

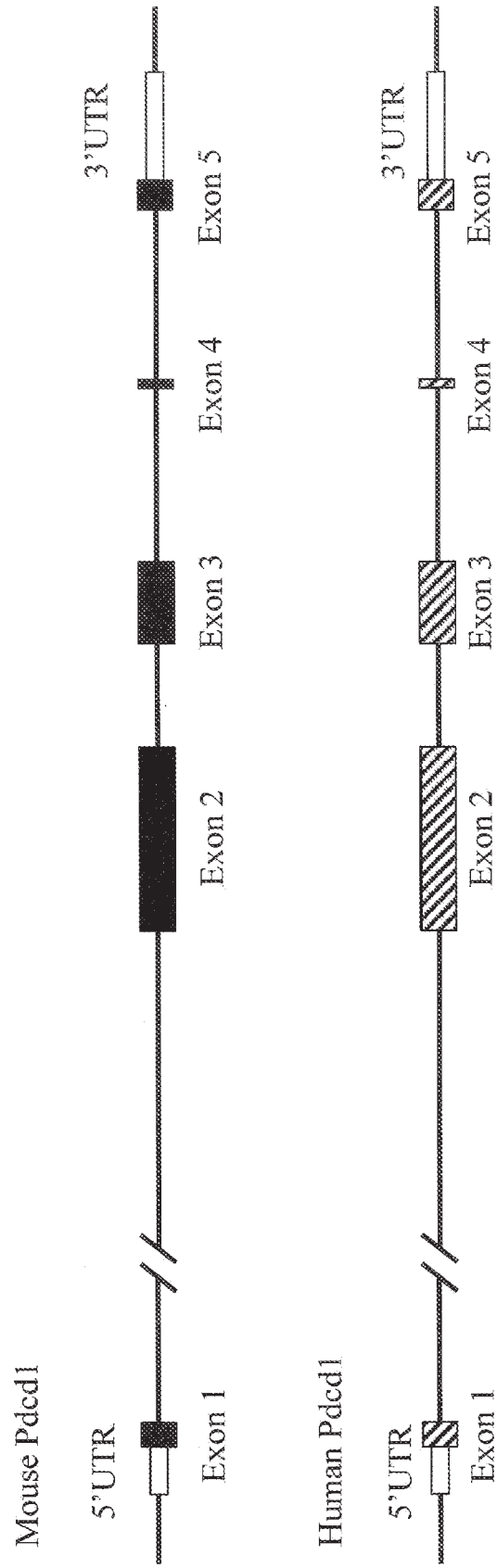


Figure 1

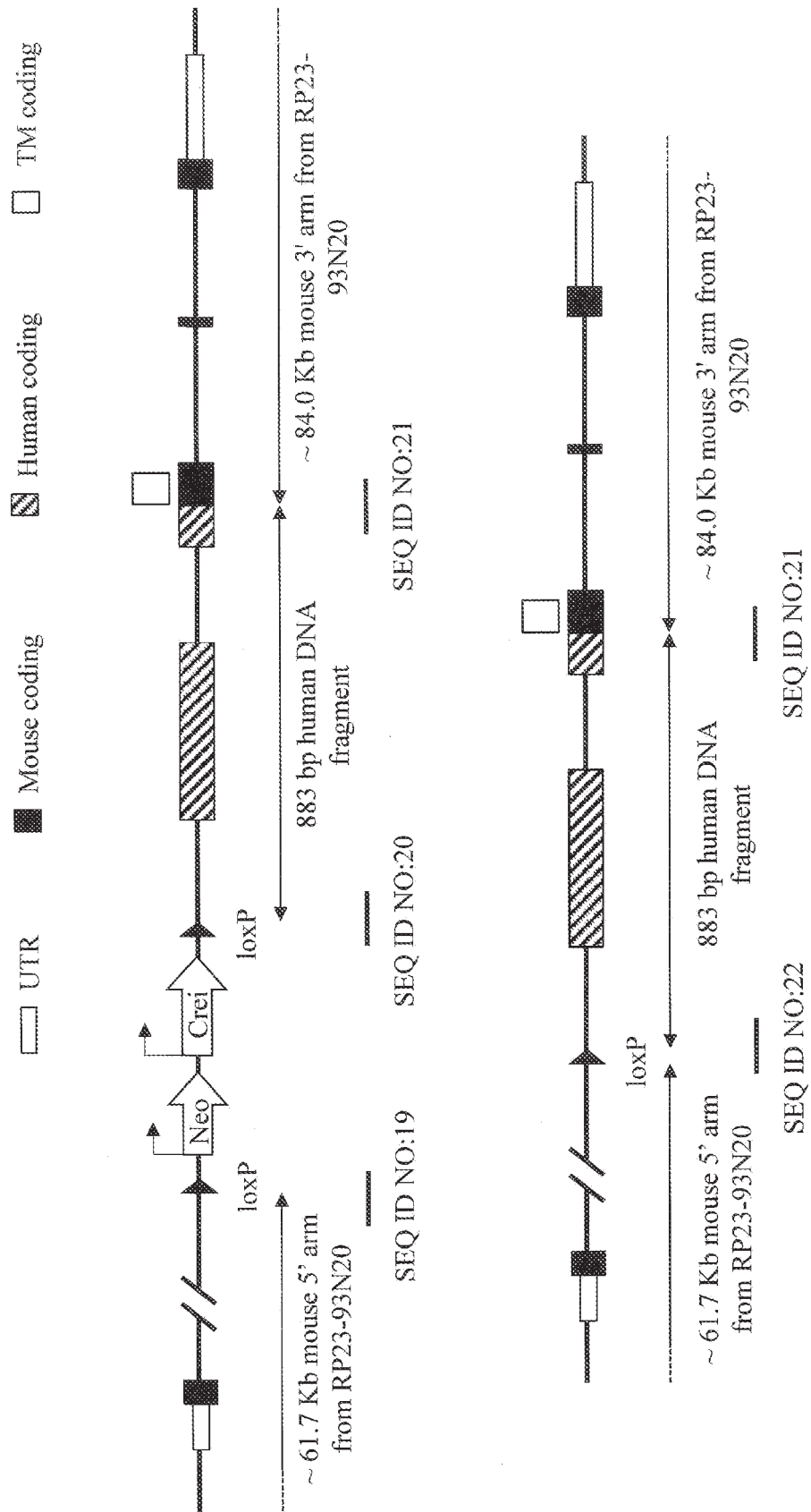


Figure 2

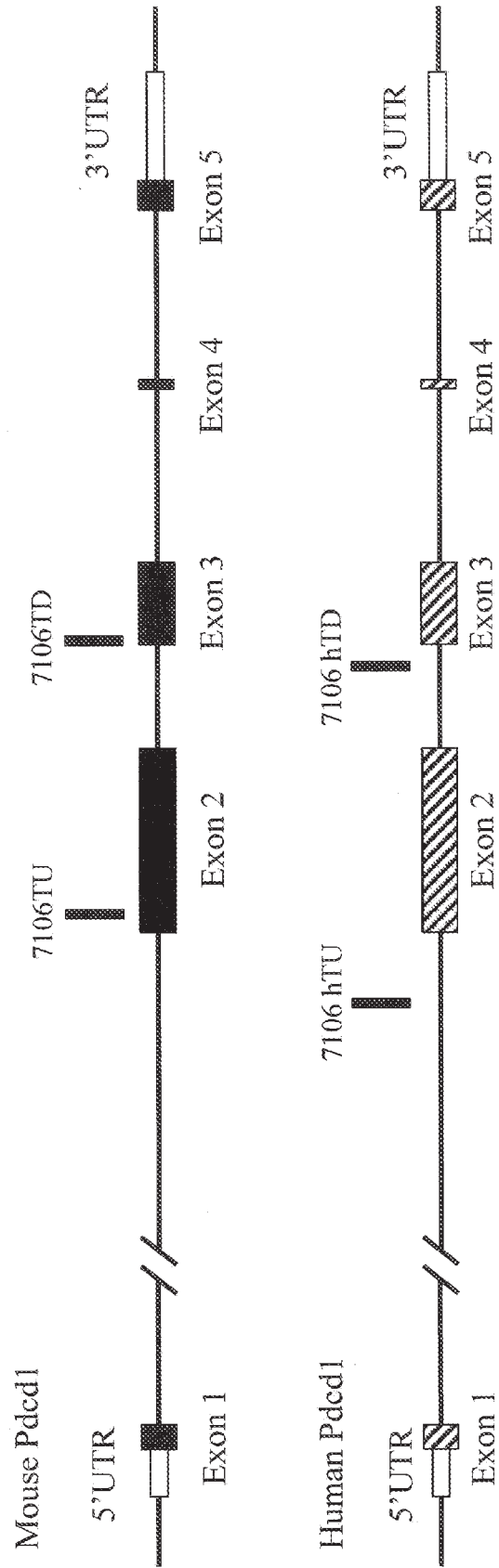


Figure 3

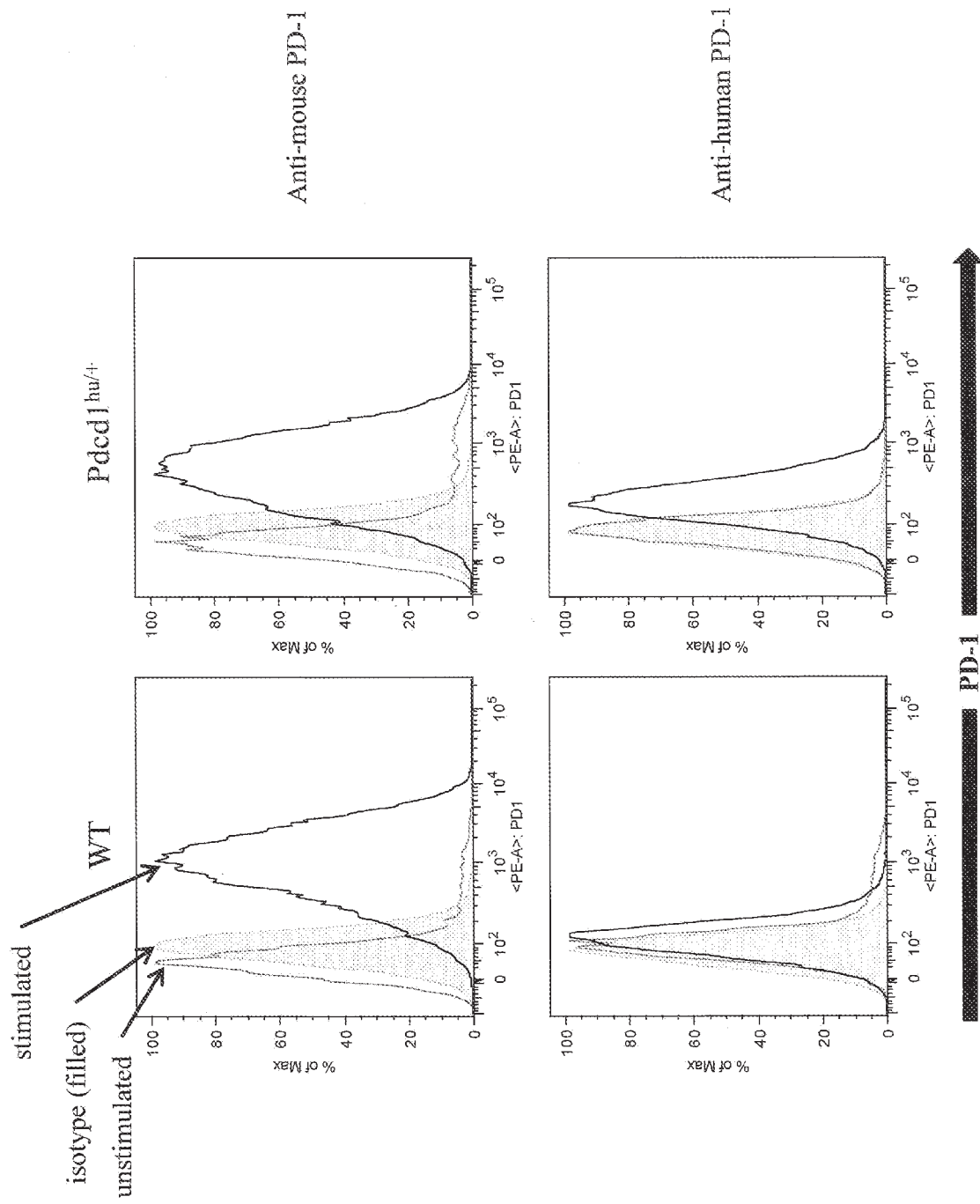


Figure 4

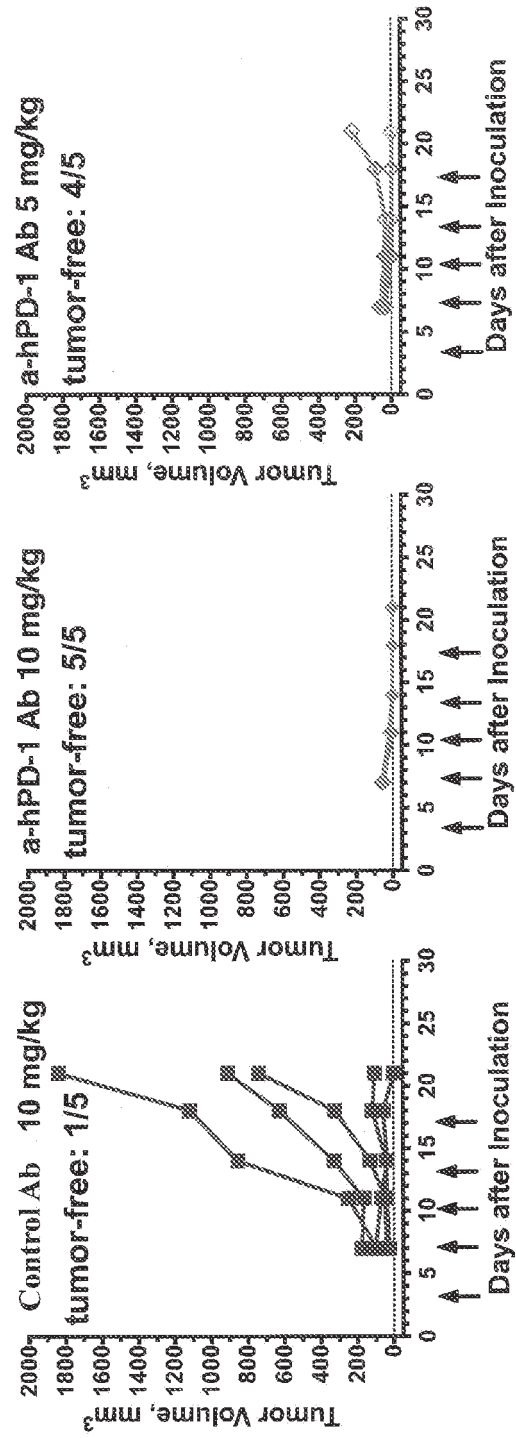


Figure 5

