHENACETIN	179	1.58	MINIMAL	MINIMAL
S-MEPHENYTOIN	218	1.69	MINIMAL	MINIMAL
TOLBUTAMIDE	270	2.34	MINIMAL	NOT TESTED
ESTRONE-3-SULFATE	350	3.83	MINIMAL	MINIMAL
DICLOFENAC	296	4.51	MINIMAL	MINIMAL
VALSARTAN	436	5.8	MINIMAL	MINIMAL
NAVITOCCLAX	975	9.6	MINIMAL	MINIMAL
BARDOXOLONE	492	5.92	QUALITATIVE-ABSORBED	NOT TESTED
BOSENTAN	552	2.8	1	NOT TESTED
PERFENIDONE	185	1.9	1.75	1.3
FEXOFENADINE	502	2.8	2.5	NOT TESTED

FIG. 76

COMPOUND	MW	logP	PDMS - CHIP MATERIAL (PARTITION COEFFICIENT)	POD MATERIAL (PARTITION COEFFICIENT)
COUMARIN	146	1.4	2.5	3
TACRINE	198	2.7	2.5	0.3
LORAZEPAM	321	2.39	3.5	1.2
RHODAMINE B	479	2.4	3.5	MINIMAL
QUINIDINE	324	2.9	9.8	MINIMAL
DIAZEPAM	285	2.82	25	11
KETOCONAZOLE	5331	4.35	25	NOT TESTED
NICOTINE	162	1.2	60	1.5
DEXTROMETHORPHAN	271	3.97	75	NOT TESTED
STAUROSPORINE	467	3.2	123	6
MIDAZOLAM	326	3.89	201	4.05
BUPROPION	240	3.6	>160	9.46
BUFURALOL	261	3.5	>216	4.77
AMITRIPTYLINE	277	4.92	>1000	175
CISAPRIDE	466	3.4	>1000	1000
TERFENADINE	472	7	>2000	NOT TESTED

FIG. 76 cont.

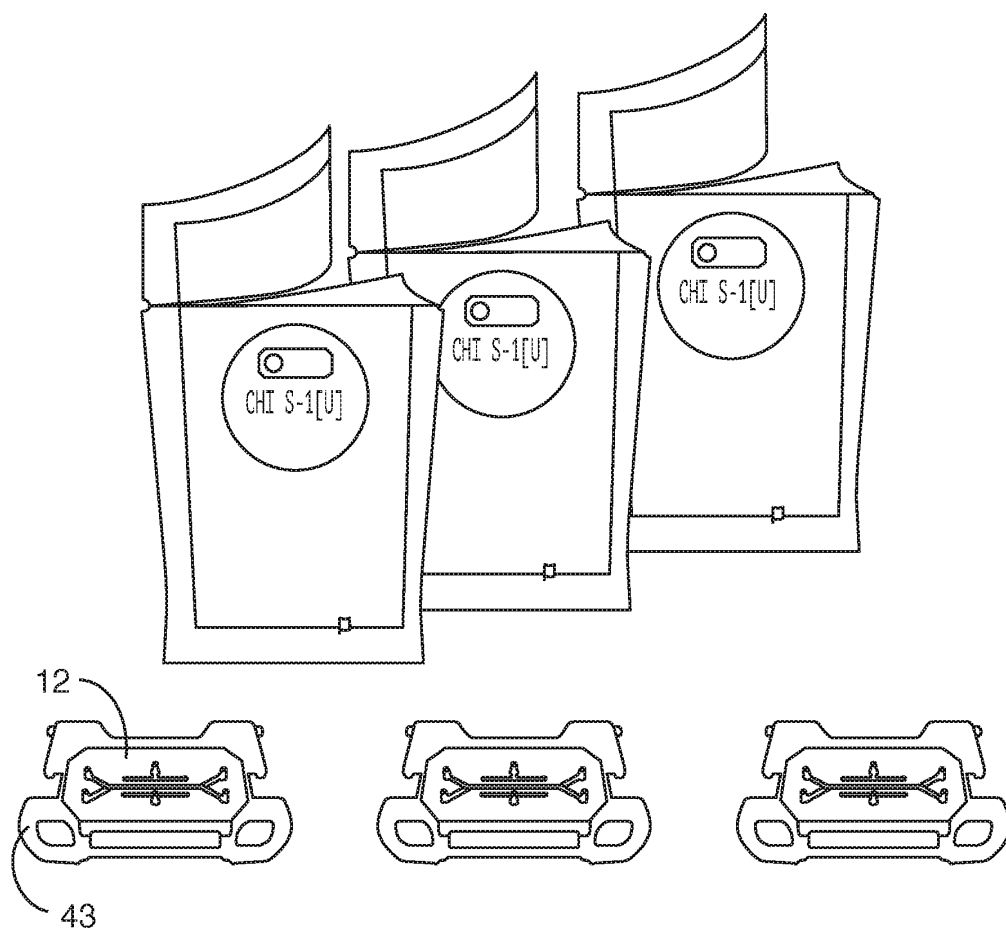


FIG. 77A

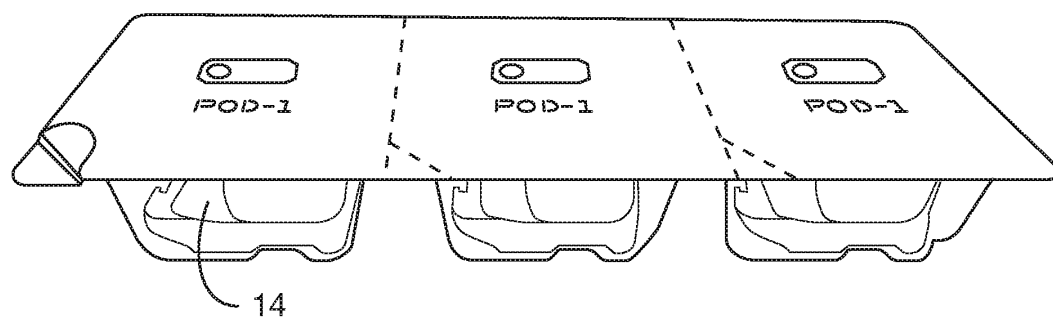


FIG. 77B

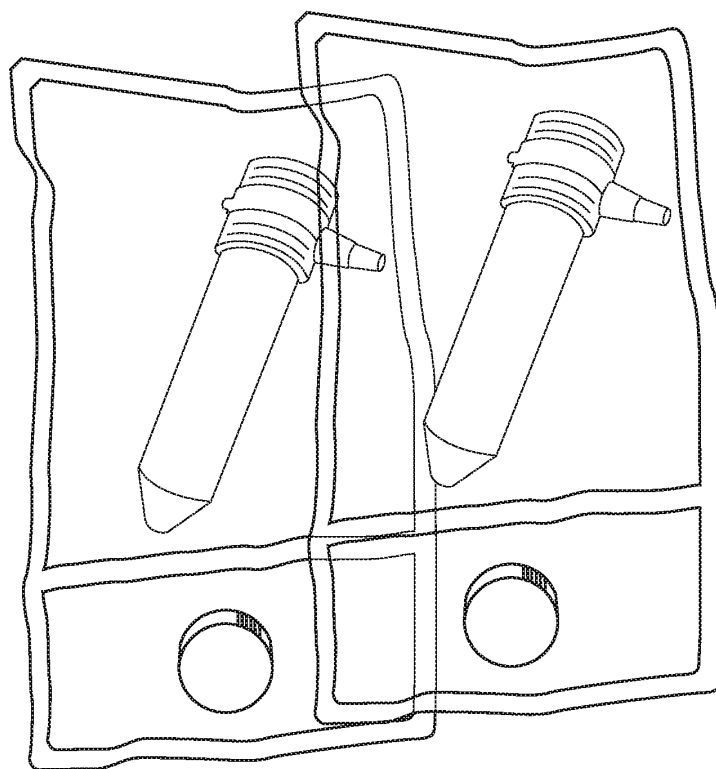
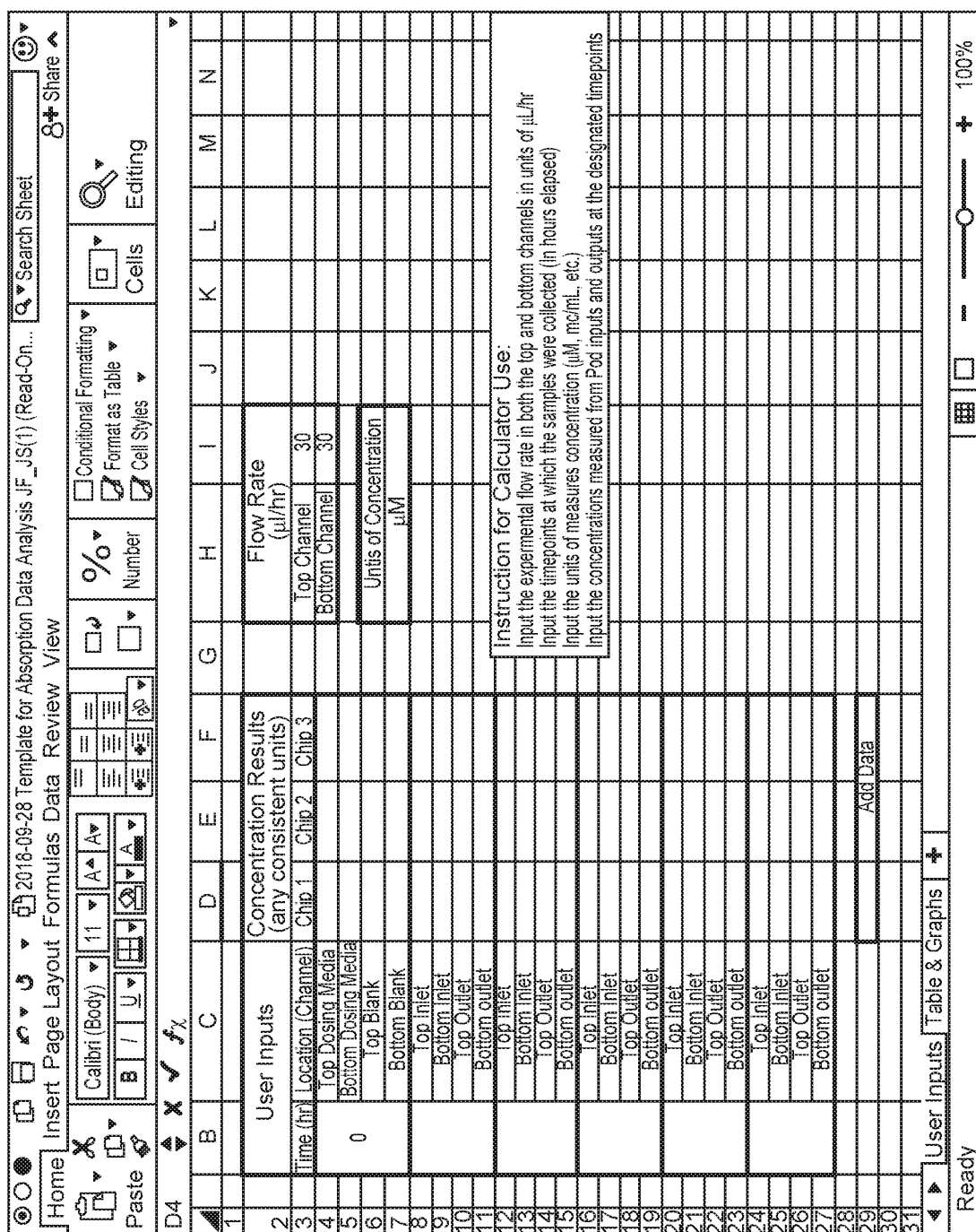


FIG. 77C



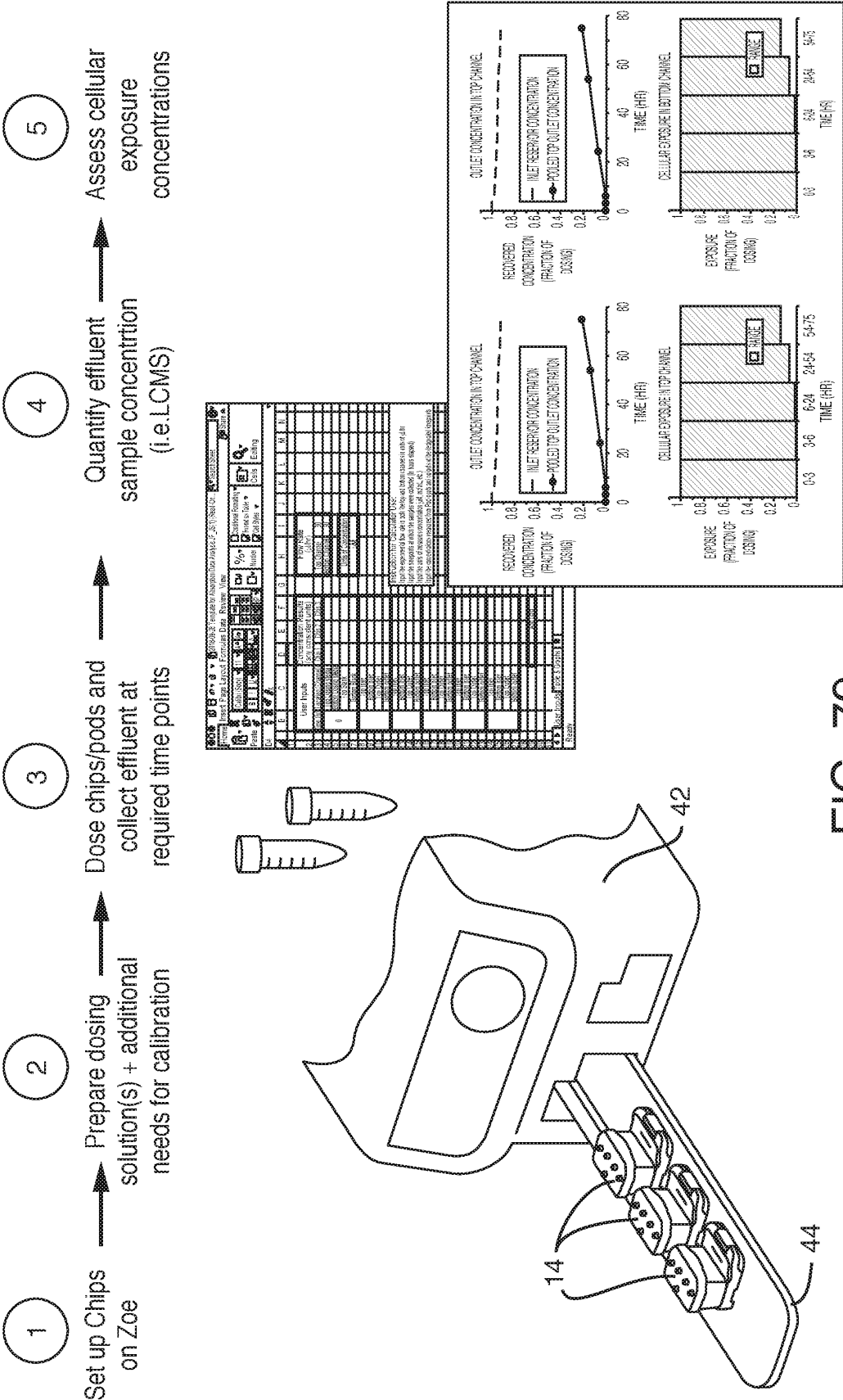
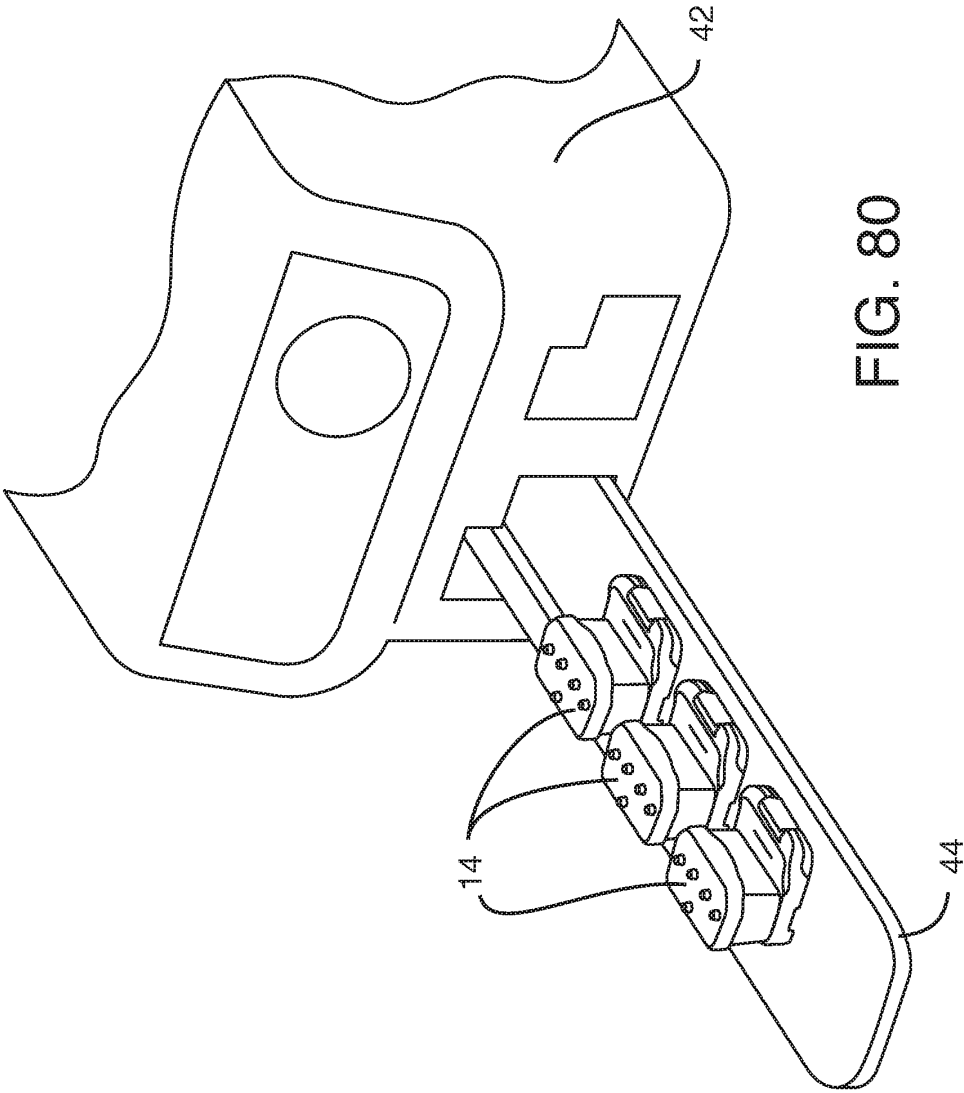


