S3 Table. Plasmids

PVL-Blunt-PA14_55440 pVL-Blunt-PVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 amplified with KR211 and KR212 and cloned into pVL-Blunt-pVL-Blunt-PA14_59340 pVL-Blunt-PA14_59340 pvl-B	Plasmid	Description	Source
pVI.847 pVI.847 pVI.8487 pVI.8490 pVI.8490 pVI.81mt-PA14 29490 pVI.81mt-PA14 55400 pVI.81mt-PA14 55400 pVI.81mt-PA14 55400 pVI.81mt-PA14 55400 pVI.81mt-PA14 55400 pVI.81mt pVI.81mt-PA14 55400 pVI.81mt pVI.81mt-PA14 59290 pVI.81mt pVI.81mt-PA14 59290 pVI.81mt pVI.81mt-PA14 29990 pVI.81mt pVI.81mt-PA14 2990 pVI.81mt-PA14 2990 pVI.81mt-PA14 59200 pVI.81mt pVI.81mt-PA14 5920			
pVL-81 pET-19b derivative pVL-847			
pVL-847 pET-19b derivative with an in-frame mbp between the His tag and the MCS pVL-Blunt-MshE (VC0405) pVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt pVL-Blunt-PA14_58750 pVL-Blunt pVL-Blunt-PA14_58750 pVL-Blunt pVL-Blunt-PA14_58750 pVL-Blunt pVL-Blunt-PA14_58750 pVL-Blunt pVL-Blunt-PA14_58750 pVL-Blunt pVL-Blunt-PA14_58400 pVL-Blunt pVL-Blunt-PA14_58400 pVL-Blunt pVL-Blunt-PA14_58400 pVL-Blunt pVL-Blunt-PA14_58400 pVL-Blunt pVL-Blunt-PA14_59290 pVL-Blunt pVL-Blunt pVL-Blunt-PA14_59290 pVL-Blunt mAshE-Fragment 2 amplified with KR221 and KR222 and cloned into pVL-Blunt pVL-Blunt mAshE-Fragment 3 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt mAshE-Fragment 3 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt mAshE-Fragment 5 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt mAshE-pragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt mAshE-pragment 5 amplified with KR225 and KR228 and cloned into pVL-Blunt mAshE-pragment 5 amplified with KR225 and KR228 and cloned into pVL-Blunt mAshE-pragment 5 amplified with KR225 and KR228 and cloned into pVL-Blunt mAshE-pragment 5 amplified with KR225 and KR228 and cloned into p			
pVL-Blunt-PA14_59340 PA14_59390 amplified with KR213 and KR214 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 PA14_59340 amplified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 amplified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 amplified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 amplified with KR211 and KR212 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 amplified with KR211 and KR212 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pA14_59390 amplified with KR213 and KR214 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pA14_59390 amplified with KR213 and KR214 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pA14_59390 amplified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pA14_59340 amplified with KR213 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pandified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pandified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 pandified with KR216 and KR220 and cloned into pVL-Blunt-PVL-Bl	pVL791	pET-19b derivative	
pVL-Blunt-MshE (VC0405) pVL-Blunt-PA14_29490 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_58740 pVL-Blunt-PA14_58740 pVL-Blunt-PA14_29990 pVL-Blunt-PA14_29990 pVL-Blunt-PA14_29990 pVL-Blunt-PA14_29990 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_005180 pVL-Blunt-PA14_005180 pVL-Blunt-PA14_59340 pVL-			
the MCS PVL-Blunt-MshE (VC0405) pVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_68820 pVL-Blunt-PA14_68820 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_05180 pVL-Blunt-PA14_05180 pVL-Blunt-PA14_05180 pVL-Blunt-PA14_05180 pVL-Blunt-PA14_59340 pVL-Blunt-PA14_593		TET 10h devication with an information who have an the His tee and	
PVL-Blunt-PA14_29490 pVL-Blunt-PA14_29490 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_23990 pVL-Blunt-PA14_5820 pVL-Blunt-PA14_5820 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_59290 pVL-Blunt-PA14_05180 pVL-Blunt-PA14_05180 pVL-Blunt-PA14_59340 pVL-Blunt-P	pvL84/	•	
pVL-Blunt-MshE (VC0405) pVL-Blunt-PA14_29490 pVL-Blunt-PA14_58750 pVL-Blunt-PA14_5880 pVL-Blu		the MCS	
PVL-Blunt-PA14_29490	nVIBlunt-MshF (VC0405)	MshE amplified with KR221 and KR228 and cloned into nVI -Blunt	
