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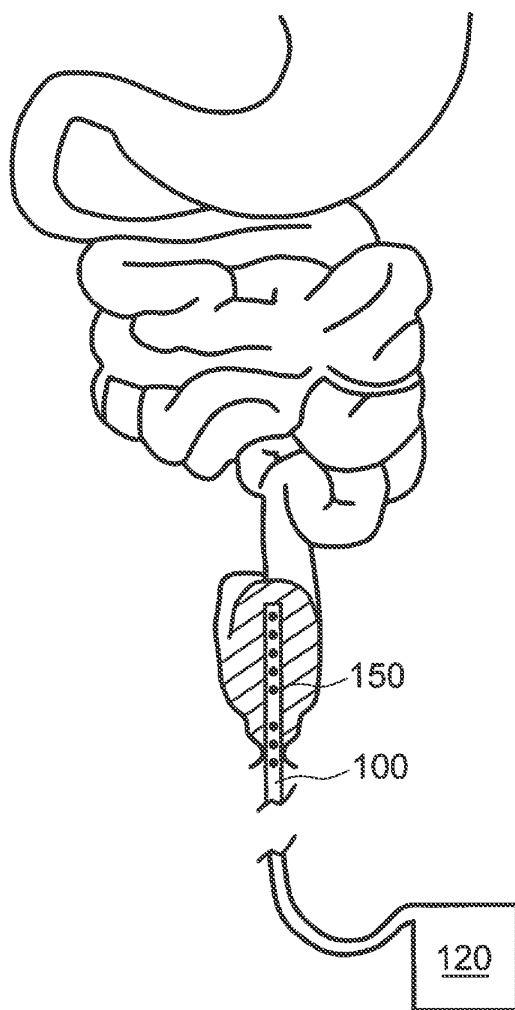


FIG. 1A

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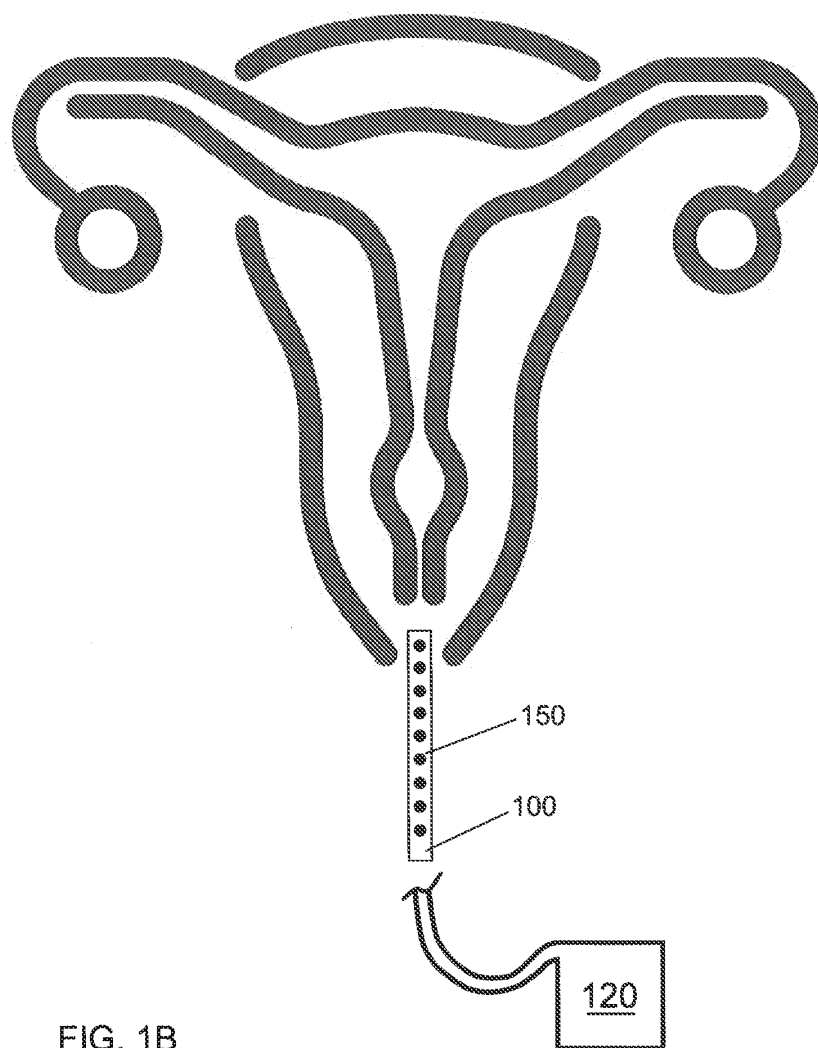


FIG. 1B

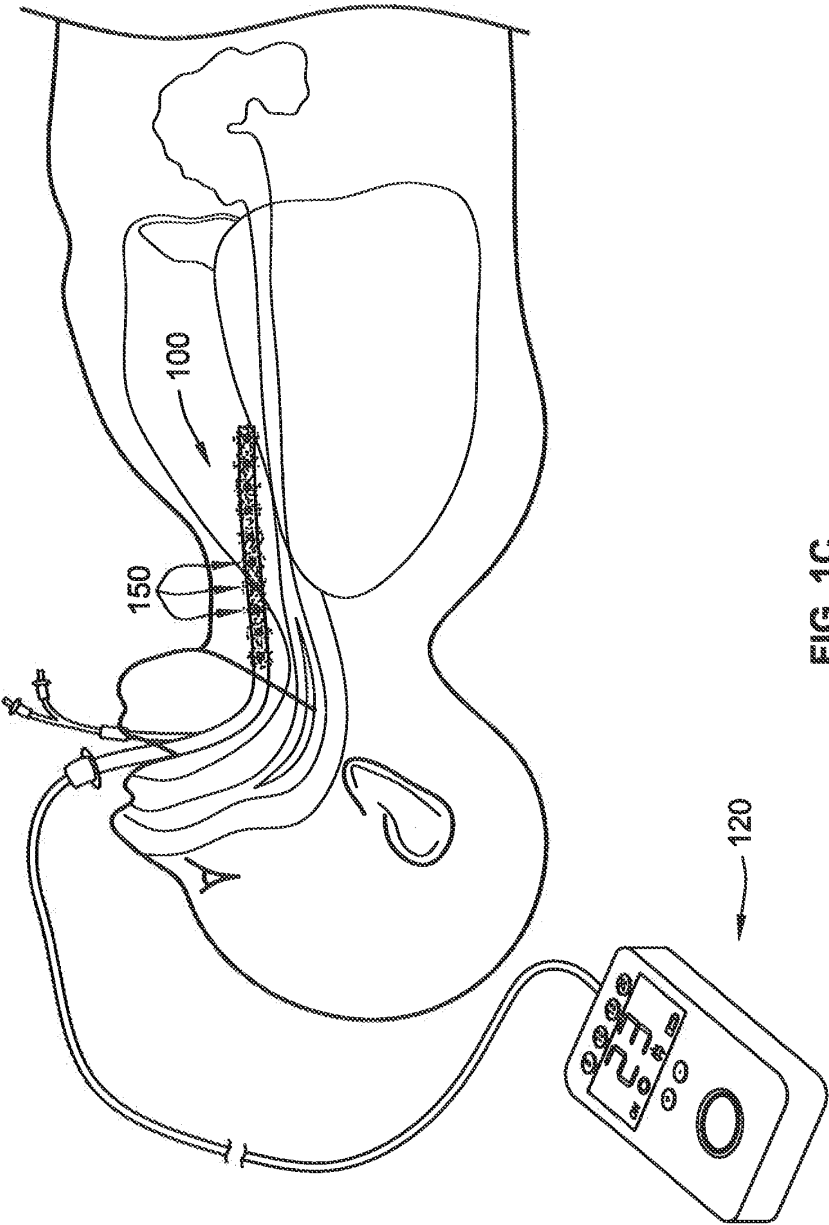


FIG. 1C

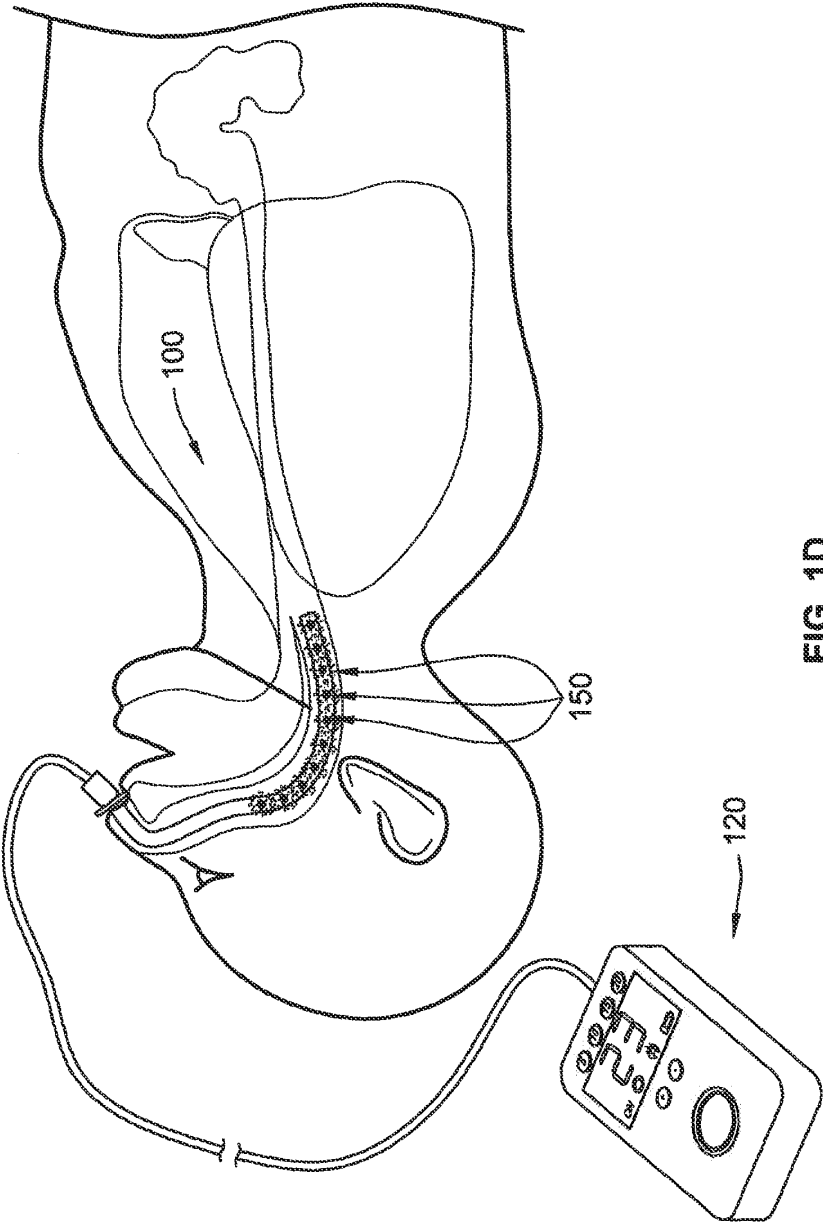


FIG. 1D

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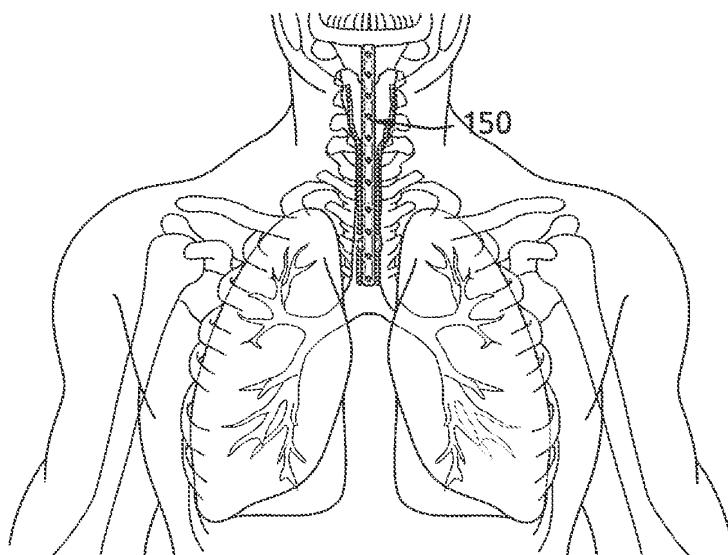


FIG. 1E

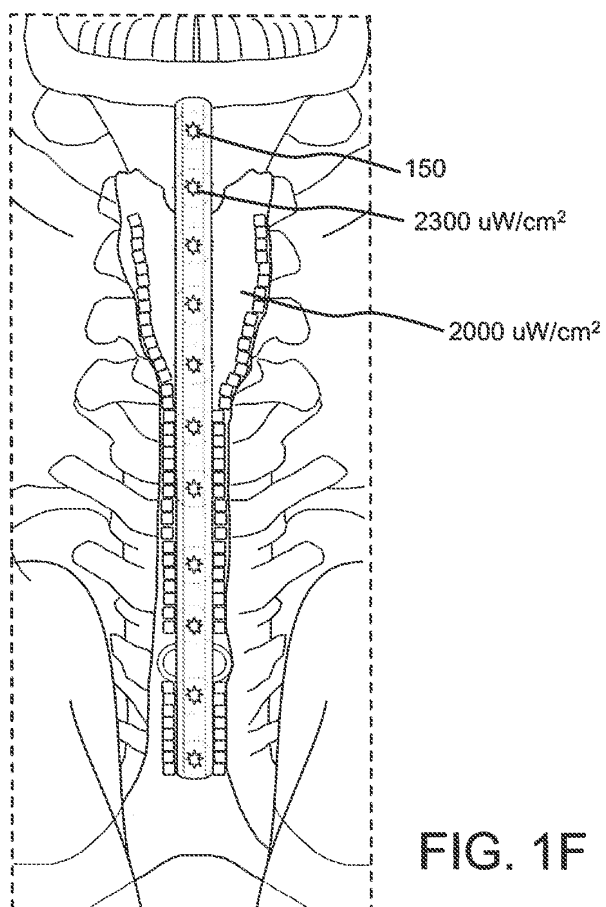


FIG. 1F

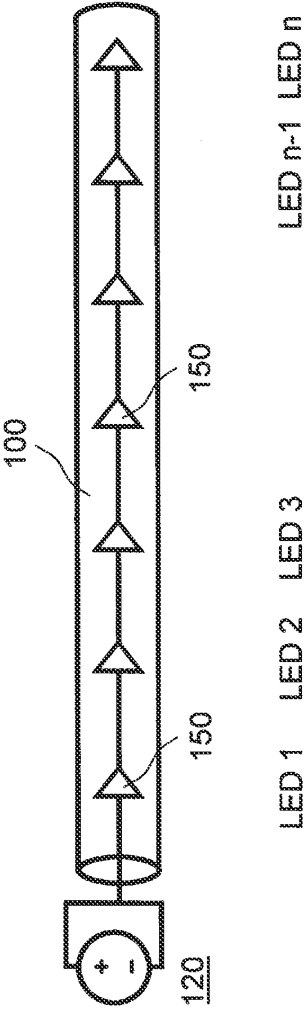


FIG. 2

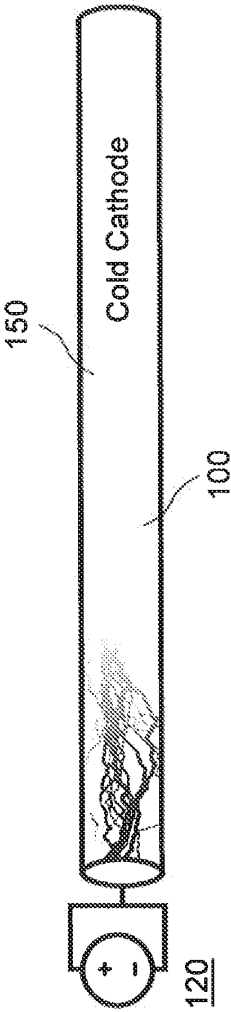


FIG. 3

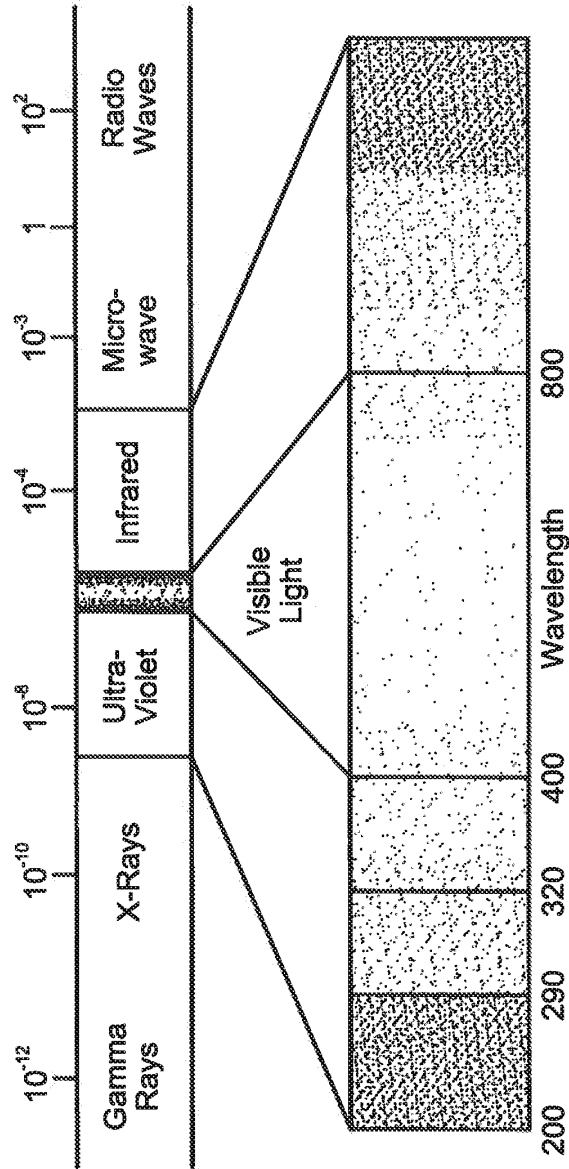


FIG. 4

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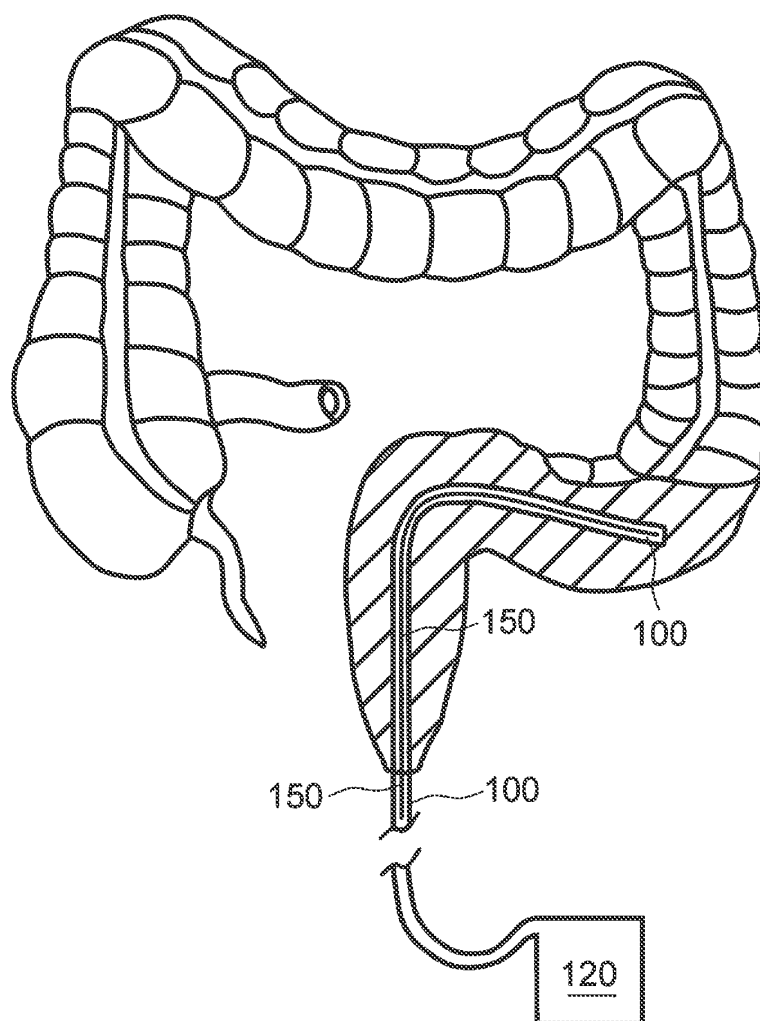


FIG. 5

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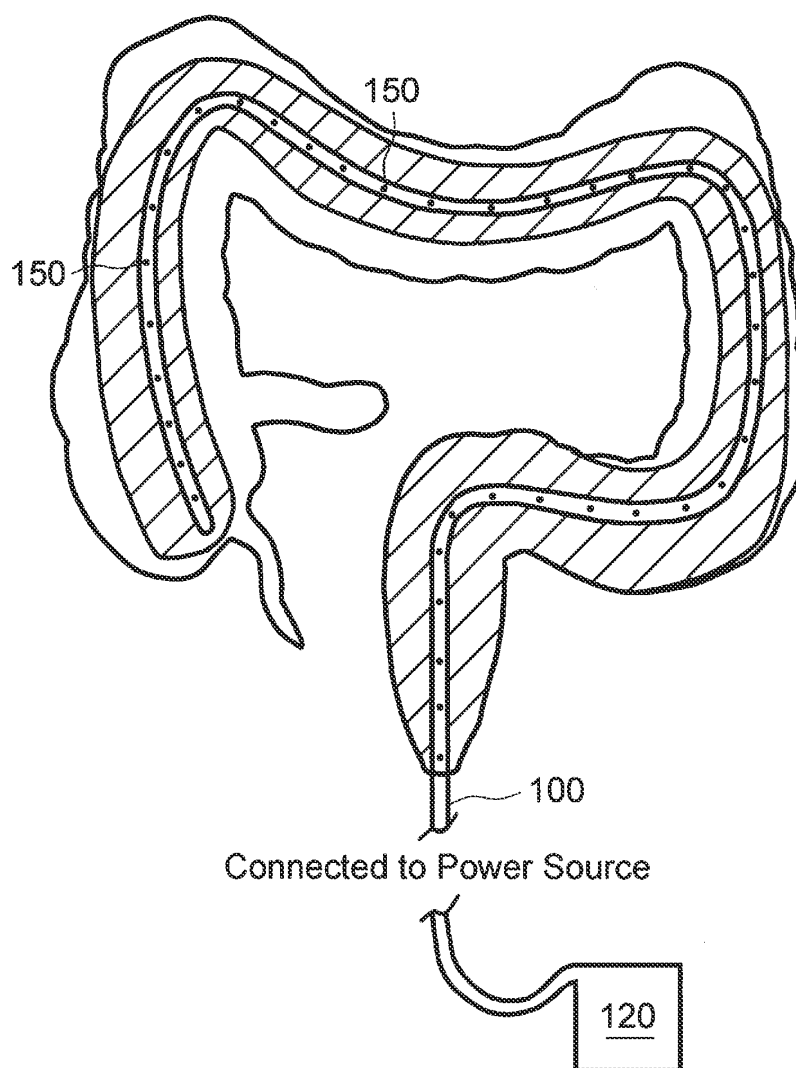


