

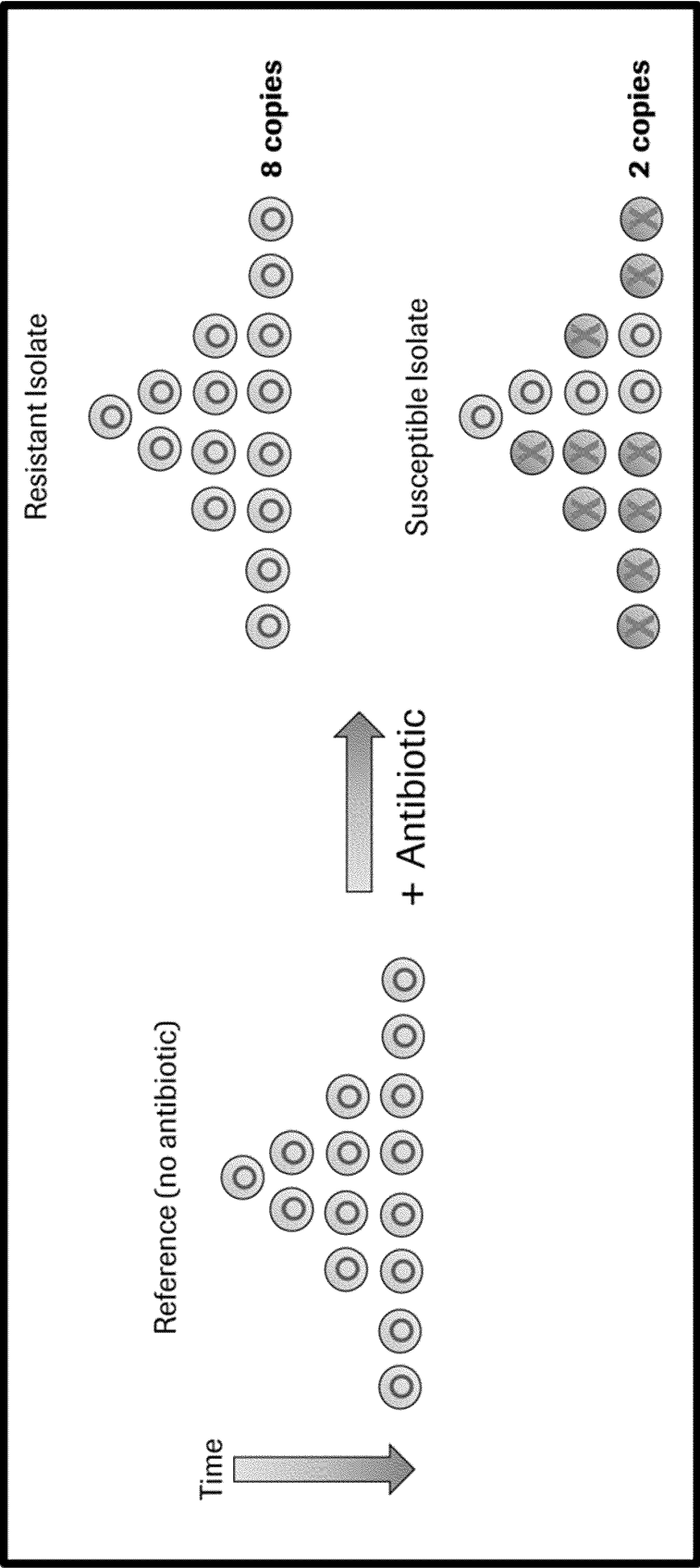


FIG. 1

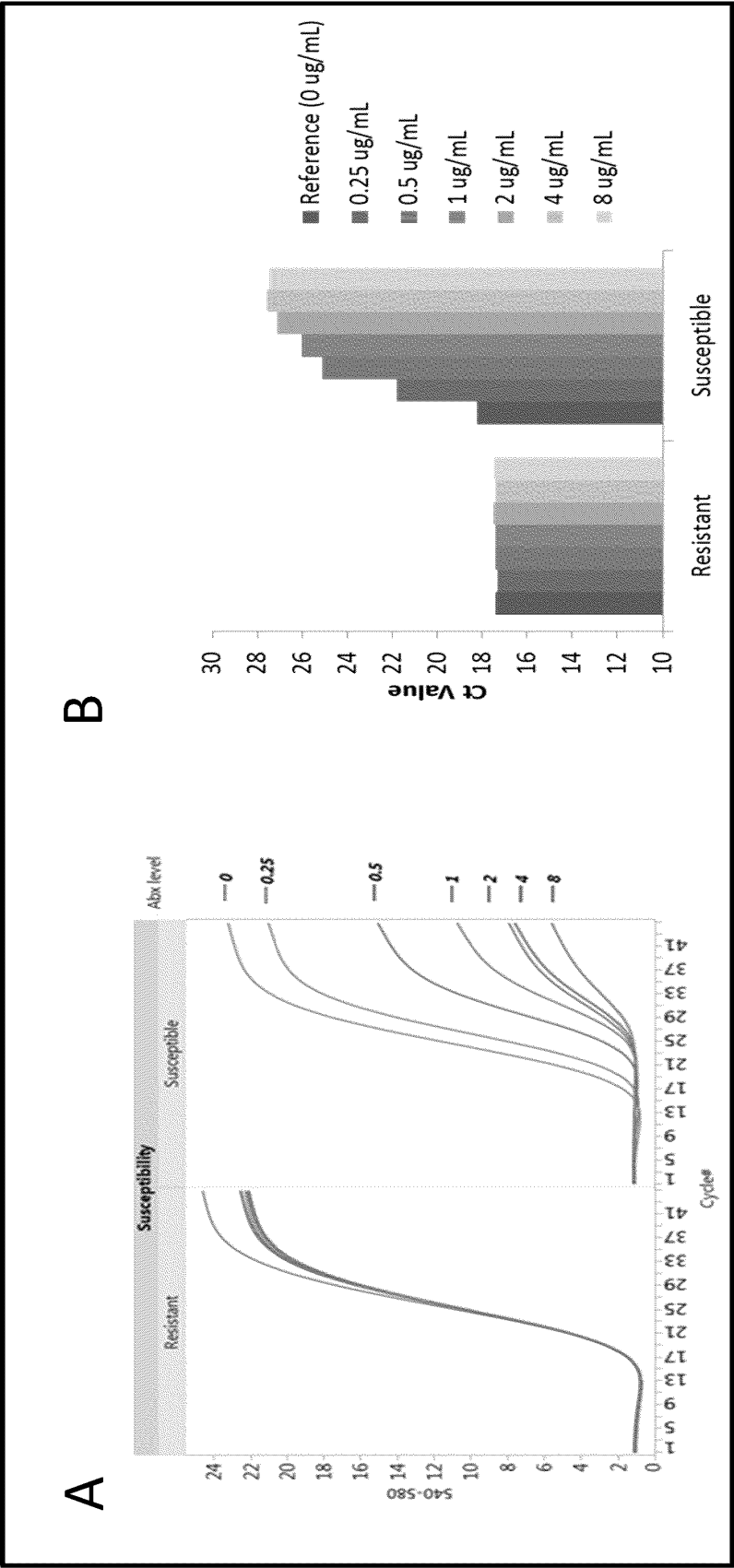


FIG. 2

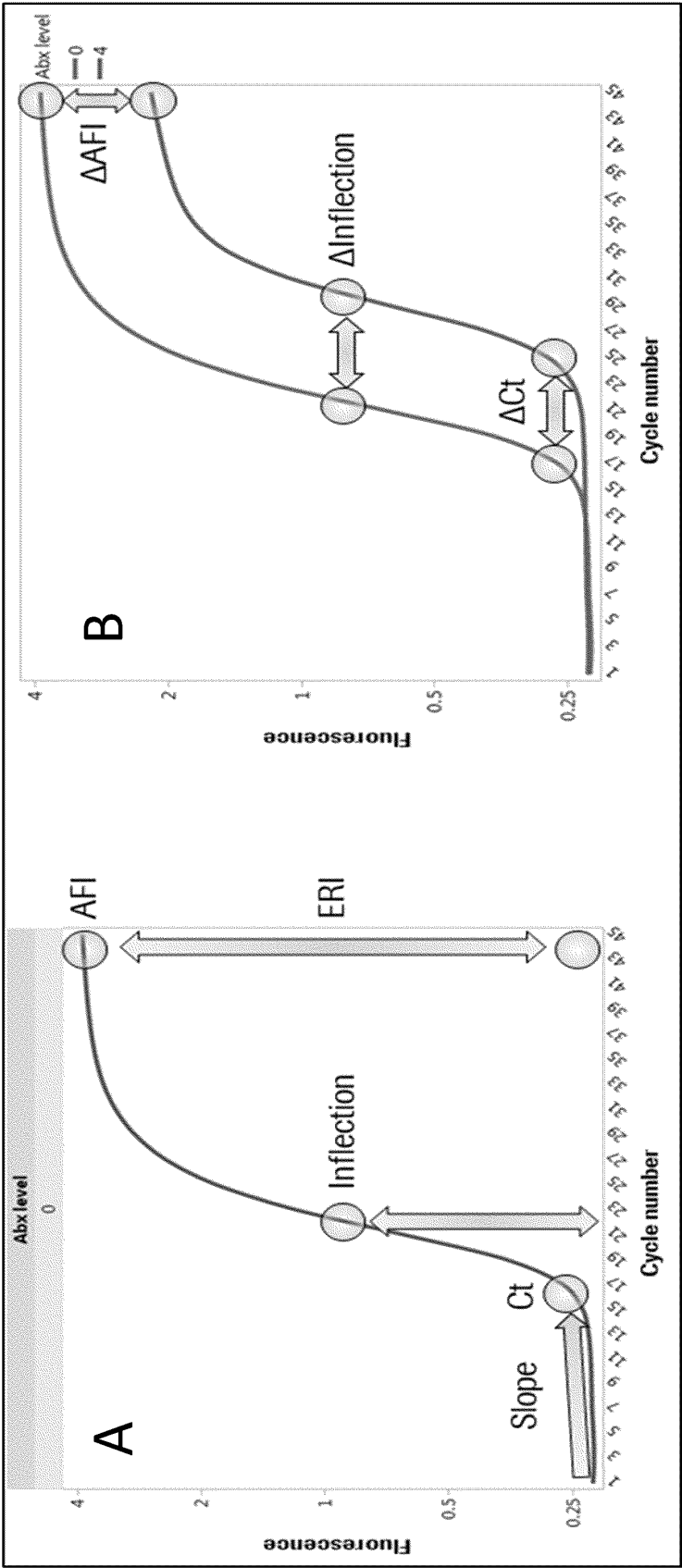


FIG. 3

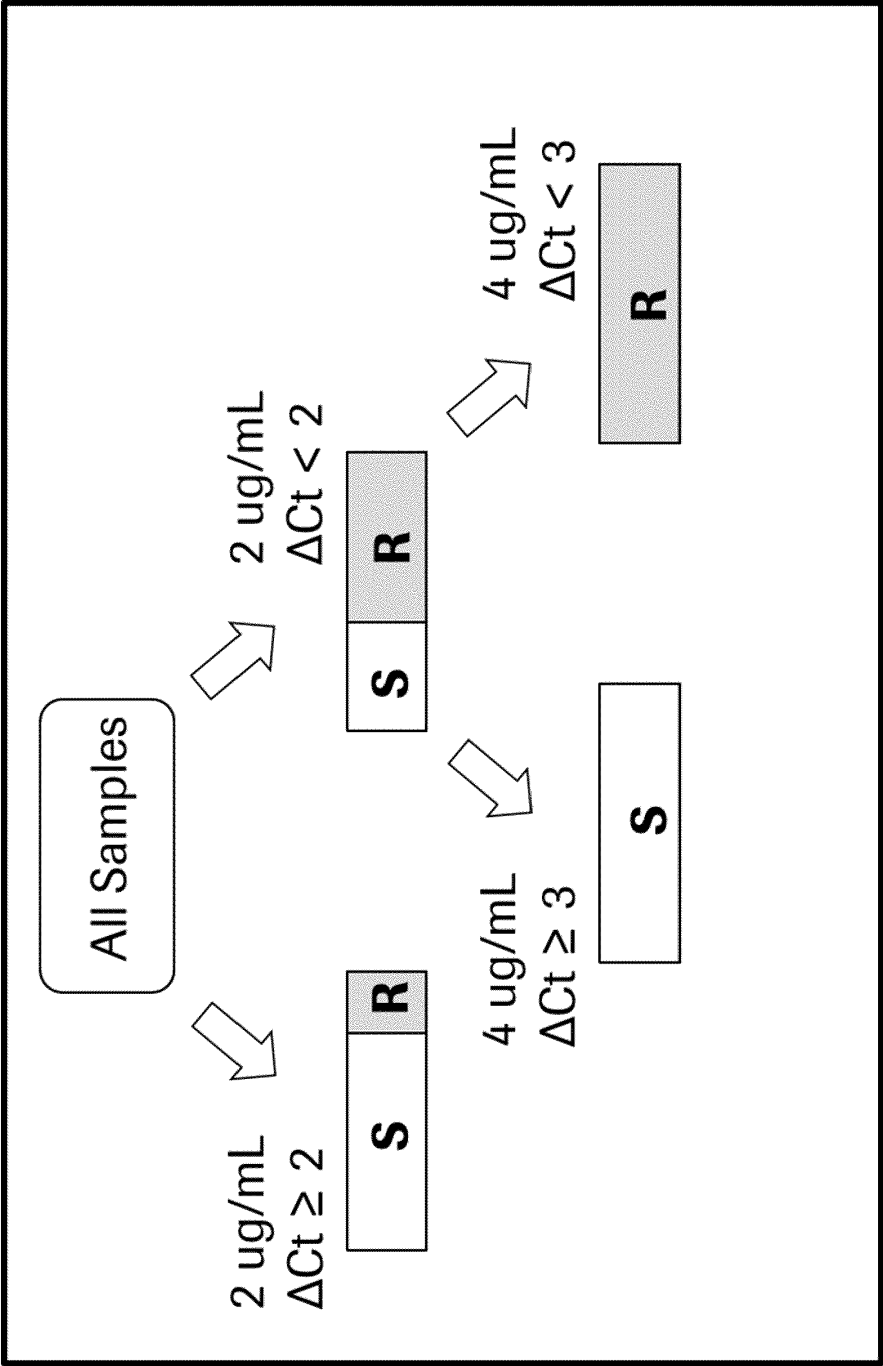


FIG. 4

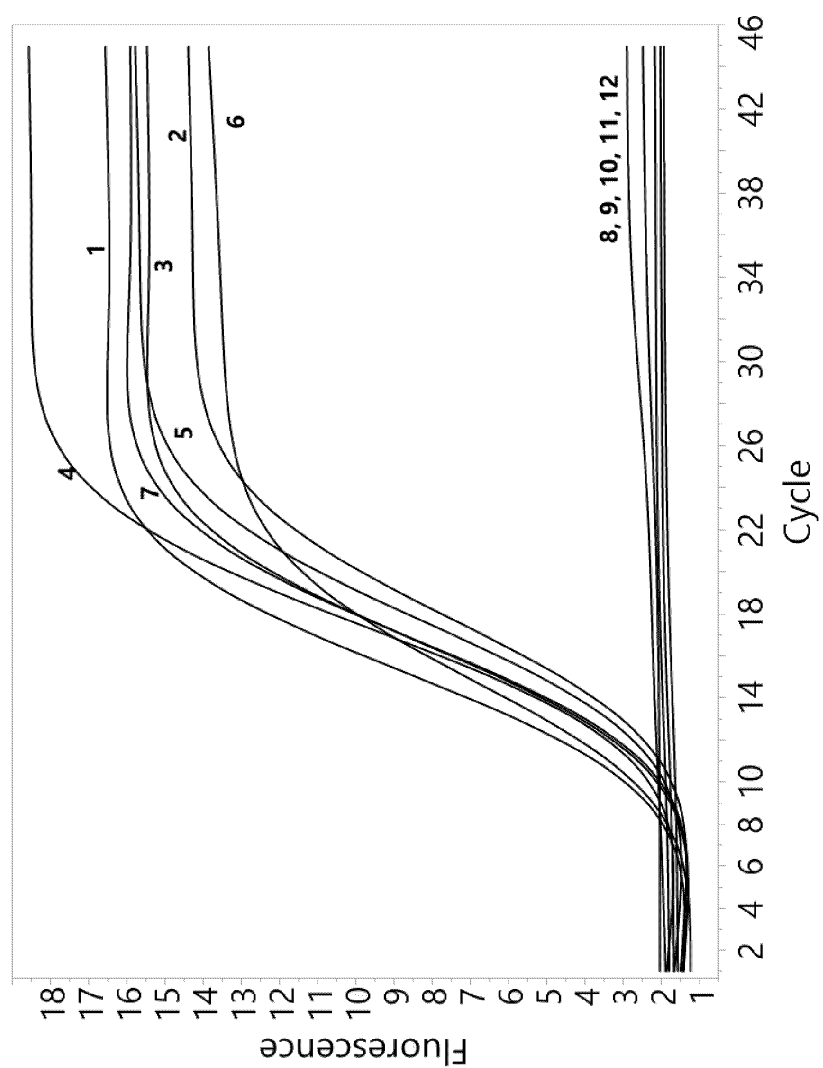


FIG. 5

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pitti
12	No Template Control