pVL-Blunt-PA14_58750 PA14_58750 amplified with KR205 and KR206 and cloned into pVL-Blunt pVL-Blunt-PA14_55440 PA14_55440 amplified with KR207 and KR208 and cloned into pVL-Blunt pVL-Blunt-PA14_23990 PA14_55440 amplified with KR209 and KR210 and cloned into pVL-Blunt pVL-Blunt-PA14_68820 PA14_23990 amplified with KR211 and KR212 and cloned into pVL-Blunt pVL-Blunt-PA14_59290 PA14_59290 amplified with KR211 and KR214 and cloned into pVL-Blunt-PA14_59290 PA14_59290 amplified with KR213 and KR214 and cloned into pVL-Blunt pVL-Blunt-PA14_05180 PA14_05180 amplified with KR215 and KR216 and cloned into pVL-Blunt-PA14_05190 PA14_05180 amplified with KR217 and KR218 and cloned into pVL-Blunt pVL-Blunt-PA14_59340 PA14_05190 amplified with KR219 and KR220 and cloned into pVL-Blunt pVL-Blunt-MshE-F1 MshE fragment 1 amplified with KR221 and KR220 and cloned into pVL-Blunt pVL-Blunt-MshE-F2 MshE fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE fragment 3 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE fragment 3 amplified with KR221 and KR228 and cloned into pVL-Blunt mShE fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt MshE fragment 6 amplified with KR226 and KR228 and cloned into pVL-Blunt mShE-F3 MshE fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt mShE gyll-Blunt-MshE-F6 MshE fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt mShE gyll-Blunt-MshE gy			
pVL-Blunt-PA14_58750 PA14_58750 amplified with KR205 and KR206 and cloned into This work pVL-Blunt-PA14_55440 PA14_55440 amplified with KR207 and KR208 and cloned into This work pVL-Blunt-PA14_68820 PA14_23990 amplified with KR209 and KR210 and cloned into This work pVL-Blunt-PA14_68820 PA14_68820 amplified with KR211 and KR212 and cloned into This work pVL-Blunt-PA14_59290 PA14_59290 amplified with KR211 and KR212 and cloned into This work pVL-Blunt-PA14_05180 PA14_05180 amplified with KR213 and KR214 and cloned into This work pVL-Blunt-PA14_05180 PA14_05190 amplified with KR215 and KR216 and cloned into This work pVL-Blunt-PA14_59340 PA14_05190 amplified with KR217 and KR218 and cloned into This work pVL-Blunt-PA14_59340 PA14_59340 amplified with KR219 and KR220 and cloned into This work pVL-Blunt-MshE-F1 MshE Fragment 1 amplified with KR211 and KR220 and cloned into This work pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR211 and KR220 and cloned into This work pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR220 and cloned into This work pVL-Blunt-MshE-F4 MshE Fragment 3 amplified with KR221 and KR224 and cloned into This work pVL-Blunt-MshE-F5 MshE Fragment 4 amplified with KR221 and KR228 and cloned into This work pVL-Blunt-MshE-F6 MshE Fragment 5 amplified with KR225 and KR228 and cloned into This work pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR225 and KR228 and cloned into This work pVL-Blunt-MshE-F3 MshE Fragment 6 amplified with KR227 and KR228 and cloned into This work pVL-Blunt-MshE-F3 MshE Fragment 6 amplified with KR227 and KR228 and cloned into This work pVL-Blunt-MshE-F3 MshE _{KR8AR89A} is introduced into pVL791-MshE using SH60 and This work SH65 MshE _{KR8AR89A} is introduced into pVL791-MshE using SH60 and This work pVL-Blunt-MshE plass, pR36 MshE _{KR8AR89A} is introduced into pVL-Blunt-MshE using SH60 and SH67 MshE _{KR8AR89A} is introduced into pVL-Blunt-MshE using SH64 and SH69 MshE _{KR8AR89A} is introduced into pVL-Blunt-MshE _K	p + 2 2 3 4 4 4 5 1 1 1 - 2 5 1 5 0		1110 ((0111
pVL-Blunt-PA14_55440 PA14_55440 amplified with KR207 and KR208 and cloned into PA14_55440 amplified with KR207 and KR208 and cloned into PVL-Blunt PA14_23990 amplified with KR209 and KR210 and cloned into PVL-Blunt PA14_68820 PA14_68820 amplified with KR211 and KR212 and cloned into PVL-Blunt PA14_59290 PA14_68820 amplified with KR213 and KR214 and cloned into PVL-Blunt PVL-Blunt PA14_05180 PA14_05180 amplified with KR215 and KR216 and cloned into PVL-Blunt PVL-Blunt PA14_05190 PA14_05190 amplified with KR215 and KR216 and cloned into PVL-Blunt PVL-B	pVL-Blunt-PA14 58750	1	This work
pVL-Blunt-PA14_23990 pVL-Blunt PA14_23990 amplified with KR209 and KR210 and cloned into PA14_23990 amplified with KR209 and KR210 and cloned into PA14_68820 amplified with KR211 and KR212 and cloned into PVL-Blunt PA14_68820 amplified with KR213 and KR214 and cloned into PVL-Blunt PA14_05180 PA14_59290 amplified with KR213 and KR214 and cloned into PVL-Blunt PVL-Blunt PA14_05180 amplified with KR215 and KR216 and cloned into PVL-Blunt PA14_05190 amplified with KR217 and KR218 and cloned into PVL-Blunt PA14_05190 amplified with KR217 and KR218 and cloned into PVL-Blunt PA14_05190 amplified with KR219 and KR220 and cloned into PVL-Blunt PA14_05190 amplified with KR219 and KR220 and cloned into PVL-Blunt PVL-	_	= .	
