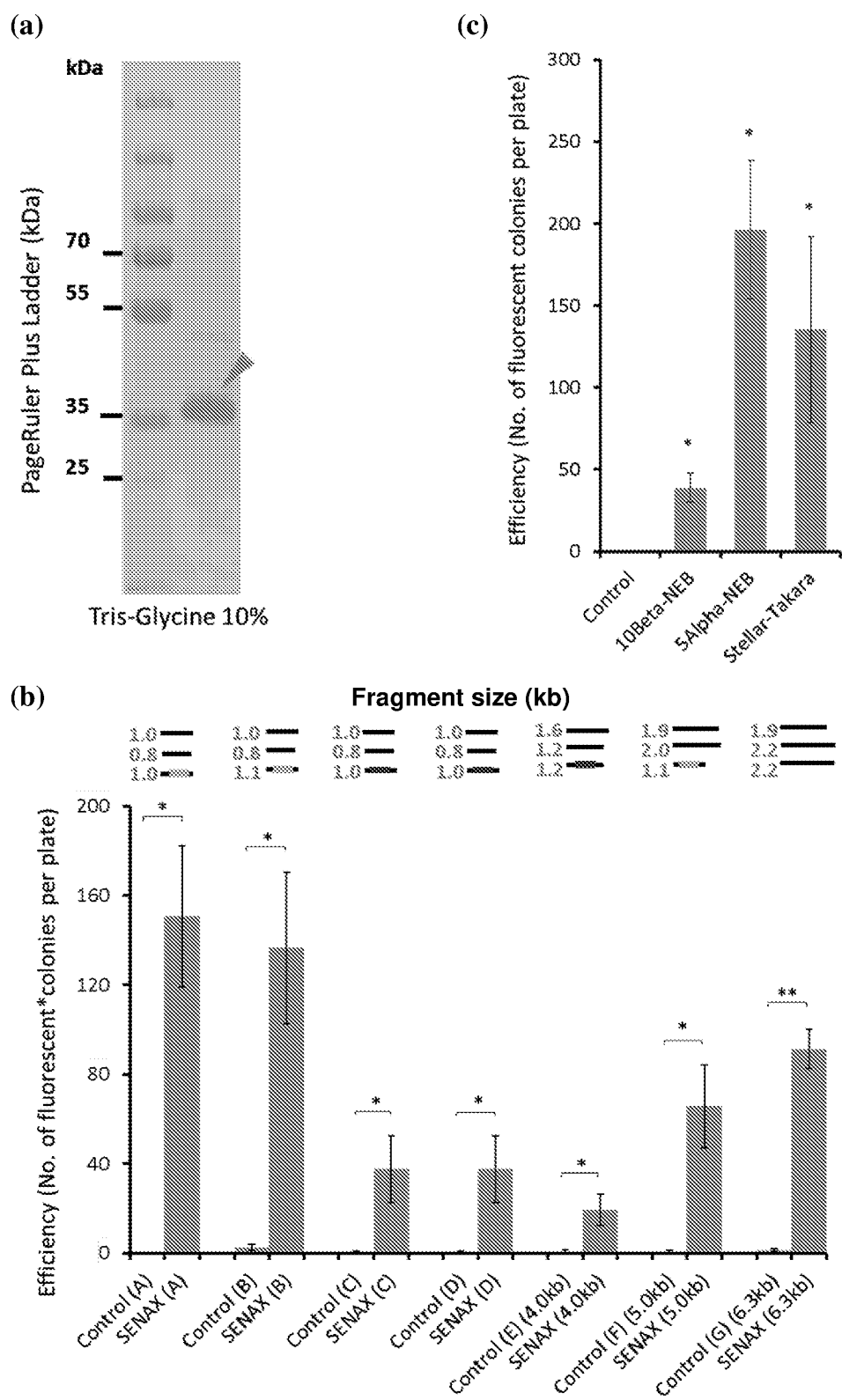




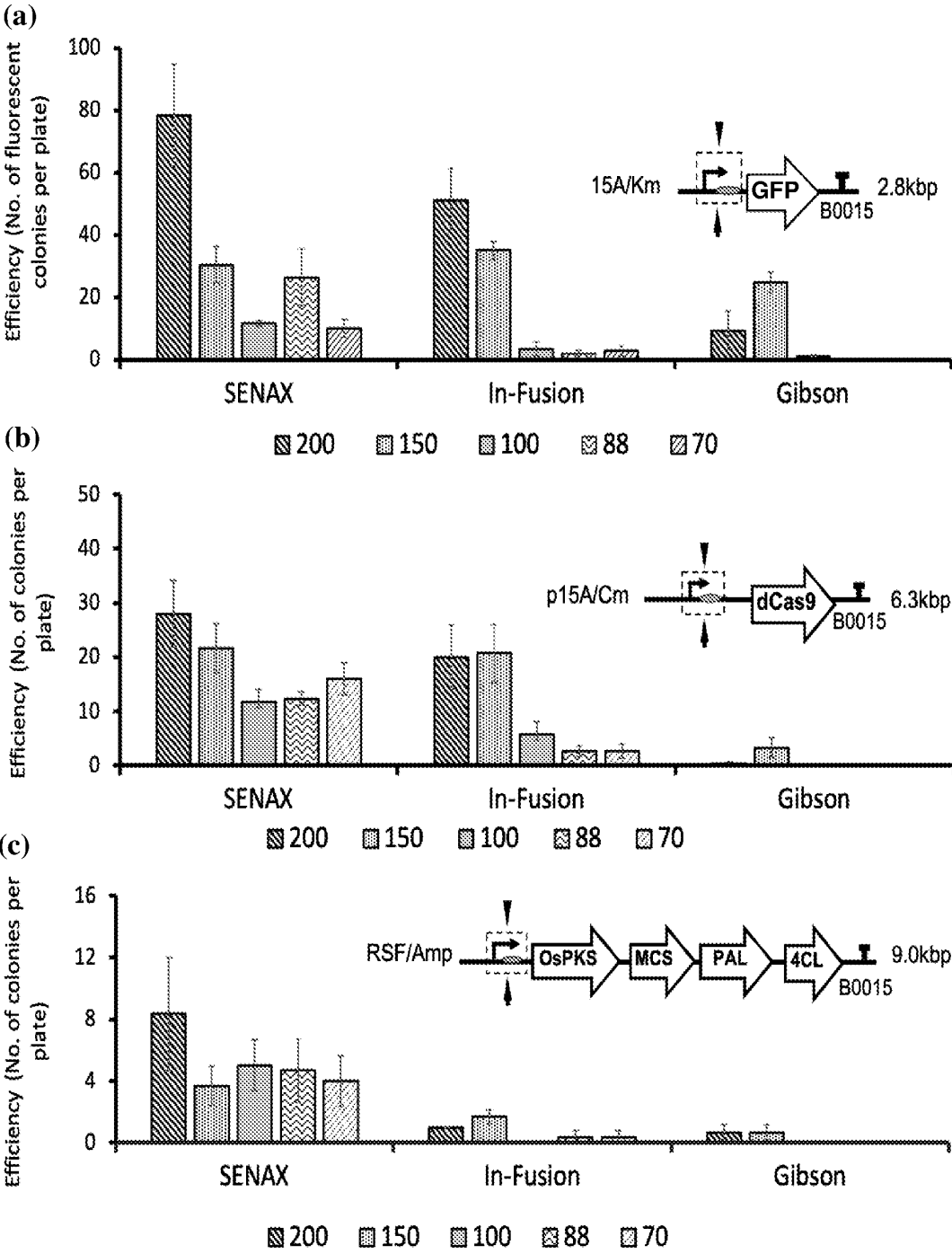
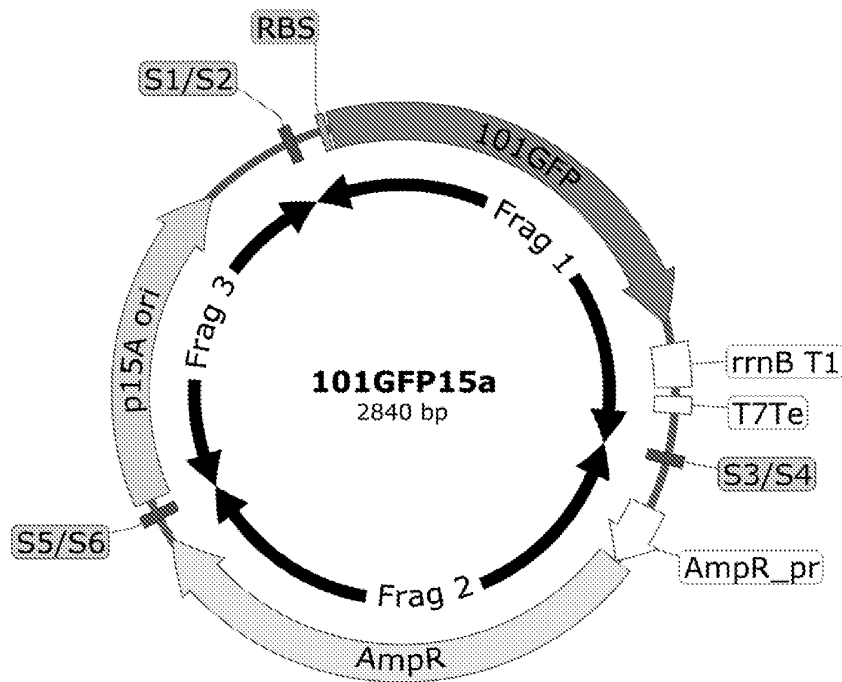


Fig. 2

(a) 3-fragment



4-fragment

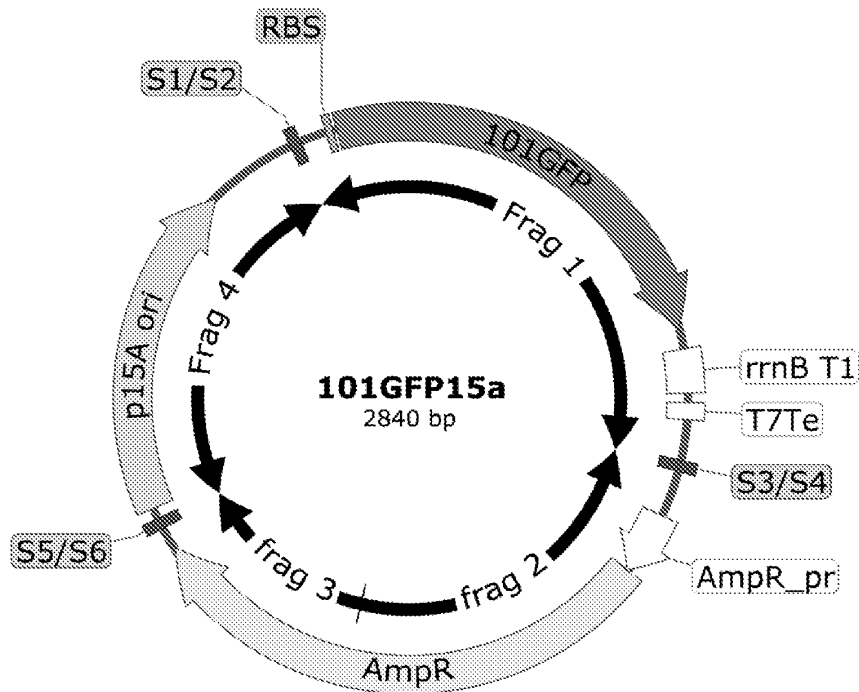
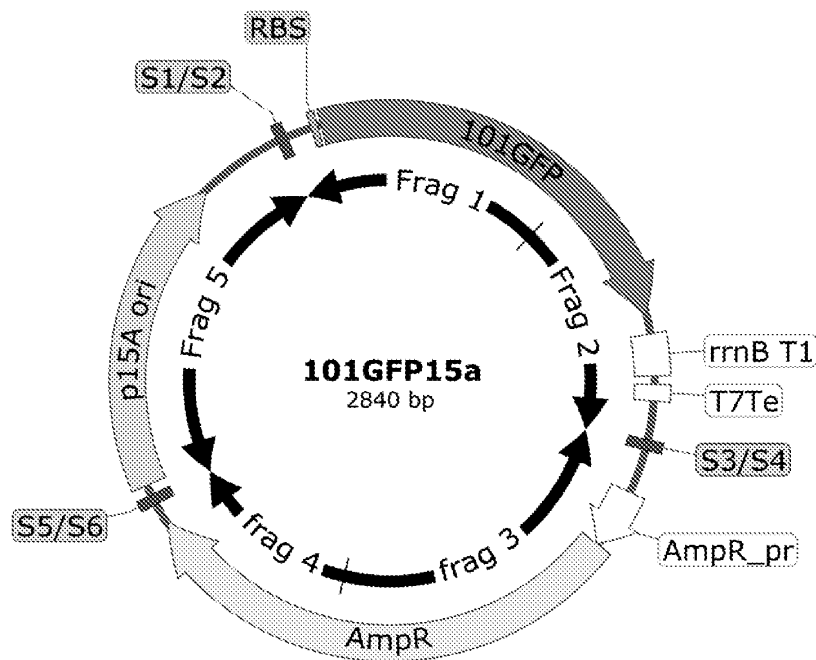


Fig. 3

5-fragment



6-fragment

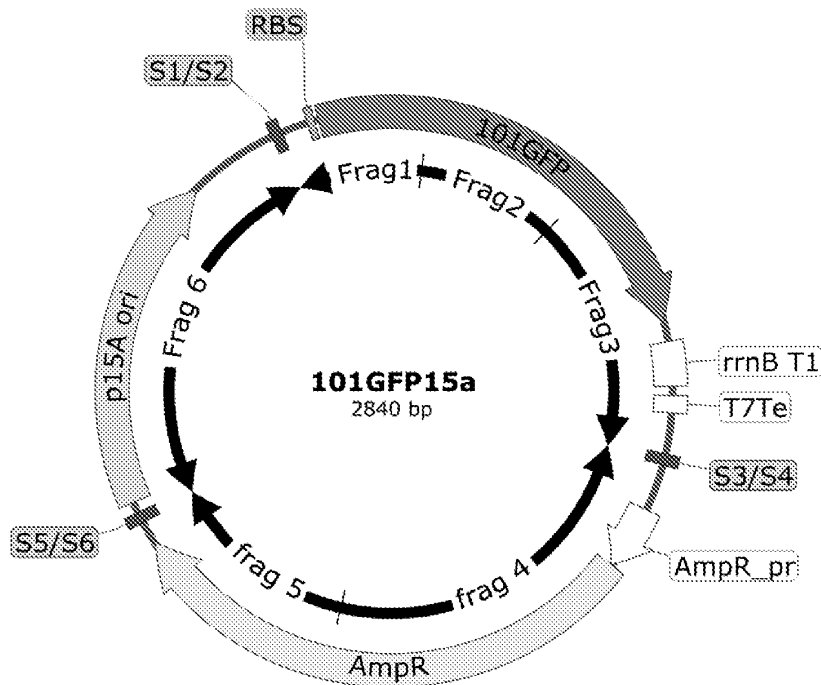
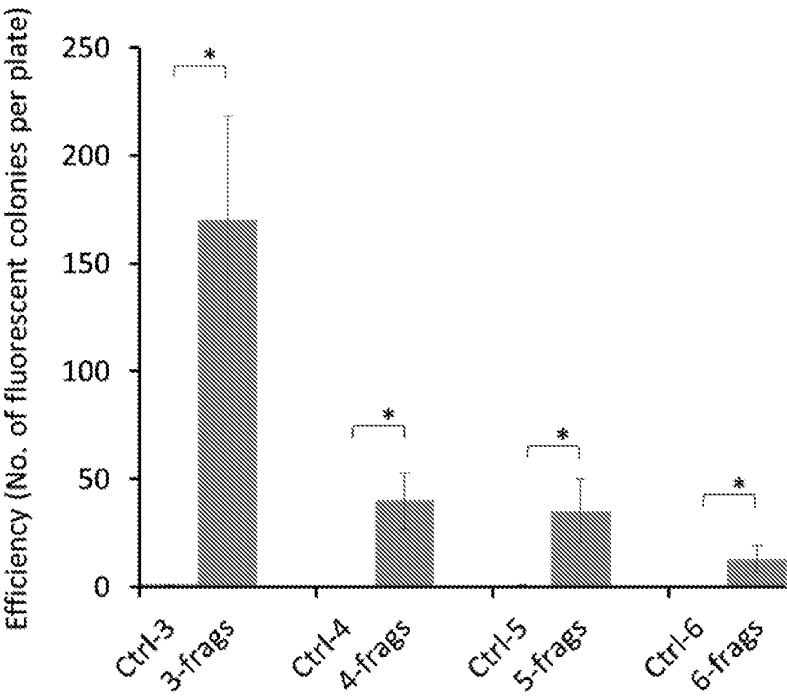


Fig. 3a (cont.)

(a) (cont.)



(b)

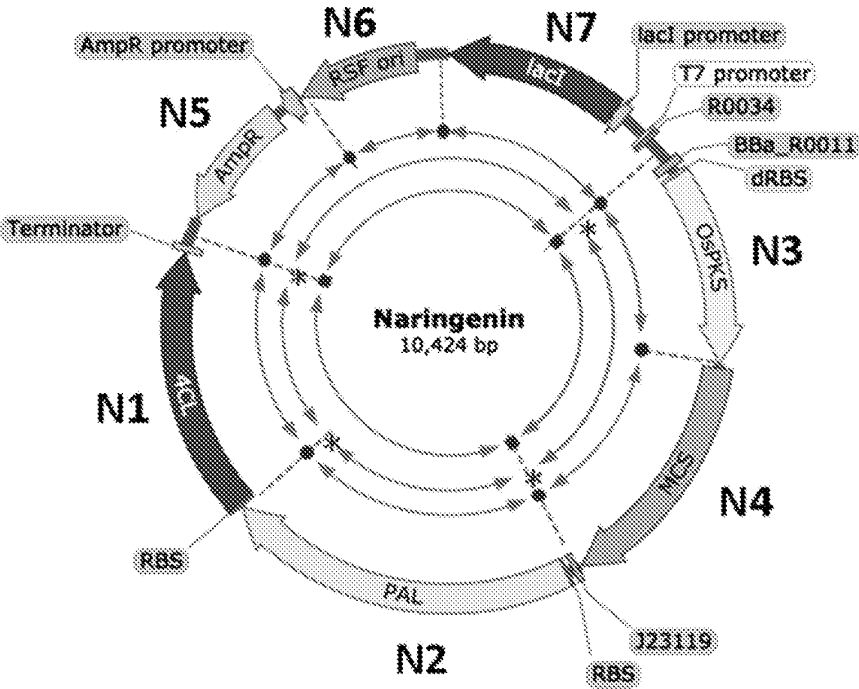


Fig. 3 (cont.)