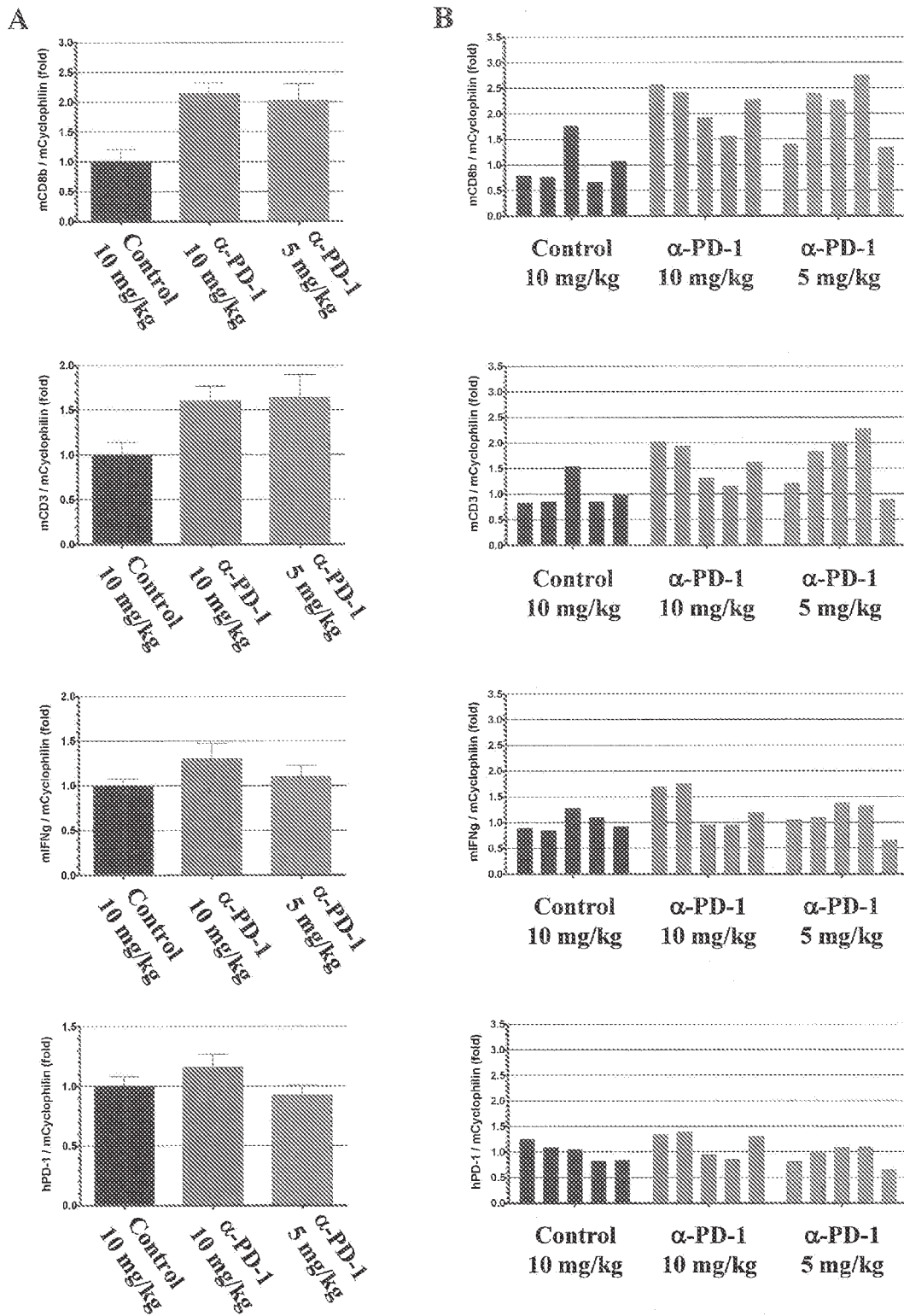


Figure 6

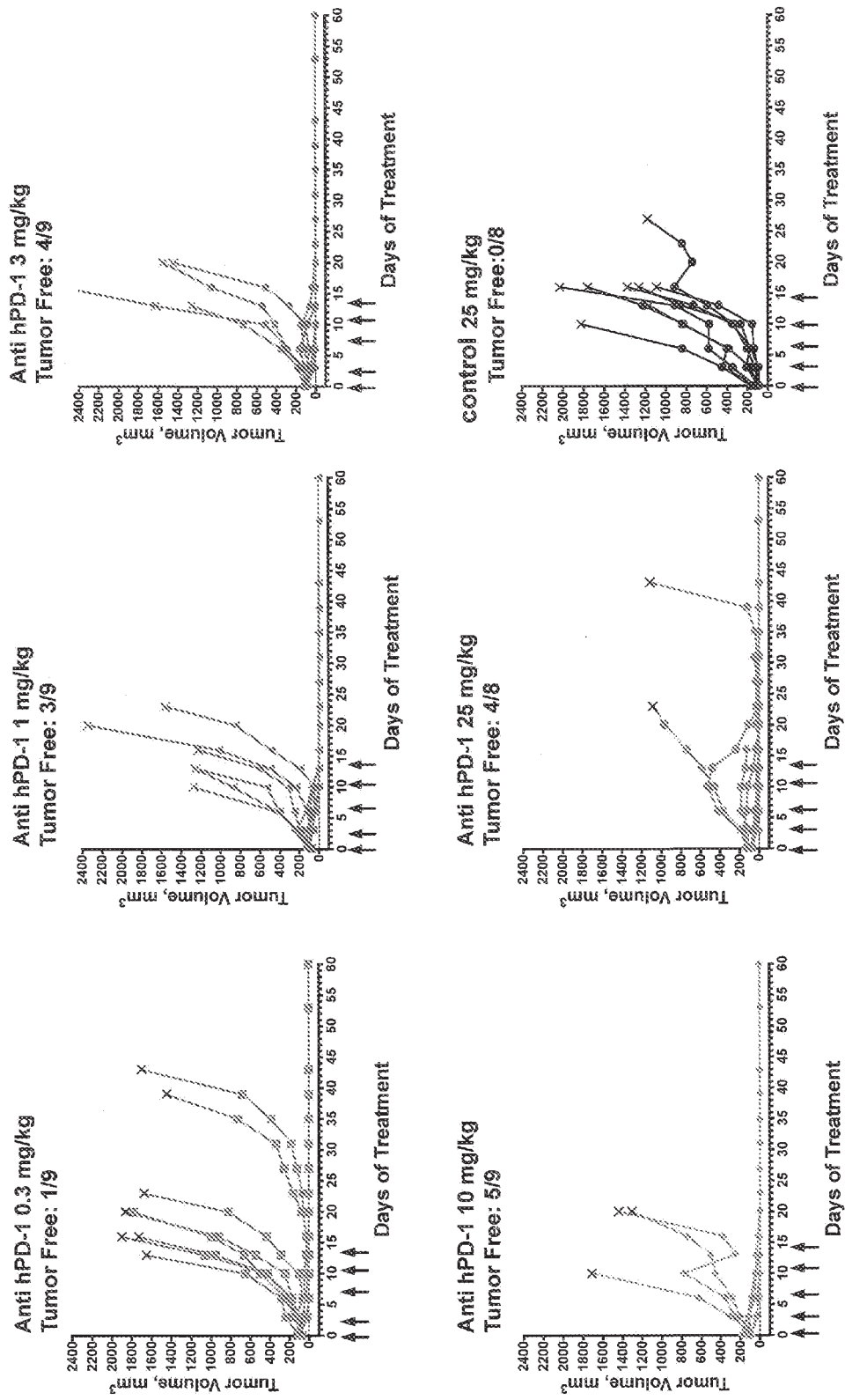


Figure 7

Figure 8

Mouse Pcdl mRNA (NM_008798.2)

TGAGCAGCGGGGAGGAGGAAGAGGAGACTGCTACTGAAGGCGACACTGCCAGGGGCT
CTGGGCATGTGGGTCCGGCAGGTACCCTGGTCATTCACTTGGGCTGTGCTGCAGT
TGAGCTGGCAATCAGGGTGGCTTCTAGAGGTCCCCAATGGGCCCTGGAGGTCCCT