pVL-Blunt-PA14_23990	pVL-Blunt-PA14_55440	PA14_55440 amplified with KR207 and KR208 and cloned into	This work
pVL-Blunt-PA14_68820 mplified with KR211 and KR212 and cloned into PA14_68820 mplified with KR211 and KR212 and cloned into PVL-Blunt pVL-Blunt-PA14_59290 mplified with KR213 and KR214 and cloned into pVL-Blunt-PA14_05180 PA14_59290 amplified with KR213 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_05180 PA14_05180 amplified with KR215 and KR216 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 PA14_59340 amplified with KR217 and KR218 and cloned into pVL-Blunt-PVL-Blunt-PA14_59340 PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt-PVL-Blunt-MshE-F1 MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt-PVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt-PVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt-PVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt-PVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt-PVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt-PVL-PIL-PVL-PVL-PVL-PVL-PVL-PVL-PVL-PVL-PVL-PV		1	
pVL-Blunt-PA14_68820	pVL-Blunt-PA14_23990	= :	This work
pVL-Blunt pVL-Blunt-PA14_59290 pA14_59290 amplified with KR213 and KR214 and cloned into pVL-Blunt pVL-Blunt-PA14_05180 pA14_05180 amplified with KR215 and KR216 and cloned into pVL-Blunt pVL-Blunt-PA14_05190 pA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt pVL-Blunt-PA14_05190 pA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt pVL-Blunt-PA14_59340 pA14_05190 amplified with KR219 and KR220 and cloned into pVL-Blunt pVL-Blunt-MshE-F1 MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt-MshE pVL-Blunt MshE _{R8AR89A} is introduced into pVL791-MshE using SH60 and SH61 pVL-Blunt-MshE p108A, p114A MshE _{R8AR89A} is introduced into pVL791-MshE using SH64 and SH65 pVL-Blunt-MshE p145A, p146A,			
pVL-Blunt-PA14_59290 mplified with KR213 and KR214 and cloned into pVL-Blunt pVL-Blunt-PA14_05180 mplified with KR215 and KR216 and cloned into pVL-Blunt pVL-Blunt-PA14_05190 PA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt-PA14_59340 pVL-Blunt mpVL-Blunt-PA14_59340 mplified with KR219 and KR220 and cloned into pVL-Blunt-PA14_59340 mplified with KR219 and KR220 and cloned into pVL-Blunt-PA14_59340 mplified with KR219 and KR220 and cloned into pVL-Blunt-PA14_59340 mplified with KR219 and KR220 and cloned into pVL-Blunt-PA14_59340 mplified with KR221 and KR222 and cloned into pVL-Blunt-PA14_59340 mplified with KR221 and KR223 and cloned into pVL-Blunt-PA14_59340 mplified with KR221 and KR223 and cloned into pVL-Blunt-PA14_59340 mplified with KR221 and KR223 and cloned into pVL-Blunt-PA14_59340 mplified with KR221 and KR223 and cloned into pVL-Blunt-PA14_59340 mplified with KR221 and KR223 and cloned into pVL-Blunt-PA14_59340 mplified with KR225 and KR228 and cloned into pVL-Blunt-PA14_59340 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59340 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59340 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_59440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_50440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_50440 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_5040 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_5040 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_5040 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_5040 mplified with KR226 and KR228 and cloned into pVL-Blunt-PA14_5040 mplified with KR226 and	pVL-Blunt-PA14_68820		This work
pVL-Blunt-PA14_05180 PA14_05180 PA14_05180 with KR215 and KR216 and cloned into pVL-Blunt PA14_05180 PA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt pVL-Blunt PA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt pVL-Blunt PA14_59340 pP14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt pVL-Blunt pVL-Blunt PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt pVL-Blunt pVL-Blunt MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt pVL-Blunt mShE pragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt pVL-Blunt mShE pragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt mShE pragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt mShE pragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt mShE using SH60 and This work pVL-Blunt mShE pragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt mShE using SH60 and This work pVL-Blunt-MshE using SH60 and This work SH61 pVL-Blunt-MshE pragment pragme	"VI Dlama DA 14 50200		This
PA14_05180 amplified with KR215 and KR216 and cloned into PVL-Blunt PVL-Blunt-PA14_05190 PA14_05190 amplified with KR217 and KR218 and cloned into This work pVL-Blunt PVL-Blunt-PA14_59340 PA14_59340 amplified with KR219 and KR220 and cloned into This work pVL-Blunt PVL-Blunt-MshE-F1 MshE Fragment 1 amplified with KR221 and KR222 and cloned into This work pVL-Blunt PVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into This work pVL-Blunt PVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into This work pVL-Blunt PVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into This work pVL-Blunt PVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into This work pVL-Blunt PVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into This work pVL-Blunt PVL791-MshE R9A, D12A MshE R9AD12A is introduced into pVL791-MshE using SH60 and This work SH61 PVL-Plunt-MshE D108A, D111A MshEssarR89A is introduced into pVL791-MshE using SH64 and This work SH65 PVL-Blunt-MshE V145A, R146A, R147A MshEy145AR146AR147A is introduced into pVL-Blunt-MshE using SH64 and SH67 MshEy145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 MshEy145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A With NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshEy145AR146AR147A is introduced into pVL791-MshEy145AR146AR147A This work SH78 and SH79	pvL-Blunt-PA14_39290	= .	I IIIS WOFK