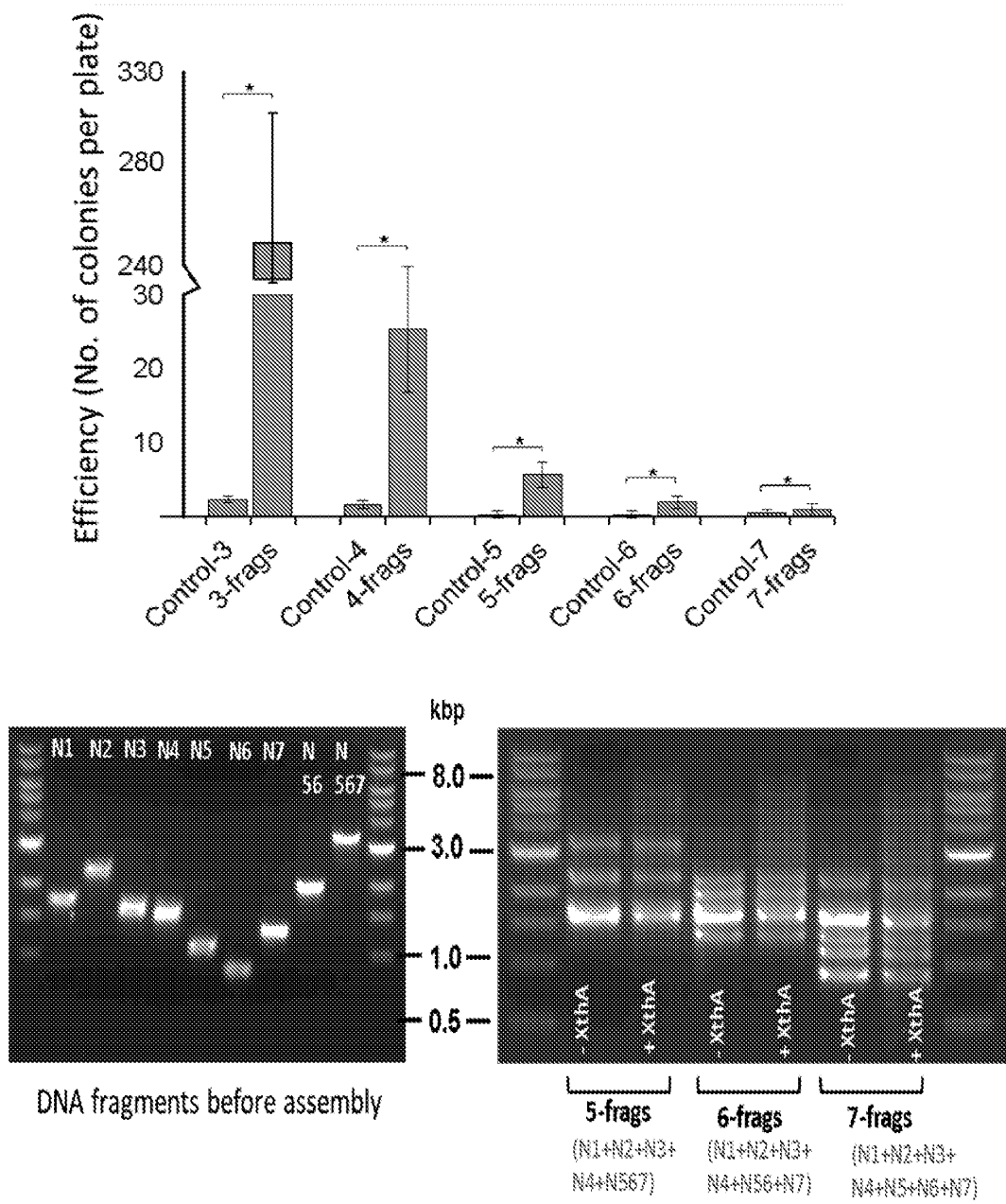


Fig. 3b (cont.)

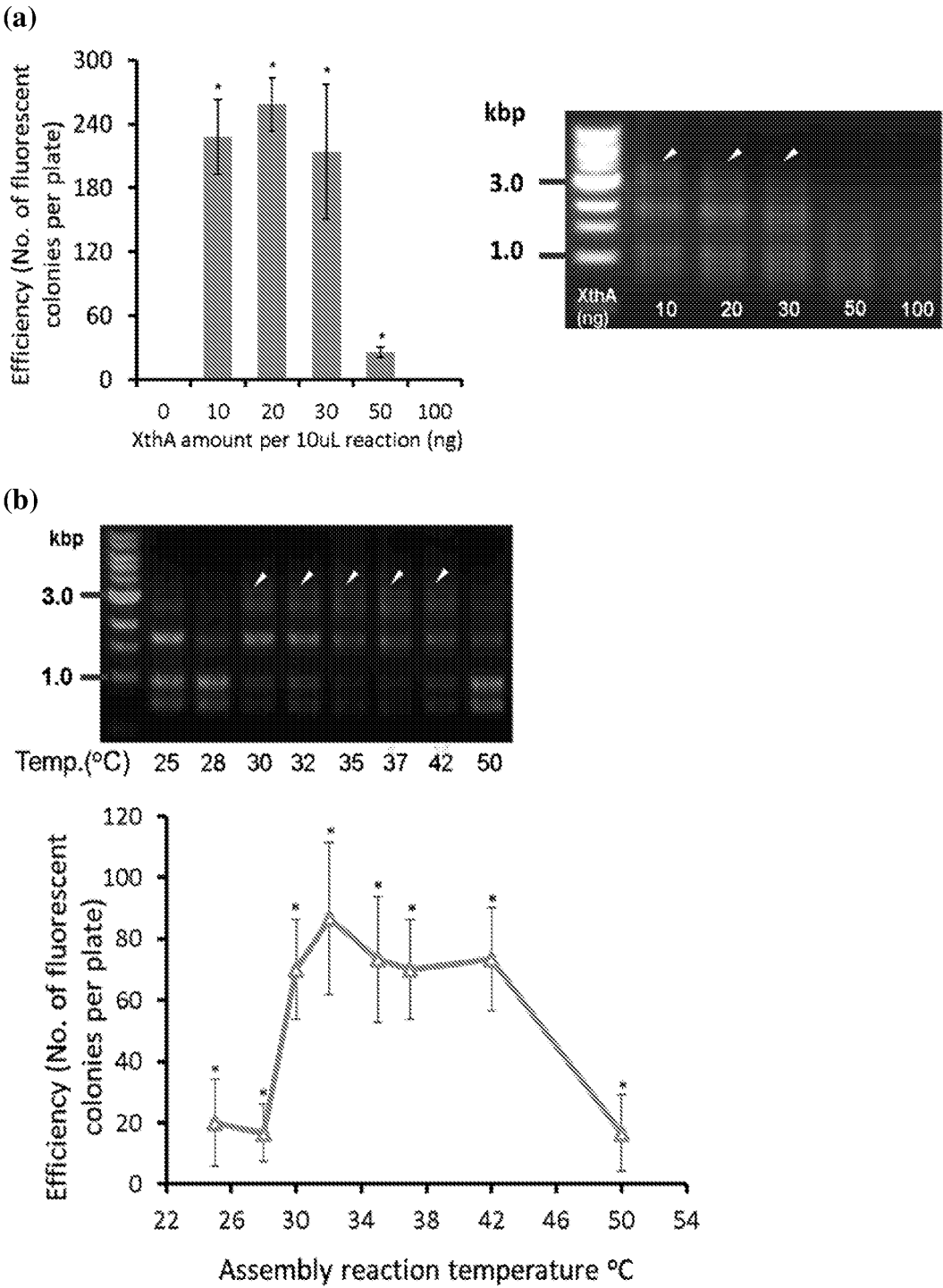


Fig. 4

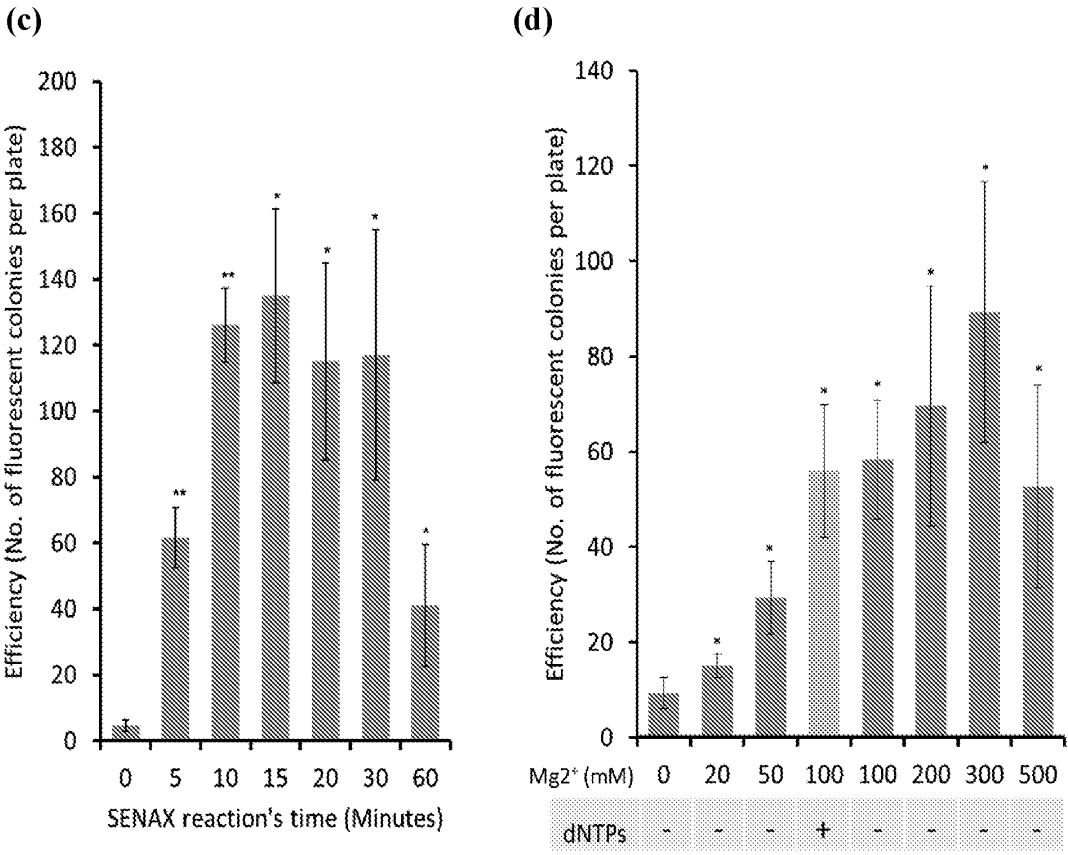


Fig. 4 (cont.)

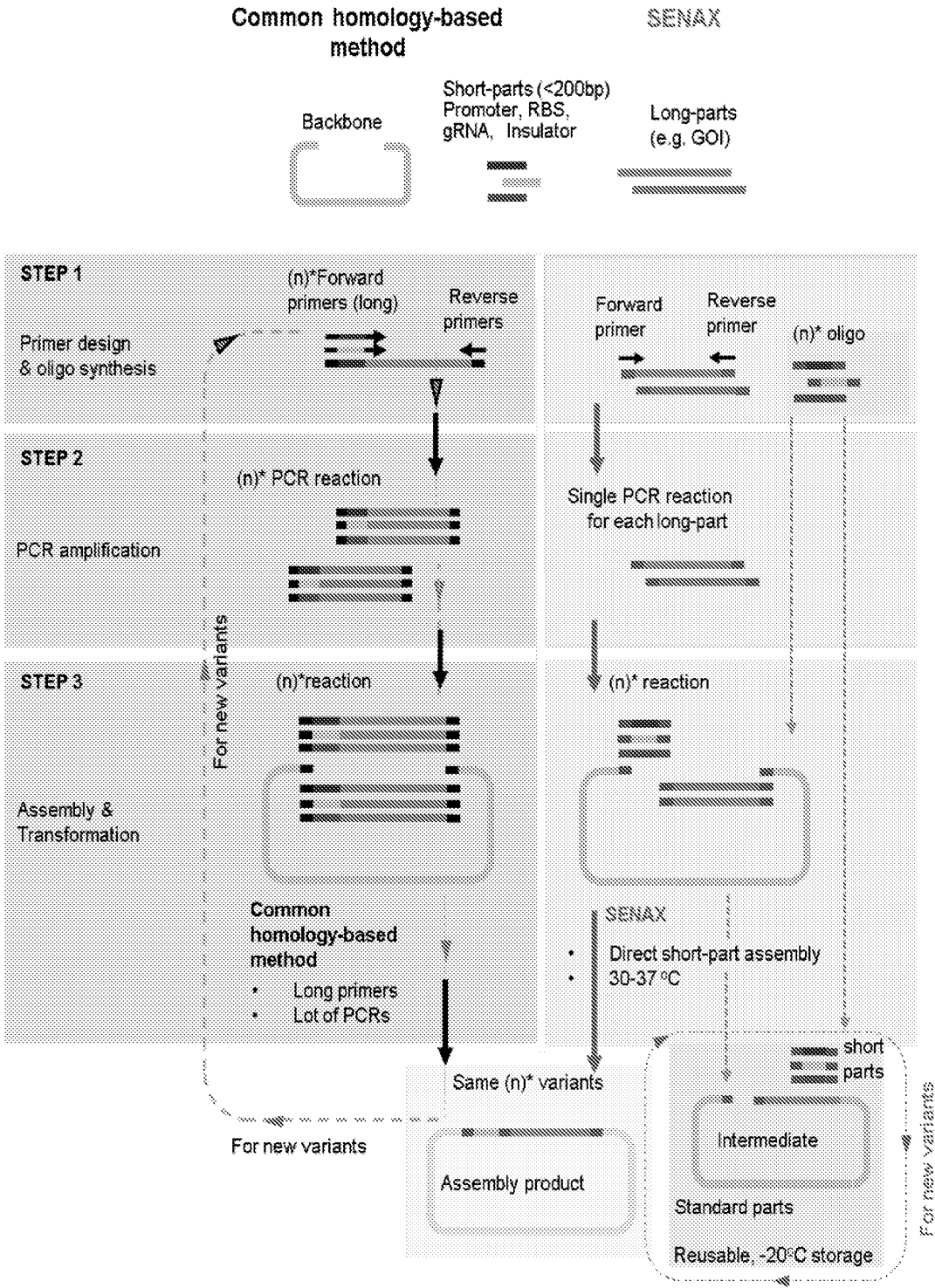


Fig. 5

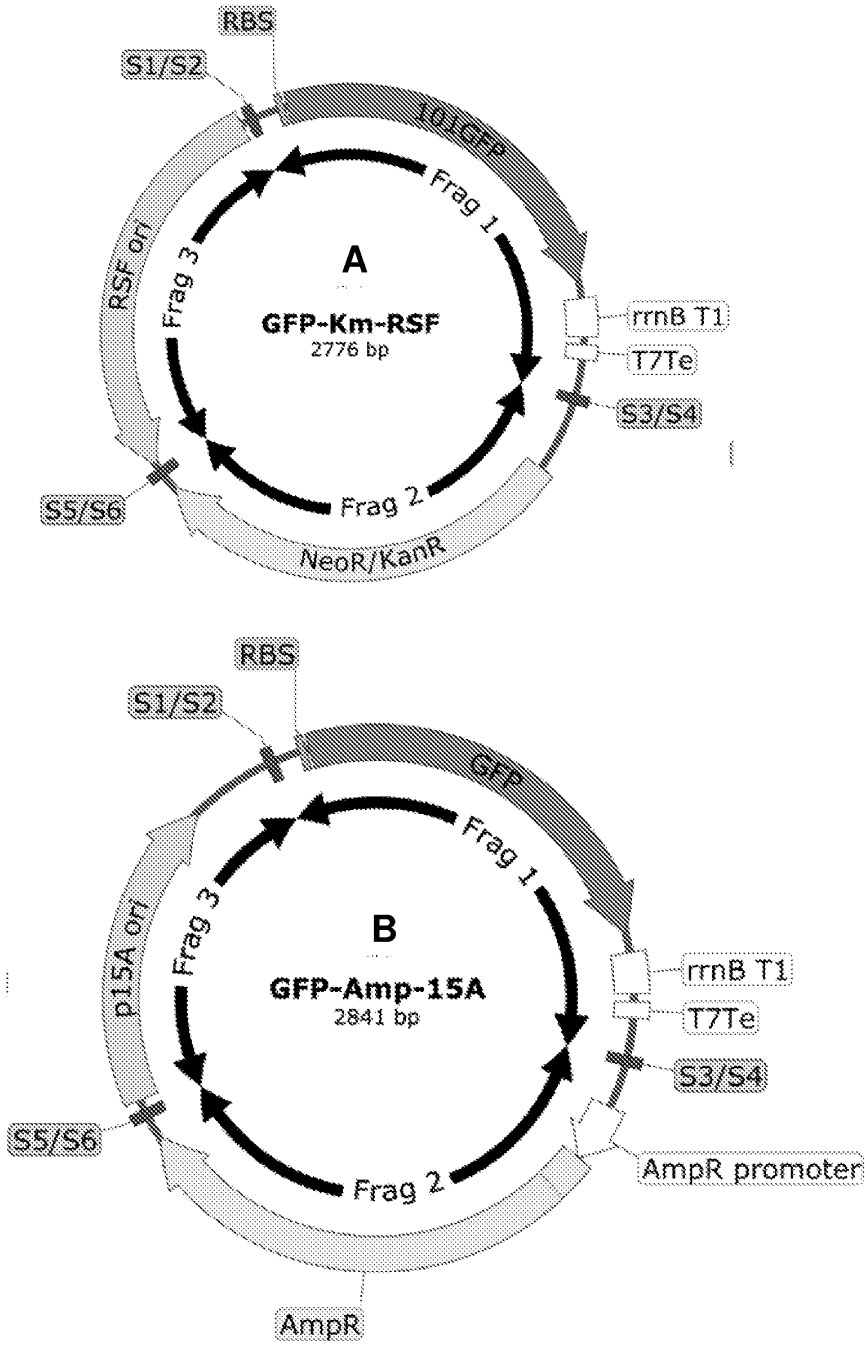


Fig. 6

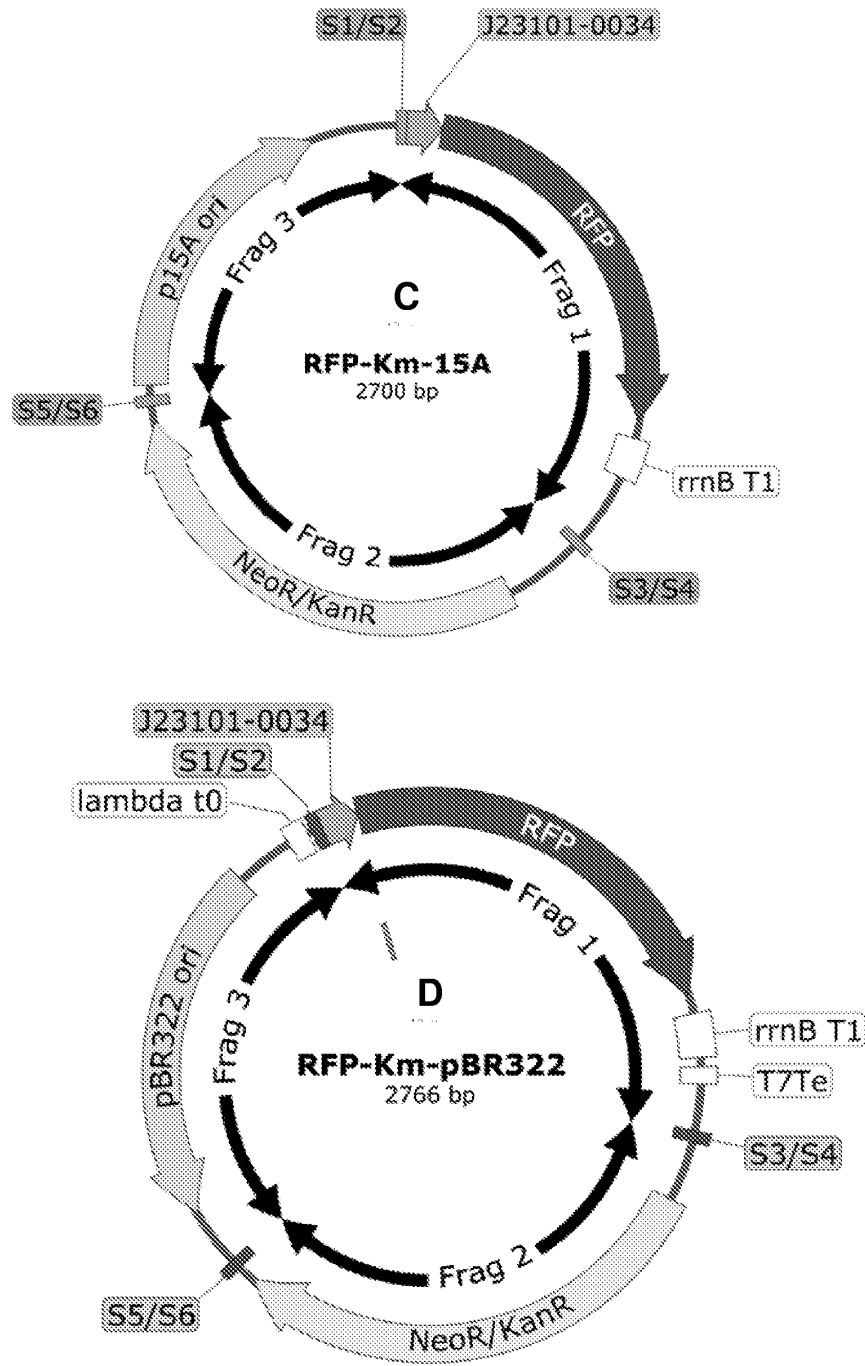


Fig. 6 (cont.)

