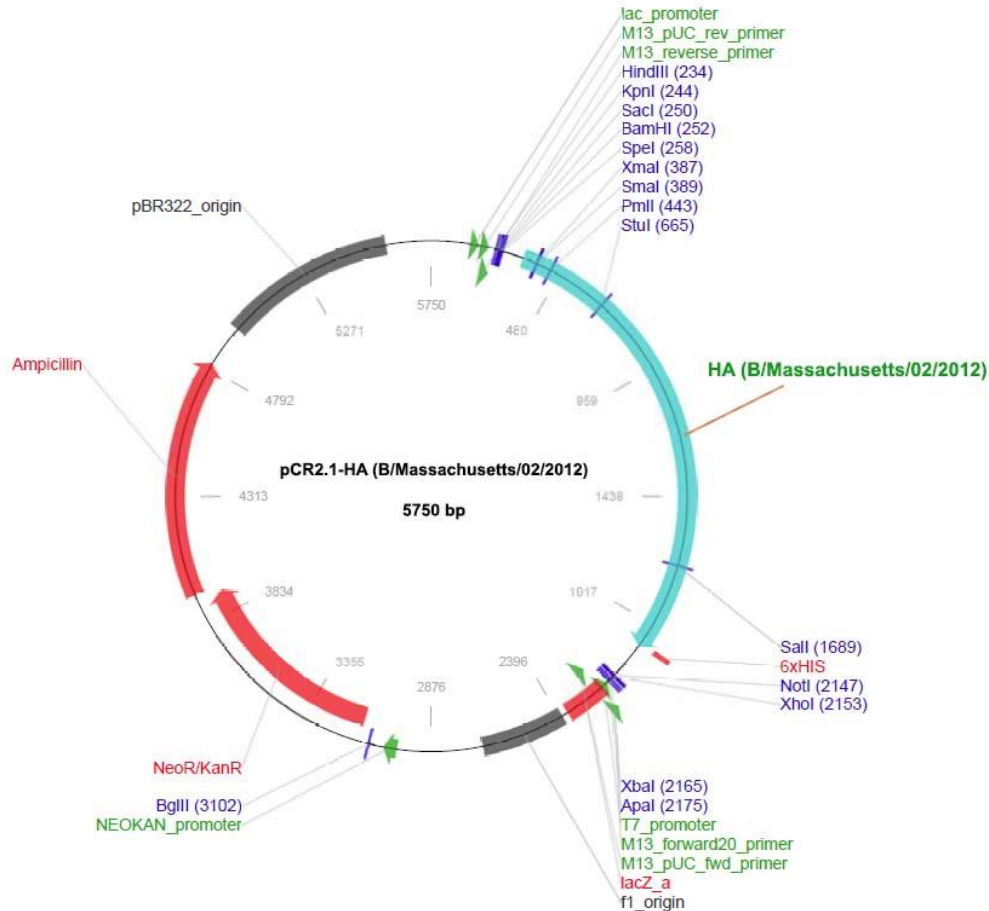


pCR2.1-HA (B/Massachusetts/02/2012)

Cat# HA-B036

Gene Name	pCR2.1-HA (B/Massachusetts/02/2012)
Gene description:	Codon optimized cDNA clone of influenza B hemagglutinin (aa 16-548) (B/Massachusetts/02/2012) for high-level expression in mammalian cells
cDNA Insert Size	1599 bp codon optimized influenza B hemagglutinin ((B/ Massachusetts/02/2012) cDNA with a Kozak consensus sequence(GACATGA), corresponding to amino acid 16-548 (Gene accession# AGL06036).
Vector	pCR2.1
Storage	4 °C

Construct map:



Detailed sequence of the whole construct (pCR2.1-HA (B/Massachusetts/02/2012):