pVL-Blunt-PA14_05190 PA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt-PA14_59340 PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt pVL-Blunt MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt MshE Rssa, Rssa MshE Rssanssa is introduced into pVL791-MshE using SH60 and SH61 MshE _{Rssanssa} is introduced into pVL791-MshE using SH60 and This work SH61 MshE _{Rssanssa} is introduced into pVL791-MshE using SH64 and This work SH65 MshE _{Rssanssa} is introduced into pVL-Blunt-MshE using SH64 and SH65 MshE _{Rssanssa} is introduced into pVL-Blunt-MshE using SH64 and SH67 MshE _{Rssanssanssans} SH64 and SH67 MshE _{Rssanssanssanssanssanssanssanssanssanssa}	nVI Blunt PA 1/1 05180		This work
pVL-Blunt-PA14_05190	pvL-Biuiii-1 A14_03180		THIS WOLK
pVL-Blunt pVL-Blunt-PA14_59340 PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt pVL-Blunt-MshE-F1 MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-P1-MshE R9A, D12A MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE R9A, D12A MshER9AD12A is introduced into pVL791-MshE using SH60 and SH61 pVL-P1-MshE R88A, R89A MshER88AR89A is introduced into pVL791-MshE using SH76 and SH65 pVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, R847A MshEY145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 pVL-791-MshE Y145A, R146A, MshEY145AR146AR147A excised from pVL-Blunt-MshEY145AR146AR147A This work with Nde1 and BamH1 and ligated into pVL791 digested with Nde1 and BamH1 pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A Using SH78 and SH79	pVL-Blunt-PA14 05190		This work
PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt MshE Fragment 3 amplified with KR221 and KR223 and cloned into pVL-Blunt MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshE R88A, R89A MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshE R88A, R89A is introduced into pVL791-MshE using SH60 and SH61 pVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, R85145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 pVL-791-MshE Y145A, R146A, R85145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A with Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI pVL791-MshEy145AR146AR147A is introduced into pVL791-MshEy145AR146AR147A with Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI with Ndel and BamHI and ligated into pVL791-MshEy145AR146AR147A with Ndel and BamHI and li	F	= :	
pVL-Blunt-MshE-F1 MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-P91-MshE R9A, D12A MshER9AD12A is introduced into pVL791-MshE using SH60 and SH61 pVL-Blunt-MshE D108A, D111A SH65 pVL-Blunt-MshE D108A, D111A MshER88AR89A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, R147A PVL-Blunt-MshE Y145A, R146A, R147A R147A PVL-P91-MshE R146A, R146A, R147A R147A PVL-P91-MshE R146A, R146A R147A R147A PVL-P91-MshE R146A, R146A, R147A SH67 MshER146AR147A excised from pVL-Blunt-MshE using SH66 and SH67 MshER146AR147A excised from pVL-Blunt-MshEy145AR146AR147A using SH68 and BamHI MshER146AR147A is introduced into pVL791-MshEy145AR146AR147A using SH78 and SH79 This work SH78 and SH79	pVL-Blunt-PA14_59340		This work
pVL-Blunt pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL791-MshE R9A, D12A MshER9AD12A is introduced into pVL791-MshE using SH60 and SH61 pVL791-MshE R88A, R89A MshER88AR89A is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, R147A pVL-791-MshE Y145A, R146A, R147A pVL-791-MshE Y145A, R146A, R147A pVL-791-MshE R146A, R147A MshEy145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A with Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEy145AR146AR147A using SH78 and SH79 This work This work in this work with Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI pVL791-MshER146AR147A is introduced into pVL791-MshEy145AR146AR147A using This work SH78 and SH79	_	pVL-Blunt	
pVL-Blunt-MshE-F2 MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE R9A, D12A MshER9AD12A is introduced into pVL791-MshE using SH60 and SH61 pVL-Blunt-MshE D108A, D111A MshER88AR89A is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, MshEY145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 pVL-791-MshE Y145A, R146A, MshEY145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A This work and SH67 MshER146AR147A excised from pVL-Blunt-MshEy145AR146AR147A This work with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEy145AR146AR147A using SH78 and SH79	pVL-Blunt-MshE-F1		This work
pVL-Blunt pVL-Blunt-MshE-F3 MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL791-MshE R9A, D12A MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshER9AD12A is introduced into pVL791-MshE using SH60 and SH61 pVL791-MshE R88A, R89A MshER88AR89A is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE D108A, D111A MshER88AR89A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, R147A pVL-791-MshE Y145A, R146A, R147A pVL-791-MshE Y145A, R146A, R147A pVL-791-MshE Y145A, R146A, R147A pVL-791-MshE R146A, R146A MshEY145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE R146A, R147A is introduced into pVL791-MshEy145AR146AR147A using This work SH78 and SH79		1	
MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-P1-MshE using SH60 and This work SH61 MshE _{R9AD12A} is introduced into pVL791-MshE using SH60 and This work SH61 pVL-Blunt-MshE plosa, plila MshE _{R88AR89A} is introduced into pVL-P1-MshE using SH66 and SH67 pVL-Blunt-MshE plosa, plila MshE _{N145AR146AR147A} is introduced into pVL-Blunt-MshE using SH66 This work and SH67 pVL-791-MshE yl45A, Rl46A, Rl46A, MshE _{Y145AR146AR147A} accised from pVL-Blunt-MshE _{Y145AR146AR147A} This work with Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI pVL791-MshE _{R146A, Rl47A} MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} This work SH78 and SH79	pVL-Blunt-MshE-F2		This work
pVL-Blunt pVL-Blunt-MshE-F4 MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-91-MshE using SH60 and SH61 pVL-91-MshE R88A, R89A MshER88AR89A is introduced into pVL791-MshE using SH60 and SH77 pVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, MshEY145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 This work SH65 pVL-791-MshE Y145A, R146A, MshEY145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A with Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEy145AR146AR147A using This work with Ndel and BamHI MshER146AR147A is introduced into pVL791-MshEy145AR146AR147A using This work SH78 and SH79	WI Dland Make E2	1	This