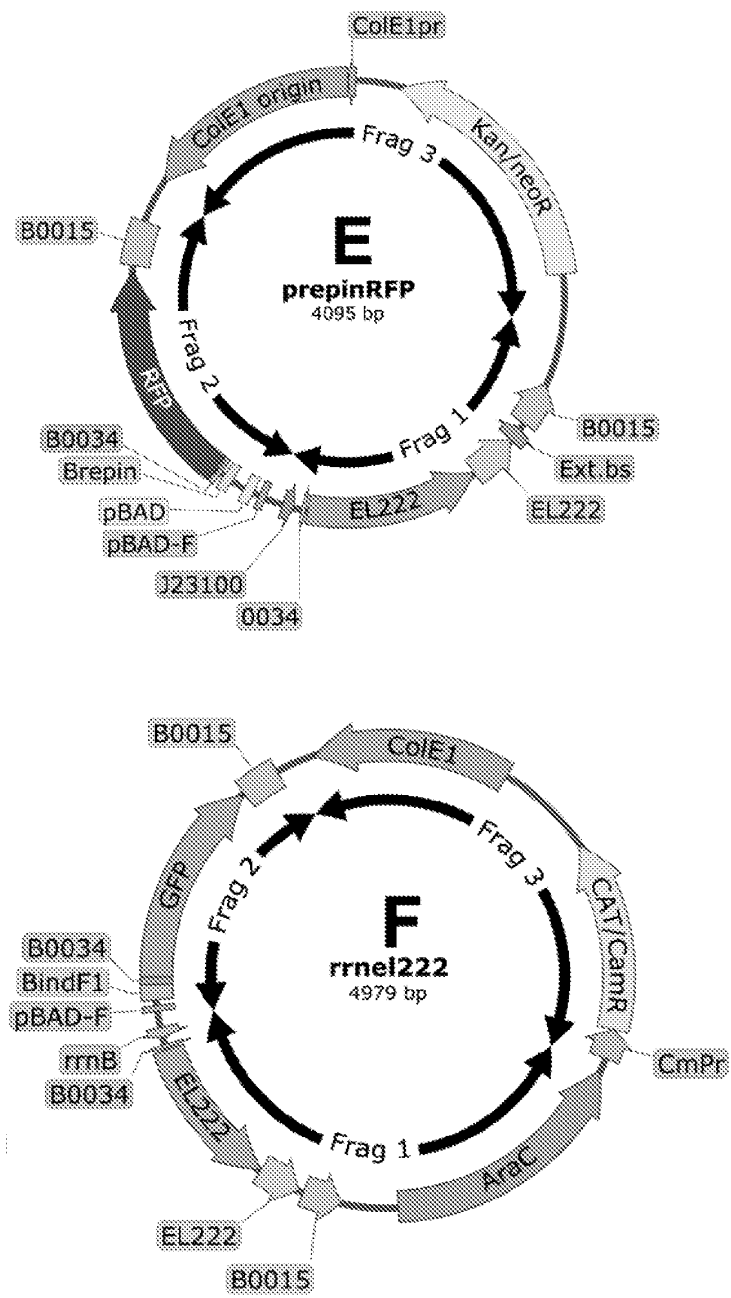


Fig. 6 (cont.)

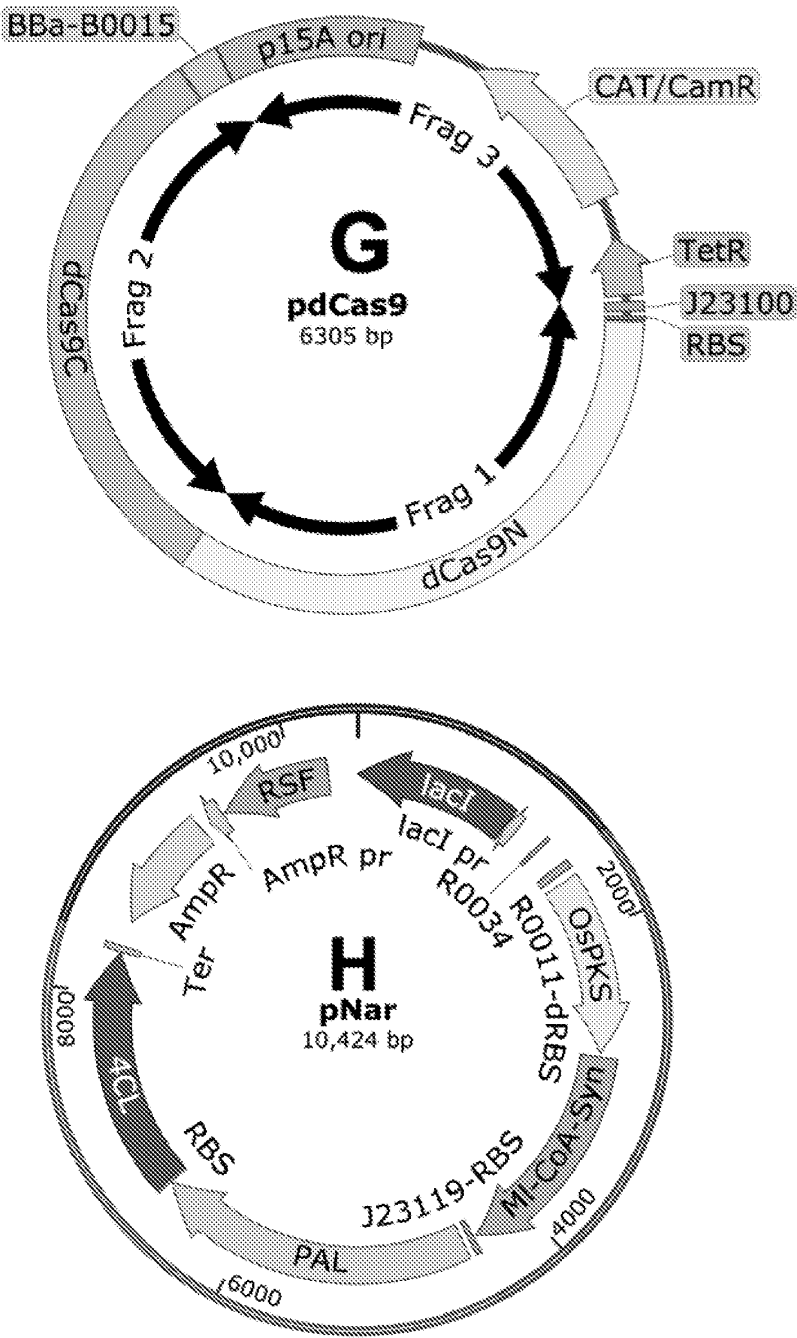
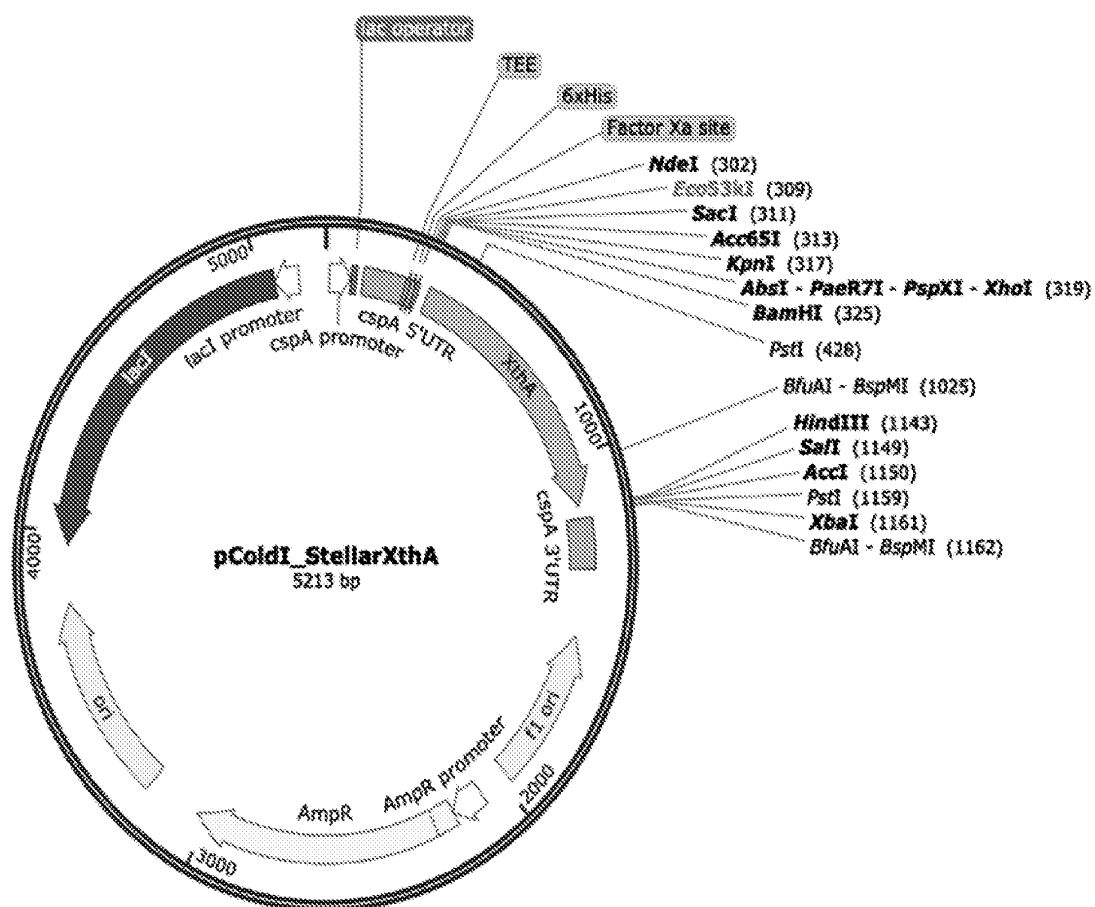


Fig. 6 (cont.)



```

1  MKFVSFNING LRARPHQLEA IVEKHQPDVI GLQETKVHDD MFPLEEVAKL
51 GYNVFIHGQK GHYGVALLTK ETPIAVRRGF PGDDEEAQRR IIMAEIP SPL
101 GNVTVINGYF PQGESRDHPI KFPKAQFYQ NLQNYLETEL KRENPVLIMG
151 DMNISPGLD LD IGIGEENRKR WLRTGKCSFL PEEREWMERL MSWGLVD TFR
201 HANPQTADRF SWFDYRSKGF DDNRGLRIDL LLASQPLAEC CVETGIDYEI
251 RSM EKPSDHA PVWATFRR (SEQ ID NO: 2)

```

Fig. 7

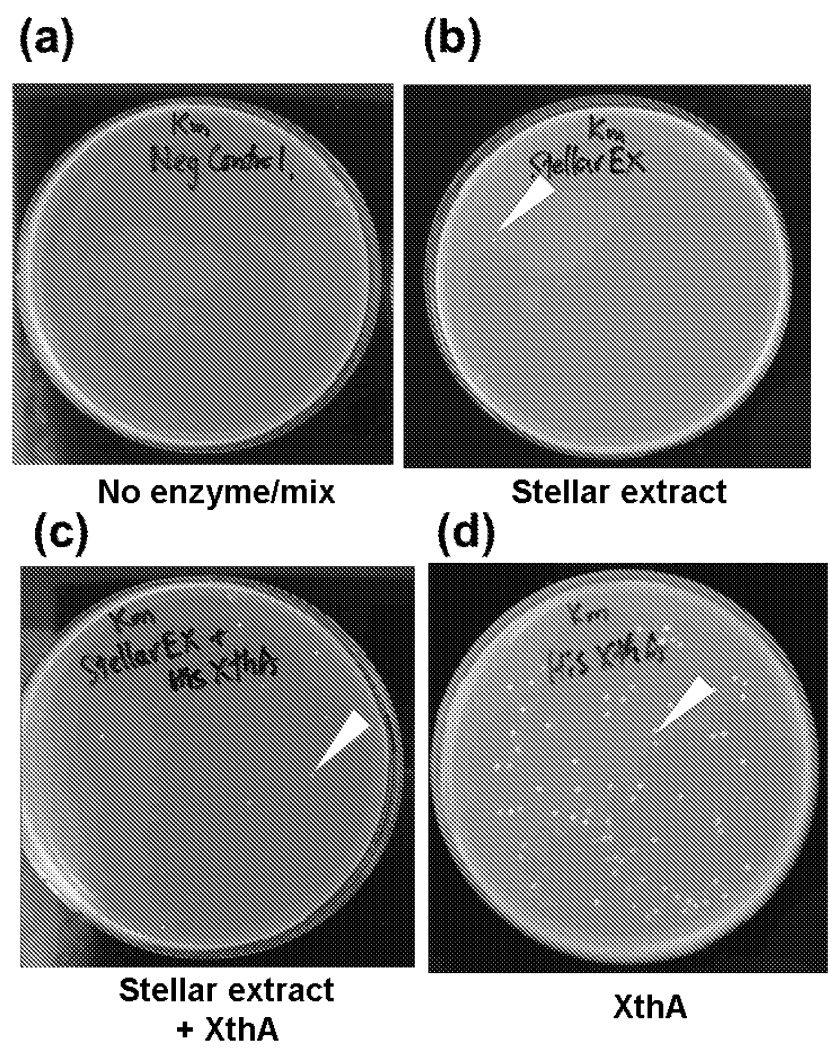
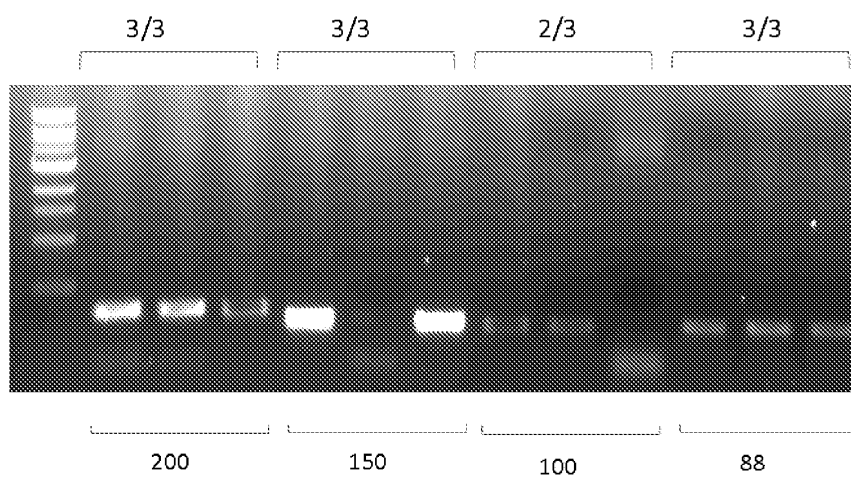


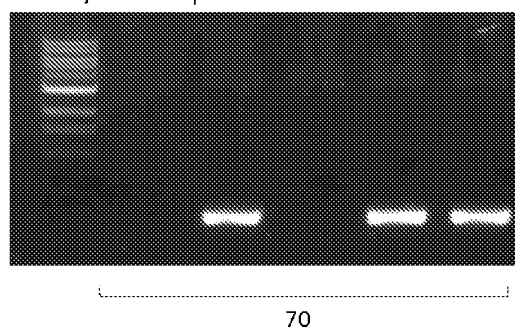
Fig. 8

(a)**6.3kb backbone case**

3/3 colonies for each cases are PCR positive, except 2/3 for case 100bp

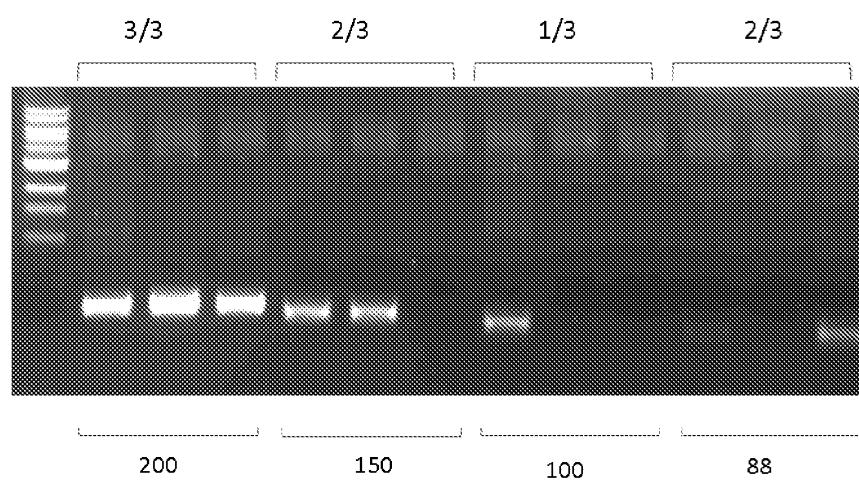


3/5 of 70bp-colonies are correct

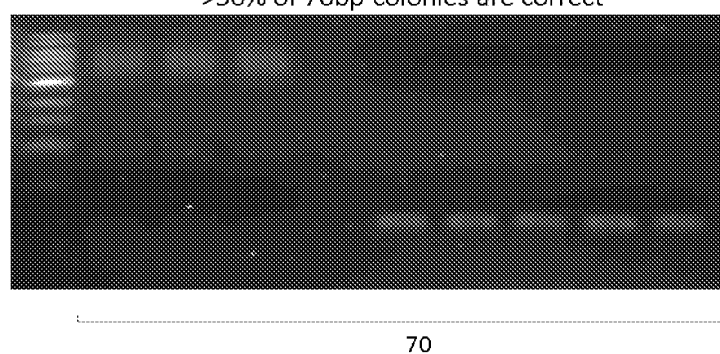
**Fig. 9**

(b)**9.0kb backbone case**

2/3 (or 3/3) colonies for each cases are PCR positive, except 1/3 for case 100bp



~>50% of 70bp-colonies are correct

**Fig. 9 (cont.)**

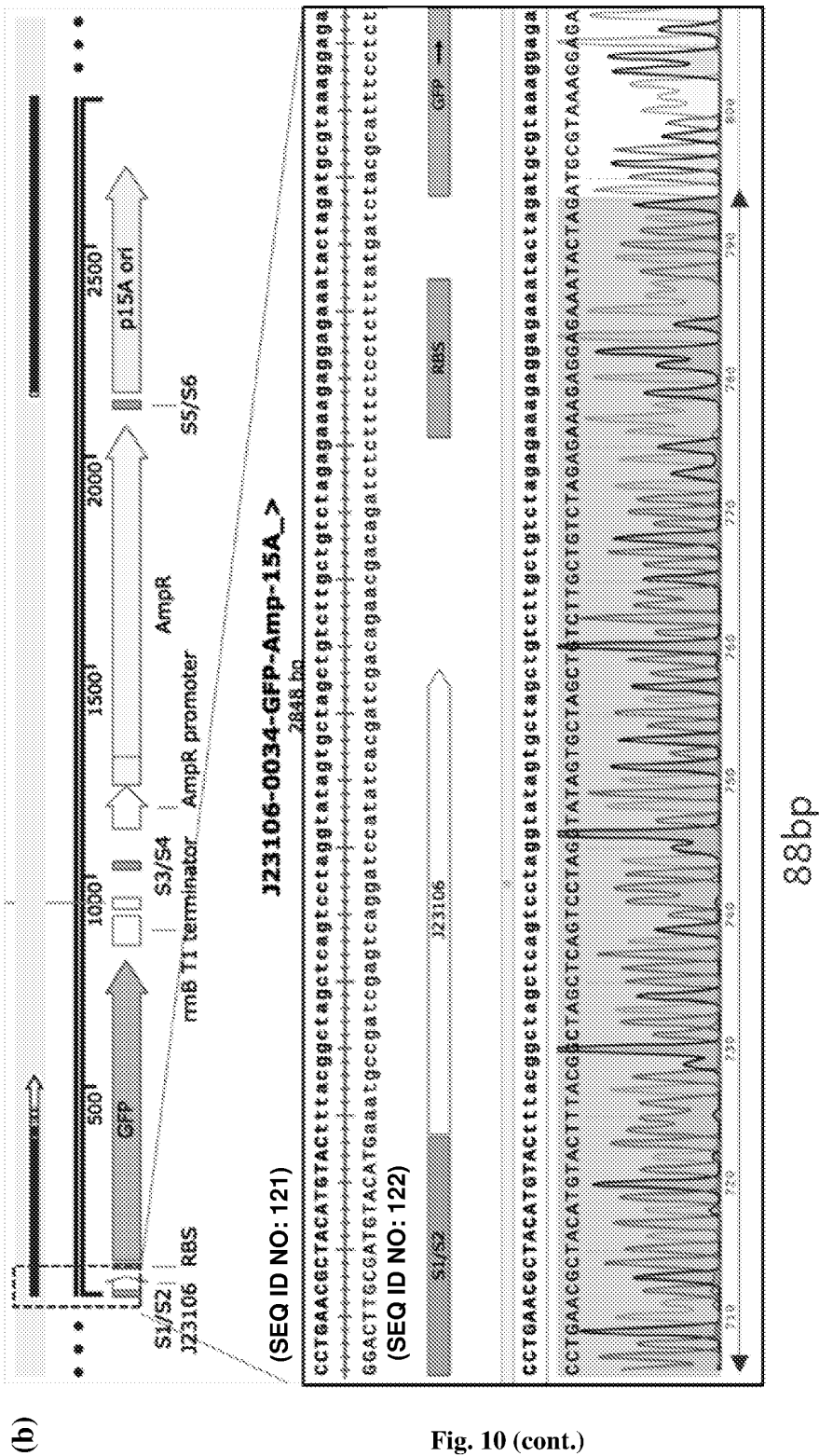
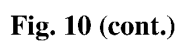


Fig. 10 (cont.)