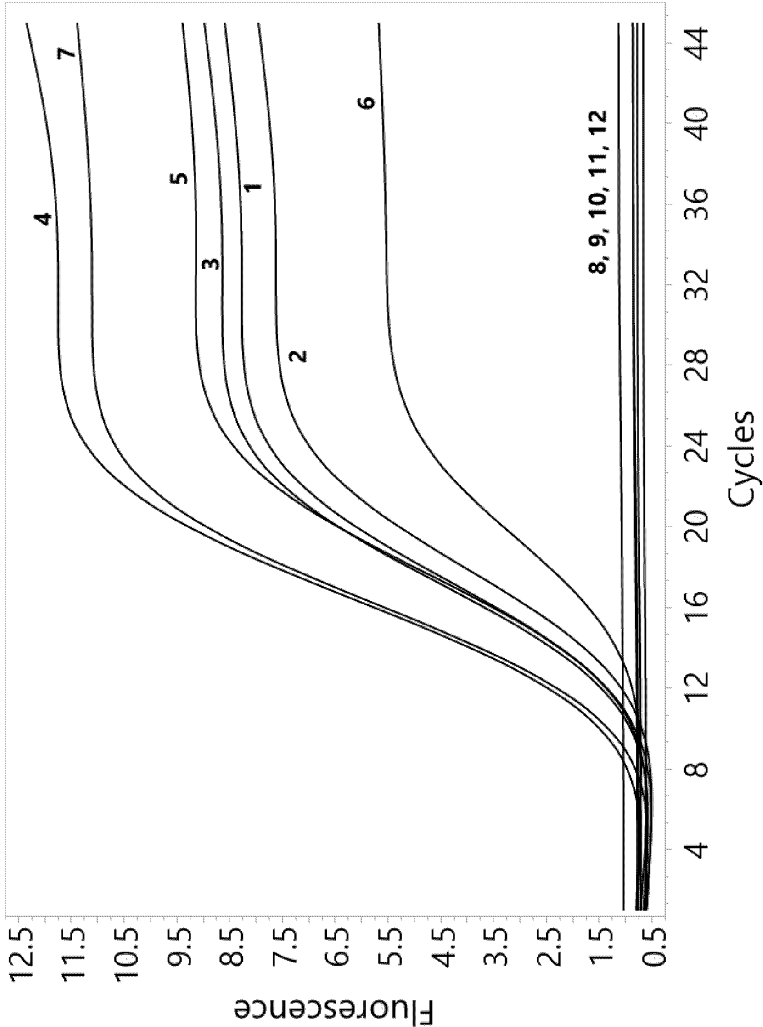


FIG. 6

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

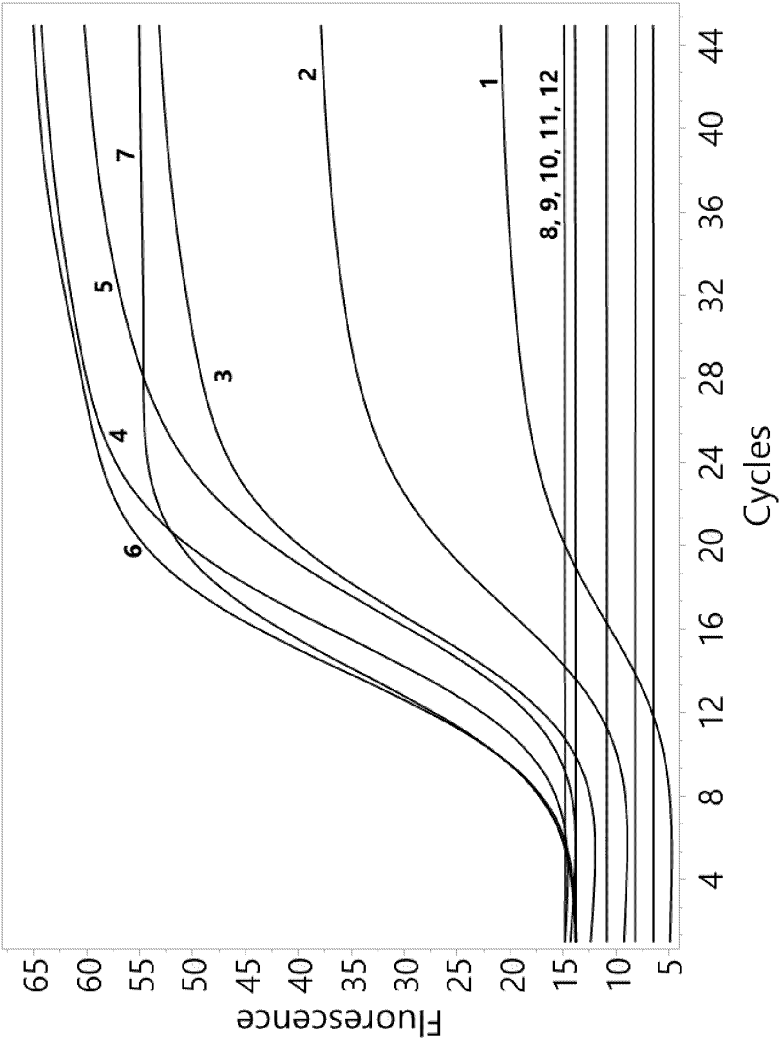


FIG. 7

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

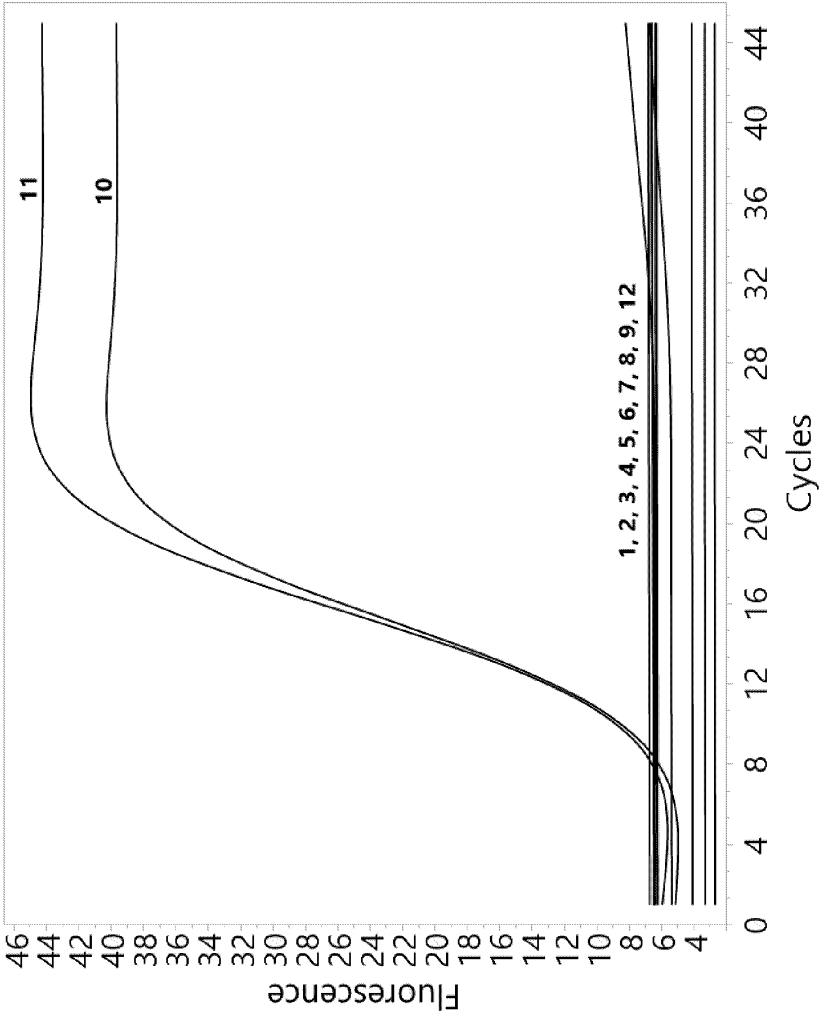


FIG. 8

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

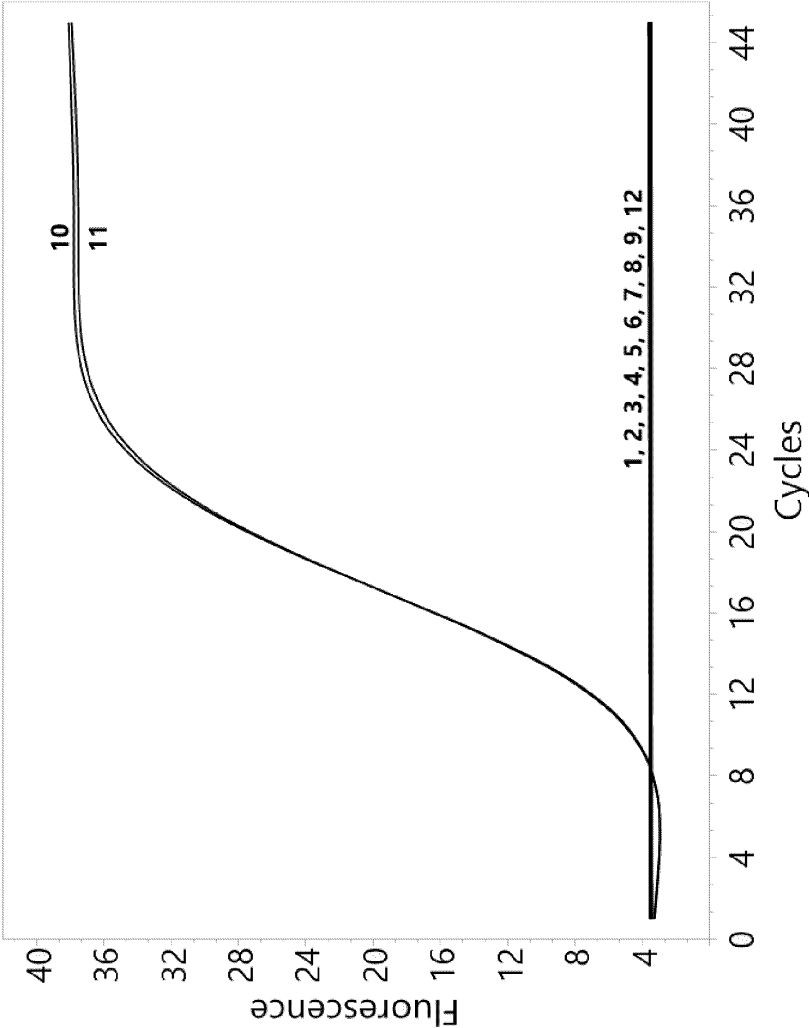


FIG. 9

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

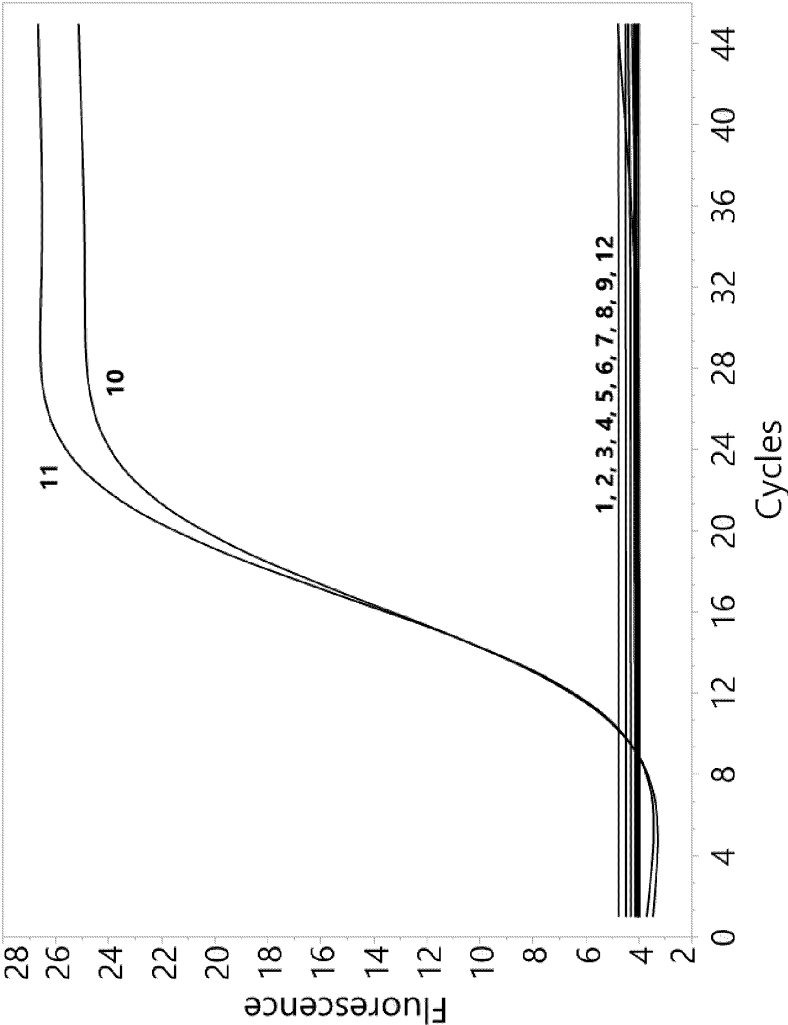


FIG. 10

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

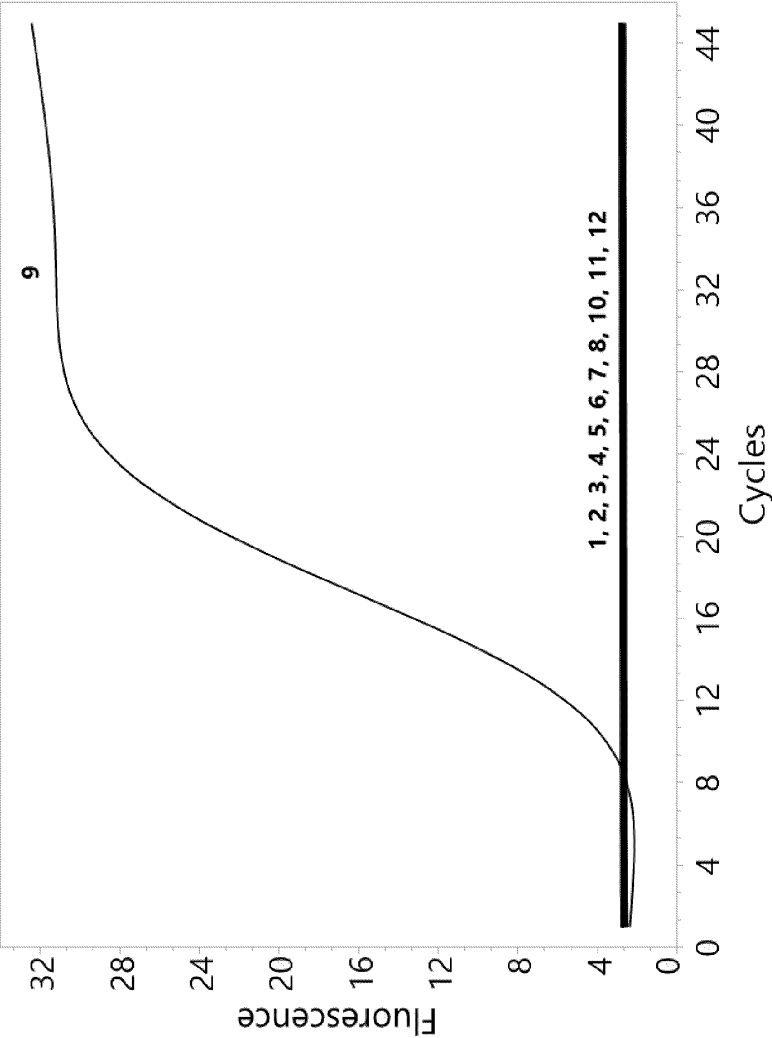


FIG. 11

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

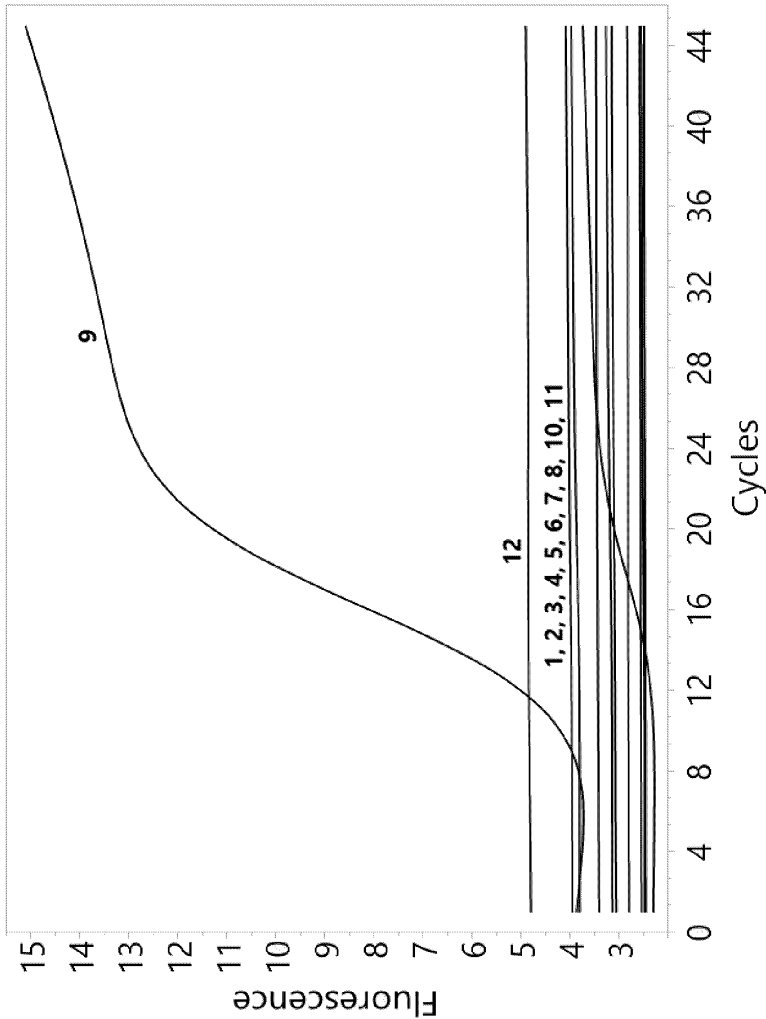


FIG. 12

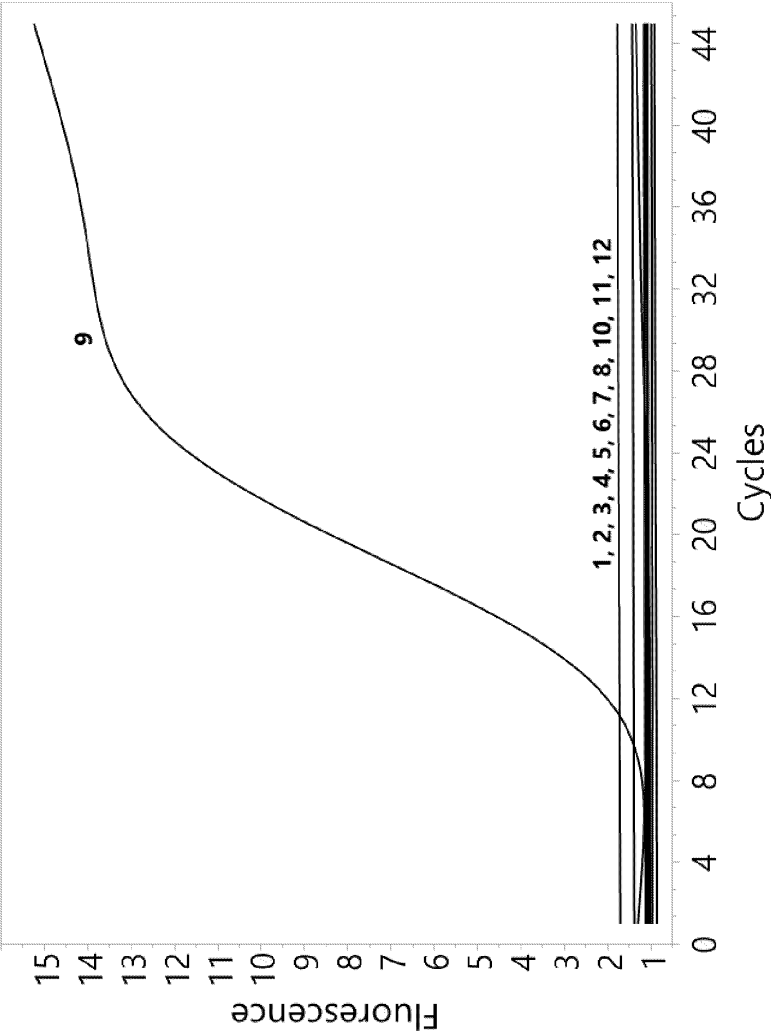


FIG. 13

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

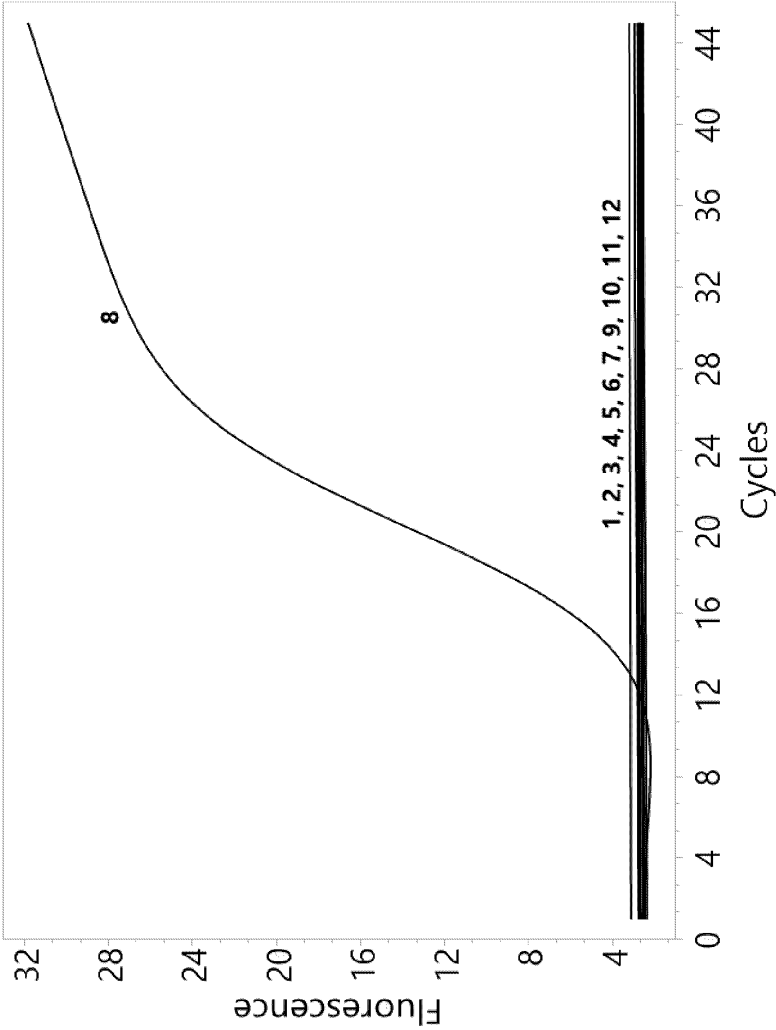


FIG. 14

Curve Label	Target
1	<i>Escherichia coli</i>
2	<i>Klebsiella pneumoniae</i>
3	<i>Enterobacter cloacae</i>
4	<i>Klebsiella oxytoca</i>
5	<i>Klebsiella aerogenes</i>
6	<i>Serratia marcescens</i>
7	<i>Proteus mirabilis</i>
8	<i>Stenotrophomonas maltophilia</i>
9	<i>Pseudomonas aeruginosa</i>
10	<i>Acinetobacter baumannii</i>
11	<i>Acinetobacter pittii</i>
12	No Template Control