FIG. 79



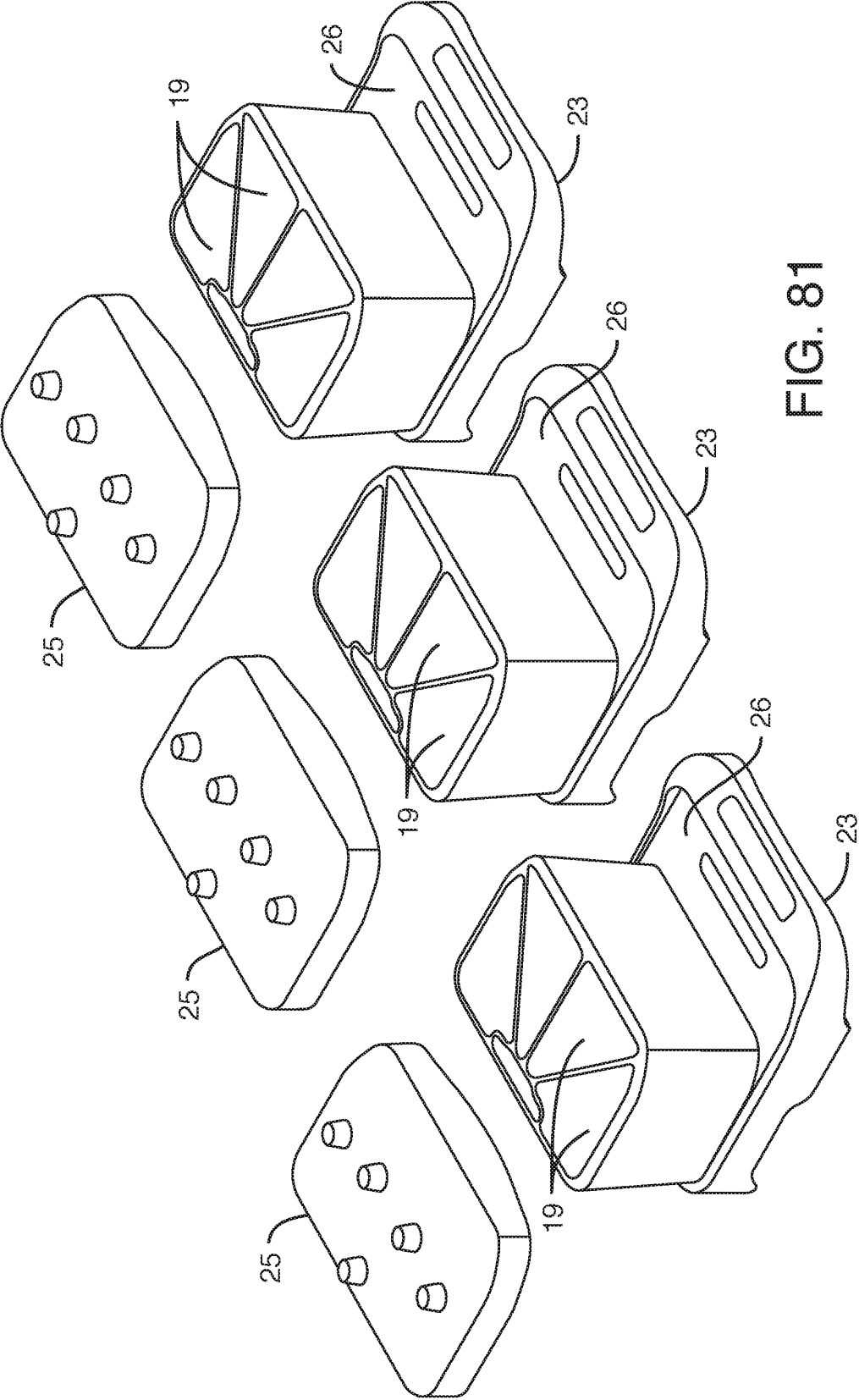


FIG. 81

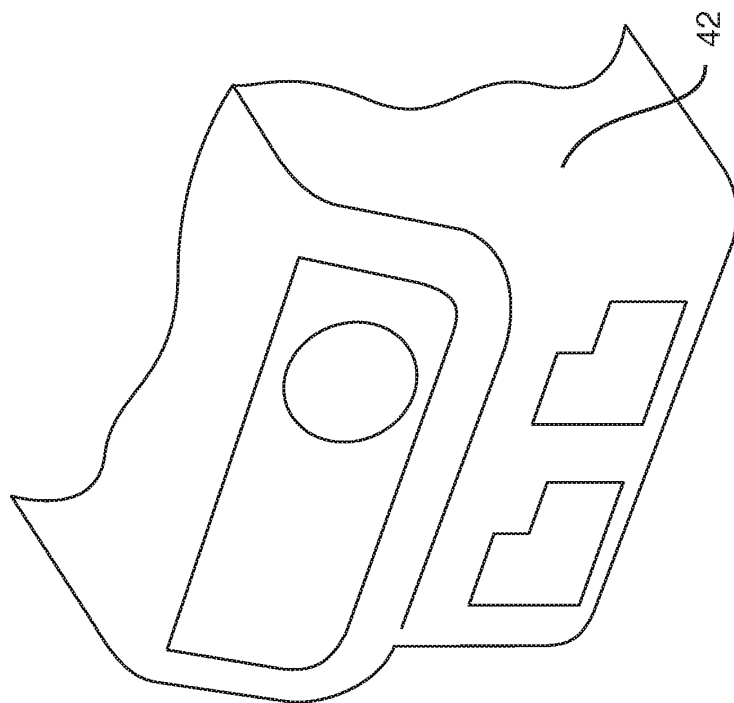


FIG. 82

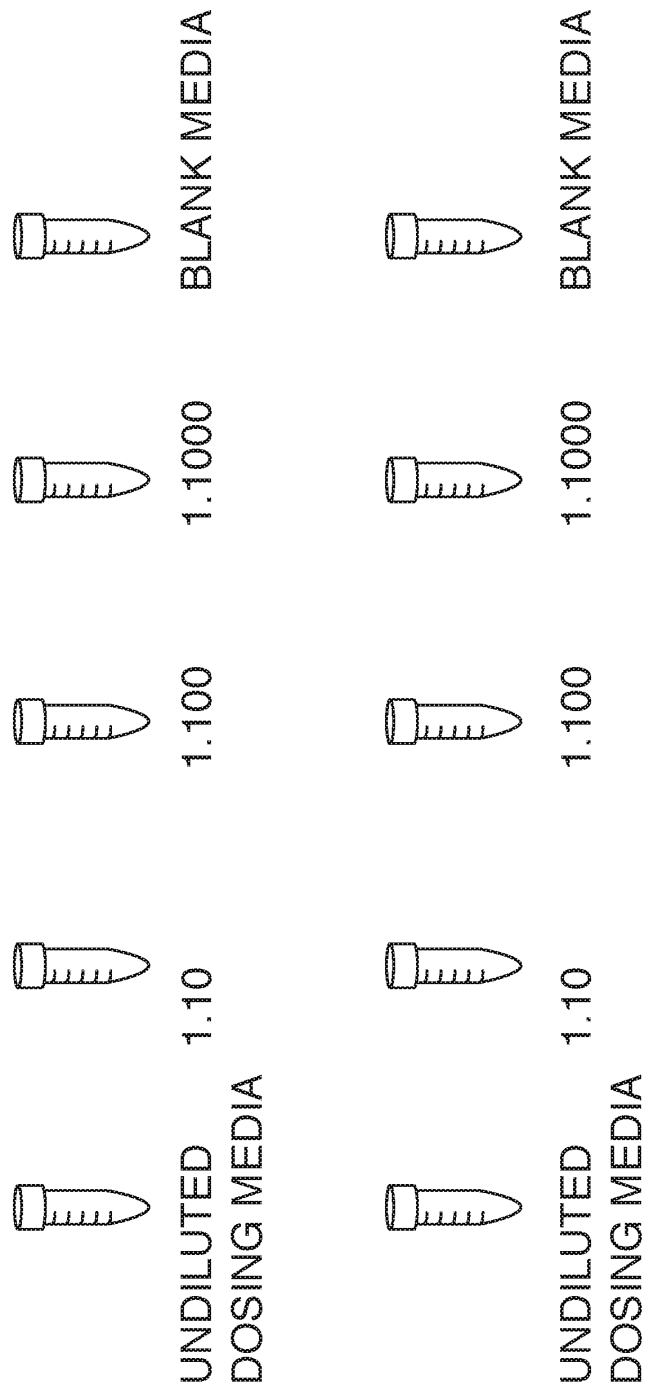
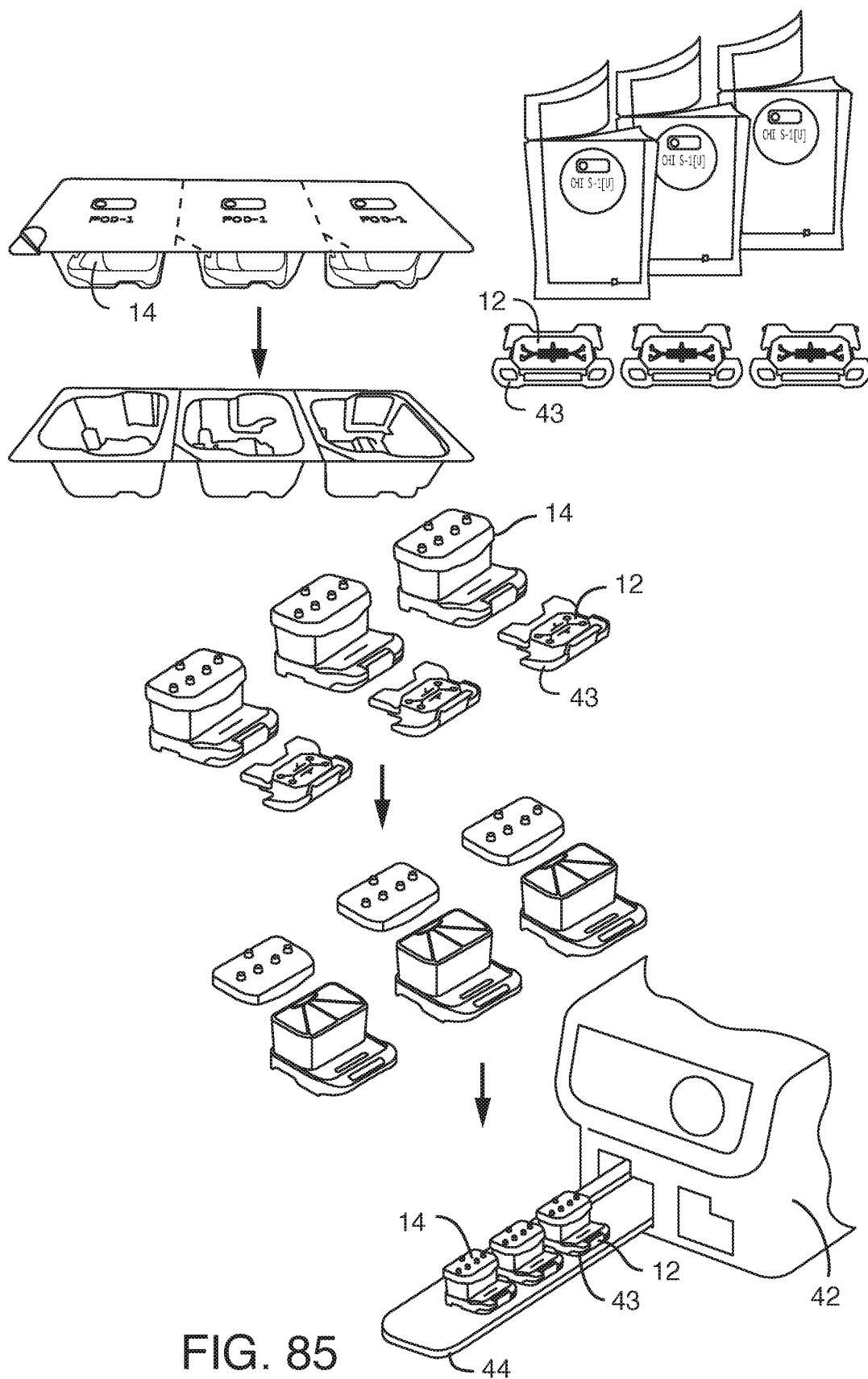


FIG. 83



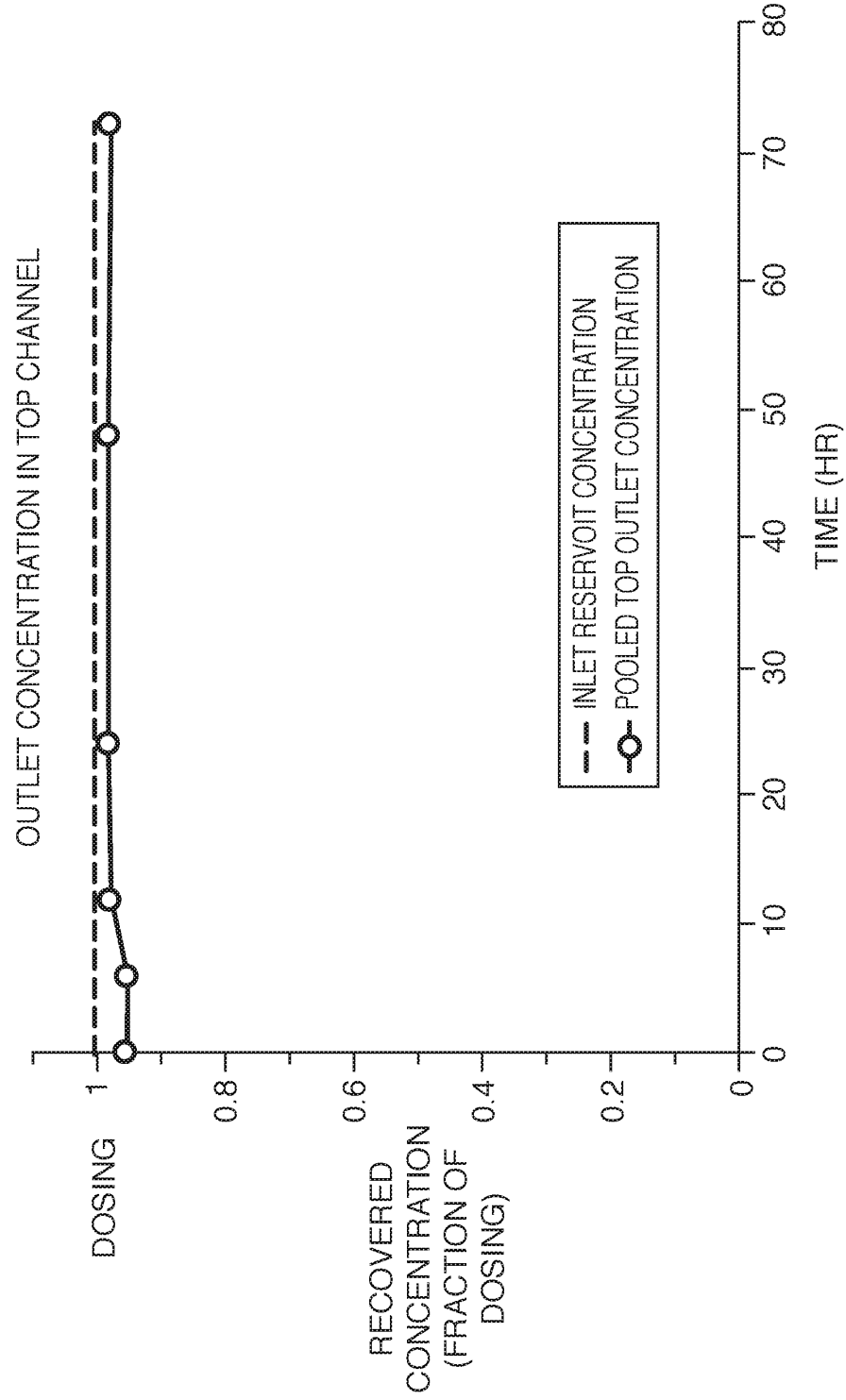


FIG. 86A

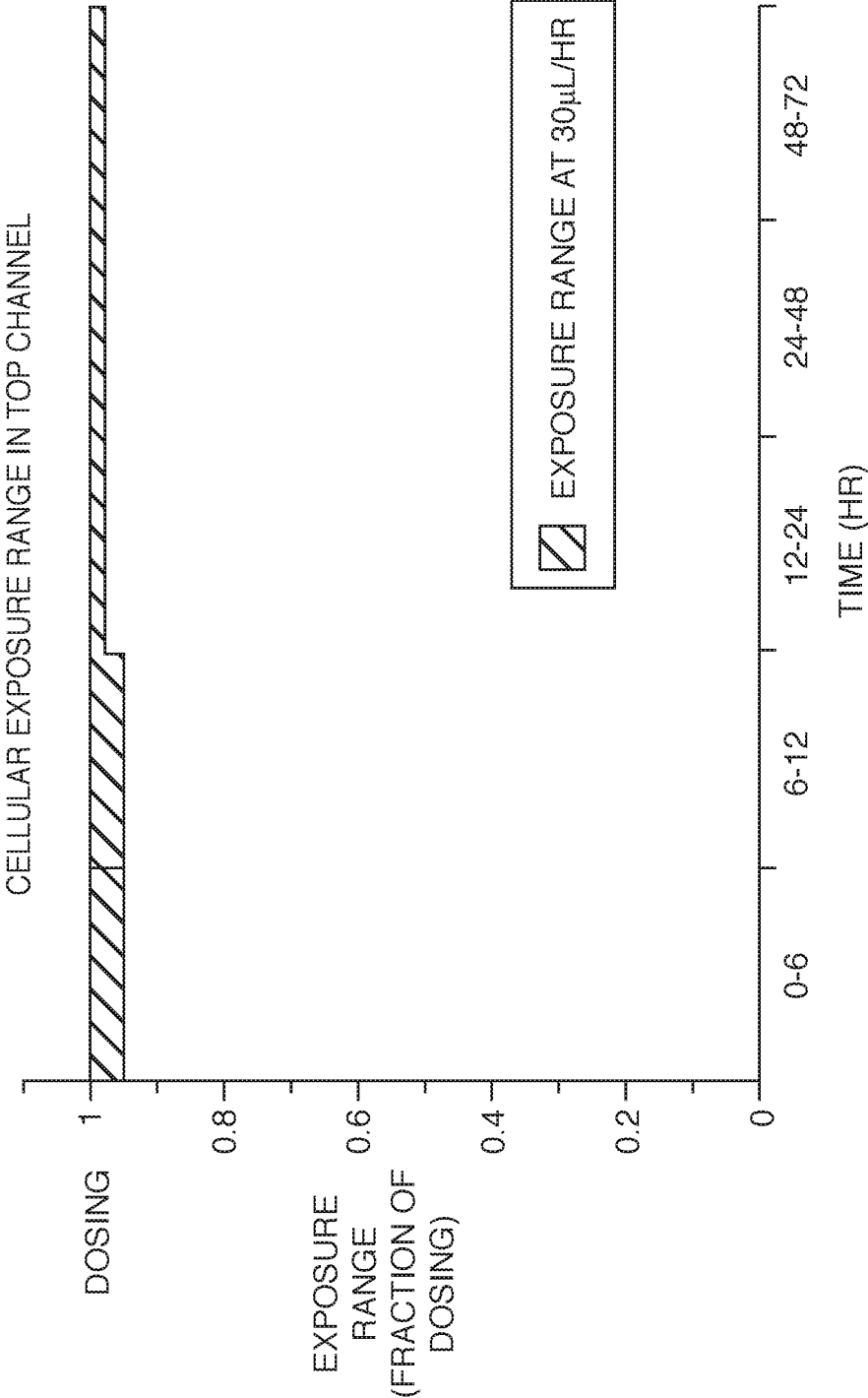


FIG. 86B

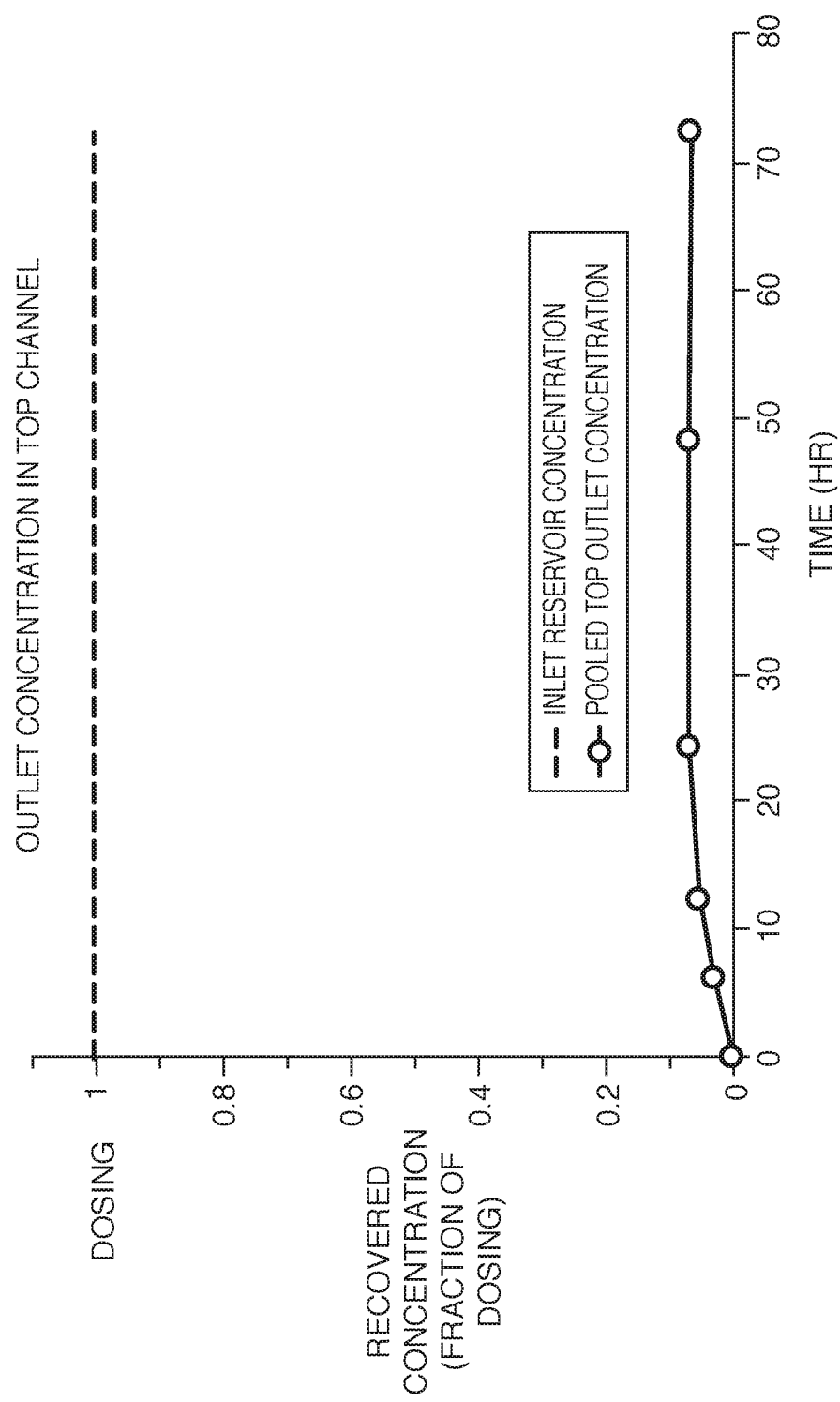
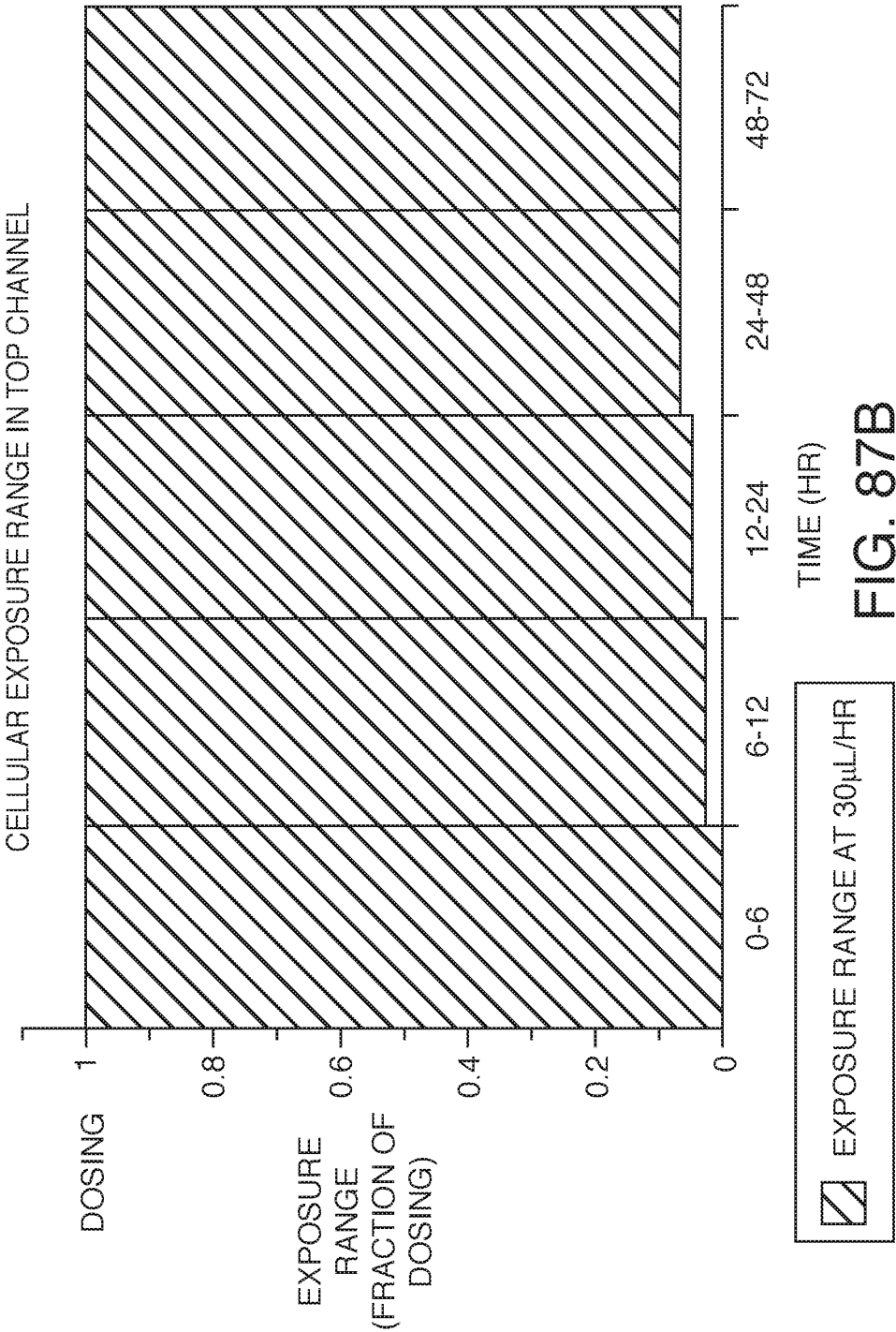