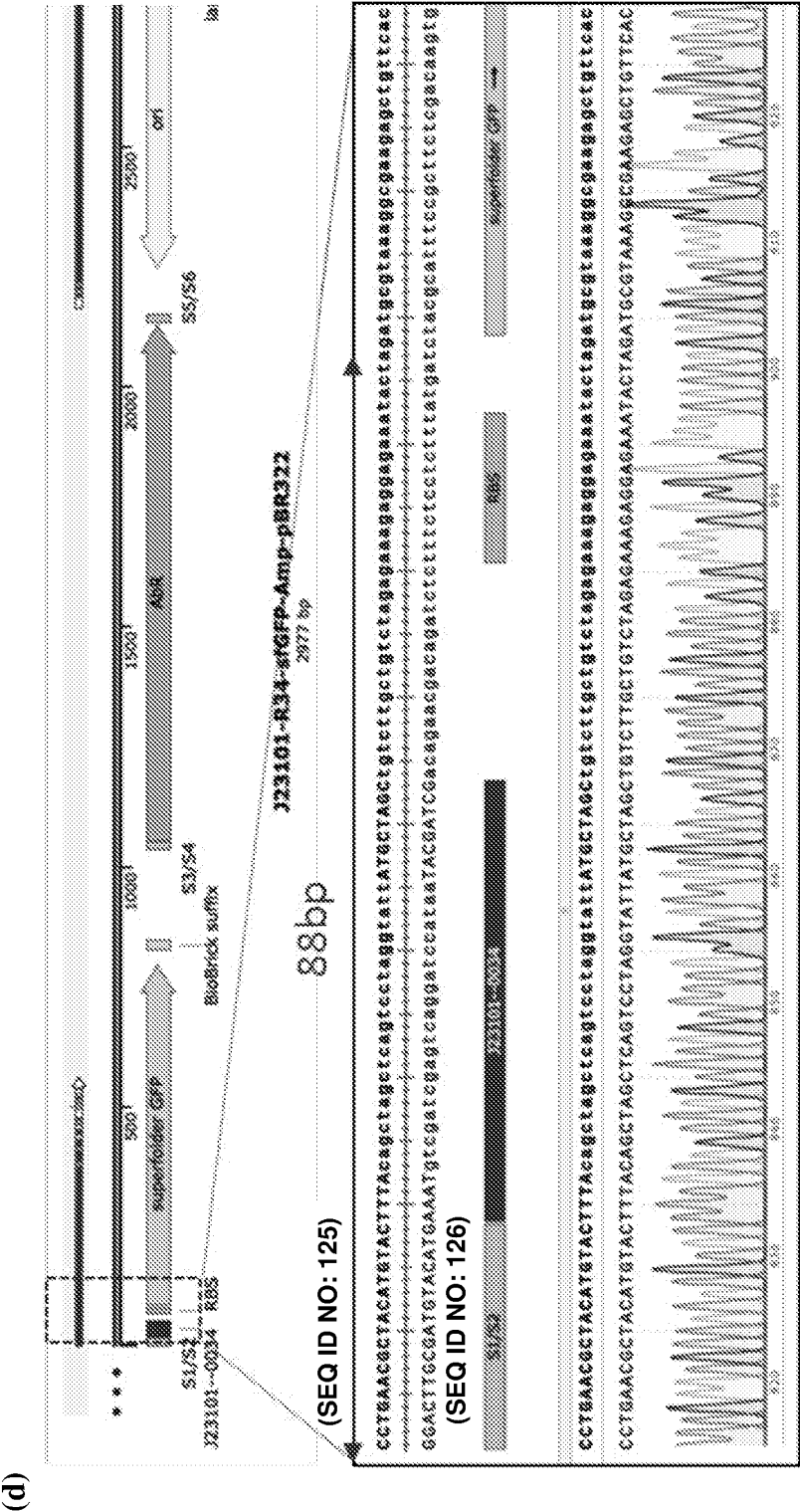


Fig. 10 (cont.)

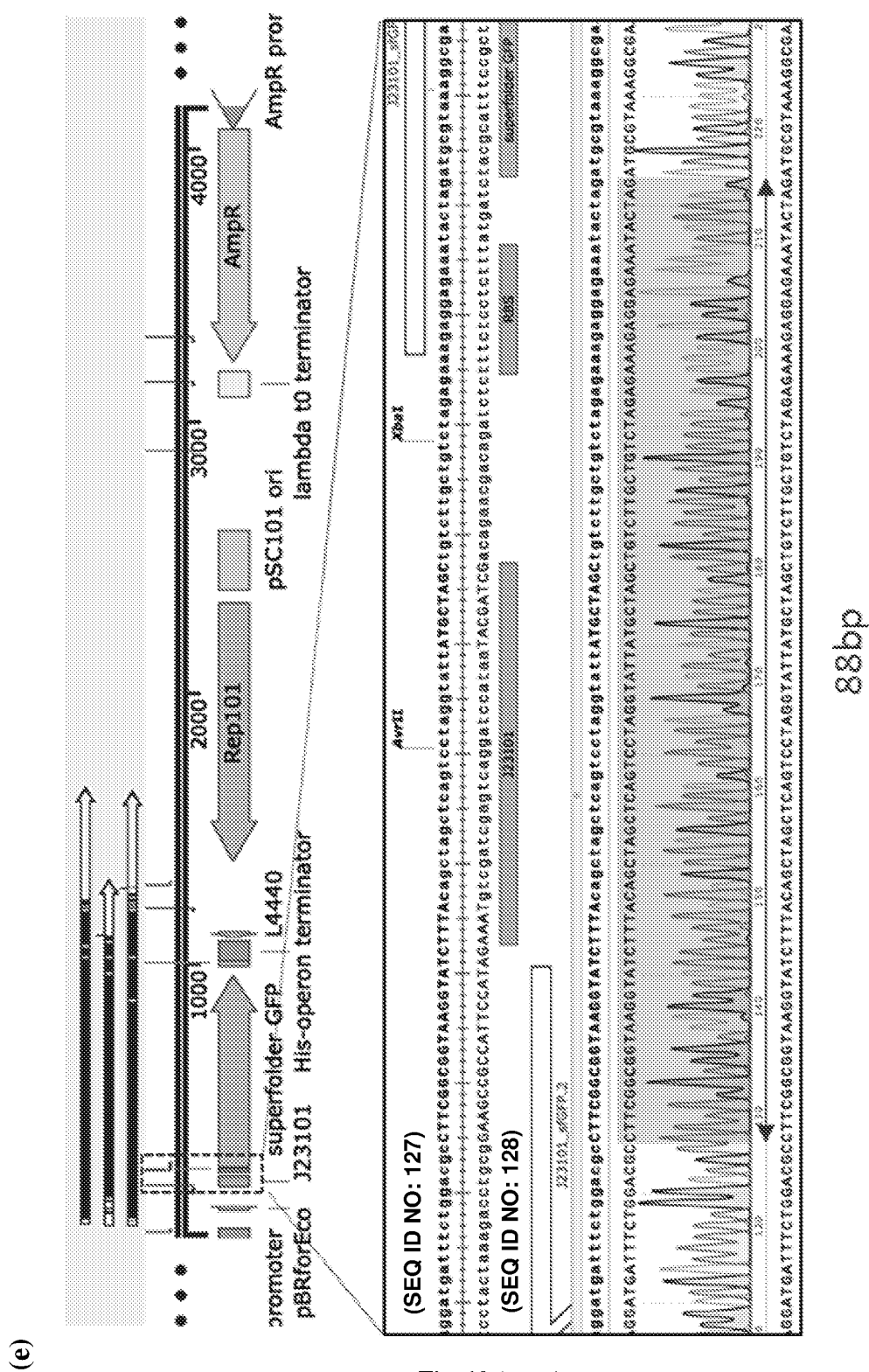
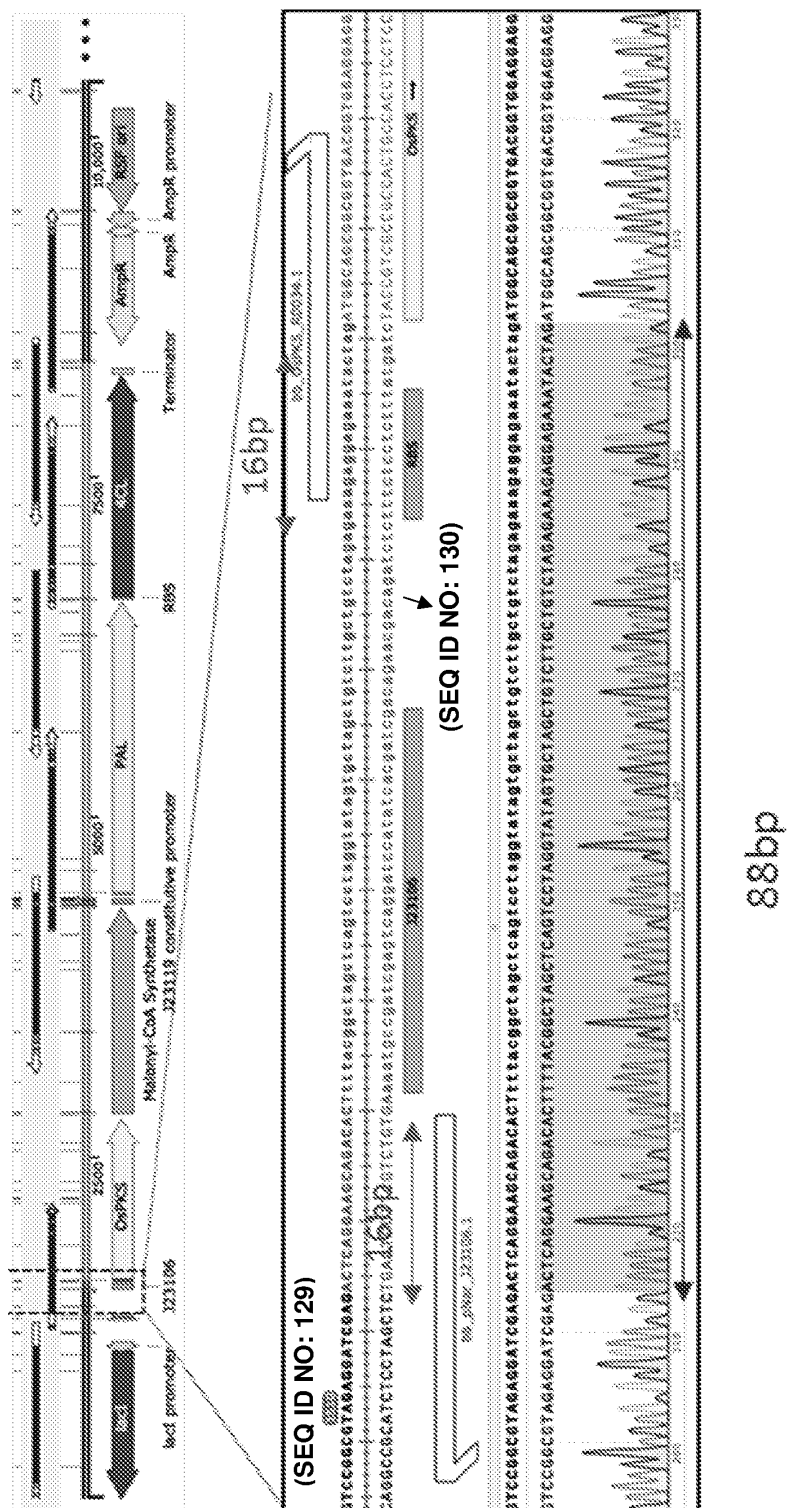


Fig. 10 (cont.)

(f)



(g)

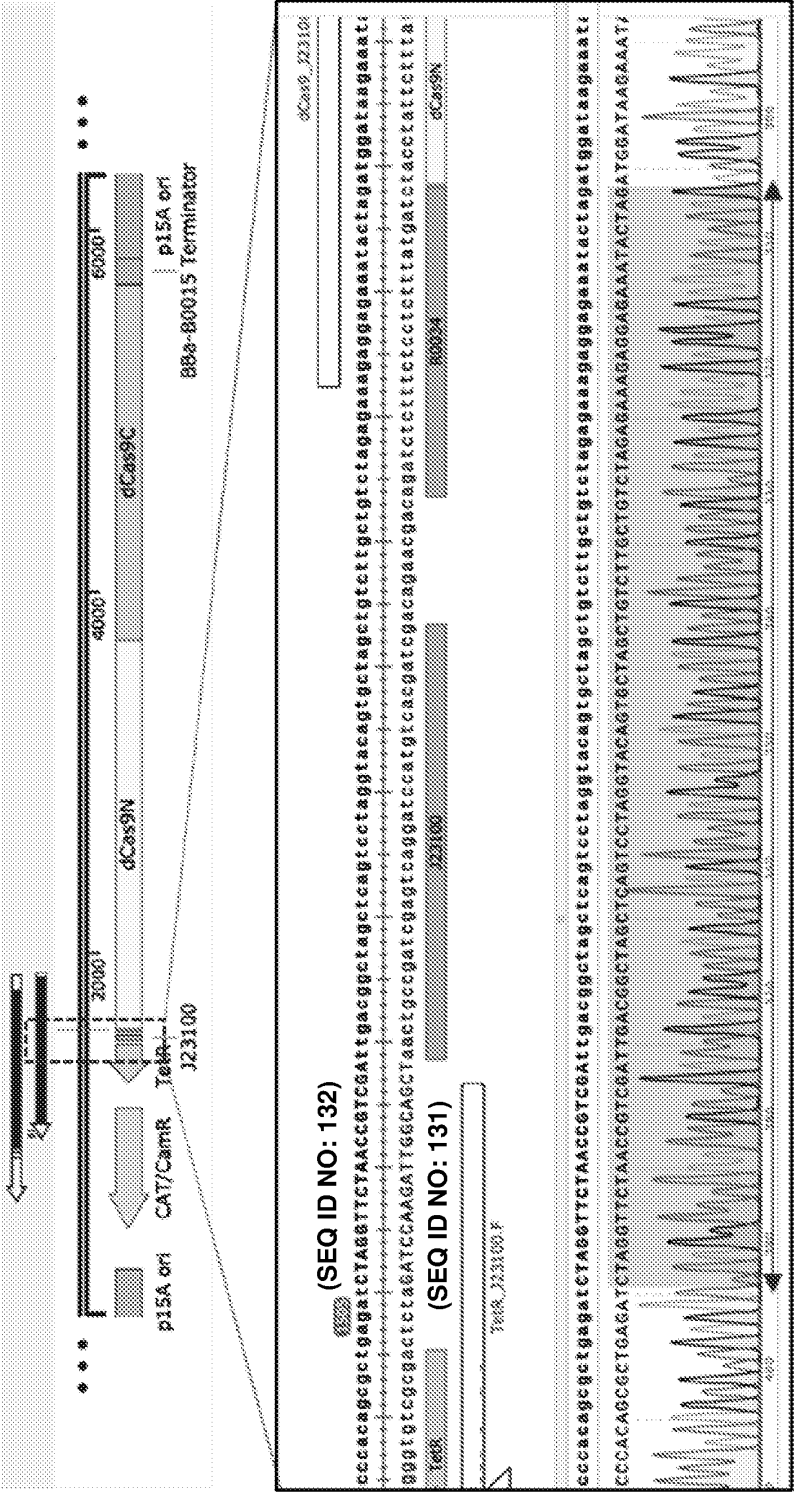


Fig. 10 (cont.)

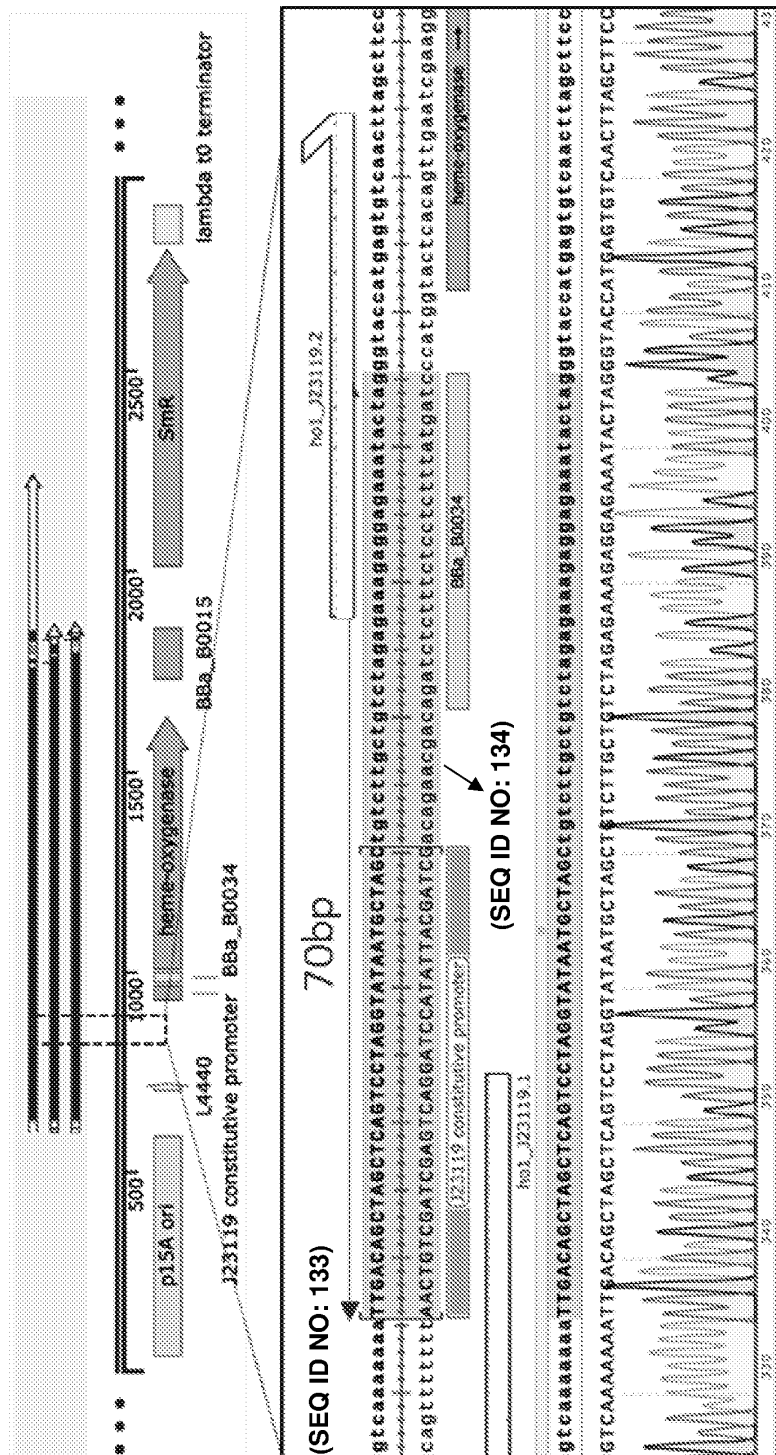


Fig. 10 (cont.)