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1   AGCGCCCAAT ACGCAAACCG CCTCTCCCCG CGCGTTGGCC GATTCATTAA TGCAGCTGGC ACGACAGGTT
71  TCCCGACTGG AAAGCGGGCA GTGAGCGCAA CGCAATTAAT GTGAGTTAGC TCACTCATT A GGCACCCCA
141 GCTTTACTACT TTATGCTTCC GGCTCGTATG TTGTGTGGAA TTGTGAGCGG ATAACAATTT CACACAGGAA
211 ACAGCTATGA CCATGATTAC GCCAAGCTTG GTACCGAGCT CGGATCCACT AGTAACGGCC GCCAGTGTGC
281 TGGAATTCGC CCTTTCCTTT CCTGGGTCTT TTCTGCAGGC ACCGTCGCCG CCACCATGGA CATGAGGGTC
351 CCCCTCAGC TCCTGGGGCT CCTGCTGCTC TGGCTCCCCG GGGCGCGCTG TGACAGGATC TGCAGTGGAA
421 TCACCTCCTC CAACTCCCCT CACGTGGTCA AGACTGCAAC CCAGGGAGAG GTGAACGTCA CCGGAGTGAT
491 CCCTCTTACC ACAACCCCTA CCAAGTCCTA CTTGCAAAAC CTCAAGGGCA CAAAACCAG GGGAAAGCTC
561 TGCCAGATT GCCTTAACTG CACCGACCTC GATGTGCGAC TTGGAAGACC TATGTGCGTC GGAACCACCC
631 CATCCGCAA GGCATCCATC CTTACAGAGG TGAGGCCTGT GACCTCCGGA TGTTTCCCTA TCATGCACGA
701 CAGGACCAAG ATCAGGCAGC TCGCTAACCT GCTGAGAGGA TACGAGAACA TCCGGCTCAG CACCCAGAAC
771 GTGATCGACG CTGAGAAGGC TCCTGGAGGA CCATACAGAC TGGGCACATC CGGCTCTTGT CCAAACGCTA
841 CCTCTAAGTC CGGCTTCTTC GCTACCATGG CTTGGGCTGT CCCAAAGGAT AACAAACAAGA ACGCCACCAA
911 CCCCCTGACT GTGGAGGTGC CATACTCTG CGCTGAGGGG GAGGATCAGA TCACTGTCTG GGGCTTCCAC
981 TCCGATGACA AGACACAGAT GAAGAACCTG TACGGCGACT CCAACCCCA GAAGTTCACT AGCAGCGCCA
1051 ACGGCGTCAC AACACACTAC GTGAGCCAGA TCGGGGGCTT TCCCGACCAG ACTGAGGACG GCGGGTTGCC
1121 ACAATCAGGC AGGATTGTCG TGGATTACAT GATGCAAAAAG CCCGGCAAGA CAGGGACAAT CGTGTACCAG
1191 CGGGGGGTGC TGCTGCCCA GAAGGTGTGG TGCGCCAGCG GCAGATCAA AGTGATCAAG GGCAGCCTGC
1261 CACTGATTGG CGAGCCGAC TGCCTGCATG AGAAGTACCG CGGGCTGAAT AAGAGCAAGC CCTACTACAC
1331 CGGGGAGCAC GCAAAGGCCA TTGGCAATTG TCCCATCTGG GTGAAGACCC CTCTGAAGCC GGCCAACGGG
1401 ACAAAGTATA GGCCACCCGC CAAACTGCTG AAGGAAAGGG GCTTCTTCGG CGCCATCGCA GGGTTCCTGG
1471 AGGGGGGCTG GGAGGGGATG ATCGCCGGCT GGCATGGCTA CACAAGCCAC GGCGCCACG GGGTCGCAGT
1541 GGCAGCTGAT CTGAAAAGCA CTCAGGAAGC CATCAATAAG ATCACAAAAGA ATCTGAACTC CCTGTCCGAA
1611 CTGGAAGTCA AGAACCTGCA GAGACTGTCC GCGCTATGG ACGAACTGCA CAACGAGATT CTGGAGCTGG
1681 ACGAGAAGGT CGACGACCTG AGAGCCGACA CCATCTCCAG CCAGATTGAG CTGGCCGTGC TGCTGTCCAA
1751 CGAGGGAATC ATTAACTCCG AGGATGAGCA CCTGCTGGCA CTGGAAGGA AACTGAAGAA GATGCTGGGG
1821 CAAAGCGCCG TGGATATCGG AAATGGGTGC TTCGAGACCA AGCACAAGTG CAACCAGACC TGCTGGACA
