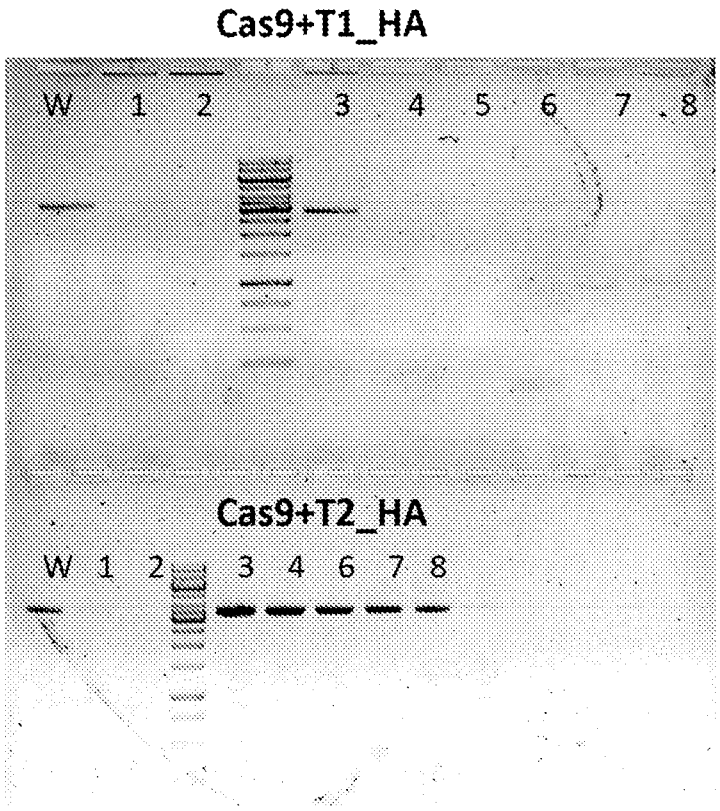


Fig. 1A

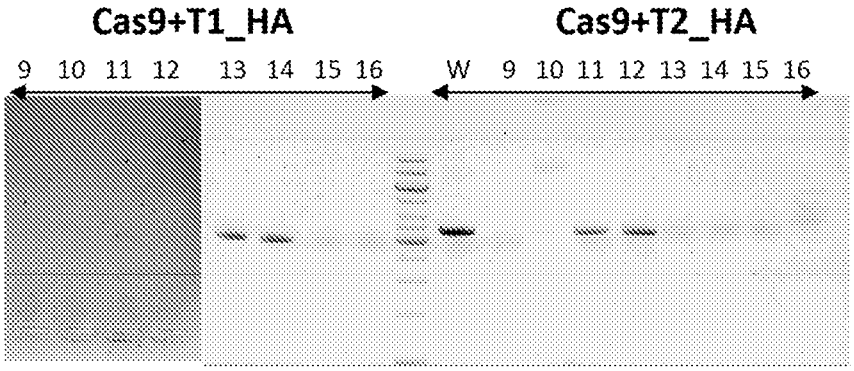


Fig. 1B

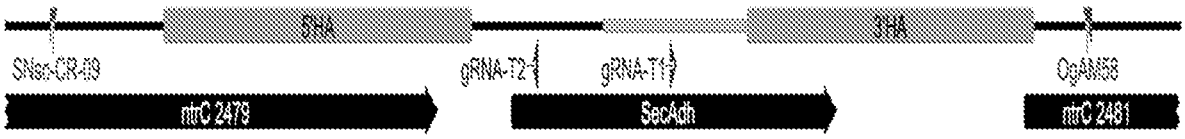


