

## Supplementary S1. PR3 MAb sequences

Red letters: leader sequence

Green letters: Variable region sequence.

**Bold , underline and Italic:** indicate 3 CDR regions

### 172-01

Antibody Heavy Chain

>DNA level

AAGCAGTGGTATCAACGCAGTANTACGCGGGGACAGAGGAGGCCGGTCTGGATTTCGATTCCAGTTCCTCACATT  
CAGTCAGCACTGAACACGGACCCCTCACC**ATGA**ACTTCGGGCTCAGCTTGATTTTCCTTGCCCTCATTTTAAAAGGTGT  
CCAGTGTGAGGTGCAGCTGGAGCAGTCAGGGGGAGACTTAGTGAAGCCTGGAGGGTCCCTGAAACTCTCCTGTGCA  
GCCTCTGGATTCACTTTCAGTACCTATGGCATGTCTTGGGTTGCCAGACTCCAGACAAGAGGCTGGAGTGGGTCGCA  
ACCTTTGTTAGTGGTGGTAGTTATAACTACTATCCAGACAGTGTGAAGGGGGCGATTGCCATTTCCAGAGACAATGCC  
AAGAACGCCCTGTACCTGCAAATGAGCAGTCTGAAGTCTGAGGACACAGCCATGTATTATTGTGTAAGACGGGGGGC  
TTCCTACGATGCTCTGGACTACTGGGGTCAAGGAACCTCAGTCACCGTCTCCTCAGCCAAAACGACACCCCCATCTGTC  
TATCCACTGGCCCCCTGGATCTGCTGCCCAAATAACTCCATGGTGACCCTGGGATGCCTGGTCAAGGGCTATTTCCCTG  
AGCCAGTGACAGTGACCTGGAACCTGGATCCCTGTCCAGCGGTGTGCACACCTTCCCAGCTGTCCTGCAGTCTGACC  
TCTACACTCTGAGCAGCTCAGTGACTGTCCCTCCAGCACCTGGCCAGCGAGACCGTCACCTGCAACGTTGCCACCC  
GGCCAGCAGCACCAAGGTGGACAAGAAAATTGTGCCAGGGATTGTGGTTGTAAGCCTTGCATATGTACAGTCCCAG  
AAGTATCATCTGTCTTCATCTTCCCCCAAAGCCCAAGGATGTGCTCACCATTACTCTGACTCCTAAGGTCACGTGTGTT  
GTGGTAGACATCAGCAAGGATGATCCCAGGTCCAGTTCAGCTGGTTTGTAGATGATGTGGAGGTGCACACAGCTCA  
GACGCAACCCCGGGAGGAGCAGTTCAACAGCACTTTCGCTCAGTCAGTGAACCTCCCATCATGCACCAGGACTGGCT  
CAATGGCAAGGAGTTCAAATGCAGGGTCAACAGTGCAGCTTTCCTGCCCCATCGAGAAAACCATCTCCAAAACCAA  
AGGCAGACCGAAGGCTCCACAGGTGTACACCATTCCACCTCCCAAGGAGCAGATGGCCAAGGATAAAGTCAGTCTGA  
CCTGCATGATAACAGACTTCTTCCCTGAAGACATTACTGTGGAGTGGCAGTGAATGGGCAGCCAGCGGAGAATACTAC  
AAGAACTCAGCCCATCATGGACACAGATGGCTCTTACTTCGTCTACAGCAAGCTCAATGTGCAGAAGAGCAACTGG  
GAGGCAGGAAATACTTTCACCTGCTCTGTGTTACATGAGGGCCTGCACAACCACCATCTGAGAAGAGCCTCTCCCAC  
TCTCCTGGTAAATGATCCAGTGTCTTGGAGCCCTCTGGTCCTACAGGACTCTGACACCTACCTCCACCCCTCCCTGTA  
TAAATAAAGCACCCAGCACTGCCTTGGGACCCTGCAAAAAAAAAAAAAAAAAAATTTGCGAGGACGGTG