FIG. 87A



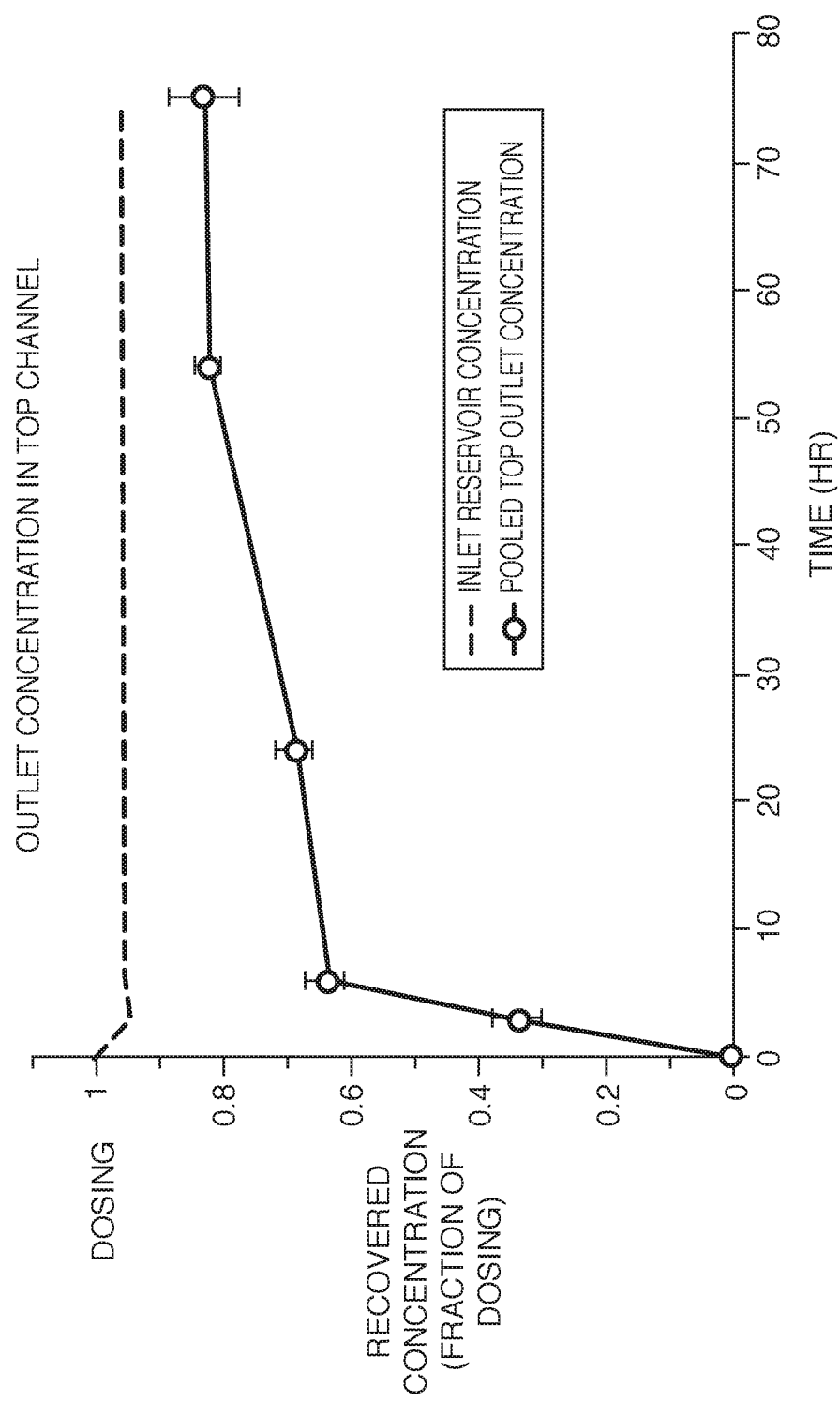


FIG. 88A

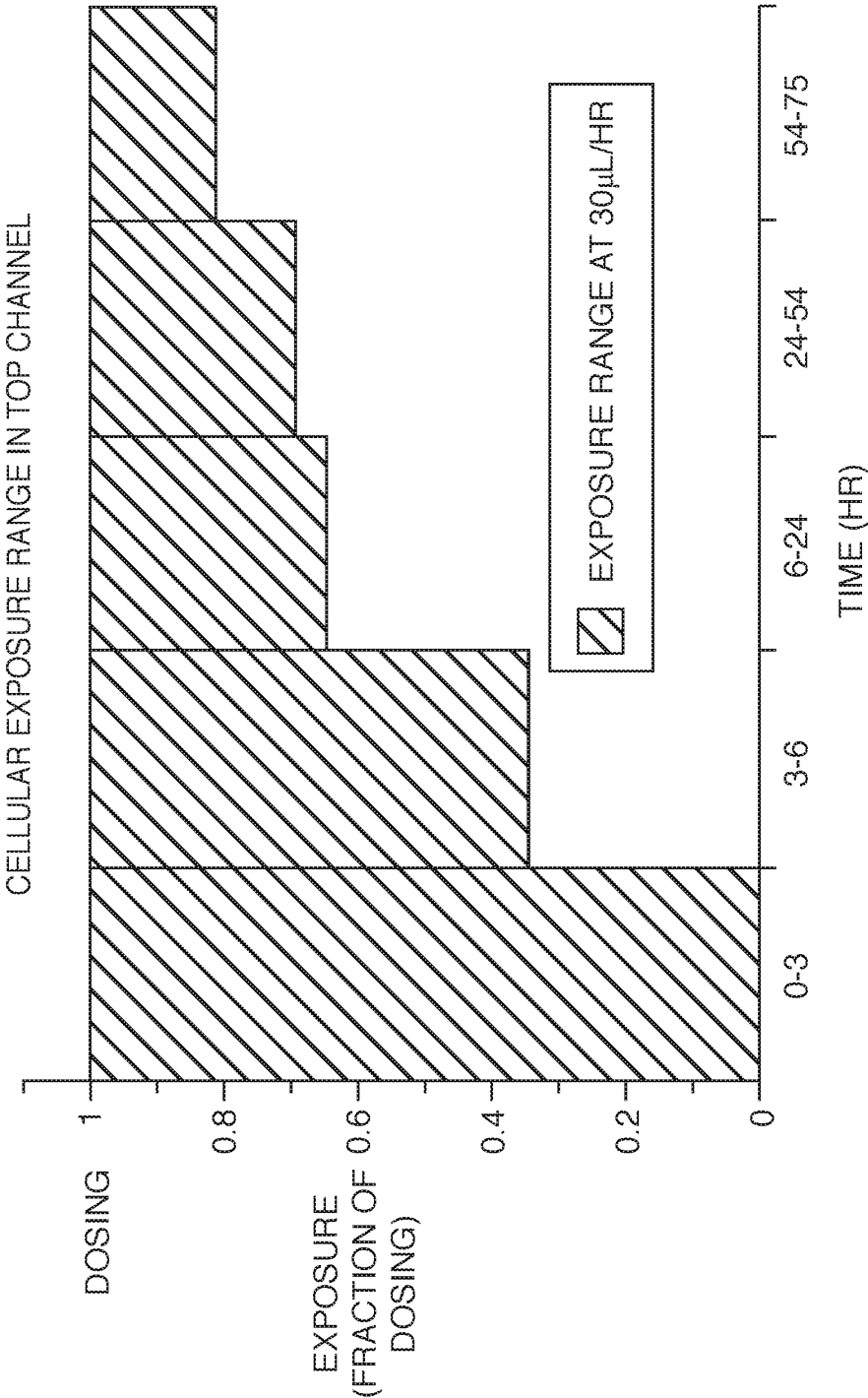


FIG. 88B

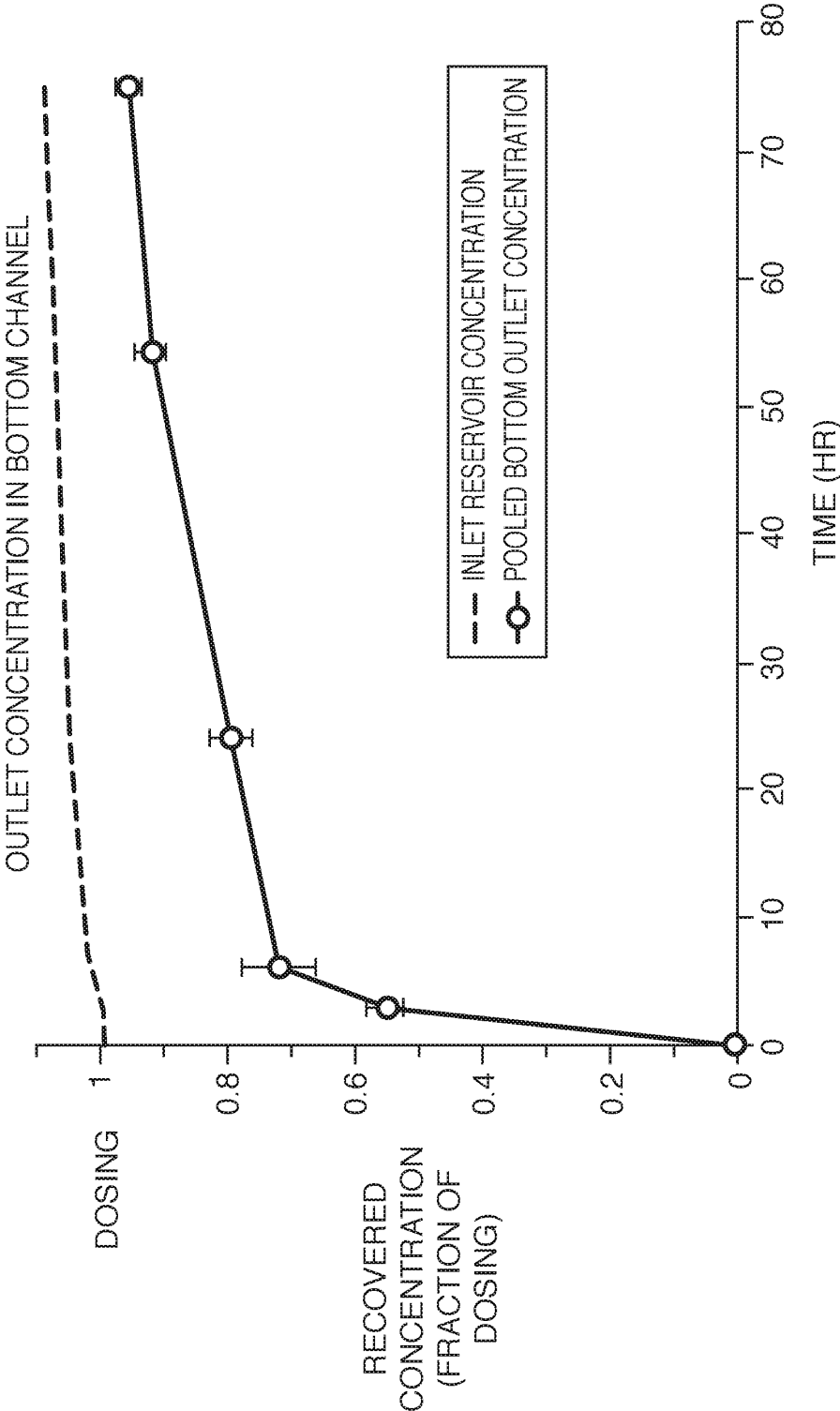


FIG. 88C

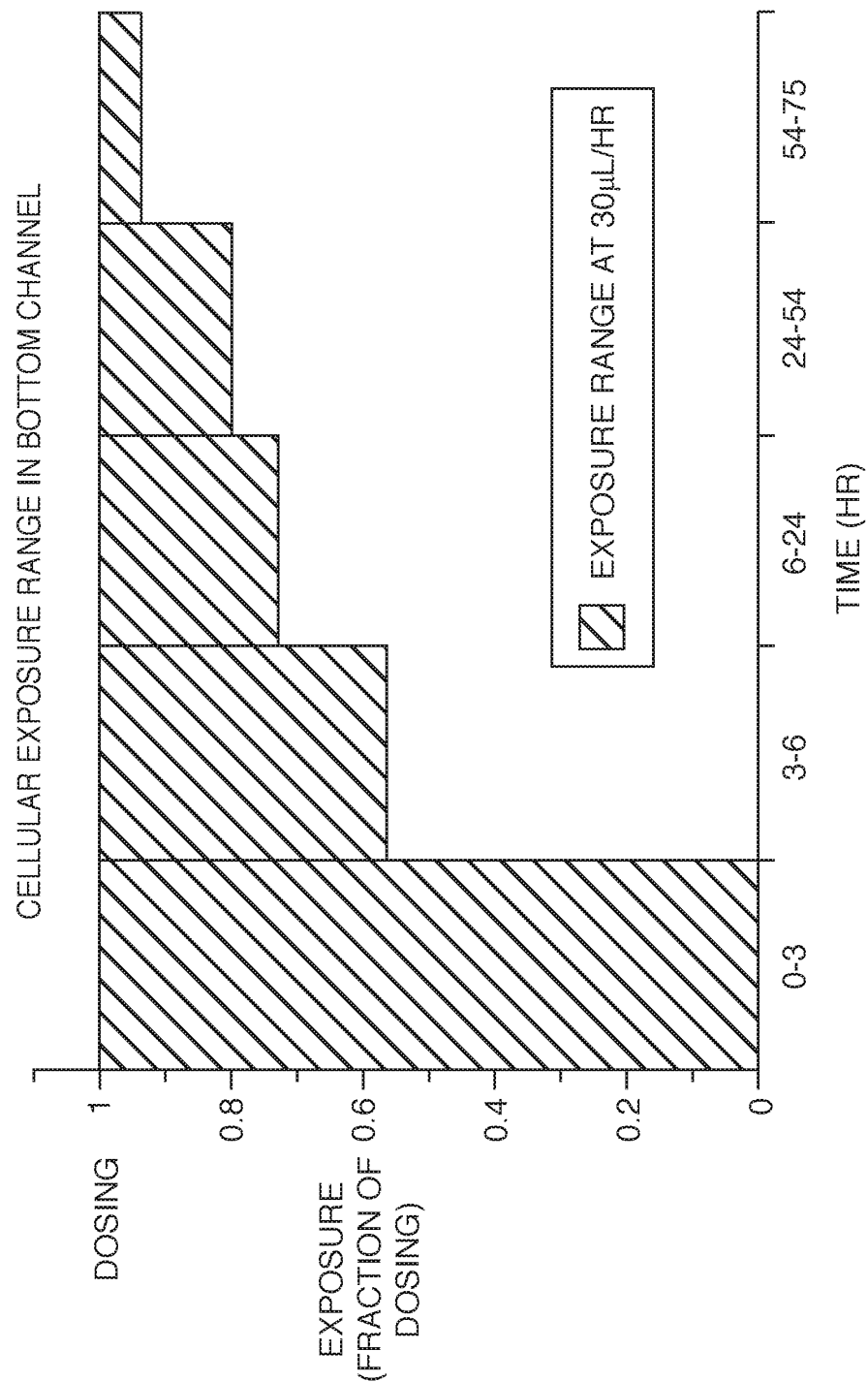


FIG. 88D

POTENTIAL EXPOSURE CONCENTRATION RANGE (μM)				
EXPOSURE PERIOD (HR)	TOP CHANNEL		BOTTOM CHANNEL	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
3 - 6	0.171	102.000	0.150	93.900
6 - 24	34.733	102.000	52.247	93.900
24 - 54	65.100	102.000	67.733	93.900
54 - 75	70.033	102.000	75.067	93.900
75+	83.467	102.000	86.700	93.900

FIG. 89

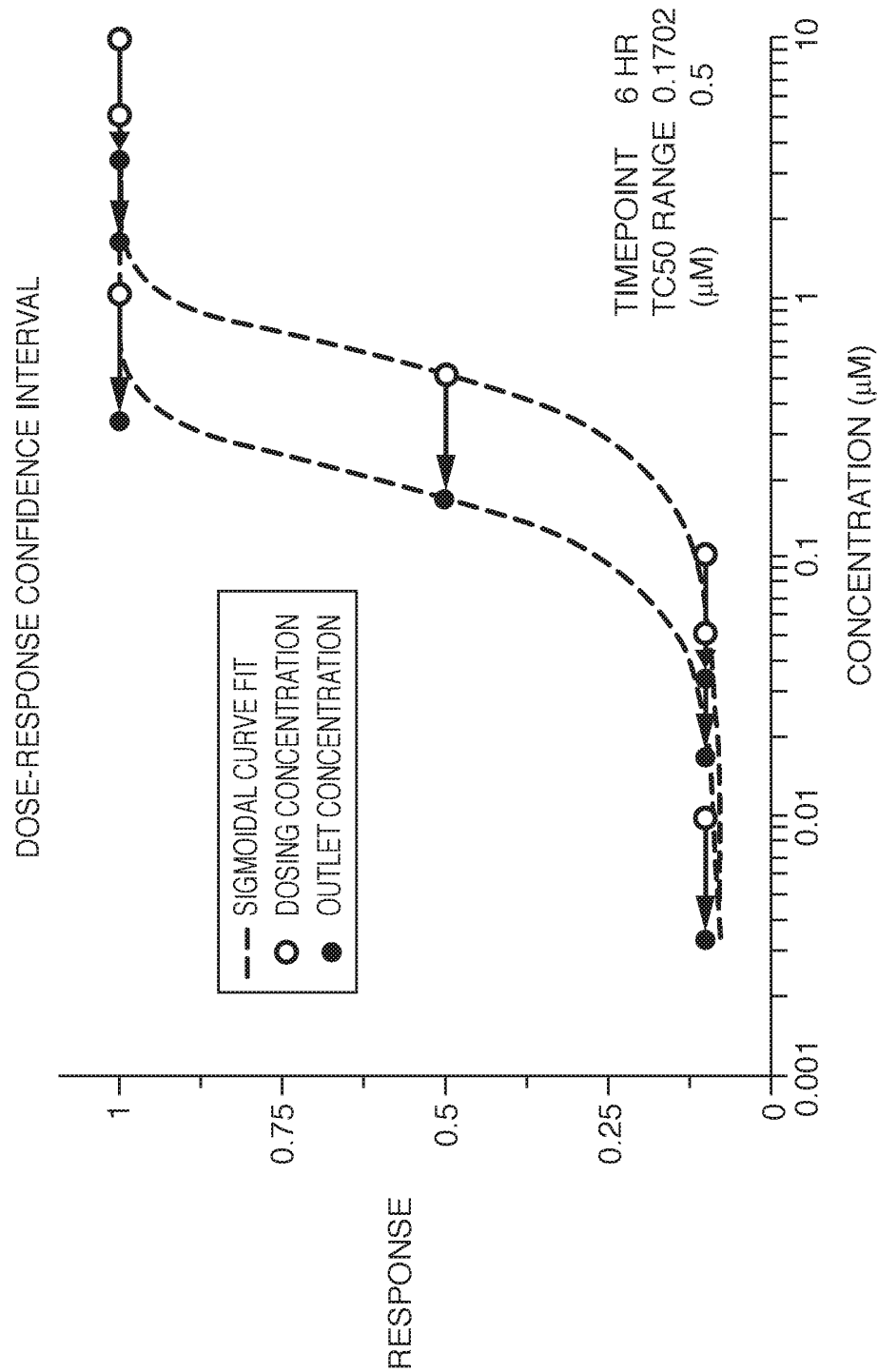


FIG. 90A

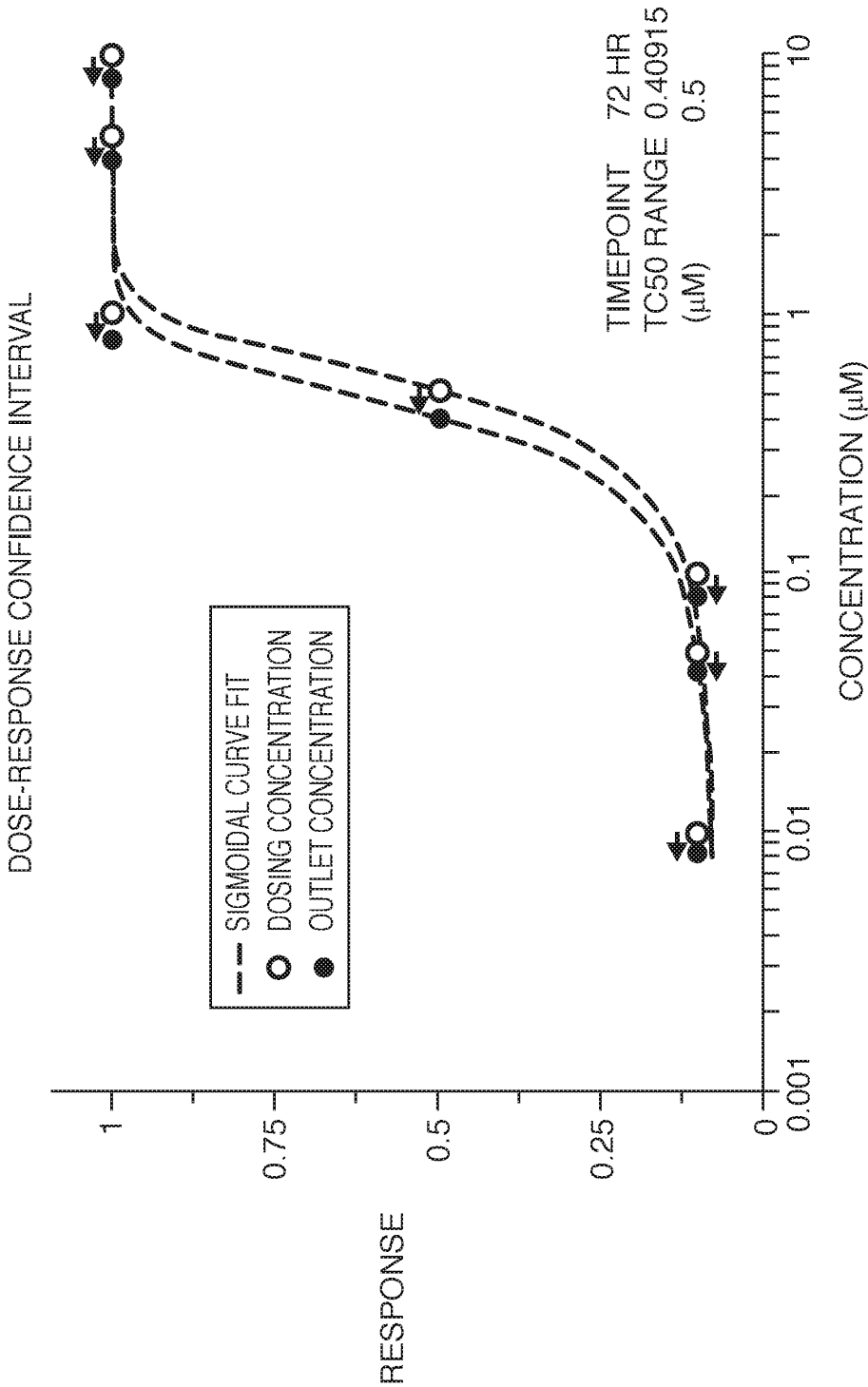


FIG. 90B

DURATION OF DOSING (HR)	RECOMMENDED TIME POINTS (HR)
< 3	0.5, 1, 1.5, 2, 3
6	0.5, 1, 2, 4, 6
12	1, 3, 6, 9, 12
24	2, 3, 6, 12, 24
48	1, 3, 6, 24, 48
72+	1, 6, 24, 48, 72

