

Oligo#	Sequence (5' to 3') with insertions denoted in lowercase and substitutions in bold	Product	Mutagenesis	Rounds
Oligo1	aggaagtggaggtggaggatccgggagctccagcCCGAGGGTGACGATCCCCG	FlagTemplate	Q5	1
Oligo2	ttatcatcgtcatctttataatcaaccaatgcataGCCGAGGCGGAAAACATC			
Oligo3	attaaagtcgttcaccgctcgaaaaaggaatctatcagacctetaacGGTGGAGGATCCGGGAGC	Ep1	Q5	1
Oligo4	gtacactttgtttcactcagtgatctaatgcacaatcgaccgcateTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo5	gagcaagccttctaagcgtctttcattgaaGGTGGAGGATCCGGGAGC	Ep2	Q5	1
Oligo6	gggtcaggcaggatctgcgagaatccacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo7	tacacagttacctcccgcgtatacaaatGGTGGAGGATCCGGGAGC	Ep3	Q5	1
Oligo8	cgagttgtcaagttcacacatccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo9	ttcttgacgtgacgtatgtgcctgctGGTGGAGGATCCGGGAGC	Ep4	Q5	1
Oligo10	caccactccatggggcgtccacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo11	ggagctgaaaaaactggtggaacaatggaaccttgaatcGGTGGAGGATCCGGGAGC	Ep5	Q5	1
Oligo12	tctacggtaatcgtaccgcttcgagtcgccattccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo13	tggagctgtgatcttacgcggacacctgcgtatcGGTGGAGGATCCGGGAGC	Ep6	Q5	1
Oligo14	atcactaattctgattccaacaggggtccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo15	ttcgcacgcactcgtccatgtggtctGGTGGAGGATCCGGGAGC	Ep7	Q5	1
Oligo16	caagcgggaagctcgcaattccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo17	gcttcgtggttactgctgcttaccagcacggaagGGTGGAGGATCCGGGAGC	Ep8	Q5	1
Oligo18	tgtattattaggcagcccttgagggcgtccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo19	tcaagggactacctgcccagggttctatGGTGGAGGATCCGGGAGC	Ep9	Q5	1
Oligo20	ggtaattgtaacacgattgcagcgttattagcTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo21	gtaaccaagcgttcggctgcgcggggGGTGGAGGATCCGGGAGC	Ep10	Q5	1
Oligo22	attatacgtttttgtagctccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo23	gtctactctcgtgtaaaaaacttgaatGGTGGAGGATCCGGGAGC	Ep11	Q5	1
Oligo24	gtaaaaggaaggcttcaactccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo25	tttcaactttaatggcctgacggggaccggagtcctgactgaatccaatGGTGGAGGATCCGGGAGC	Ep12	Q5	3
Oligo26	ttgacacacttatttttaaccaggttggtagcttcttcggcccgatacTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo27	agacgctgttcgtgaccacagactctggagattttggacattacacctGGTGGAGGATCCGGGAGC			
Oligo28	gttgtatcggcgatgtcgcgtccaaattgctggaacggcagaaatttttATTGGATTCAGTCAGGACTCCG			
Oligo29	tgtctcgcgtatcGGTGGAGGATCCGGGAGC			
Oligo30	cctccgaatgaacaAGGTGTAATGTCCAAAATCTCCAGAG			
Oligo31	ctgtatcaggatgtcaattgcacagaagtcGGTGGAGGATCCGGGAGC	Ep13	Q5	2
Oligo32	tacagcaacttggttacttgtgtttgtcccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo33	cccacttggcgctctacagcacaggcagtcGGTGGAGGATCCGGGAGC			
Oligo34	cgtcagttggtcggcgtggatggctaccggGACTTCTGTGCAATTGACATCCTGATAC			
Oligo35	GCTGTACCAG ggc GCTGAACTGTA	Ep13*	Q5	1
Oligo36	ACTGCCACCTGATTGCTG			
Oligo37	tatccacgtatcgggtacgaatggaacgGGTGGAGGATCCGGGAGC	Ep14	Q5	1
Oligo38	gcgtggaaccacgtcacatttccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo39	tggagtgtctcccactaaattgaacgacctGGTGGAGGATCCGGGAGC	Ep15	Q5	1