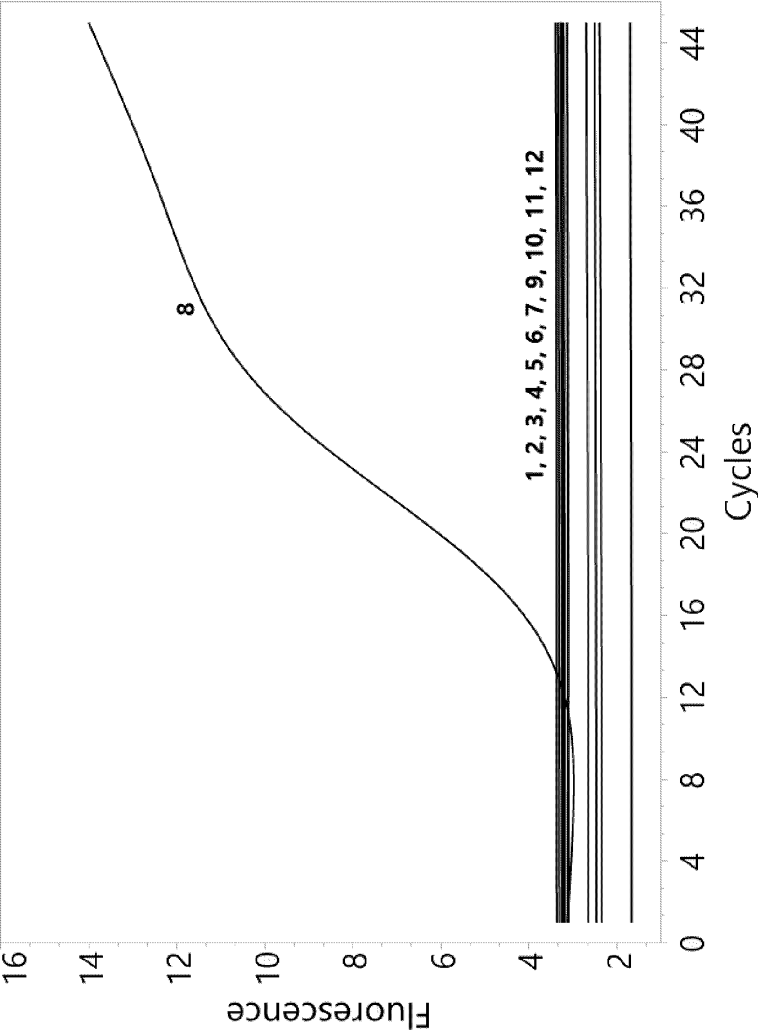


FIG. 15

Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Stenotrophomonas maltophilia
9	Pseudomonas aeruginosa
10	Acinetobacter baumannii
11	Acinetobacter pittii
12	No Template Control

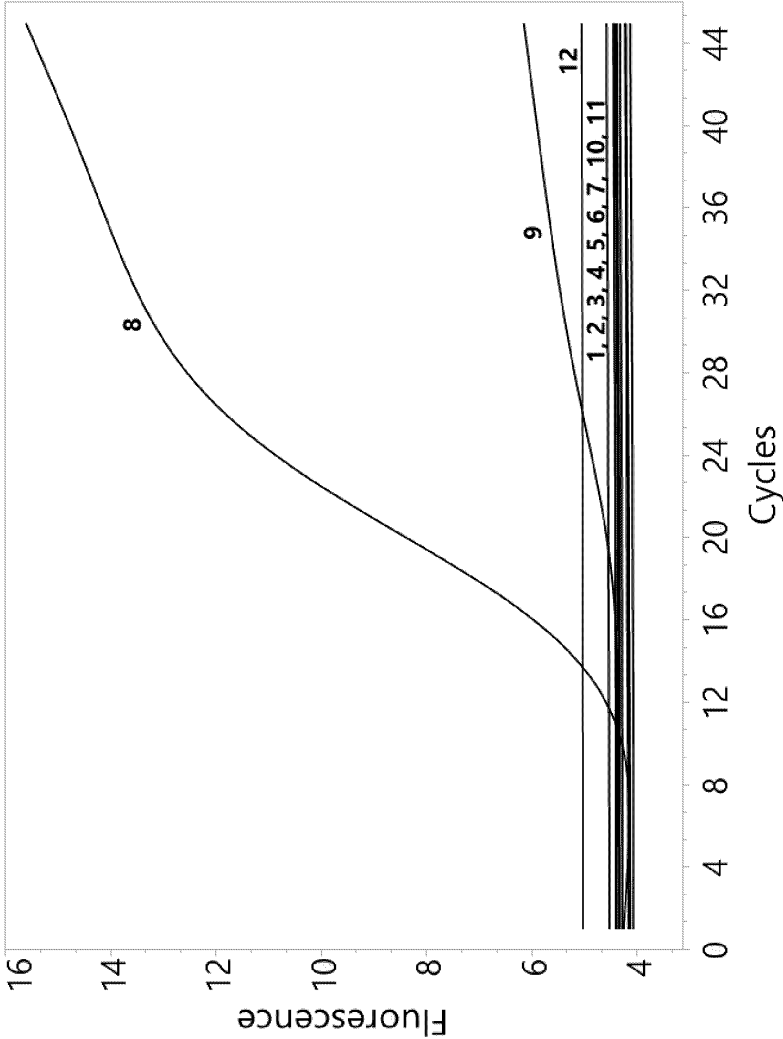


FIG. 16

Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

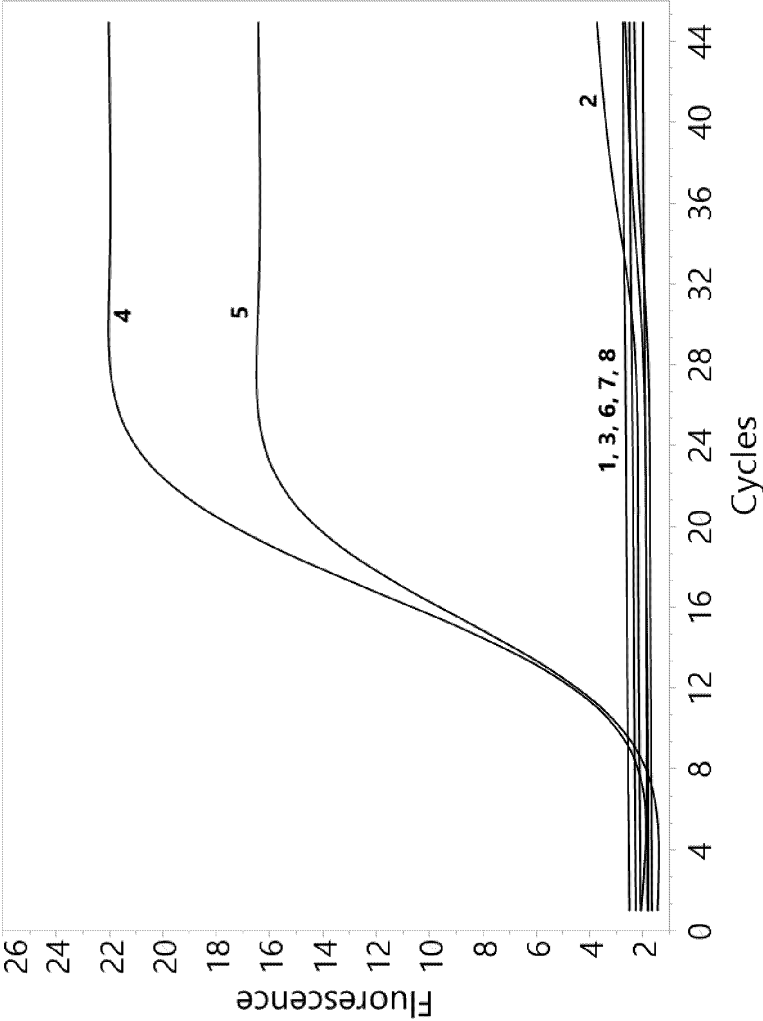
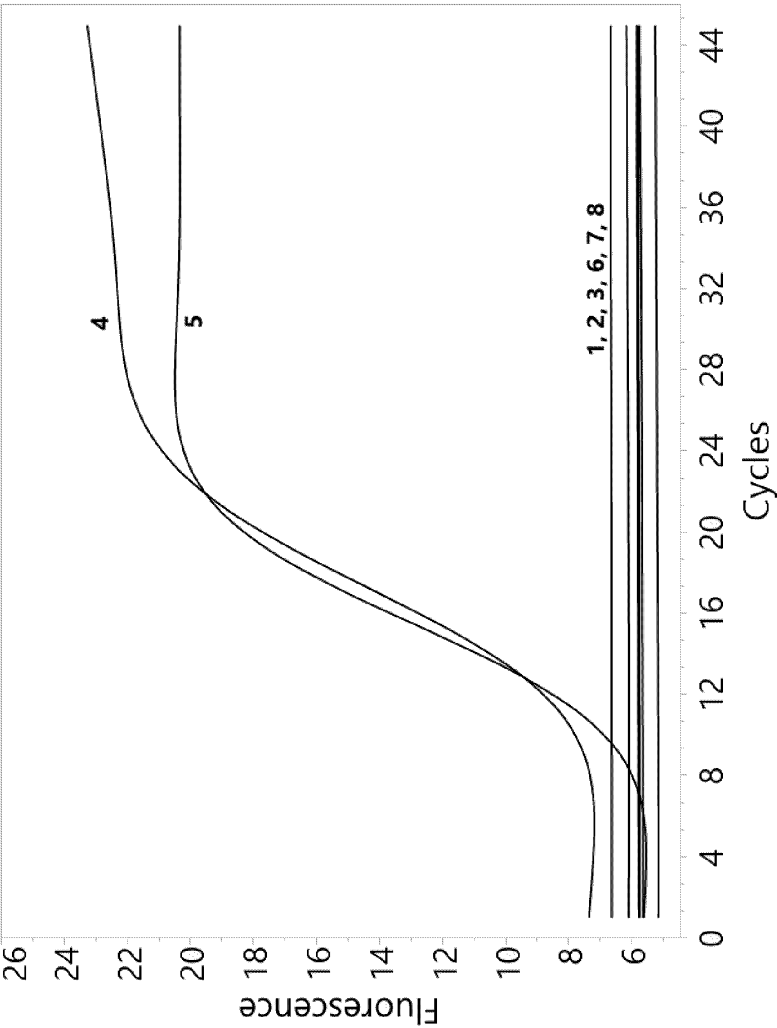


FIG. 17



Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

FIG. 18

Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

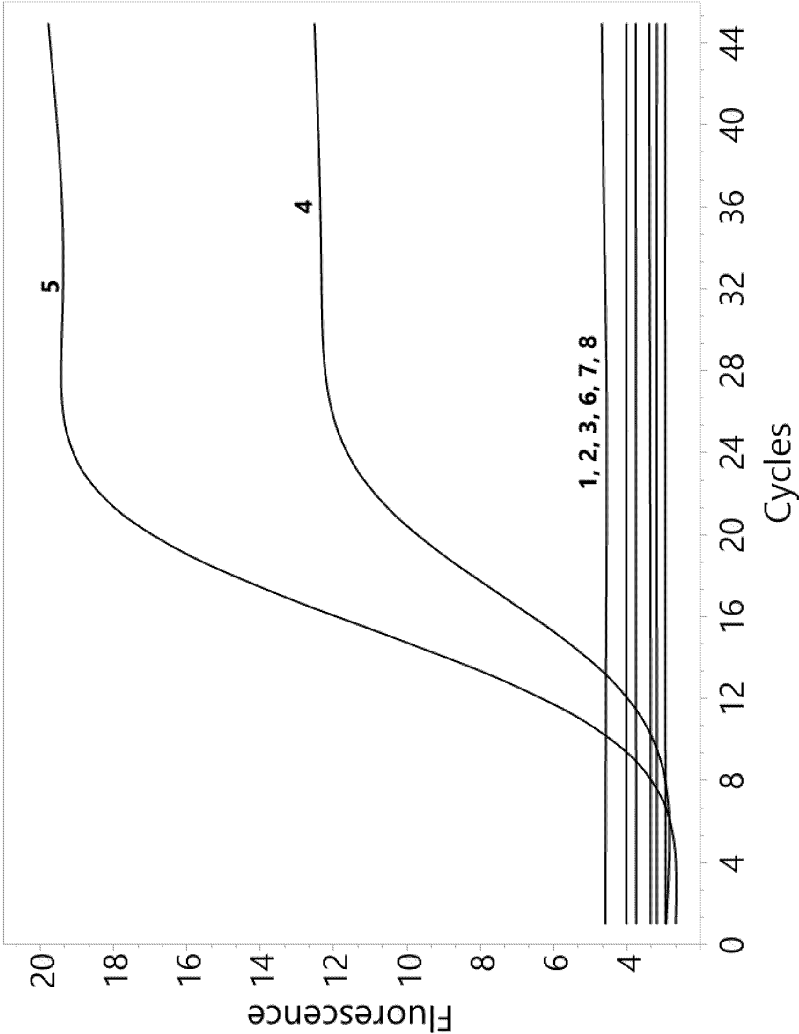
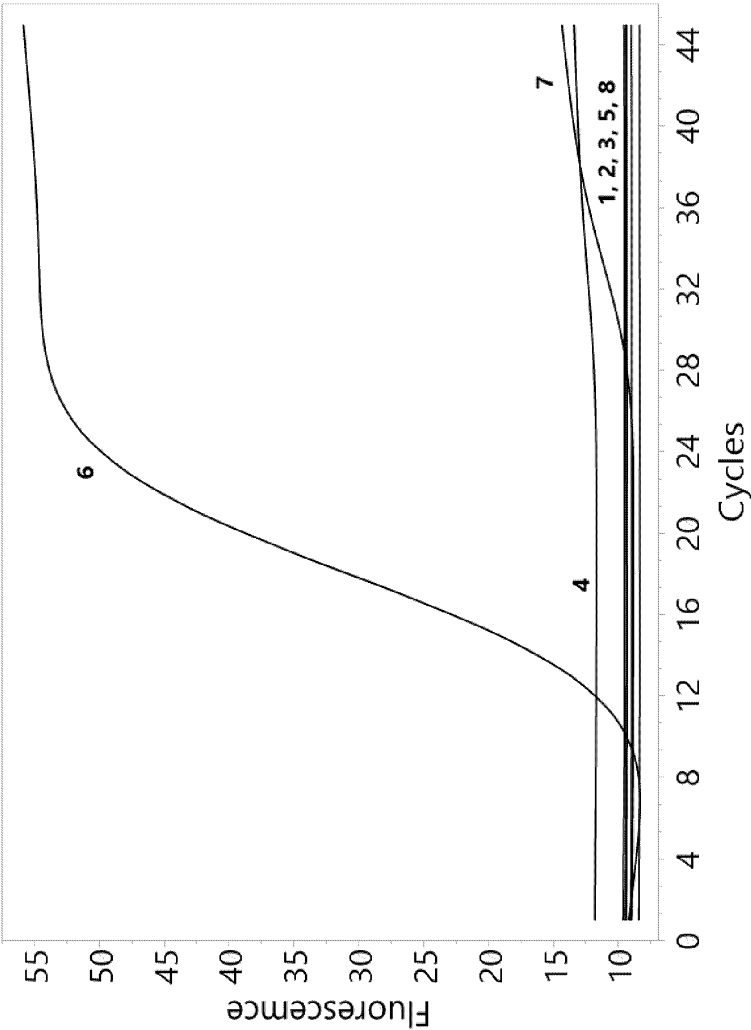


FIG. 19



Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

FIG. 20

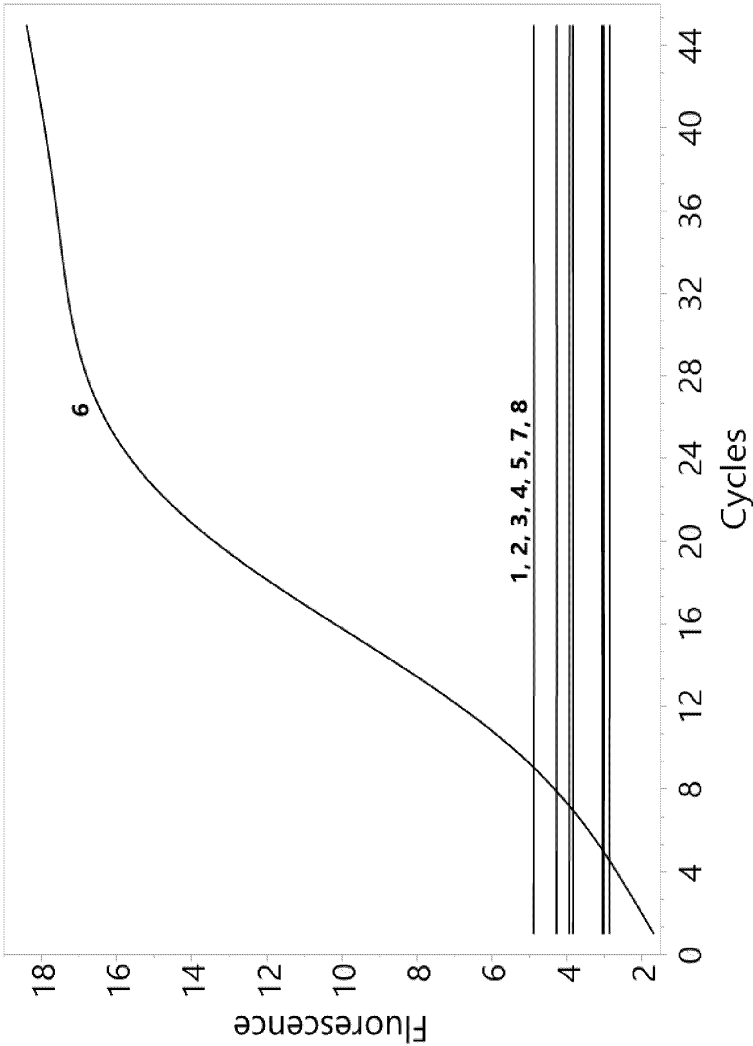


FIG. 21

Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

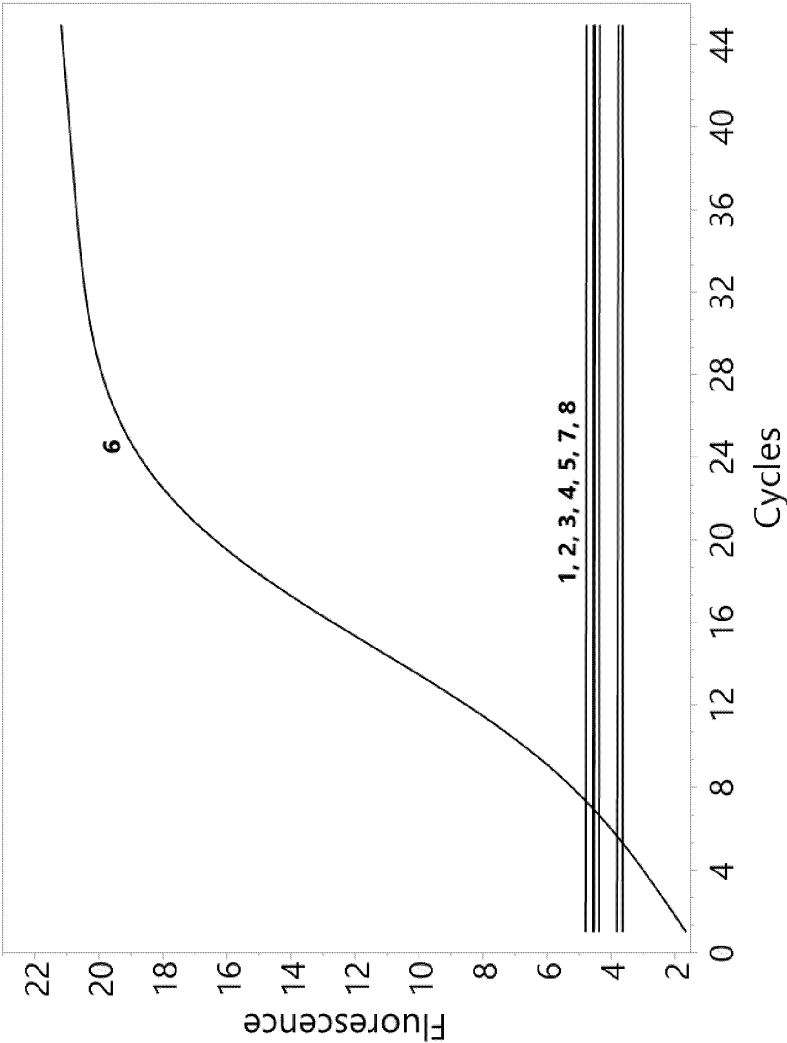


FIG. 22

Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

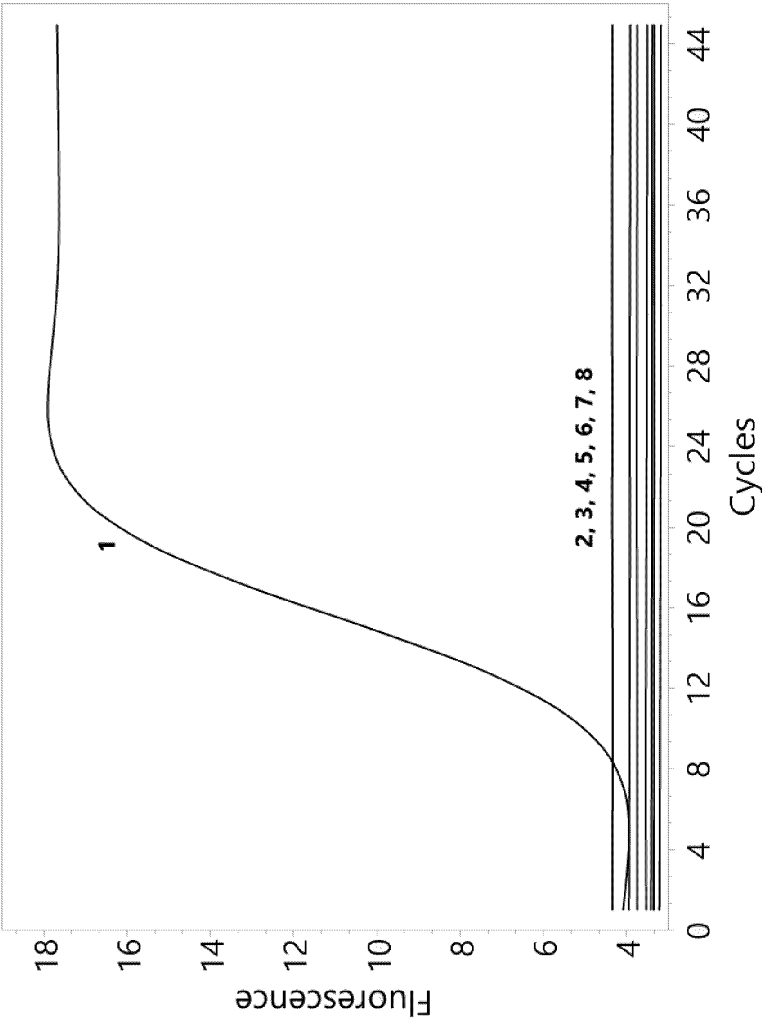


FIG. 23

Curve Label	Target
1	<i>Streptococcus agalactiae</i>
2	<i>Streptococcus pneumoniae</i>
3	<i>Streptococcus pyogenes</i>
4	<i>Enterococcus faecium</i>
5	<i>Enterococcus faecalis</i>
6	<i>Staphylococcus aureus</i>
7	<i>Staphylococcus epidermidis</i>
8	No Template Control