>Amino acid level

MNFGLSLIFLALILKGVQCEVQLEQSGGDLVKPGGSLKLSCAASGFTFSTYGMSWVRQTPDKRLEW  
VATFVSGGSYNYYPDSVKGRFAISRDNALYLMSSLKSEDTAMYCYVRRGASYDALDYWGQ  
GTSVTVSSAKTTPPSVYPLAPGSAAQTNSMVTLGCLVKGYFPEPVTVTWNSGSLSSGVHTFPAVLQS  
DLYTLSSSVTVPSSTWPSETVTCNVAHPASSTKVDKKIVPRDCGCKPCICTVPEVSSVFIFPPKPKDVL  
TITLTPKVTCVVVDISKDDPEVQFSWFVDDVEVHTAQTQPREEQFNSTFRSVSELPIMHQDWLNGKE  
FKCRVNSAAFPAPIEKTISKTKGRPKAPQVYTIPPPKEQMAKDKVSLTCMITDFFPEDITVEWQWNG  
QPAENYKNTQPIMDTDGSYFVYSKLVNPKSNWEAGNTFTCSVLHEGLHNHHTKSLSHSPGK

## 172-01

### Antibody light Chain

#### >DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGGGAAATACATCAGGCAGGCAAGGGCATCAAG**ATG**AAGTCACAGAC  
CCAGGTCTTCGTATTTCTACTGCTCTGTGTGTCTGGTGCTCATGGGAGTATTGTGATGACCCAGACTCCCAAATTCCTG  
CTTGATCAGCAGGAGACAGGATTACCATAACCTGCAAGGCCAGTCAGAGTGTGAGTAATGATGTAGCTTGGTACCA  
ACAGAAGCCAGGGCAGTCTCCTAACTGCTGATATACTATGCATCCAATCGCTACACTGGAGTCCCTGATCGCTTCACT  
GGCAGTGGATATGGGACGGATTTCACTTTACCATCAGCACTGTGCAGGCTGAAGACCTGGCAGTTTATTTCTGTCAG  
CAGGATTATAGCTCTCCATTACGTTTCGGCTCGGGGACAAAGTTGGAATAAAACGGGGCTGATGCTGCACCAACTGTA  
TCCATCTTCCCACCATCCAGTGAGCAGTTA

#### >Amino acid level

MKSQTQVFVFLLLCVSGAHGSIVMTQTPKLLVSAGDRITITCKASQSVSNDVAWYQQKPGQSPKLLIYYASNR  
YTGVDPDRFTGSGYGTDFFTISTVQAEDLAVYFCQQDYSSPFTFGSGTKLEIKRA

## 172-03

### Antibody Heavy Chain

#### >DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGACACACAGAAAAACATGAGATCACAGTTCTCTCTACAGTCACTGAAC  
ACACAGGACCTCACC**ATG**GGATGGAGCTATATCATCCTCTTTTGGTAGCAACAGTTACAGATGTCCACTCCAGGTC  
CAGTTGCAGCAGGCTGGGGCCGAGCTTGTGAAGCCTGGGGCTTCAGTGAAGTTGTCCTGCAAGGCTTCTGGCTACAC  
CTTCACCAACTACTGGATGCACTGGGTGAAGCAGAGGCCTGGACAAGGCCTTGAGTGGATTGGAGAGATTAATCCCA  
CCAACGGTGGTATTAATTACAATGAGGAGTTCATAAAGAAGGCCACACTGACTGCAGACAAATCGTCCAACACAGCCT  
ACATGCAGCTCAGCGGCCTGACATCTGAGGACTCTGCGGTCTATTTCTGTTAATTGAGATTATGACGGGGGAGGGGT  
ACTGGGGCCAAGGCACCTTCTCTACAGTCTCCTCAGCCAAAACGACACCCCATCTGTCTATCCACTGGCCCCCTGGATC  
TGCTGCCCAAATAACTCCATGGTGACCCTGGGATGCCTGGTCAAGGGCTATTTCCCTGAGCCAGTGACAGTGACCTG  
GAACTCTGGATCCCTGTCCAGCGGTGTGCACACCTTCC