FIG. 91

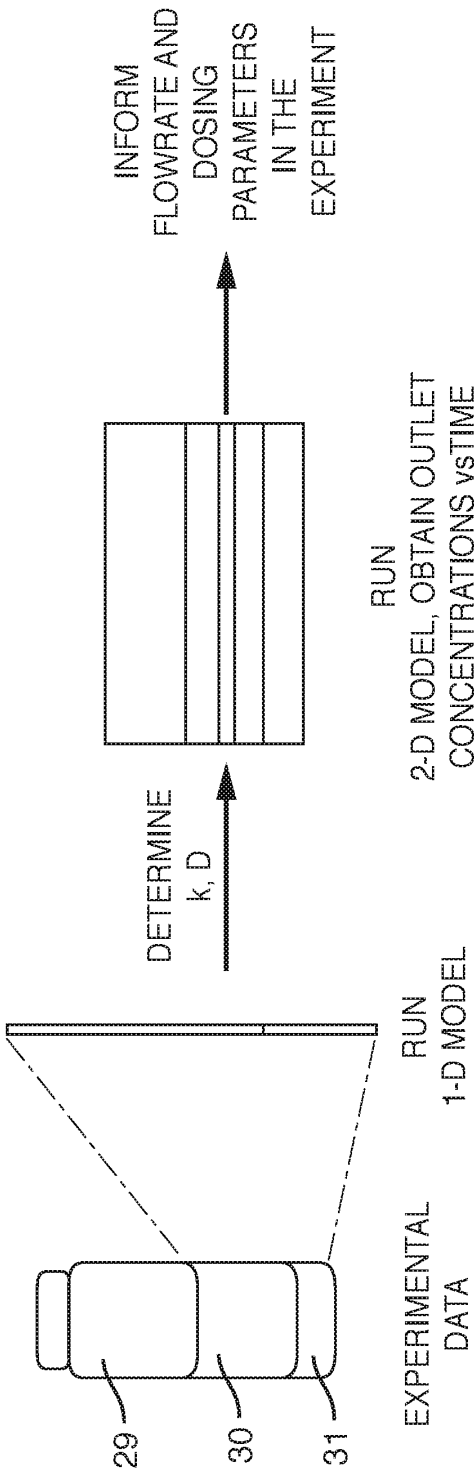


FIG. 92

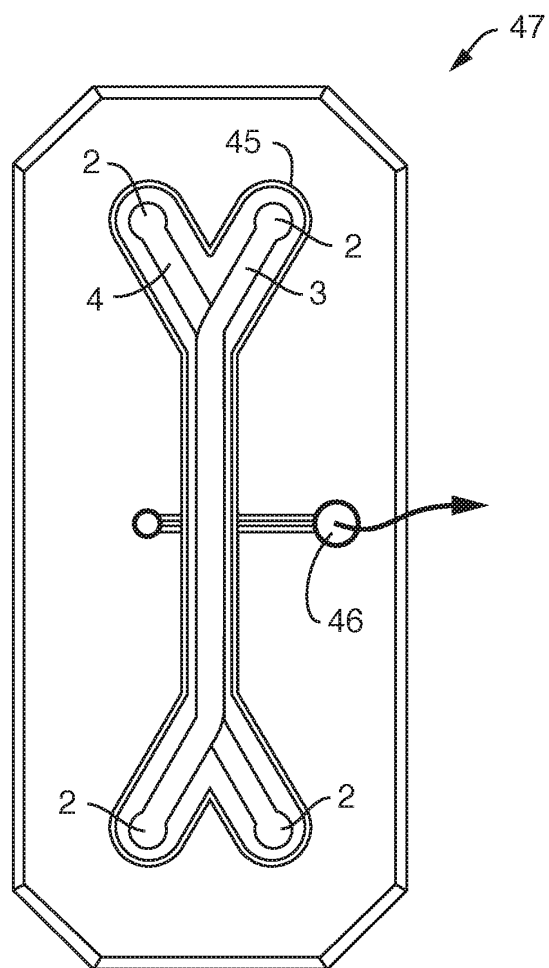


FIG. 93

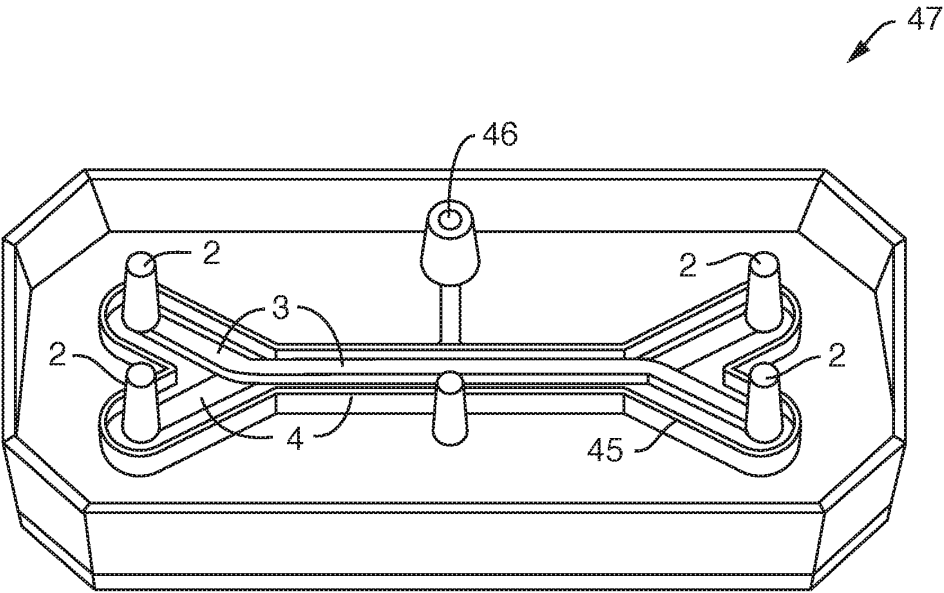


FIG. 94

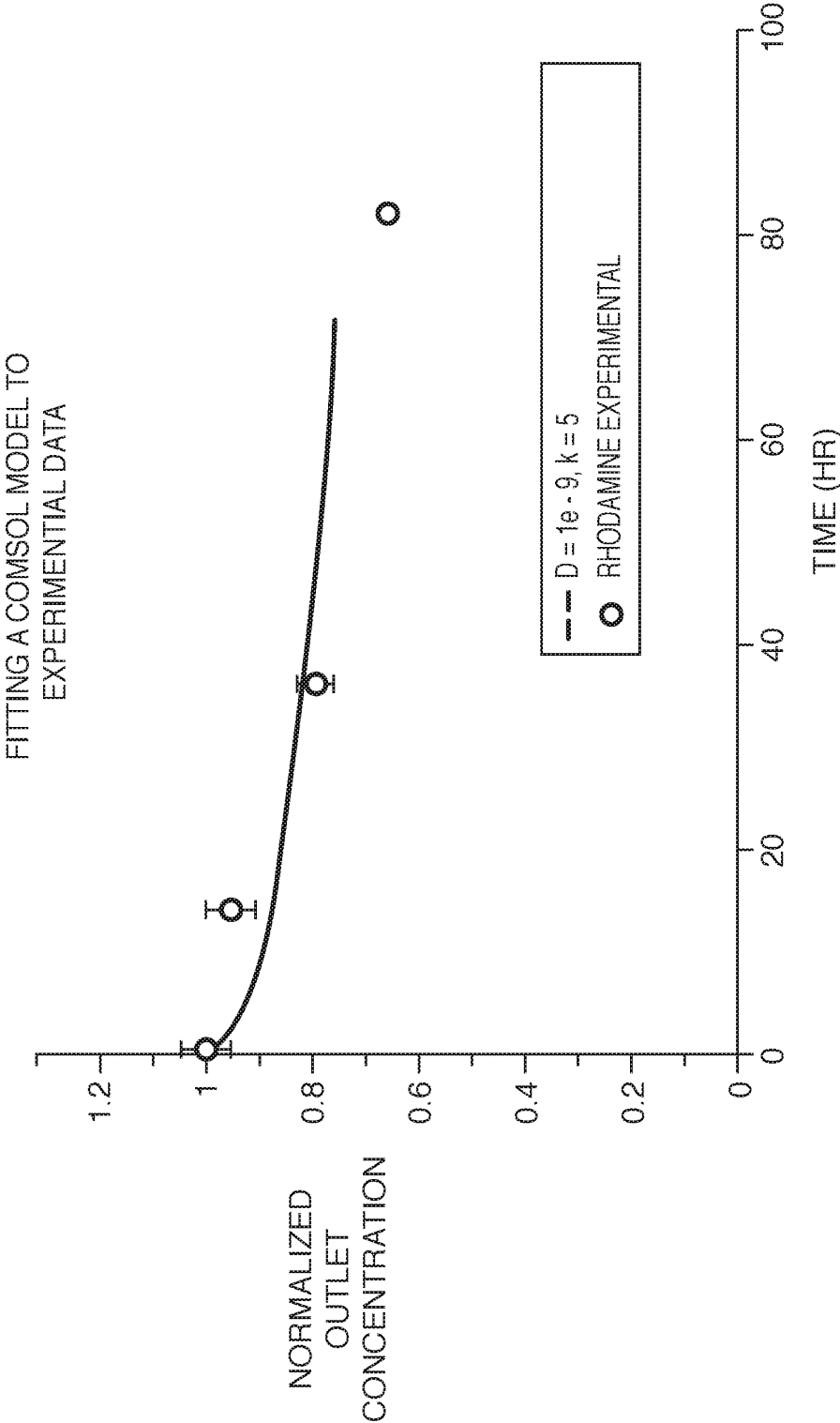


FIG. 95

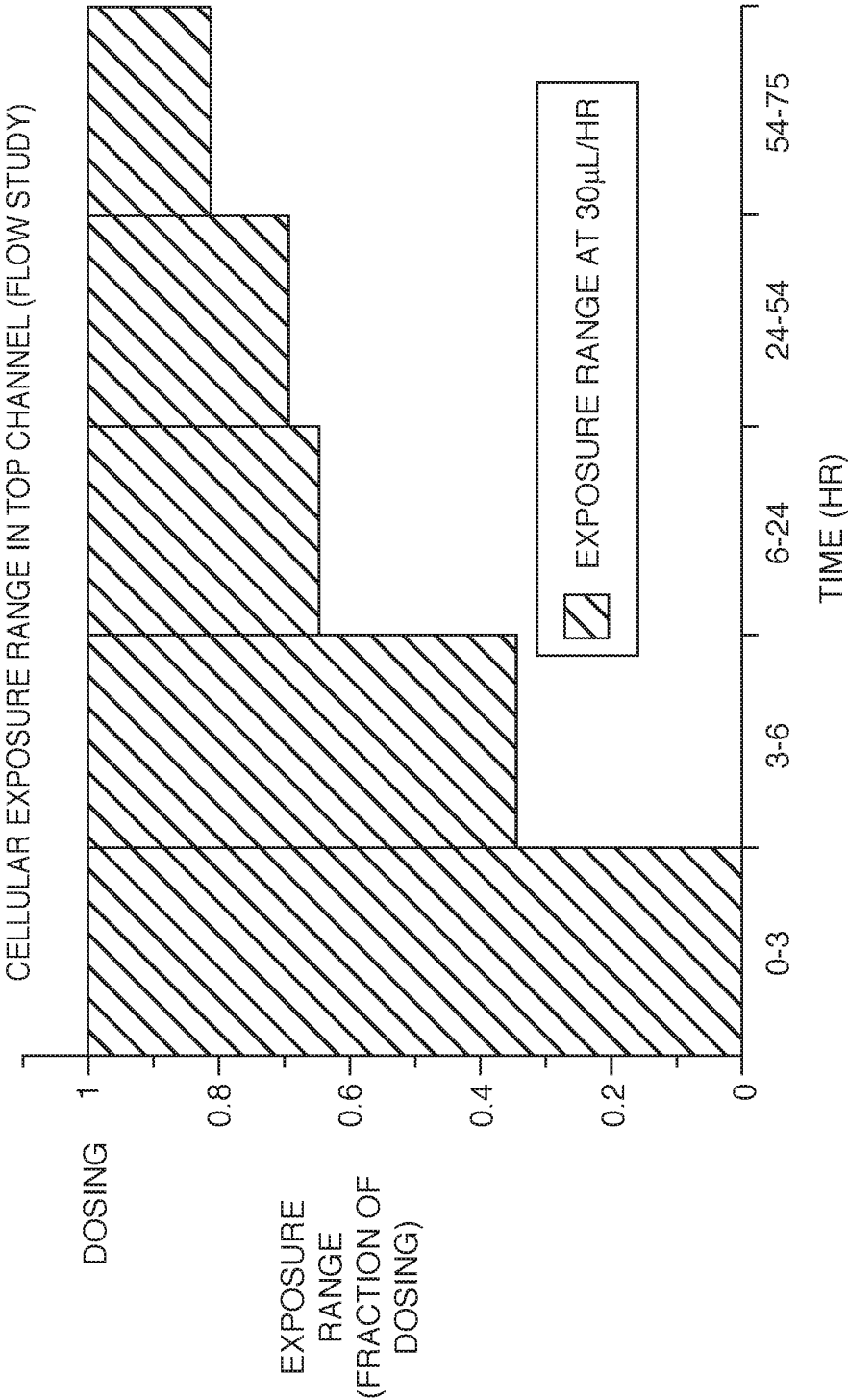


FIG. 96A

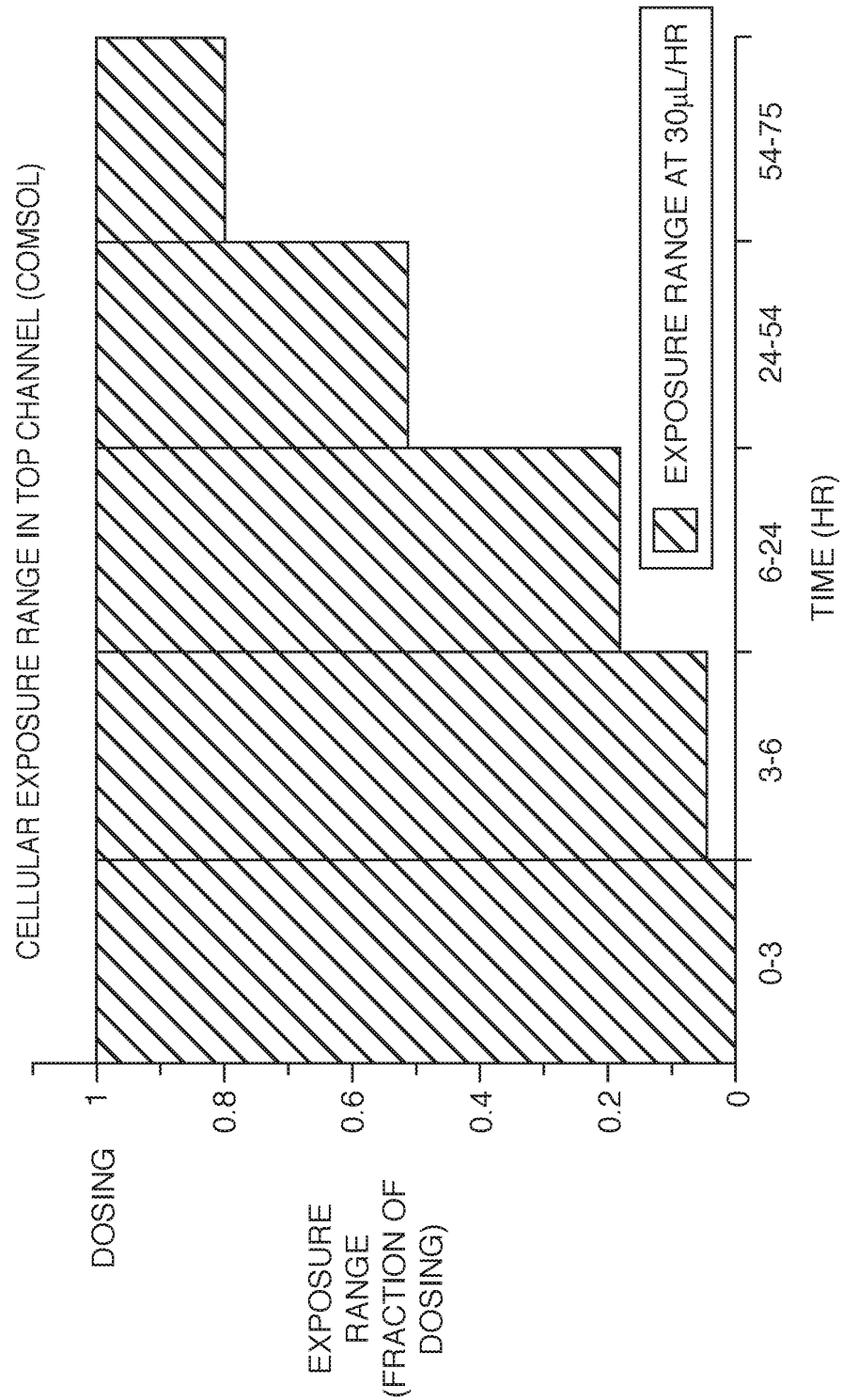


FIG. 96B

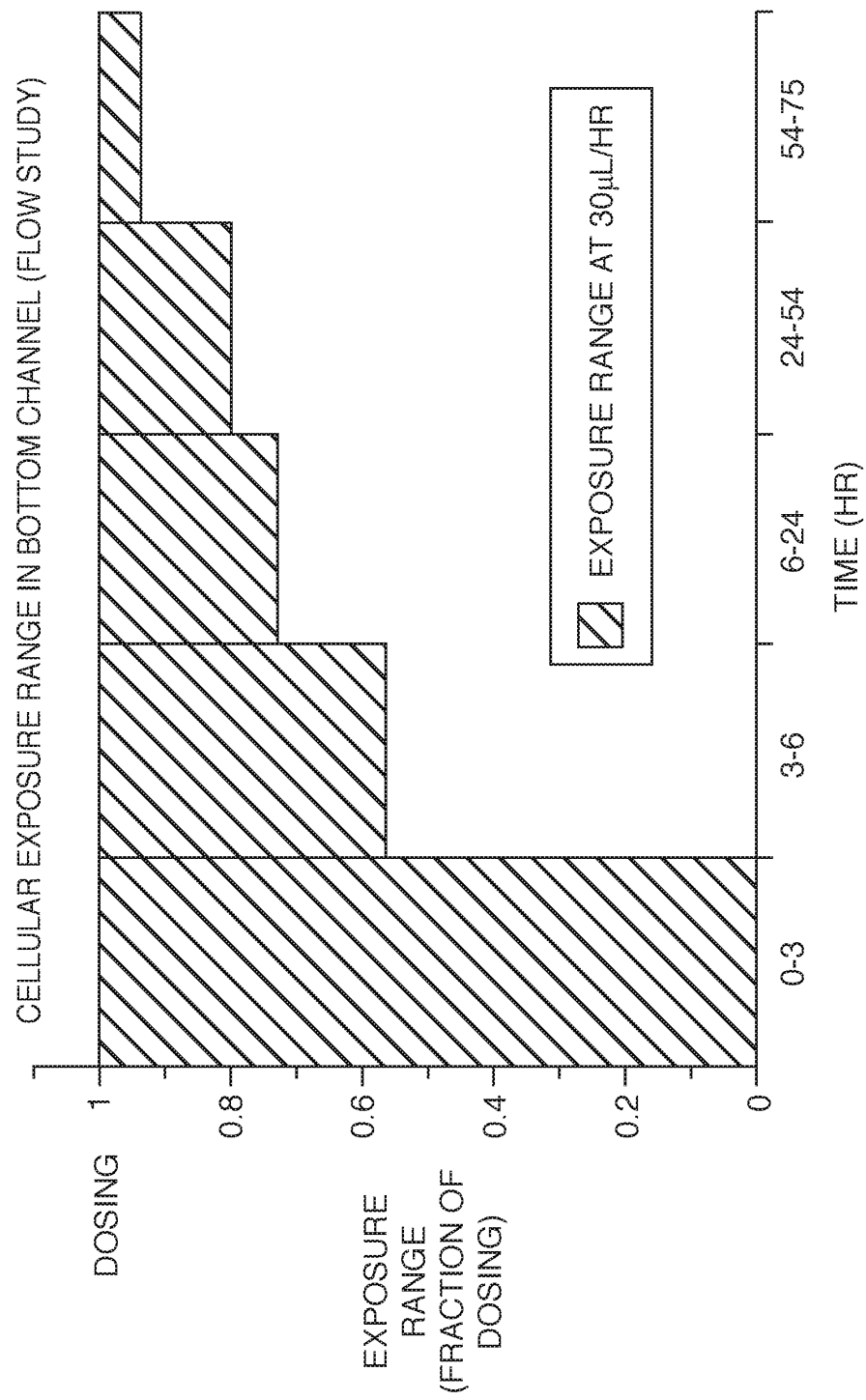


FIG. 97A

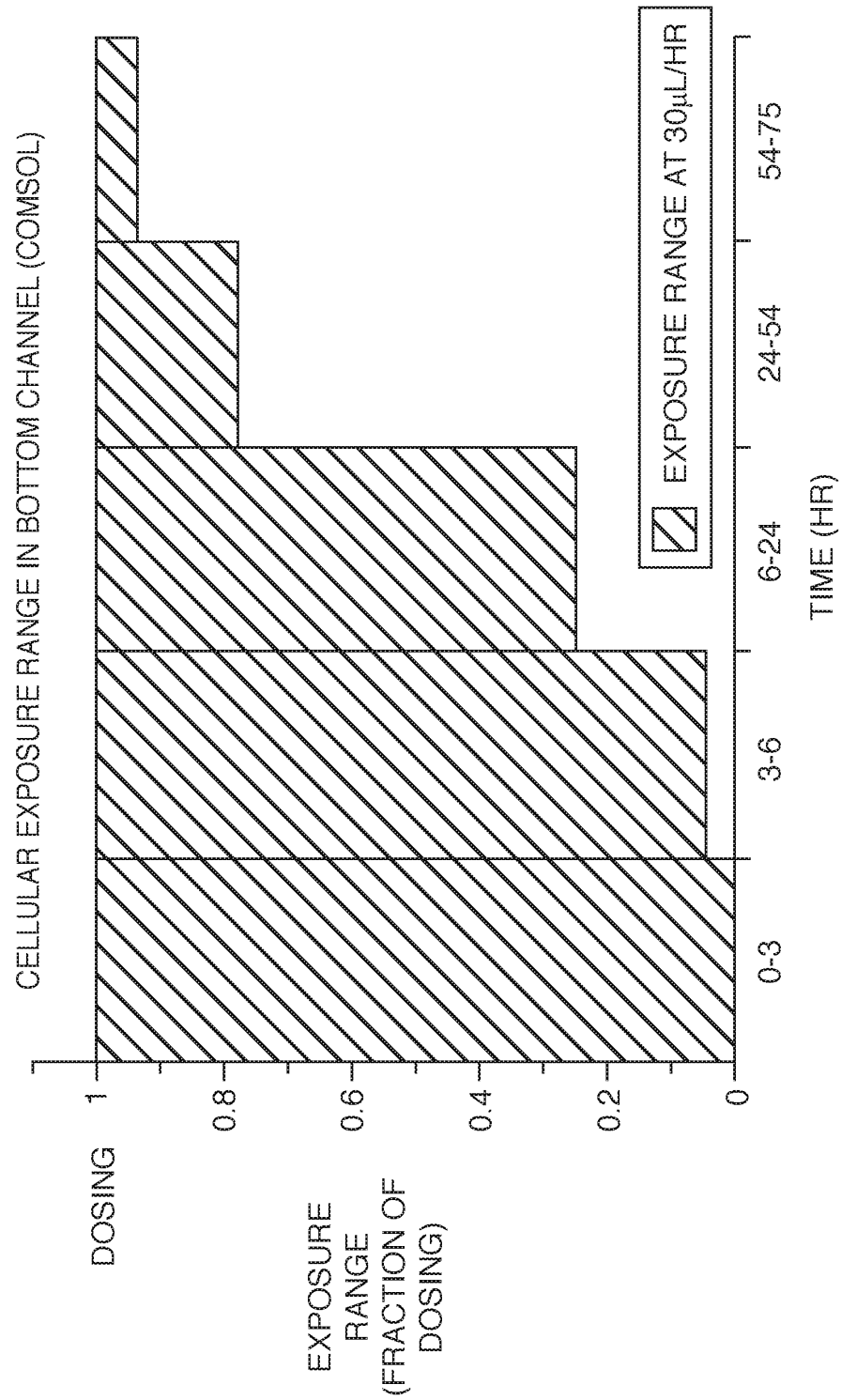


FIG. 97B

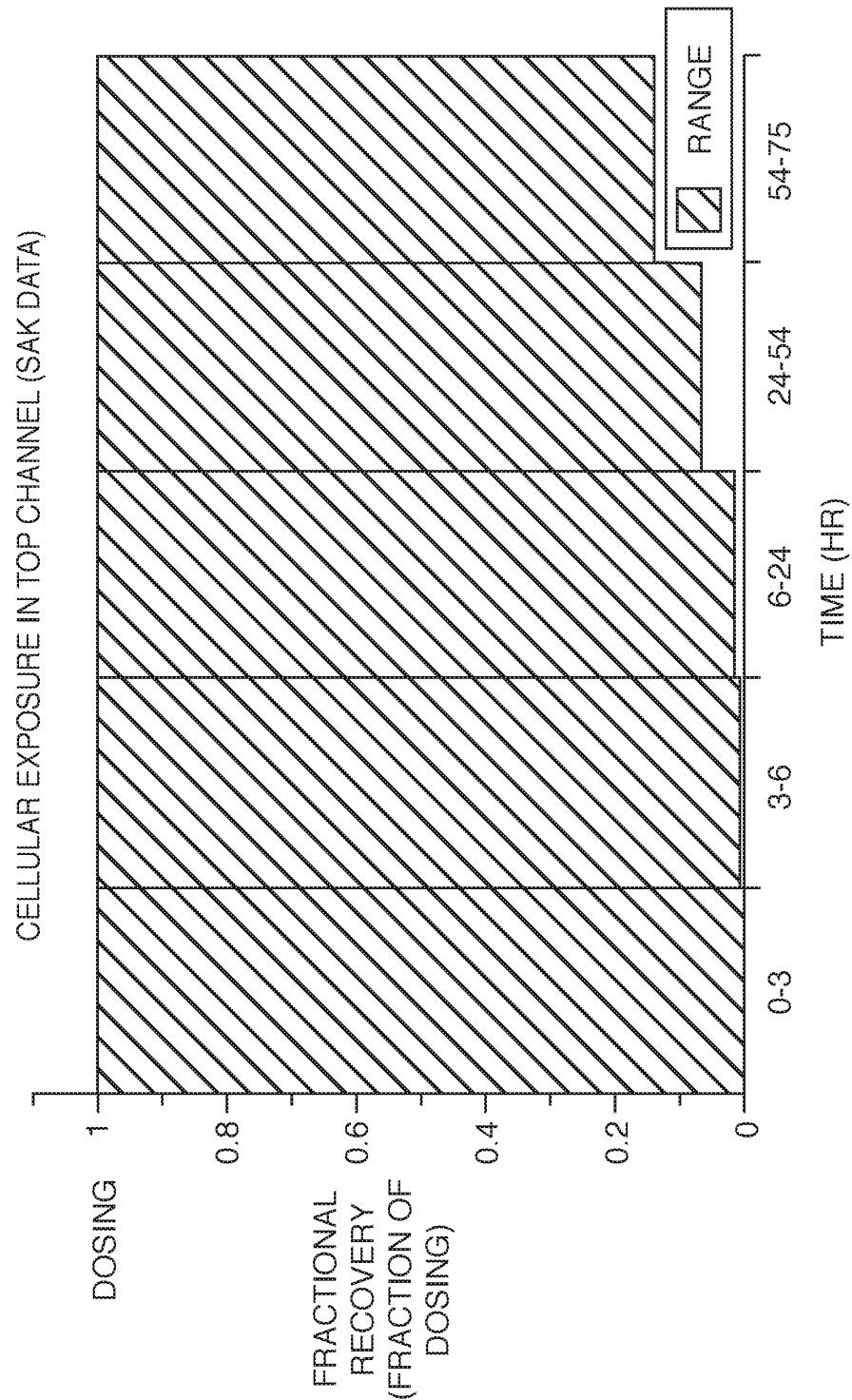


FIG. 98A

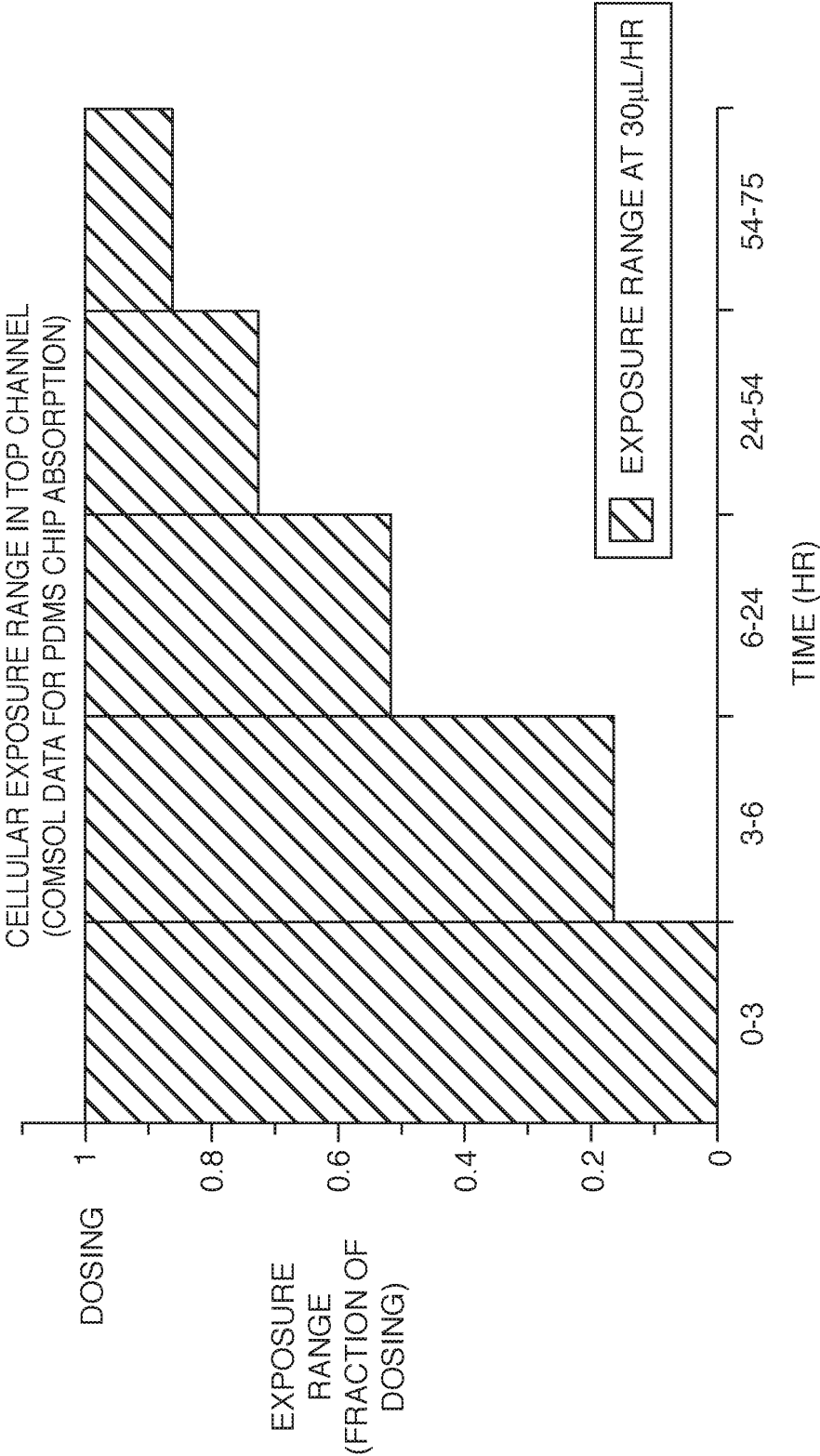


FIG. 98B