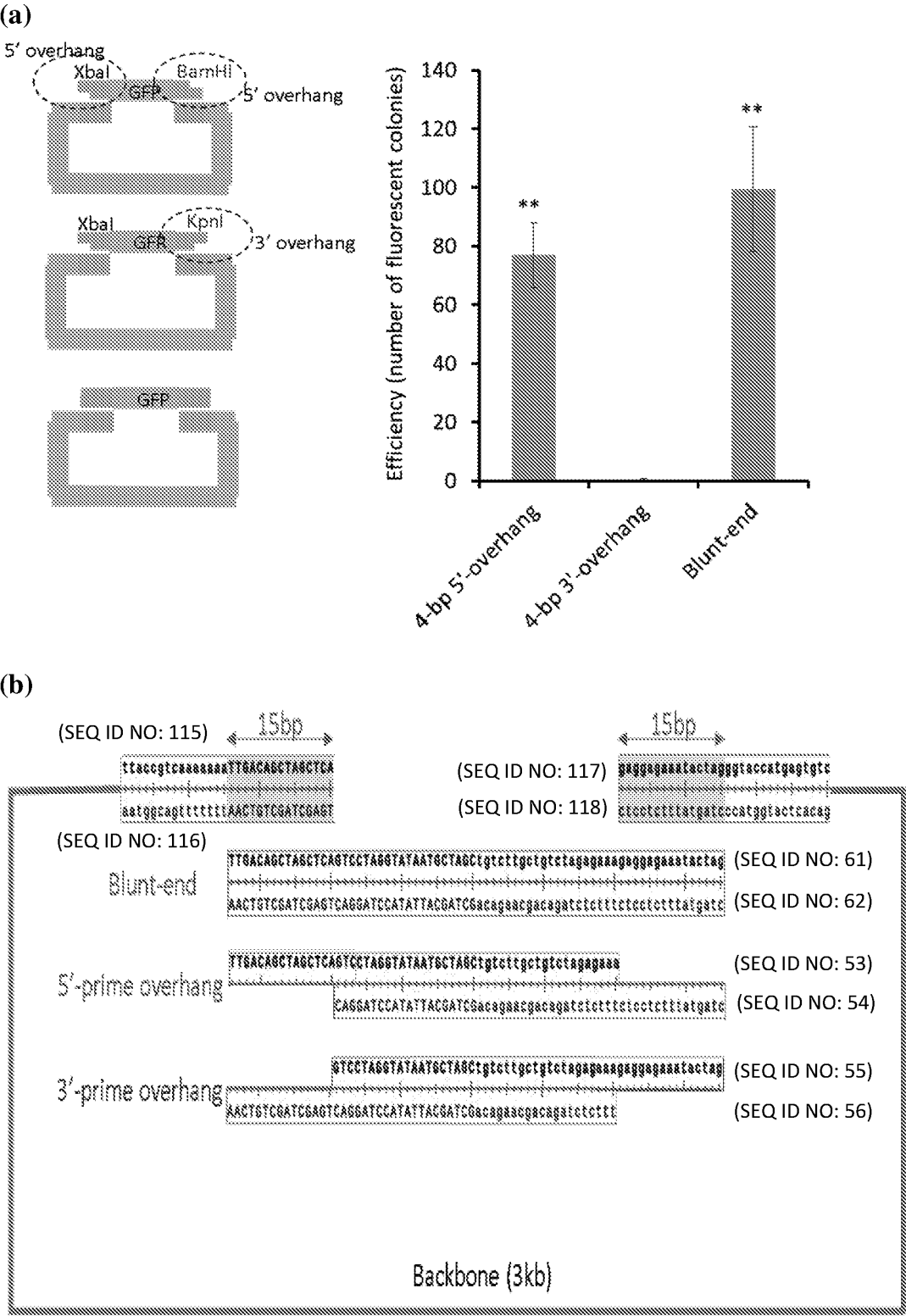
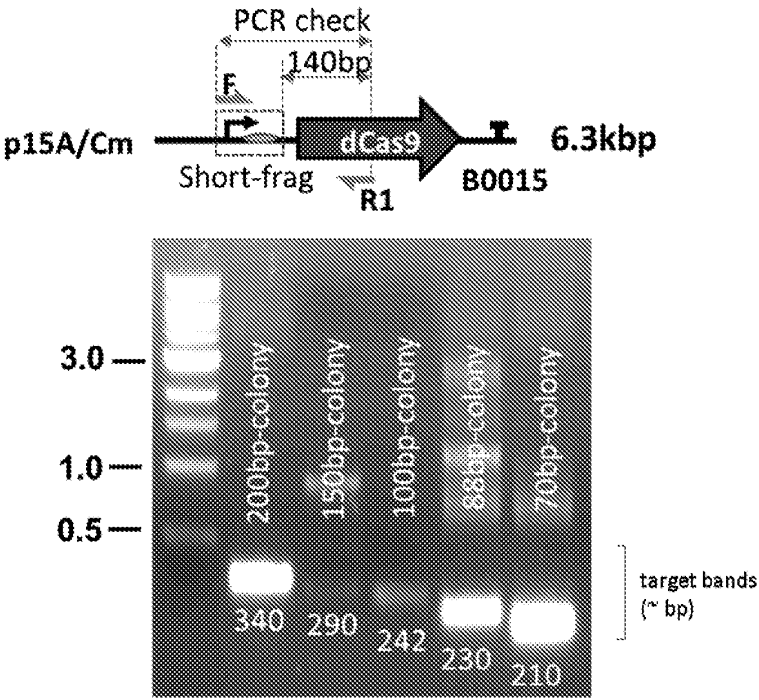


Fig. 11

(a)



(b)

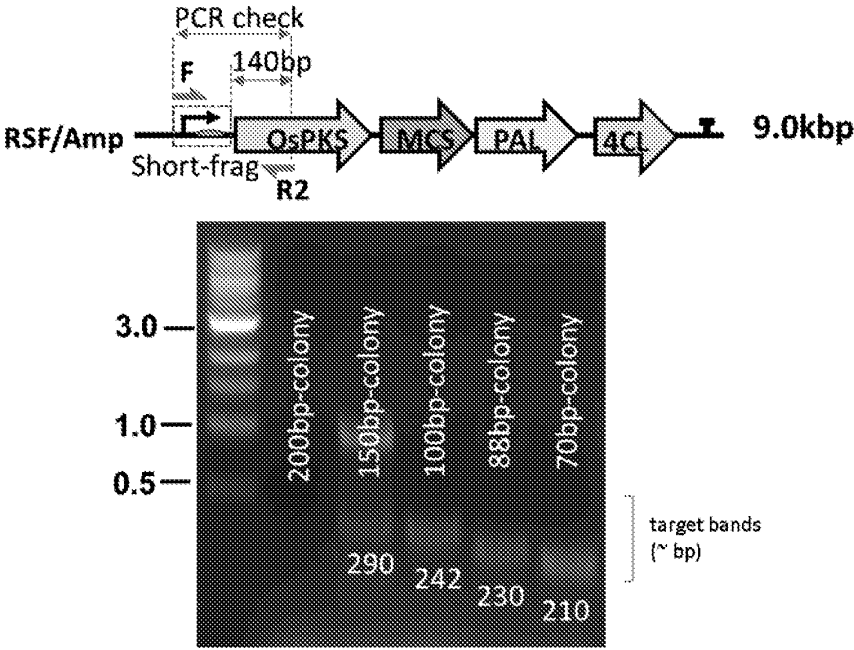


Fig. 12

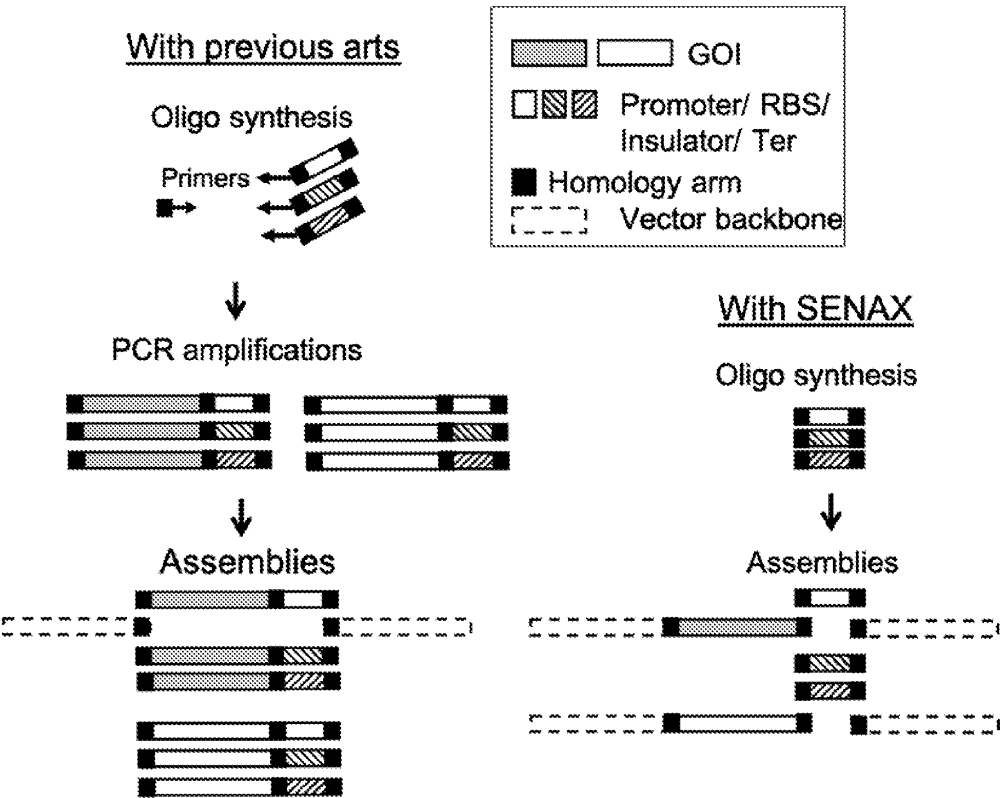


Fig. 13

J23106	rbs32	J23106	rbs32	J23106	rbsD	rbsD
J23106	rbsD	J23106	rbs32	J23106	rbs32	rbsD
J23106	rbs32	J23106	rbs32	J23106	rbs32	rbsD
J23106	rbs32	J23106	rbsD	J23106	rbs32	rbsD
pMCS	rbsMCS	pPAL	rbsPAL	p4CL	rbs4CL	rbsOsCHS

Fig. 14

(a)

S/N	Short-fragment	Size (bp)	BackBone	Final Size	Function
1	promoter-RBS pLac-0034	114	RSF origin KanR	4.2 kb	Drive OsPKS gene's expression
2	promoter-RBS pLac-0032	115	RSF origin KanR	4.2 kb	Drive OsPKS gene's expression
3	promoter-RBS pLac-0029	117	RSF origin KanR	4.2 kb	Drive OsPKS gene's expression
4	promoter-RBS J23114-0034	88	RSF origin KanR	3.6 kb	Drive MCS gene's expression
5	promoter-RBS J23102-0034	88	RSF origin KanR	3.6 kb	Drive MCS gene's expression
6	promoter-RBS J23114-0029	89	RSF origin KanR	3.6 kb	Drive MCS gene's expression
7	promoter-RBS J23106-0029	89	RSF origin KanR	3.6 kb	Drive MCS gene's expression
8	promoter-RBS J23106-0034	88	RSF origin KanR	3.6 kb	Drive 4CL gene's expression
9	promoter-RBS J23101-0032	88	RSF origin KanR	3.6 kb	Drive 4CL gene's expression
10	promoter-RBS J23101-0029	89	RSF origin KanR	3.6 kb	Drive 4CL gene's expression
11	promoter-RBS J23102-0034	88	RSF origin KanR	3.6 kb	Drive 4CL gene's expression
12	promoter-RBS J23102-0034	88	15A origin SmR	4.4 kb	Drive gRNA expression
13	promoter-RBS J23106-0034	88	15A origin SmR	4.4 kb	Drive gRNA expression
14	promoter-RBS J23100-0034	88	15A origin CamR	6.4 kb	Drive a dCas9 domain's expression
15	promoter-RBS J23100-0034	88	15A origin CamR	6.9 kb	Drive a dCas9 domain's expression
16	promoter-RBS J23100-0034	88	15A origin CamR	9.1 kb	Drive a fusion protein expression
17	promoter-RBS J23106-0034	88	15A origin CamR	9.1 kb	Drive a fusion protein expression
18	promoter-RBS J23114-0034	88	15A origin CamR	9.1 kb	Drive a fusion protein expression

Fig. 15

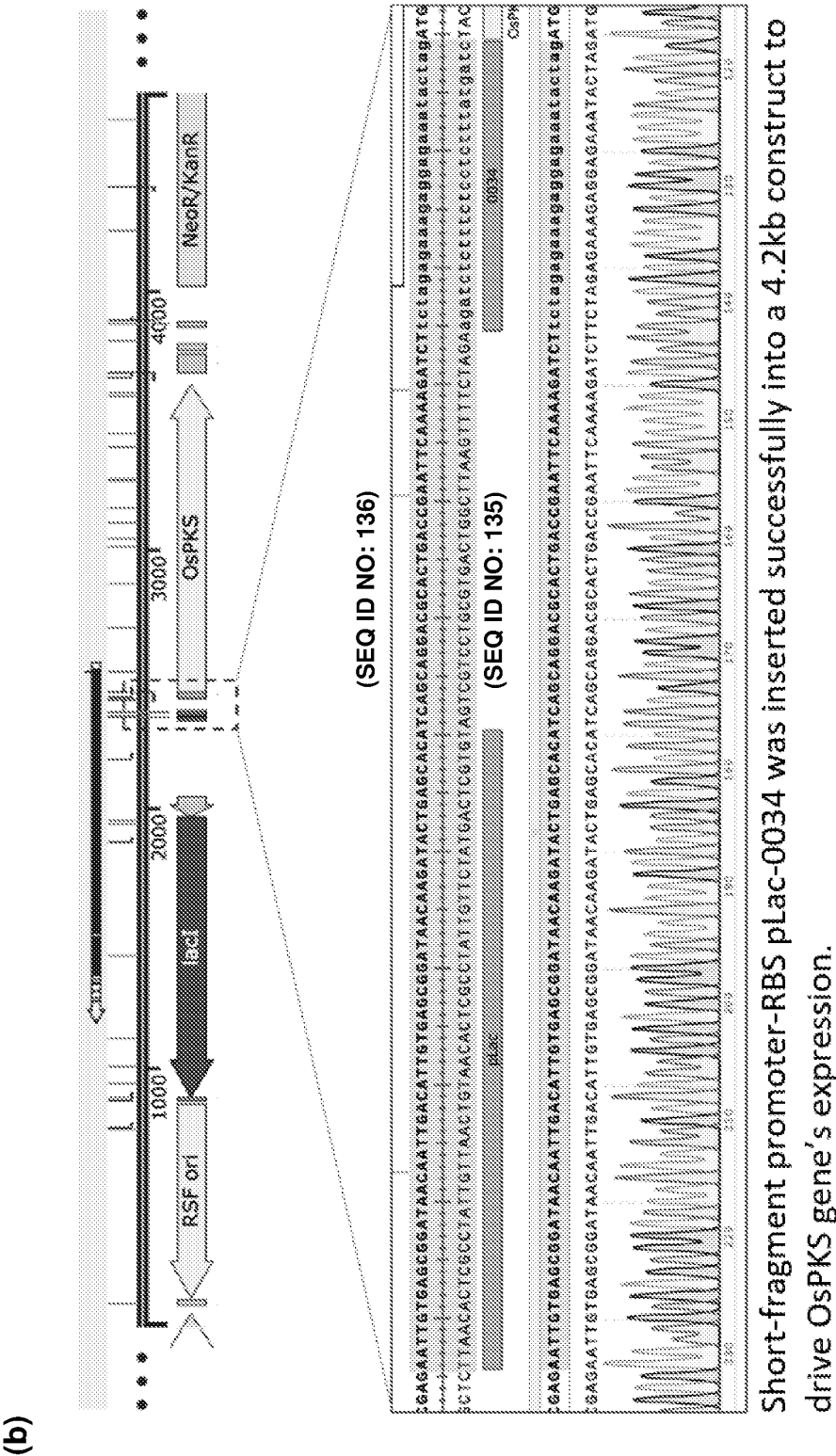
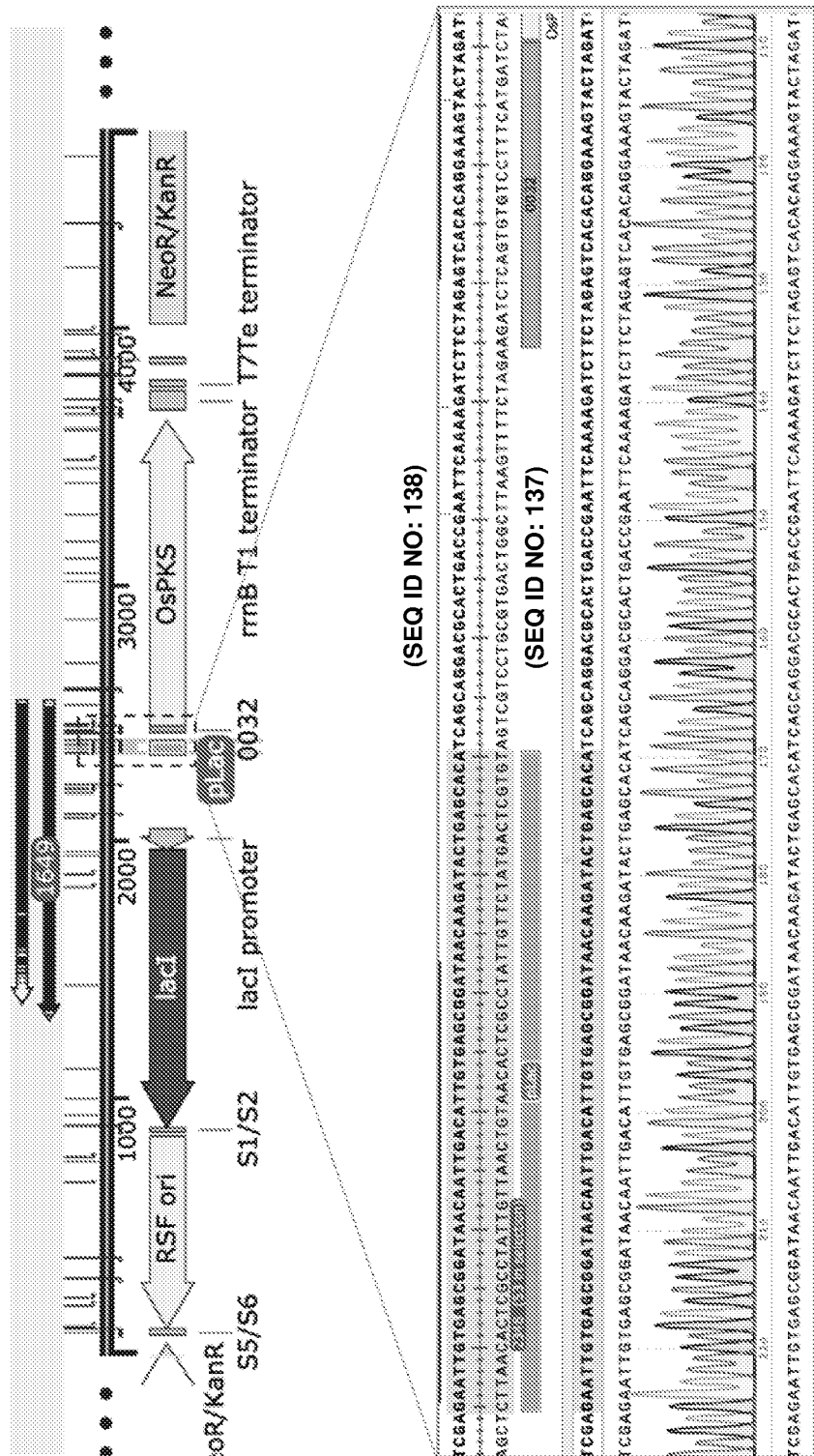


Fig. 15 (cont.)