MshE Fragment 4 amplified with KR225 and KR228 and cloned into PVL-Blunt pVL-Blunt-MshE-F5	pvL-Blunt-MsnE-F3		I IIIS WOFK
pVL-Blunt pVL-Blunt-MshE-F5	nVI_Rlunt_MchF_F4	1	This work
PVL-Blunt-MshE-F5 MshE Fragment 5 amplified with KR226 and KR228 and cloned into PVL-Blunt pVL-Blunt MshE Fragment 6 amplified with KR227 and KR228 and cloned into PVL-Blunt pVL791-MshE R9A, D12A MshE _{R9AD12A} is introduced into pVL791-MshE using SH60 and SH61 pVL791-MshE _{R88A, R89A} MshE _{R88AR89A} is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE _{D108A, D111A} MshE _{D108AD111A} is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE _{Y145A, R146A, R147A} MshE _{Y145AR146AR147A} is introduced into pVL-Blunt-MshE using SH66 This work and SH67 pVL-791-MshE _{Y145A, R146A, R146A, R147A} MshE _{Y145AR146AR147A} is introduced into pVL-Blunt-MshE _{Y145AR146AR147A} This work with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE _{R146A, R147A} MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using This work SH78 and SH79	pvE-Blunt-WSnE-F4		THIS WOLK
pVL-Blunt make Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt make Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt make Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt make pVL-Blunt make pVL-Blunt make pVL-Blunt with KR227 and KR228 and cloned into pVL-Blunt with KR228 and cloned into pVL-Blunt with KR227 and KR228 and cloned into pVL-Blunt with SH60 and This work SH75 make pVL-P91-MshE plant with KR228 and cloned into pVL-P91-MshE using SH60 and This work with with pVL-Blunt-MshE using SH64 and This work with SH65 make pVL-P91-MshE plant with KR228 and cloned into pVL-P91-MshE using SH60 and This work with work with pVL-Blunt-MshE using SH64 and This work with Ndel and BamHI and ligated into pVL-Blunt-MshE plant-MshE plant-	pVL-Blunt-MshE-F5	1	This work
pVL-Blunt-MshE-F6 MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt pVL791-MshE R9A, D12A MshER9AD12A is introduced into pVL791-MshE using SH60 and SH61 pVL791-MshE R88A, R89A MshER88AR89A is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE Y145A, R146A, R147A pVL-791-MshE Y145A, R146A, R147A R147A R147A R147A R147A BVL791-MshE R146A, R146A MshEY145AR146AR147A excised from pVL-Blunt-MshEY145AR146AR147A with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A using SH78 and SH79 This work SH78 and SH79	F		
MShE _{R9AD12A} is introduced into pVL791-MshE using SH60 and SH61 pVL791-MshE _{R88A, R89A} MshE _{R88AR89A} is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE _{D108A, D111A} MshE _{D108AD111A} is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Plunt-MshE _{Y145A, R146A} MshE _{Y145AR146AR147A} is introduced into pVL-Blunt-MshE using SH66 This work and SH67 pVL-791-MshE _{Y145A, R146A} MshE _{Y145AR146AR147A} excised from pVL-Blunt-MshE _{Y145AR146AR147A} This work with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE _{R146A, R147A} MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using This work SH78 and SH79	pVL-Blunt-MshE-F6	1	This work
SH61 pVL791-MshE _{R88A, R89A} MshE _{R88AR89A} is introduced into pVL791-MshE using SH76 and SH77 pVL-Blunt-MshE _{D108A, D111A} MshE _{D108AD111A} is introduced into pVL-Blunt-MshE using SH64 and SH65 pVL-Blunt-MshE _{Y145A, R146A} MshE _{Y145AR146AR147A} is introduced into pVL-Blunt-MshE using SH66 This work and SH67 pVL-791-MshE _{Y145A, R146A} MshE _{Y145AR146AR147A} excised from pVL-Blunt-MshE _{Y145AR146AR147A} With NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE _{R146A, R147A} MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using SH78 and SH79 This work SH78 and SH79	-	pVL-Blunt	
PVL-91-MshE _{R88A, R89A} MshE _{R88AR89A} is introduced into pVL791-MshE using SH76 and SH77 PVL-Blunt-MshE _{D108A, D111A} MshE _{D108AD111A} is introduced into pVL-Blunt-MshE using SH64 and SH65 PVL-Blunt-MshE _{Y145A, R146A} MshE _{Y145AR146AR147A} is introduced into pVL-Blunt-MshE using SH66 This work and SH67 PVL-791-MshE _{Y145A, R146A} MshE _{Y145AR146AR147A} excised from pVL-Blunt-MshE _{Y145AR146AR147A} This work with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI PVL791-MshE _{R146A, R147A} MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using SH78 and SH79	pVL791-MshE _{R9A, D12A}	MshE _{R9AD12A} is introduced into pVL791-MshE using SH60 and	This work
PVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 PVL-Blunt-MshE Y145A, R146A, MshEY145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 This work and SH67 PVL-791-MshE Y145A, R146A, MshEY145AR146AR147A excised from pVL-Blunt-MshEY145AR146AR147A with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI PVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A using SH78 and SH79 This work SH78 and SH79			
PVL-Blunt-MshE D108A, D111A MshED108AD111A is introduced into pVL-Blunt-MshE using SH64 and SH65 PVL-Blunt-MshE Y145A, R146A, MshEY145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 PVL-791-MshE Y145A, R146A, R146A, With Ndel and BamHI and ligated into pVL-Blunt-MshEY145AR146AR147A with Ndel and BamHI PVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A using SH78 and SH79 This work with Ndel and BamHI and ligated into pVL791-MshEY145AR146AR147A using SH78 and SH79	pVL791-MshE $_{R88A, R89A}$	•	This work
SH65 pVL-Blunt-MshE y145A, R146A, MshEy145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 pVL-791-MshE y145A, R146A, MshEy145AR146AR147A excised from pVL-Blunt-MshEy145AR146AR147A This work with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE R146A, R147A MshEy145AR146AR147A is introduced into pVL791-MshEy145AR146AR147A using SH78 and SH79 This work SH78 and SH79	W. D. W.L.		