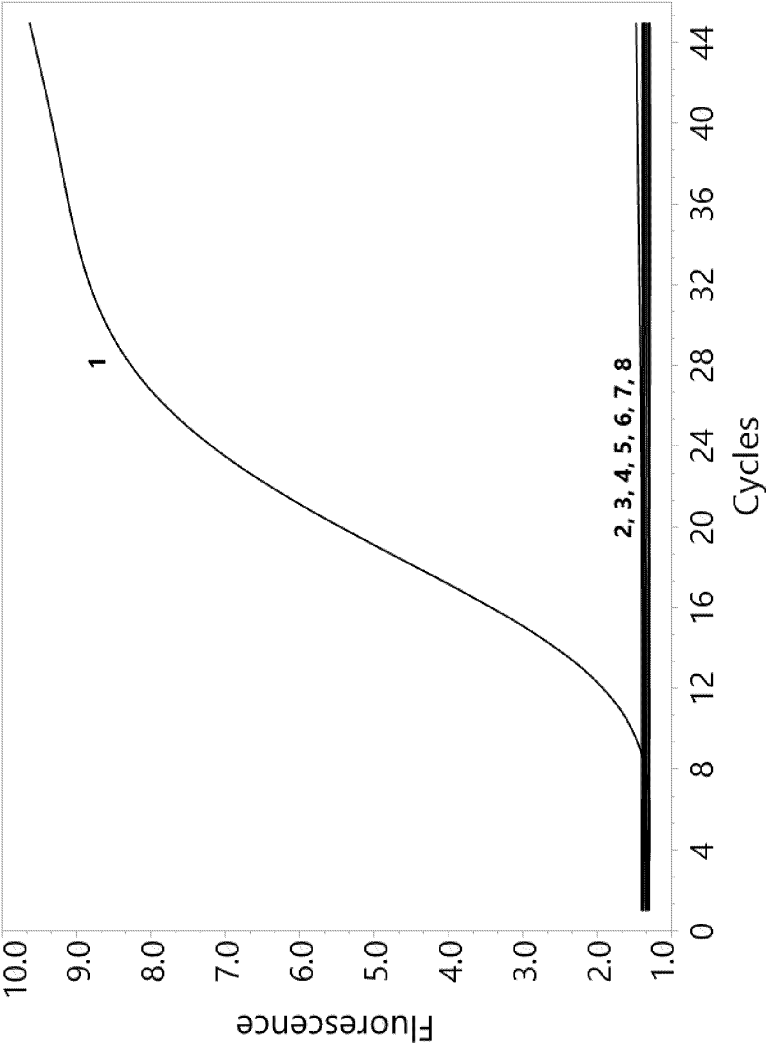
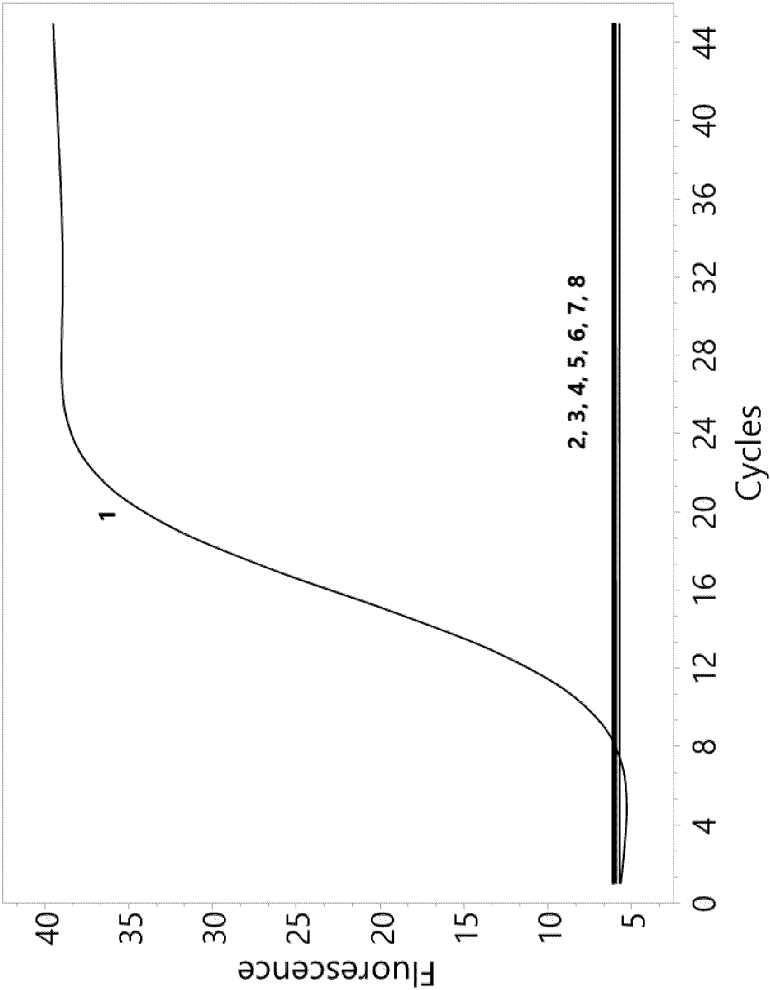


FIG. 24

Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control



Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

FIG. 25

Curve Label	Target
1	Candida albicans
2	Candida auris
3	No Template Control

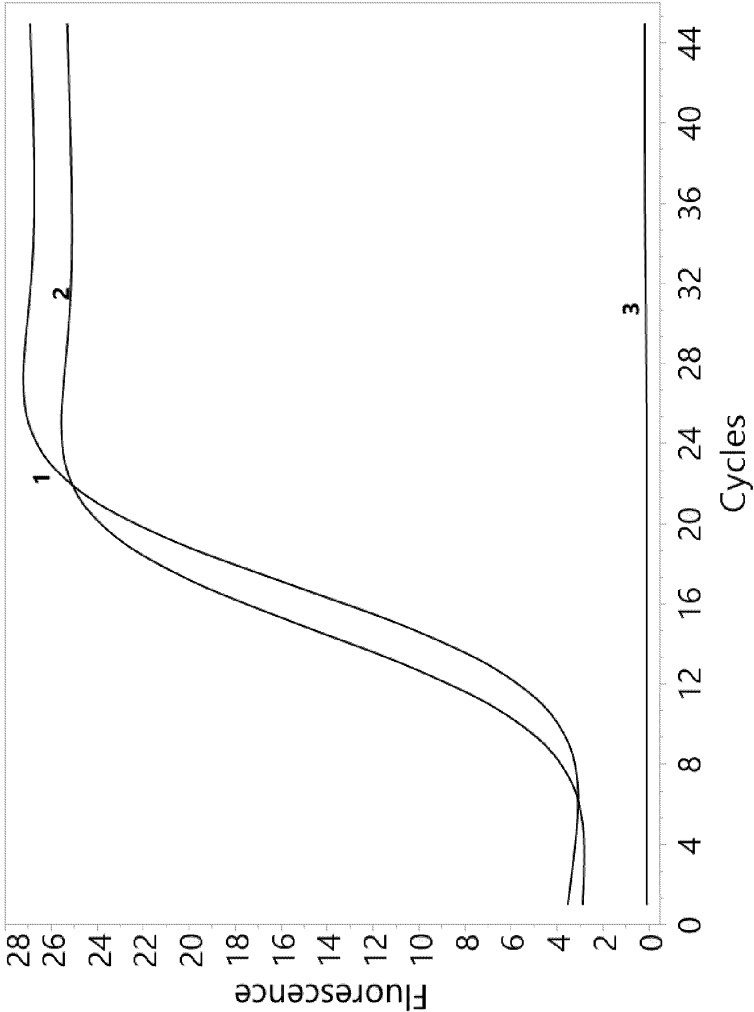


FIG. 26

Curve Label	Target
1	Candida albicans
2	Candida auris
3	No Template Control

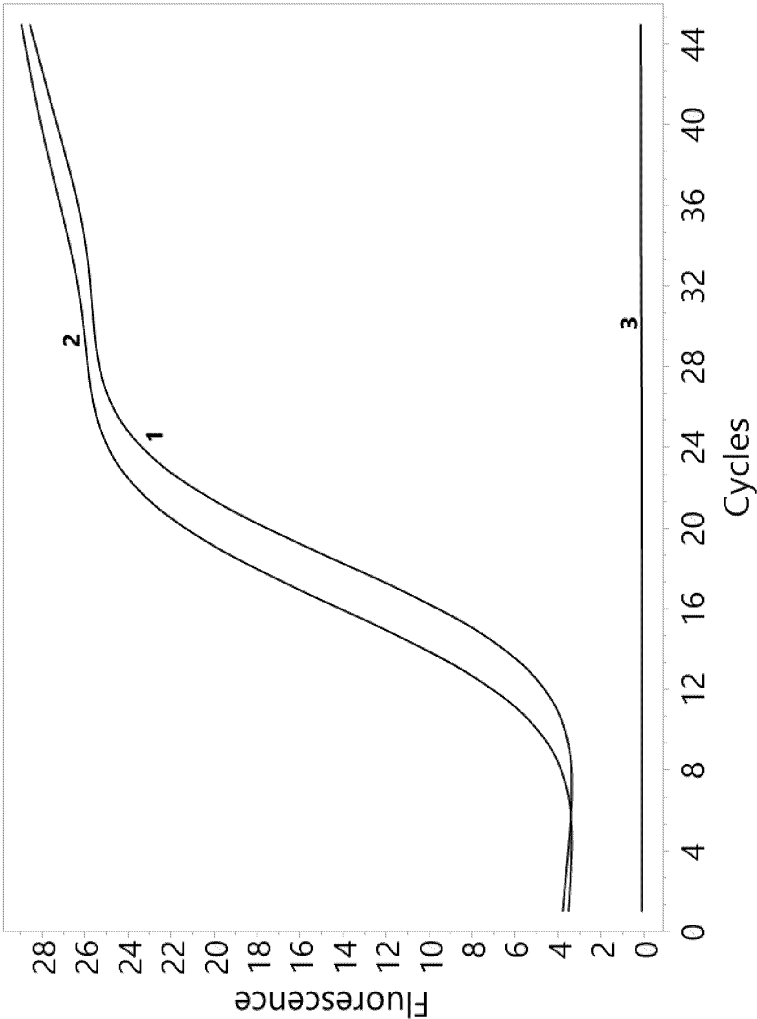


FIG. 27

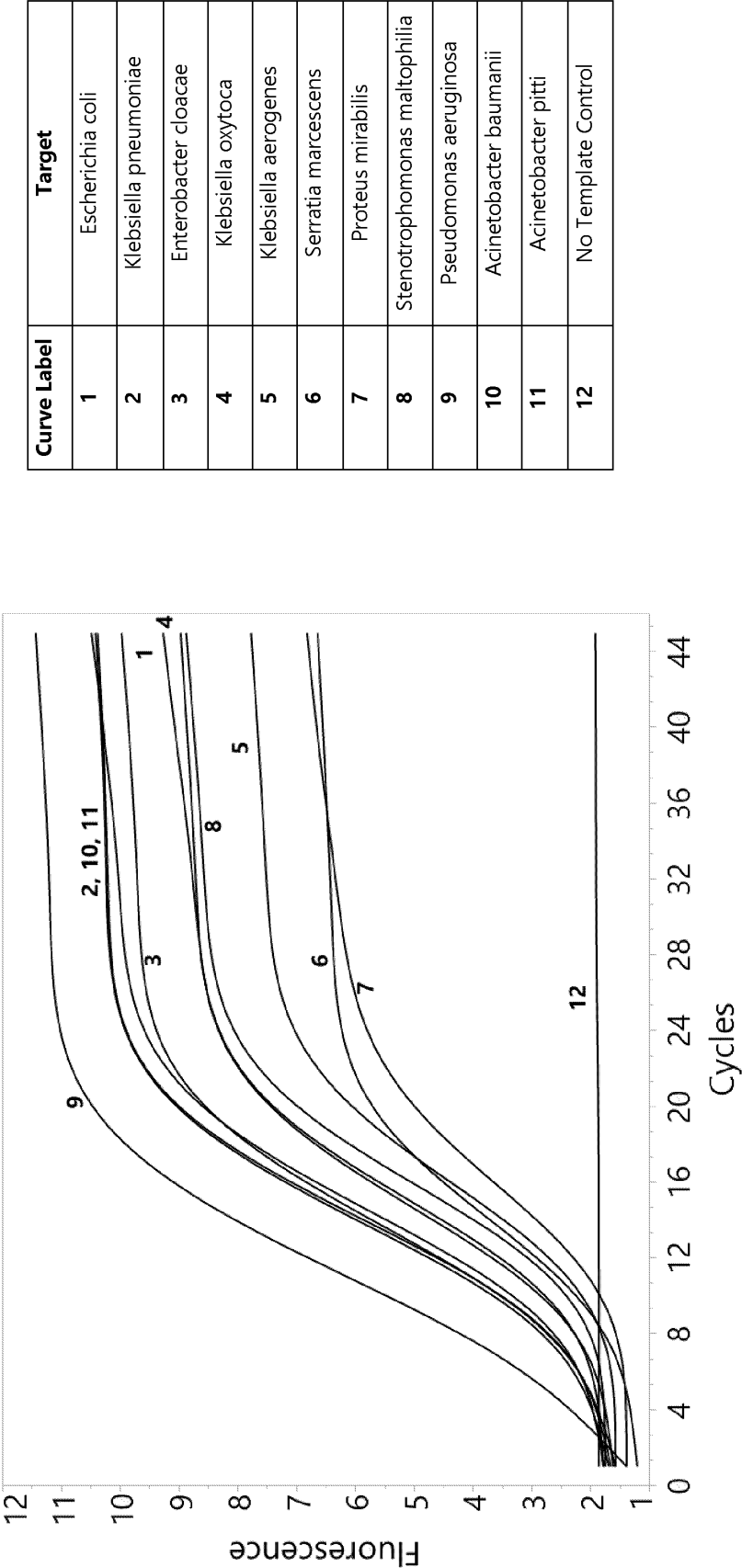


FIG. 28

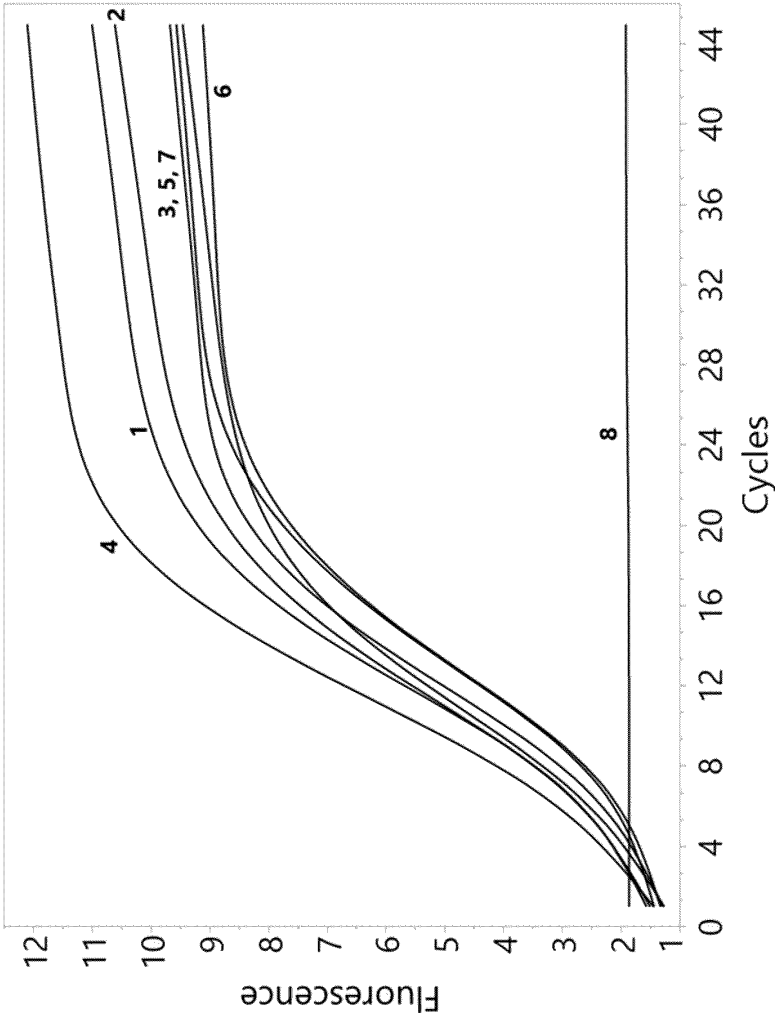


FIG. 29

Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

		Enterobacterales	<i>P. aeruginosa</i>	<i>Acinetobacter spp.</i>	<i>S. maltophilia</i>
Antimicrobial	Class	Sens. < Int. Res. >	Sens. < Int. Res. >	Sens. < Int. Res. >	Sens. < Int. Res. >
Ertapenem	Carbapenem	0.5 1 2	-- -- --	-- -- --	-- -- --
Meropenem	Carbapenem	1 2 4	2 4 8	2 4 8	-- -- --
Imipenem	Carbapenem	1 2 4	2 4 8	2 4 8	-- -- --
Amoxicillin/ Clavulanate	Beta-lactam Combination	8/4 16/8 32/16	-- -- --	-- -- --	-- -- --
Ceftazidime/ Avibactam	Beta-lactam Combination	8/4 -- 16/4	8/4 -- 16/4	-- -- --	-- -- --
Ceftolozane/ Tazobactam	Beta-lactam Combination	2/4 4/4 8/4	4/4 8/4 16/4	-- -- --	-- -- --
Ampicillin/ Sulbactam	Beta-lactam Combination	8/4 16/8 32/16	-- -- --	8/4 16/8 32/16	-- -- --
Piperacillin/ Tazobactam	Beta-lactam Combination	16/4 32/4-64/4 128/4	16/4 32/4-64/4 128/4	16/4 32/4-64/4 128/4	-- -- --
Aztreonam	Monobactam	4 8 16	8 16 32	-- -- --	-- -- --
Ampicillin	Beta-lactam	8 16 32	-- -- --	-- -- --	-- -- --
Cefazolin	Cephalosporin	2 4 8	-- -- --	-- -- --	-- -- --
Cefepime	Cephalosporin	2 4-8 16	8 16 32	8 16 32	-- -- --

FIG. 30-1

Cefotaxime	Cephalosporin	1 2 4	-- -- --	8 16-32 64	-- -- --
Ceftazidime	Cephalosporin	4 8 16	8 16 32	8 16 32	8 16 32
Ceftriaxone	Cephalosporin	1 2 4	-- -- --	8 16-32 64	-- -- --
Amikacin	Aminoglycoside	16 32 64	16 32 64	16 32 64	-- -- --
Gentamicin	Aminoglycoside	4 8 16	4 8 16	4 8 16	-- -- --
Tobramycin	Aminoglycoside	4 8 16	4 8 16	4 8 16	-- -- --
Ciprofloxacin	Fluoroquinolone	0.25 0.5 1	0.5 1 2	1 2 4	-- -- --
Levofloxacin	Fluoroquinolone	0.5 1 2	1 2 4	2 4 8	2 4 8
Trimethoprim/ Sulfamethoxazole	Sulfonamide	2/38 -- 4/76	-- -- --	2/38 -- 4/76	2/38 -- 4/76
Fosfomycin	Fosfomycin	64 128 256	-- -- --	-- -- --	-- -- --
Cefiderocol	Sideromycin	4 8 16	4 8 16	4 8 16	4 8 16
Minocycline	Tetracycline	4 8 16	-- -- --	4 8 16	4 8 16