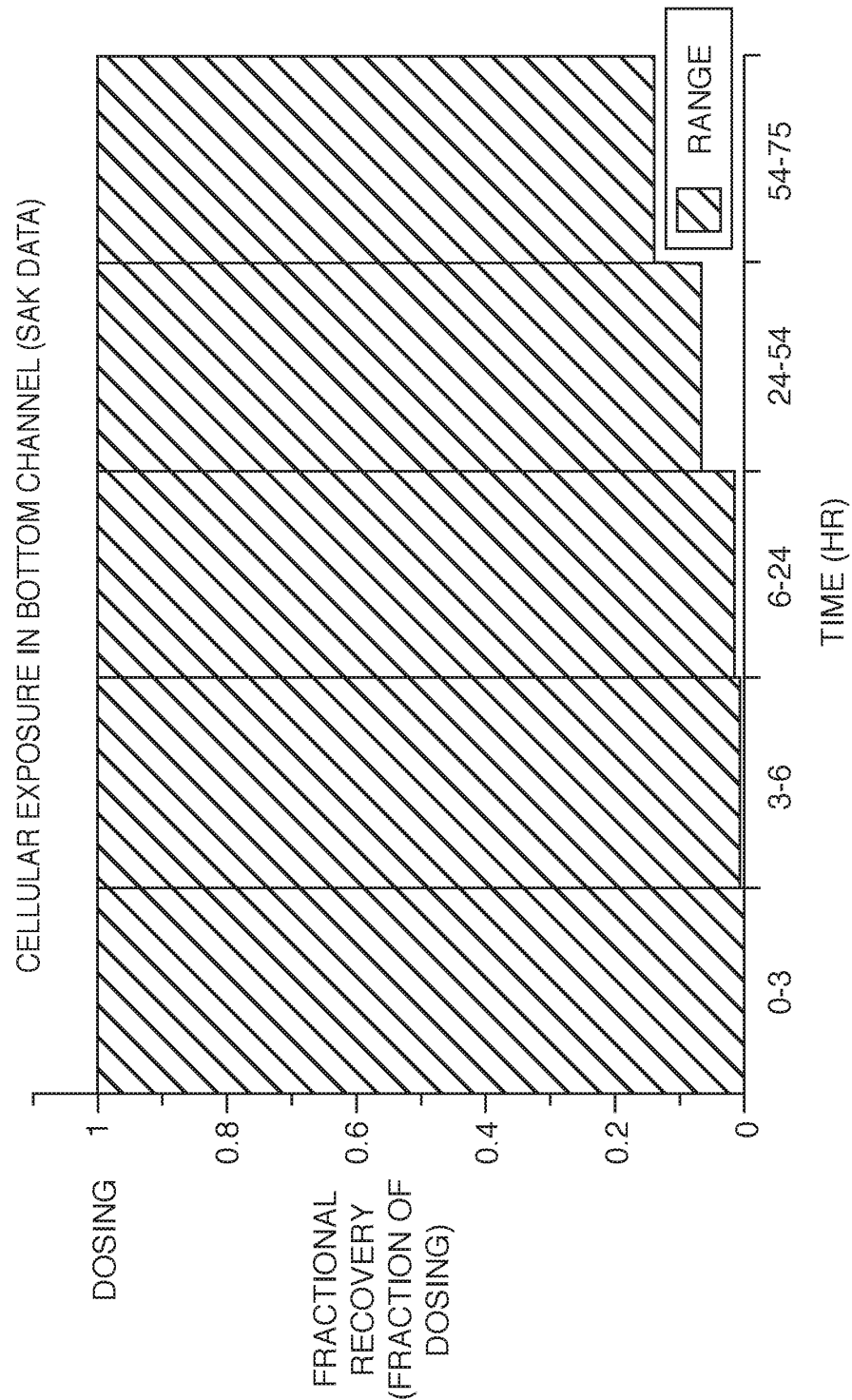


FIG. 99A

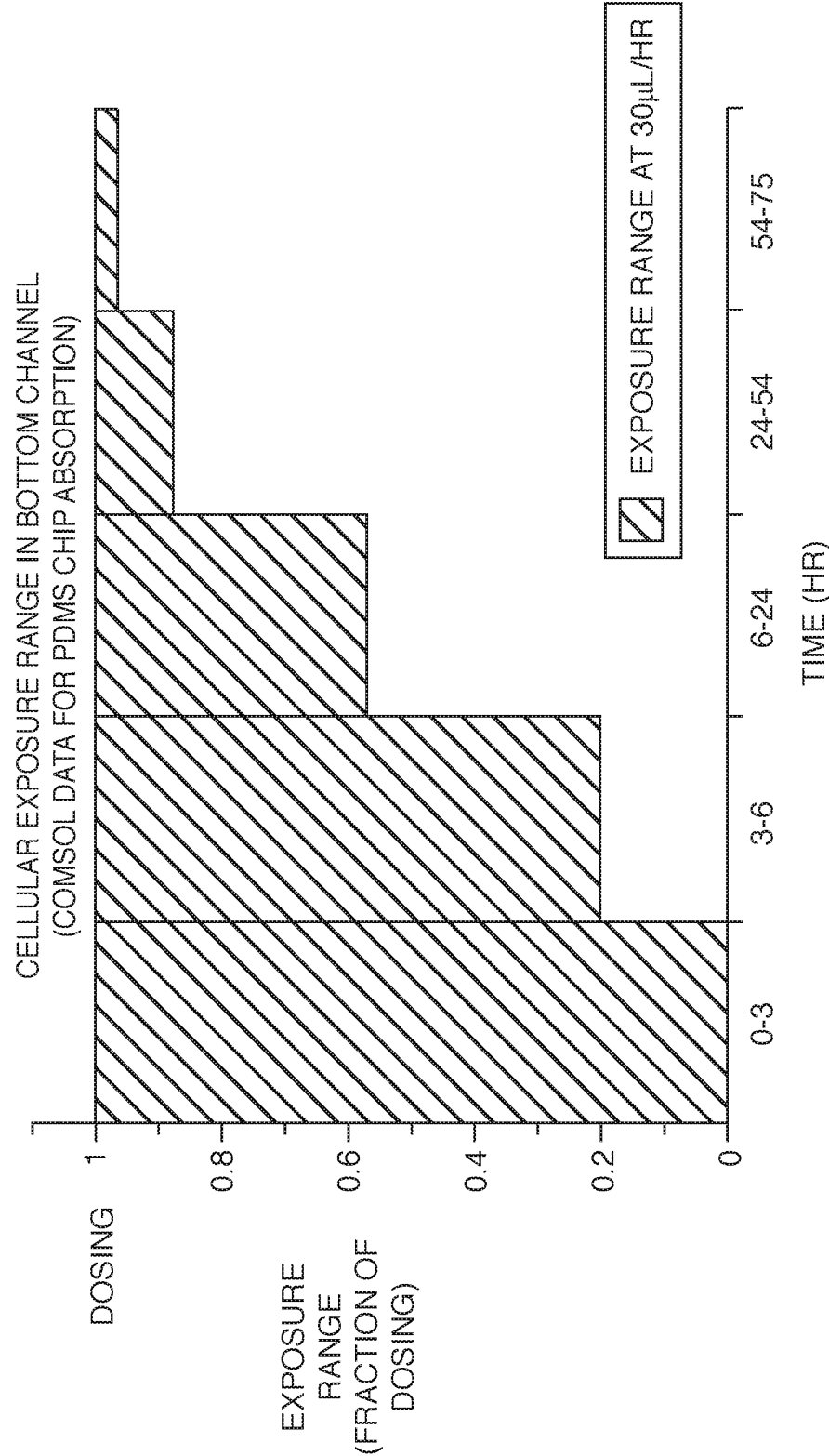


FIG. 98B

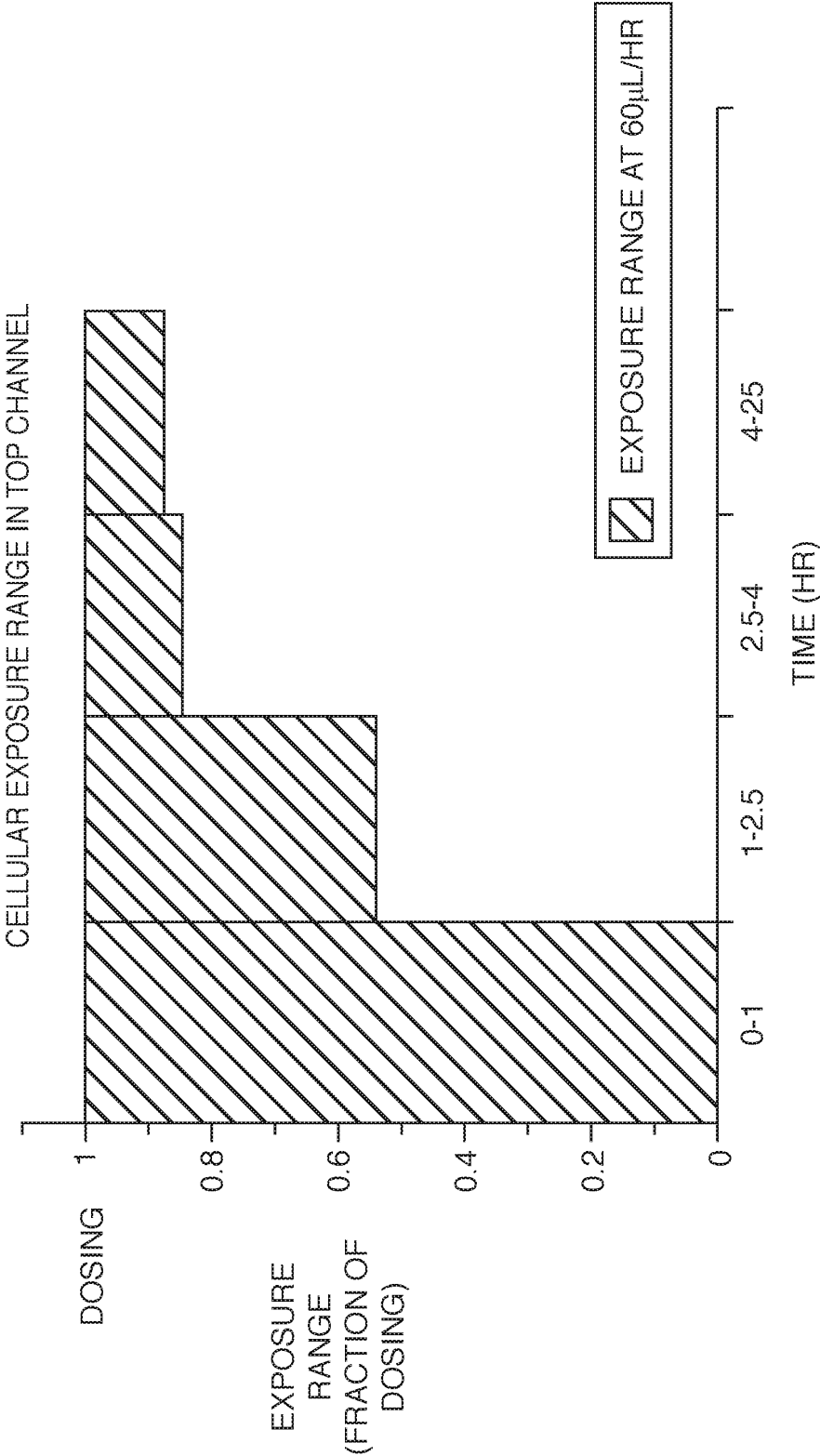


FIG. 100

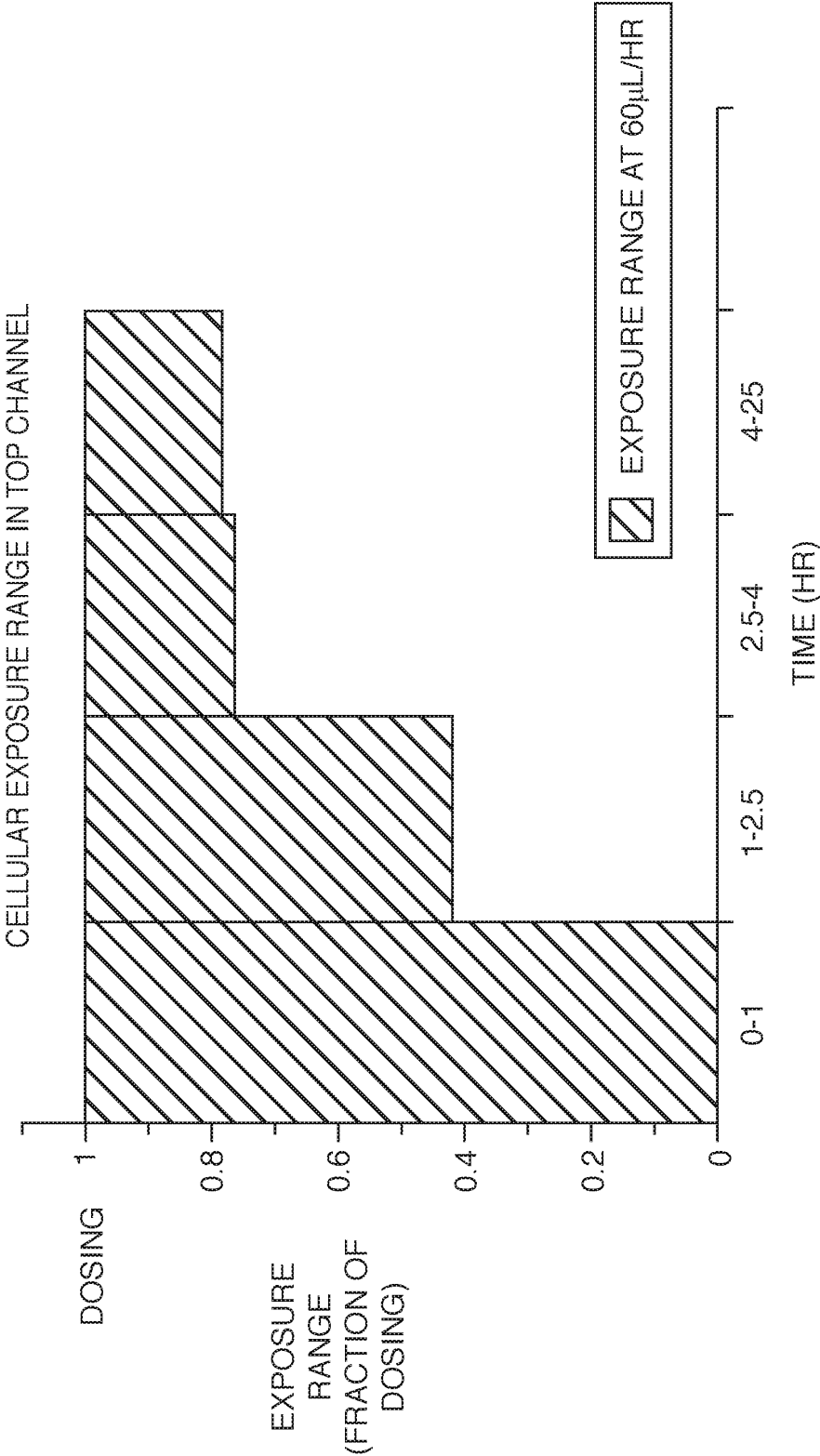


FIG. 101

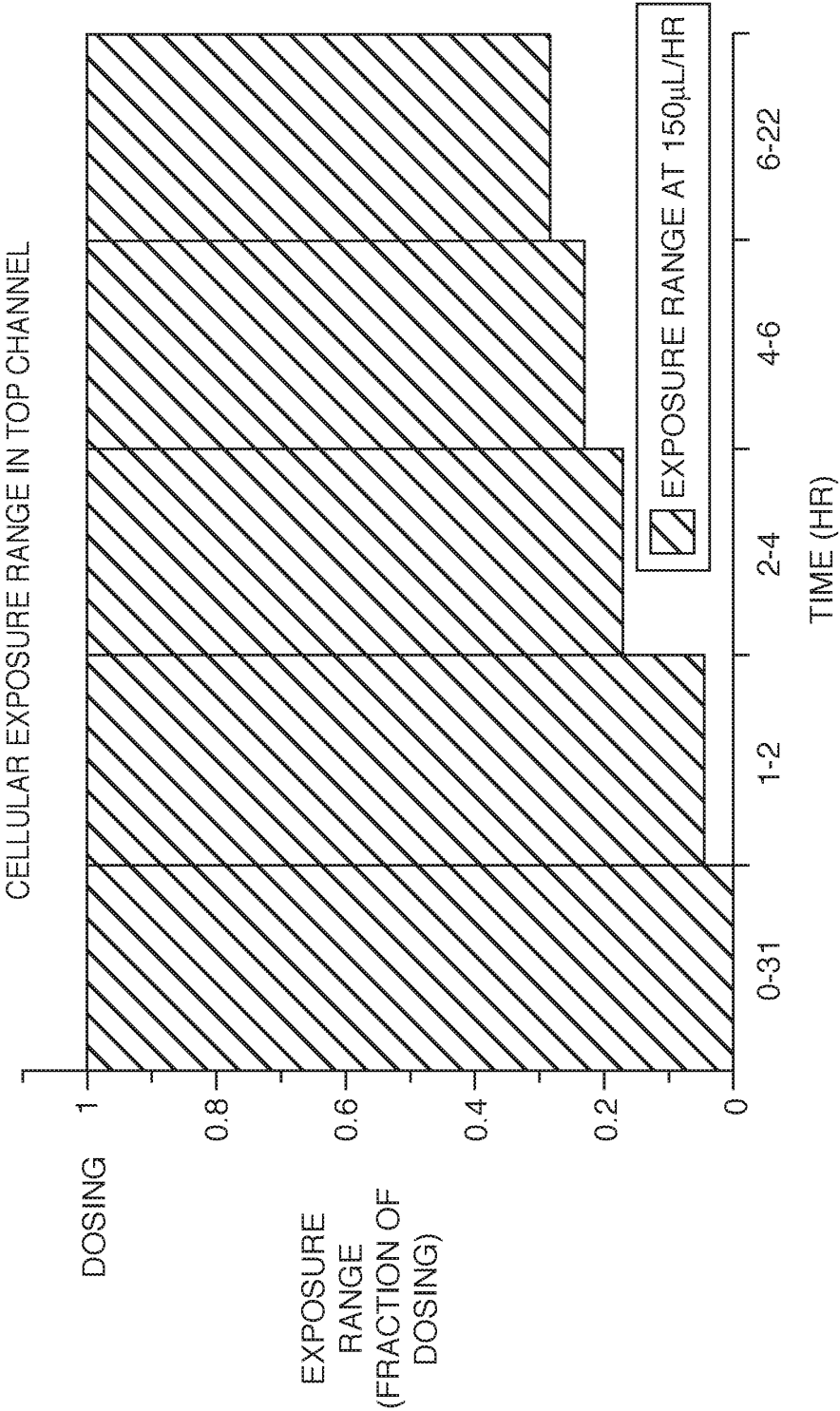


FIG. 102

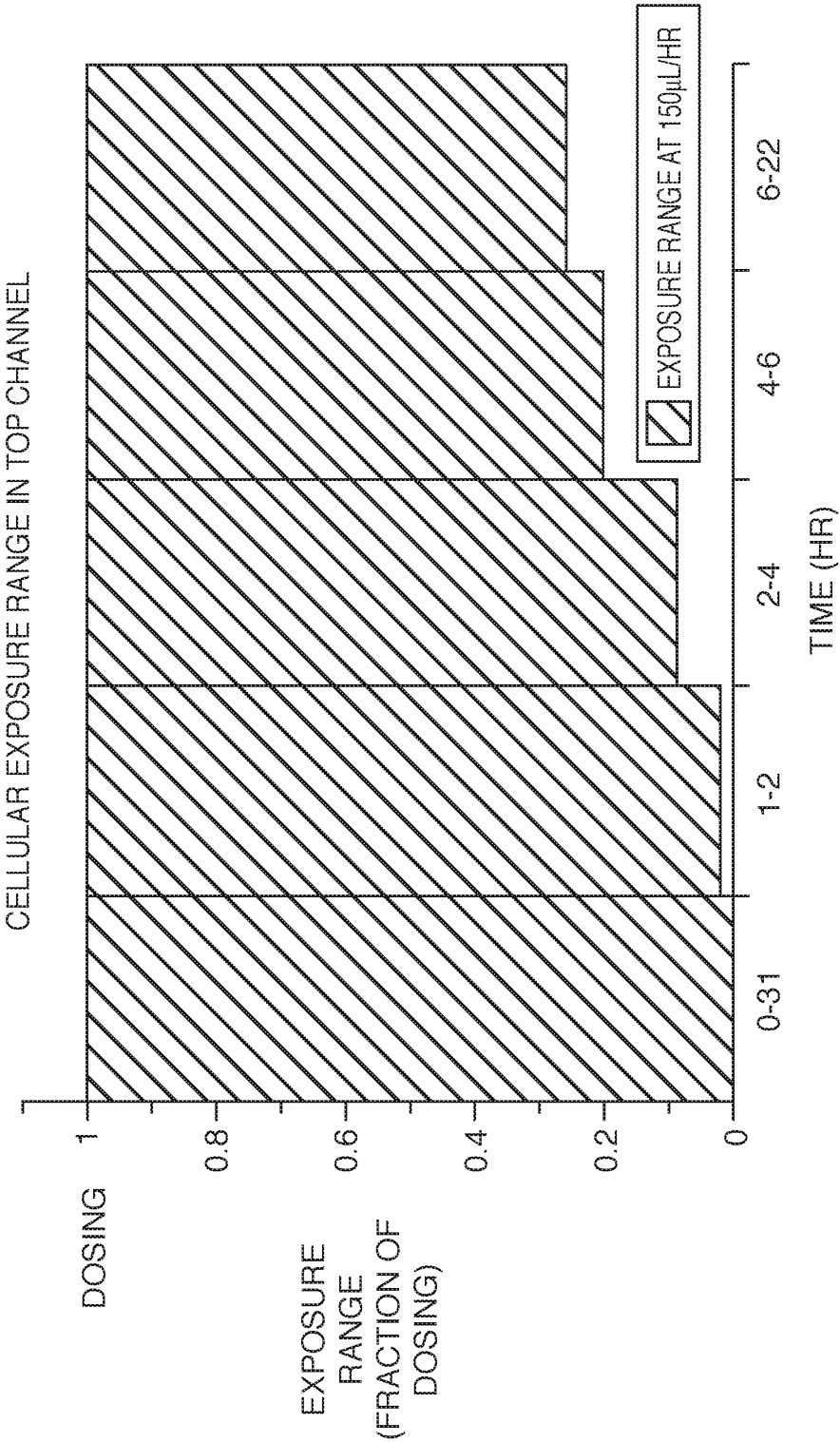


FIG. 103

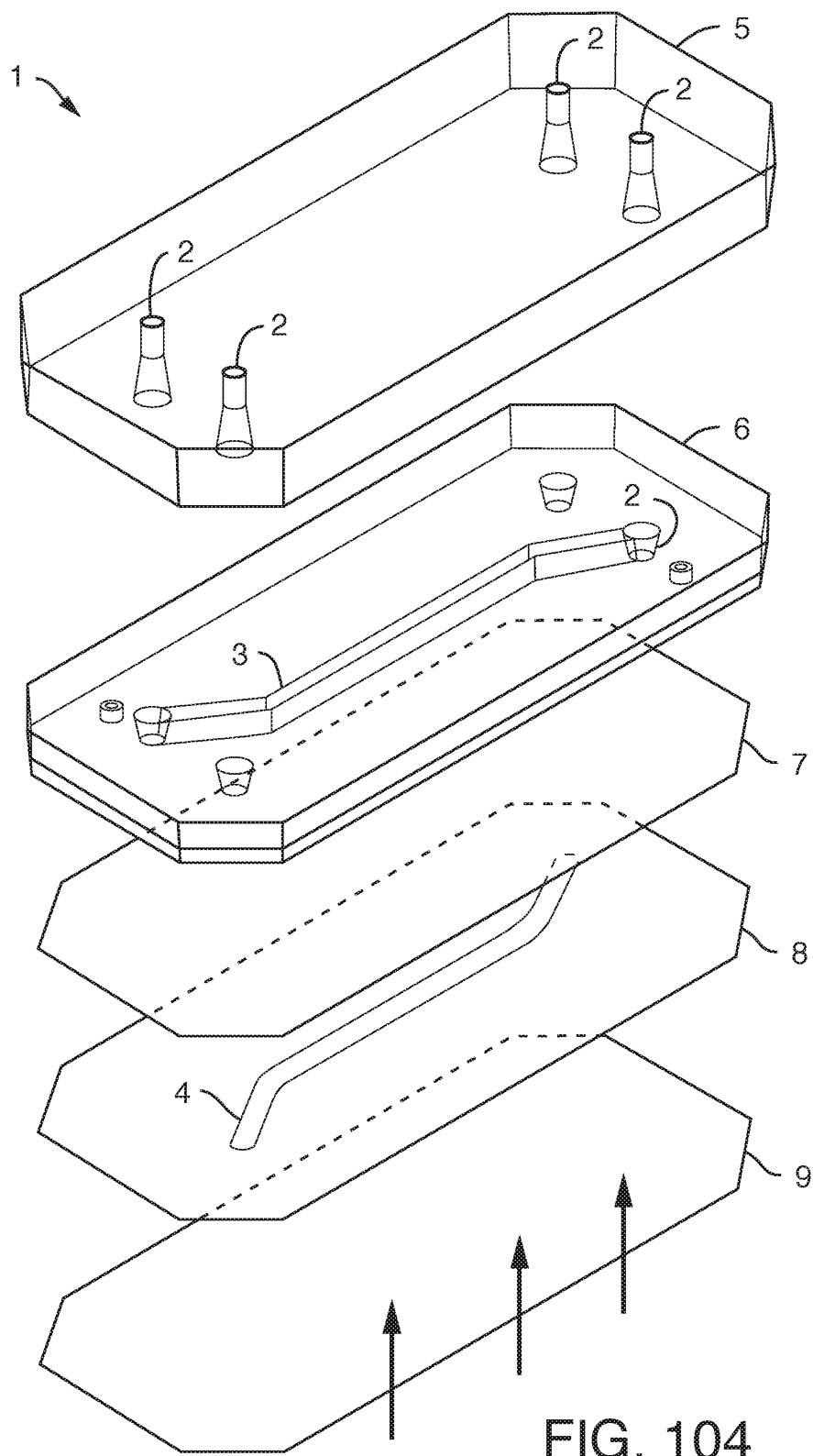


FIG. 104

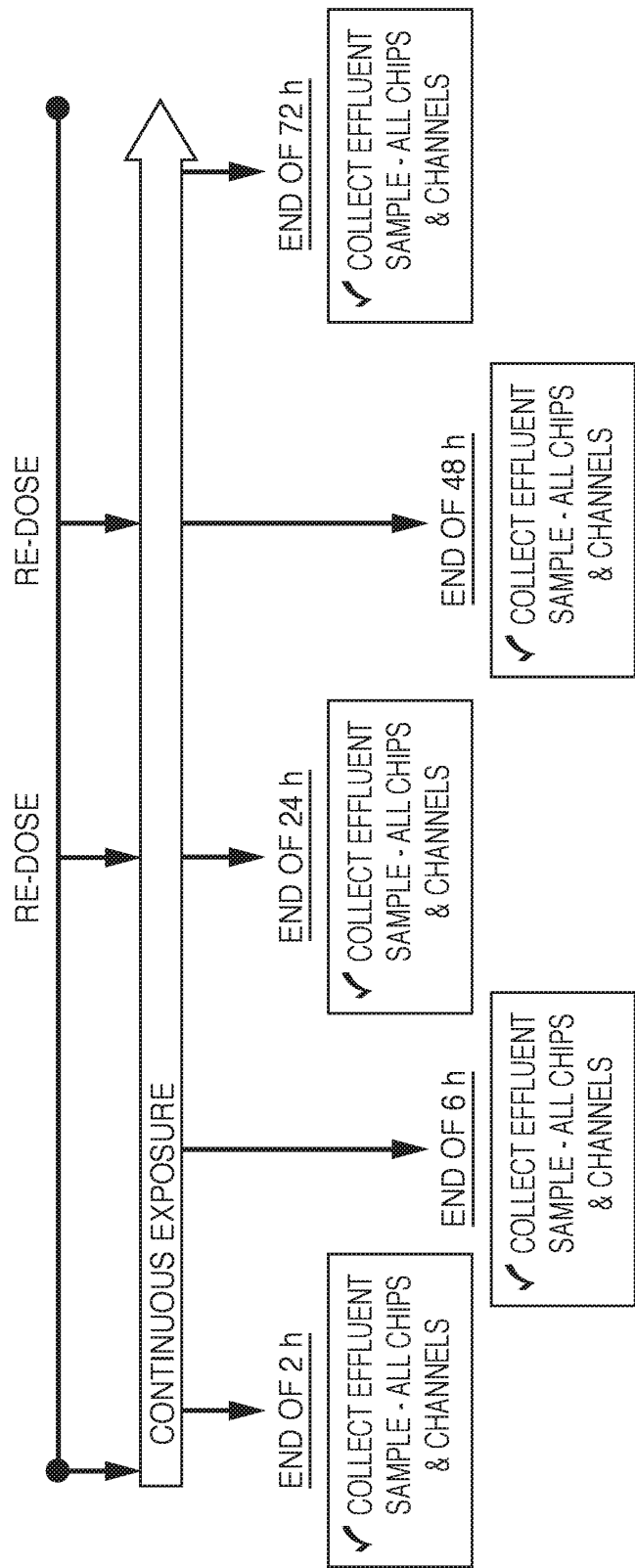


FIG. 105

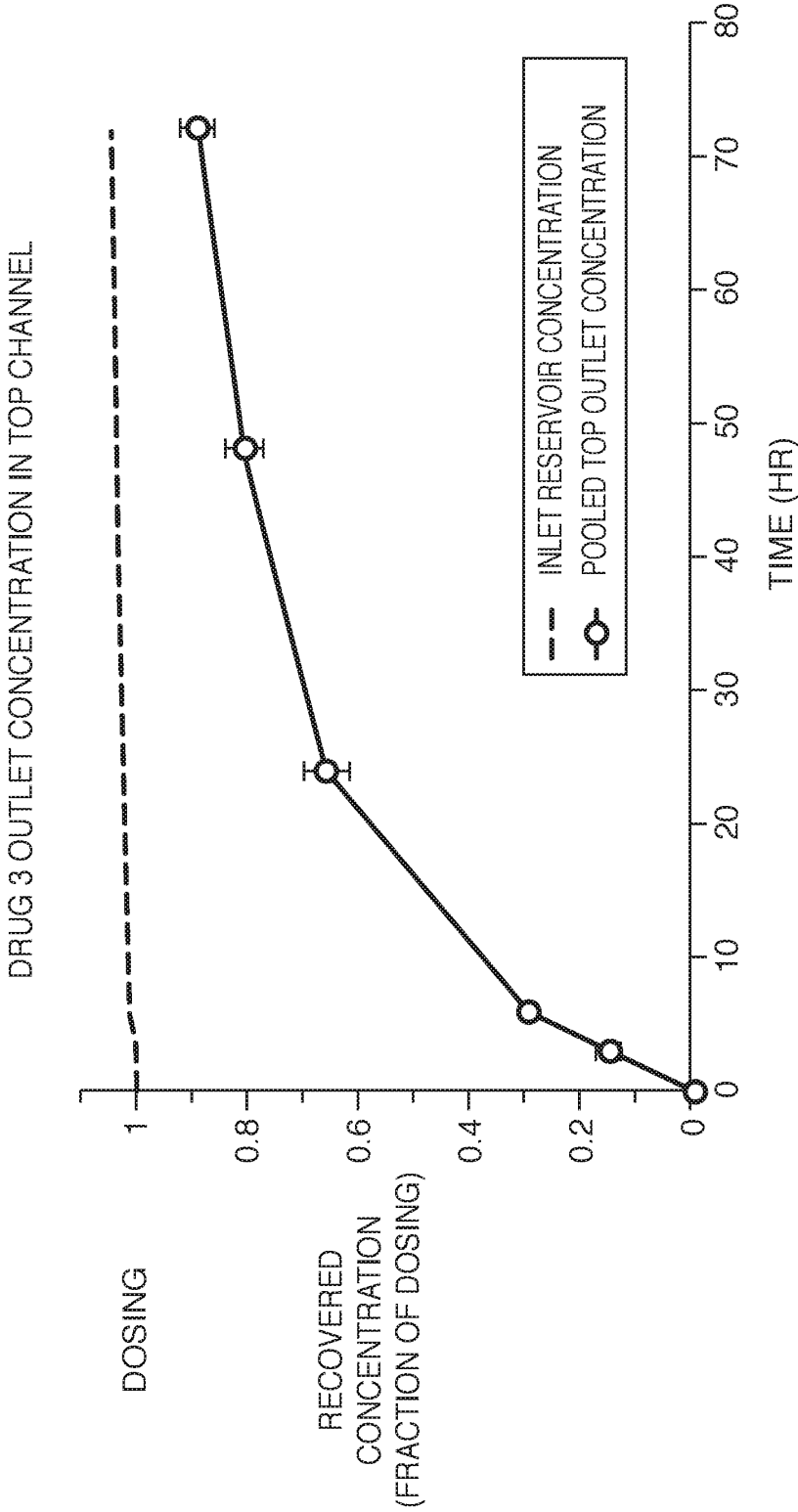


FIG. 106A

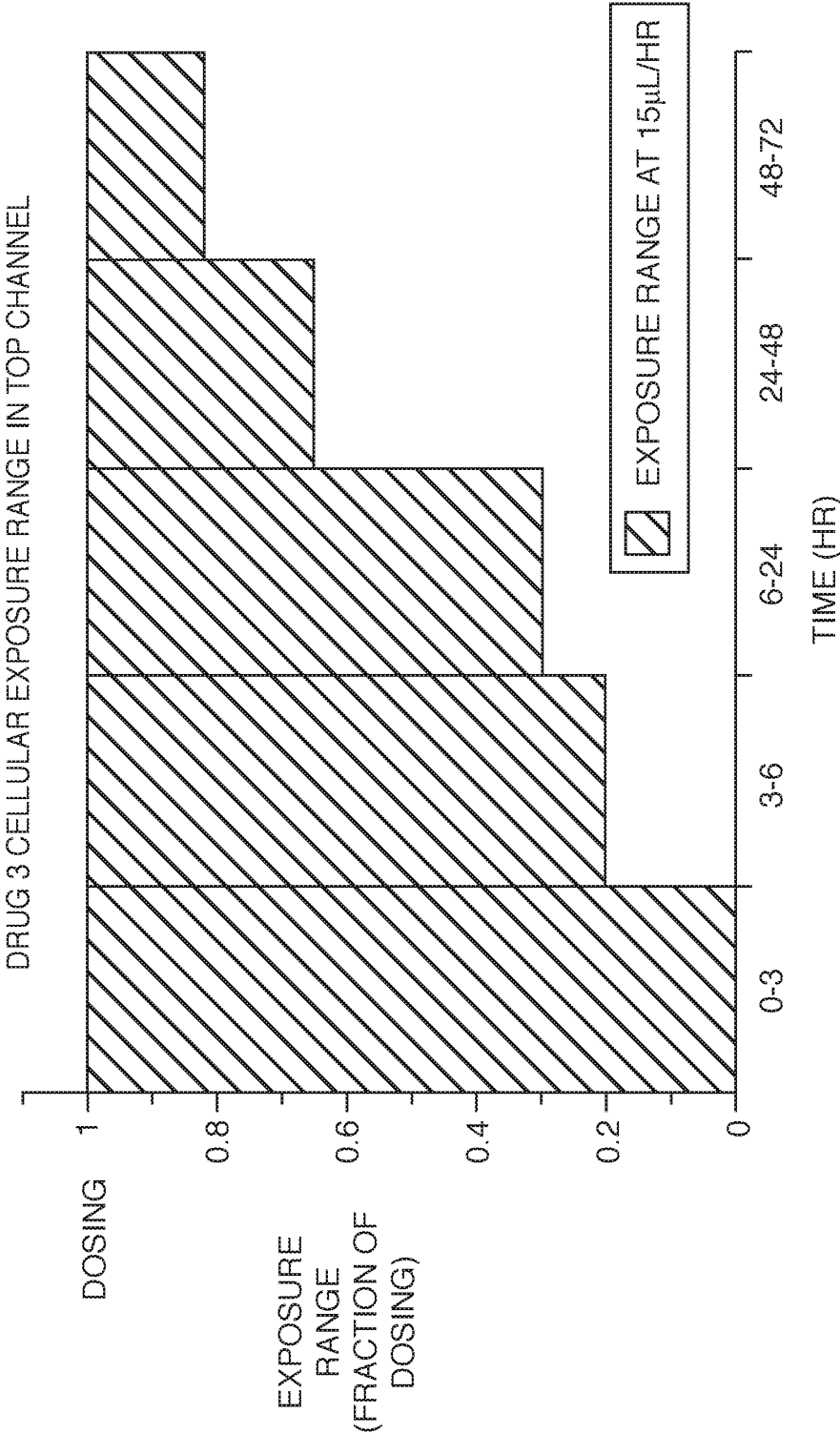


FIG. 106B

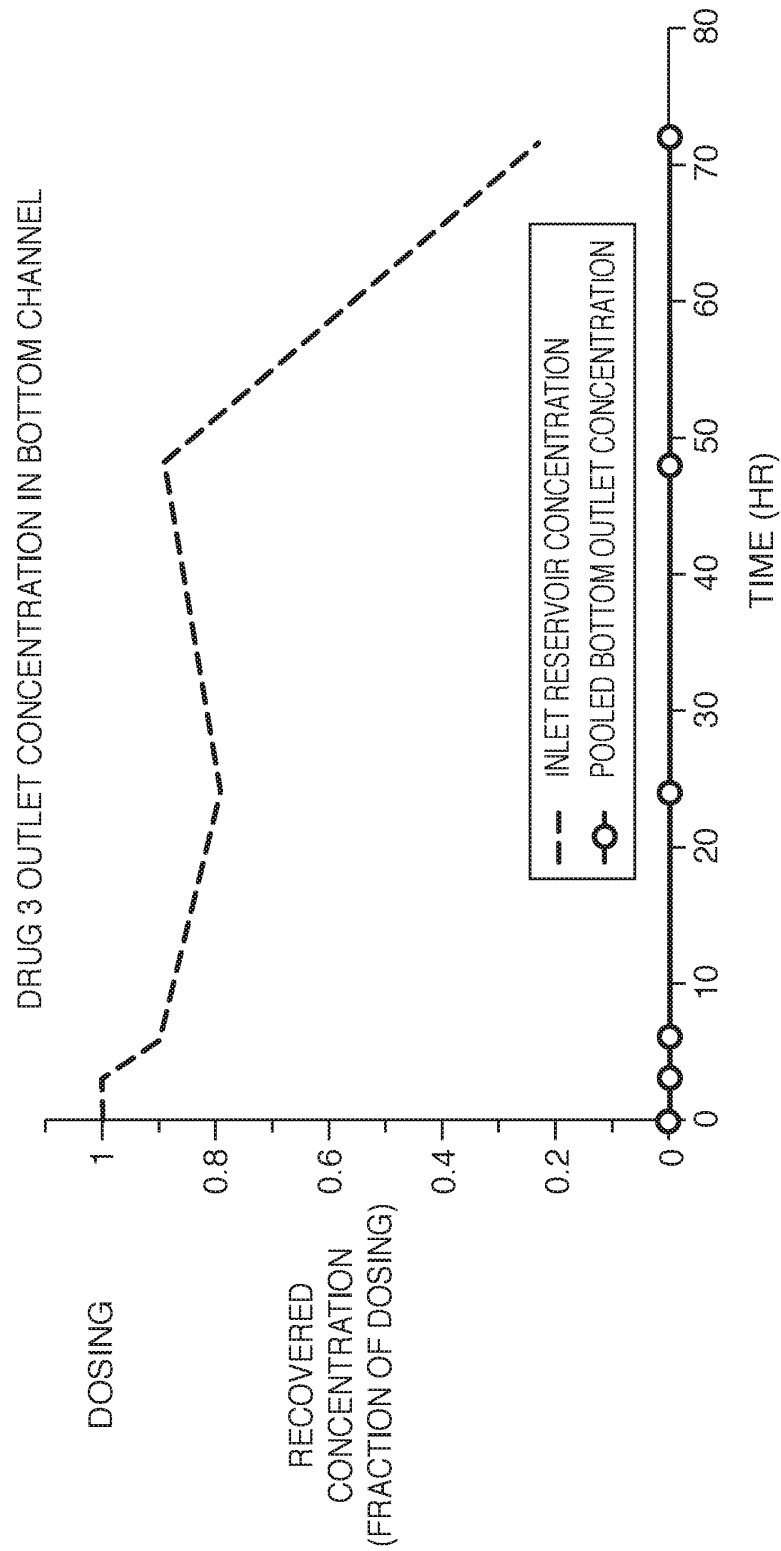