1891 GGATTGCCGC CGGCACCTTC AACGCCGGAG AGTTTTCCCT GCCCACTTTC GACAGCCTGA ACATCACTGC
1961 CGCCTCCCTG AACGACGATG GGCTGGACAA CCACCATCAC CATCACCAC GAGAATTCAT TGATCATTAA
2031 TCAGCCATAC CACATTTGTA GAGGTTTTAC TTGCTTTAAA AAACCTCCCA CACCTCCCC TGAACCTGAA
2101 ACATAAAATG AATAAGGGCG AATTCTGCAG ATATCCATCA CACTGGCGGC CGCTCGAGCA TGCATCTAGA
2171 GGGCCCAATT CGCCCTATAG TGAGTCGTAT TACAATTCAC TGGCCGTCGT TTTACAACGT CGTGACTGGG
2241 AAAACCCTGG CGTTACCCAA CTTAATCGCC TTGCAGACA TCCCCCTTC GCCAGCTGGC GTAATAGCGA
2311 AGAGGCCCGC ACCGATCGCC CTTCCAACA GTTGCGCAGC CTGAATGGCG AATGGACGCG CCCTGTAGCG
2381 GCGCATTAA GCGCGCGGGT GTGGTGGTTA CGCGCAGCGT GACCGCTACA CTTGCCAGCG CCCTAGCGCC
2451 CGCTCCTTTC GCTTCTTTC CTTCTTTCT CGCCAGTTC GCCGGCTTTC CCCGTCAAGC TCTAAATCGG
2521 GGTCCCTTTC TAGGGTTCCG ATTTAGTGCT TTACCGCAC TCGACCCCA AAAACTTGAT TAGGGTATG
2591 GTTACGTA GGGCCATCG CCCTGATAGA CGGTTTTTCG CCCTTTGACG TTGGAGTCCA CGTCTTTTAA
2661 TAGTGGACTC TTGTTCCAAA CTGGAACAAC ACTCAACCCT ATCTCGGTCT ATTCTTTTGA TTTATAAGGG
2731 ATTTTGCCGA TTTCGGCCTA TTGGTTAAAA AATGAGCTGA TTTAACAAAA ATTTAACGCG AATTTTAAACA
2801 AAATTCAGGG CGCAAGGGCT GCTAAAGGAA GCGGAACACG TAGAAAAGCCA GTCCGCAGAA ACGGTGCTGA
2871 CCCCGGATGA ATGTCAGCTA CTGGGCTATC TGGACAAGGG AAAACGCAAG CGCAAAGAGA AAGCAGGTAG
2941 CTTGCACTGG GCTTACATGG CGATAGCTAG ACTGGGCGGT TTTATGGACA GCAAGCGAAC CGGAATTGCC
3011 AGCTGGGGCG CCCTCTGGTA AGGTTGGGAA GCCCTGCAA GTAAACTGGA TGGCTTTCTT GCCCCAAGG
3081 ATCTGATGGC GCAGGGGATC AAGATCTGAT CAAGAGACAG GATGAGGATC GTTTCGCATG ATTGAACAAG
3151 ATGGATTGCA CGCAGGTTCT CCGGCCGCTT GGGTGGAGAG GCTATTCGGC TATGACTGGG CACAACAGAC
3221 AATCGGCTGC TCTGATGCCG CCGTGTTCG GCTGTCAGCG CAGGGGCGCC CGGTTCTTTT TGTCAGGACC
3291 GACCTGTCCG GTGCCCTGAA TGAAGTGCAG GACGAGGCAG CGCGGCTATC GTGGCTGGCC ACGACGGGCG
3361 TTCTTTGCGC AGCTGTGCTC GACGTTGTCA CTGAAGCGGG AAGGGACTGG CTGCTATTGG GCGAAGTGCC
3431 GGGGCAGGAT CTCCTGTGAT CCCACCTTGC TCCTGCCGAG AAAGTATCCA TCATGGCTGA TGCAATGCGG
3501 CGGCTGCATA CGCTTGATCC GGCTACCTGC CCATTTCGACC ACCAAGCGAA ACATCGCATC GAGCGAGCAC
3571 GTAAGCGGAT GGAAGCCGGT CTTGTCGATC AGGATGATCT GGACGAAGAG CATCAGGGGC TCGCGCCAGC
3641 CGAACTGTTT GCCAGGCTCA AGGCGCGCAT GCCCGACGGC GAGGATCTCG TCGTGACCCA TGGCGATGCC
3711 TGCTTGCCGA ATATCATGGT GGAAAATGGC CGCTTTTCTG GATTCATCGA CTGTGGCCGG CTGGGTGTGG
3781 CGGACCGCTA TCAGGACATA GCGTTGGCTA CCCGTGATAT TGCTGAAGAG CTTGGCGGCG AATGGGCTGA