FIG. 30-2

		<i>S. aureus</i> and <i>lugdunensis</i>	<i>S. epidermidis</i>	<i>Enterococcus</i> spp.	<i>S. pneumoniae</i>	Streptococcus β - Hemolytic	Viridans Streptococcus
Antimicrobial	Class	Sens., Int., Res.	Sens., Int., Res.	Sens., Int., Res.	Sens., Int., Res.	Sens., Int., Res.	Sens., Int., Res.
Vancomycin	Glycopeptide	2 4-8 16	4 8-16 32	4 8-16 32	1 -- --	1 -- --	1 -- --
Oxacillin	Beta-lactam	2 -- 4	0.25 -- 0.5	-- -- --	-- -- --	-- -- --	-- -- --
Ampicillin	Beta-lactam	-- -- --	-- -- --	8 -- 16	-- -- --	0.25 -- --	0.25 0.5-4 8
Penicillin	Beta-lactam	0.12 -- 0.25	0.12 -- 0.25	8 -- 16	2 4 8	0.12 -- --	0.12 0.25-2 4
Cefoxitin	Cephalosporin	4 -- 8	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Cefazolin	Cephalosporin	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --	-- -- --
Ceftaroline	Cephalosporin	1 2-4 8	1 2-4 8	-- -- --	0.5 -- --	0.5 -- --	-- -- --
Ceftriaxone	Cephalosporin	-- -- --	-- -- --	-- -- --	1 2 4	0.5 -- --	1 2 4
Clindamycin	Lincosamide	0.5 1-2 4	0.5 1-2 4	-- -- --	0.25 0.5 1	0.25 0.5 1	0.25 0.5 1
Daptomycin	Lipopeptide	1 -- --	1 -- --	<i>E. faecalis</i> 2 4 8 <i>E. faecium</i> 4* -- 8	-- -- --	1 -- --	1 -- --
Linezolid	Oxazolidinone	4 -- 8	4 -- 8	2 4 8	2 -- --	2 -- --	2 -- --
Gentamicin	Aminoglycoside	4 8 16	4 8 16	-- -- --	-- -- --	-- -- --	-- -- --
Levofloxacin	Fluoroquinolone	1 2 4	1 2 4	2 4 8	2 4 8	2 4 8	2 4 8

FIG. 31

		<i>Candida albicans</i>	<i>Candida glabrata</i>	<i>Candida krusei</i>	<i>Candida tropicalis</i>	<i>Candida auris</i>
Antifungal	Class	Sens. Int. Res.	Sens. Int. Res.	Sens. Int. Res.	Sens. Int. Res.	Sens. Int. Res.
Anidulafungin	Echinocandin	0.25 0.5 1	0.12 0.25 0.5	0.25 0.5 1	0.25 0.5 1	-- -- --
Caspofungin	Echinocandin	0.25 0.5 1	0.12 0.25 0.5	0.25 0.5 1	0.25 0.5 1	-- -- --
Micafungin	Echinocandin	0.25 0.5 1	0.06 0.12 0.25	0.25 0.5 1	0.25 0.5 1	-- -- --
Voriconazole	Triazole	0.12 0.25-0.5 1	-- -- --	0.5 1 2	0.12 0.25-0.5 1	-- -- --
Fluconazole	Triazole	2 4* 8	-- 32* 64	-- -- --	2 4* 8	-- -- --

* SDD - Susceptible Dose
Dependent

FIG. 32

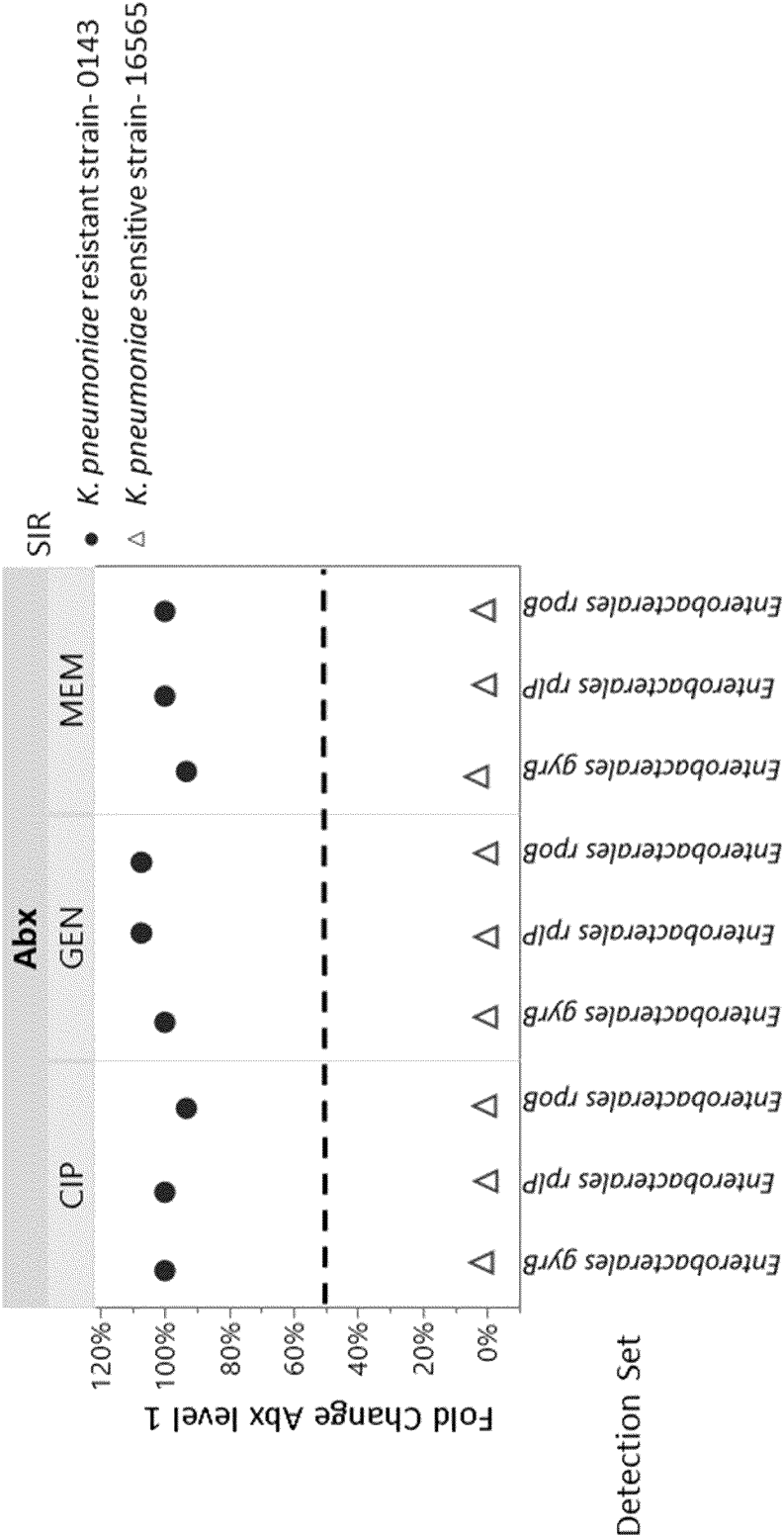


FIG. 33

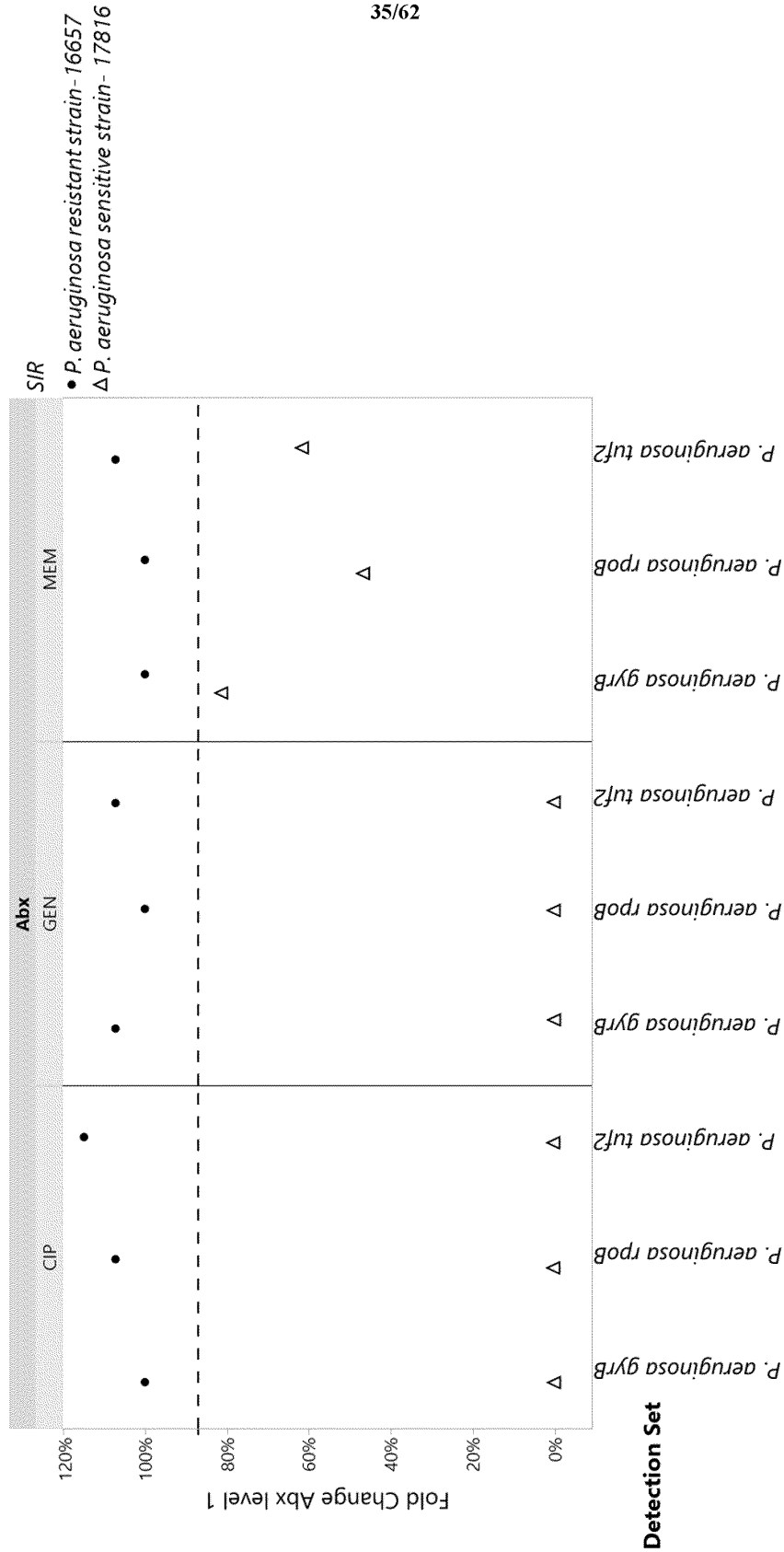
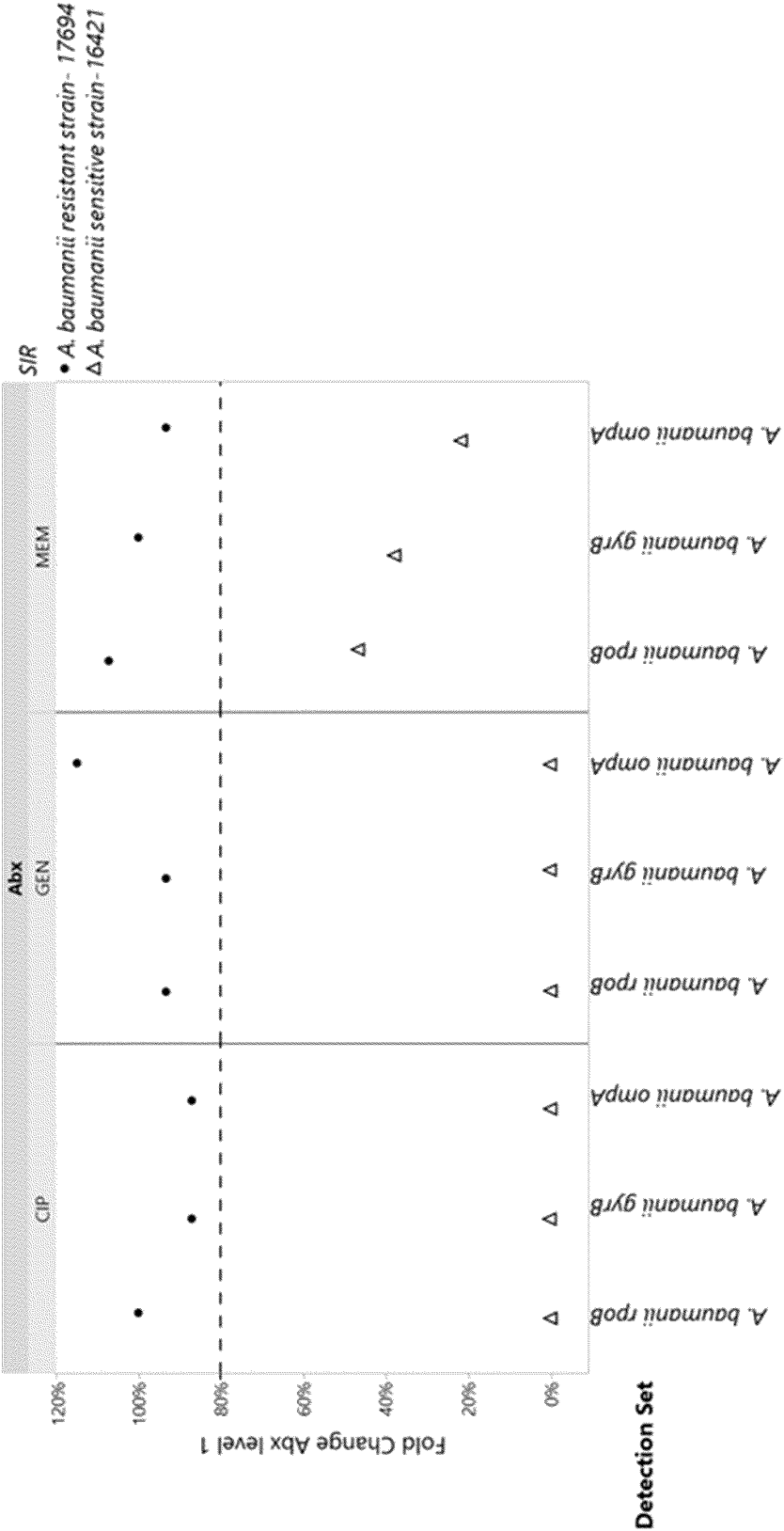


FIG. 34



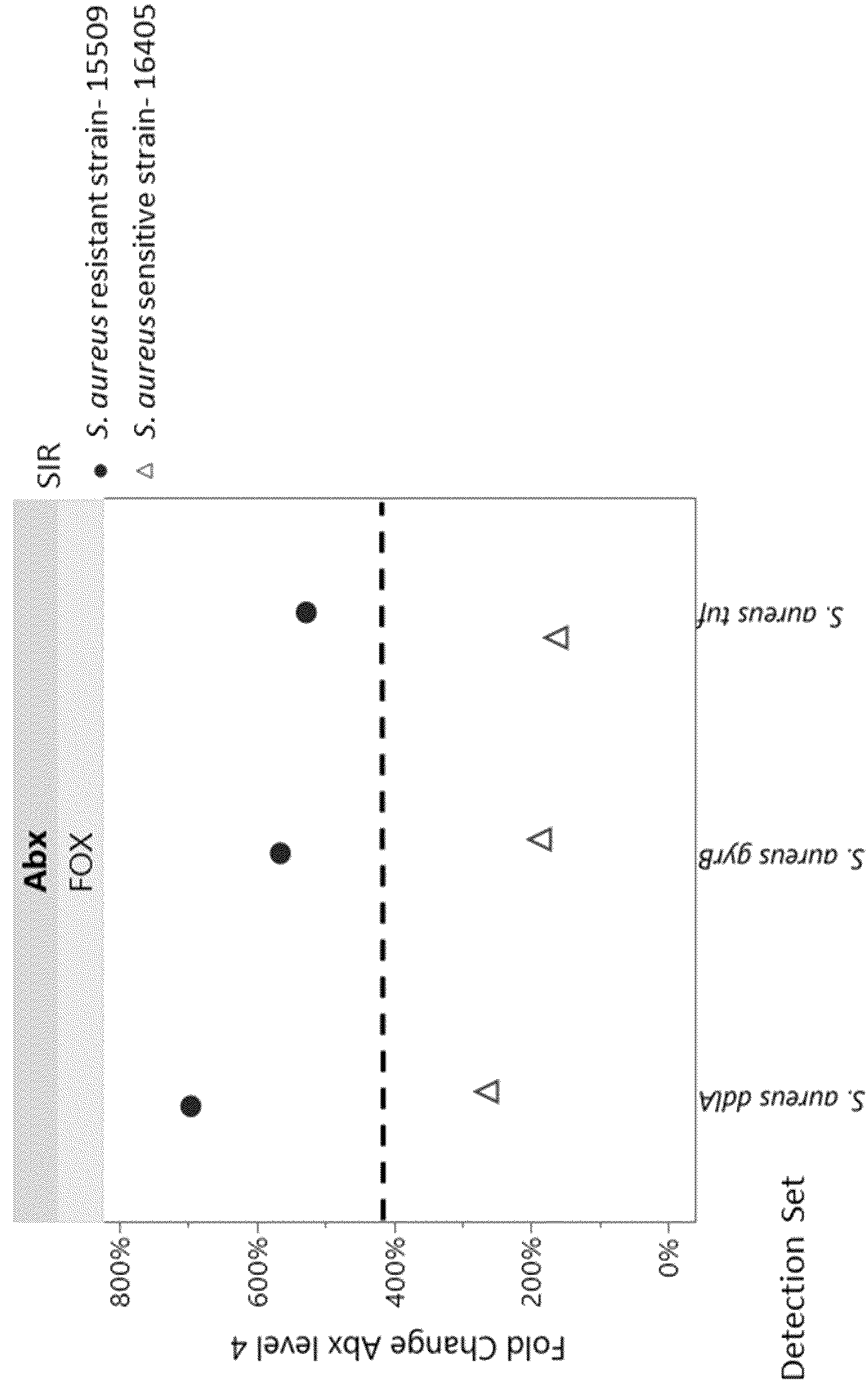


FIG. 36

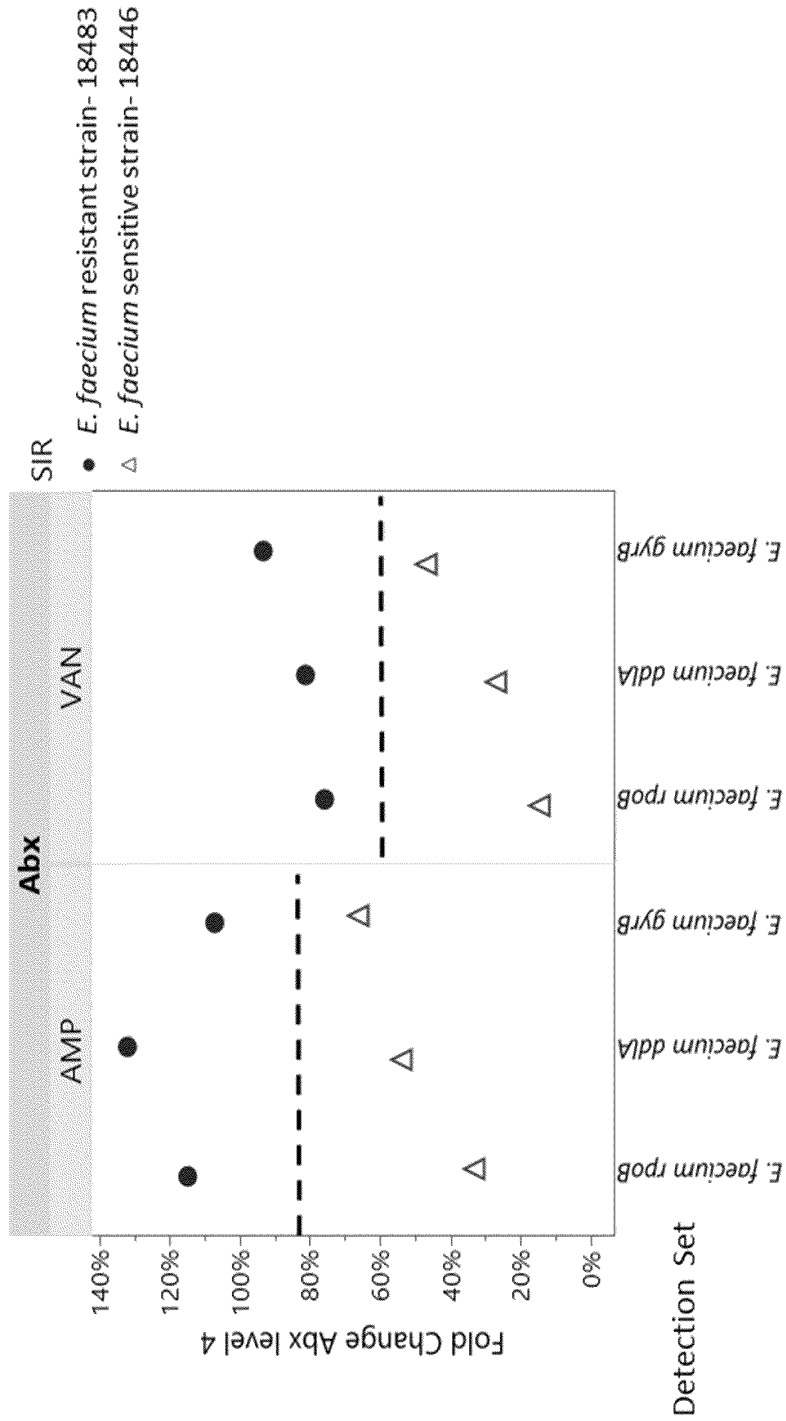


FIG. 37

Primers and Probes to Perform Real-Time PCR ID and AST Assay of <i>Candida</i> Genus					
Oligonucleotide Type	Oligonucleotide Name	SEQ ID NO:	Sequence	Modifications	
Forward primers	SEGP1712 SEGP1718	88 91	CGTTTTCATTAAATCAAGAACGAAAGTTA ACAACGGATCTCTTGGTTCTC		
Reverse primers	SEGP1713 SEGP1719	89 92	ACCGATCCCTAGTCGGCATA GCAATGTGCGTTCAAAGATTCCA		
Probes	SEGP1716	90	<FAM>AGACTACGA<ZEN>CGGTATCTGATCATCTTCG ATC CC<3IABkFQ>	<FAM>: Fluorophore <ZEN>: Quencher <3IABkFQ>: 3' Blocker	
Probes	SEGP1722.1	93	<FAM_Thr>TCGATGAAAG<BHQ_2>AACGCAGCGAAATG CGATACG<Phos>	<FAM_Thr>: Fluorophore <BHQ_2>: Quencher <Phos>: Phosphate	