FIG. 107A

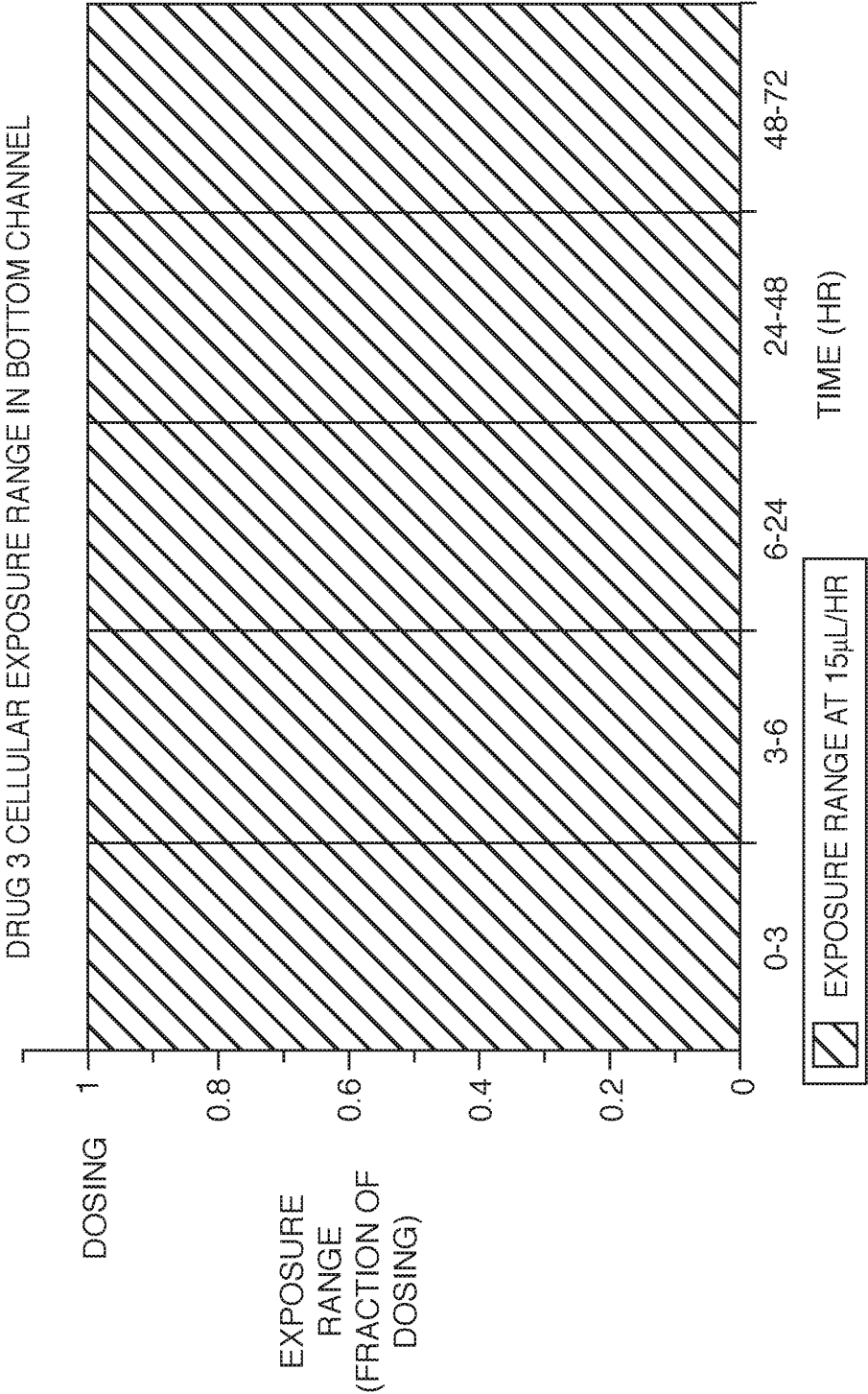


FIG. 107B

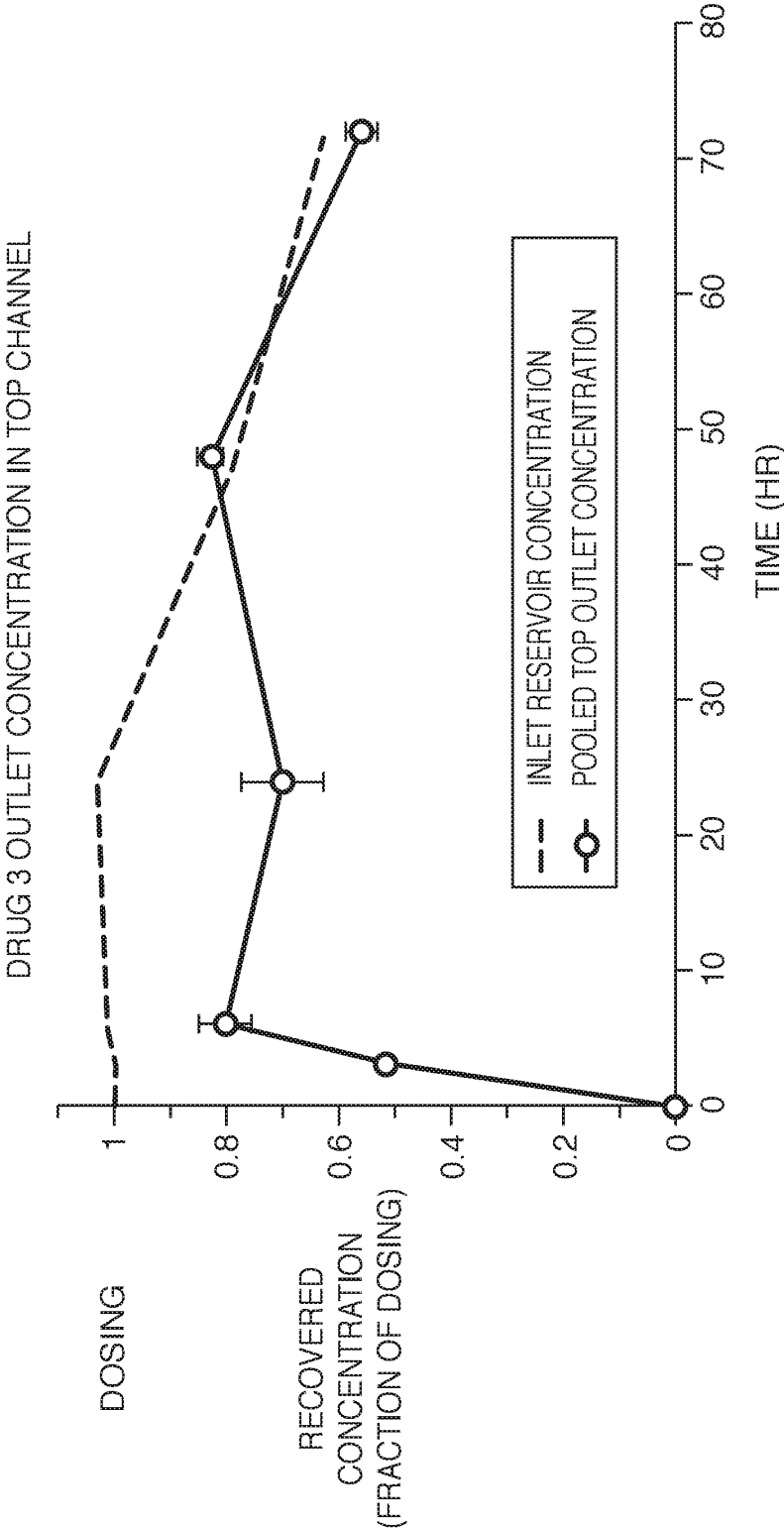


FIG. 108A

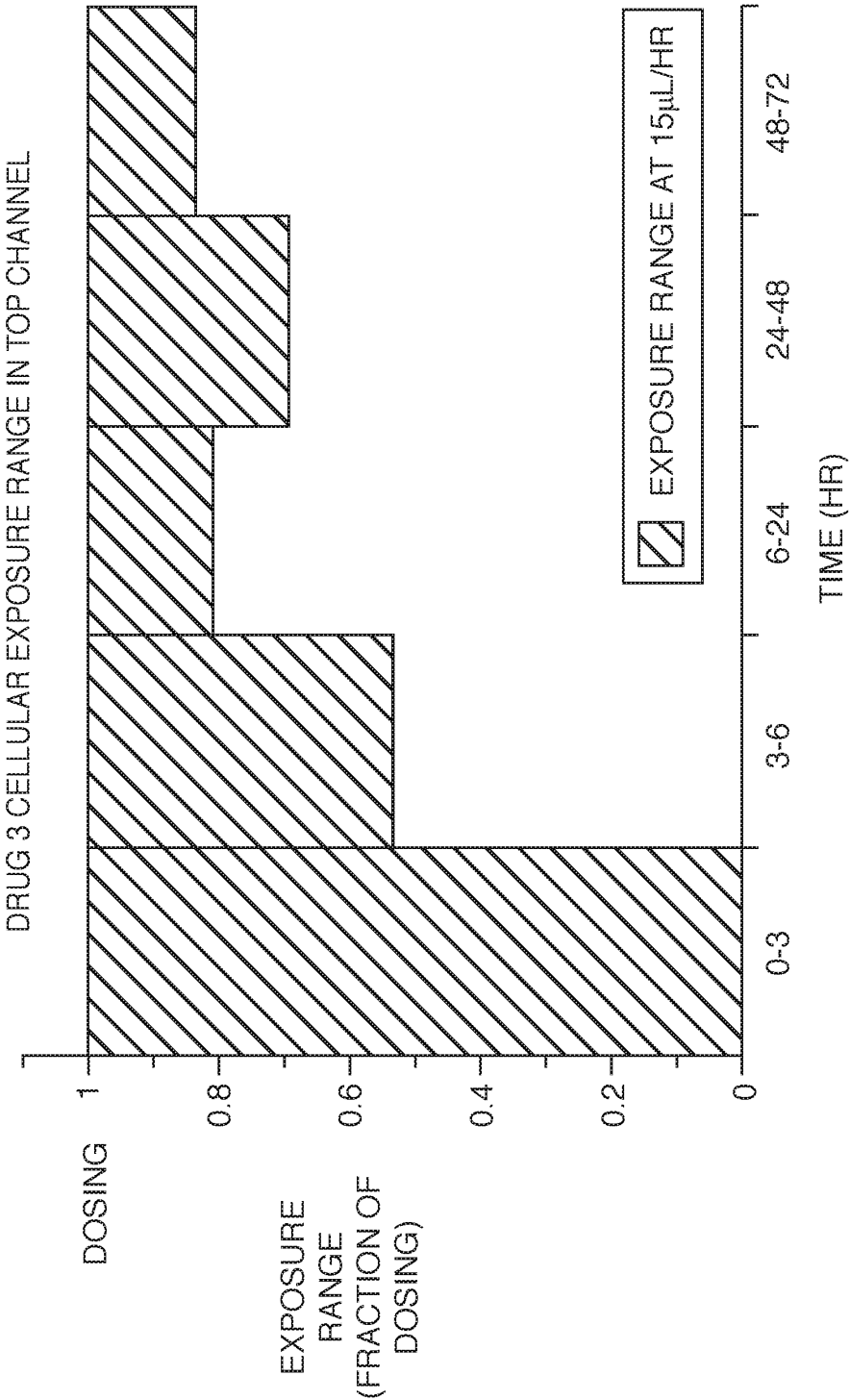


FIG. 108B

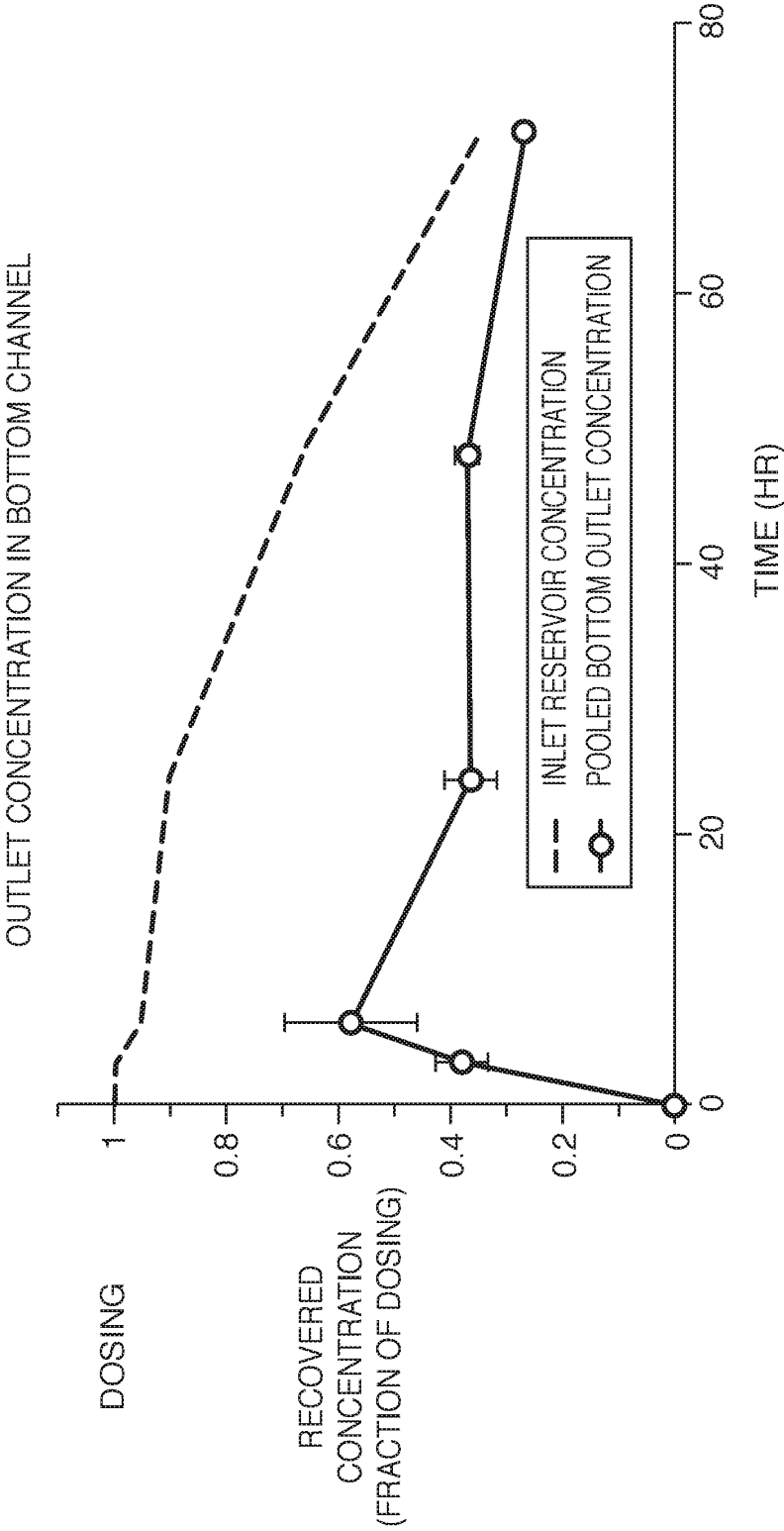


FIG. 109A

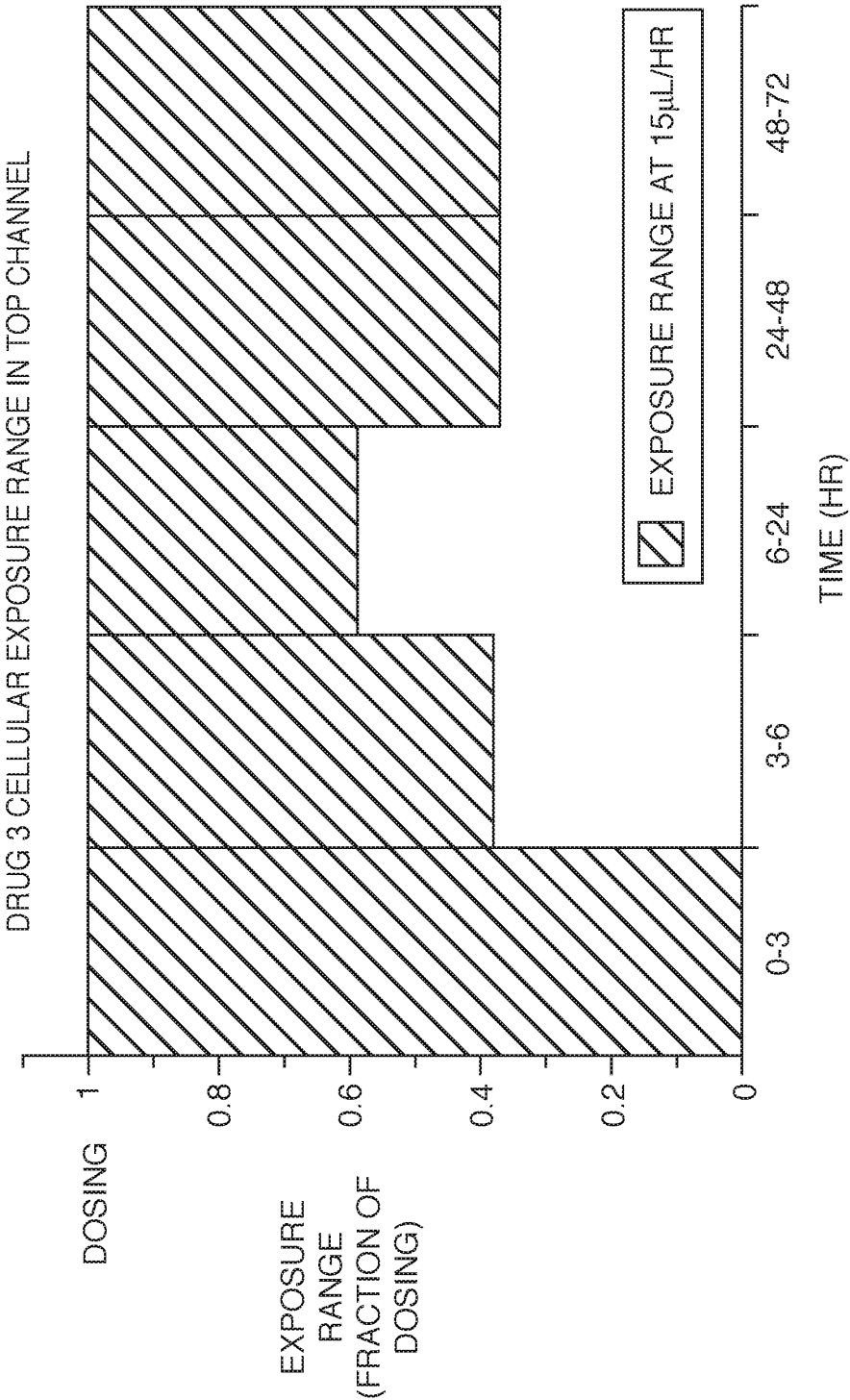


FIG. 109B

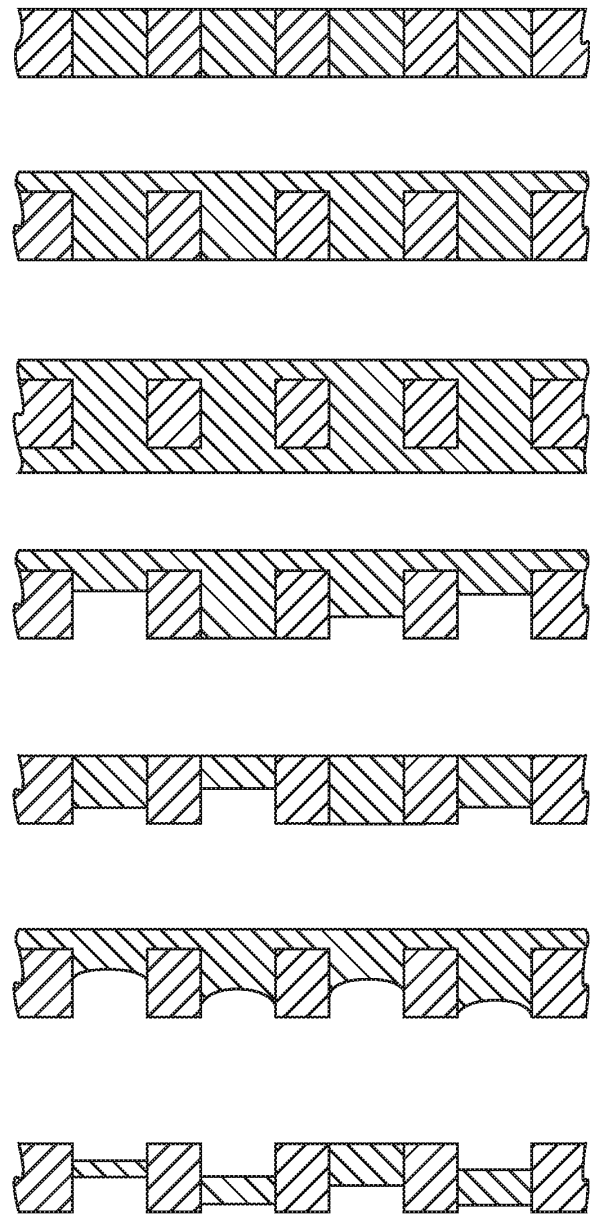


FIG. 110

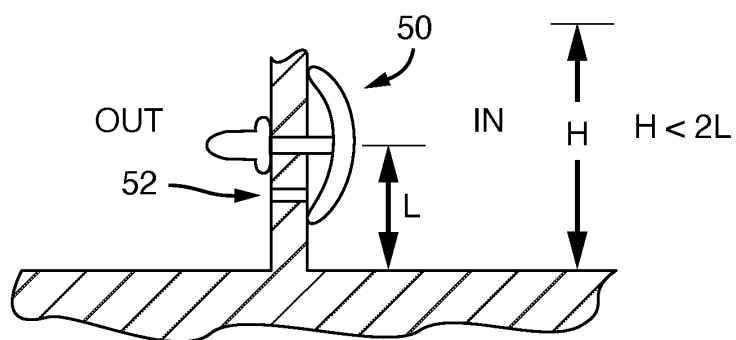


FIG. 111A

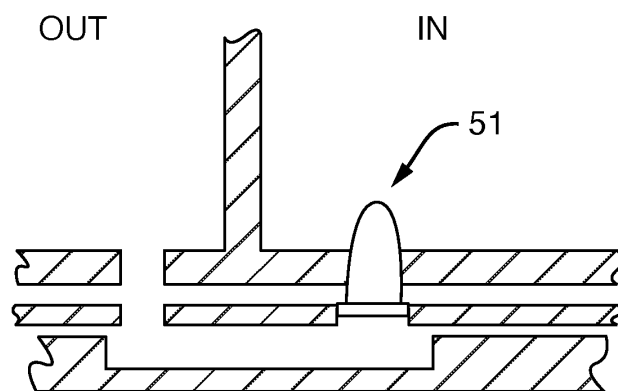


FIG. 111B

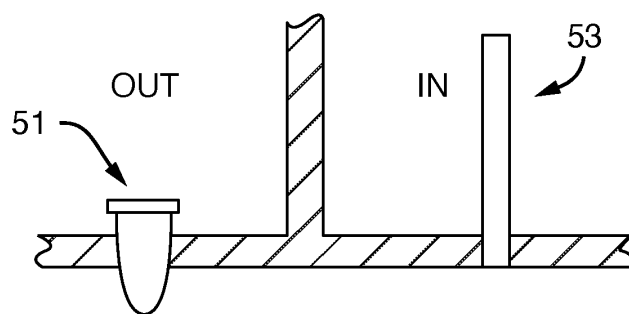


FIG. 111C

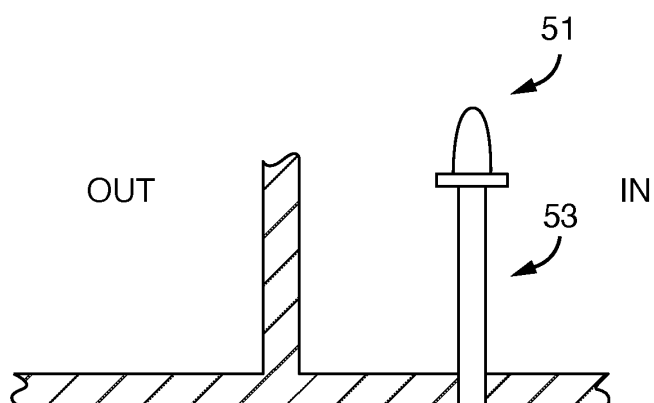


FIG. 111D