FIG. 6

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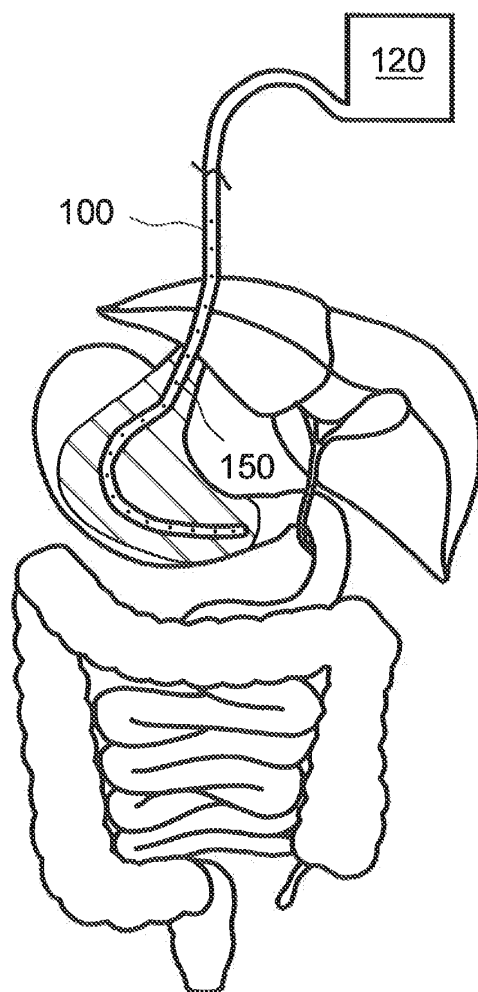


FIG. 7

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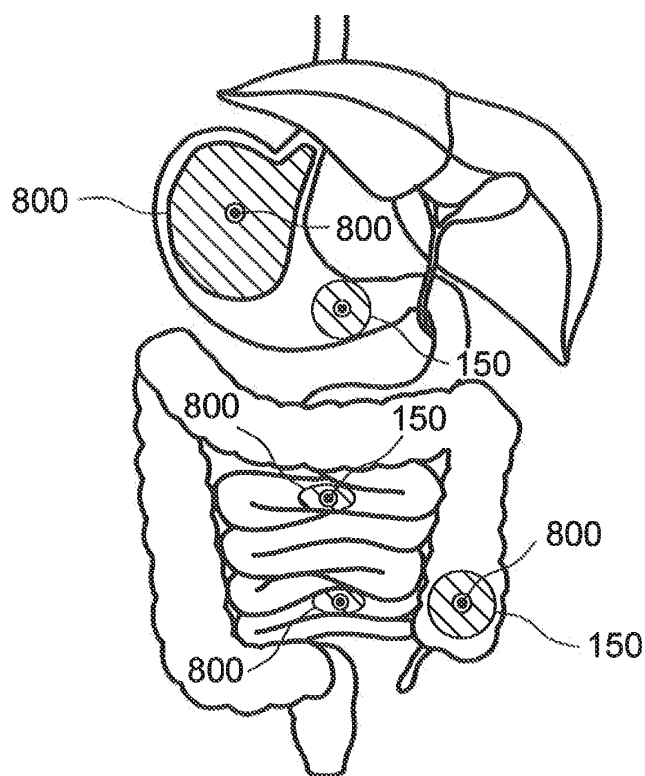


FIG. 8

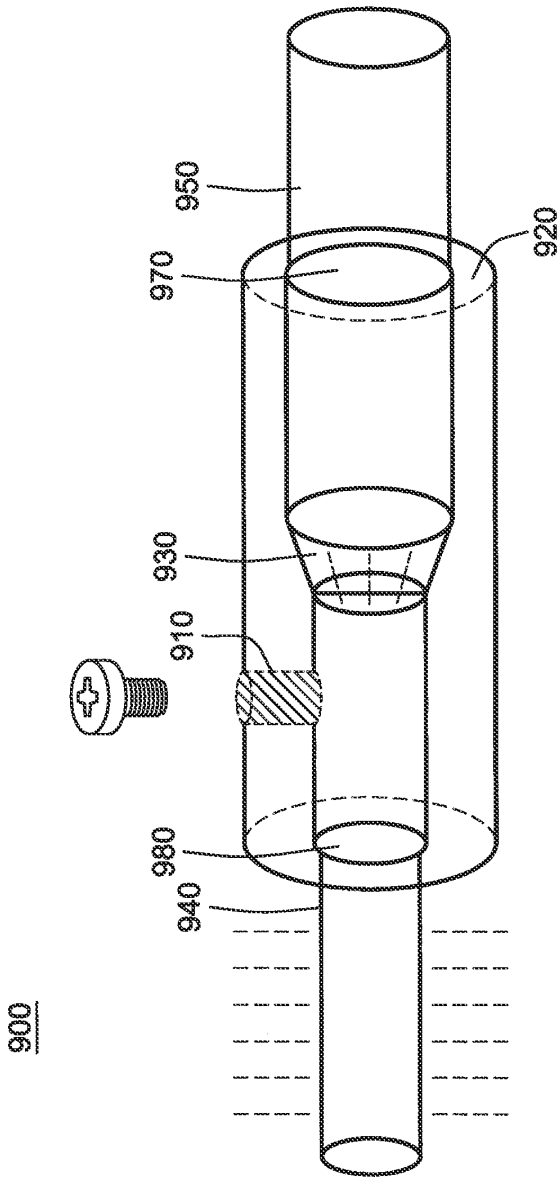
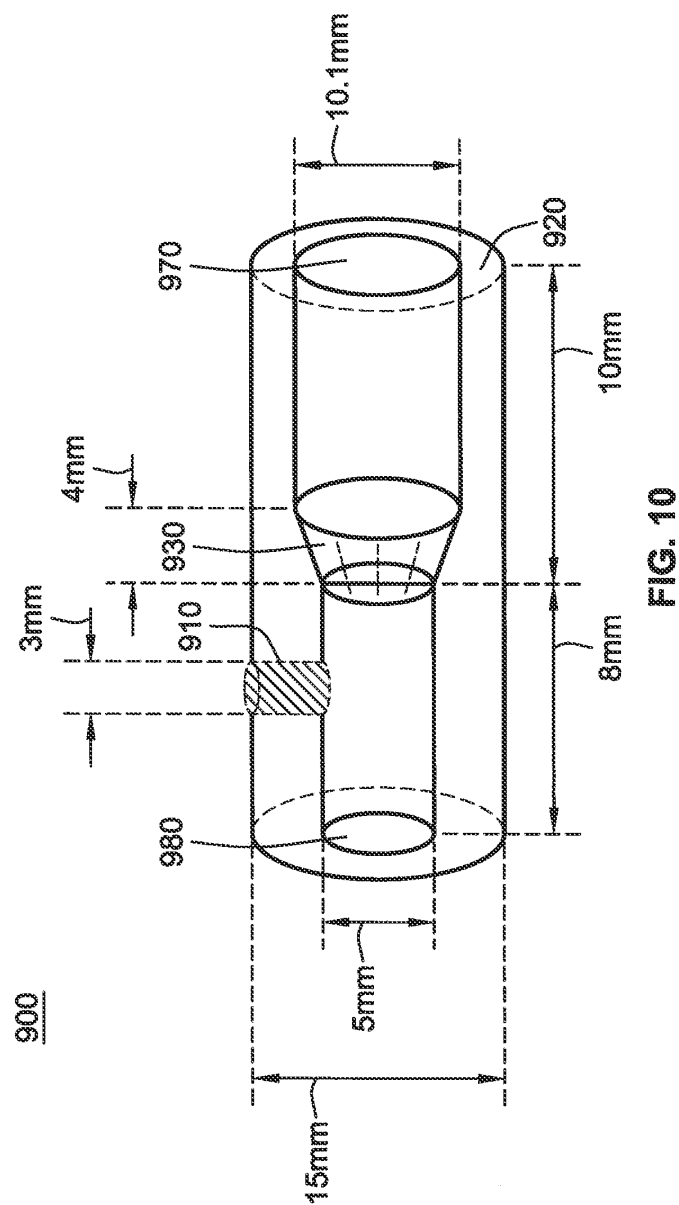


FIG. 9



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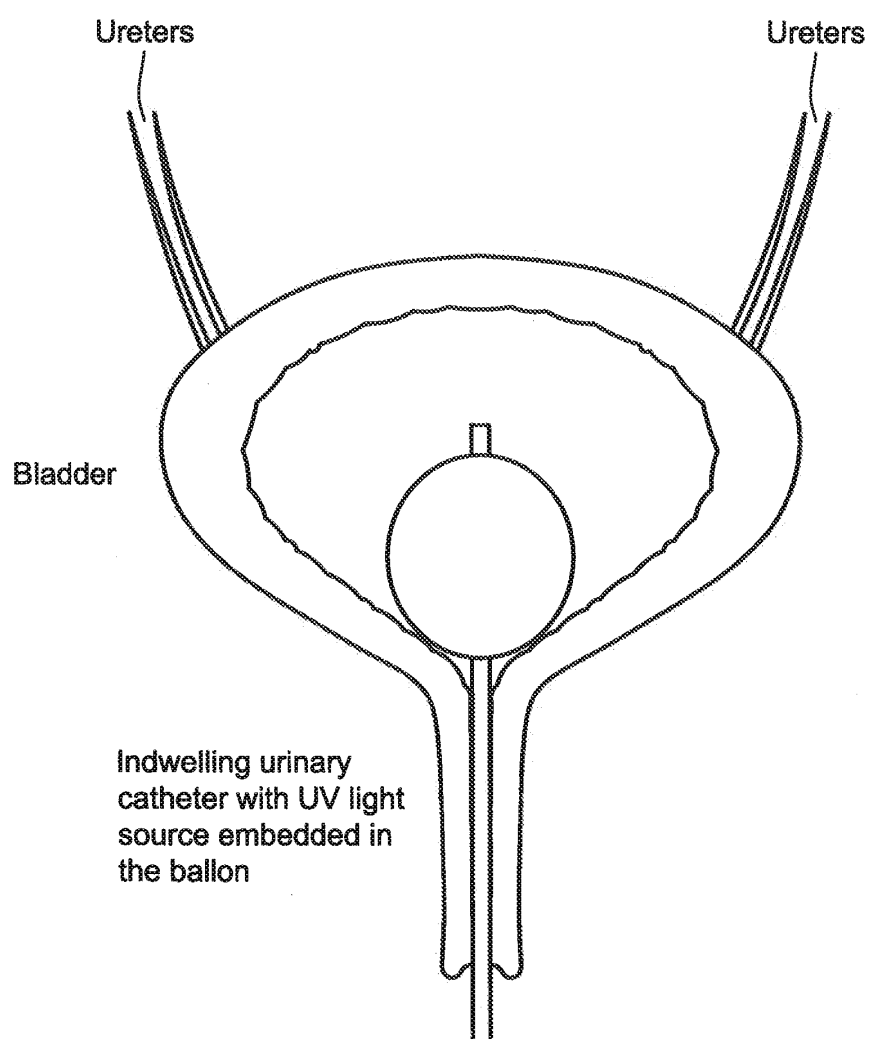


FIG. 11

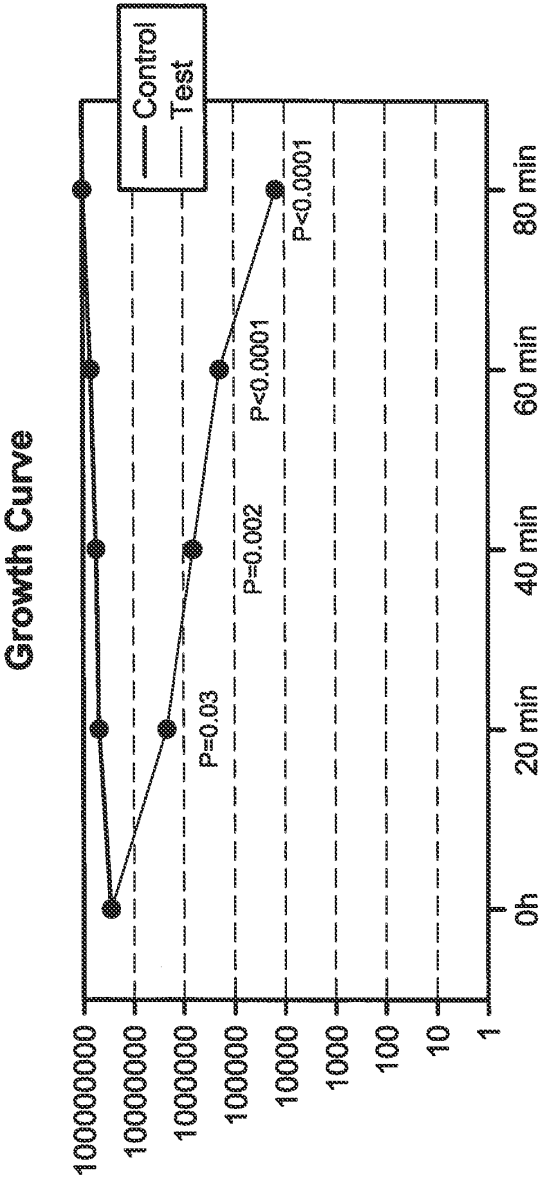


FIG. 12A

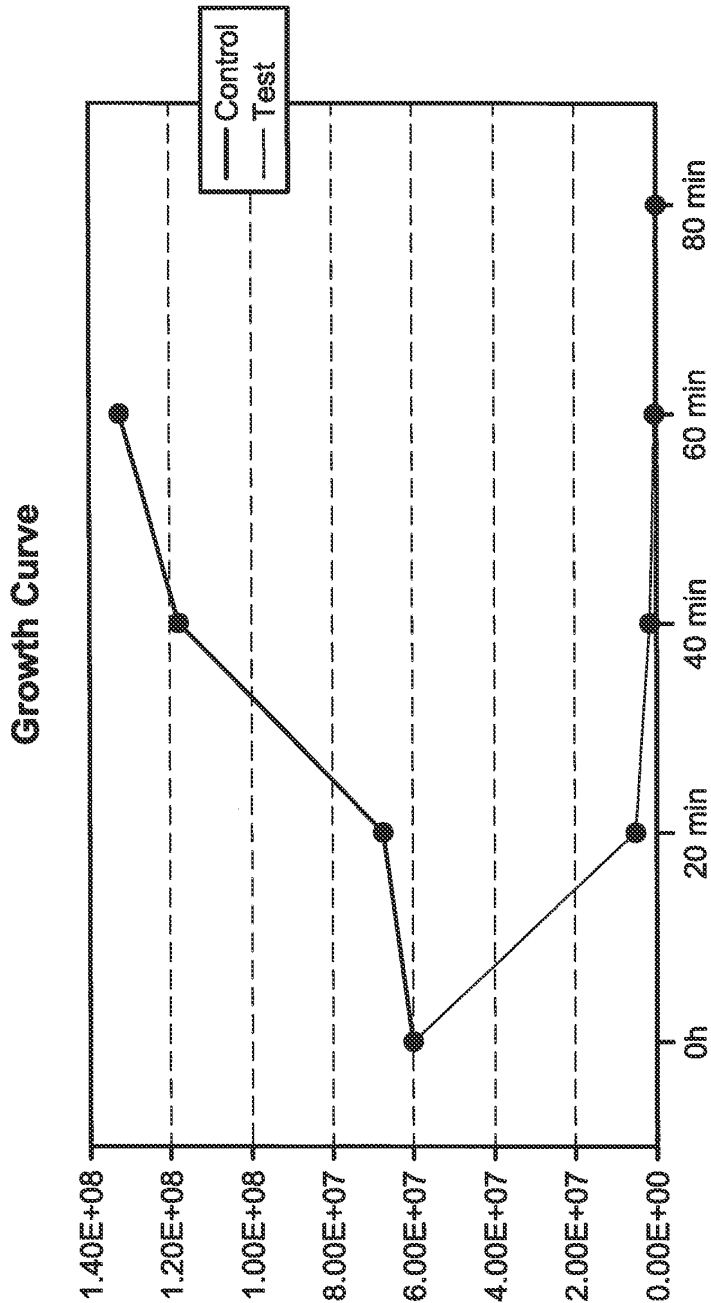


FIG. 12B

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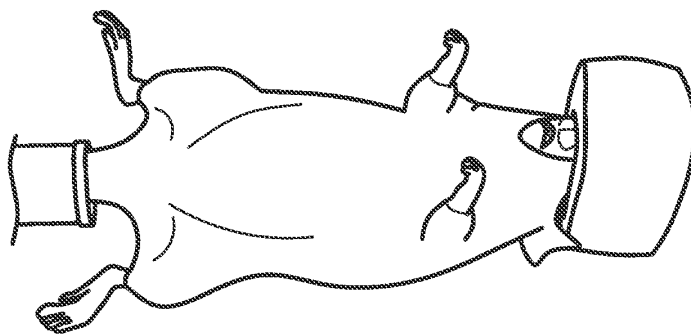


FIG. 13

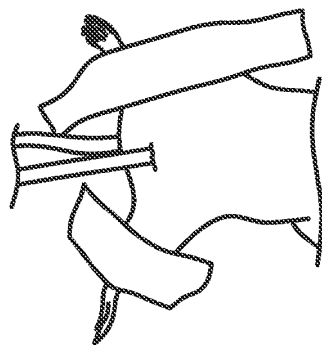
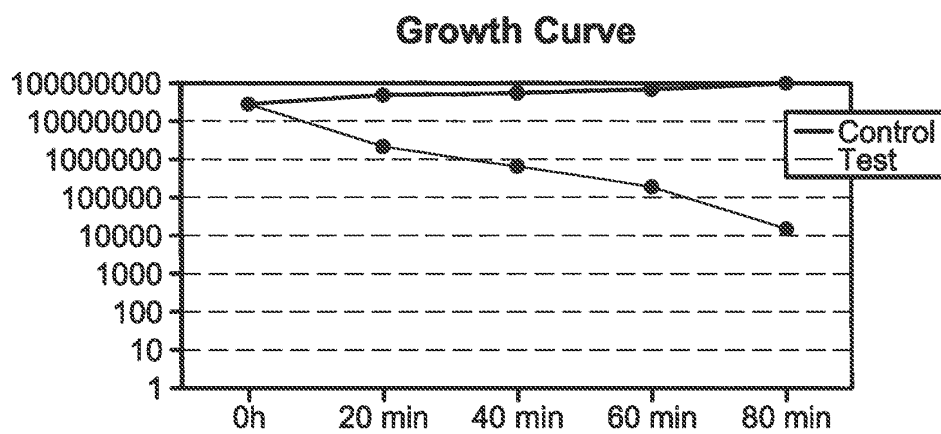
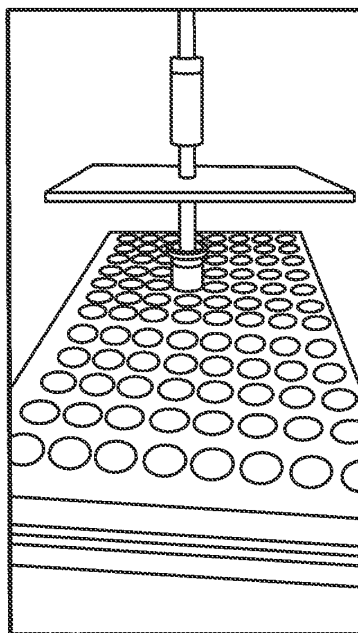