FIG. 38

Primers and Probes that hybridize to 16s rRNA in bacteria (gram positive and gram negative)					
Oligonucleotide Type	Oligonucleotide Name	SEQ ID NO:	Sequence	Modifications	
Forward primer	SEGP1830	94	TCCTACGGGAGGCAGCAGT		
Reverse primer	SEGP1831	95	GGACTACCAGGGTATCTAATCCTGTT		
Probe	SEGP1895.1	96	<CFR_635>CGTATTACCGCGGCT<BHQ_2 >GCTGGCAC<Phos>	<CFR_635>: Fluorophore <BHQ_2>: Quencher <Phos>: Phosphate	

FIG. 39

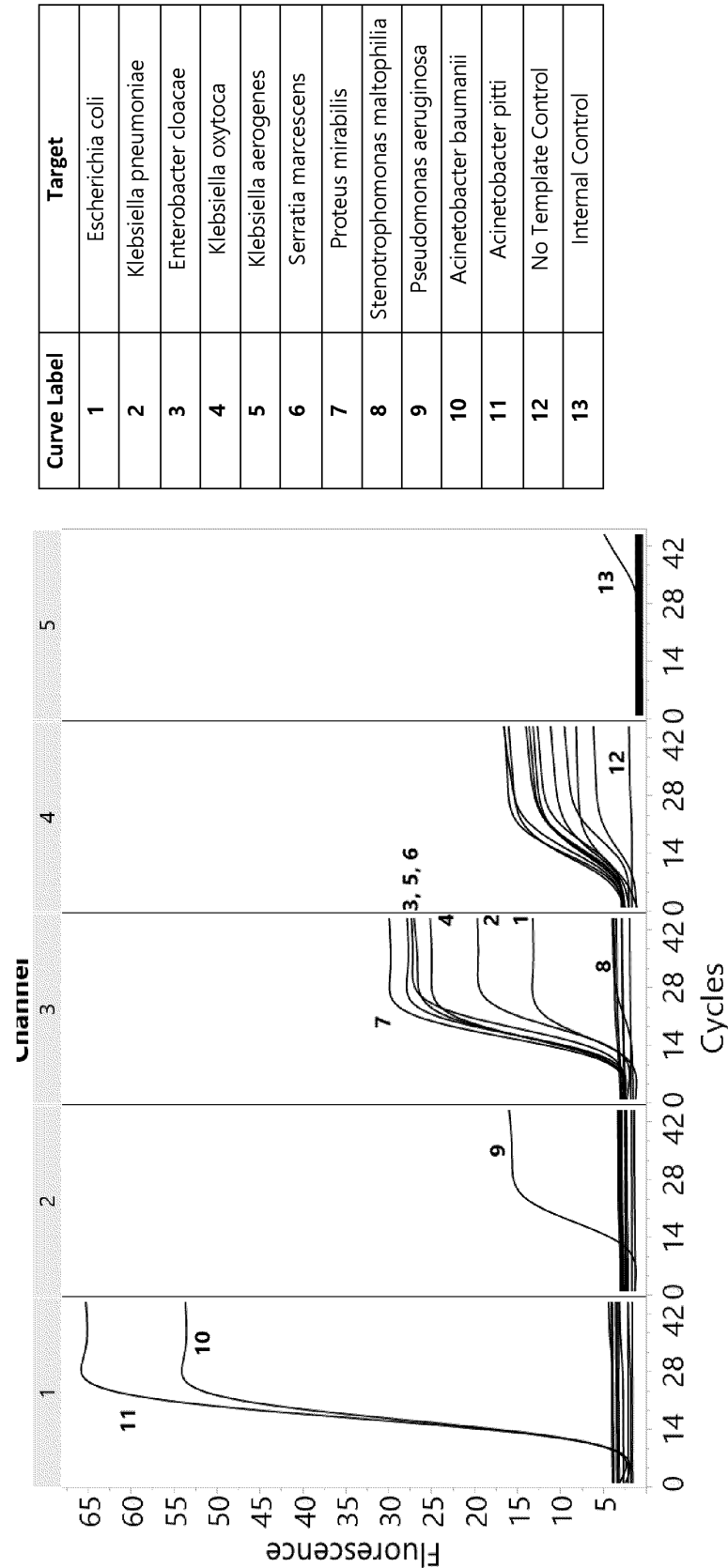


FIG. 40A

Gram (-) Breakpoint Groups	Channel	Wavelength	Dye
<i>Acinetobacter</i>	1	435-470	ATTO425/Coumarin
<i>P. aeruginosa</i>	2	495-521	FAM
<i>Enterobacterales</i>	3	540-580	HEX
<i>Bacterial 16S</i>	4	610-645	CFR635/JA270
<i>Generic Internal Control</i>	5	680-700	Cy5.5

FIG. 40B

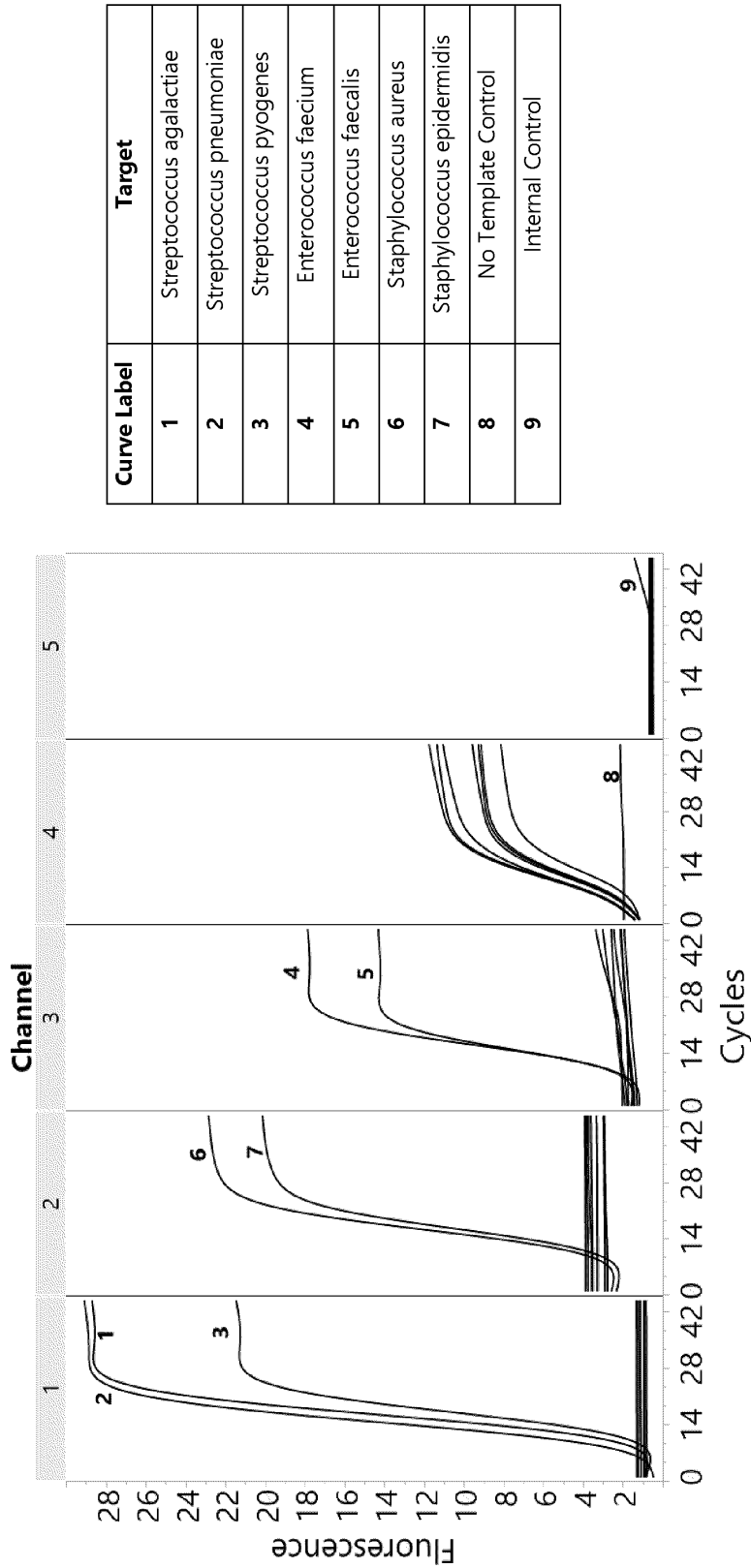


FIG. 41A

Gram (+) Breakpoint Groups	Channel	Wavelength	Dye
<i>Streptococcus</i>	1	435-470	ATTO425/Coumarin
<i>Staphylococcus</i>	2	495-521	FAM
<i>Enterococcus</i>	3	540-580	HEX
<i>Bacterial 16S</i>	4	610-645	CFR635/JA270
<i>Generic Internal Control</i>	5	680-700	Cy5.5

FIG. 41B

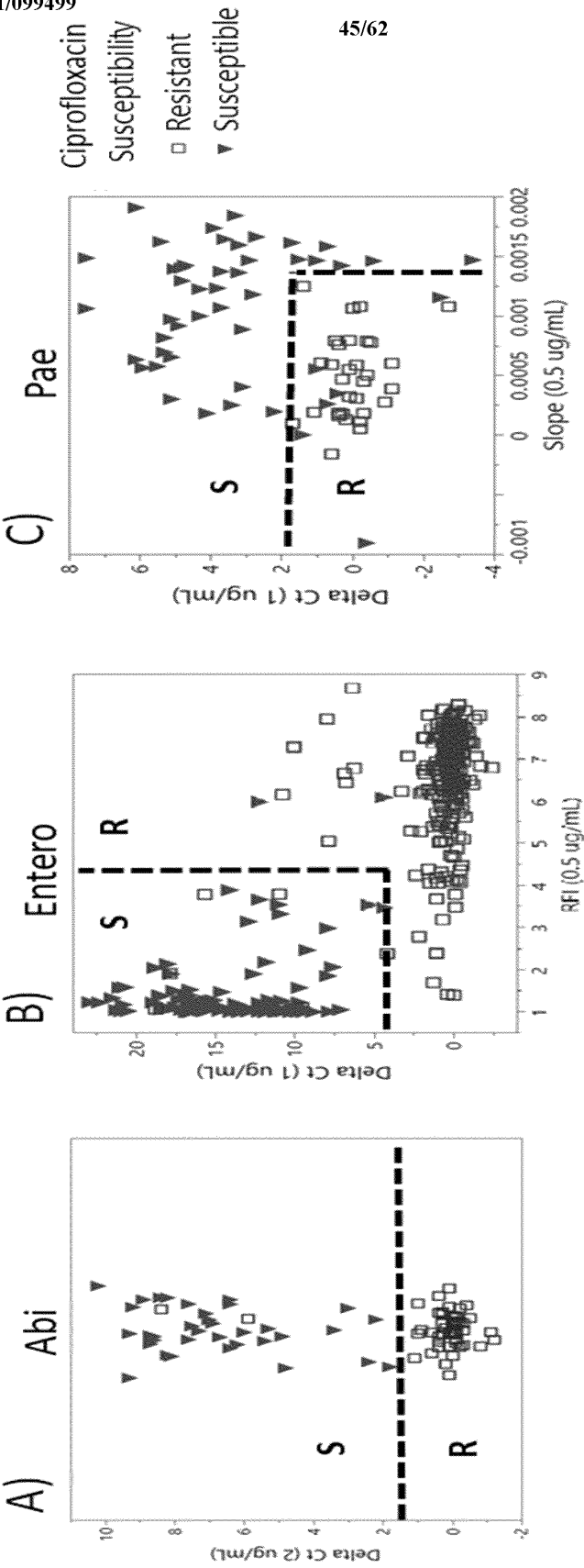


FIG. 42

Ciprofloxacin

A)

Species	Resistant	Susceptible
Abi	51	35
Ecl	57	8
Eco	74	16
Kae	25	58
Kpn	85	13
Pae	31	48

B)

Species	Sensitivity	Specificity	Categorical Agreement
Abi	96%	100%	98%
Ecl	96%	100%	97%
Eco	100%	94%	99%
Kae	96%	97%	96%
Kpn	100%	100%	100%
Pae	94%	100%	97%

FIG. 43

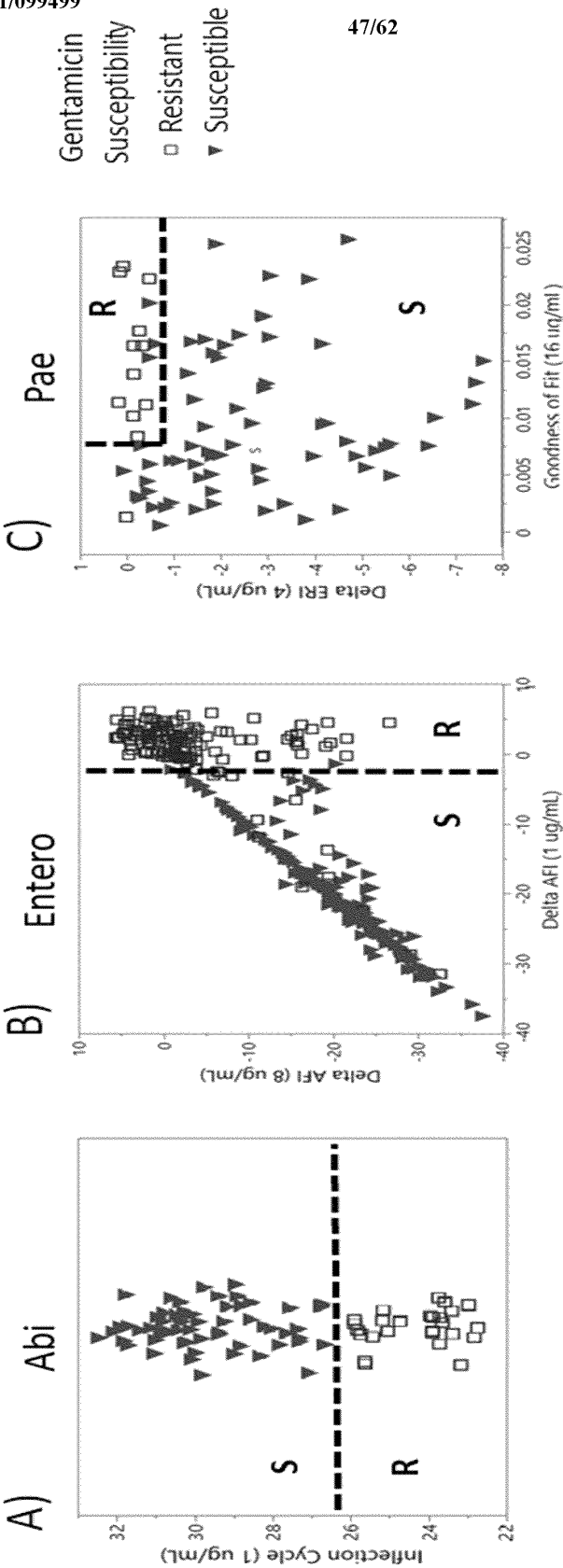


FIG. 44

Gentamicin

A)

Species	Resistant	Susceptible
Abi	26	59
Ecl	38	26
Eco	45	47
Kae	8	75
Kpn	52	41
Pae	12	73

B)

Species	Sensitivity	Specificity	Categorical Agreement
Abi	100%	100%	100%
Ecl	89%	100%	94%
Eco	98%	98%	98%
Kae	75%	97%	95%
Kpn	94%	100%	97%
Pae	92%	100%	99%