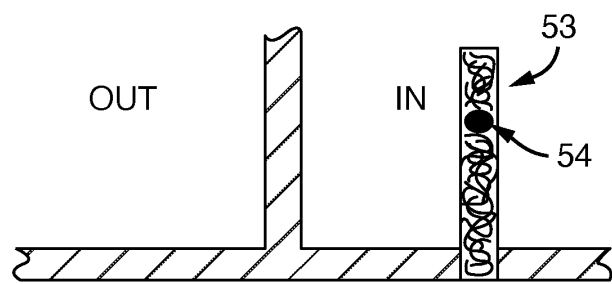


FIG. 111E

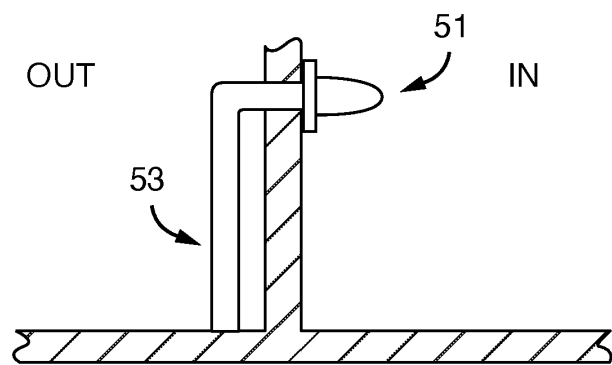


FIG. 111F

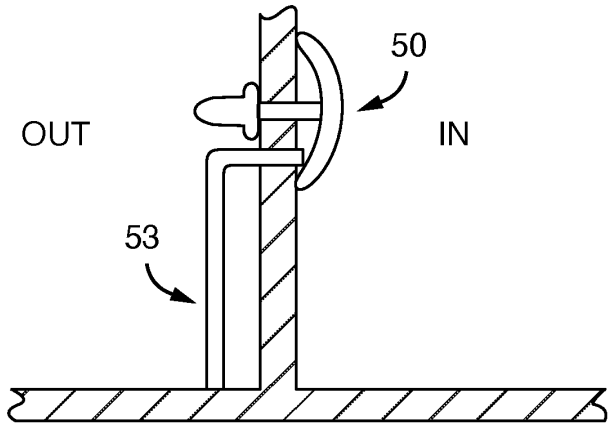


FIG. 111G

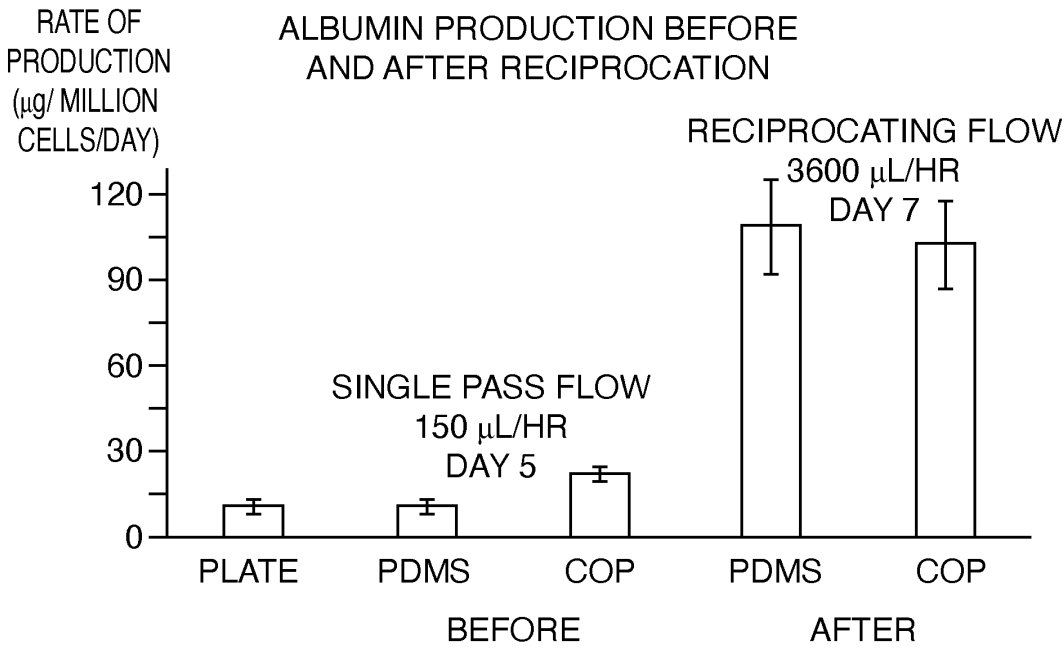


FIG. 112

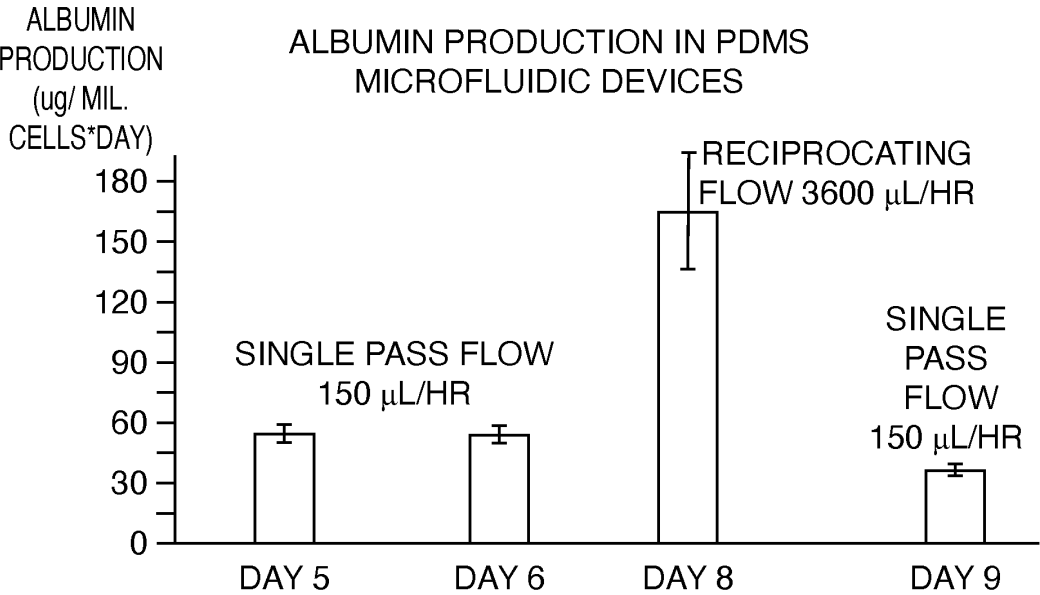


FIG. 113

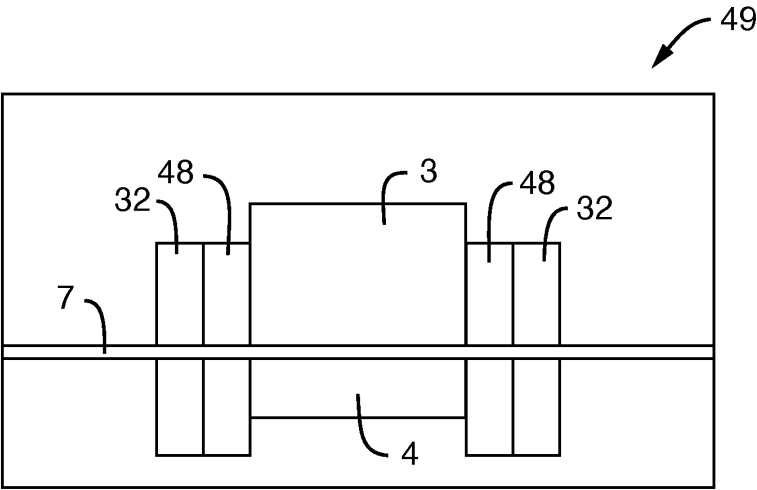


FIG. 114

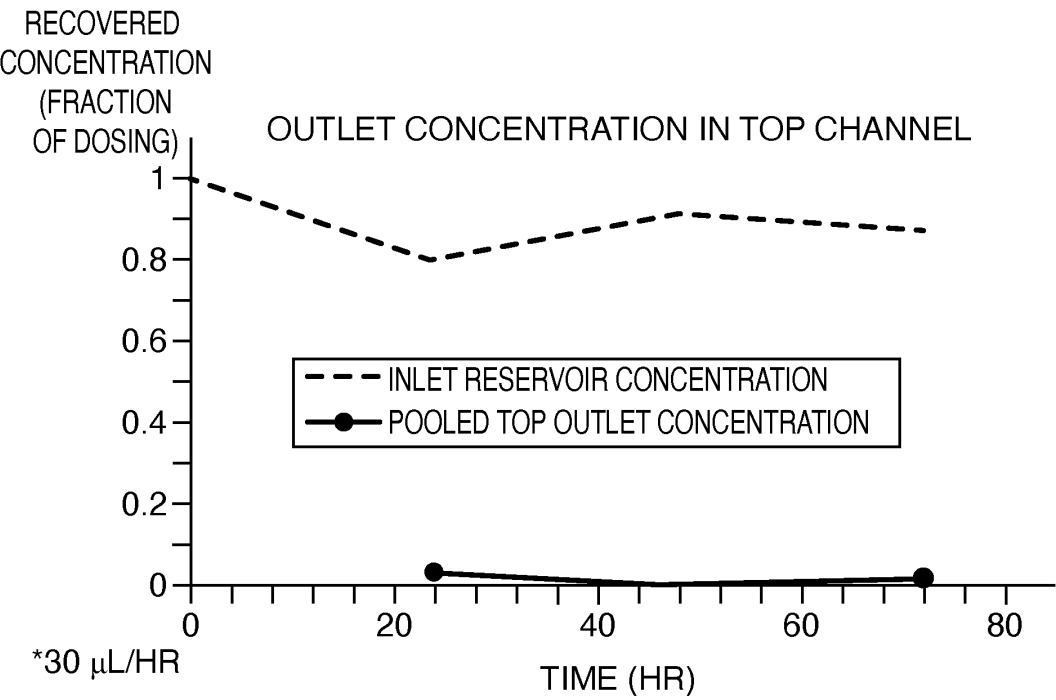


FIG. 115A

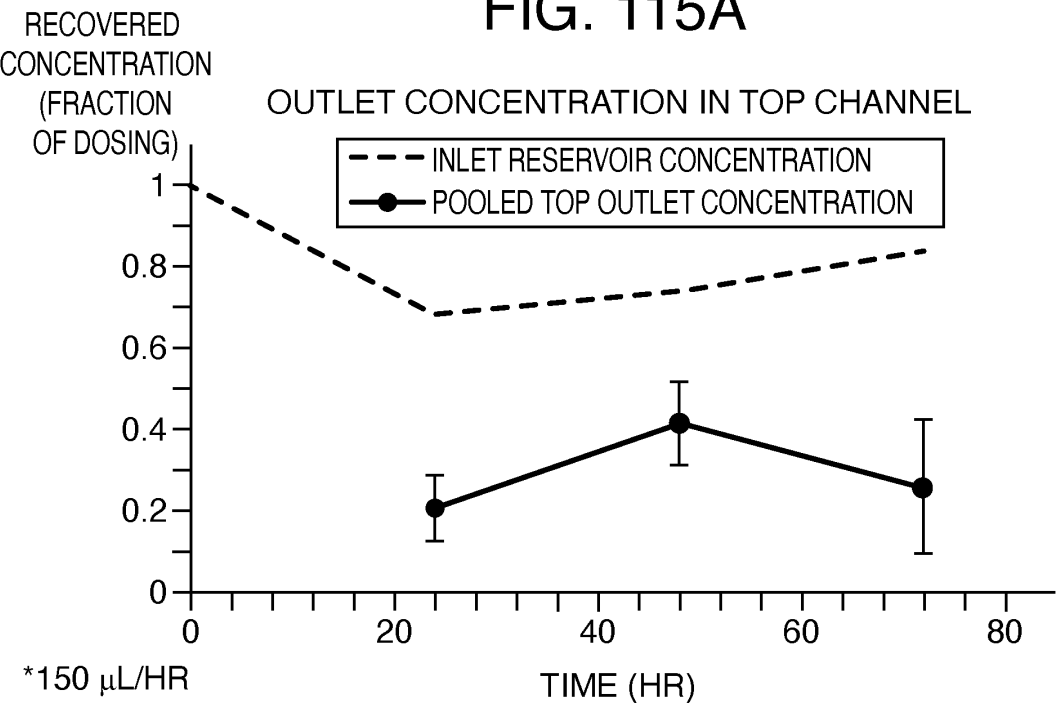


FIG. 115B

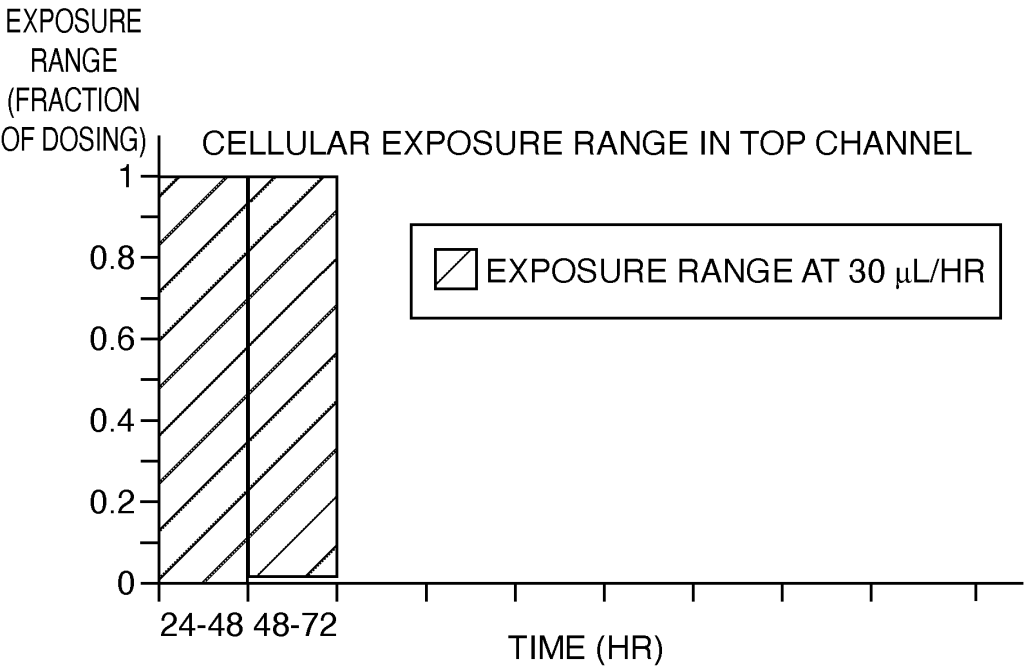


FIG. 115C

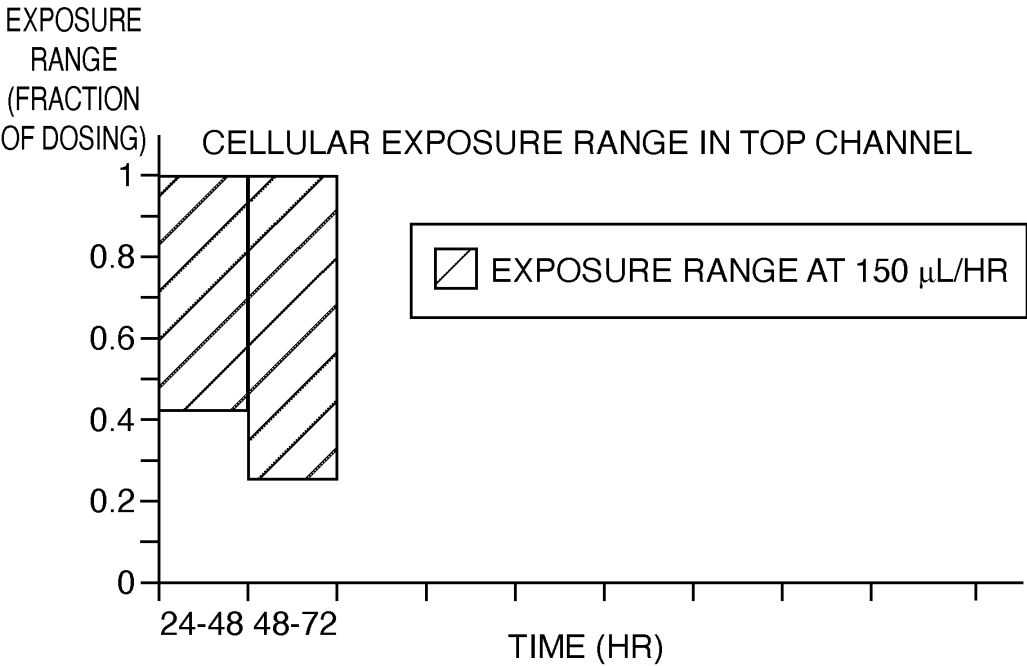


FIG. 115D

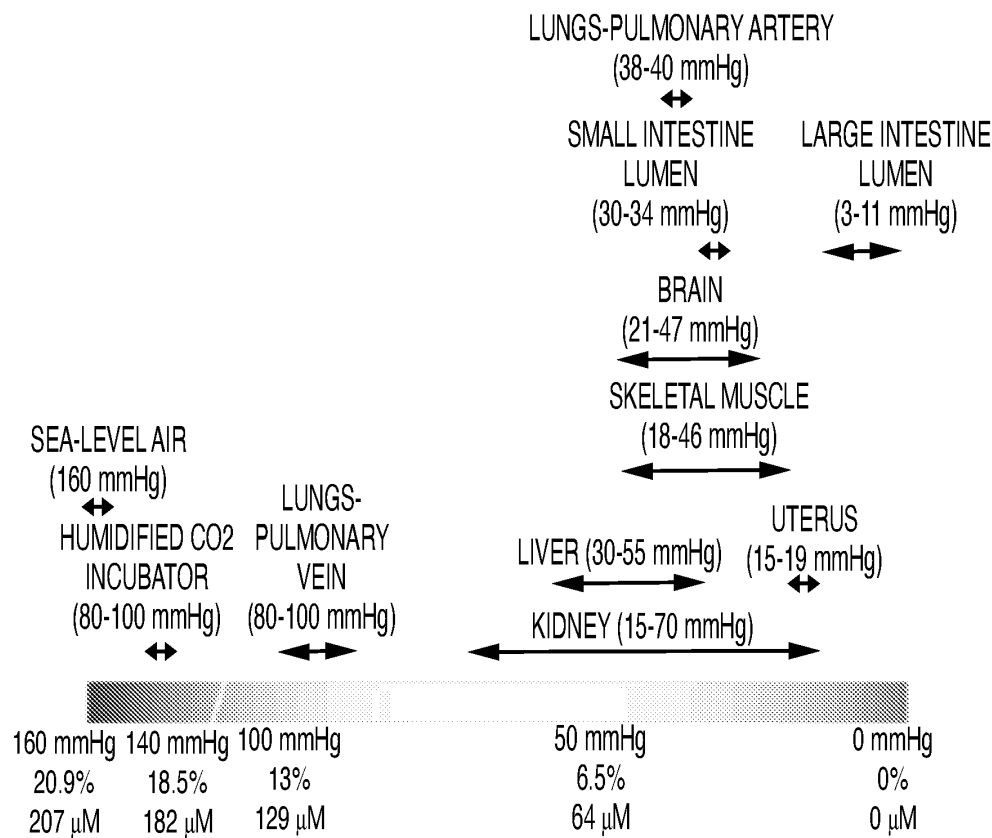