#### >Amino acid level

MGWSYIILFLVATVTDVHSQVQLQQAGAELVKPGASVKLSCKASGYFTNYWMHWVKQRPQGGLIEWIGEIN  
PTNGGINYNEEFIKKATLTADKSSNTAYMQLSGLTSEDSAVYFCLIEIMTGEGYWGQGTSLTVSSAKTTPPSVYPL  
APGSAAQTNSMVTLGCLVKGYFPEPVTVTWNSGSLSS

## 172-03

### Antibody light Chain

#### >DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGGGAGGCAGGGGGAGCAAGATGGATTACAGGCCAGGTCTC**ATG**  
TTGCTGCTGCTATCGGTATCTGGTACTTGTGGAGACATTTTATGATGACCCAGTCTCCATCCTCCCTGACTGTGTACGCG  
GAGAGAAGGTCACTATGAGTTGTAAGTCCAGTCAGAATCTCTTAGTTAGTGGAACCAAATAACTACTTGGCCTGGC  
ACCAGCAGAAACCAGGACGATCTCCTAAAATGCTGATAATTTGGGCATCCACTAGGGTGTCTGGAGTCCCTGATCGCT  
TCATAGGCAGTGGATCTGGGACGGATTTCCTGACCATCAACAGTGTGCAGGCTGAAGATCTGGCTGTTTATTACT  
GTCAGCAGTCTTCAGCGCTCCGCTCACGTTCCGGTCTGGGACCAAGCTGGAGCTGAAACGGGCTGATGCTCCACCA  
ACTGTATCCACC

>Amino acid level

MDSQAQVLMLLLLSVSGTCGDILMTQSPSSLTVSAGEKVTMSCKSSQNLVSGNQNNYLAWHQKPKGRSPK  
MLIIWASTRVSGVPDRFIGSGSGTDFLTINSVQAEDLAVYYCQQSFSAPLTFGAGTKLELK

## 172-04 GR13033PCS (Note: the 5' leader sequencing still missing)

Antibody Heavy Chain

>DNA level

CTTCCGGAGGTGAAGCTGGAGCAGTCTGGACCTGACCTGGTGAAGCCTGGGGCTTCAGTGAAGATATCCTGCAAG  
GCTTCTGGTTACTCTTTCACTGGCTACTACCTGCACTGGGTGAAACAGAGCCATGGAAAGAGCCTTGAGTGGATTGG  
ACGTGTCAATCCTAACAATGATATTACTACCTACAACCAGAAGTTCAAGGACAAGGCCATATTAAGTGTAGACAAGT  
CATCCAGCACAGCCTACATGGAGTTCGCGAGCCTGACATCTGAGGACTCTGCGGTCTATTACTGTGCAGGGGGGGG  
TAATGCTTTGGACTACTGGGGTCAAGGAACCTCAGTCACCGTCTCCTCAGCCAAAACAACAGCCCCATCGGTCTATC  
CACTGGCCCCCTGTGTGTGGAGATACTGGCTCCTCGGTGACTCTAGGATGCCTGGTCAAGGGTTATTTCCCTGAG  
CCAGTGACCTTGACCTGGAACCTCTGGATCCCTGTCCAGTGGTGTGCACACCTTCCAGCTGTCCTGCAGTCTGACCTC  
TACACCCTCAGCAGCTCAGTGAACCTCGAGCACCTGGCCCAGCCAGTCCATCACCTGCAATGTGGCCACCC  
GGCAAGCAGCACCAAGGTGGACAAGAAAATTGAGCCCAGAGGGCCACAATCAAGCCCTGTCCTCCATGCAAATG  
CCCAGCACCTAACCTCTTGGGTGGACCATCCGTCTTCATCTTCCCTCAAAGATCAAGGATGTACTCATGATCTCCCTG  
AGCCCCATAGTCACATGTGTGGTGGTGGATGTGAGCGAGGATGACCCAGATGTCCAGATCAGCTGGTTTGTGAACA  
ACGTGGAAGTACACACAGCTCAGACACAAACCCATAGAGAGGATTACAACAGTACTCTCCGGGTGGTCACTGCCCT  
CCCCATCCAGCACAGGACTGGATGAGTGGCAAGGAGTTCAAATGCAAGGTCAACAACAAAGACCTCCAGCGCCC  
ATCGAGAGAACCATCTCAAACCCAAAGGGTCAGTAAGAGCTCCACAGGTATATGTTTTGCCTCCACCAGAAGAAG  
AGATGACTAAGAAACAGGTCACTTTGACCTGCATGGTCAAGACTTCATGCCTGAAGACATTTACGTGGAGTGGAC  
CAACAACGGGAAAACAGAGCTAACTACAAGAACTGAACCAAGTCTGGACTTTGATGGTTTTTACTTCATGTACA  
GCAAGCTGAGAGTGGAAAAGAAGAACTGGGTGGAAAGAAATAGCTACTCCTGTTCACTGGTCCACGAGGGTTTGC  
ACAATCACCACACGACTAAGAGCTTTTCCCGGACTCCGGGTAAATGAGCTCAGCACCCACAAAACCTTCAGGTCCAA  
AGAGACACCCCACTCATCTCCATGCTTCCCTGTATAAATAAAGCACCCAGCAATGCCTGGGACCATGTAAAAAAA  
AAAAAAAAAAAAAAAAATTTGCGAGGACGGTG