FIG. 45

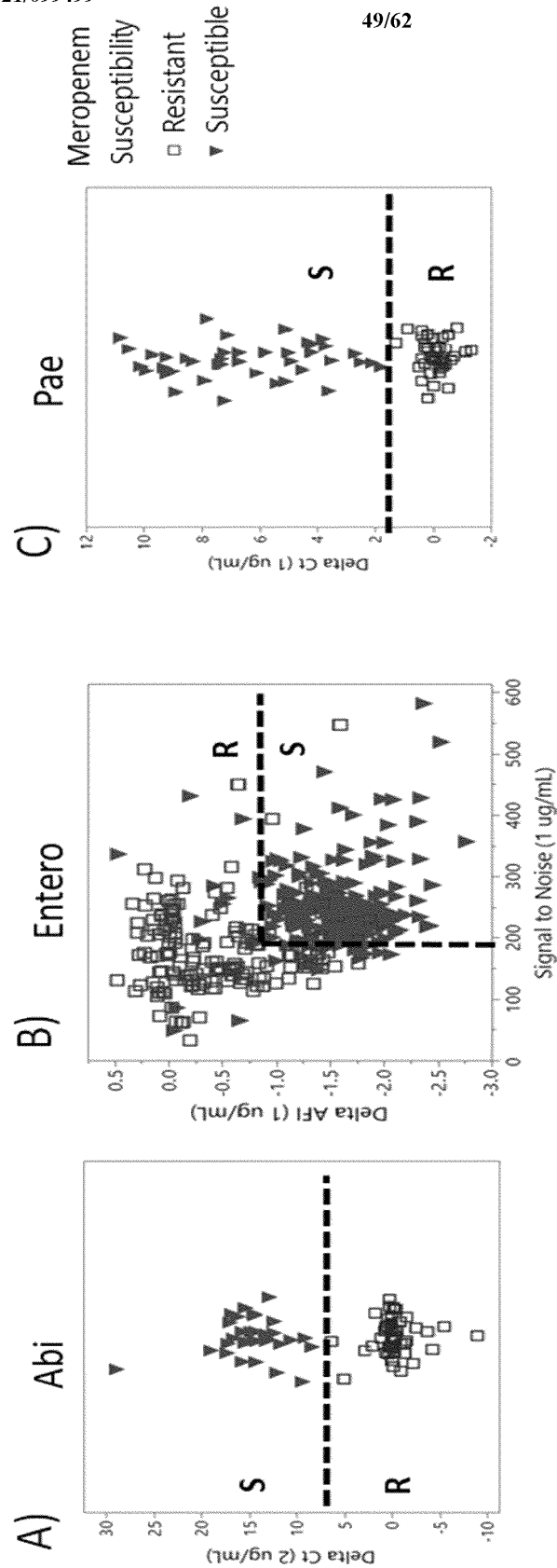


FIG. 46

Meropenem

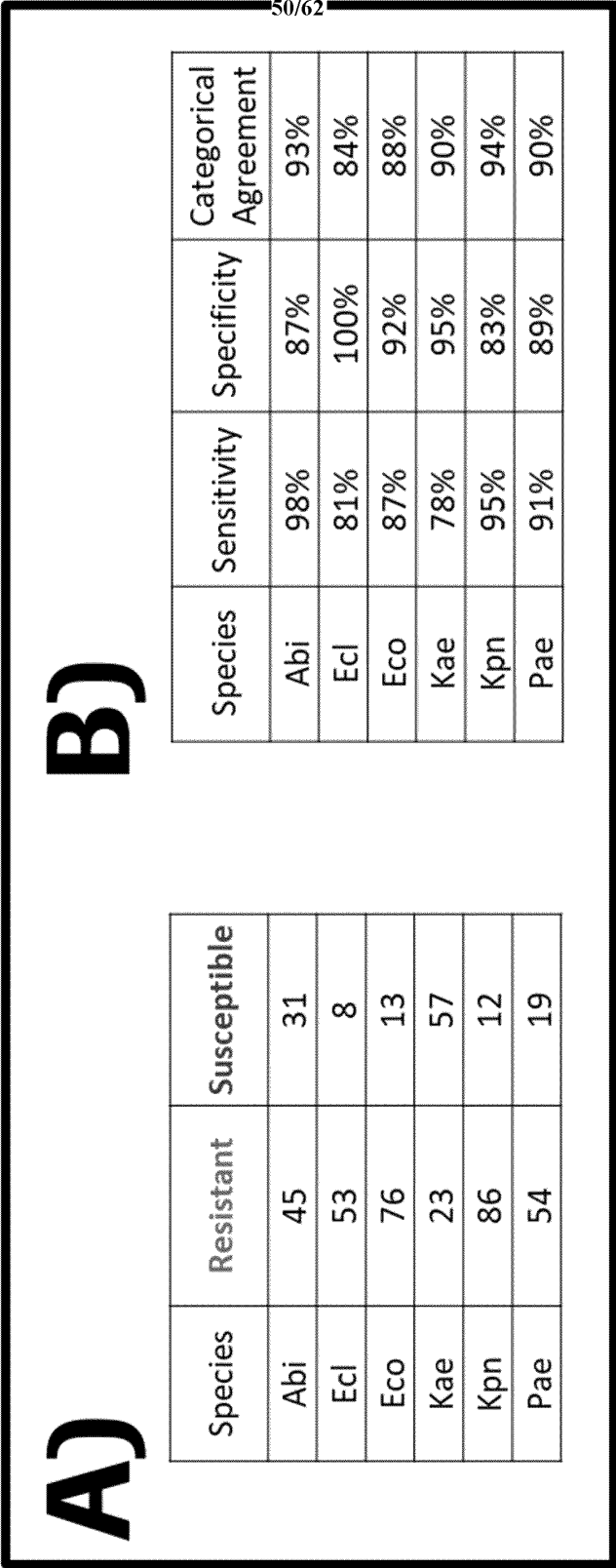


FIG. 47

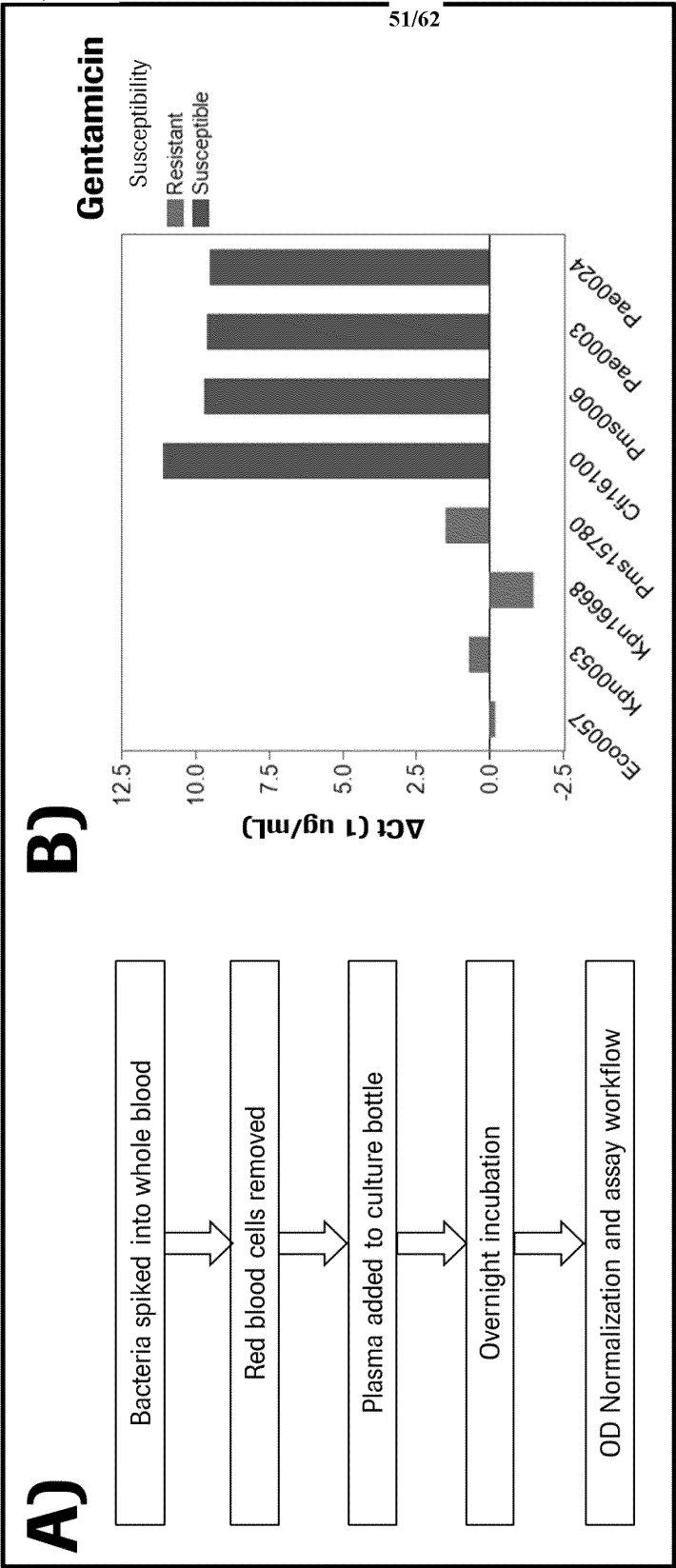


FIG. 48

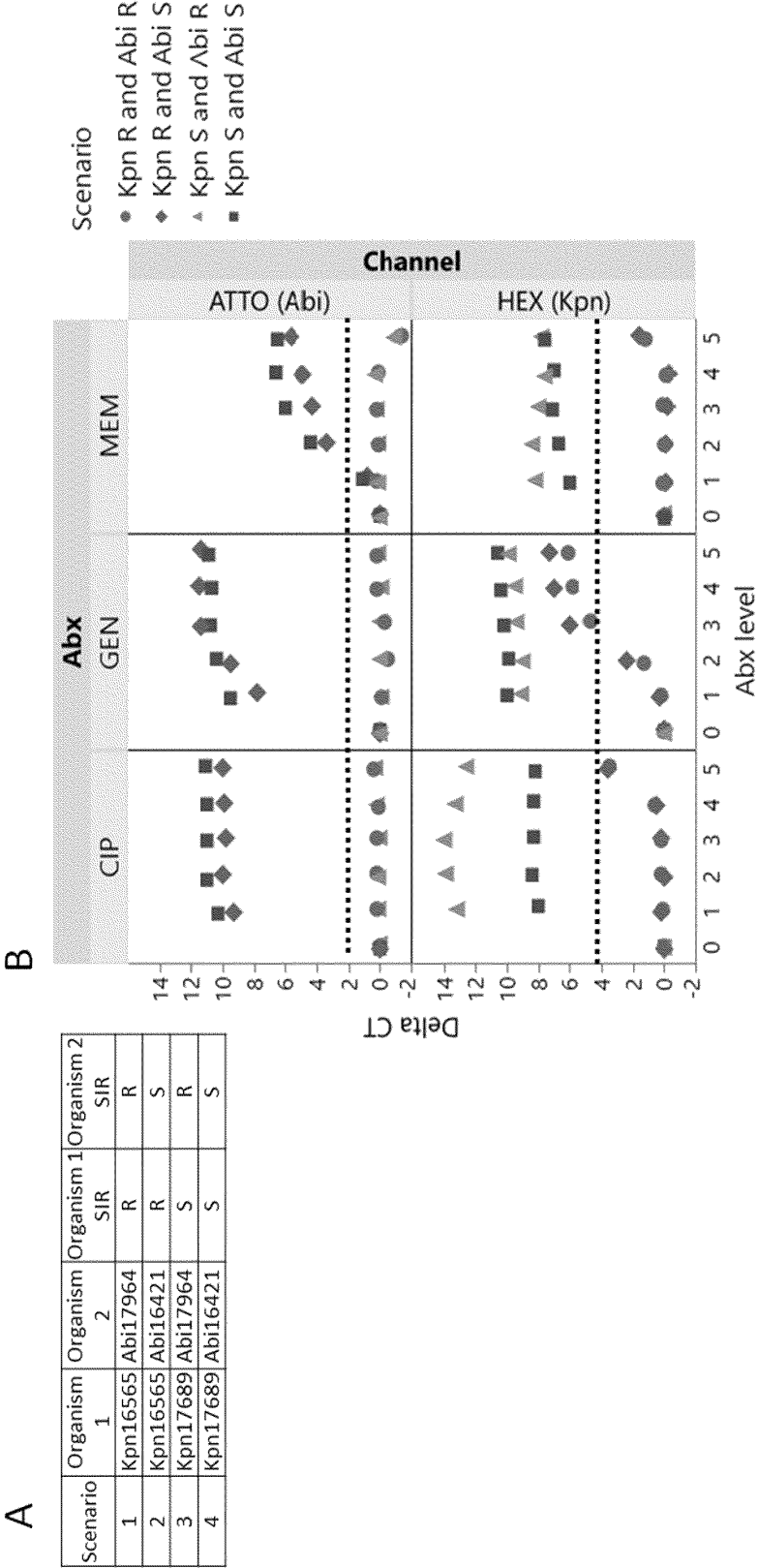


FIG. 49

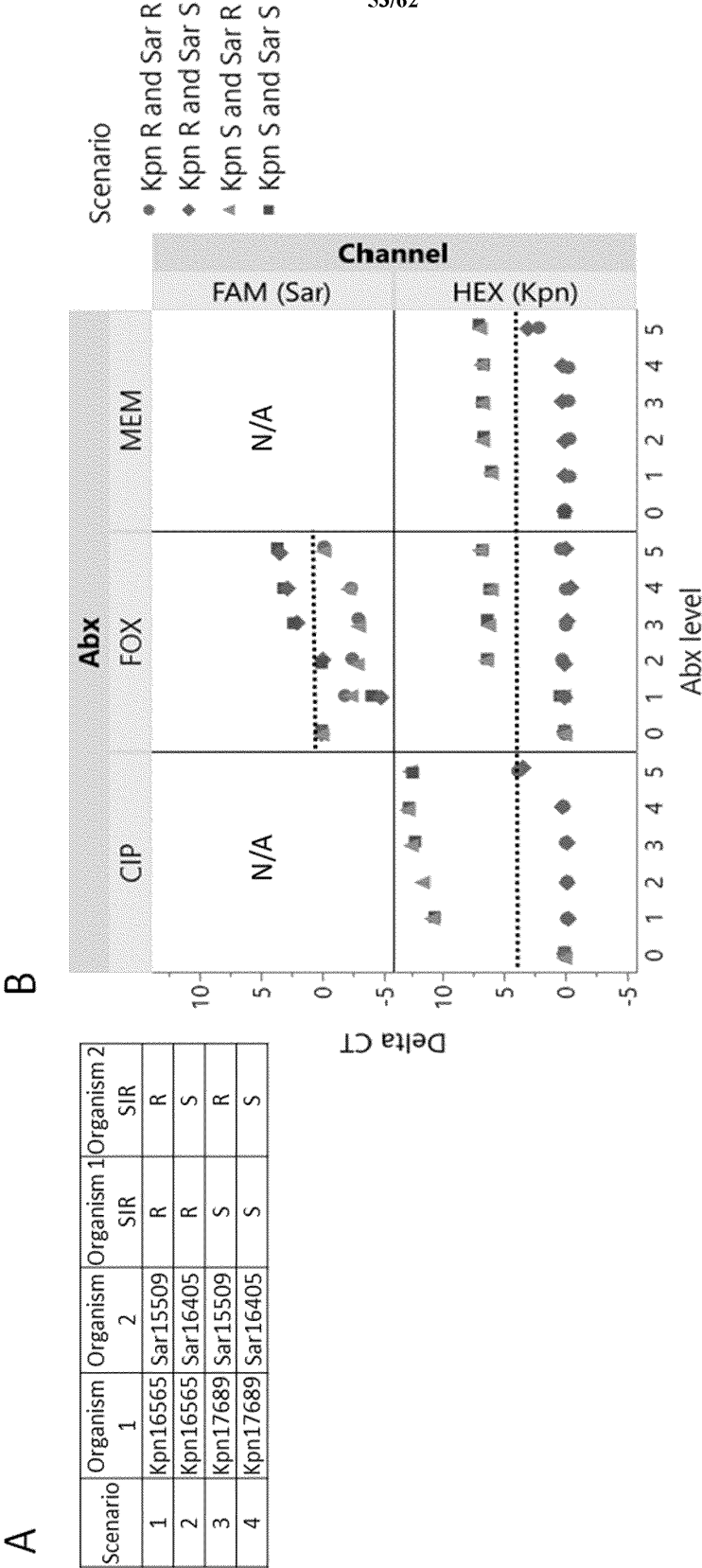


FIG. 50

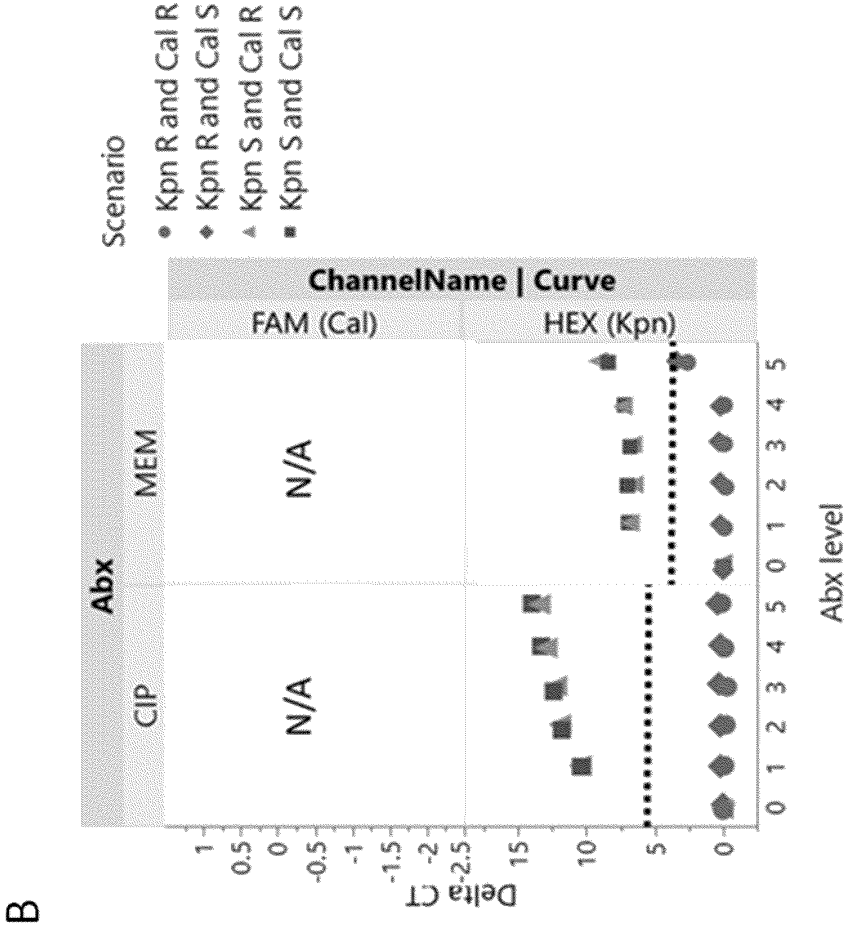
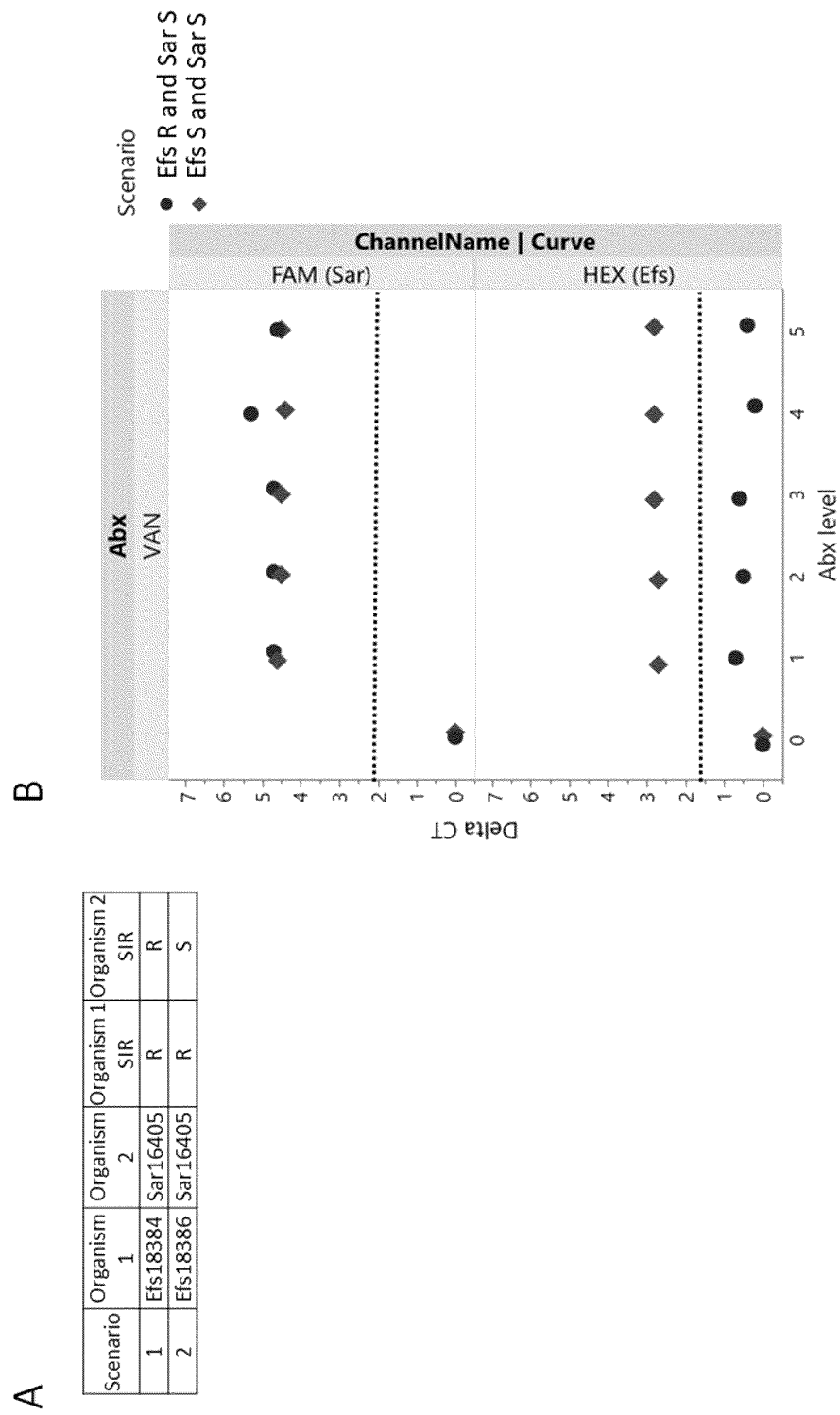