Fig. 1C

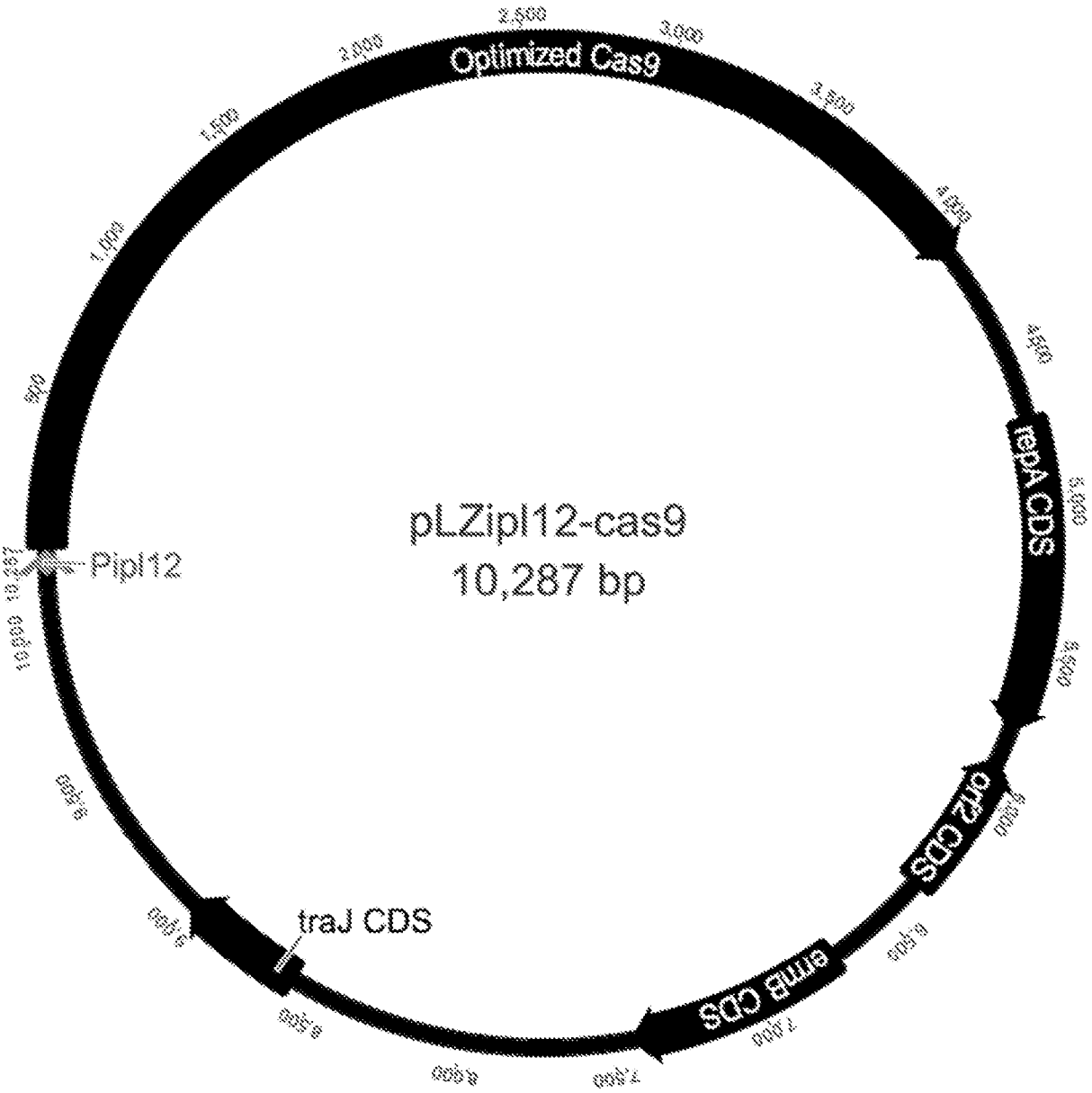

Optimized Cas9
repA CDS
ori2 CDS
ermB CDS
traJ CDS
Pipl12
pLZipl12-cas9
10,287 bp