FIG. 14A

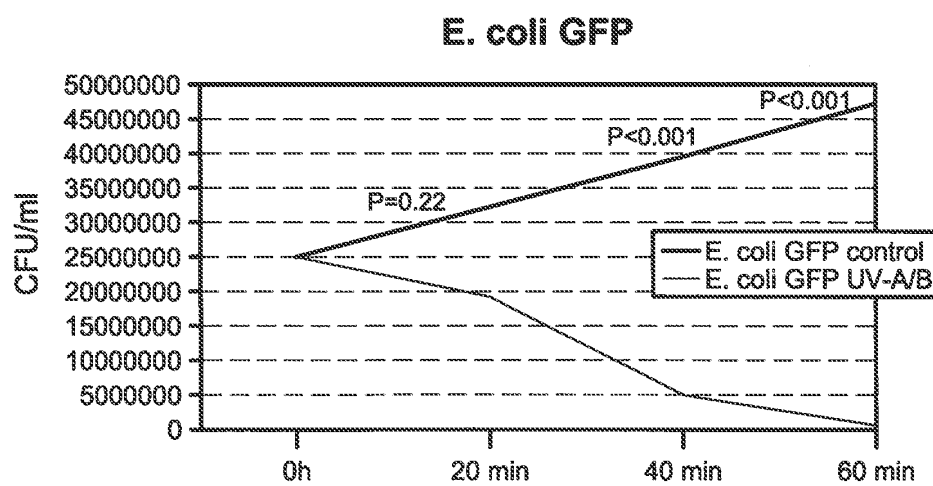


FIG. 14B

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**FIG. 15A****FIG. 15B**

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**FIG. 16**

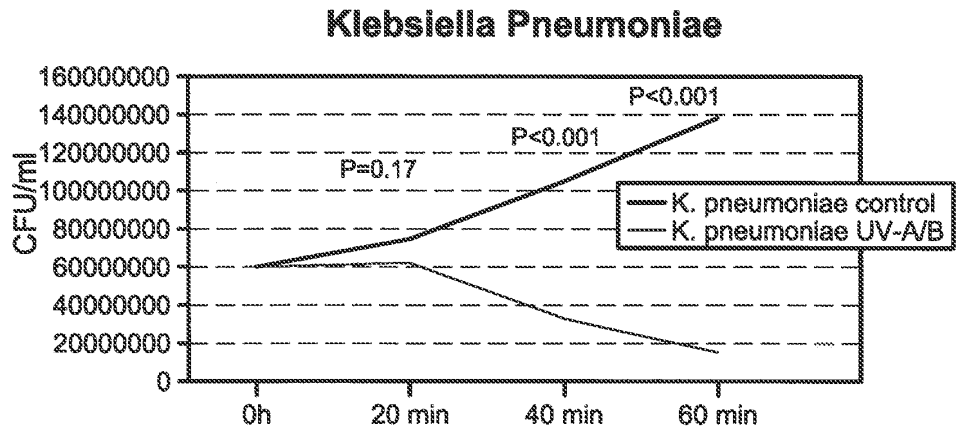


FIG. 17A

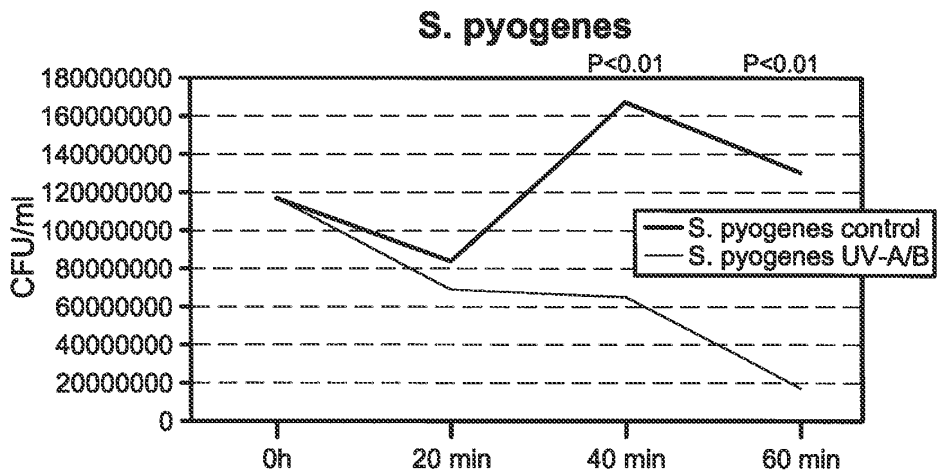


FIG. 17B

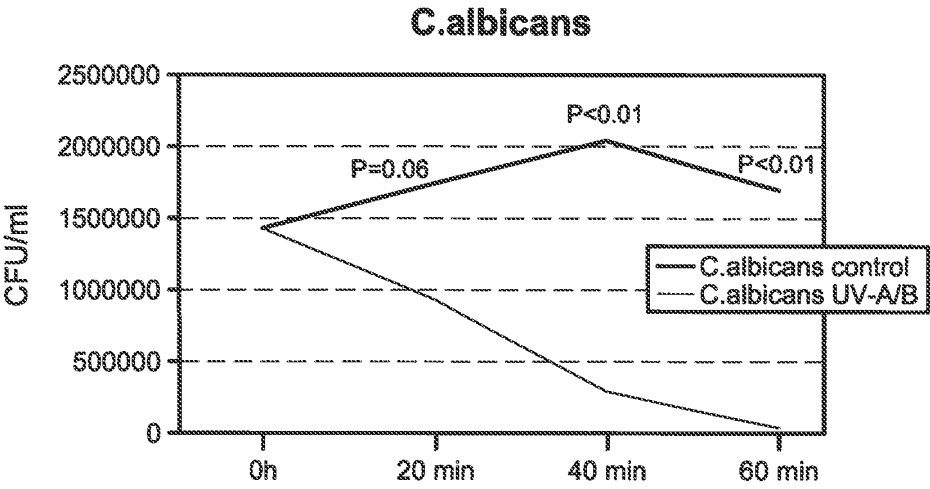


FIG. 18

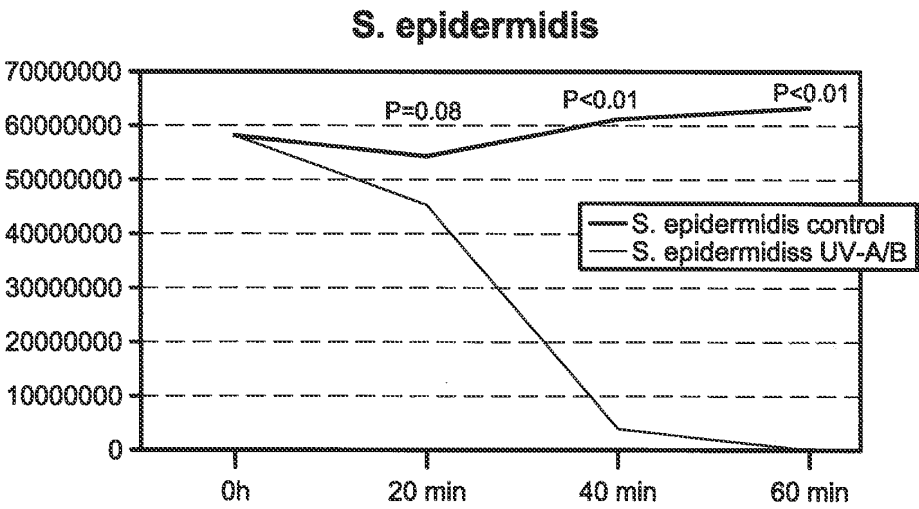
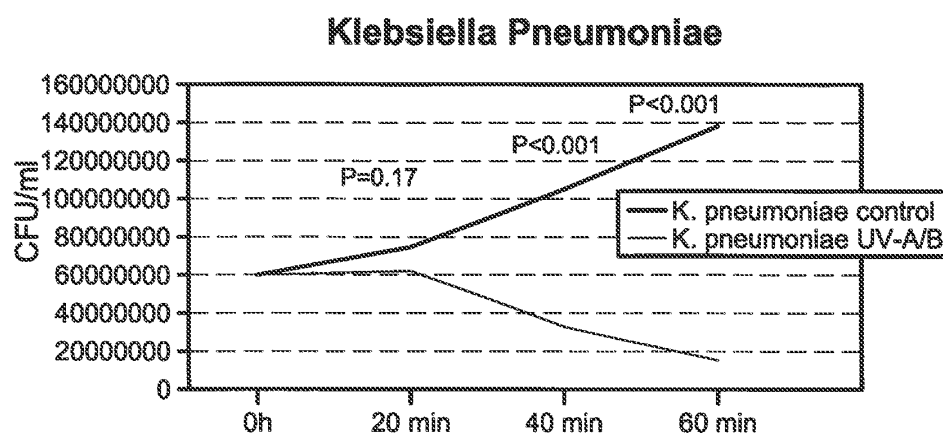


FIG. 19

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**FIG. 20**

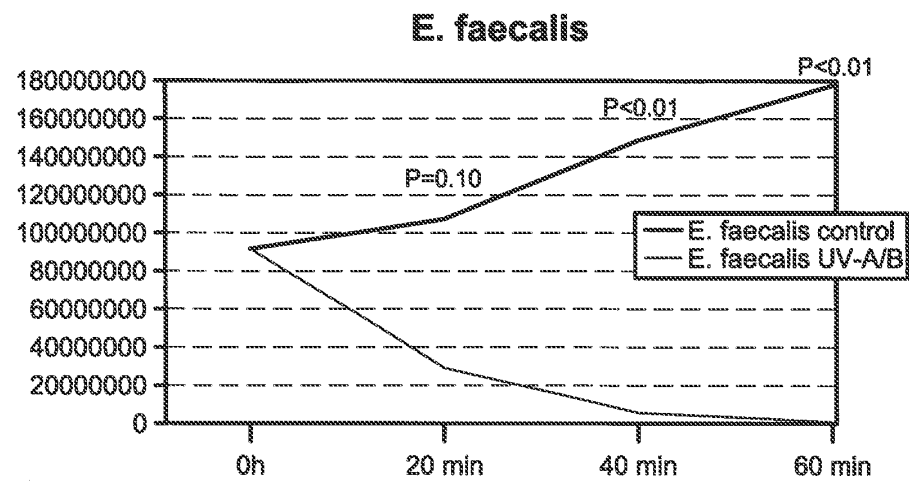


FIG. 21A

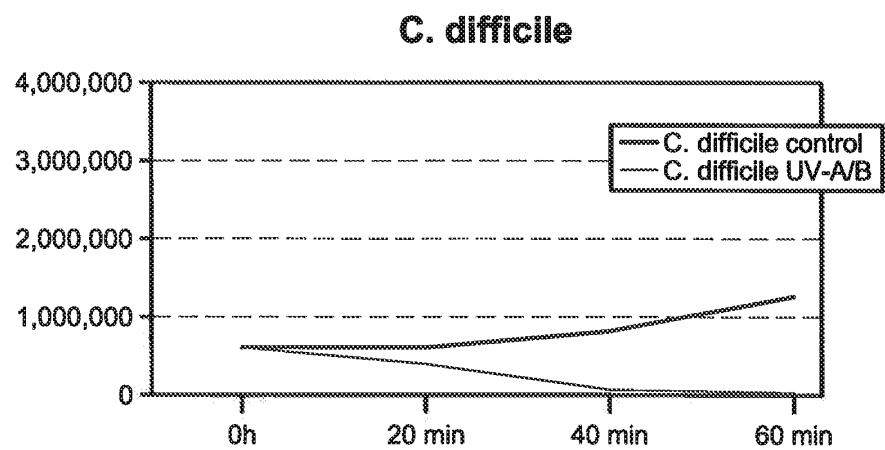


FIG. 21B

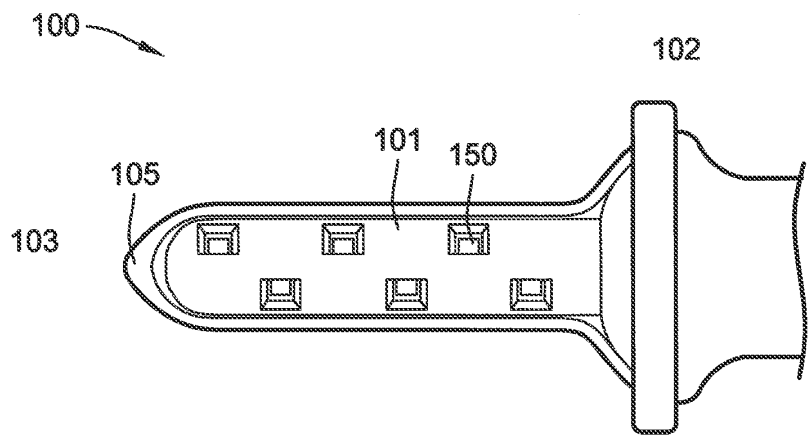


FIG. 22

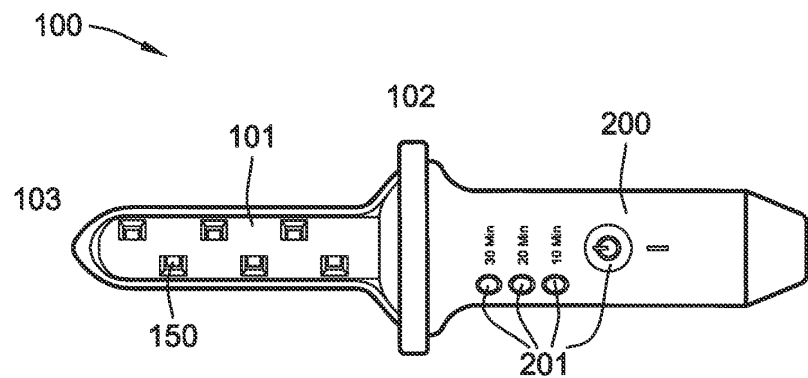


FIG. 23

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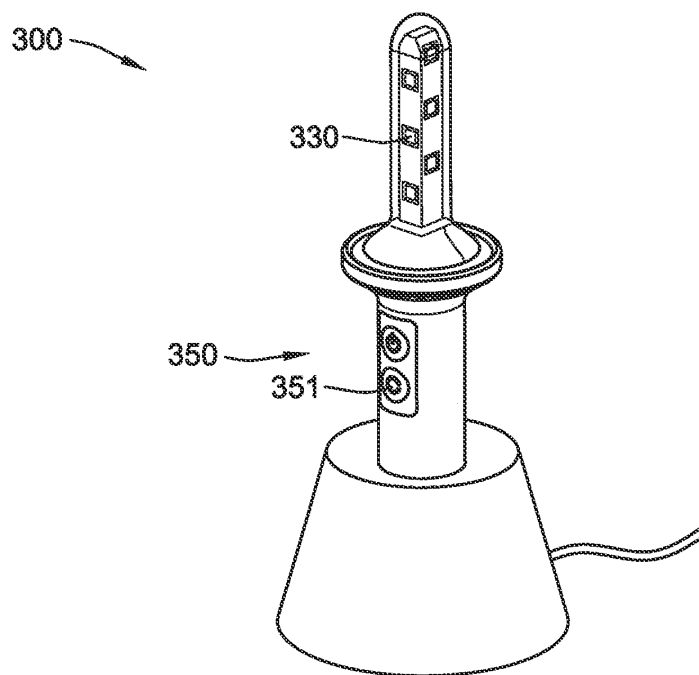


FIG. 24

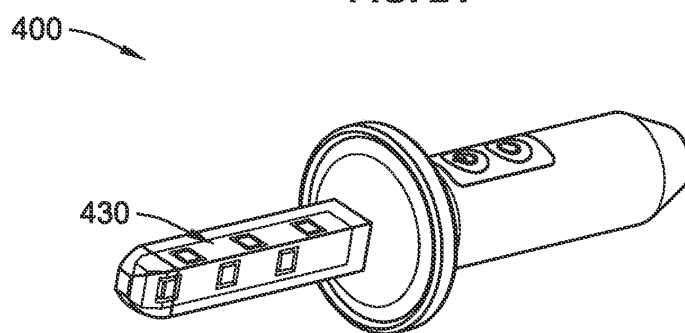


FIG. 25

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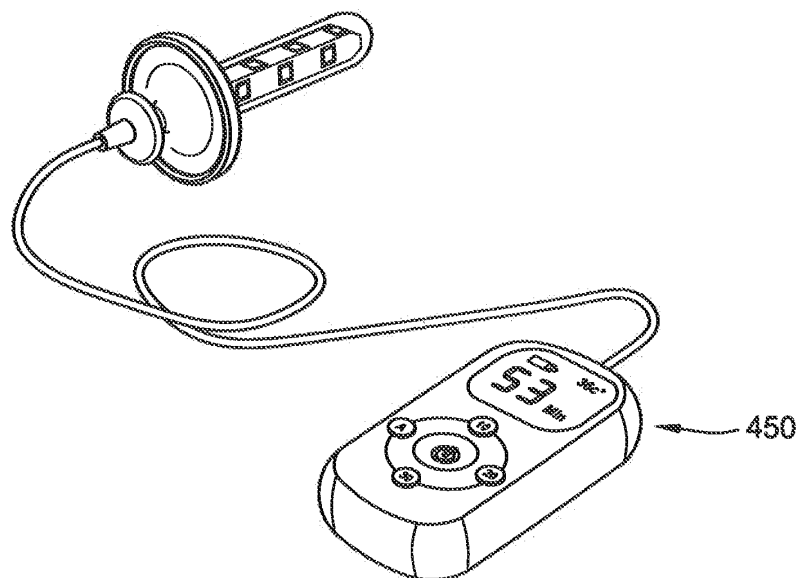


FIG. 26

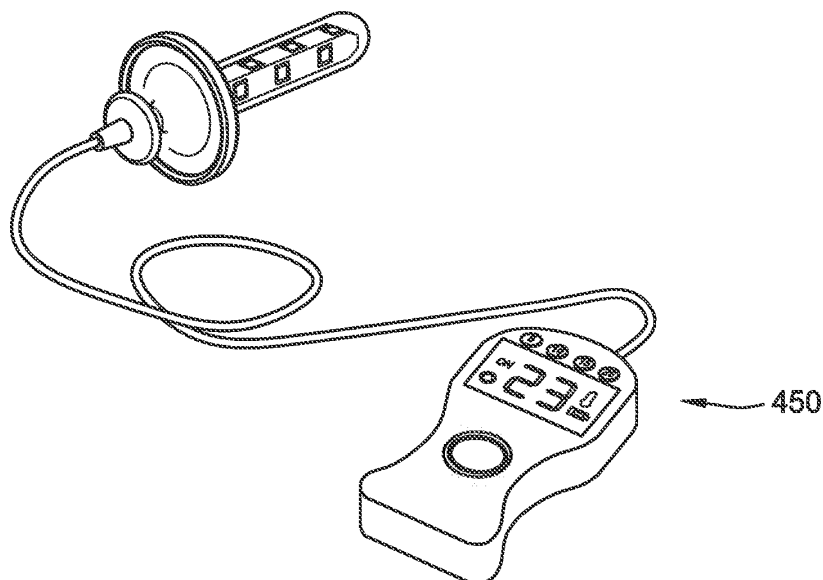


FIG. 27

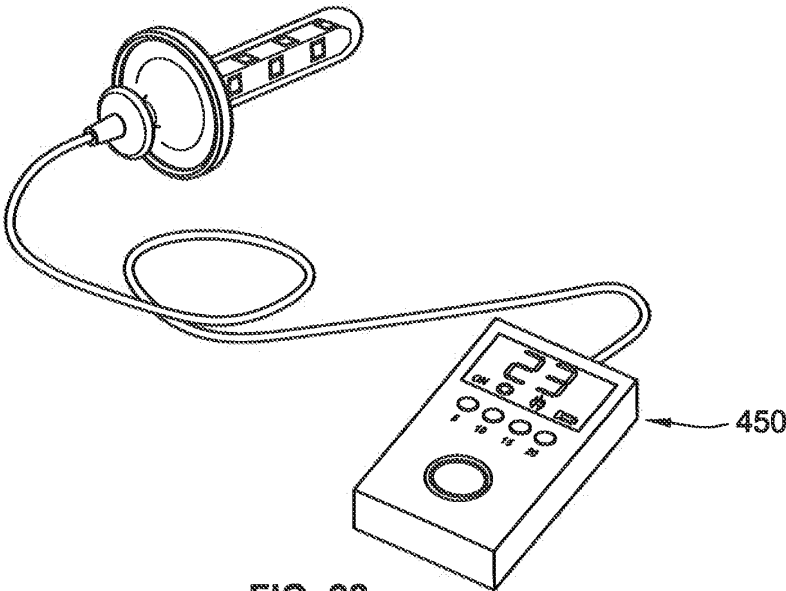


FIG. 28

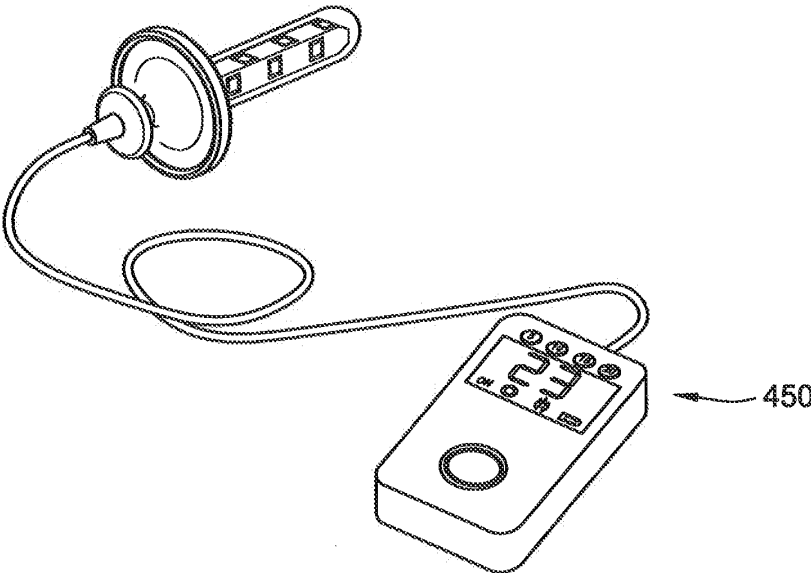


FIG. 29

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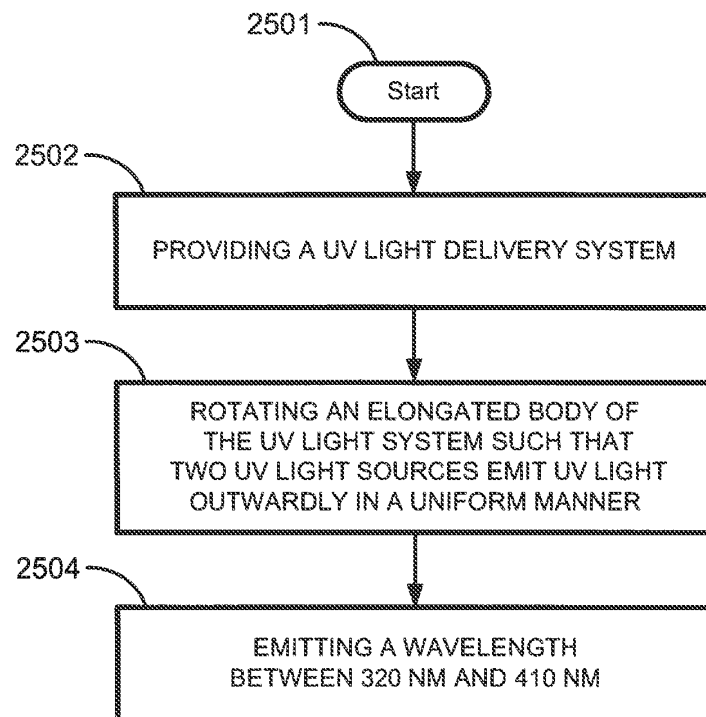


FIG. 30

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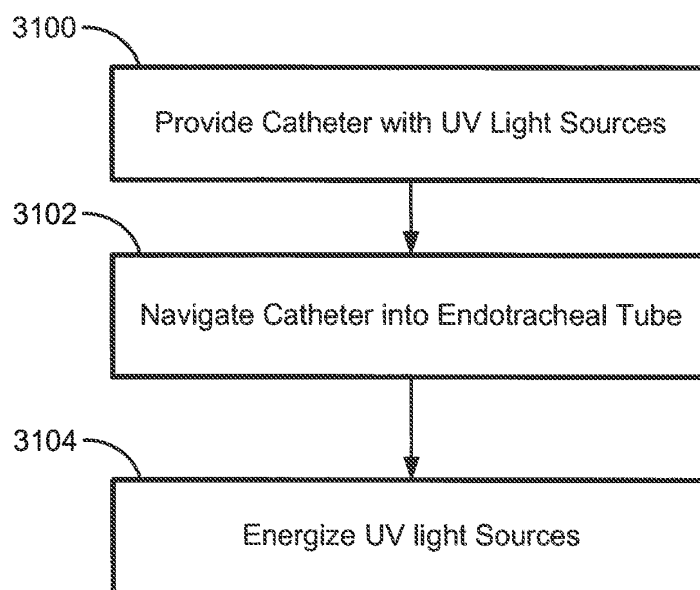