Short-fragment promoter-RBS pLac-0032 was inserted successfully into a 4.2kb construct to drive OsPKS gene's expression.

Fig. 15b (cont.)

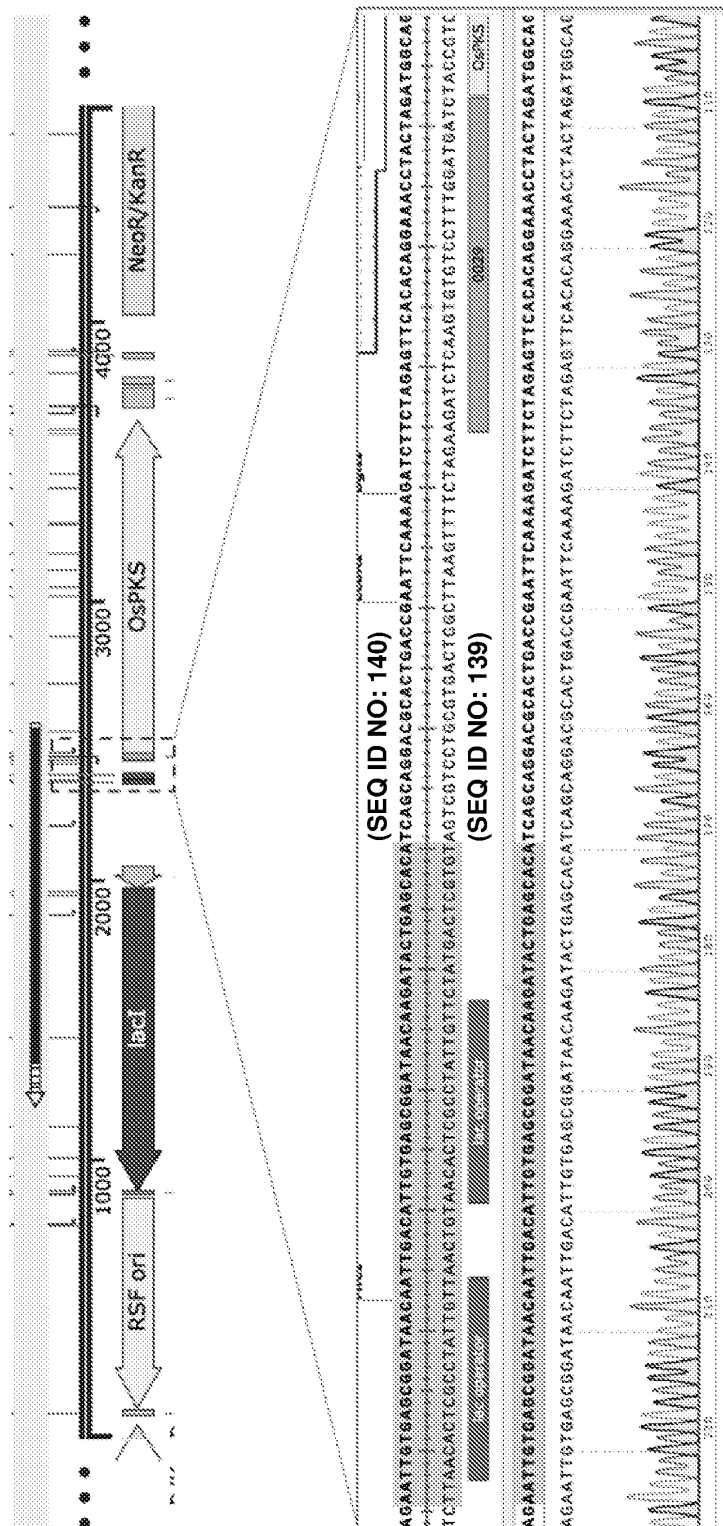


Fig. 15b (cont.)

Short-fragment promoter-RBS plac-0029 was inserted successfully into a 4.2kb construct to drive OsPKS gene's expression.

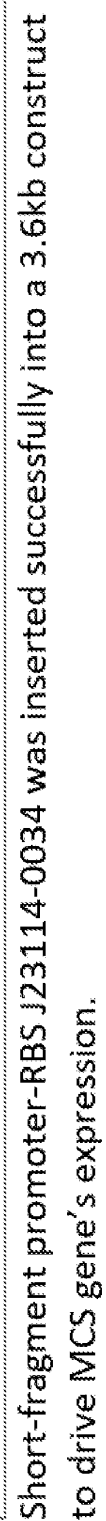
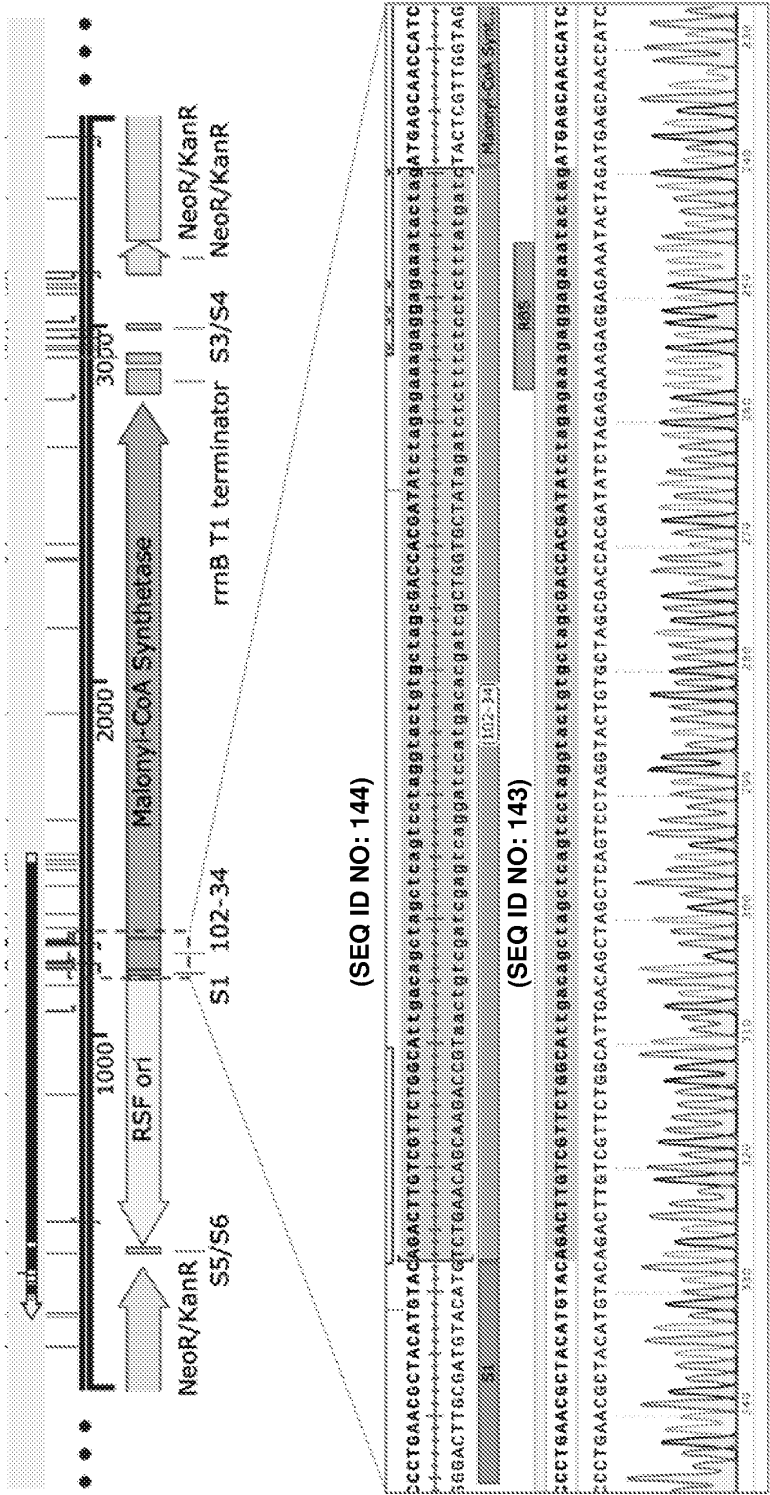


Fig. 15b (cont.)



Short-fragment promoter-RBS J23102-0034 was inserted successfully into a 3.6kb construct to drive MCS gene's expression.

Fig. 15b (cont.)

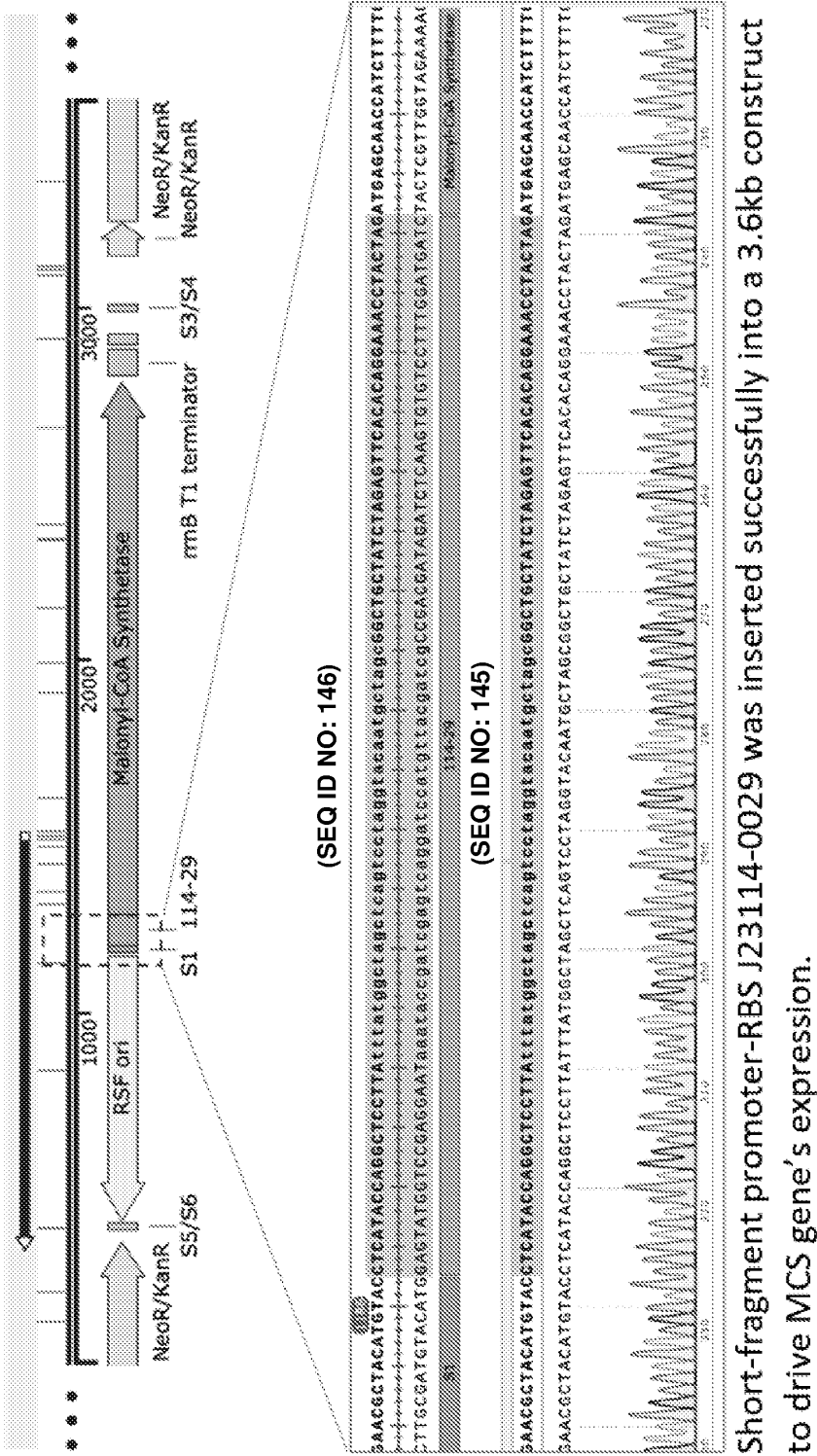
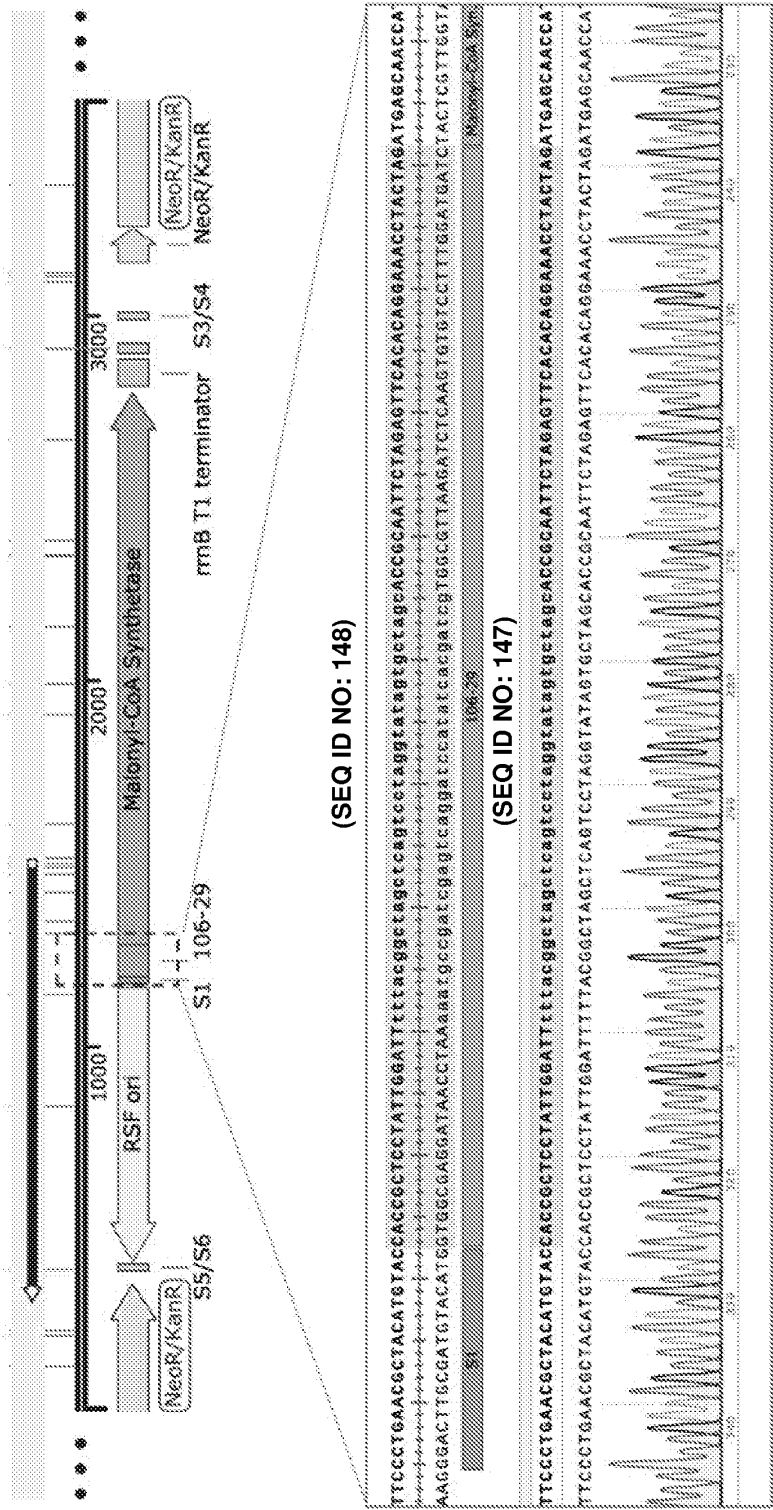


Fig. 15b (cont.)



Short-fragment promoter-RBS J23106-0029 was inserted successfully into a 3.6kb construct to drive MCS gene's expression.

Fig. 15b (cont.)

