

**Source Data Fig. 4. CD19-BBz(86) DNA and amino acid sequences**

**DNA seq.**

5'-

ATGCTTCTCCTGGTGACAAGCCTTCTGCTCTGTGAGTTACCACACCCAGCATTCCCTCCTG  
ATCCCAGACATCCAGATGACACAGACTACATCCTCCCTGTCTGCCTCTCTGGGAGACAGA  
GTCACCATCAGTTGCAGGGCAAGTCAGGACATTAGTAAATATTTAAATTGGTATCAGCA  
GAAACCAGATGGAAGTGTAAACTCCTGATCTACCATACATCAAGATTACACTCAGGAGT  
CCCATCAAGTTTCAAGTGGCAGTGGGTCTGGAACAGATTATTCTCTCACCATTAGCAACCT  
GGAGCAAGAAGATATTGCCACTTACTTTTGCCAACAGGGTAATACGCTTCCGTACACGTT  
CGGAGGGGGGACTAAGTTGGAAATAACAGGCTCCACCTCTGGATCCGGCAAGCCCGGATC  
TGGCGAGGGATCCACCAAGGGCGAGGTGAAACTGCAGGAGTCAGGACCTGGCCTGGTGGC  
GCCCTCACAGAGCCTGTCCGTACATGCACTGTCTCAGGGGTCTCATTACCCGACTATGG  
TGTAAGCTGGATTTCGCCAGCCTCCACGAAAGGGTCTGGAGTGGCTGGGAGTAATATGGG  
GTAGTGAAACCACATACTATAATTCAAGTCTCAAATCCAGACTGACCATCATCAAGGACA  
ACTCCAAGAGCCAAGTTTTCTTAAAAATGAACAGTCTGCAAACCTGATGACACAGCCATTT  
ACTACTGTGCCAAACATTATTACTACGGTGGTAGCTATGCTATGGACTACTGGGGTCAAG  
GAACCTCAGTCACCGTCTCCTCAGCGGCCGCATTTCGTGCCGGTCTTCTGCCAGCGAAGCC  
CACCACGACGCCAGCGCCGCGACCACCAACACCGGCGCCCACCATCGCGTCGCAGCCCCTG  
TCCCTGCGCCCAGAGGCGTGCCGGCCAGCGCGGGGGGCGCAGTGCACACGAGGGGGCTG  
GACTTCGCCTGTGATATCTACATCTGGGCGCCCTTGGCCGGGACTTGTGGGGTCCCTTCTC  
CTGTCACTGGTTATCACCCCTTACTGCAACCACAGGAACAAACGGGGCAGAAAGAAACTC  
CTGTATATATTCAAACAACCATTTATGAGACCAGTACAAACTACTCAAGAGGAAGATGG  
CTGTAGCTGCCGATTTCCAGAAGAAGAAGAAGGAGGATGTGAACTGAGAGTGAAGTTCA  
GCAGGAGCGCAGACGCCCCGCGTACCAGCAGGGCCAGAACCAGCTCTATAACGAGCTCA  
ATCTAGGACGAAGAGAGGAGTACGATGTTTTGGACAAGAGACGTGGCCGGGACCCTGAG  
ATGGGGGGAAAGCCGAGAAGGAAGAACCCTCAGGAAGGCCTGTACAATGAACTGCAGAA  
AGATAAGATGGCGGAGGCCTACAGTGAGATTGGGATGAAAGGCGAGCGCCGGAGGGGCA  
AGGGGCACGATGGCCTTTACCAGGGTCTCAGTACAGCCACCAAGGACACCTACGACGCC  
TTCACATGCAGGCCCTGCCCCCTCGCTAA

**Amino acid seq.**

MLLLVTSLLLCELPHPAFLIPDIQMTQTTSSLSASLGDRVTISCRASQDISKYLNWYQQKP  
DGTVKLLIYHTSRLHSGVPSRFSGSGSDYSLTISNLEQEDIATYFCQQGNTLPYTFGGGT  
KLEITGSTSGSGKPGSGEGSTKGEVQLQESGPGLVAPSQSLSVTCTVSGVSLPDYGVSWIRQ  
PPRKGLEWLGVIWGSETTYNSALKSRLTIKDNSKSQVFLKMNSLQDDTAIYYCAKHYY  
YGGSYAMDYWGQTSVTVSSAAAFVPVFLPAKPTTTPAPRPPTPAPTIASQPLSLRPEACR  
PAAGGAVHTRGLDFACDIYIWAPLAGTCGVLLLSLVITLYCNHRNKRGRKLLYIFKQPFM  
RPVQTTQEEDGCSRFPPEEEEGGCELRVKFSRSADAPAYQQGQNQLYNELNLGRREEYDV  
LDKRRGRDPMEGKPRRKNPQEGLYNELQDKMAEAYSEIGMKGERRRRKGKHDGLYQG  
LSTATKDTYDALHMQUALPPR\*