FIG. 31

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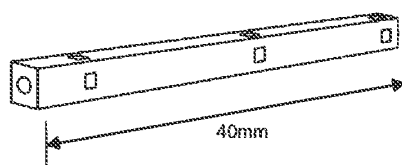


FIG. 32

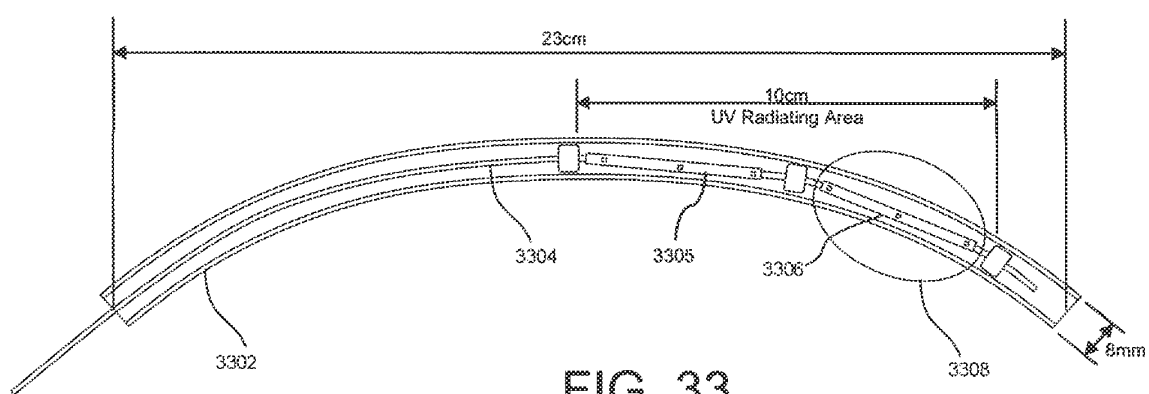


FIG. 33

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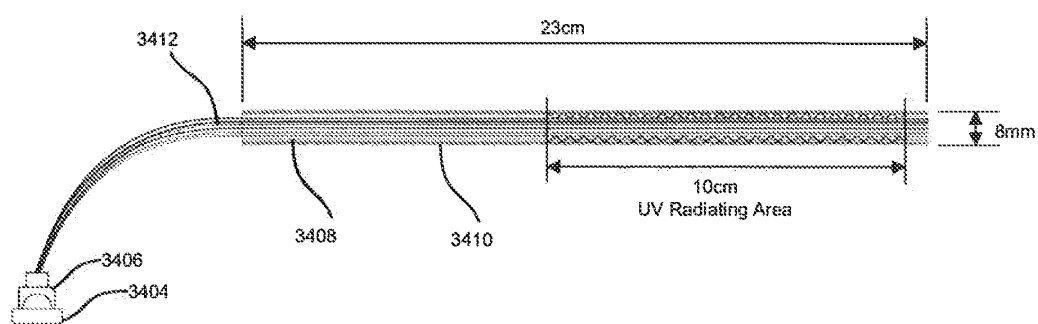


FIG. 34A

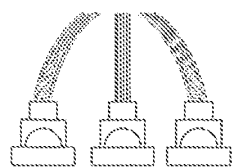


FIG. 34B

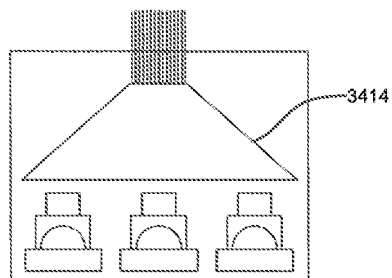
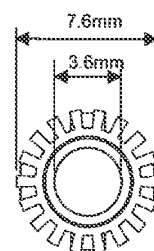
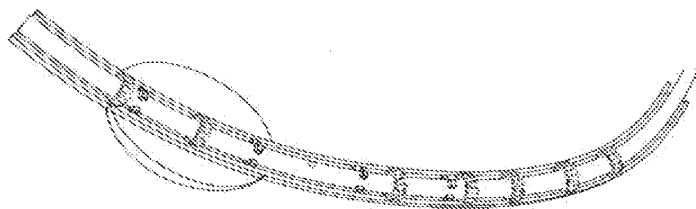
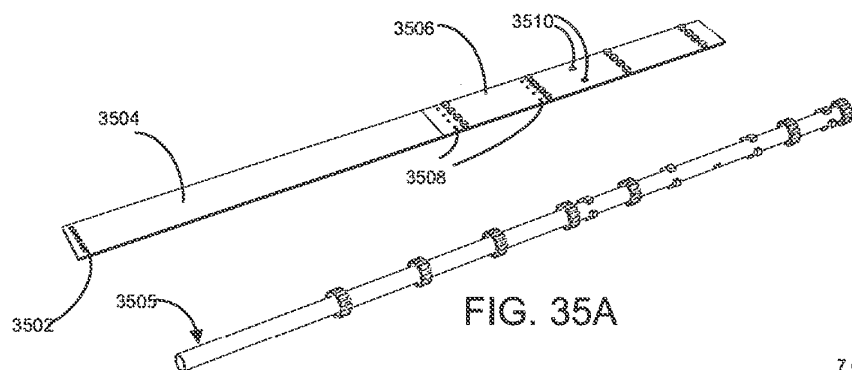


FIG. 34C

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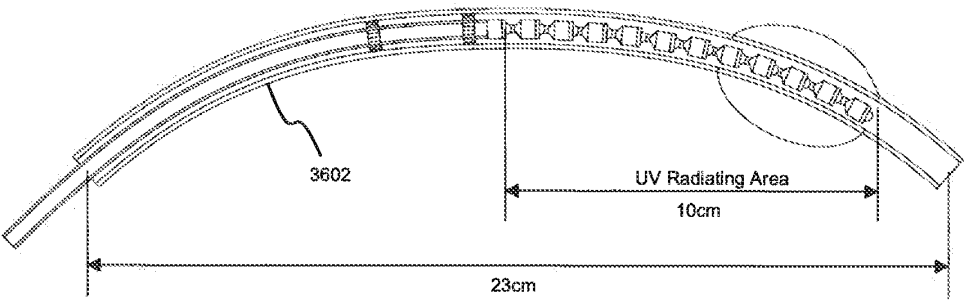


FIG. 36A



FIG. 36B

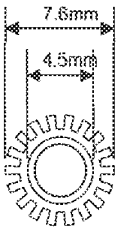


FIG. 36C

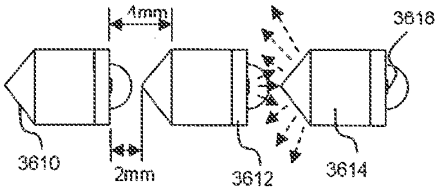


FIG. 36D



FIG. 37

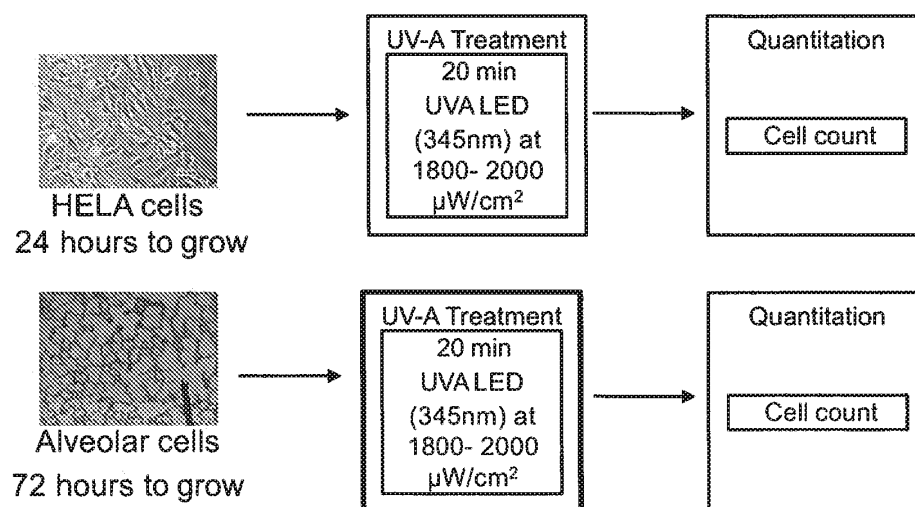


FIG. 38

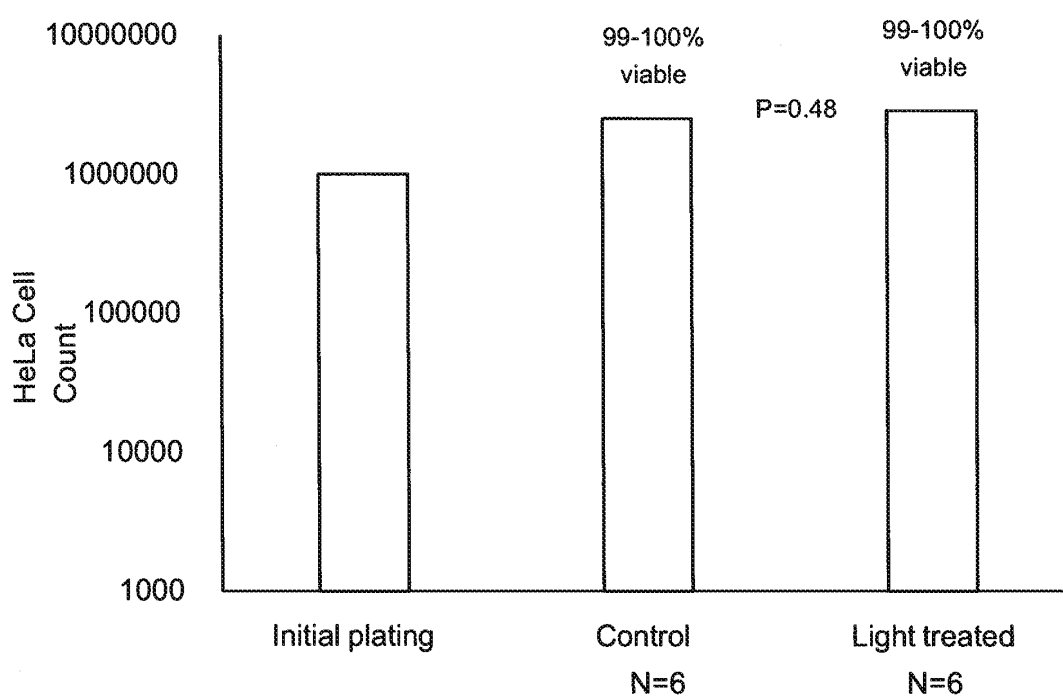


FIG. 39

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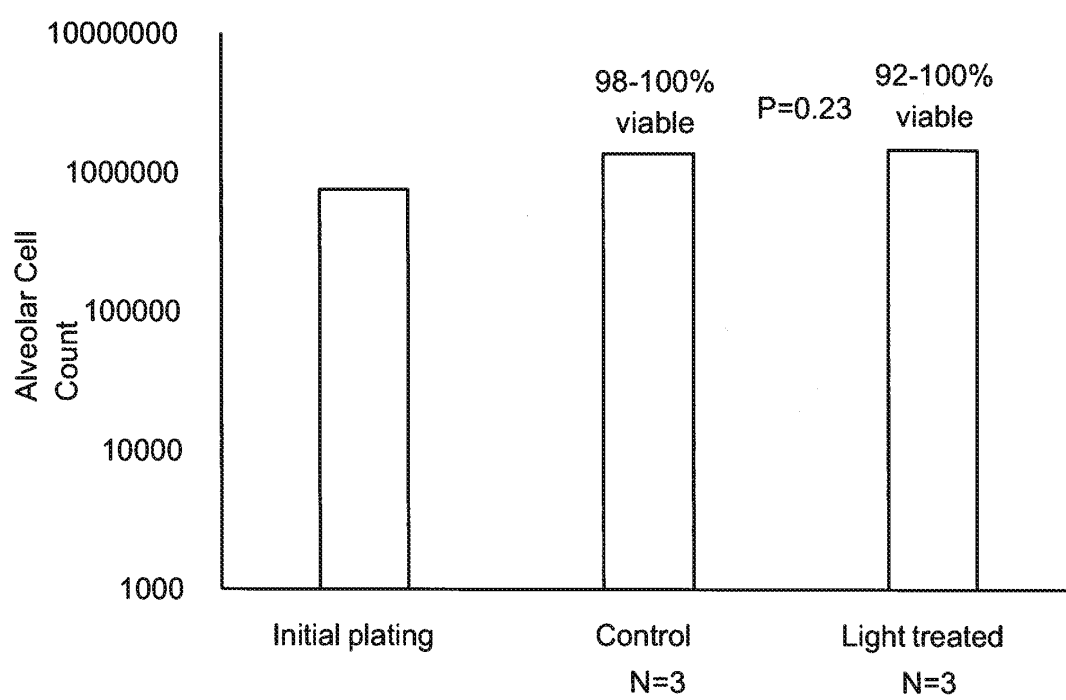


FIG. 40

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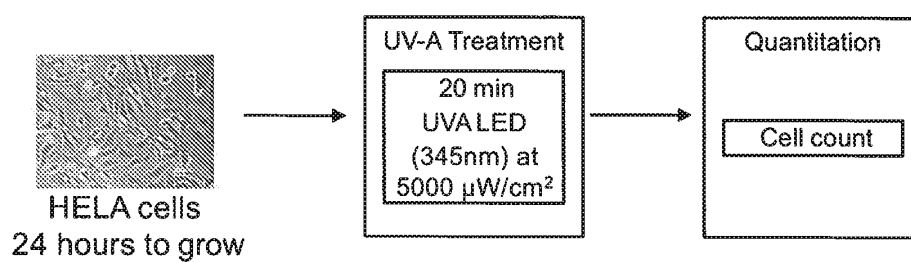


FIG. 41

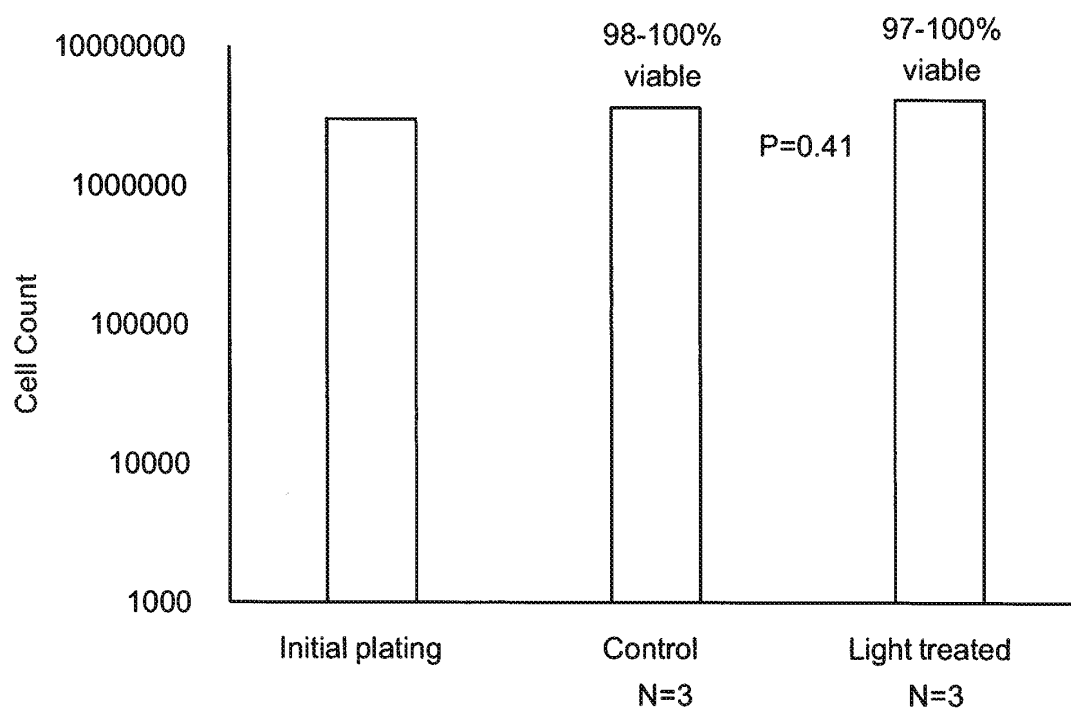


FIG. 42

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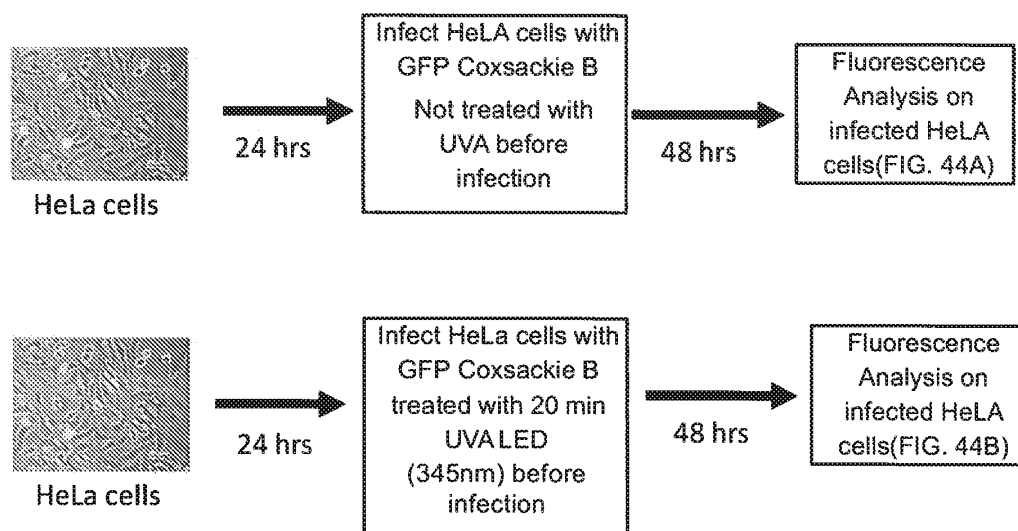


FIG. 43

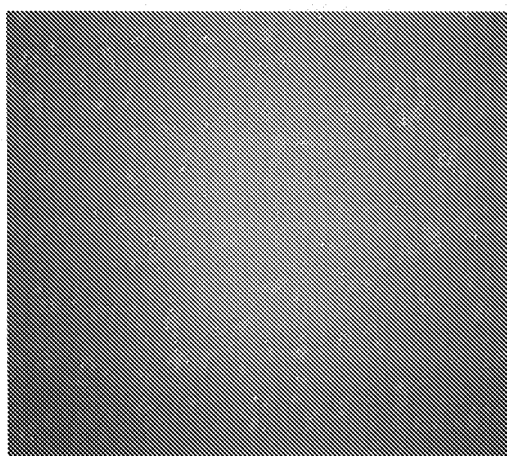


FIG. 44A

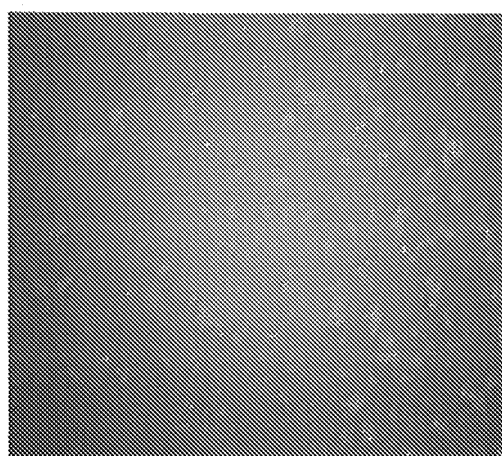


FIG. 44B

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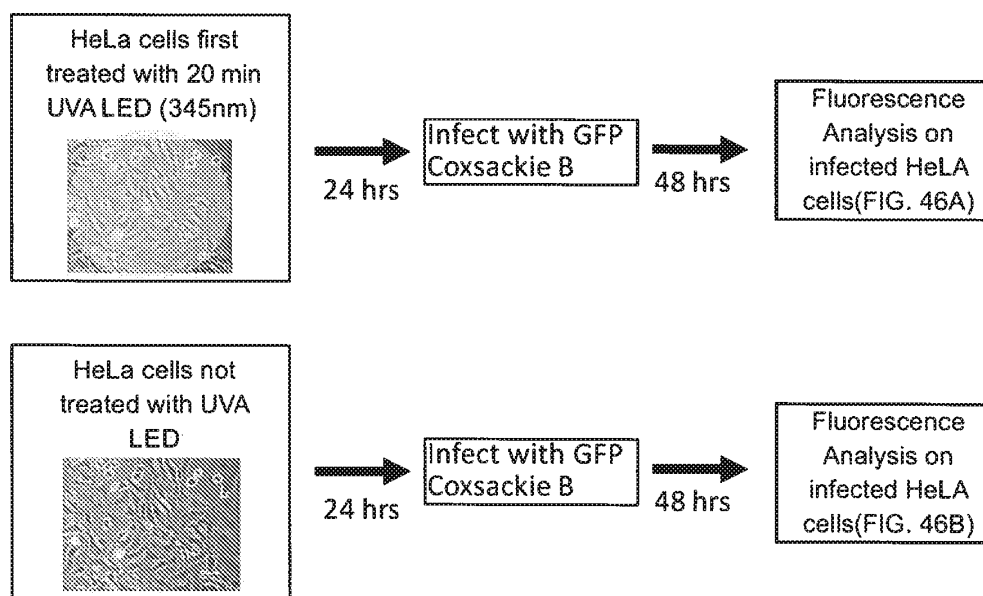