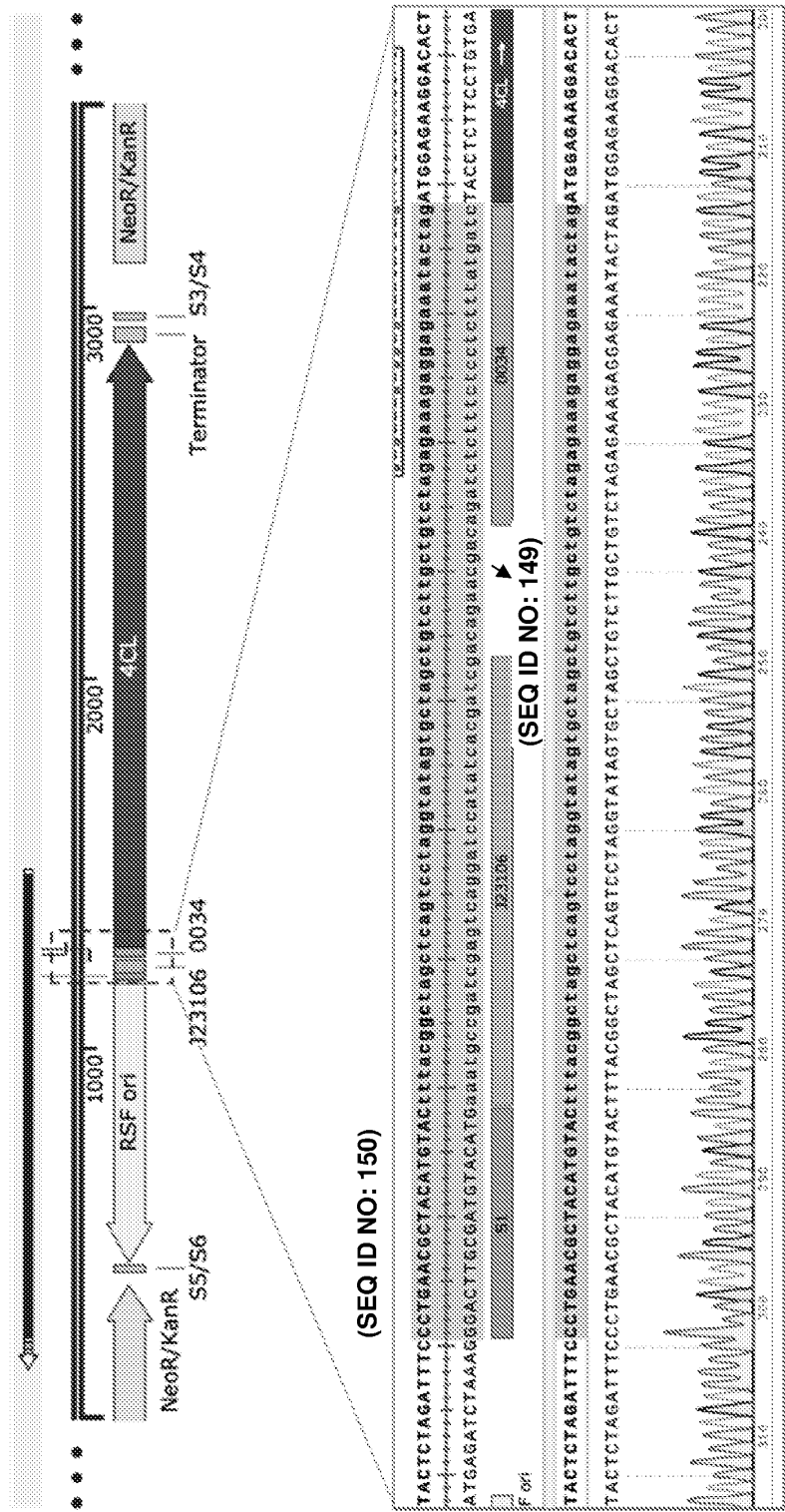
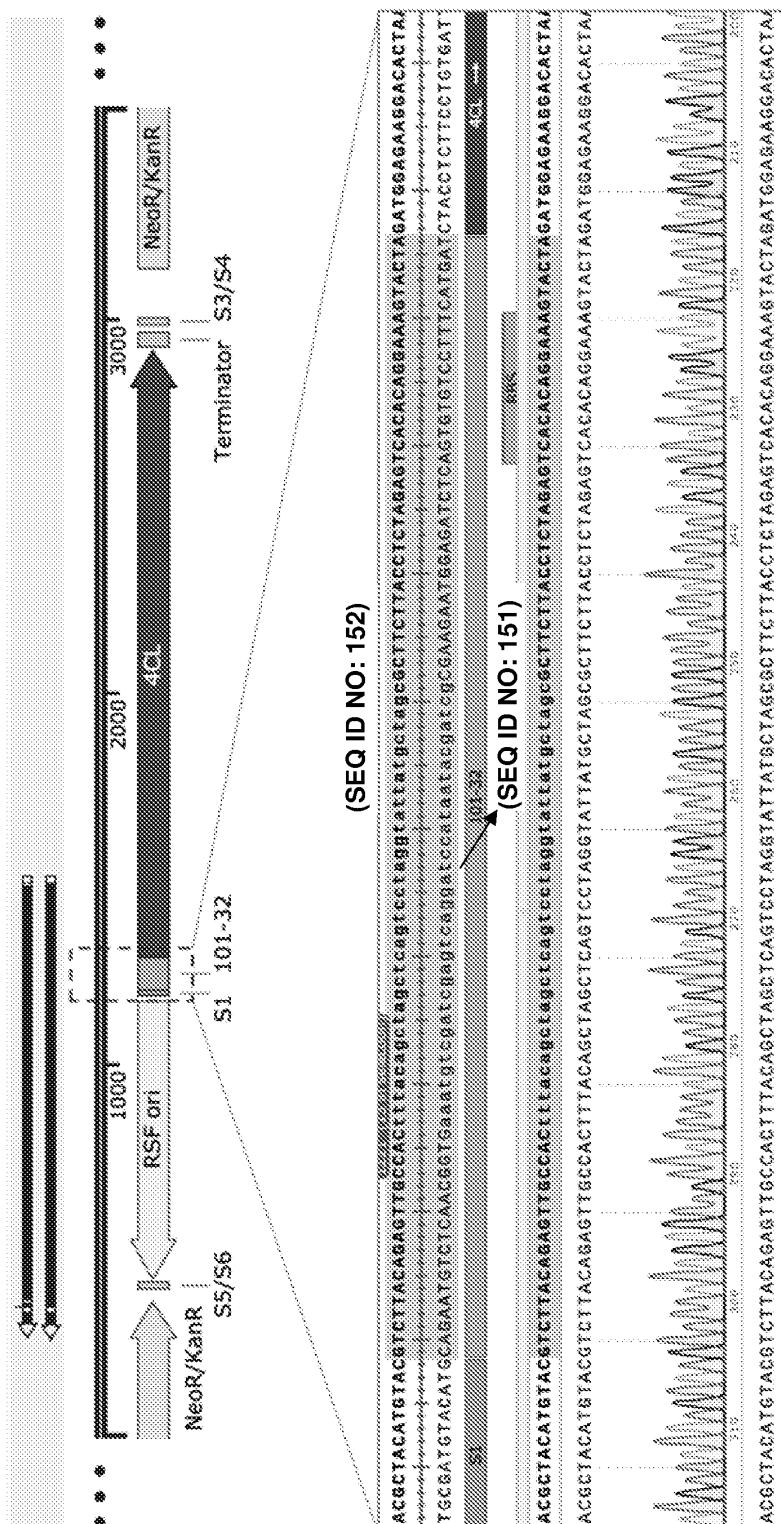
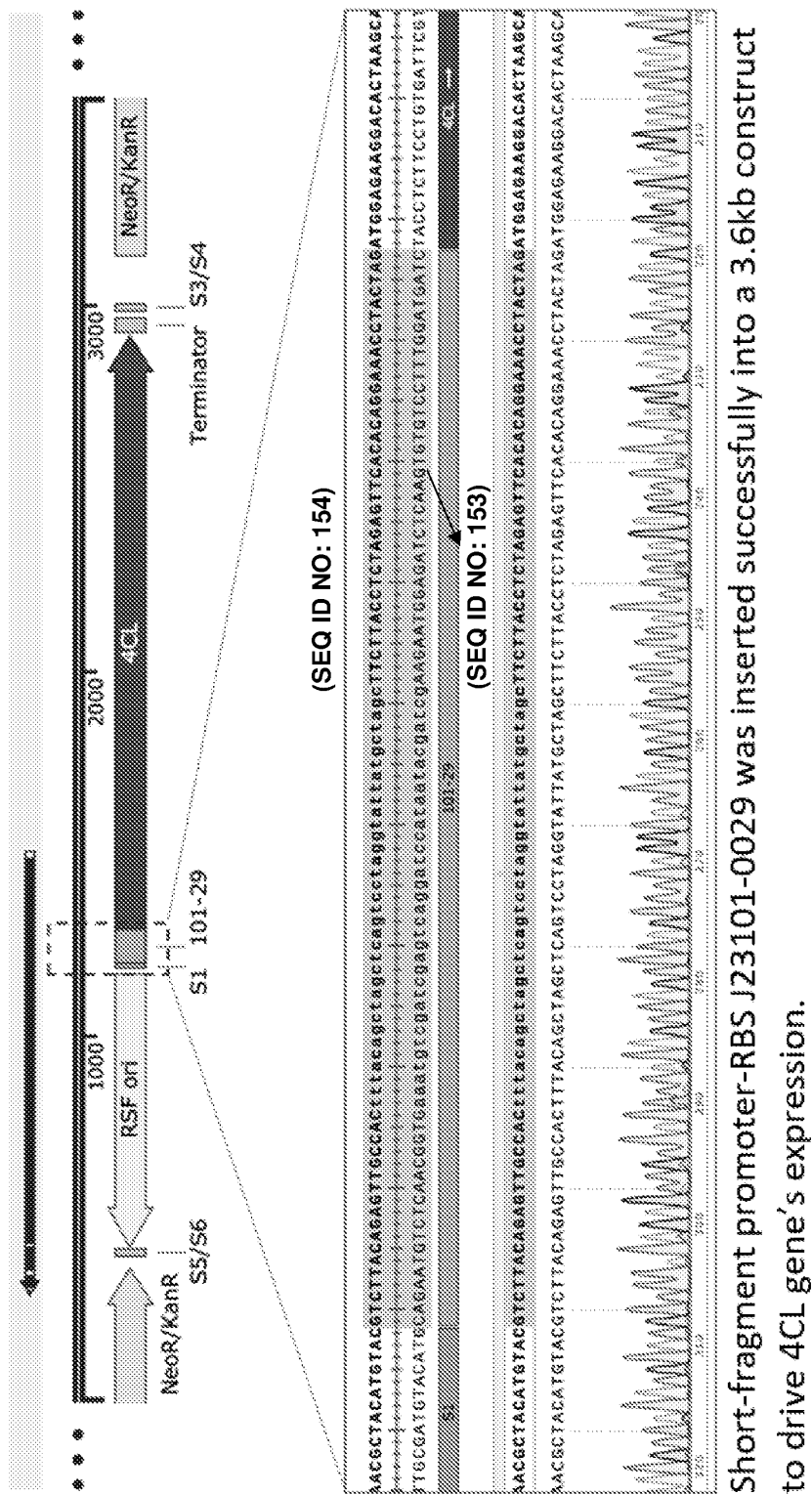


Fig. 15b (cont.)



Short-fragment promoter-RBS J23101-0032 was inserted successfully into a 3.6kb construct to drive 4CL gene's expression.

Fig. 15b (cont.)



Short-fragment promoter-RBS J23101-0029 was inserted successfully into a 3.6kb construct to drive 4CL gene's expression.

Fig. 15b (cont.)

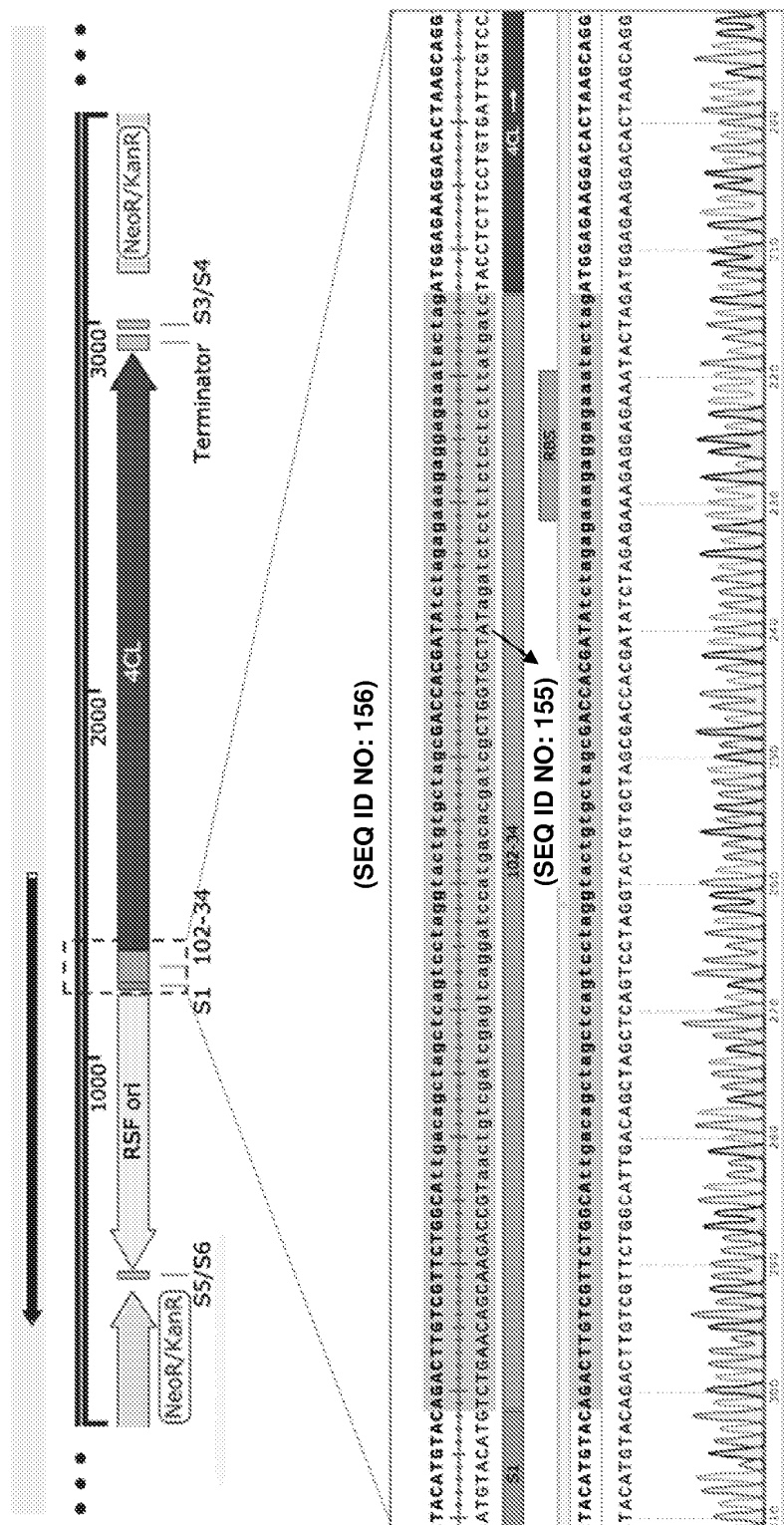


Fig. 15b (cont.)

Short-fragment promoter-RBS J23102-0034 was inserted successfully into a 3.6kb construct to drive 4CL gene's expression.

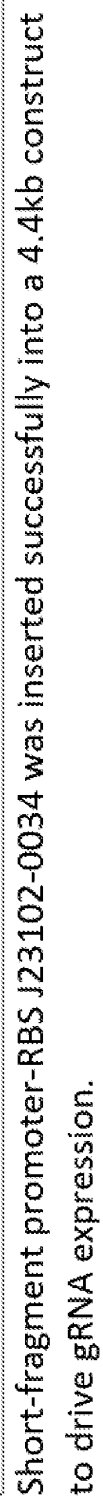


Fig. 15b (cont.)

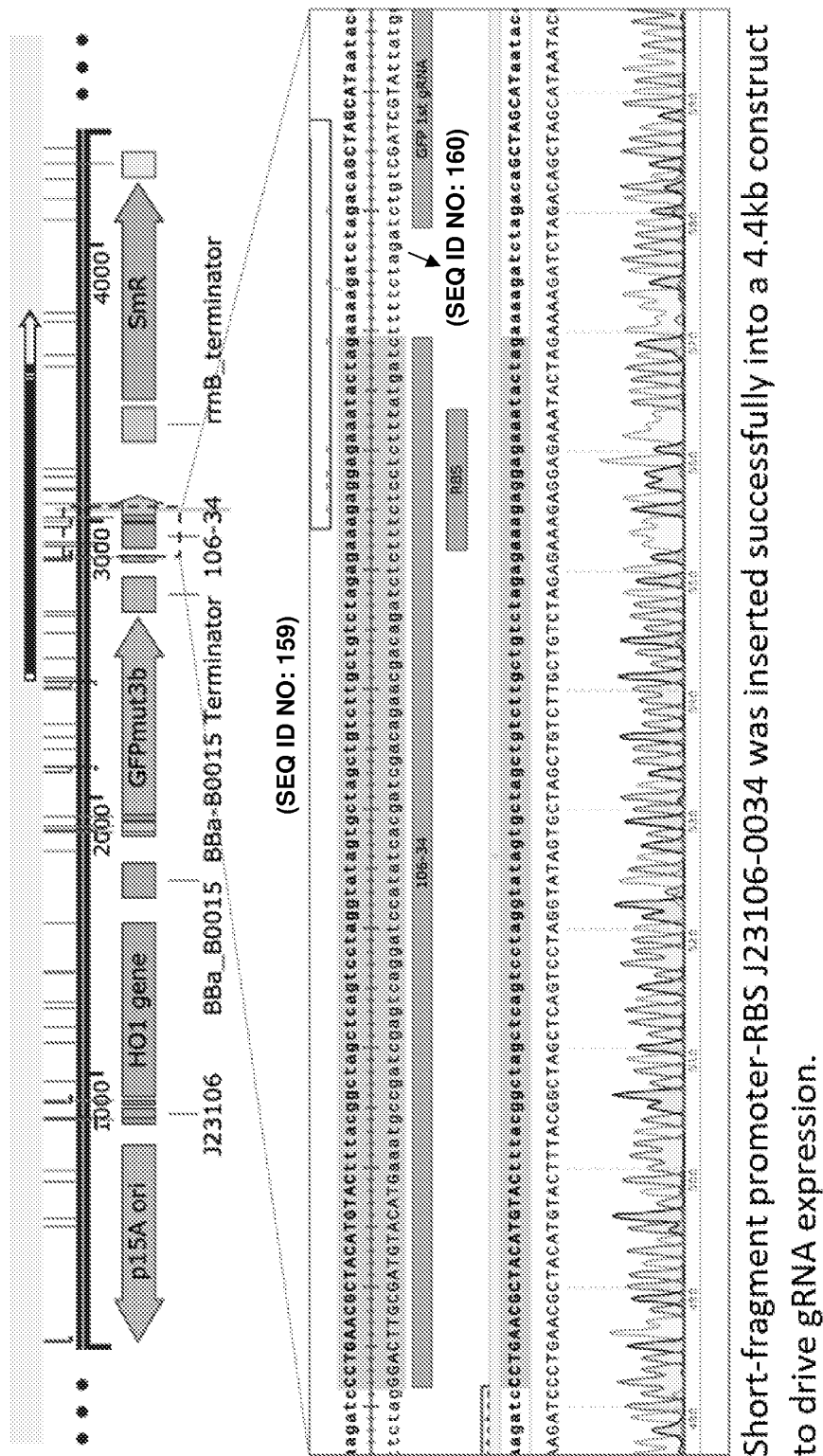
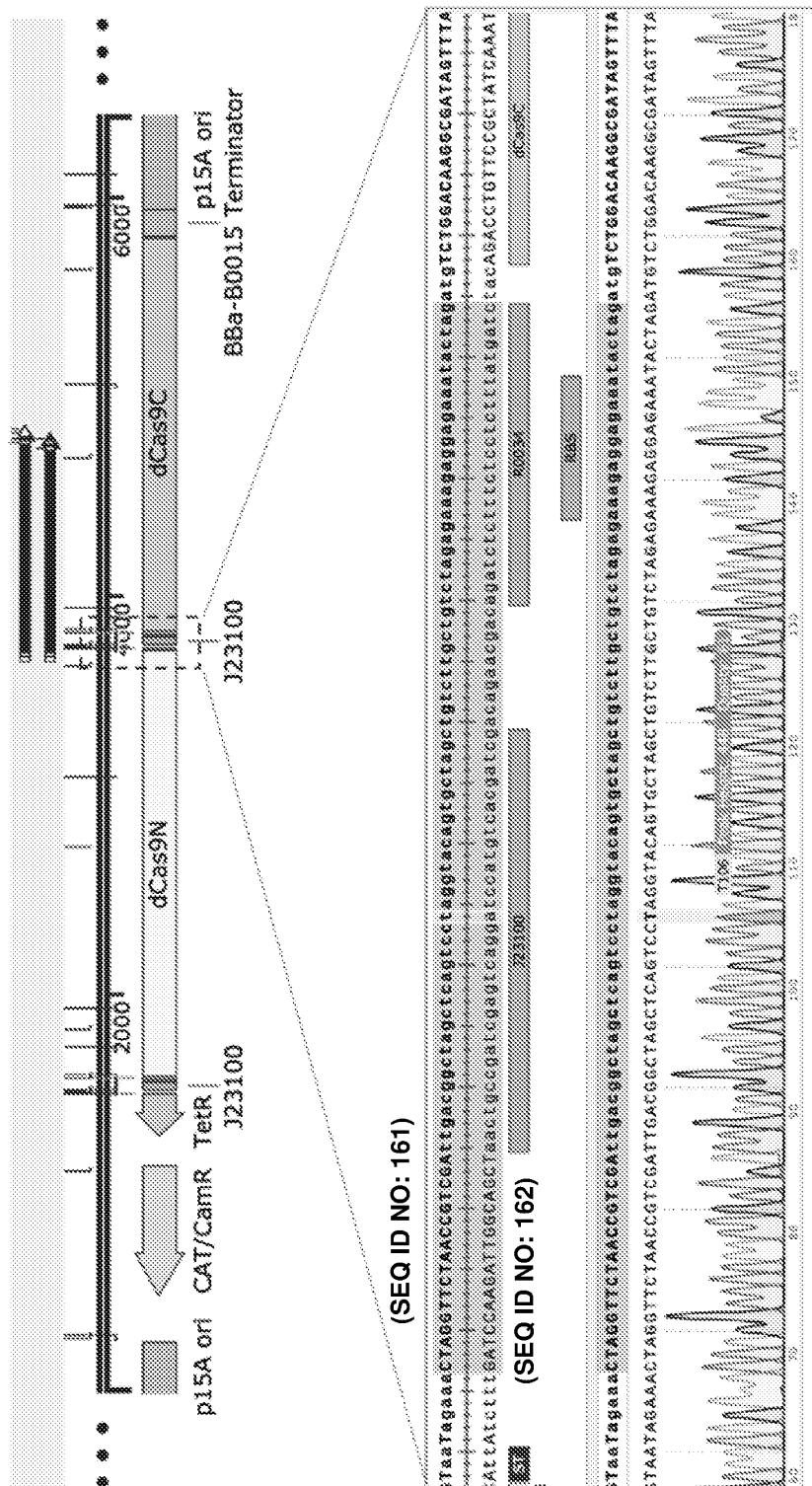
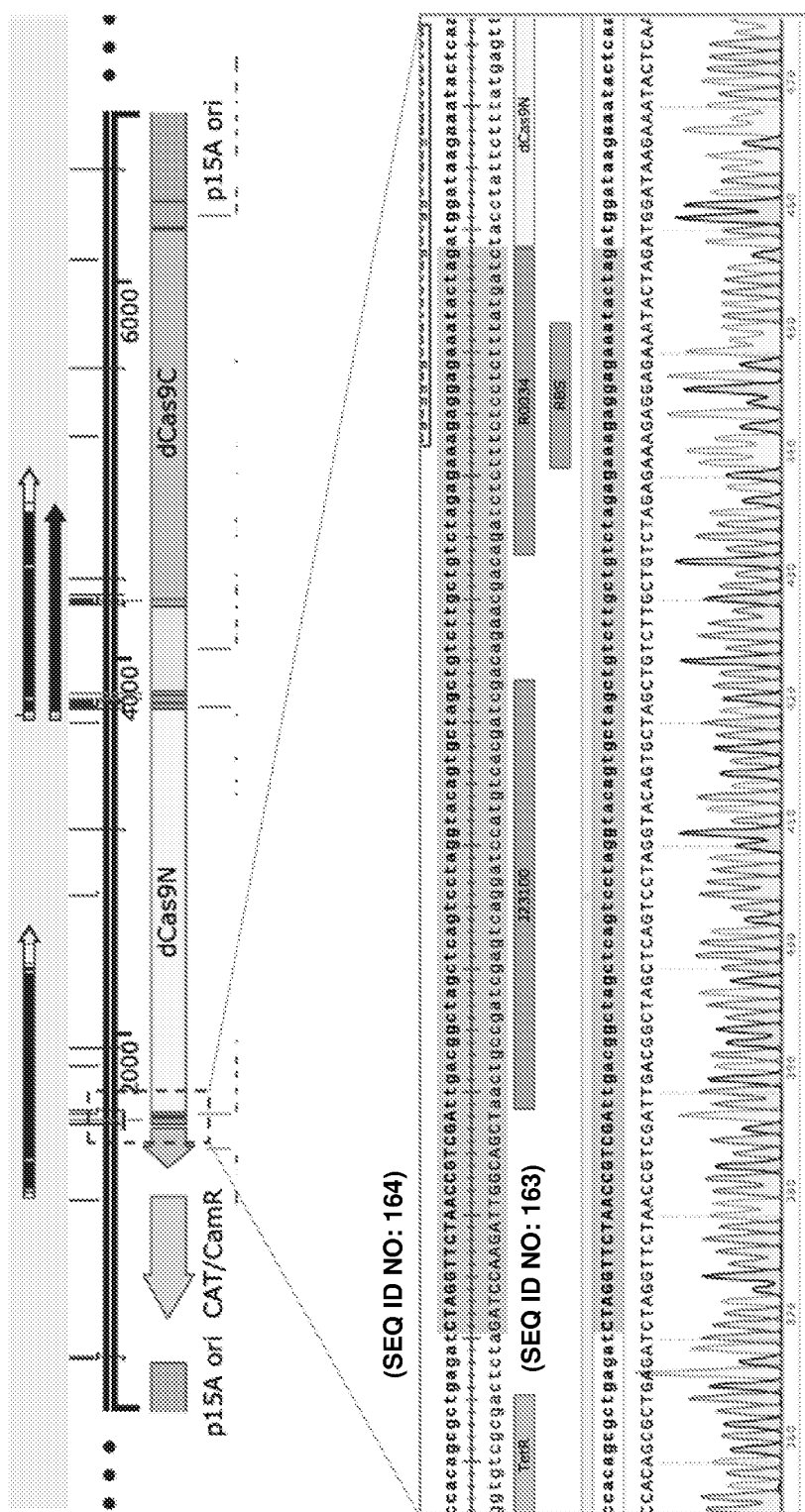