>Amino acid level

EVKLEQSGPDLVKPGASVKISKASGYSTGYLHWVKQSHGKSLEWIGRVNPNNDITTYNQKFKDKAILTVDKS  
SSTAYMEFRSLTSEDSAVYYCAGGGNALDYWGQGSTVTVSSAKTTAPSVYPLAPVCGDGTGSSVTLGCLVKGYF  
PEPVTLTWNSGSLSSGVHTFPAVLQSDLYTLSSSVTVTSSTWPSQSITCNVAHPASSTKVDKKIEPRGPTIKPCPPC  
KCPAPNLLGGPSVFIKPKIKDVLMIPLIVTCVVVDVSEDDPDVQISWVFNNEVHTAQTQTHREDYNSTLRV

VSALPIQHQDWMSGKEFKCKVNNKDLPAPIERTISKPKGSVRAPQVYVLPPEEEMTKKQVTLTCMVTDFMPE  
DIYVEWTNNGKTELNYKNTEPVLDGDFYFMYSKLRVEKKNWVERNSYSCSVVHEGLHNHHTTKSFSRTPGK

## 172-04 GR13033PCS

### Antibody Light Chain

#### >DNA level

GGTGGATACAGTTGGTGGAGCATCCTCTCTCCAGCTCTCAGAGATGGAGACAGACACACTCCTGTTATGGGTA  
CTGCTCTGGGTTCCAGTTCCACTGGTGACATTGTGCTGACACAGTCTCCCAAATTCCTGCTTGATCAGCAGGAGACA  
GGGTTACCATAACCTGCAAGGCCAGTCAGAGTGTGAGTAATAATGTAGGTTGGTACCAACAGAAGACAGGACAGTCT  
CCTAAACTGCTGATATACTACGCATCCAATCGATACTGGAGTCCCTGATCGCTTCACTGGCAGTGGATATGGGACG  
GATTTCACTTTCACCATCAGCACTGTGCAGGCTGAAGACCTGGCAGTTTATTTCTGTCAGCAGGATTATAACTCTCCGT  
ACACGTTCCGAGGGGGGACCAAGTTGGAAATAAAACGGGCTGATGCTGCACCAACTGTATCCATCTTCCCACCATCCA  
GTGAGCAGTTAACATCTGGAGGTGCCTCAGTCGTGTGCTTCTTGAACAACTTCTACCCCAAAGACATCAATGTCAAGT  
GGAAGATTGATGGCAGTGAACGACAAAATGGCGTCTGAACAGTTGGACTGATCAGGACAGCAAAGACAGCACCTA  
CAGCATGAGCAGCACCCCTCACGTTGACCAAGGACGAGTATGAACGACATAACAGCTATACCTGTGAGGCCACTCACA  
AGACATCAACTTCACCCATTGTCAAGAGCTTCAACAGGAATGAGTGTTAGAGACAAAGGTCCTGAGACGCCACCACCA  
GCTCCCCAGCTCCATCCTATCTTCCCTTCTAAGGTCTTGGAGGCTTCCCCACAAGCGACCTACCACTGTTGCGGTGCTCC  
AAACCTCCTCCCCACCTCCTTTTCTCCTCCTCCCTTCTTGGCTTTTATCATGCTAATATTTGCAGAAAATATTCAATAA  
AGTGAGTCTTGCACCTGAAAAAAAAAAAAAAAAAATTTGCGAGGACGGTG