PVL-Blunt-MshE Y145A, R146A, MshEY145AR146AR147A is introduced into pVL-Blunt-MshE using SH66 and SH67 PVL-791-MshE Y145A, R146A, R146A, With NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI PVL791-MshE R146A, R147A MshEY145AR146AR147A excised from pVL-Blunt-MshEY145AR146AR147A This work with NdeI and BamHI MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A using SH78 and SH79 This work of the work of	pVL-Blunt-MshE _{D108A, D111A}	1	This work
R147A pVL-791-MshE Y145A, R146A, R147A R147A R147A pVL791-MshE R146A, R147A mith Ndel and BamHI and ligated into pVL791 digested with Ndel and BamHI pVL791-MshE R146A, R147A MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using SH78 and SH79 This work This work SH78 and SH79	nVI Dlunt MahE		This work
pVL-791-MshE _{Y145A, R146A} , MshE _{Y145AR146AR147A} excised from pVL-Blunt-MshE _{Y145AR146AR147A} with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE _{R146A, R147A} MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using SH78 and SH79 This work			THIS WOLK
with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A using SH78 and SH79 This work	TIT #01 > 6 1 T		This work
and BamHI pVL791-MshE R146A, R147A MshER146AR147A is introduced into pVL791-MshEY145AR146AR147A using SH78 and SH79 This work	• , , , ,		THIS WOLK
pVL791-MshE $_{R146A,R147A}$ MshE $_{R146AR147A}$ is introduced into pVL791-MshE $_{Y145AR146AR147A}$ using This work SH78 and SH79	K14/A		
SH78 and SH79	pVL791-MshE _{R146A R147A}		This work
$pVL-Blunt-MshE\ _{E191A,\ D192A} \qquad MshE_{E191AD192A}\ is\ introduced\ into\ pVL-Blunt-MshE\ using\ SH68\ and \qquad This\ work$	-	SH78 and SH79	
	pVL-Blunt-MshE $_{E191A,D192A}$	MshE _{E191AD192A} is introduced into pVL-Blunt-MshE using SH68 and	This work

SH69

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pVL791-MshE _{R9A}	R9A is introduced into pVL791-MshE using SH72 and SH73	This work
pVL791-MshE _{D12A}	D12A is introduced into pVL791-MshE _{R9AD12A} using SH74 and	This work
1 51211	SH75	
pVL-Blunt-MshE _{O32A}	Q32A is introduced into pVL-Blunt-MshE using KR229 and KR230	This work
		This work
pVL-Blunt-MshE _{E51A}	E51A is introduced into pVL-Blunt-MshE using KR231 and KR232	
pVL791-MshE _{R88A}	R88A is introduced into pVL791-MshE _{R88AR89A} using SH85 and	This work
	SH86	
pVL791-MshE _{R89A}	R89A is introduced into pVL791-MshE _{R88AR89A} using SH87 and	This work
1	SH88	
pVL-Blunt-MshE _{D108A}	D108A is introduced into pVL-Blunt-MshE using KR233 and	This work
p v E-Diant WishE Dioga	KR234	THIS WOLK
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pVL791-MshE _{D111A}	D111A is introduced into pVL791-MshE using SH89 and SH90	This work
pVL-Blunt-MshE D142A	D142A is introduced into pVL-Blunt-MshE using KR235 and	This work
	KR236	
pVL-Blunt-PA14_29490-F1	PA14 29490 Fragment 1 was amplified with KR203 and SH54 and	This work
_	cloned into pVL-Blunt	
pVL-Blunt-PA14 29490-F2	PA14 29490 Fragment 2 was amplified with KR203 and SH55 and	This work
p v L-Bluff-1 A14_2)4/0-12		THIS WOLK
TH. DI DA 14 20400 F2	cloned into pVL-Blunt	m1 · 1
pVL-Blunt-PA14_29490-F3	PA14_29490 Fragment 3 was amplified with KR203 and SH56 and	This work
	cloned into pVL-Blunt	
pVL-Blunt-PA14 29490-F4	PA14 29490 Fragment 4 was amplified with SH57 and KR204 and	This work
_	cloned into pVL-Blunt	
pVL-Blunt-PA14 29490-F5	PA14 29490 Fragment 5 was amplified with SH58 and KR204 and	This work
p v E Branc 1711 1_25 150 15	cloned into pVL-Blunt	THIS WOLK
pVL-Blunt-PA14 29490-F6		This work
pvL-Bluiii-PA14_29490-F6	PA14_29490 Fragment 6 was amplified with SH59 and KR204 and	This work
	cloned into pVL-Blunt	