FIG. 116

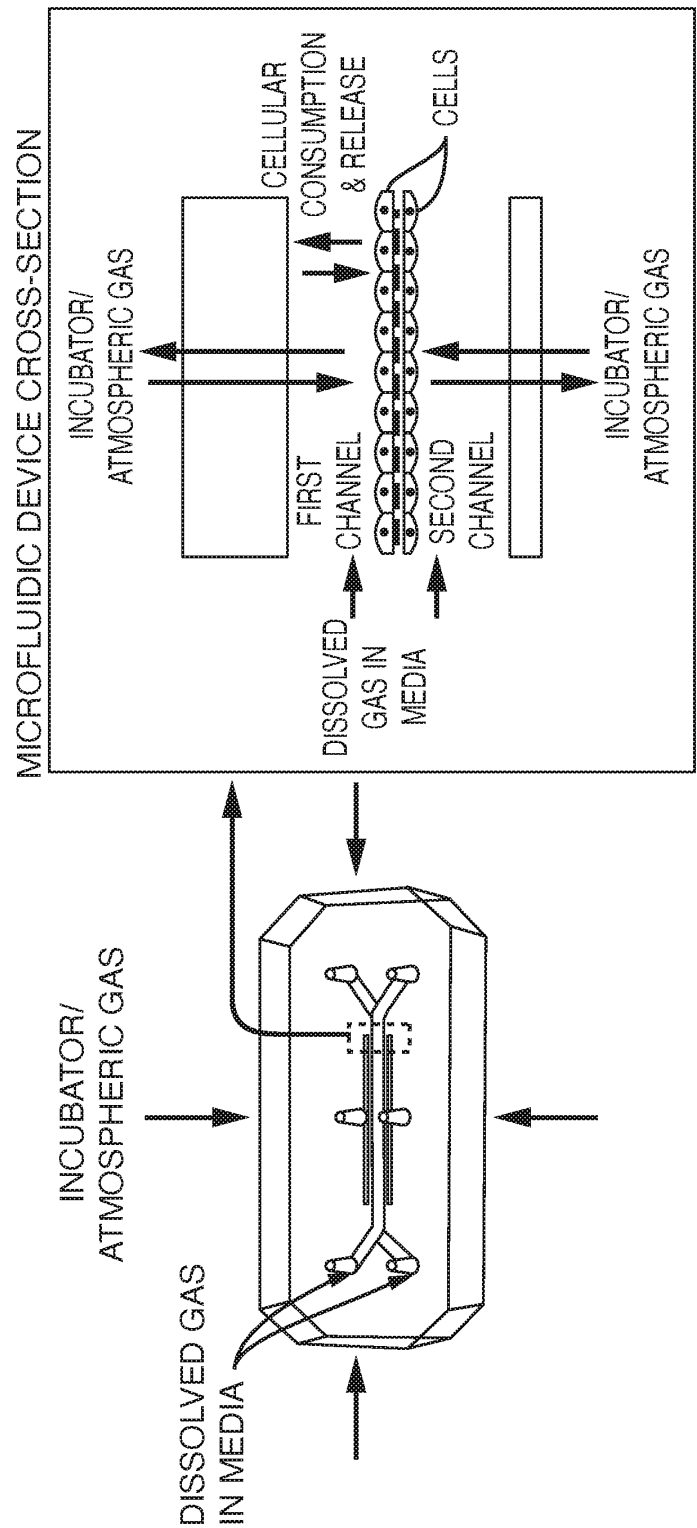


FIG. 117

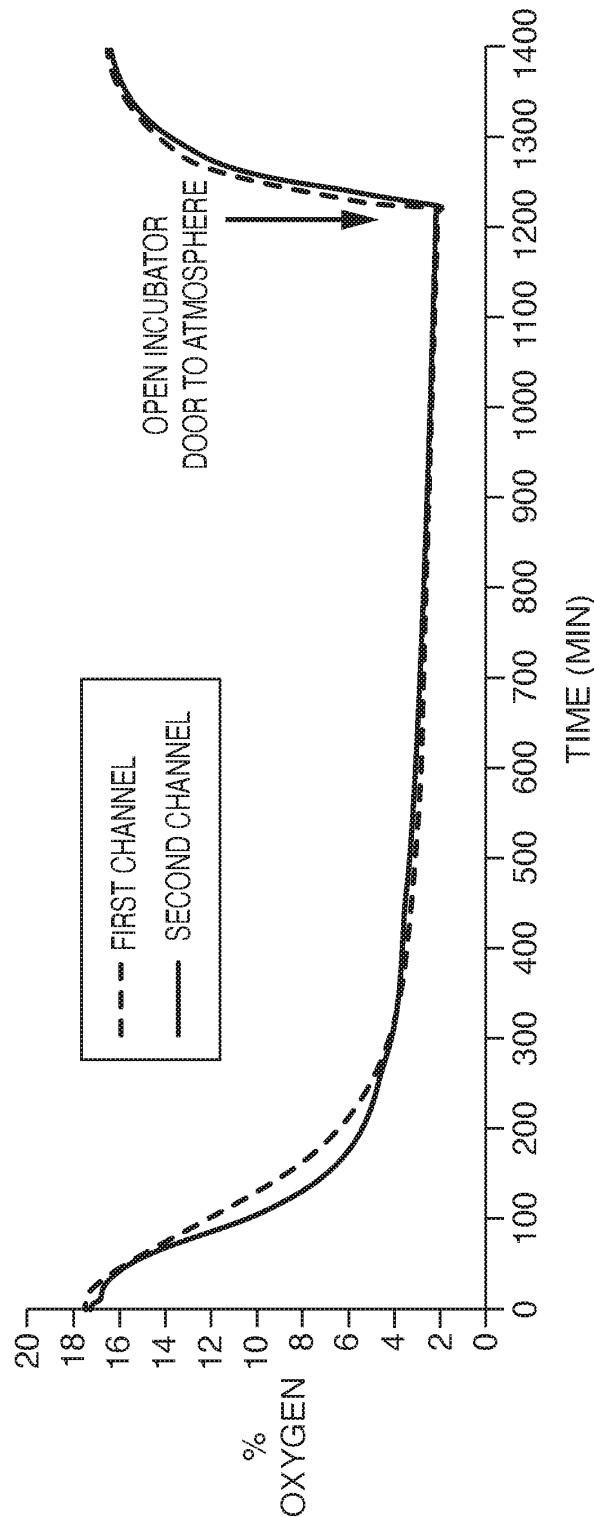


FIG. 118

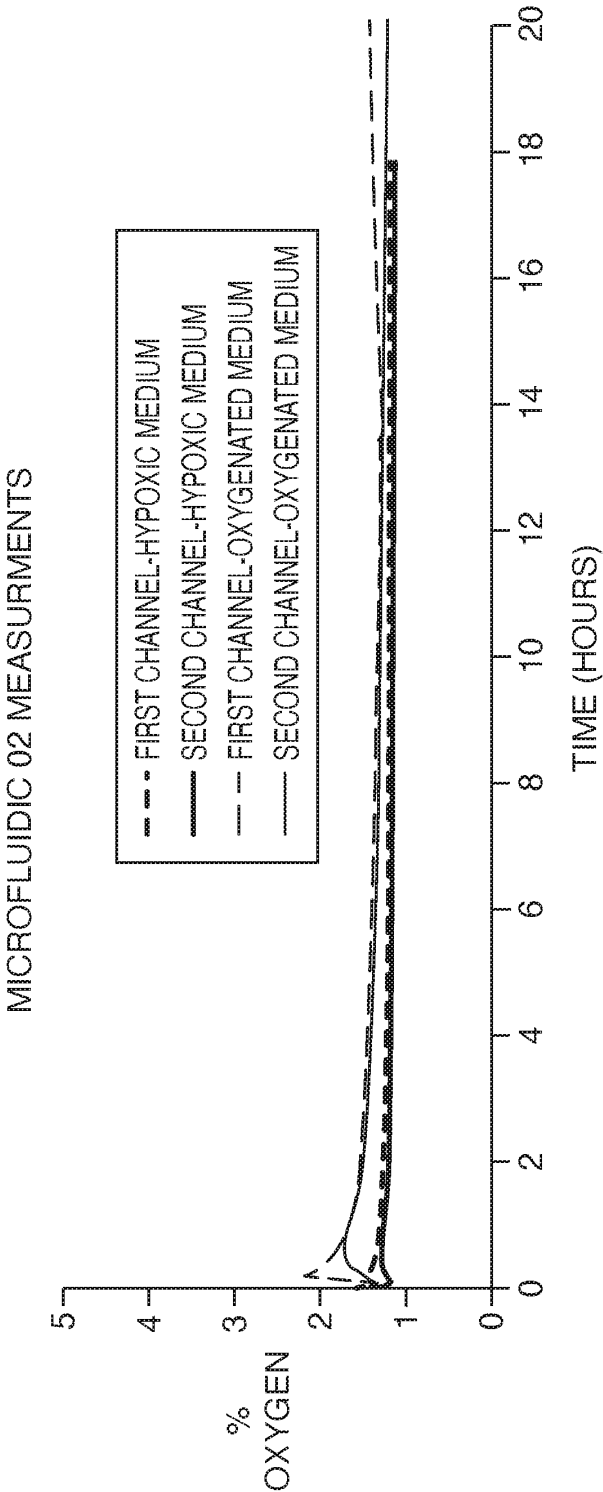


FIG. 119

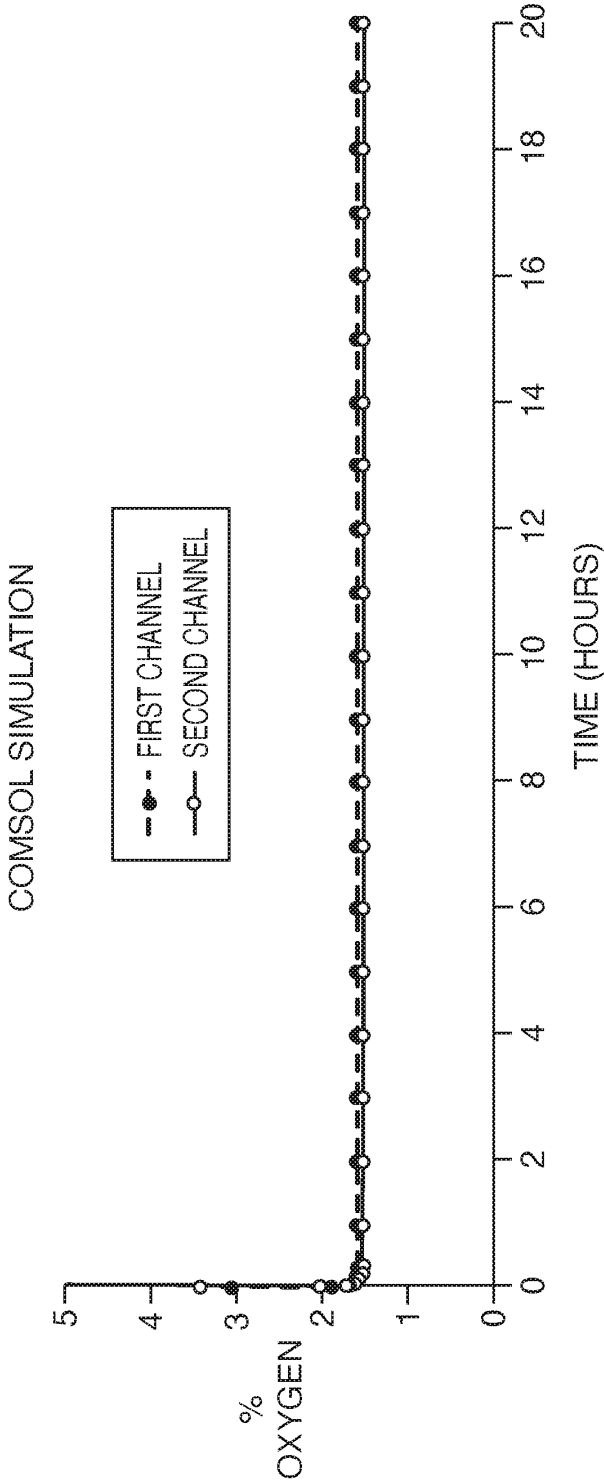


FIG. 120

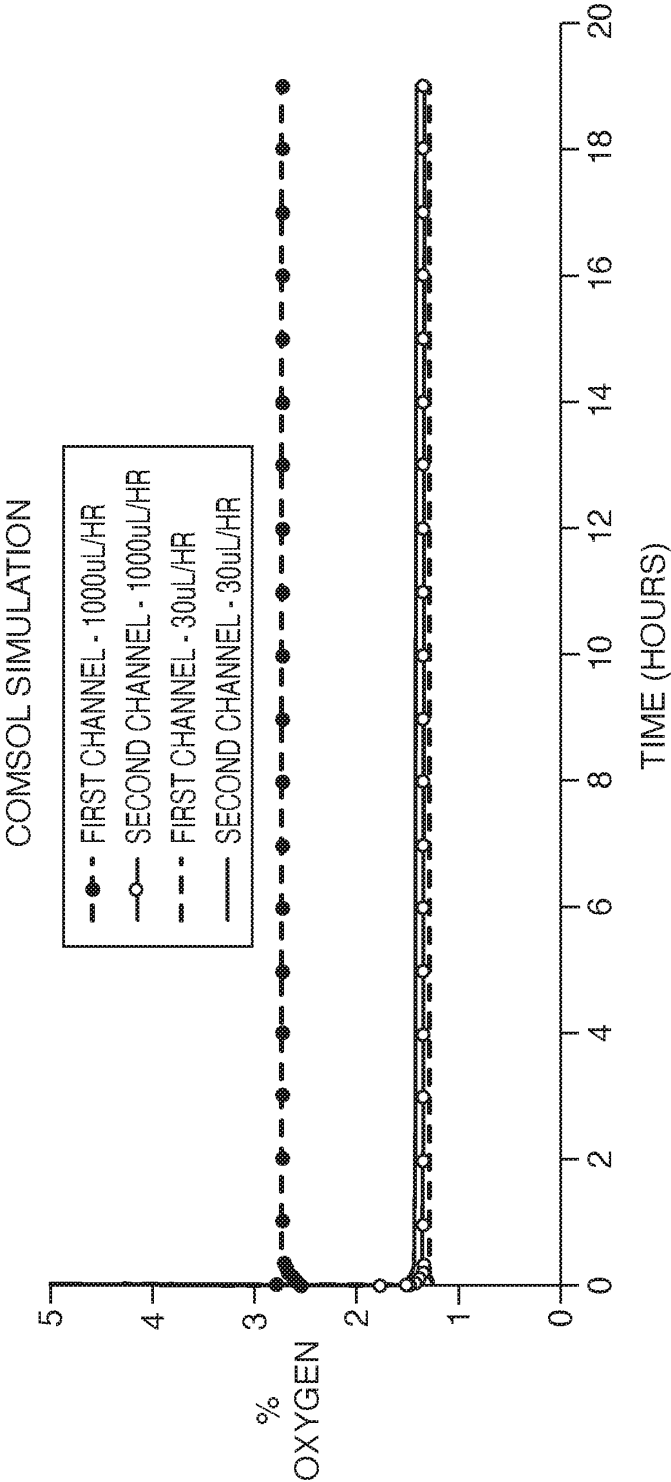


FIG. 121

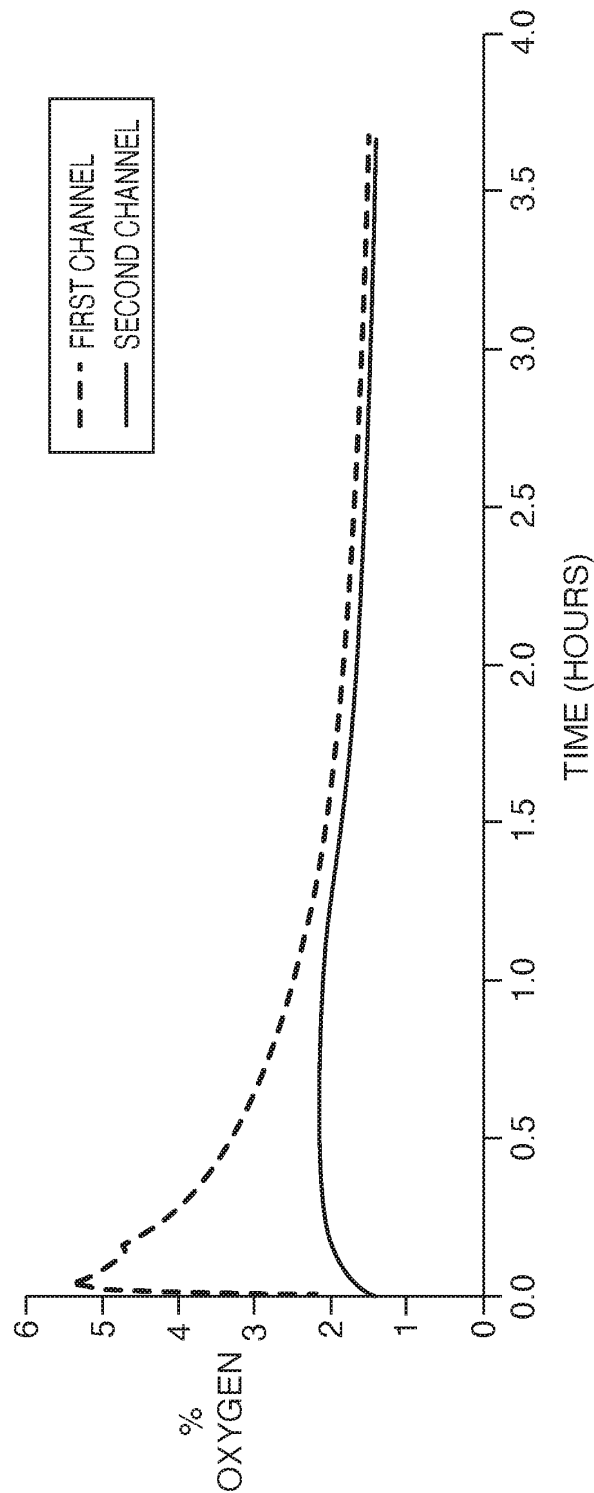


FIG. 122

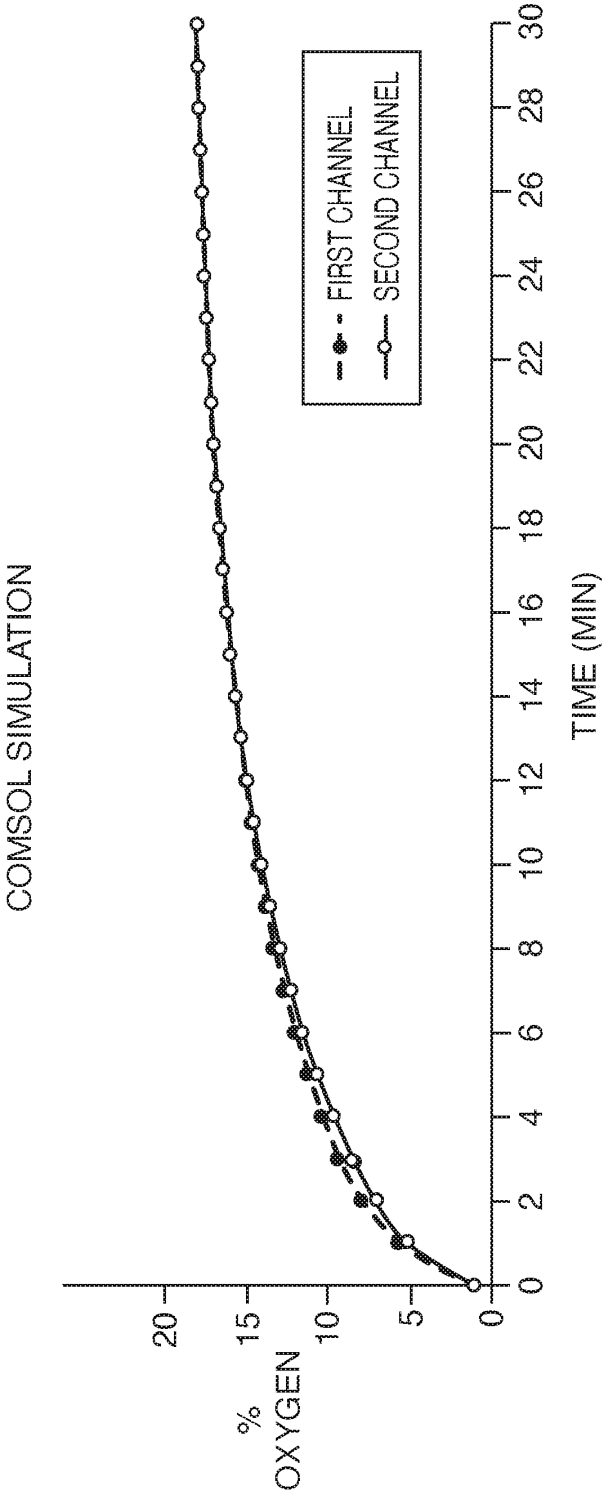


FIG. 123

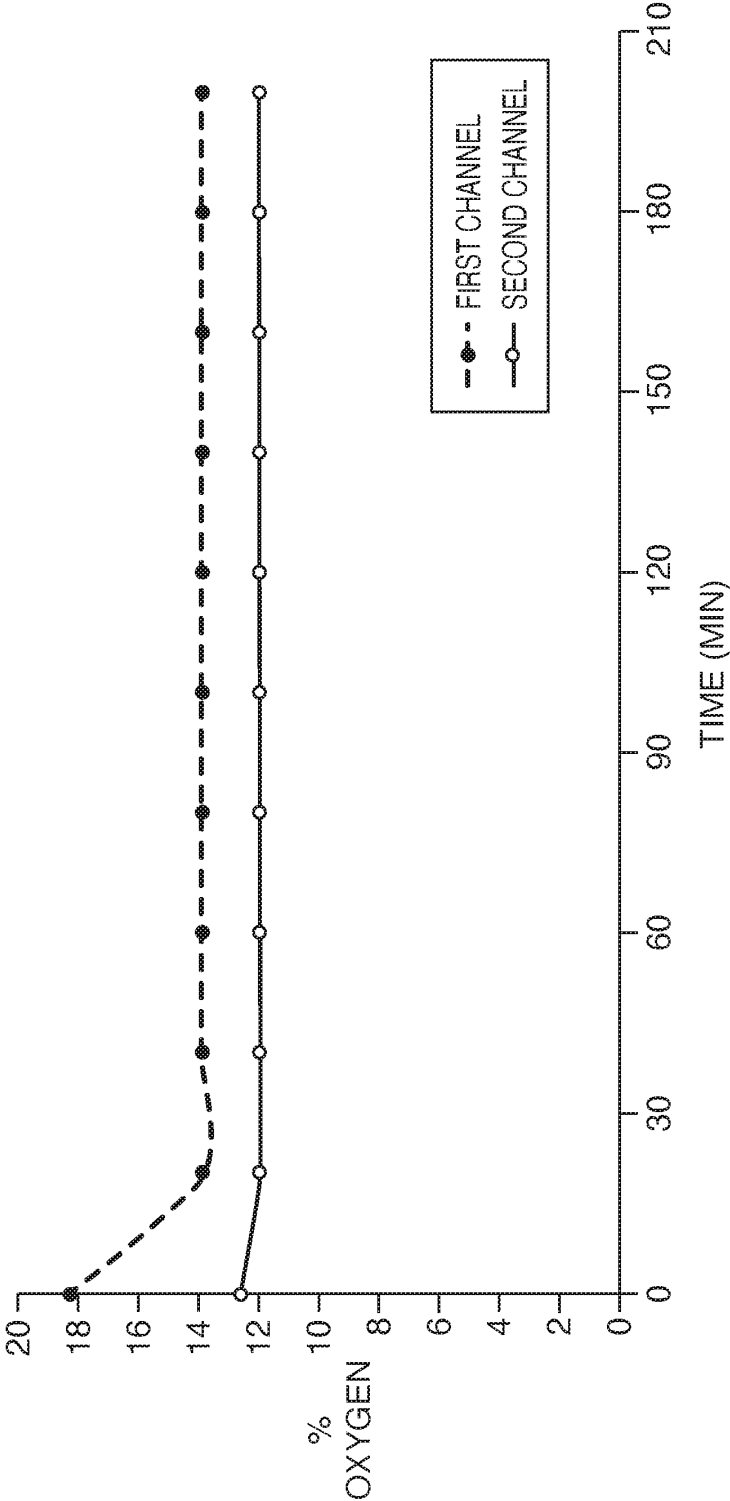


FIG. 124

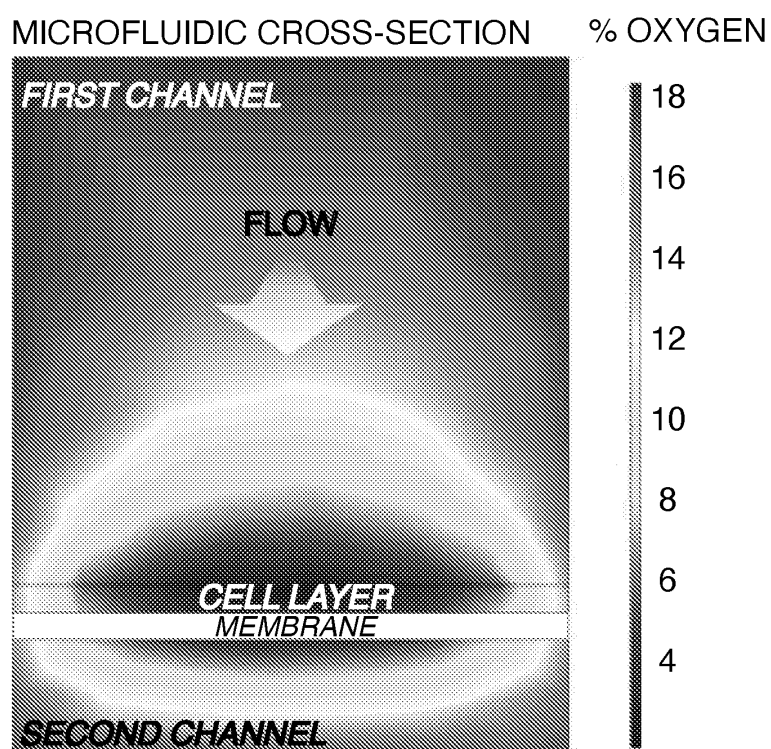


FIG. 125

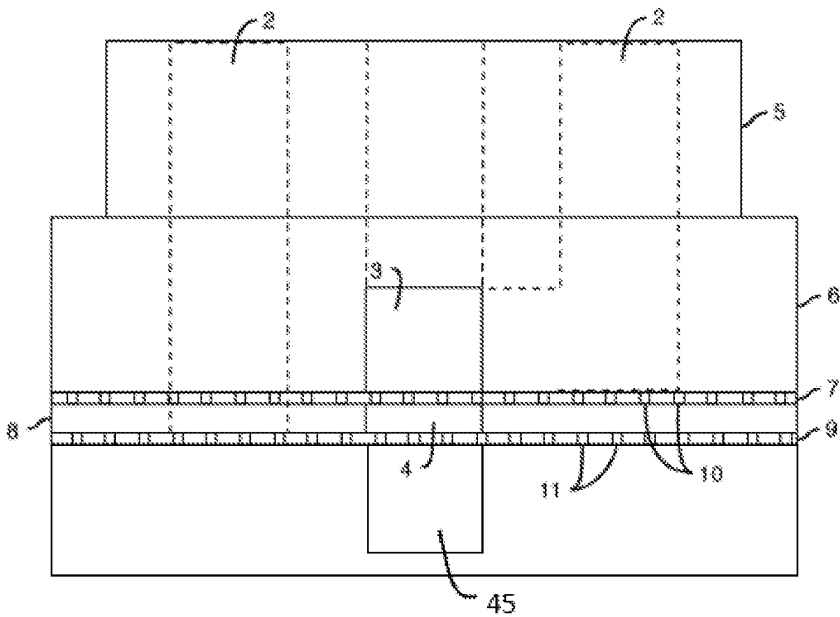


FIG. 126