#### >Amino acid level

METDTLLLWVLLXWVPGSTGEIVLTQSPAIMSASLGEEITLTCSASSSVSYMHWYQQKSGTSPKLL  
IYSTSNLASGVPSRFSGSGSGTFYSLTISSEVEAEDAADYYCHQWSSYGTFGGGTKLEIKRADAAPT  
VSIFFPSSEQLTSGGASVVCFLNFPYKPDINVKWKIDGSERQNGVLNSWTDQDSKDYSSMSSTLT  
LTKDEYERHNSYTCEATHKTSTSPIVKSFNRECE

## 172-05

### Antibody Heavy Chain

#### >DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGGACCACAGCCCCTGAAGACACTGACTCTAACTATGGAATGGAGCTG  
GGTCTTTCTCTTCTCTGTCACTAAGTACAGGTGTCCACTCTGAGGTCCAGCTGCAGCAGTCTGGACCTGACCTGGTG  
AAGCCTGGGGCTTCAGTGAAGATATCTGCAAGGCTTCTGGTTACTCTTTCAGTGGCTACTACCTGCACTGGGTGAAA  
CAGAGCCATGGAAAGAGCCTTGAGTGGATTGGACGTGTCAATCCTAACAATGATATTACTACCTACAACCAGAAGTTC  
AAGGACAAGGCCATATTAAGTGTAGACAAGTCATCCAGCACAGCCTACATGGAGTTCGCGAGCCTGACATCTGAGGA  
CTCTGCGGTCTATTACTGTGCAGGGGGGGGTAATGCTTTGGACTACTGGGGTCAAGGAACCTCAGTCACCGTCTCCTC  
AGCCAAAACAACAGCCCCATCGGTCTATCCACTGGCCCCTGTGTGTGGAGATACAACTGGCTCCTCGGTGACTCTAGG

ATGCCTGGTCAAGGGTTATTTCCCTGAGCCAGTGACCTTGACCTGGAACCTCTGGATCCCTGTCCAGCGGTGTGCACAC  
CTTCC

>Amino acid level

MEWSWVFLFLLSVTTGVHSEVQLQQSGPDLVKPGASVKISCKASGYSFTGYLHWVKQSHGKSLEWIGRVNP  
NNDITTYNQFKDKAILTVDKSSSTAYMEFRSLTSEDSAVYYCAGGGNALDYWGQGTSVTVSS

## 172-05

Antibody light Chain

>DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGAGAAATACATCAGGCAGGCAAGGGCATCAAGATGAAGTCACAGAC  
CCAGGTCTTCGTATTTCTACTGCTCTGTGTCTGGTGCTCATGGGAGGATTGTGATGACCCAGACTCCCAAATTCCTG  
CTTGATCAGCAGGAGACAGGGTTACCATAACCTGCAAGGCCAGTCAGAGTGTGAGTAATAATGTAGGTTGGTACCA  
ACAGAAGACAGGACAGTCTCCTAAACTGCTGATATACTACGCATCCAATCGATACTGGAGTCCCTGATCGCTTCACT  
GGCAGTGGATATGGGACGGATTTCACTTTCACCATCAGCACTGTGCAGGCTGAAGACCTGGCAGTTTATTTCTGTGAG  
CAGGATTATAACTCTCCGTACACGTTCCGAGGGGGGACCAAGTTGGAATAAAACGGGCTGATGCTGCACCAACTGT  
ATCCATCTTCCCACCATCCAGTGAGCAGTTA