FIG. 45

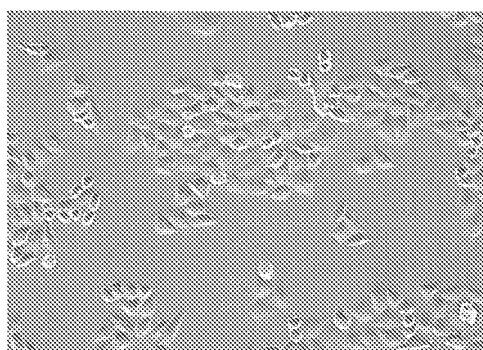


FIG. 46A

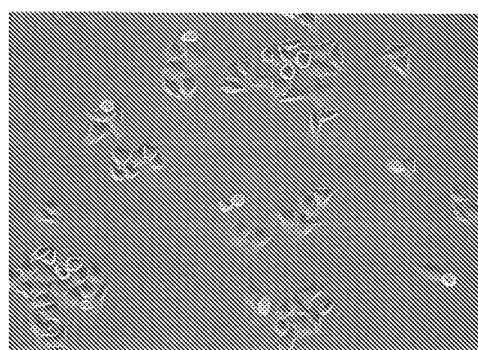


FIG. 46B

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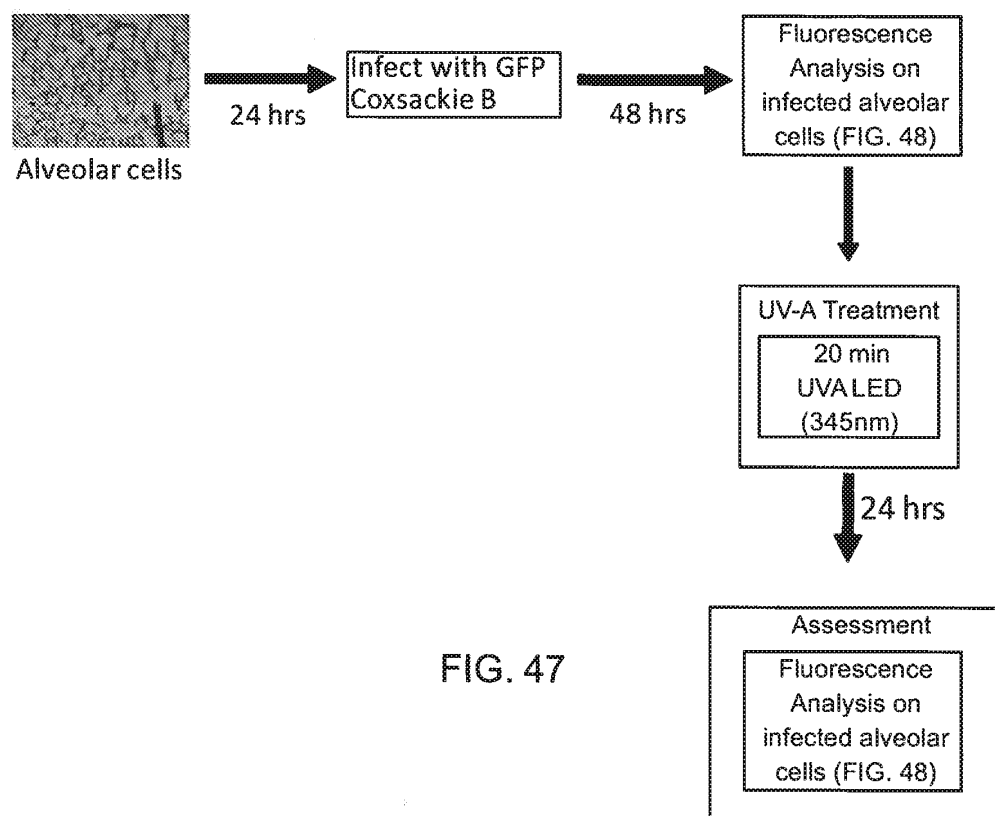


FIG. 47

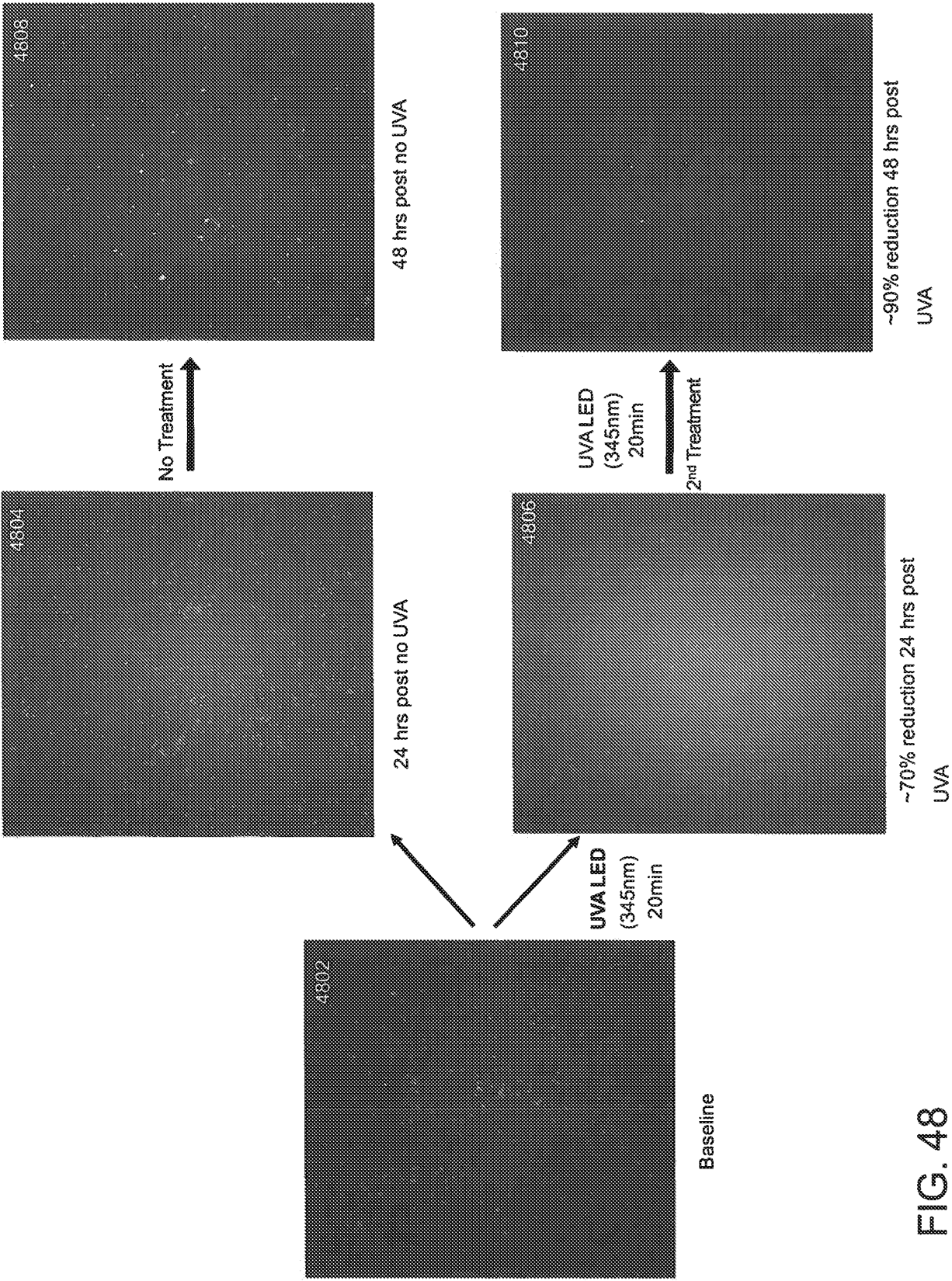


FIG. 48

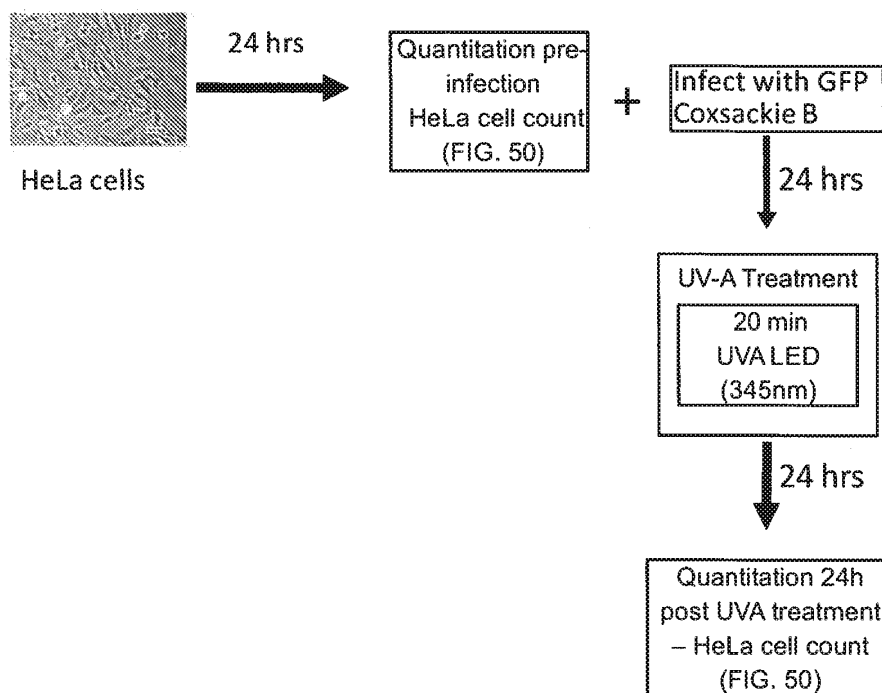


FIG. 49

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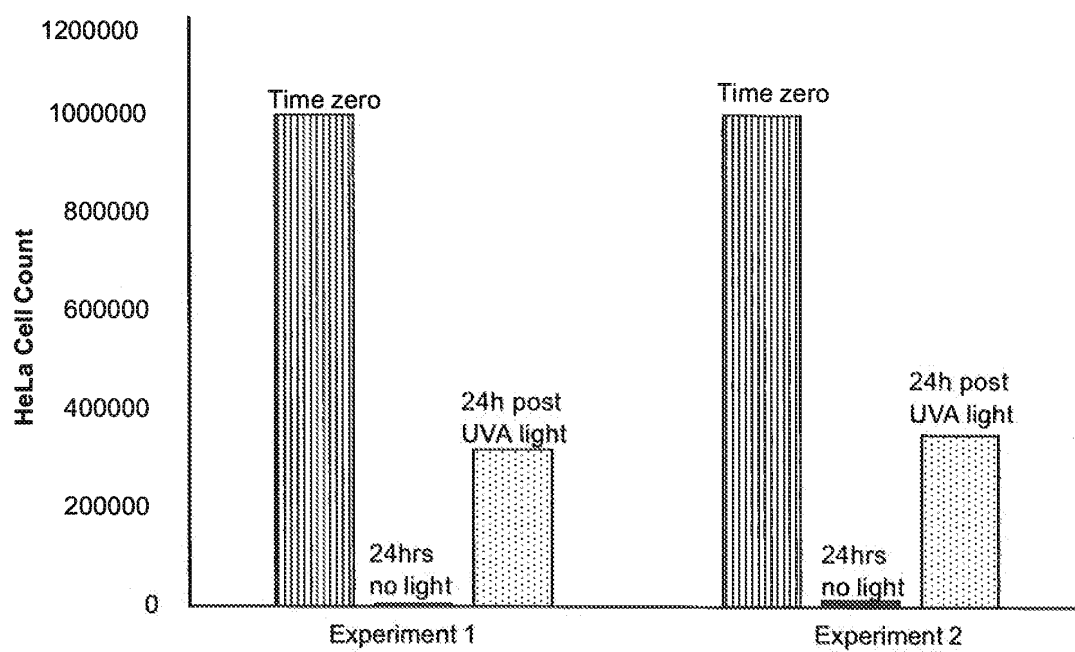
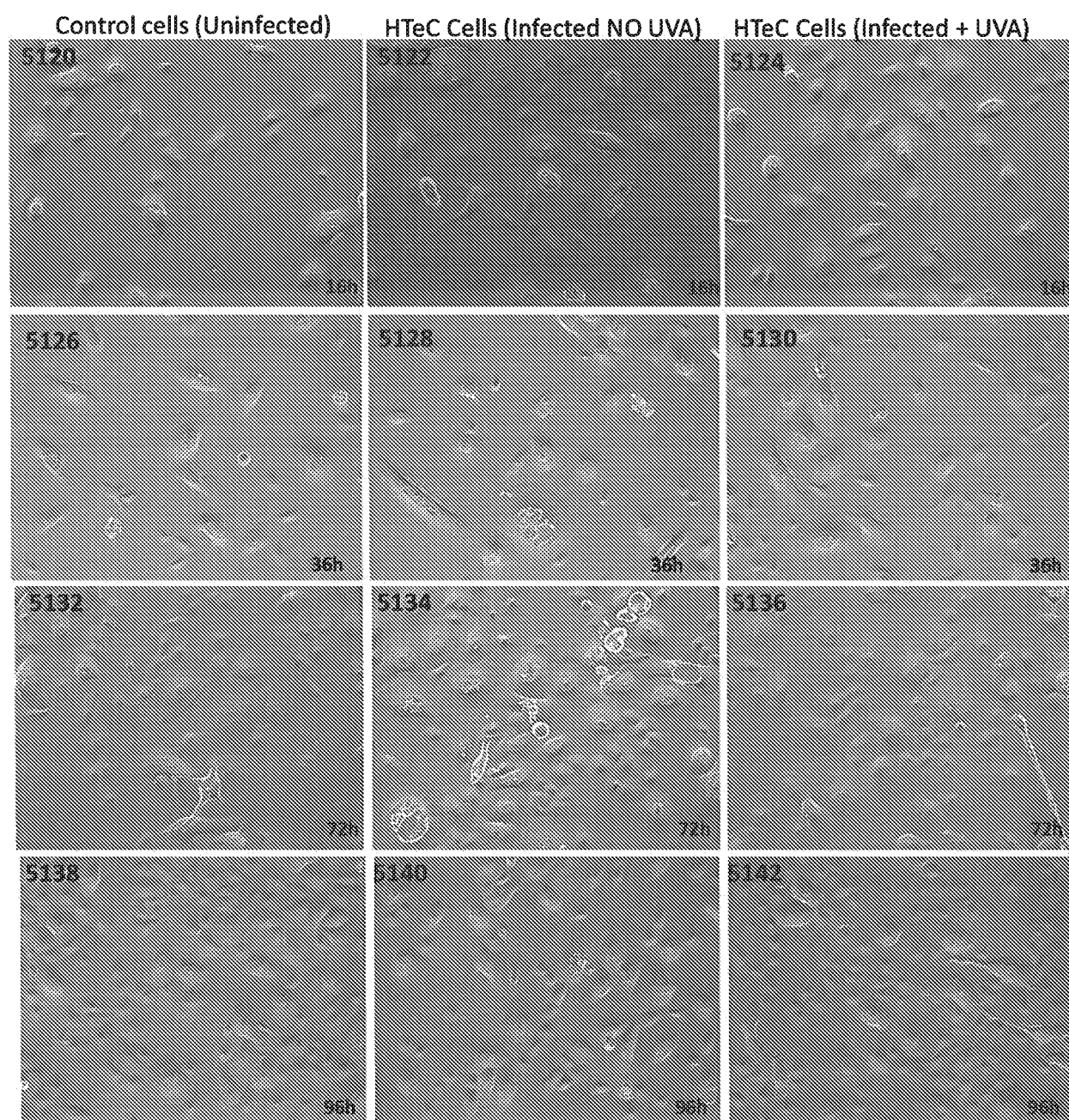


FIG. 50

UVA treatment of coronavirus 229E transfected cells**FIG. 51**

UVA treatment of coronavirus 229E
Live Cell count (48 and 72 hours)

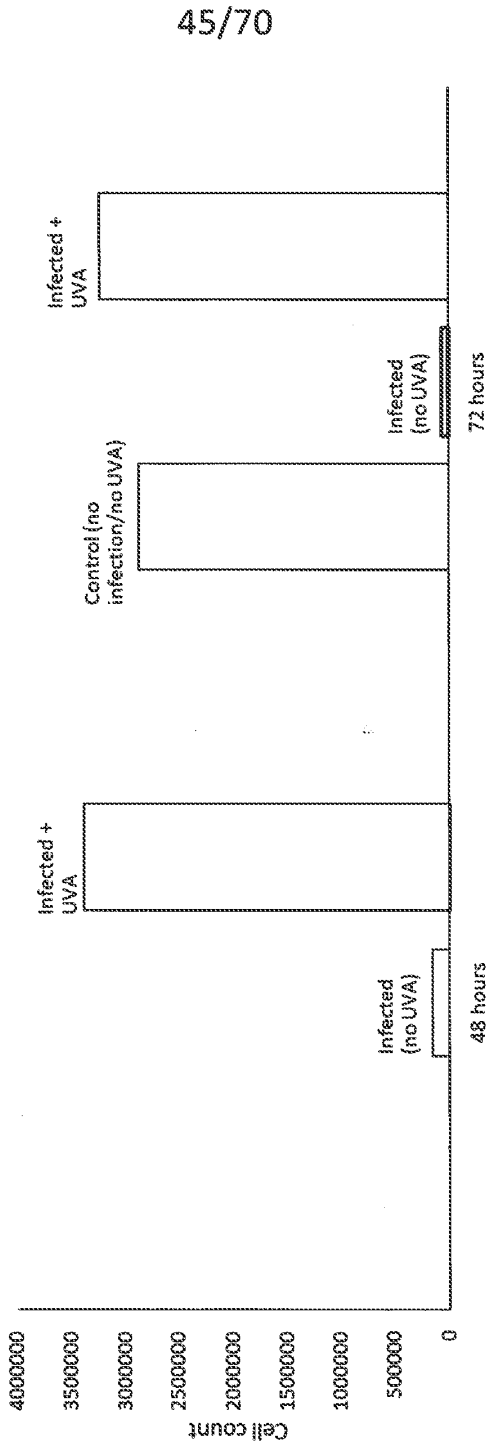


FIG. 52

UVA treatment of coronavirus 229E
Live/dead Cell count (48 and 72 hours)

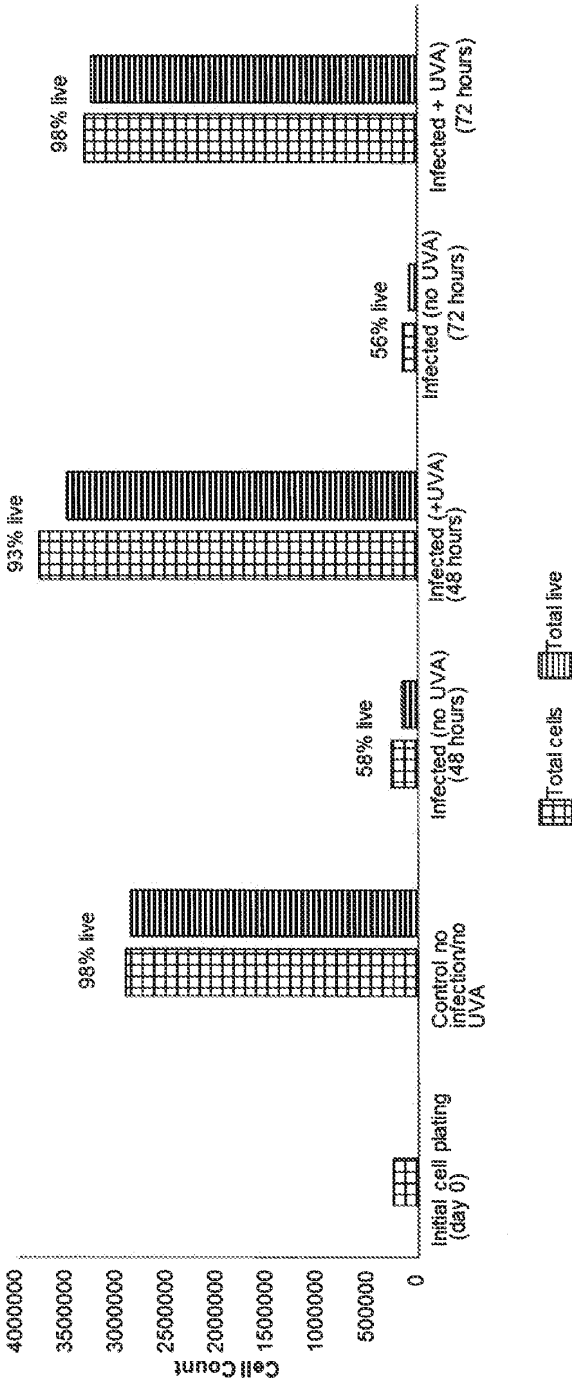


FIG. 53

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UVA treatment of coronavirus 229E
Live/dead Cell count)

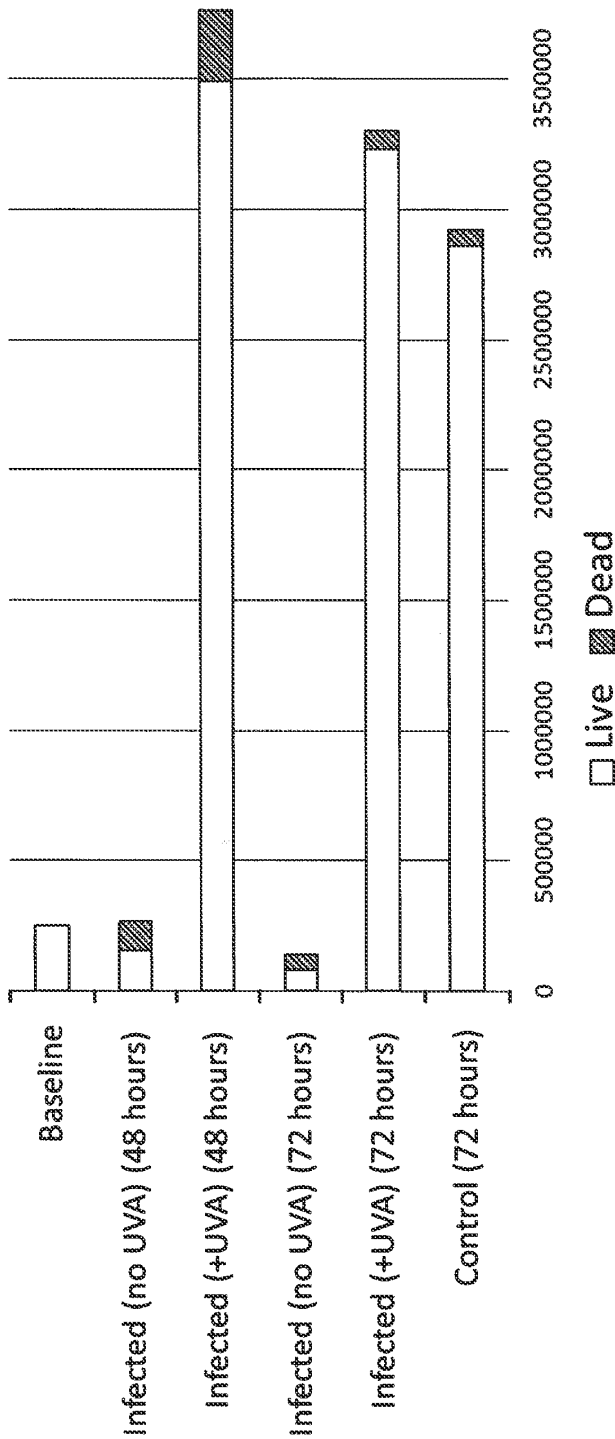


FIG. 54

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Microbial strains	Liquid broth	Solid medium (agar-based plates)	Temperature of incubation °C	Atmosphere	Time of incubation Initial (hour)	Time of incubation Prior UVA exposure (hour)	Intensity of UVA light ($\mu\text{W}/\text{cm}^2$)	Time of UVA exposure (minutes)
<i>Candida albicans</i> (Robin) Berkhout ATCC® 10231™	Sabouraud Dextrose	Sabouraud Dextrose	24 to 26	Aerobic	16 to 24	4 to 6	1700	20, 40 and 60
<i>Clostridioides difficile</i> (Prevot) Lawson et al. ATCC® 700057™	Brain Heart infusion	Reinforced Clostridial	36 to 37	Anaerobic	24 to 48	6 to 8	2000	20, 40 and 60
<i>Enterococcus faecalis</i> ATCC® 29212™	Brain Heart infusion	Trypticase Soy Agar with 5% Sheep Blood	36 to 37	Aerobic	18 to 24	4 to 6	2400	20, 40 and 60
<i>Escherichia coli</i> GFP ATCC® 25922 GFP™	Luria Bertani	Luria Bertani	36 to 37	Aerobic	16 to 24	2 to 3	1300	20, 40 and 60
<i>Escherichia coli</i> - clinical isolate	Luria Bertani	Luria Bertani	36 to 37	Aerobic	16 to 24	2 to 3	1100 to 1300	20, 40, 60 and 80
<i>Klebsiella pneumoniae</i> ATCC® BAA-1705™	Luria Bertani	Luria Bertani	36 to 37	Aerobic	16 to 24	2 to 3	1300	20, 40 and 60
<i>Proteus mirabilis</i> ATCC® 29806™	Luria Bertani	Hectoen Enteric	36 to 37	Aerobic	16 to 24	2 to 3	2400	20, 40 and 60
<i>Pseudomonas aeruginosa</i> ATCC® 15442™	Luria Bertani	Luria Bertani	36 to 37	Aerobic	16 to 24	2 to 3	3500	20, 40 and 60
<i>Staphylococcus epidermidis</i> (Winslow and Winslow) Evans ATCC® 14980™	Tryptic Soy Broth	Trypticase Soy Agar with 5% Sheep Blood	36 to 37	Aerobic	24 to 48	3 to 5	2150	20, 40 and 60
<i>Streptococcus pyogenes</i> Rosenbach ATCC® 19615™	Tryptic Soy Broth	Trypticase Soy Agar with 5% Sheep Blood	36 to 37	Anaerobic	24 to 48	3 to 5	1800	20, 40 and 60