Oligo40	tagcatttgaaggttgagaacgatccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo41	tccccgcagcgagccgaagaaggataagaaaaaaaaGGTGGAGGATCCGGGAGC	Ep16	Q5	2
Oligo42	aaggttttatacgcataatgtgtttatttccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo43	acttccacagggaaacgacactgccaaagggatttGGTGGAGGATCCGGGAGC			
Oligo44	tgcagtacagtggcagcattgttatttccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo45	GGTGGAGGATCCGGGAGCTCCAGC	GA Vector	-	-
Oligo46	TTTATCATCGTCATCTTTATAATCAACCAATGCATAAGCCGAGGC			
Oligo47	CTGTATGTGGGCCAAAAAGGGTGGAGGATCCGGGAGCTC	Ep17	GA	
Oligo48	GGCTGTACGCGTCCACTTCCTTTATCATCGTCATCTTTATAATCAACCAATGCATAAG			
Oligo49	ACGATGATAAAGGAAGTGGACGCGTACAGCCACTGAAAG			
Oligo50	GAGCTCCCGGATCCTCCACCCTTTTGGGCCACATACAGTCG			
Oligo51	caaccgacaaatggtgtgggttaccagccgGGTGGAGGATCCGGGAGC	Ep18	Q5	1
Oligo52	gaaaccatagactgcaagggaaaataacaTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo53	taataacttggttccaaagtaggagcGGTGGAGGATCCGGGAGC	Ep19	Q5	1
Oligo54	gaattccaggcaataacacaccagtgaaTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo55	gaaatctaacttgaaccggttgaaggGGTGGAGGATCCGGGAGC	Ep20	Q5	1
Oligo56	cggaaaagcctgtaaagatagttgaattTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo57	cacgccttgaatgggtagaggttttaaatGGTGGAGGATCCGGGAGC	Ep21	Q5	1
Oligo58	gaccctgcctgtagatctccgttgagatgtcTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo59	caaccgacaaatggtgtgggttaccagccgGGTGGAGGATCCGGGAGC	Ep22	Q5	1
Oligo60	gaaaccatagactgcaagggaaaataacaTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo61	acttccacagggaaacgacactgccaaagggatttGGTGGAGGATCCGGGAGC	sEp9	Q5	1
Oligo62	tgcagtacagtggcagcattgttatttccaacttccTTTATCATCGTCATCTTTATAATCAACCAATGC			
Oligo63	tccgggtacaaagttaccaaaagaacttccacGGTGGAGGATCCGGGAGC	mEp9	Q5	1
Oligo64	gcaaattgagtaactatcgtgaatcattgttTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo65	tcccggactattttaccccaaggataactatGGTGGAGGATCCGGGAGC	hEp9	Q5	1
Oligo66	gggaatctagtgggaatgcctcctgagtagtTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo67	agtattgccttgcacctgagttatctGGTGGAGGATCCGGGAGC	nEp9	Q5	1
Oligo68	aaatttcggttcaagcggcttttgattTCCACTTCCTTTATCATCGTCATCTTTATAATC			
Oligo69	TTTTGCGCCGACATCATAACGGTTCT	pm1165a P8	-	-
Oligo70	TATGGGGTTTTGCTAAACAACCTTCAACAG			
Oligo71	agatgacgatgataaaggaagtggataataaGGCGGTTCCGGCAGGCGAA	eGFP-FLAG	Q5	1
Oligo72	ttataatcgtggagctcccgatcctccaccTTTGTATAGTTCATCCATGCCATGTGTAATCCC			
Oligo73	tcaagggactacctgcccagggttctatAGCGGAAGTGGAGATTATAAAGATGAC	eGFP-Ep9	Q5	1
Oligo74	ggtaattgtaacacgattgcagcgttattagcGGAGCTCCCGGATCCTCC			
Oligo75	TAATACGACTCACTATAGGG	T7	-	-
Oligo76	GCTAGTTATTGCTCAGCGG	T7 term	-	-

List of oligos used in Q5 site-directed mutagenesis (Q5) or Gibson Assembly (GA) for the cloning of putative epitopes Ep1-22 for phage display or eGFP recombinant protein expression. For epitope constructs between 100-210 bp in length, multiple rounds of Q5 were denoted.