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3851 CCGCTTCCTC GTGCTTTACG GTATCGCCGC TCCCATTTCG CAGCGCATCG CCTTCTATCG CCTTCTTGAC
3921 GAGTTCTTCT GAATTGAAAA AGGAAGAGTA TGAGTATTCA ACATTTCCGT GTCGCCCTTA TTCCCTTTTT
3991 TGCGGCATTT TGCCTTCCTG TTTTGTCTCA CCCAGAAACG CTGGTGAAAG TAAAAGATGC TGAAGATCAG
4061 TTGGGTGCAC GAGTGGGTTA CATCGAACTG GATCTCAACA GCGGTAAGAT CCTTGAGAGT TTTGCCCCG
4131 AAGAACGTTT TCCAATGATG AGCACTTTTA AAGTTCTGCT ATGTGGCGCG GTATTATCCC GTATTGACGC
4201 CGGGCAAGAG CAACTCGGTC GCCGCATACA CTATTCTCAG AATGACTTGG TTGAGTACTC ACCAGTCACA
4271 GAAAAGCATC TTACGGATGG CATGACAGTA AGAGAATTAT GCAGTGCTGC CATAACCATG AGTGATAACA
4341 CTGCGGCCAA CTTACTTCTG ACAACGATCG GAGGACCGAA GGAGCTAACC GCTTTTTTTCG ACAACATGGG
4411 GGATCATGTA ACTCGCCTTG ATCGTTGGGA ACCGGAGCTG AATGAAGCCA TACCAAACGA CGAGCGTGAC
4481 ACCACGATGC CTGTAGCAAT GGCAACAACG TTGCGCAAAC TATTAACCTG CGAACTACTT ACTCTAGCTT
4551 CCCGGCAACA ATTAATAGAC TGGATGGAGG CCGATAAAGT TGCAGGACCA CTTCTGCGCT CGGCCCTTCC
4621 GGCTGGCTGG TTTATTGCTG ATAAATCTGG AGCCGGTGAG CGTGGGTCTC GCGGTATCAT TGCAGCACTG
4691 GGGCCAGATG GTAAGCCCTC CCGTATCGTA GTTATCTACA CGACGGGGAG TCAGGCAACT ATGGATGAAC
4761 GAAATAGACA GATCGCTGAG ATAGGTGCCT CACTGATTAA GCATTGGTAA CTGTCAGACC AAGTTTACTC
4831 ATATATACTT TAGATTGATT TAAAACCTCA TTTTAAATTT AAAAGGATCT AGGTGAAGAT CCTTTTGTAT
4901 AATCTCATGA CAAAATCCC TTAACGTGAG TTTTCGTTCC ACTGAGCGTC AGACCCCGTA GAAAAGATCA
4971 AAGGATCTTC TTGAGATCCT TTTTCTGTC GCGTAATCTG CTGCTTGCAA ACAAAAAAAC CACCGCTACC
5041 AGCGGTGGTT TGTTTGCCGG ATCAAGAGCT ACCAACTCTT TTTCCGAAGG TAACTGGCTT CAGCAGAGCG
5111 CAGATACCAA ATACTGTTCT TCTAGTGTAG CCGTAGTTAG GCCACCACTT CAAGAACTCT GTAGCACCGC
5181 CTACATACCT CGCTCTGCTA ATCCTGTTAC CAGTGGCTGC TGCCAGTGGC GATAAGTCGT GTCTTACCGG
5251 GTTGGACTCA AGACGATAGT TACCGGATAA GGCGCAGCGG TCGGGCTGAA CGGGGGGTTT GTGCACACAG
5321 CCCAGCTTGG AGCGAACGAC CTACACCGAA CTGAGATAAC TACAGCGTGA GCTATGAGAA AGCGCCACGC
5391 TTCCCGAAGG GAGAAAGGCG GACAGGTATC CCGTAAGCGG CAGGGTCGGA ACAGGAGAGC GCACGAGGGA
5461 GCTTCCAGGG GGAAACGCCT GGTATCTTTA TAGTCTGTG GGGTTTCGCC ACCTCTGACT TGAGCGTCTGA
5531 TTTTGTGTGAT GCTCGTCAGG GGGGCGGAGC CTATGGAAAA ACGCCAGCAA CGCGGCCTTT TTACGGTTCC
5601 TGGCCTTTTG CTGGCCTTTT GCTCACATGT TCTTTCCTGC GTTATCCCTT GATTCTGTGG ATAACCGTAT
5671 TACCGCCTTT GAGTGAGCTG ATACCGCTCG CCGCAGCCGA ACGACCGAGC GCAGCGAGTC AGTGAGCGAG
5741 GAAGCGGAAG