FIG. 55

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Microorganism	UVA Intensity ($\mu\text{W}/\text{cm}^2$)	Group	Baseline CFUx10 ⁷ /mL	20 min CFUx10 ⁷ /mL	P value	40 min CFUx10 ⁷ /mL	P value	60 min CFUx10 ⁷ /mL	P value
<i>Clostridioides difficile</i>	2,000	Exposed	0.1	0.08	0.01	0.01	0.003	0.0031	0.01
		Control	0.1	0.13		0.17		0.39	
<i>Candida albicans</i>	1,700	Exposed	0.14	0.09	0.007	0.03	0.001	0.0032	0.001
		Control	0.14	0.17		0.2		0.16	
<i>Pseudomonas aeruginosa</i>	3,500	Exposed	0.81	0.07	<0.001	No growth	<0.001	No growth	<0.001
		Control	0.81	0.61		0.93		0.85	
<i>Klebsiella pneumoniae</i>	1,300	Exposed	5.9	6.34	0.17	3.34	<0.001	1.53	<0.001
		Control	5.9	7.49		10.5		13.81	
<i>Escherichia coli</i>	1,300	Exposed	1.25	0.41	<0.001	0.21	0.001	0.03	<0.001
		Control	1.25	3.31		4.2		5.52	
<i>Enterococcus faecalis</i>	2,400	Exposed	9.21	2.99	0.1	0.61	0.01	0.08	0.01
		Control	9.21	10.6		14.72		17.74	
<i>Streptococcus pyogenes</i>	1,800	Exposed	1.17	0.68	0.64	0.64	0.001	0.17	0.004
		Control	1.17	0.83		1.68		1.31	
<i>Proteus mirabilis</i>	2,400	Exposed	0.62	No growth	<0.001	No growth	<0.001	No growth	<0.001
		Control	0.62	0.59		0.49		0.54	
<i>Staphylococcus epidermidis</i>	2,150	Exposed	0.57	0.43	0.01	0.03	<0.001	0.000117	<0.001
		Control	0.57	0.59		0.69		0.7	

FIG. 56

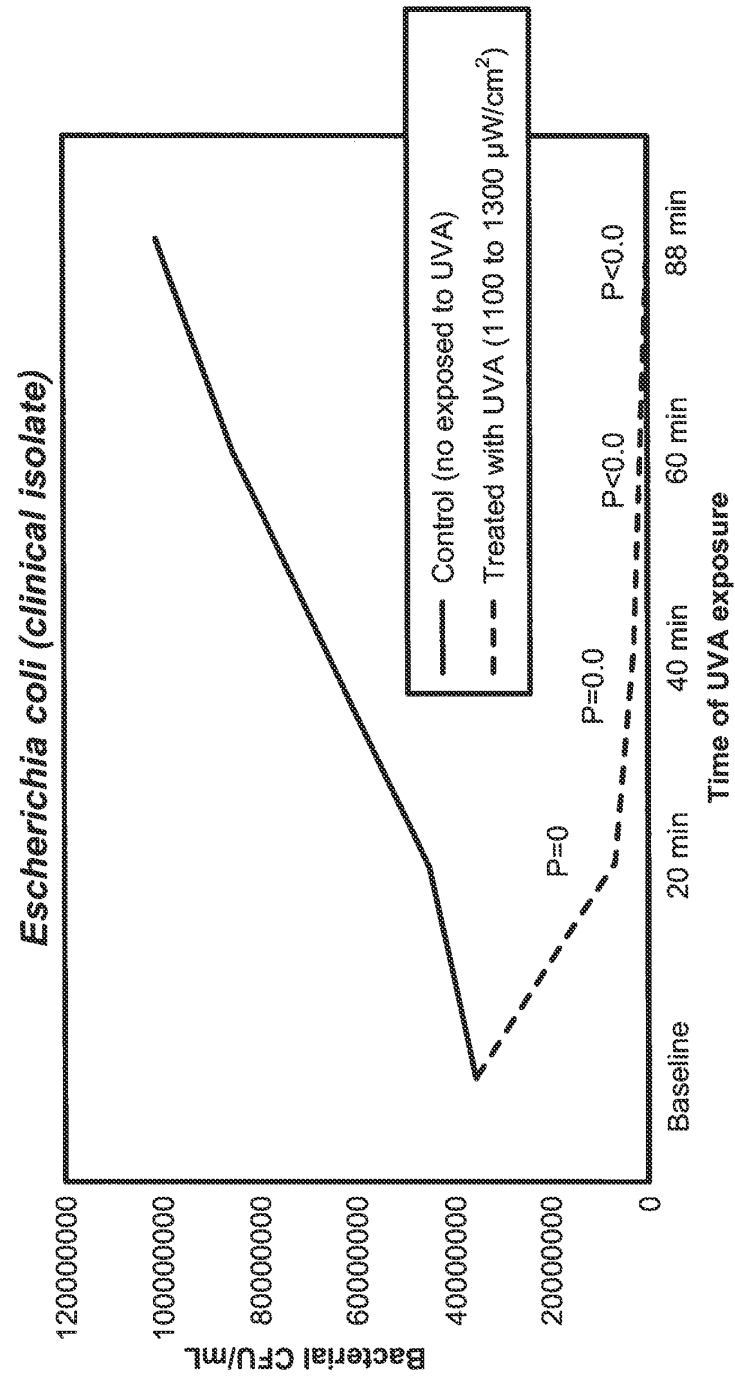


FIG. 57

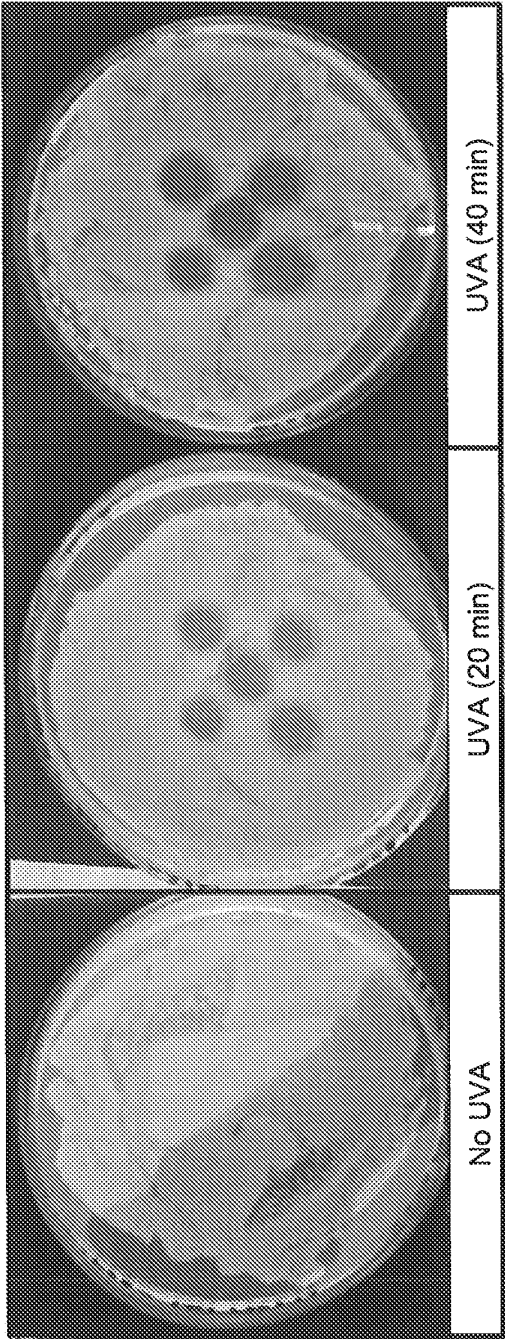


FIG. 58A

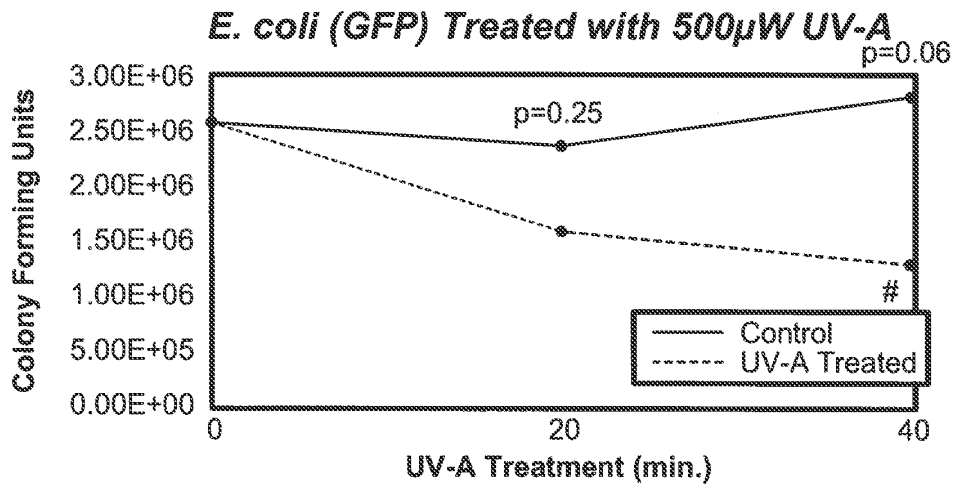


FIG. 58B

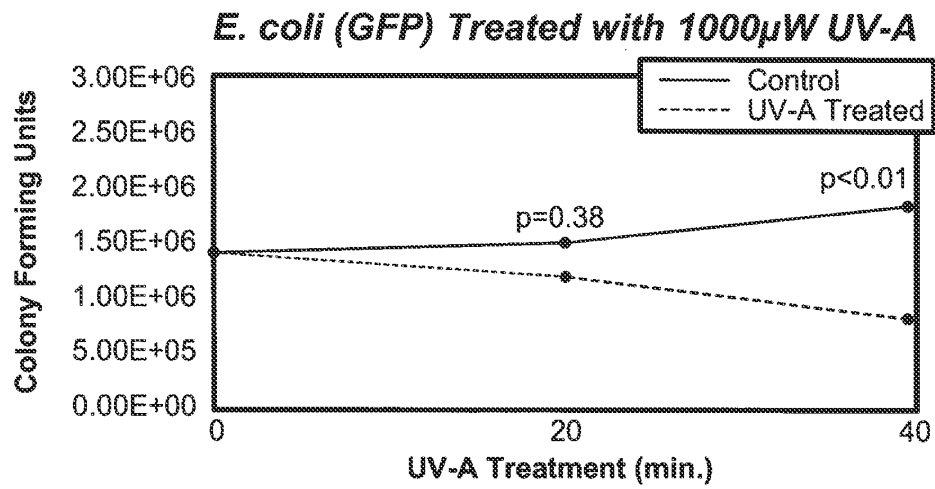
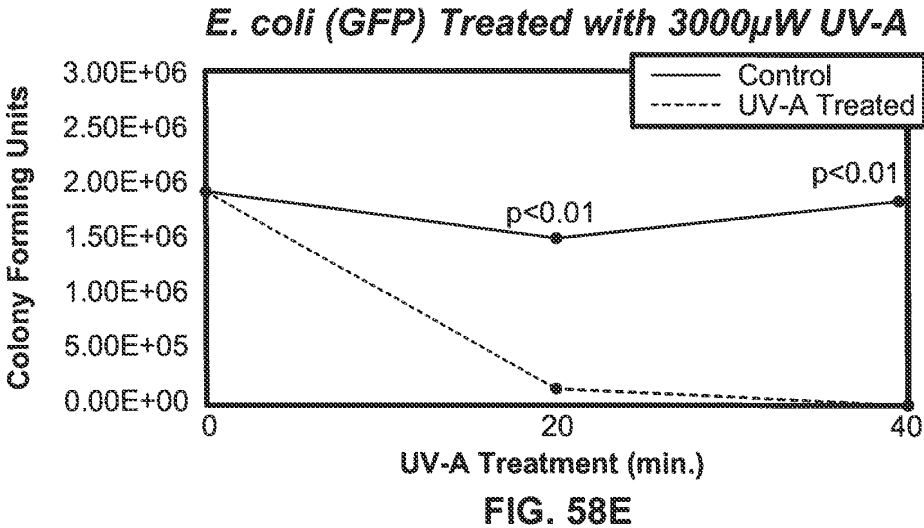
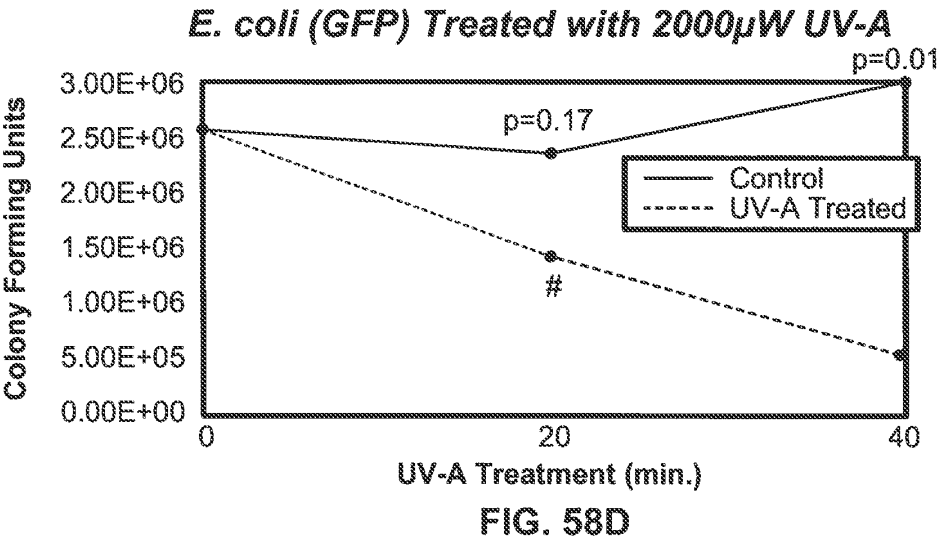


FIG. 58C



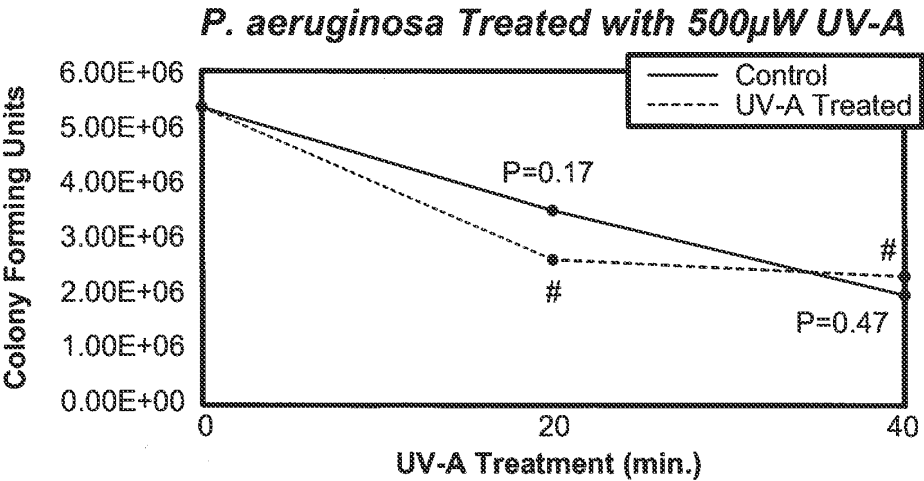


FIG. 58G

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P. aeruginosa Treated with 1000μW UV-A

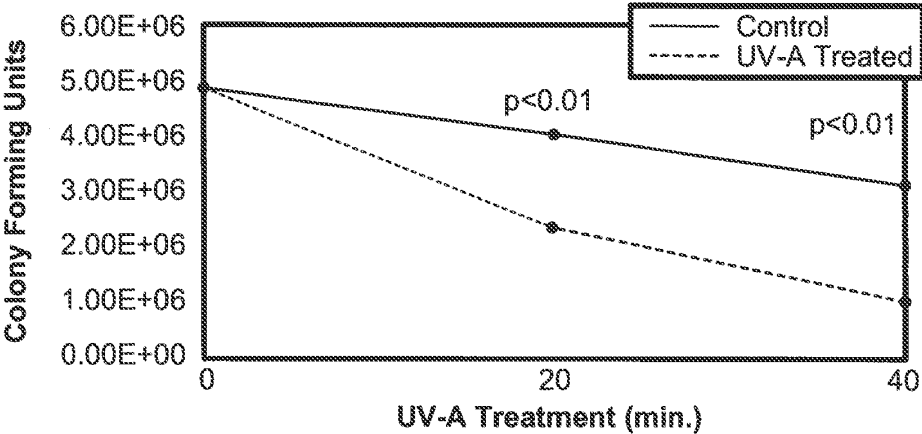


FIG. 58H

P. aeruginosa Treated with 2000μW UV-A

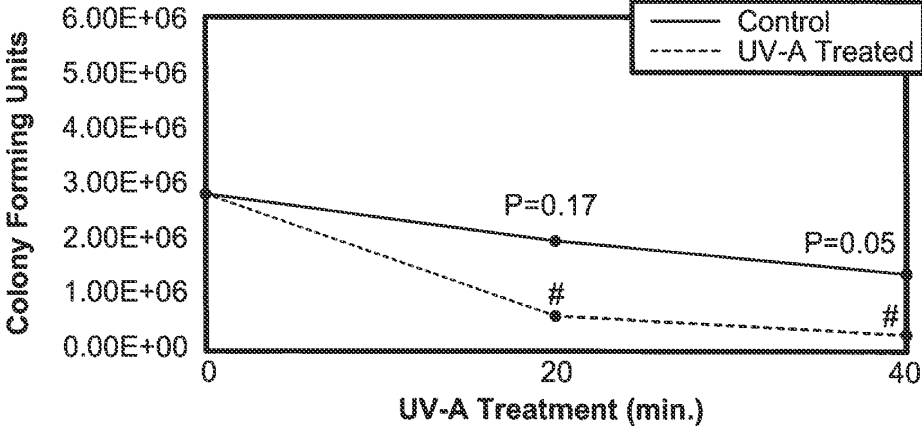


FIG. 58I

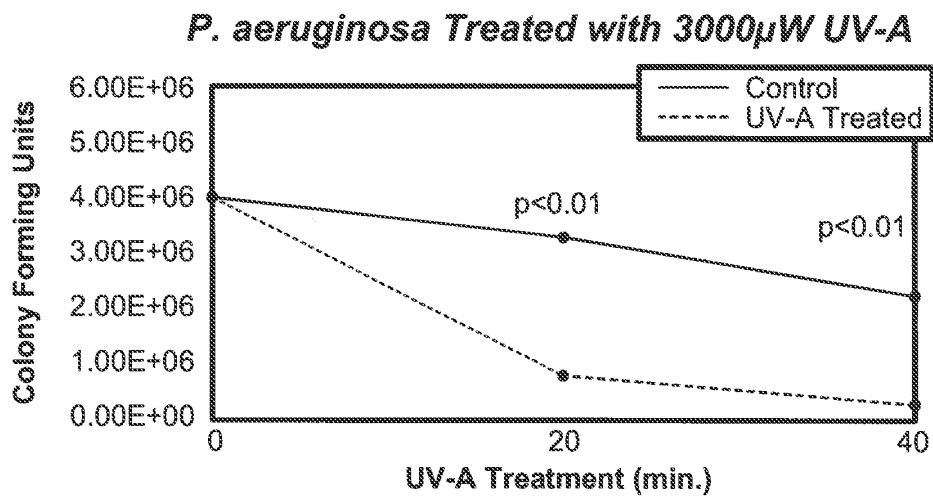


FIG. 58J

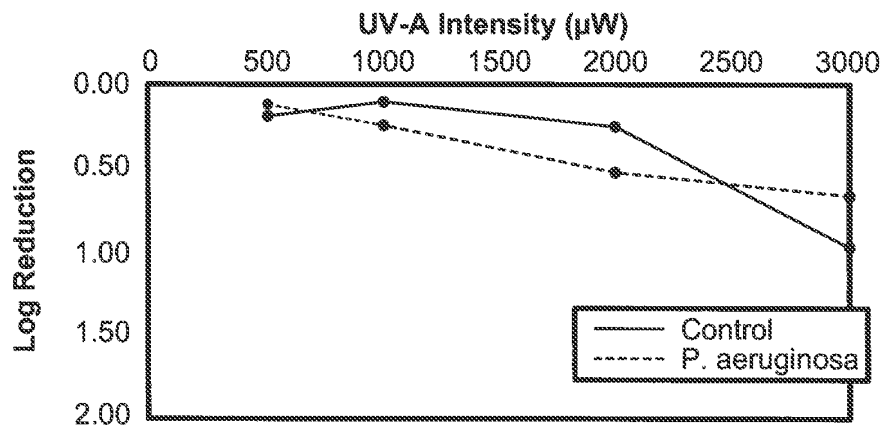


FIG. 58K

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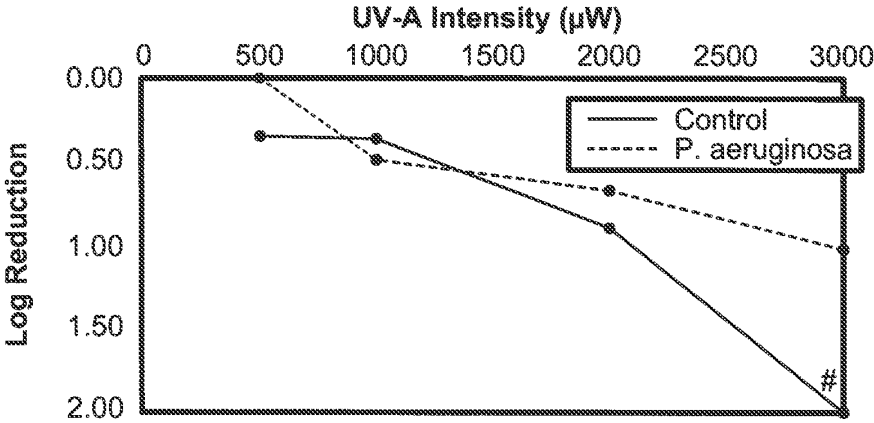