Fig. 2A

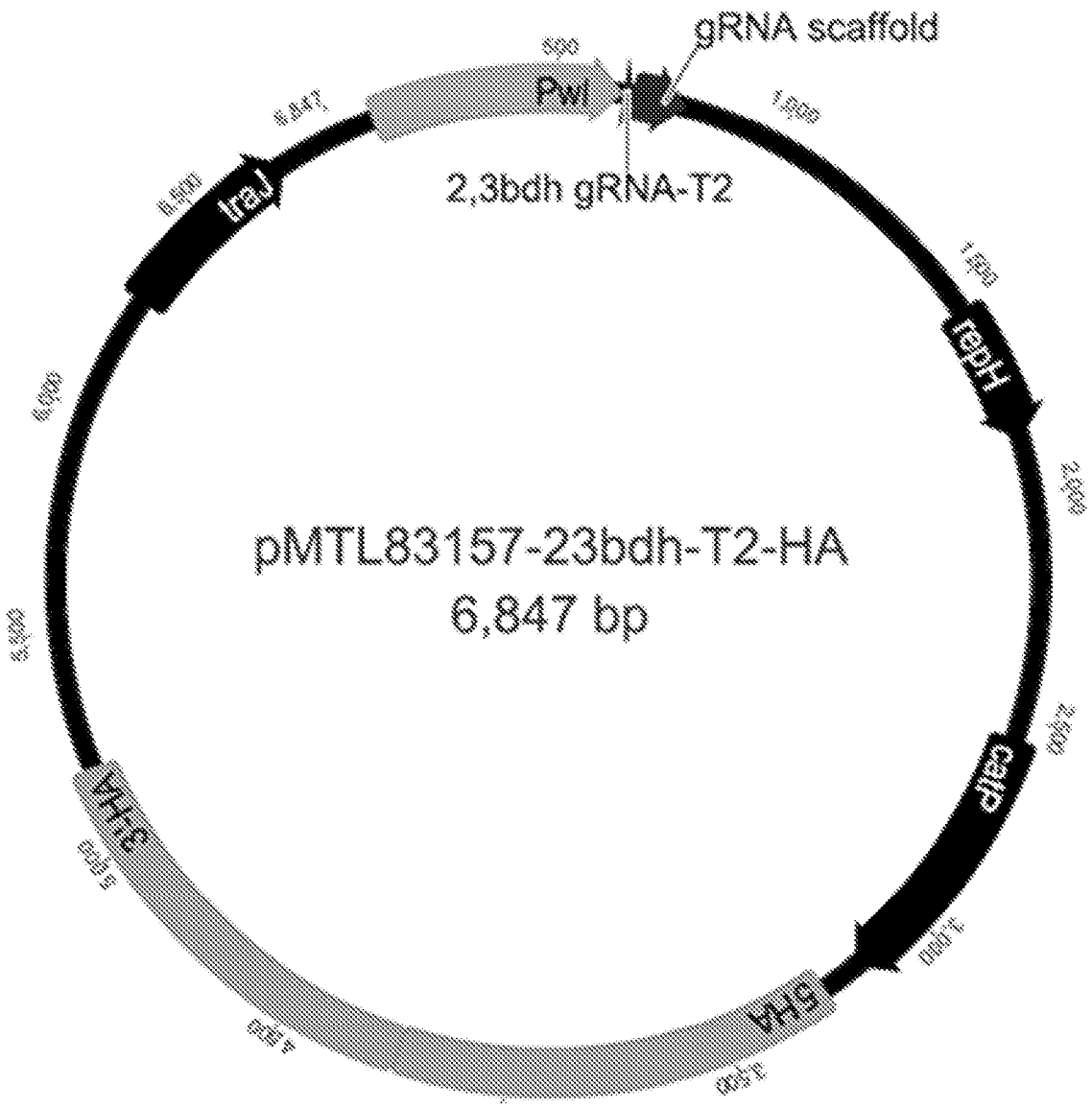

gRNA scaffold
Pwl
2,3bdh gRNA-T2
traJ
repH
catP
5HA
3HA
pMTL83157-23bdh-T2-HA
6,847 bp

Fig. 2B

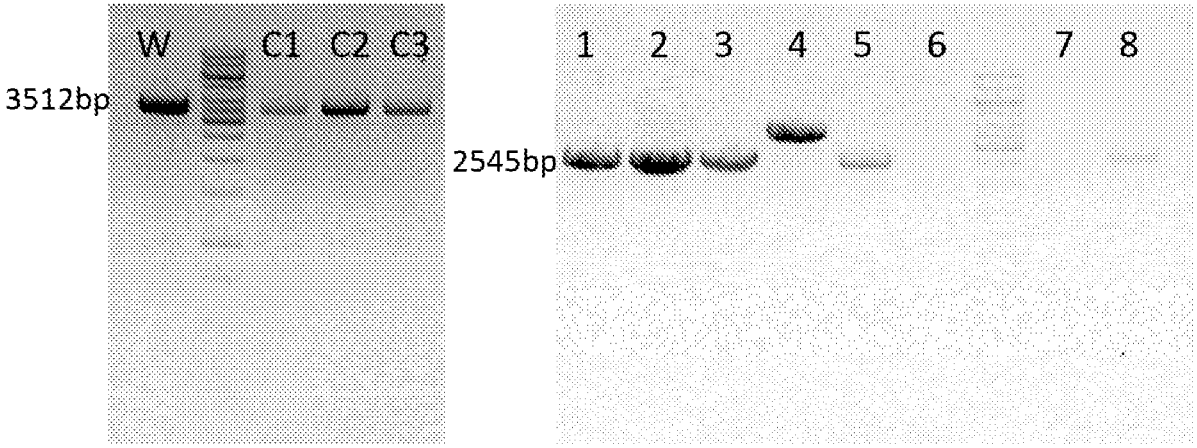

W
C1
C2
C3
3512bp
1
2
3
4
5
6
7
8
2545bp

Fig. 3A


Og34f
5'HA
3'HA
Og33f
peptidase, ArgE/DapE family
23BDH
nitrogen regulation protein
gRNA-T1
gRNA-T2