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Note: signal peptide (342 bp -401 bp) is highlighted in green color; HA sequence (402 bp – 1991 bp) is highlighted in yellow color.

Detailed amino acid sequence of the codon optimized cDNA clone:

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1 MRVPAQLLGL LLLWLPGARC DRICTGITSS NSPHVVKTAT QGEVNVTVGI PLTTTPTKSY FANLKGTKTR
71 GKLCPDCLNC TDLDVALGRP MCVGTTPSAK ASILHEVRPV TSGCFPIIMHD RTKIRQLANL LRGYENIRLS
151 TQNVIDAEKA PGGPYRLGTS GSCP NATSKS GFFATMAWAV PKDNNKNATN PLTVEVPYIC AEGEDQITVW
221 GFHSDDKTQM KNLYGDSNPQ KFTSSANGVT THYVSQIGGF PDQTEDGGLP QSGRIVVDYM MQKPGKTGTI
291 VYQRGVLLPQ KVWCASGRSK VIKGSLPLIG EADCLHEKYG GLNKSHPYYT GEHAKAIGNC PIWVKTPLKL
361 ANGTKYRPPA KLLKERGFFG AIAGFLEGGW EGMIAGWHGY TSHGAHVAV AADLKSTQEA INKIKTNLNS
431 LSELEVKNLQ RLSGAMDELH NEILELDEKV DDLRADTISS QIELAVLLSN EGIINSEDEH LLALERKLLK
501 MLGPSAVDIG NGCFETKHKC NQTCLDRIAA GTFNAGEFSL PTFDSL NITA ASLNDDGLDN HHHHHH

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