FIG. 58L

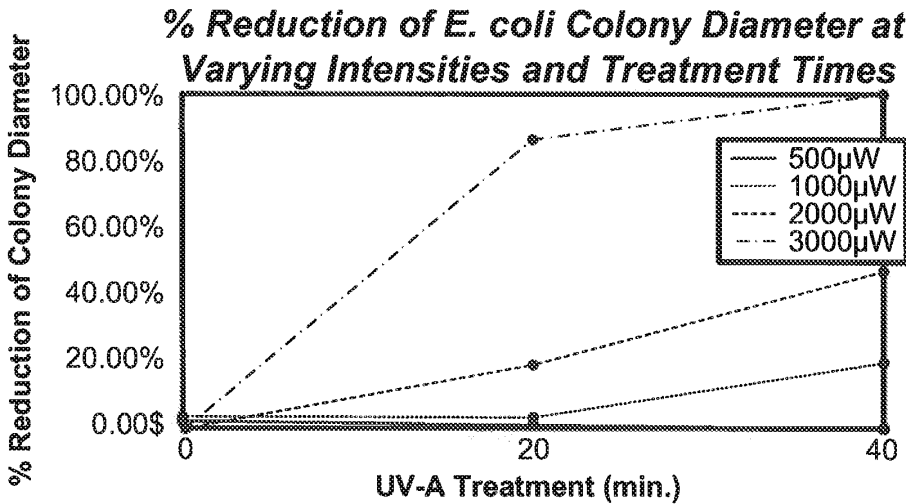


FIG. 58M

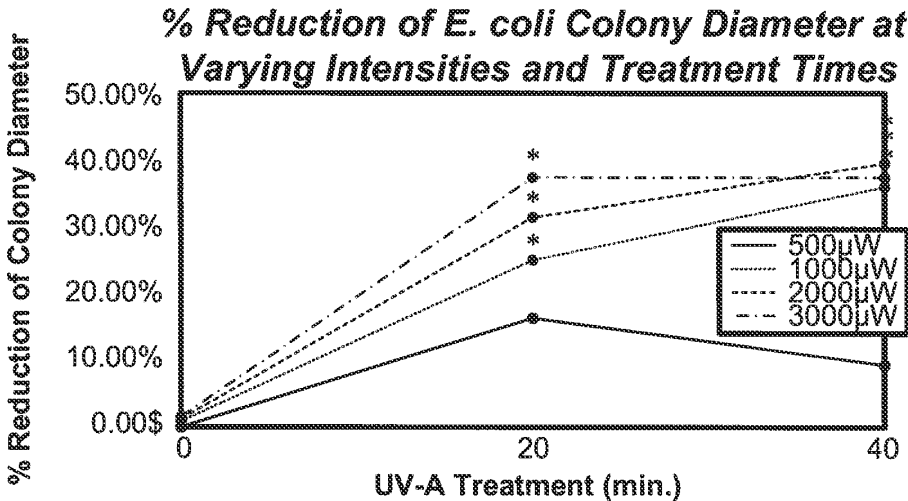


FIG. 58N

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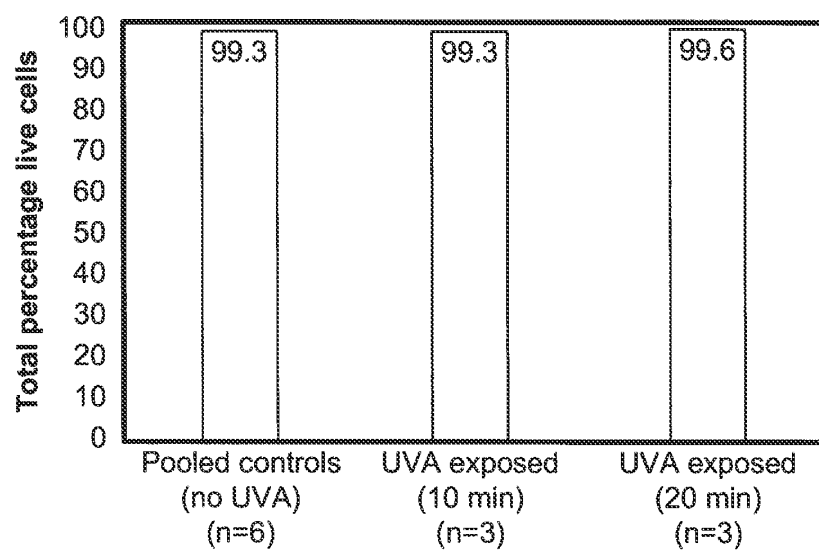


FIG. 59A

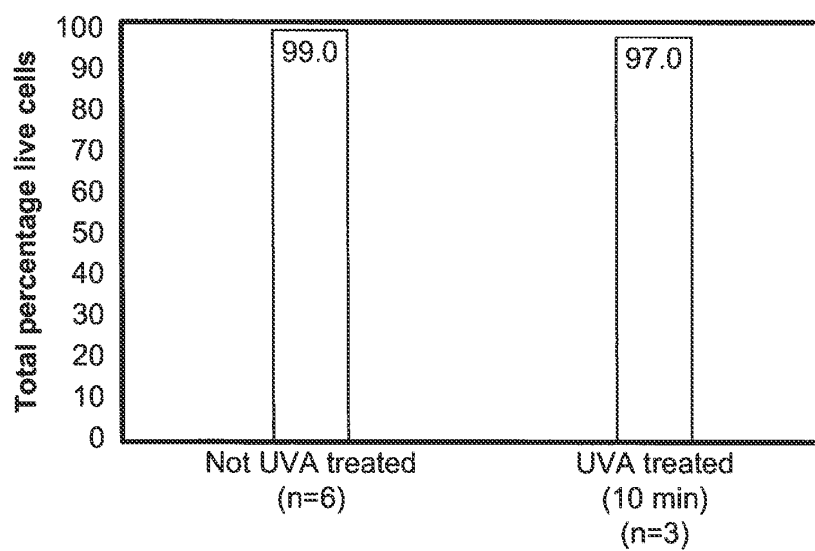


FIG. 59B

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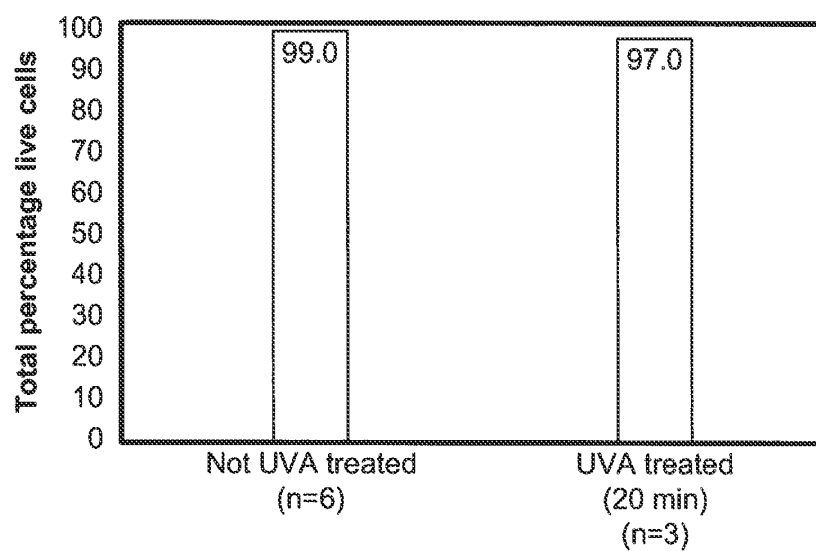


FIG. 59C

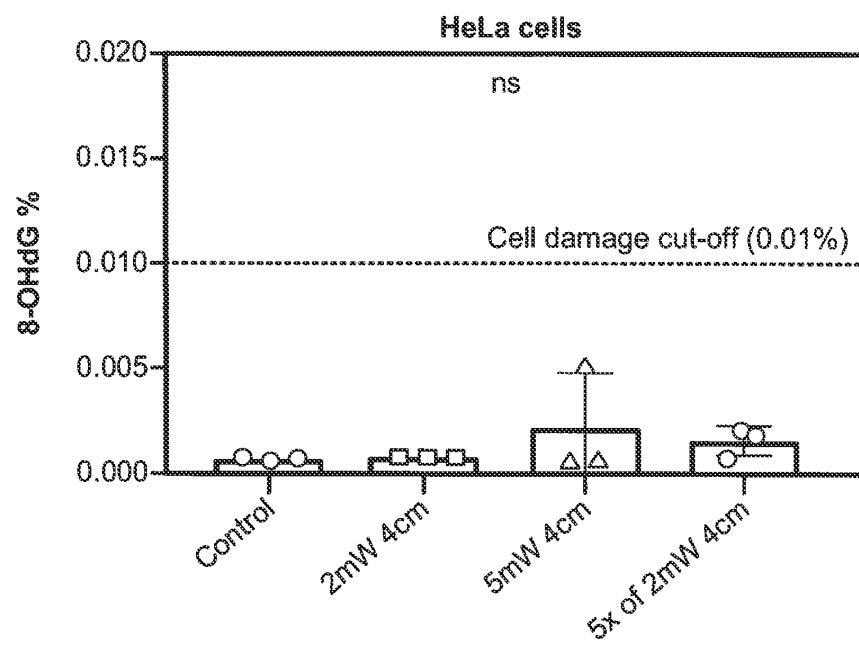


FIG. 59D

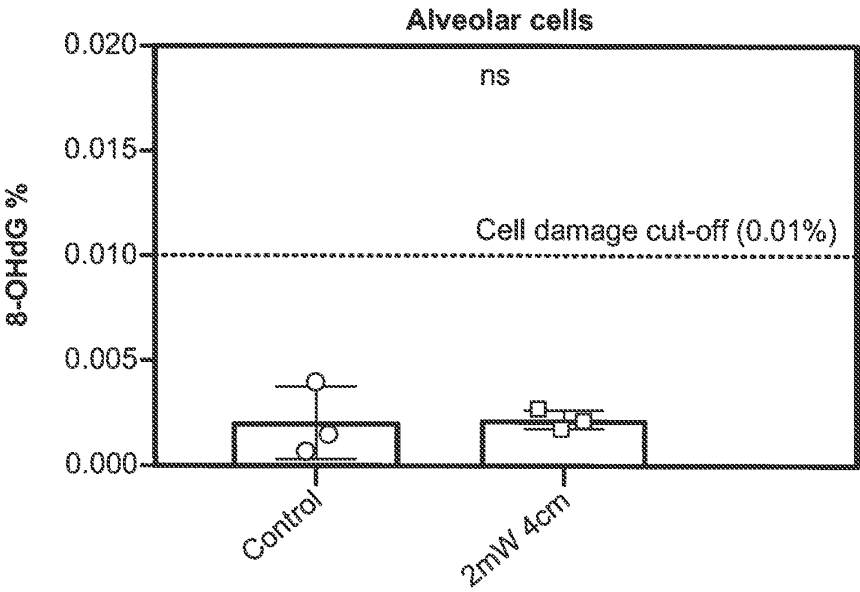


FIG. 59E

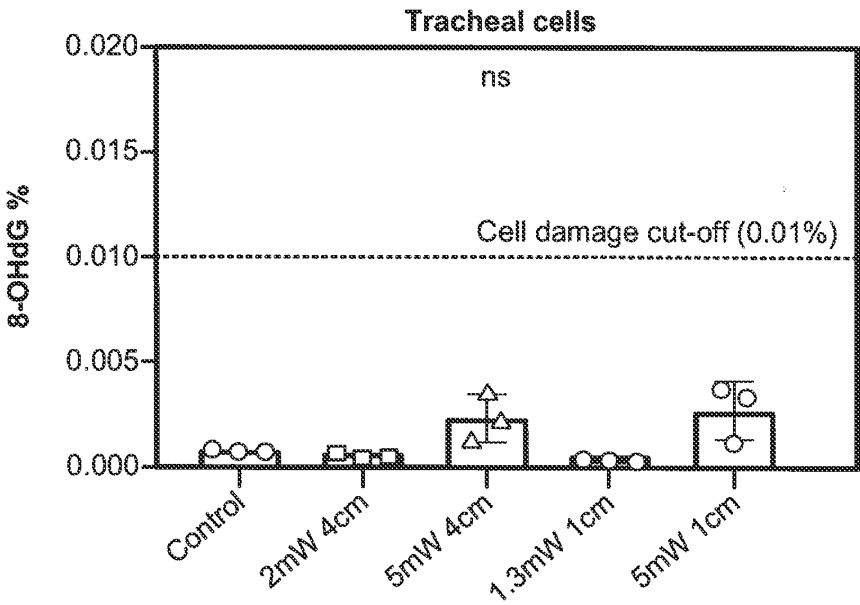


FIG. 59F

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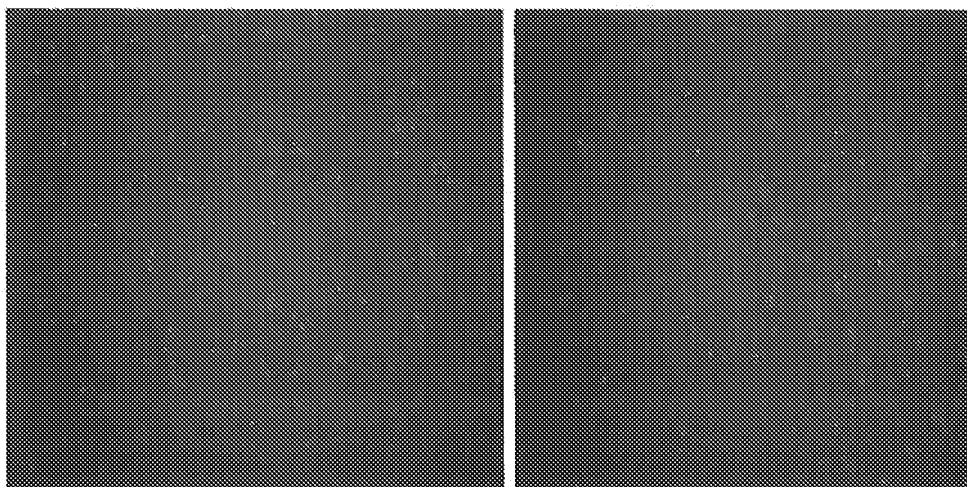


FIG. 60

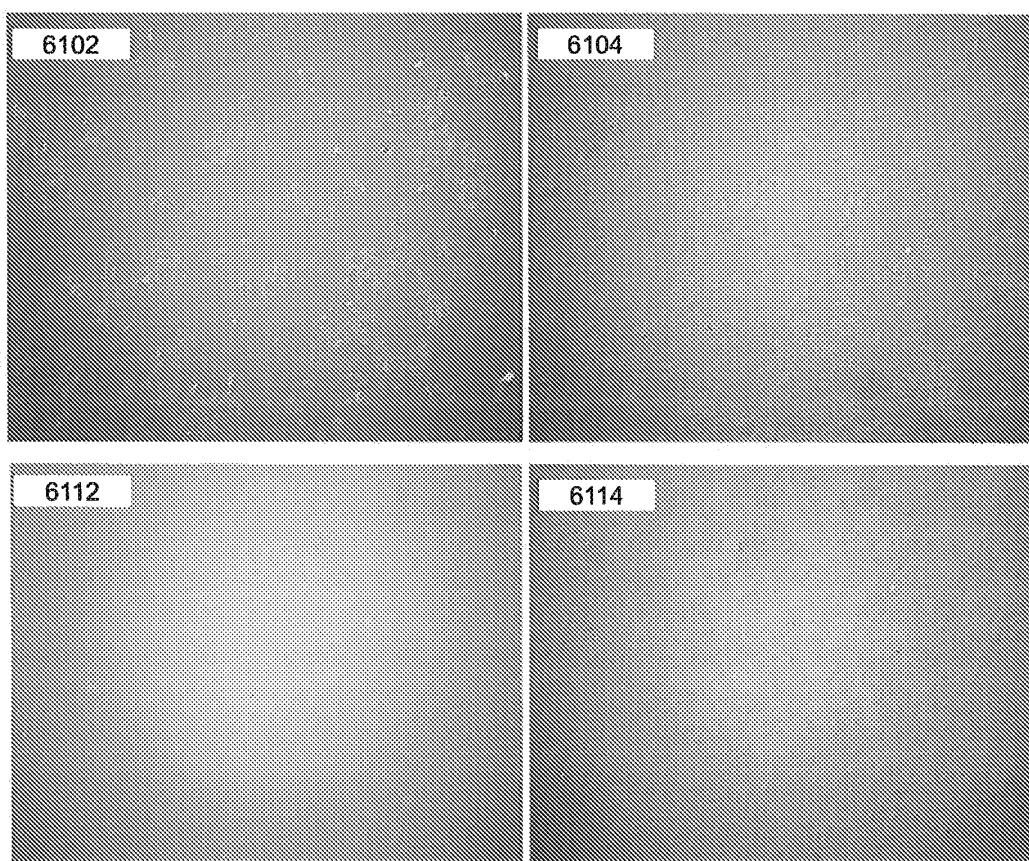


FIG. 61

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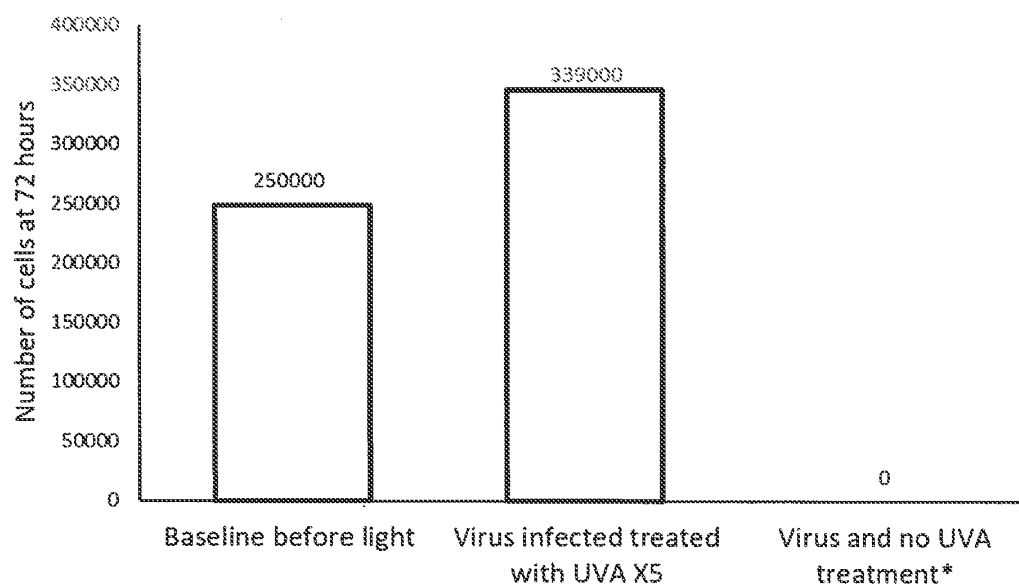