Fig. 3B

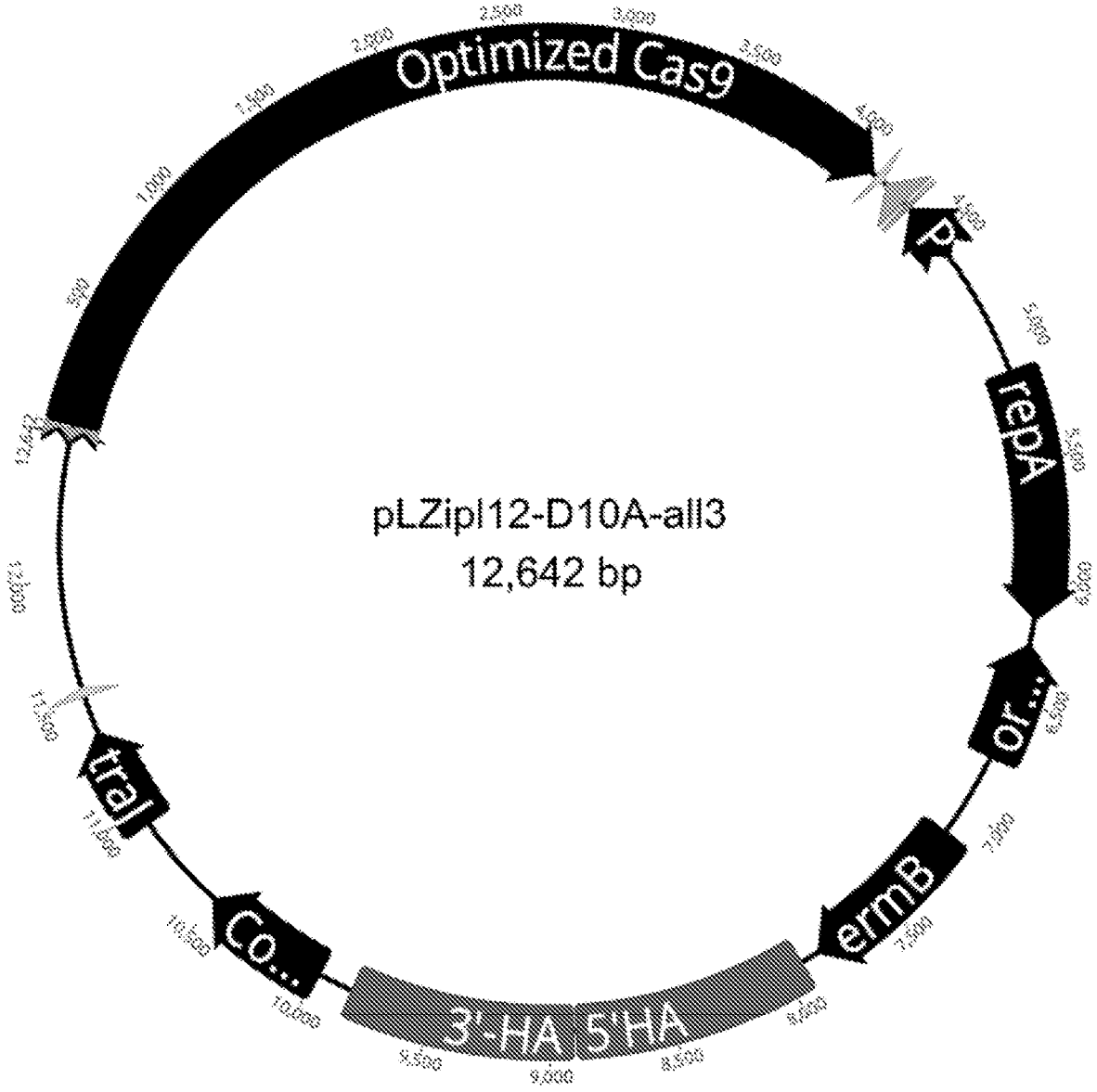

Optimized Cas9
P
repA
ori...
ermB
3'-HA 5'HA
Co...
traI
pLZipI12-D10A-all3
12,642 bp

Fig. 4