pVL791-MshE (VC0405)	MshE wild-type excised from pVL-Blunt-MshE with NdeI and	This work
	BamHI and ligated into pVL791 digested with NdeI and BamHI	
pVL791-VC0462	VC0462 isolated from His-ORF library	This work
pVL791-VC0463	VC0463 isolated from His-ORF library	This work
pVL791-VC2424	VC2424 isolated from His-ORF library	This work
pVL791-VC0835	VC0835 isolated from His-ORF library	This work
-		
pVL791-VC2732	VC2732 isolated from His-ORF library	This work
pVL791-PA14_29490	PA14_29490 excised from pVL-Blunt-PA14_29490 with NdeI and	This work
	BamHI and ligated into pVL791 digested with NdeI and BamHI	
pVL791-PA14_58750	PA14_58750 excised from pVL-Blunt-PA14_58750 with AseI and	This work
	BgIII and ligated into pVL791 digested with NdeI and BamHI	
pVL791-PA14 55440	PA14 55440 excised from pVL-Blunt-PA14 55440 with NdeI and	This work
p (2 /) 1 1111	BamHI and ligated into pVL791 digested with NdeI and BamHI	11115 ((0111
pVL791-PA14 23990	PA14 23990 excised from pVL-Blunt-PA14 29490 with NdeI and	This work
pvL/91-FA14_23990		THIS WOLK
YY 501 D 1 1 4 60000	BamHI and ligated into pVL791 digested with NdeI and BamHI	m1 · 1
pVL791-PA14_68820	PA14_68820 excised from pVL-Blunt-PA14_68820 with NdeI and	This work
	BamHI and ligated into pVL791 digested with NdeI and BamHI	
pVL791-PA14_59290	PA14 59290 excised from pVL-Blunt-PA14 59290 with NdeI and	This work
_	BgIII and ligated into pVL791 digested with NdeI and BamHI	
pVL791-PA14 05180	PA14 05180 excised from pVL-Blunt-PA14 05180 with NdeI and	This work
p v E / > 1 1 11 1 _ 0 3 1 0 0	BamHI and ligated into pVL791 digested with NdeI and BamHI	THIS WOLK
~VI 701 DA14 05100		Thisl.
pVL791-PA14_05190	PA14_05190 excised from pVL-Blunt-PA14_05190 with NdeI and	This work
	BamHI and ligated into pVL791 digested with NdeI and BamHI	
pVL791-PA14_59340	PA14_59340 excised from pVL-Blunt-PA14_59340 with NdeI and	This work
	XhoI and ligated into pVL791 digested with NdeI and XhoI	
pVL847-MshE	MshE wild-type excised from pVL-Blunt-MshE with NdeI and	This work
-	BamHI and ligated into pBL847 digested with NdeI and BamHI	
pVL847-MshE-F1	MshE Fragment 1 excised from pVL-Blunt-MshE-F1 with NdeI and	This work
P 1 20 17 1110112-1 1	BamHI and ligated into pBL847 digested with NdeI and BamHI	IIIS WUIK
WI 047 Male E2		This 1
pVL847-MshE-F2	MshE Fragment 2 excised from pVL-Blunt-MshE-F2 with NdeI and	This work

	BamHI and ligated into pBL847 digested with NdeI and BamHI	
pVL847-MshE-F3	MshE Fragment 3 excised from pVL-Blunt-MshE-F3 with NdeI and	This work
p (Eo) / MSHE 13	BamHI and ligated into pBL847 digested with NdeI and BamHI	THIS WOLK
pVL847-MshE-F4	MshE Fragment 4 excised from pVL-Blunt-MshE-F4 with NdeI and	This work
•	BamHI and ligated into pBL847 digested with NdeI and BamHI	
pVL847-MshE-F5	MshE Fragment 5 excised from pVL-Blunt-MshE-F5 with NdeI and	This work
	BamHI and ligated into pBL847 digested with NdeI and BamHI	
pVL847-MshE-F6	MshE Fragment 6 excised from pVL-Blunt-MshE-F6 with NdeI and	This work
VII 047 N 1 F	BamHI and ligated into pBL847 digested with NdeI and BamHI	
$pVL847$ -Msh $E_{R9AD12A}$	MshE _{R9AD12A} excised from pVL791-MshE _{R9AD12A} with NdeI and	This work
	BamHI and ligated into pVL847 digested with NdeI and BamHI	
$pVL847$ -Msh $E_{R88AR89A}$	MshE _{R88AR89A} excised from pVL791-MshE _{R88AR89A} with NdeI and	This work
nVI 947 MahE	BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
$pVL847$ -Msh $E_{D108AD111A}$	MshE _{D108AD111A} excised from pVL-Blunt-MshE _{D108AD111A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{R146AR147A}	MshE _{R146AR147A} excised from pVL791-MshE with NdeI and BamHI	This work