Fig. 15b (cont.)



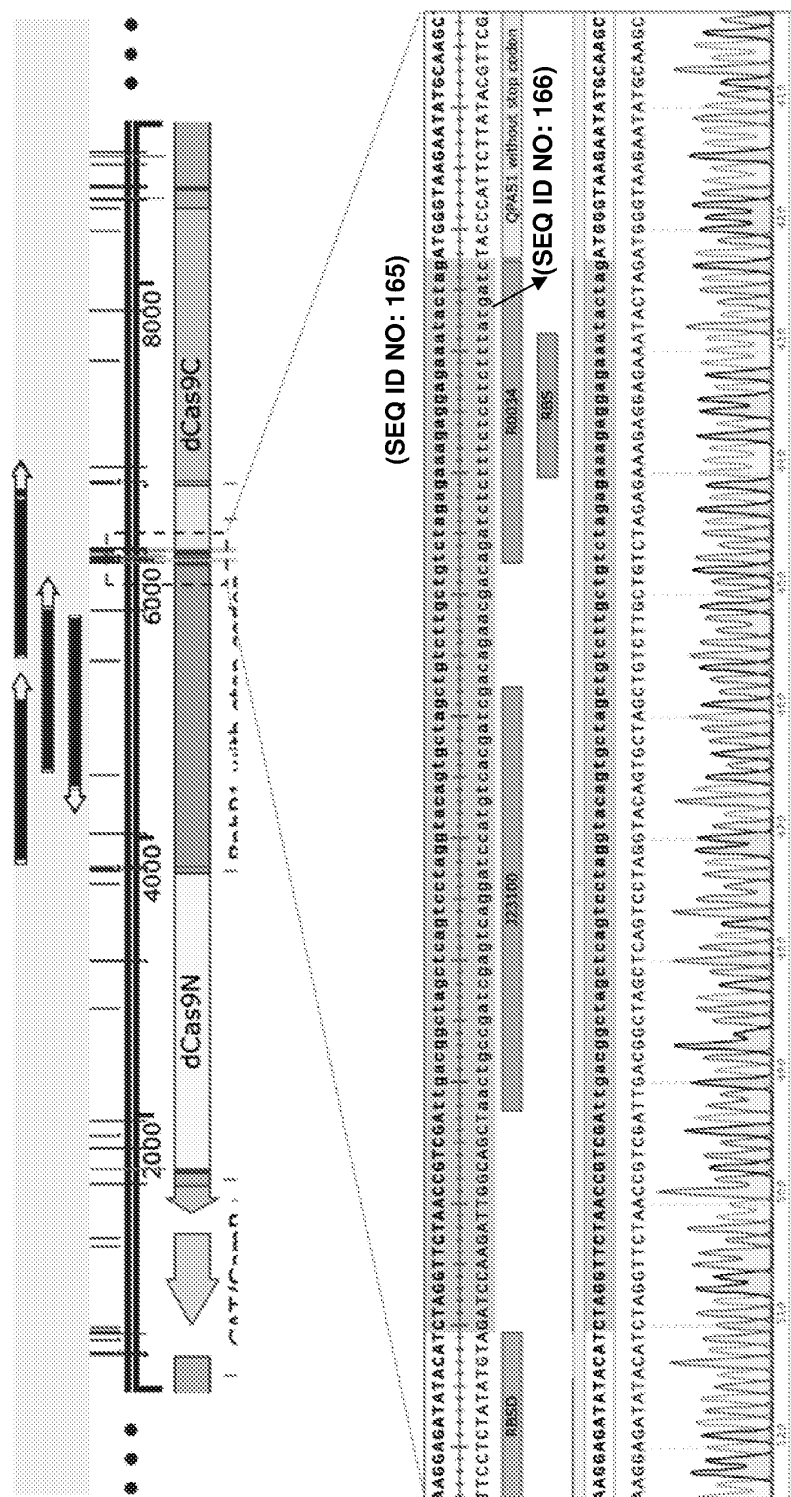
Short-fragment promoter-RBS J23100-0034 was inserted successfully into a 6.4kb construct to vary a dCas9 domain's expression.

Fig. 15b (cont.)



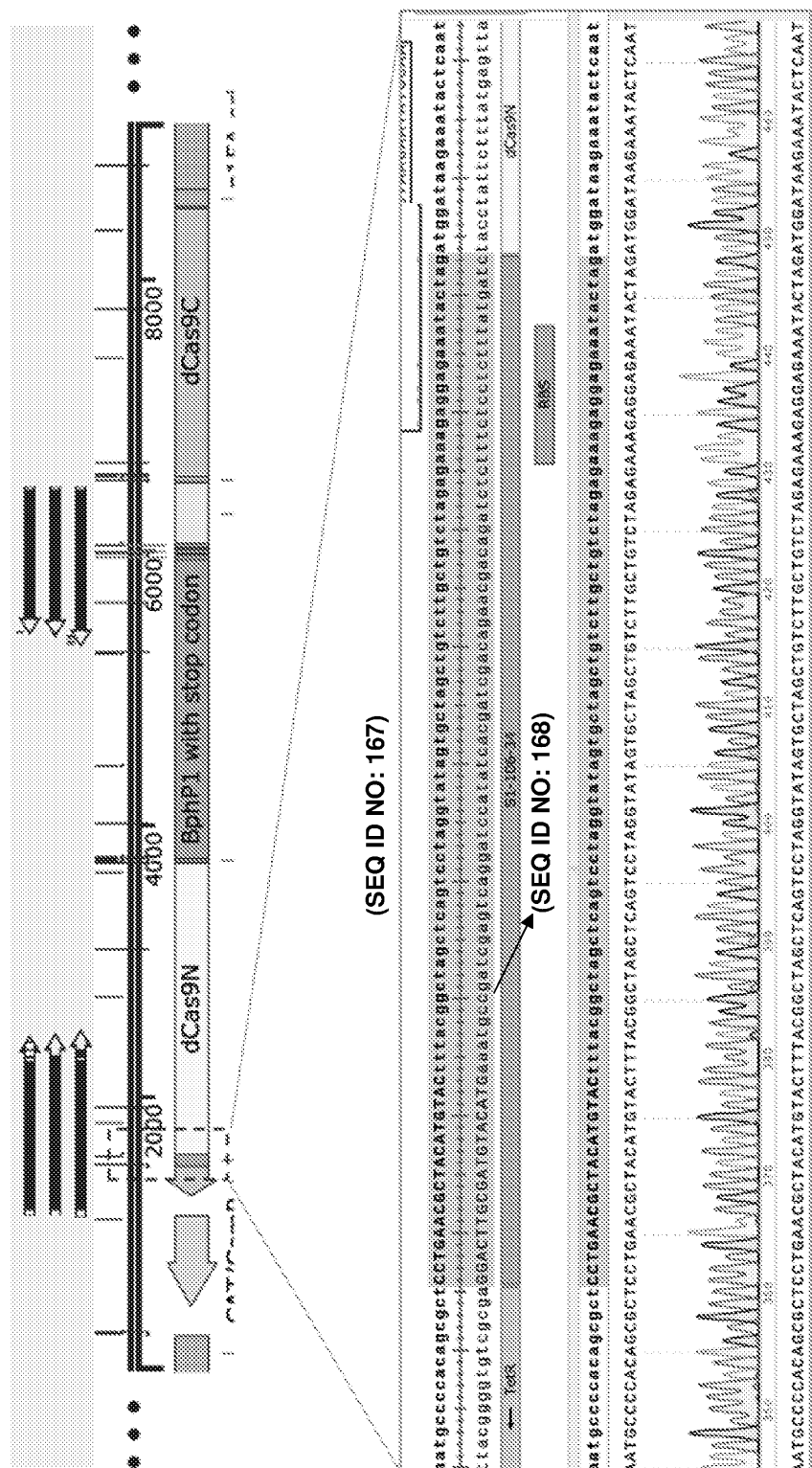
Short-fragment promoter-RBS J23100-0034 was inserted successfully into a 6.9kb construct to vary a dCas9 domain's expression.

Fig. 15b (cont.)



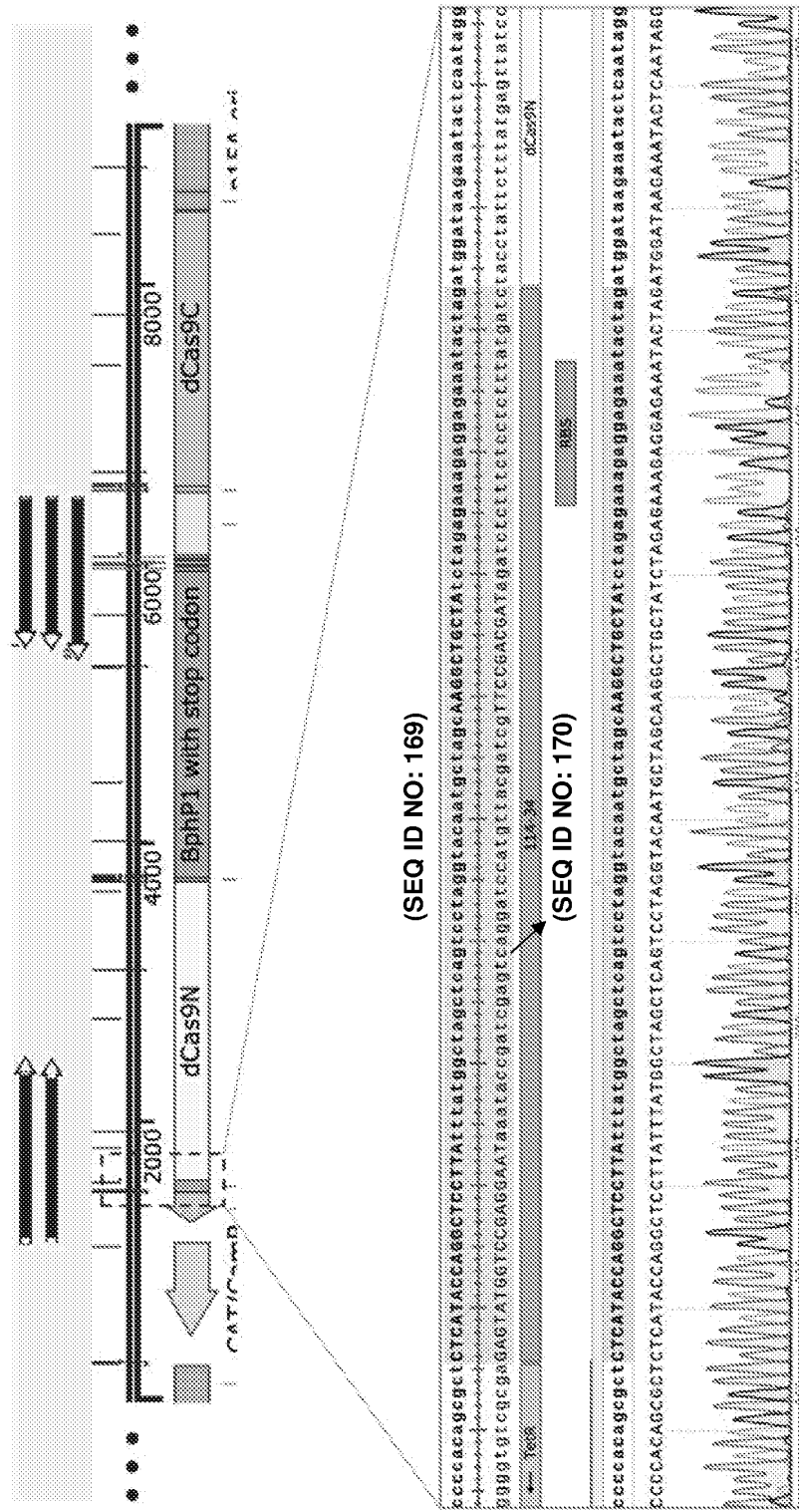
Short-fragment promoter-RBS J23100-0034 was inserted successfully into an 9.1kb construct to vary a fusion protein expression.

Fig. 15b (cont.)



Short-fragment promoter-RBS J23106-0034 was inserted successfully into a 9.1kb construct to vary a dCas9 domain's expression.

Fig. 15b (cont.)



Short-fragment promoter-RBS J23114-0034 was inserted successfully into a 9.1kb construct to vary a dCas9 domain's expression.

Fig. 15b (cont.)

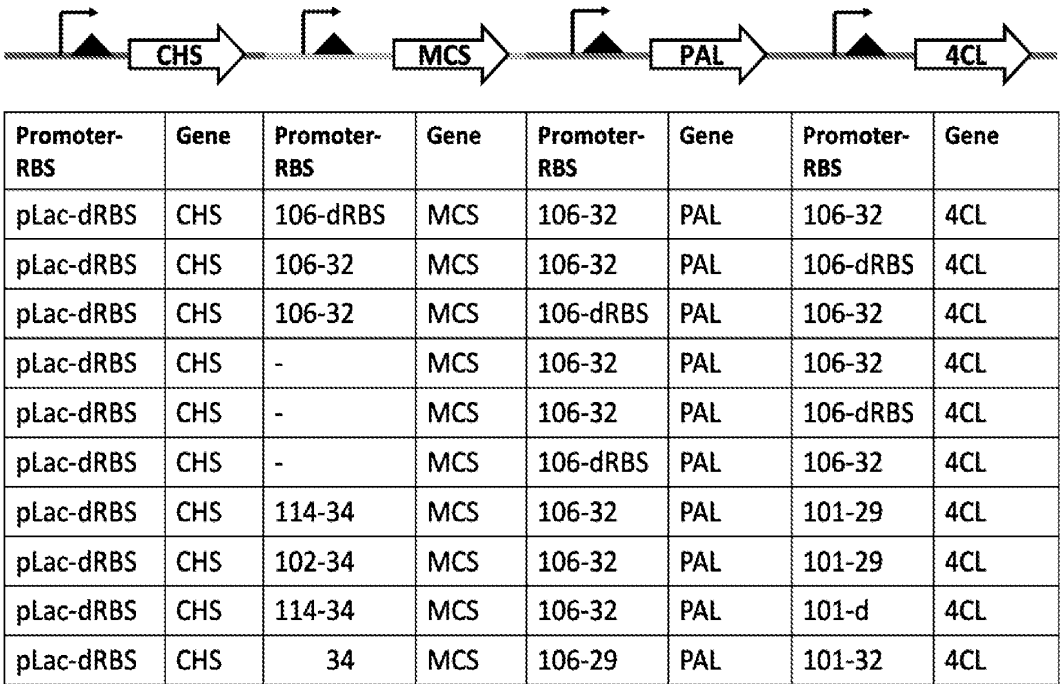


Fig. 16

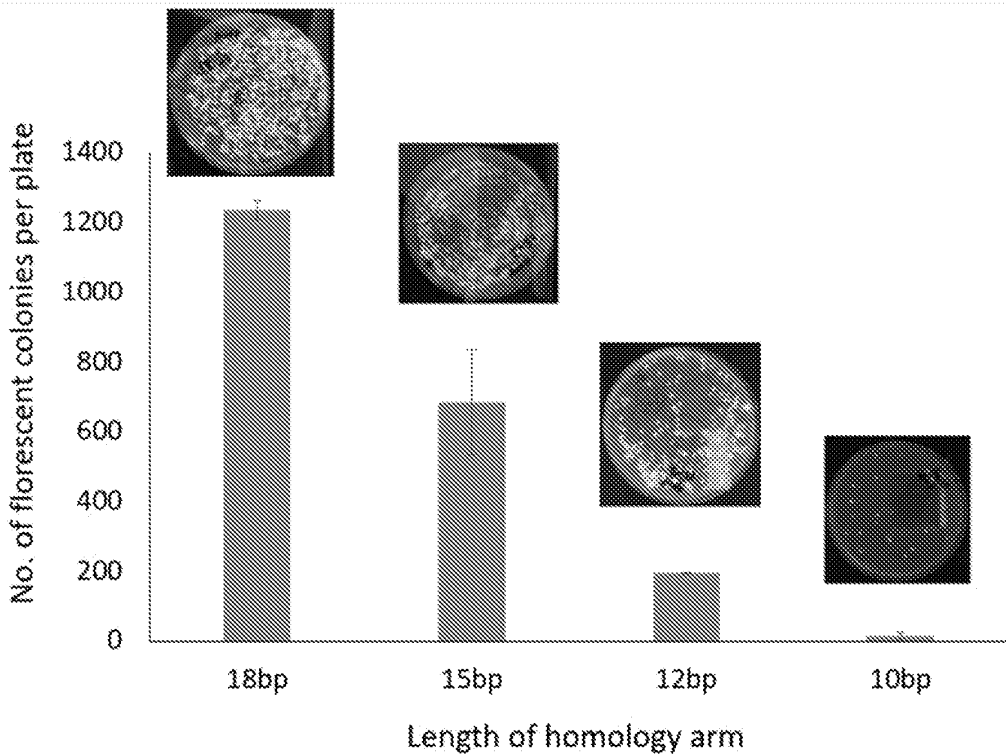


Fig. 17