

S3 Table. Plasmids

Plasmid	Description	Source
pVL-Blunt	pCR-Blunt derivative with restriction sites removed	{Lee, 2007 #2089}
pVL791	pET-19b derivative	{Lee, 2007 #2089}
pVL847	pET-19b derivative with an in-frame <i>mbp</i> between the His tag and the MCS	{Lee, 2007 #2089}
pVL-Blunt-MshE (VC0405)	MshE amplified with KR221 and KR228 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_29490	PA14_29490 amplified with KR203 and KR204 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_58750	PA14_58750 amplified with KR205 and KR206 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_55440	PA14_55440 amplified with KR207 and KR208 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_23990	PA14_23990 amplified with KR209 and KR210 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_68820	PA14_68820 amplified with KR211 and KR212 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_59290	PA14_59290 amplified with KR213 and KR214 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_05180	PA14_05180 amplified with KR215 and KR216 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_05190	PA14_05190 amplified with KR217 and KR218 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_59340	PA14_59340 amplified with KR219 and KR220 and cloned into pVL-Blunt	This work
pVL-Blunt-MshE-F1	MshE Fragment 1 amplified with KR221 and KR222 and cloned into pVL-Blunt	This work
pVL-Blunt-MshE-F2	MshE Fragment 2 amplified with KR221 and KR223 and cloned into pVL-Blunt	This work
pVL-Blunt-MshE-F3	MshE Fragment 3 amplified with KR221 and KR224 and cloned into pVL-Blunt	This work
pVL-Blunt-MshE-F4	MshE Fragment 4 amplified with KR225 and KR228 and cloned into pVL-Blunt	This work
pVL-Blunt-MshE-F5	MshE Fragment 5 amplified with KR226 and KR228 and cloned into pVL-Blunt	This work
pVL-Blunt-MshE-F6	MshE Fragment 6 amplified with KR227 and KR228 and cloned into pVL-Blunt	This work
pVL791-MshE _{R9A, D12A}	MshE _{R9AD12A} is introduced into pVL791-MshE using SH60 and SH61	This work
pVL791-MshE _{R88A, R89A}	MshE _{R88AR89A} is introduced into pVL791-MshE using SH76 and SH77	This work
pVL-Blunt-MshE _{D108A, D111A}	MshE _{D108AD111A} is introduced into pVL-Blunt-MshE using SH64 and SH65	This work
pVL-Blunt-MshE _{Y145A, R146A, R147A}	MshE _{Y145AR146AR147A} is introduced into pVL-Blunt-MshE using SH66 and SH67	This work
pVL-791-MshE _{Y145A, R146A, R147A}	MshE _{Y145AR146AR147A} excised from pVL-Blunt-MshE _{Y145AR146AR147A} with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-MshE _{R146A, R147A}	MshE _{R146AR147A} is introduced into pVL791-MshE _{Y145AR146AR147A} using SH78 and SH79	This work
pVL-Blunt-MshE _{E191A, D192A}	MshE _{E191AD192A} is introduced into pVL-Blunt-MshE using SH68 and	This work