FIG. 62

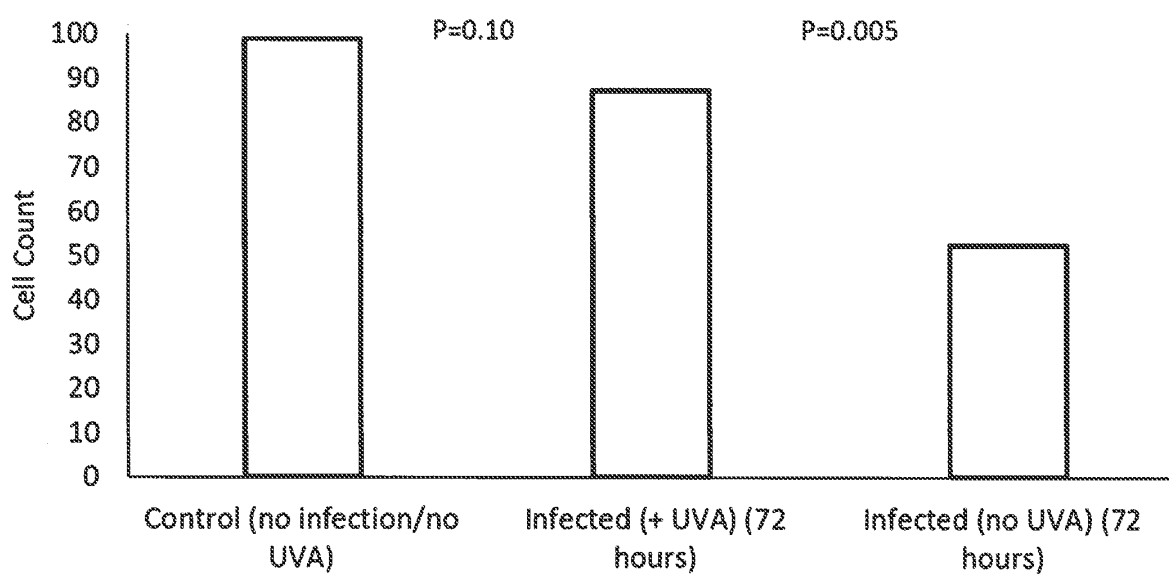


FIG. 63

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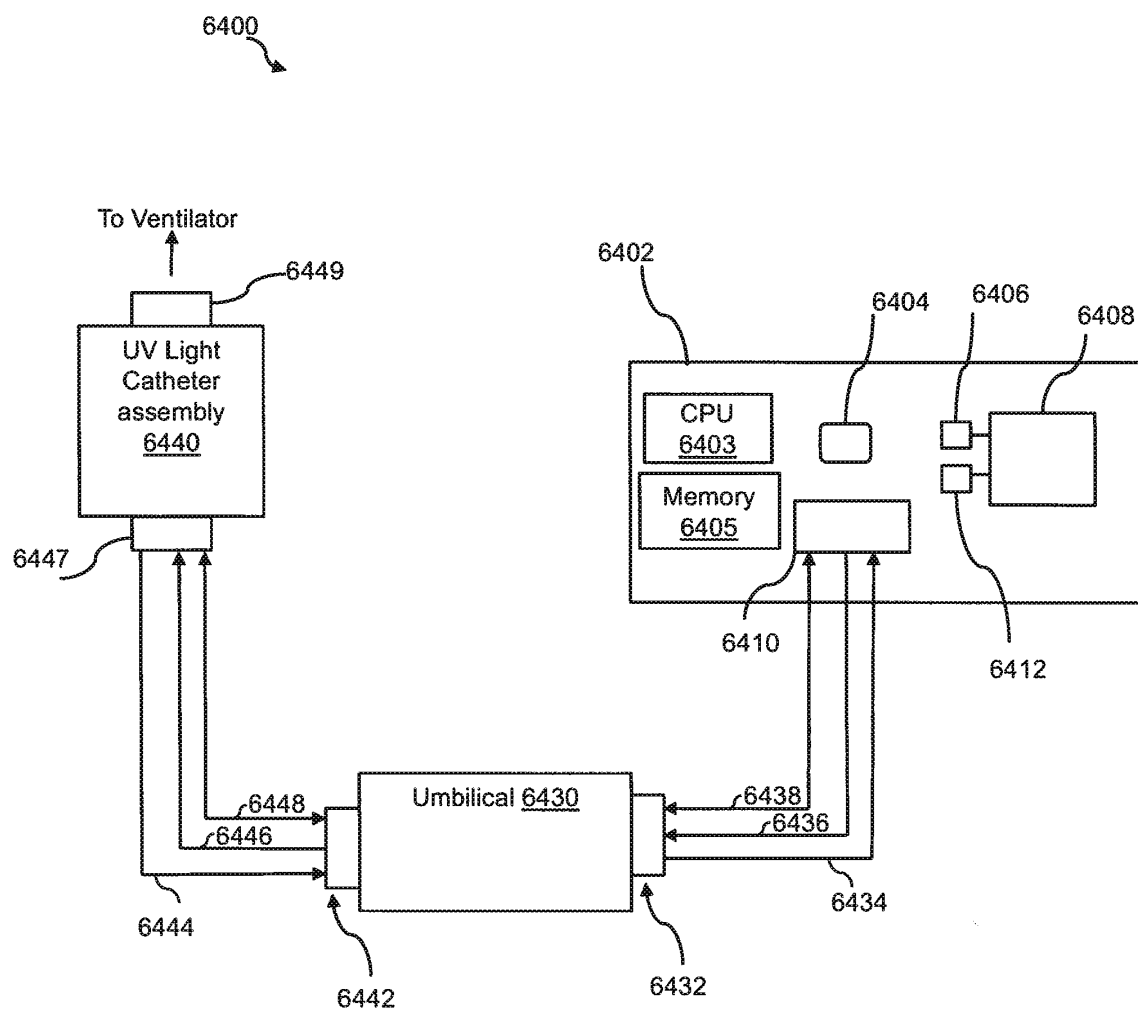


FIG. 64

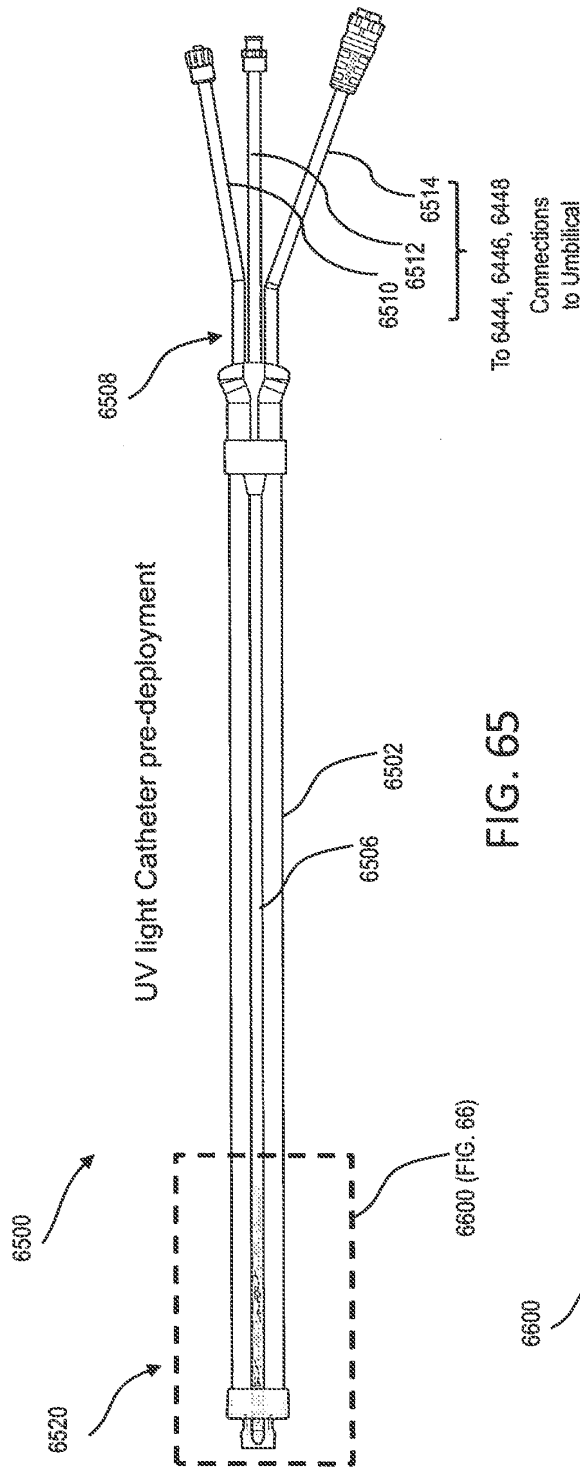


FIG. 65

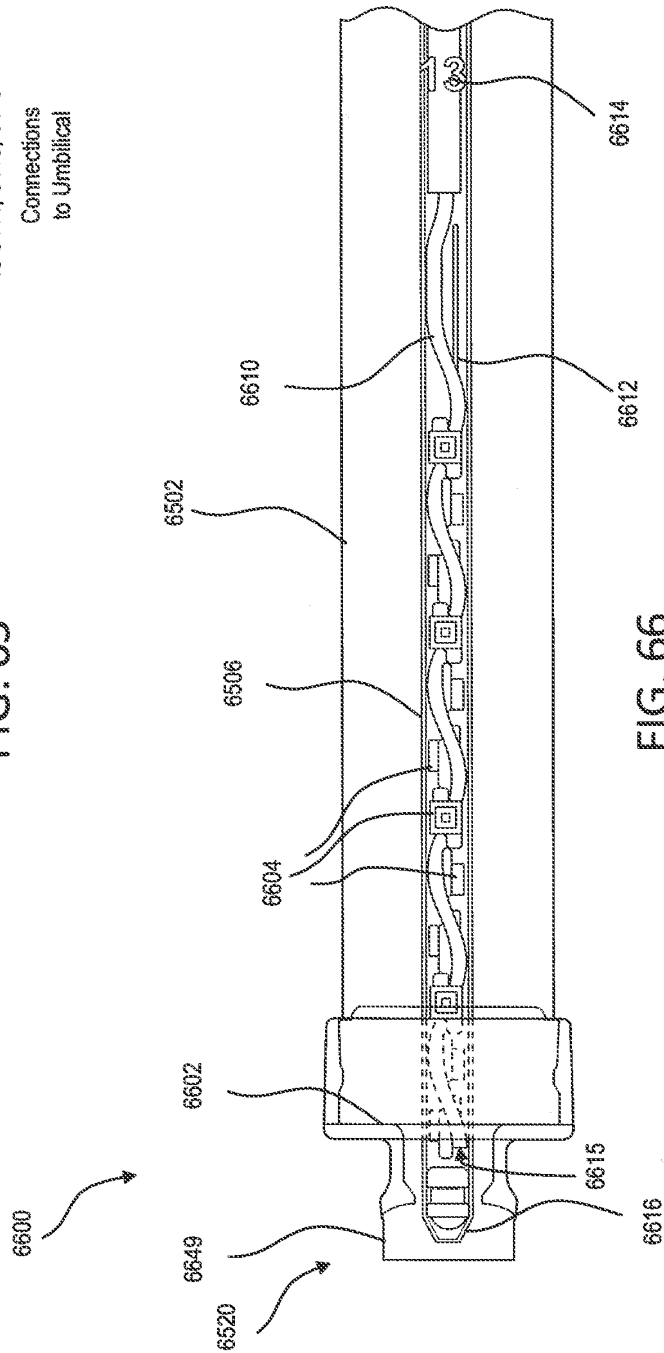
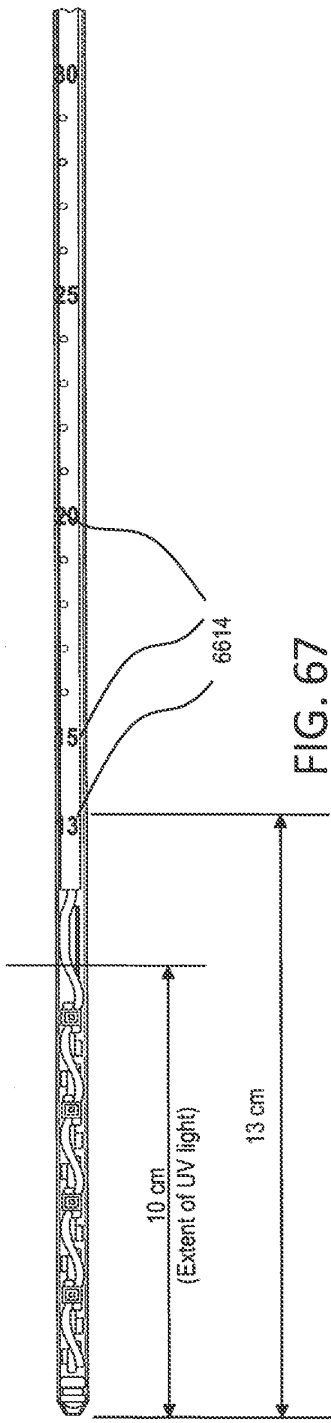
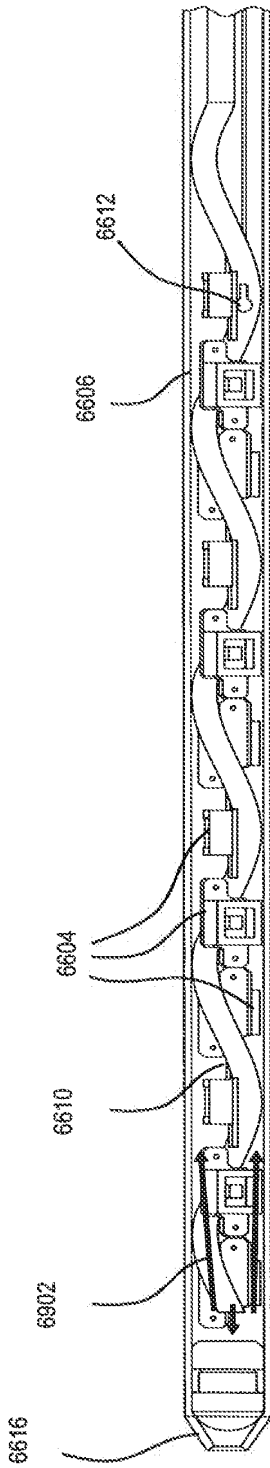
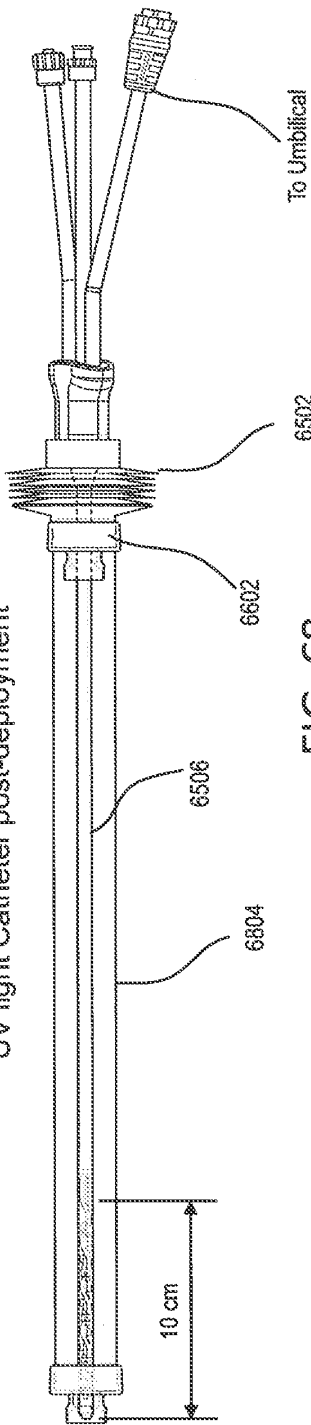
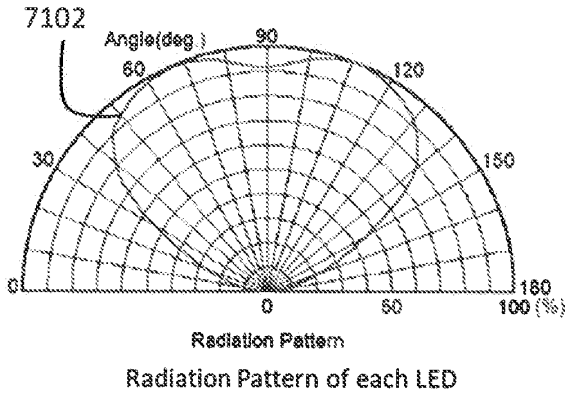
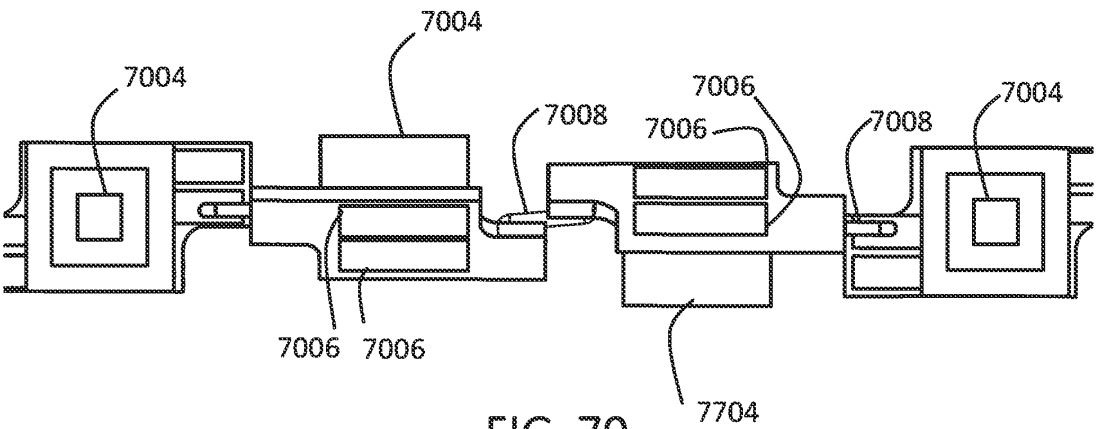


FIG. 66



UV light Catheter post-deployment





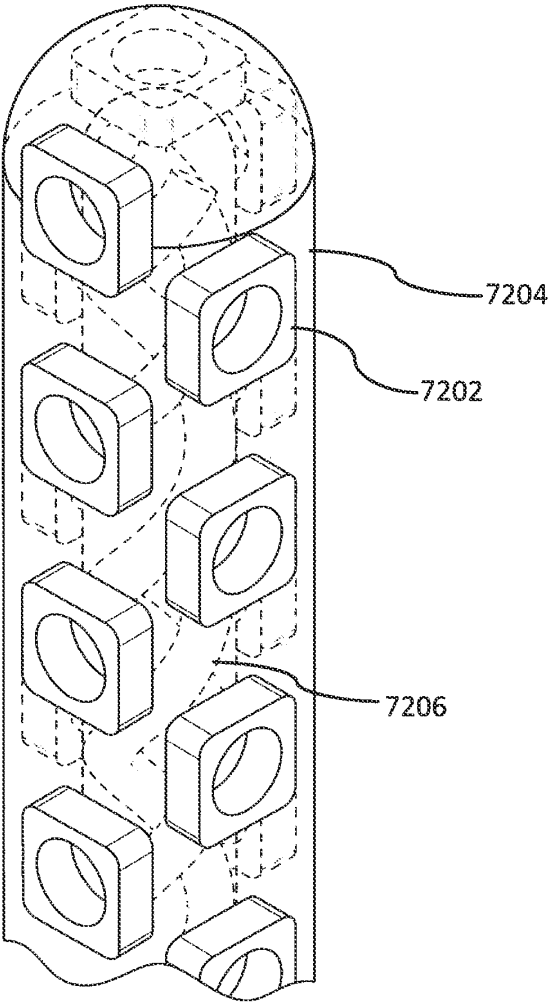


FIG. 72

Subject	1	2	3	4	5
Age	65	38	64	62	54
Gender	M	M	M	F	F
Race/ Ethnicity	White/ Hispanic	White/ Hispanic	White/ Persian	African American	White/ Hispanic
BMI (Body mass index)	26.0	36.3	25.5	35.4	34.0
PMH (Past Medical History)	Type 2 Diabetes mellitus (DM)	Prediabetes	Type 2 DM, Hypertension (HTN)	Mechanical mitral valve HTN Dyslipidemia	Type 2 DM
Symptom onset to intubation (days)	14	18	11	5	10
ETT size (mm)	7.5	8.0	8.0	7.5	7.5
PaO ₂ /FIO ₂	70	51	50	50	82
Vasopressor use	+	+	+	+	+
ECMO (Extracorporeal membrane oxygenation)	-	+	-	-	-
SOFA (Sequential organ failure assessment) score/predicted mortality	8/33.3%	8/33.3%*	14/95.2%	8/33.3%	7/21.5%
SAPSIII (Simplified Acute Physiology Score III) score/predicted mortality	62/34%	62/34%*	85/67%	68/43%	57/26%

FIG. 73

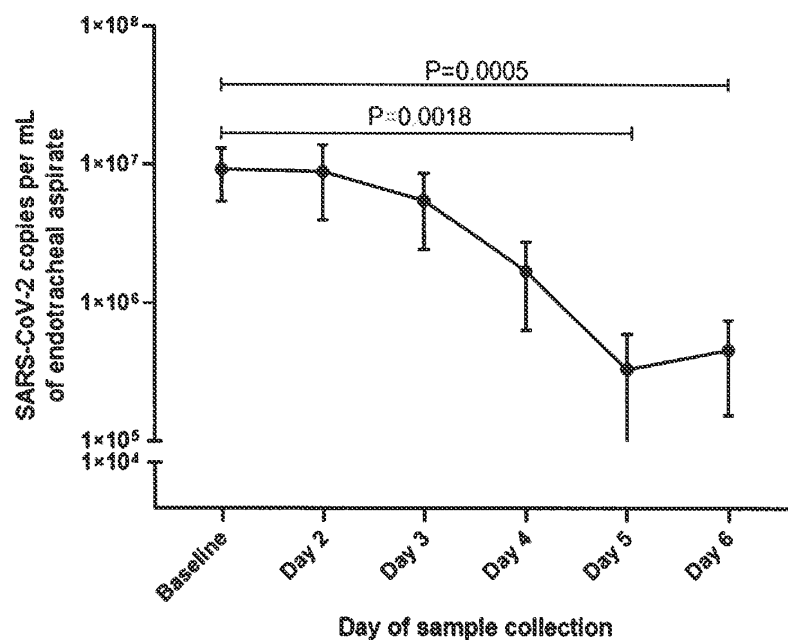


FIG. 74

Subject	Baseline viral load (log)	Day 5 viral load (log)	Day 6 viral load (log)	Viral load drop (log) by day 5	Viral load (log) by day 6
1	4.54	0	NA*	-4.54	NA*
3	7.21	6.05	6.01	-1.16	-1.20
4	7.17	4.93	5.53	-2.25	-1.64
5	6.77	5.06	0	-1.71	-6.77

FIG. 75

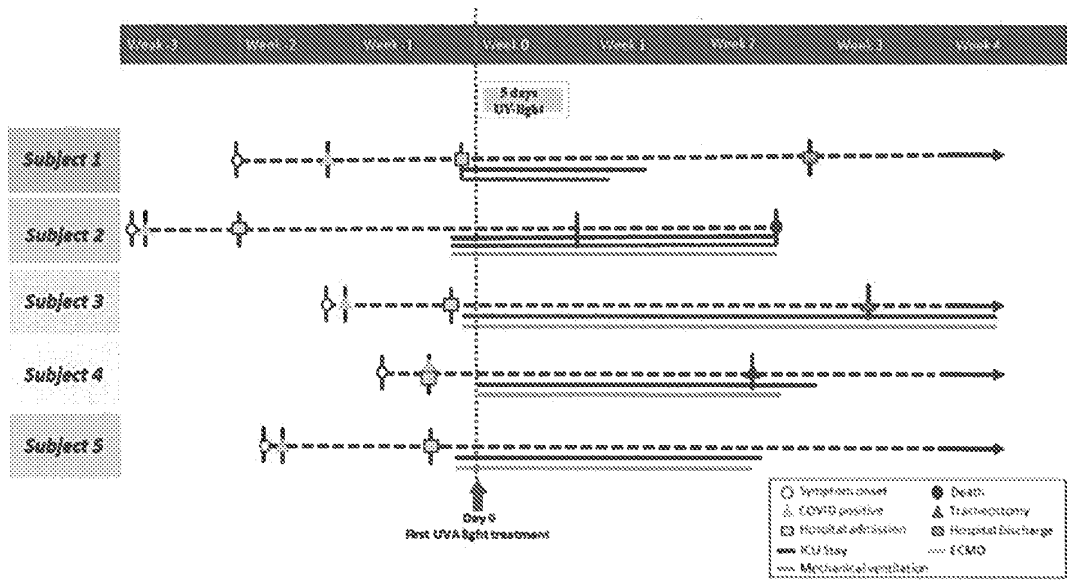


FIG. 76