>Amino acid level

MKSQTQVFVFLLCVSGAHGRIVMTQTPKFLLVSAGDRVITITCASQSVSNNVGWYQQKTGQSPKLLIYASN  
RYTGVPDRFTGSGYGTDFTFTISTVQAEDLAVYFCQQDYNSPYTFGGGTKLEIKRA

## 206-1

Antibody Heavy Chain

>DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGGATATGAGCCCTATCTTCTCTACAGACACTGAATCTCAAGGTCCTTAC  
AATGCAATGCAGCTGGGTATCTTCTTCTGATGGCAGTGGTTACAGGGGTCAATTCAGAGGTTGAGCTGCAGCAGT  
CTGGGGCAGAGGTTGTGAAGCCAGGGGCCTCAGTCAAGTTGTCCTGCACAGCTTCTGGCTTCAACATTAAAGACACCT  
ATATGTACTGGGTGAAGCAGAGGCCTGAACAGGGCCTGGAGTGGATTGGAAGGATTGATCCTGCGAATGGTAATAC  
TAAATATGACCCGAAGTTCCAGGGCAAGGCCACTATAACAACAGACACATCCTCCAACACAGCCTACCTGCAGCTCAG  
CAGCCTGACATCTGAGGACACTGCCGTCTATTACTGTGCTAGACGGAGTAGCGGTTTTGACTGCTGGGGCCAAGGCA  
CCTCTCTCAGTCTCTCAGCCAAAACGACACCCCCATCTGTCTATCCACTGGCCCCTGGATCTGCTGCCCAAATAAC  
TCCATGGTGACCCTGGGATGCCTGGTCAAGGGCTATTTCCCTGAGCCAGTGACAGTGACCTGGAACCTCTGGATCCCTG  
TCCAGCGGTGTGCACACCTTCC

>Amino acid level

MQCSWVIFFLMAVVTGVNS EVQLQQSGAEVVKPGASVKLSCTAS GFNIKDTYMYWVKQRPEQGLEWIGRI DP  
ANGNTKYDPKFQGKATITTTDSSNTAYLQLSSLTSED AVYYCAR RSSGFDCWGQGTTTLTVSS

**206-1**

Antibody light Chain

>DNA level

AAGCAGTGGTATCAACGCAGAGTACGCGGGGAAATACATCAGGCAGGCAAGGGCATCAAG **ATG**AAGTCACAGAC  
CCAGGTCTTCGTATTTCTACTGCTCTGTGTGTCTGGTGCTCATGGGAGTATTGTGATGACCCAGACTCCCAAATTCCTG  
CTTGATCAGCAGGAGACAGGATTACCATAACCTGCAAGGCCAGTCAGAGTGTGAGTAATGATGTAGCTTGGTACCA  
ACAGAAGCCAGGGCAGTCTCCTAACTGCTGATATACTATGCATCCAATCGCTACACTGGAGTCCCTGATCGCTTCACT  
GGCAGTGGATATGGGACGGATTTCACTTTCACCATCAGCACTGTGCAGGCTGAAGACCTGGCAGTTTATTTCTGTCAG  
CAGGATTATAGCTCTCCATTCACGTTCTGGCTCGGGGACAAAGTTGGAATAAAACGGGCTGATGCTGCACCAACTGTA  
TCCATCTTCCCACCATCCAGTGAGCAGTTA

>Amino acid level

MKSQTQVFVFLLCVSGAHG **SIV**MTQTPKLLVSAGDRITITC KASQSVSNDVAWYQQKPGQSPKLLIY YASNR  
YTGVDPDRFTGSGYGTDFFTISTVQAEDLAVYFC QQDYSSPFTFGSGTKLEIKRA