p v Lo-7 - WishLR 46AR 4/A	and ligated into pVL847 digested with NdeI and BamHI	THIS WOLK
$pVL847$ -Msh $E_{E191AD192A}$	MshE _{E191AD192A} excised from pVL-Blunt-MshE _{E191AD192A} with Ndel	This work
F EDIADIZA	and BamHI and ligated into pVL847 digested with NdeI and BamHI	
pVL847-MshE _{R9A}	MshE _{R9A} excised from pVL791-MshE _{R9A} with NdeI and BamHI and	This work
•	ligated into pVL847 digested with NdeI and BamHI	
$pVL847-MshE_{D12A}$	MshE _{D12A} excised from pVL791-MshE _{D12A} with NdeI and BamHI	This work
	and ligated into pVL847 digested with NdeI and BamHI	
pVL847-MshE _{Q32A}	MshE _{Q32A} excised from pVL-Blunt-MshE _{Q32A} with NdeI and	This work
VII 047 N 1 F	BamHI and ligated into pVL847 digested with NdeI and BamHI	
$pVL847$ -Msh E_{E51A}	MshE _{E51A} excised from pVL-Blunt-MshE _{E51A} with NdeI and BamHI	This work
aVI 947 MaleE	and ligated into pVL847 digested with NdeI and BamHI	This
$pVL847$ -Msh E_{R88A}	MshE _{R88A} excised from pVL791-MshE _{R88A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{R89A}	MshE _{R89A} excised from pVL791-MshE _{R89A} with NdeI and BamHI	This work
p v Eo+/-ivisiiE _{R89A}	and ligated into pVL847 digested with NdeI and BamHI	TIIIS WOLK
pVL847-MshE _{D108A}	MshE _{D108A} excised from pVL-Blunt-MshE _{D108A} with NdeI and	This work
1 2.00.1	BamHI and ligated into pVL847 digested with NdeI and BamHI	
$pVL847$ -Msh E_{D111A}	MshE _{D111A} excised from pVL791-MshE _{D111A} with NdeI and BamHI	This work
	and ligated into pVL847 digested with NdeI and BamHI	
$pVL847$ -Msh E_{D142A}	MshE _{D142A} excised from pVL-Blunt-MshE _{D142A} with NdeI and	This work
	BamHI and ligated into pVL847 digested with NdeI and BamHI	
pVL847-PA14_29490	PA14_29490 excised from pVL-Blunt-PA14_29490 with NdeI and	This work
	BamHI and ligated into pVL847 digested with NdeI and BamHI	TT1. 1
pVL847-PA14_29490-F1	PA14_29490 Fragment 1 excised from pVL-Blunt-PA14_29490-F1 with NdeI and BamHI and ligated into pVL847 digested with NdeI	This work
	and BamHI	
pVL847-PA14 29490-F2	PA14_29490 Fragment 2 excised from pVL-Blunt-PA14_29490-F2	This work
F 0 . , 0 2 , 0	with NdeI and BamHI and ligated into pVL847 digested with NdeI	
	and BamHI	
pVL847-PA14_29490-F3	PA14_29490 Fragment 3 excised from pVL-Blunt-PA14_29490-F3	This work
	with NdeI and BamHI and ligated into pVL847 digested with NdeI	
	and BamHI	
pVL847-PA14_29490-F4	PA14_29490 Fragment 4 excised from pVL-Blunt-PA14_29490-F4	This work
	with NdeI and BamHI and ligated into pVL847 digested with NdeI	
-VI 047 DA 14 20400 E5	and BamHI PA 14 20400 Fragment 5 avaised from TVI Plant PA 14 20400 F5	This
pVL847-PA14_29490-F5	PA14_29490 Fragment 5 excised from pVL-Blunt-PA14_29490-F5 with NdeI and BamHI and ligated into pVL847 digested with NdeI	This work
	and BamHI	
pVL847-PA14 29490-F6	PA14_29490 Fragment 6 excised from pVL-Blunt-PA14_29490-F6	This work
F . 20	with NdeI and BamHI and ligated into pVL847 digested with NdeI	1110 HOIR
	and BamHI	

pVL393	pMMB derivative with a NdeI site added to the polylinker	{Lee, 2007 #2089}
pVL393-MshE	MshE excised from pVL791-MshE with NdeI and BamHI and	This wor
	ligated into pVL393 digested with NdeI and BamHI	
$pVL393-MshE_{R9A}$	MshE _{R9A} excised from pVL791-MshE _{R9A} with NdeI and BamHI and	This wor
	ligated into pVL393 digested with NdeI and BamHI	
$pVL393-MshE_{D12A}$	MshE _{D12A} excised from pVL791-MshE _{D12A} with NdeI and BamHI	This wor
	and ligated into pVL393 digested with NdeI and BamHI	
$pVL393\text{-}MshE_{R88A,R89A}$	MshE _{R88A, R89A} excised from pVL791-MshE _{R88A, R89A} with NdeI and	This wor
	BamHI and ligated into pVL393 digested with NdeI and BamHI	