	SH69	
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 SH75	This work
pVL-Blunt-MshE _{Q32A}	Q32A is introduced into pVL-Blunt-MshE using KR229 and KR230	This work
pVL-Blunt-MshE _{E51A}	E51A is introduced into pVL-Blunt-MshE using KR231 and KR232	This work
pVL791-MshE _{R88A}	R88A is introduced into pVL791-MshE _{R88AR89A} using SH85 and SH86	This work
pVL791-MshE _{R89A}	R89A is introduced into pVL791-MshE _{R88AR89A} using SH87 and SH88	This work
pVL-Blunt-MshE _{D108A}	D108A is introduced into pVL-Blunt-MshE using KR233 and KR234	This work
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 KR236	This work
pVL-Blunt-PA14_29490-F1	PA14_29490 Fragment 1 was amplified with KR203 and SH54 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_29490-F2	PA14_29490 Fragment 2 was amplified with KR203 and SH55 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_29490-F3	PA14_29490 Fragment 3 was amplified with KR203 and SH56 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_29490-F4	PA14_29490 Fragment 4 was amplified with SH57 and KR204 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_29490-F5	PA14_29490 Fragment 5 was amplified with SH58 and KR204 and cloned into pVL-Blunt	This work
pVL-Blunt-PA14_29490-F6	PA14_29490 Fragment 6 was amplified with SH59 and KR204 and cloned into pVL-Blunt	This work
pVL791-MshE (VC0405)	MshE wild-type excised from pVL-Blunt-MshE with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
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 BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_58750	PA14_58750 excised from pVL-Blunt-PA14_58750 with AseI and BglII and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_55440	PA14_55440 excised from pVL-Blunt-PA14_55440 with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_23990	PA14_23990 excised from pVL-Blunt-PA14_29490 with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_68820	PA14_68820 excised from pVL-Blunt-PA14_68820 with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_59290	PA14_59290 excised from pVL-Blunt-PA14_59290 with NdeI and BglII and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_05180	PA14_05180 excised from pVL-Blunt-PA14_05180 with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_05190	PA14_05190 excised from pVL-Blunt-PA14_05190 with NdeI and BamHI and ligated into pVL791 digested with NdeI and BamHI	This work
pVL791-PA14_59340	PA14_59340 excised from pVL-Blunt-PA14_59340 with NdeI and XhoI and ligated into pVL791 digested with NdeI and XhoI	This work
pVL847-MshE	MshE wild-type excised from pVL-Blunt-MshE with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work
pVL847-MshE-F1	MshE Fragment 1 excised from pVL-Blunt-MshE-F1 with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work
pVL847-MshE-F2	MshE Fragment 2 excised from pVL-Blunt-MshE-F2 with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work

pVL847-MshE-F3	BamHI and ligated into pBL847 digested with NdeI and BamHI MshE Fragment 3 excised from pVL-Blunt-MshE-F3 with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work
pVL847-MshE-F4	MshE Fragment 4 excised from pVL-Blunt-MshE-F4 with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work
pVL847-MshE-F5	MshE Fragment 5 excised from pVL-Blunt-MshE-F5 with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work
pVL847-MshE-F6	MshE Fragment 6 excised from pVL-Blunt-MshE-F6 with NdeI and BamHI and ligated into pBL847 digested with NdeI and BamHI	This work
pVL847-MshE _{R9AD12A}	MshE _{R9AD12A} excised from pVL791-MshE _{R9AD12A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{R88AR89A}	MshE _{R88AR89A} excised from pVL791-MshE _{R88AR89A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{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 and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{E191AD192A}	MshE _{E191AD192A} excised from pVL-Blunt-MshE _{E191AD192A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{R9A}	MshE _{R9A} excised from pVL791-MshE _{R9A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{D12A}	MshE _{D12A} excised from pVL791-MshE _{D12A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{Q32A}	MshE _{Q32A} excised from pVL-Blunt-MshE _{Q32A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{E51A}	MshE _{E51A} excised from pVL-Blunt-MshE _{E51A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{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 and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{D108A}	MshE _{D108A} excised from pVL-Blunt-MshE _{D108A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{D111A}	MshE _{D111A} excised from pVL791-MshE _{D111A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-MshE _{D142A}	MshE _{D142A} excised from pVL-Blunt-MshE _{D142A} with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-PA14_29490	PA14_29490 excised from pVL-Blunt-PA14_29490 with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
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 and BamHI	This work
pVL847-PA14_29490-F2	PA14_29490 Fragment 2 excised from pVL-Blunt-PA14_29490-F2 with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-PA14_29490-F3	PA14_29490 Fragment 3 excised from pVL-Blunt-PA14_29490-F3 with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
pVL847-PA14_29490-F4	PA14_29490 Fragment 4 excised from pVL-Blunt-PA14_29490-F4 with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work
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 and BamHI	This work
pVL847-PA14_29490-F6	PA14_29490 Fragment 6 excised from pVL-Blunt-PA14_29490-F6 with NdeI and BamHI and ligated into pVL847 digested with NdeI and BamHI	This work

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 ligated into pVL393 digested with NdeI and BamHI	This work
pVL393-MshE _{R9A}	MshE _{R9A} excised from pVL791-MshE _{R9A} with NdeI and BamHI and ligated into pVL393 digested with NdeI and BamHI	This work
pVL393-MshE _{D12A}	MshE _{D12A} excised from pVL791-MshE _{D12A} with NdeI and BamHI and ligated into pVL393 digested with NdeI and BamHI	This work
pVL393-MshE _{R88A, R89A}	MshE _{R88A, R89A} excised from pVL791-MshE _{R88A, R89A} with NdeI and BamHI and ligated into pVL393 digested with NdeI and BamHI	This work