FIG. 51



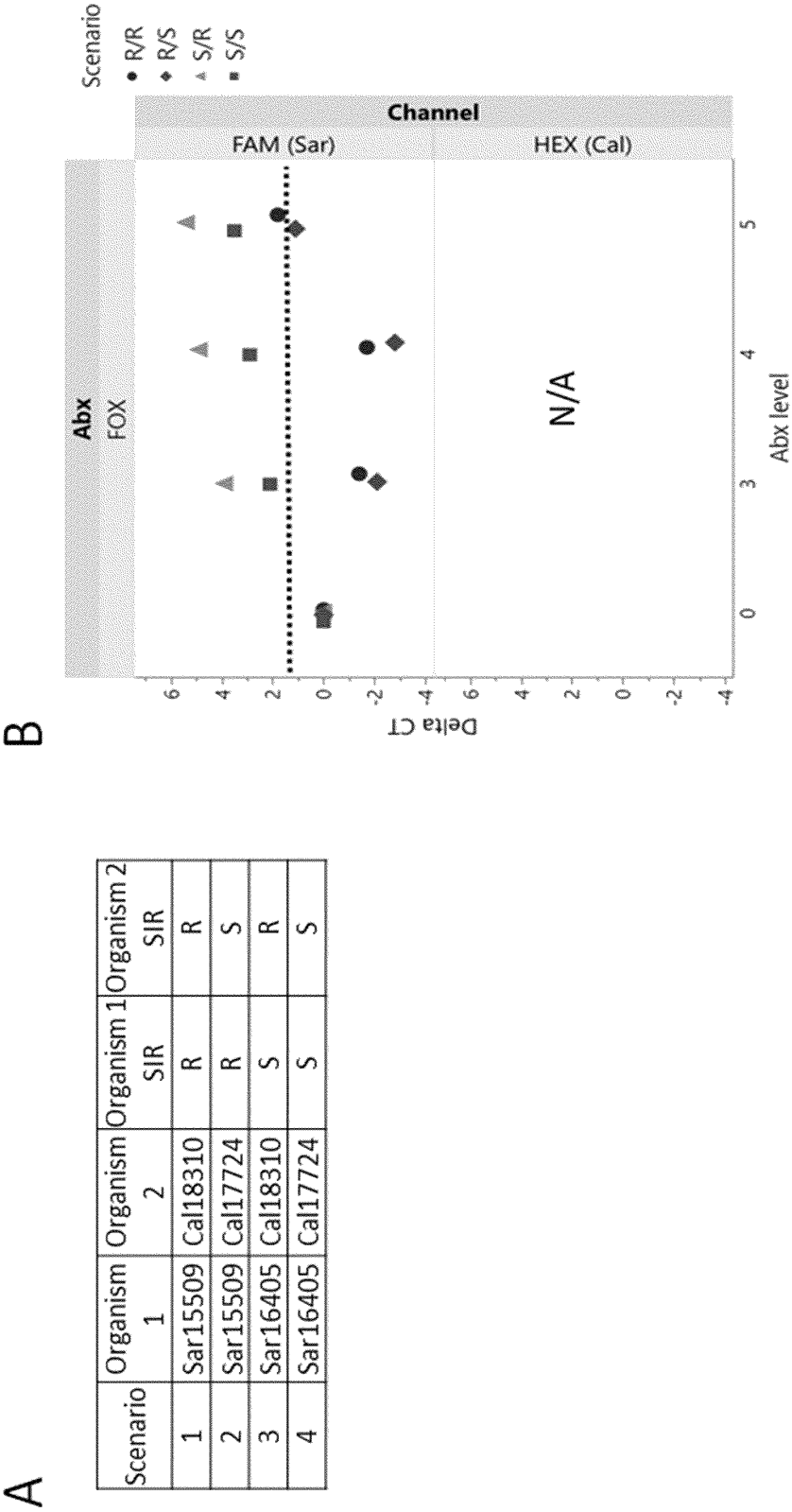
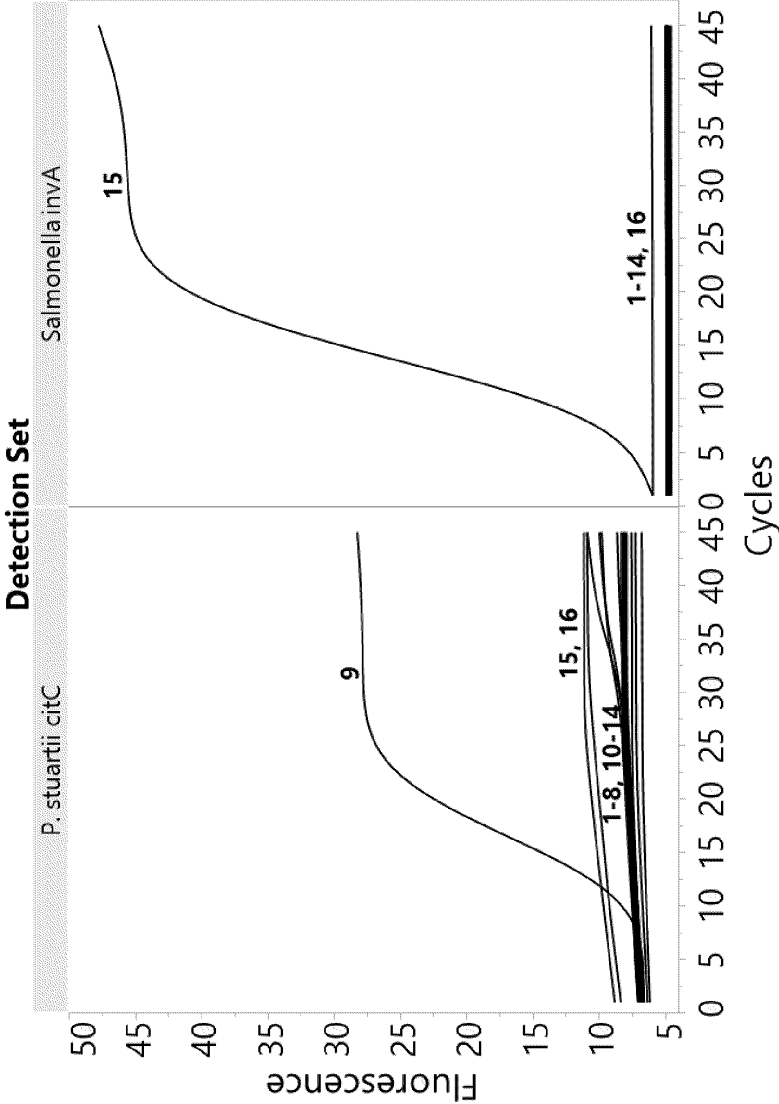


FIG. 53

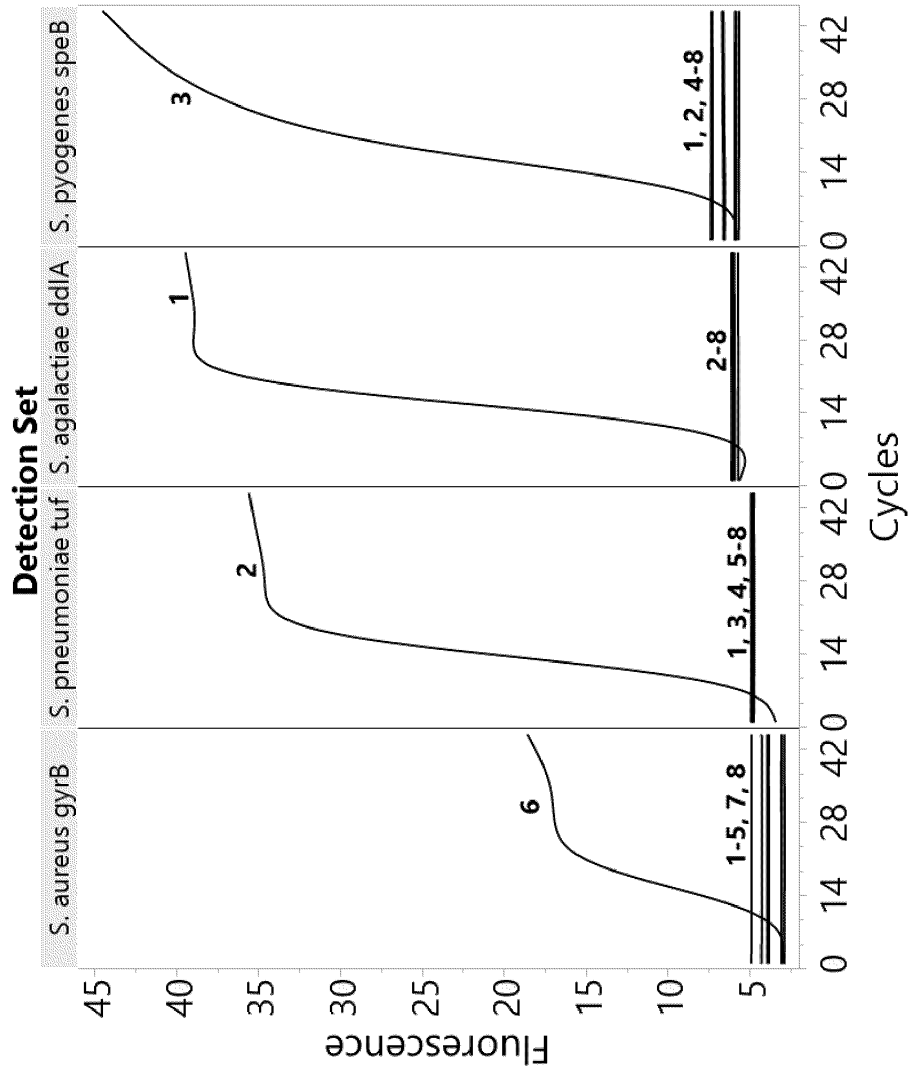
Organism	Strain ID	Source	Source ID	Known Resistance Mechanism	Gene Target			
					blaKPC	blaVIM	blaNDM	blaOXA-48
<i>Klebsiella pneumoniae</i>	16248	CDC	AR-0005	KPC-2	Pos	Neg	Neg	Neg
<i>Enterobacter cloacae</i>	16313	CDC	AR-0093	KPC-6	Pos	Neg	Neg	Neg
<i>Pseudomonas aeruginosa</i>	17210	CDC	AR-0100	VIM-2	Neg	Pos	Neg	Neg
<i>Klebsiella pneumoniae</i>	16235	CDC	AR-0040	VIM-27	Neg	Pos	Neg	Neg
<i>Acinetobacter baumannii</i>	17398	CDC	AR-0037	NDM-1	Neg	Neg	Pos	Neg
<i>Escherichia coli</i>	16215	CDC	AR-0055	NDM-1	Neg	Neg	Pos	Neg
<i>Klebsiella pneumoniae</i>	16266	CDC	AR-0160	OXA-48	Neg	Neg	Neg	Pos
<i>Klebsiella aerogenes</i>	17413	CDC	AR-0074	OXA-48	Neg	Neg	Neg	Pos

FIG. 54



Curve Label	Target
1	Escherichia coli
2	Klebsiella pneumoniae
3	Enterobacter cloacae
4	Klebsiella oxytoca
5	Klebsiella aerogenes
6	Serratia marcescens
7	Proteus mirabilis
8	Citrobacter freundii
9	Providencia stuartii
10	Providencia rettgeri
11	Stenotrophomonas maltophilia
12	Pseudomonas aeruginosa
13	Acinetobacter baumannii
14	Acinetobacter pittii
15	Salmonella enterica
16	No Template Control

FIG. 55



Curve Label	Target
1	Streptococcus agalactiae
2	Streptococcus pneumoniae
3	Streptococcus pyogenes
4	Enterococcus faecium
5	Enterococcus faecalis
6	Staphylococcus aureus
7	Staphylococcus epidermidis
8	No Template Control

FIG. 56

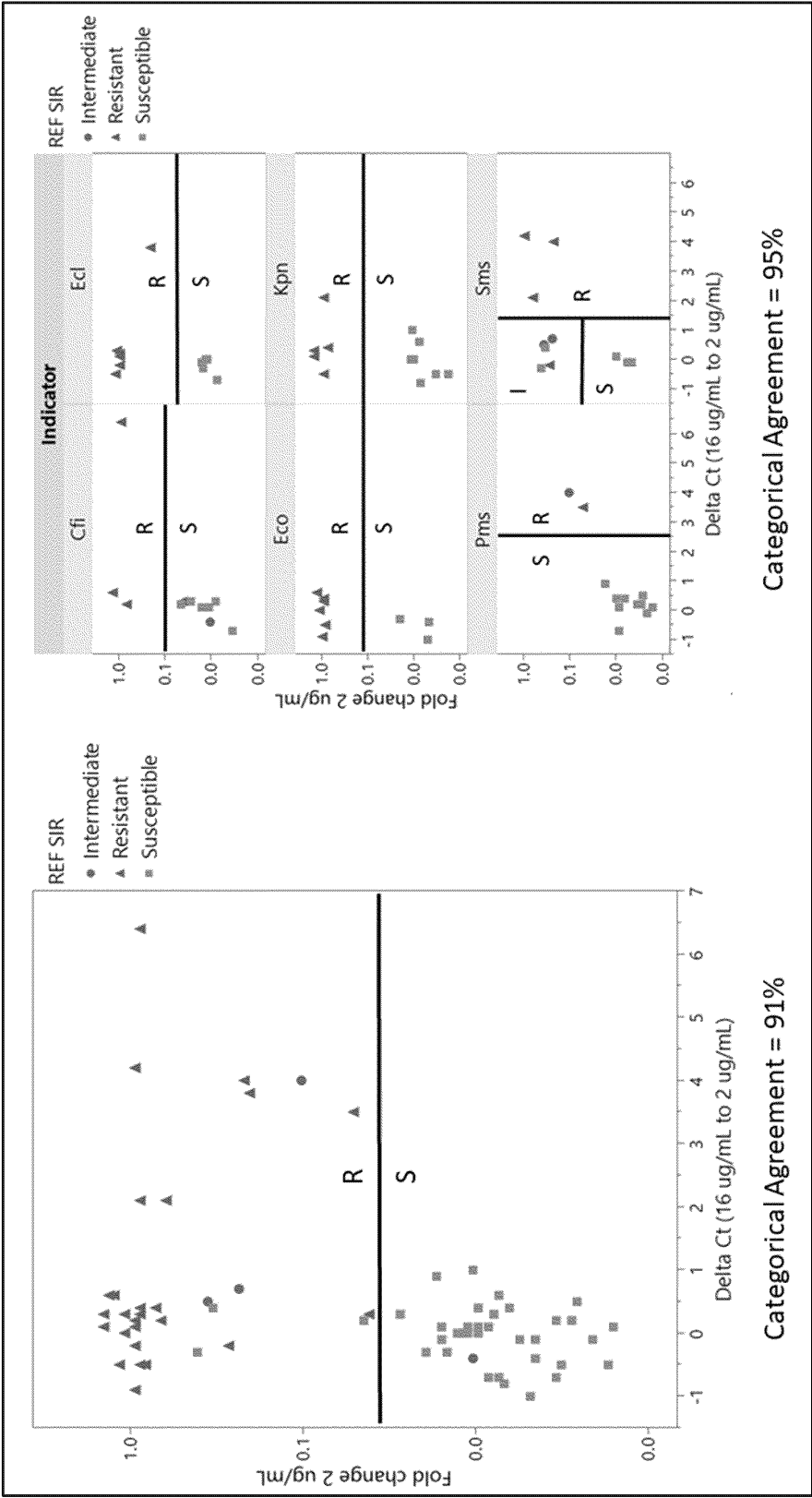


FIG. 57

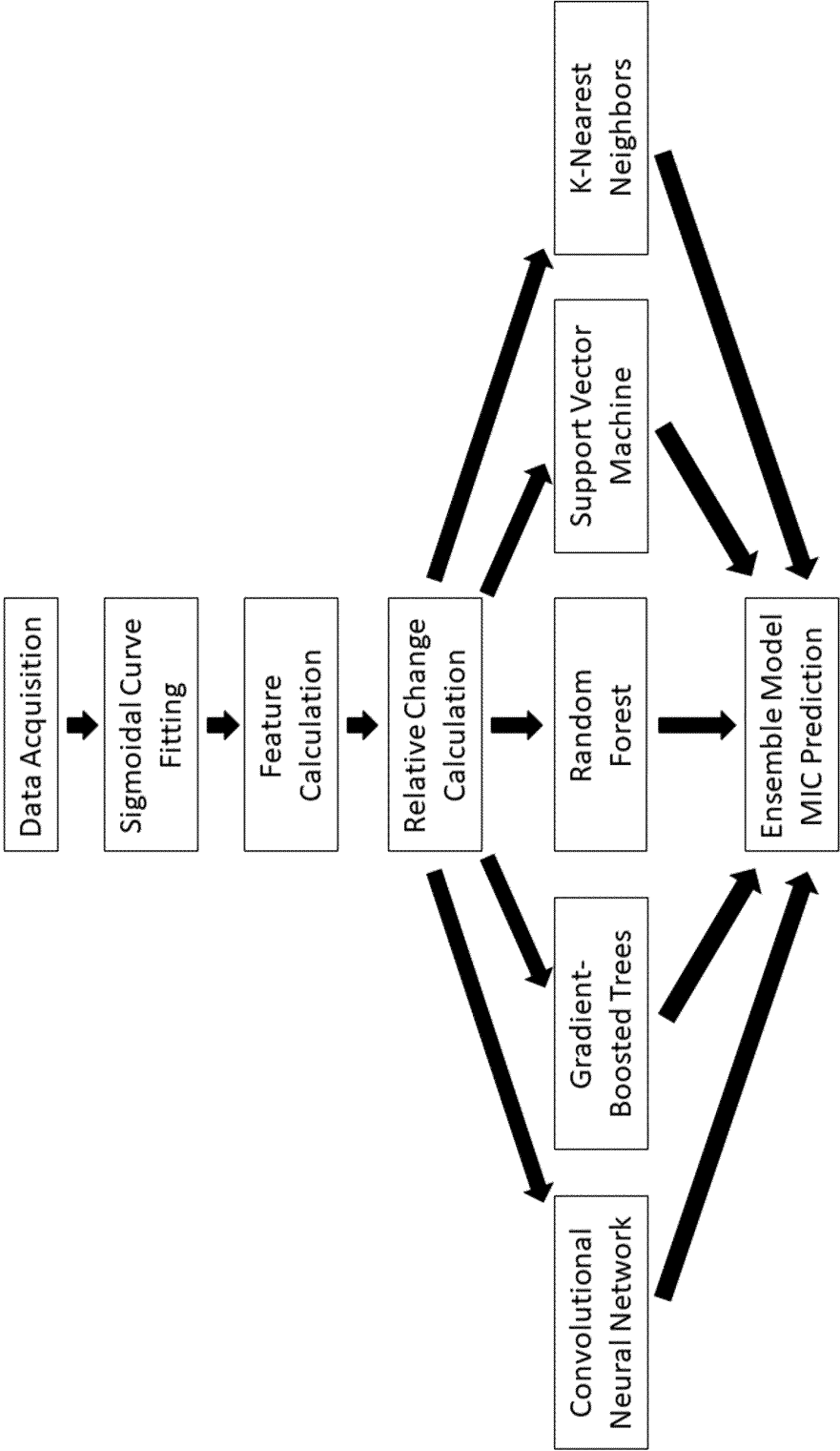


FIG. 58

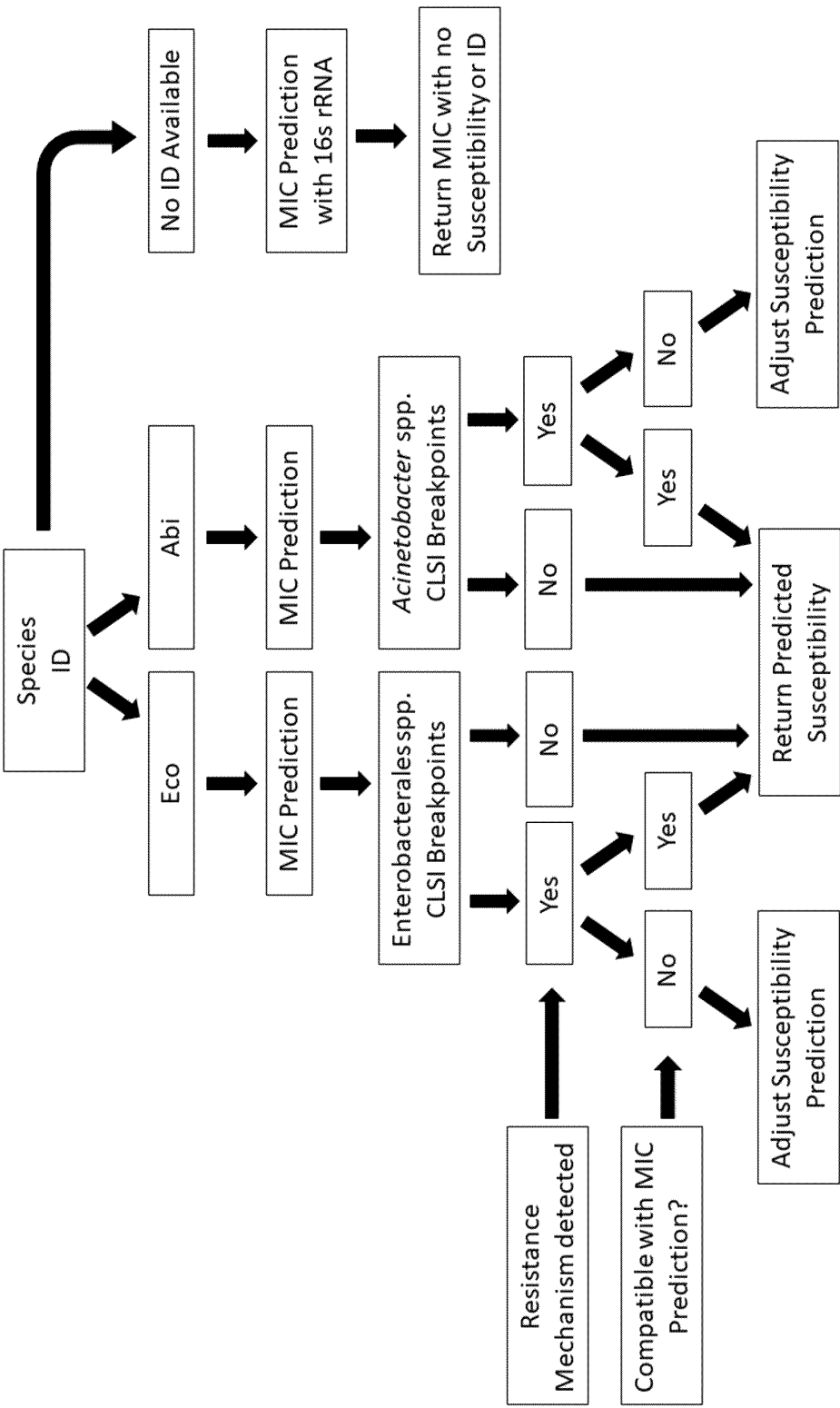


FIG. 59