CACCTTCTACCCAGCCTGGCTCACAGTGTGAGAGGGAGCAAATGCCACCTTCACC
TGCAGCTTGTCCAACCTGGTCGGAGGATCTTATGCTGAACTGGAACCGCCTGAGTC
CCAGCAACCAGACTGAAAAACAGGCCGCCTTCTGTAATGGTTTGAGCCAACCCGT
CCAGGATGCCCCGCTTCCAGATCATAACAGCTGCCCAACAGGCATGACTTCCACATG
AACATCCTTGACACACGGCGCAATGACAGTGGCATCTACCTCTGTGGGGCCATCT
CCCTGCACCCCAAGGCCAAAATCGAGGAGAGCCCTGGAGCAGAGCTCGTGGTAA
CAGAGAGAATCCTGGAGACCTCAACAAGATATCCCAGCCCCCTCGCCCAAACCAGA
AGGCCGGTTTCAAGGCATGGTCATTGGTATCATGAGTGCCCTAGTGGGTATCCCT
GTATTGCTGCTGCTGGCCTGGGCCCTAGCTGTCTTCTGCTCAACAAGTATGTCAG
AGGCCAGAGGAGCTGGAAGCAAGGACGACACTCTGAAGGAGGAGCCTTCAGCAG
CACCTGTCCCTAGTGTGGCCTATGAGGAGCTGGACTTCCAGGGACGAGAGAAGAC
ACCAGAGCTCCCTACCGCCTGTGTGCACACAGAATATGCCACCATTGTCTTCACT
GAAGGGCTGGGTGCCTCGGCCATGGGACGTAGGGGCTCAGCTGATGGCCTGCAG
GGTCCTCGGCCTCCAAGACATGAGGATGGACATTGTTCTTGGCCTCTTTGACCAG
ATTCTTCAGCCATTAGCATGCTGCAGACCCTCCACAGAGAGCACCGGTCCGTCCCTCAG
TCAAGAGGAGCATGCAGGCTACAGTTCAGCCAAGGCTCCCAGGGTCTGAGCTAGCTGG
AGTGACAGCCCAGCGCCTGCACCAATTCCAGCACATGCACTGTTGAGTGAGAGCTCAC
TTCAGGTTTACCACAAGCTGGGAGCAGCAGGCTTCCCGGTTTCTATTGTCACAAGGTG
CAGAGCTGGGGCCTAAGCCTATGTCTCCTGAATCCTACTGTTGGGCACTTCTAGGGACT
TGAGACACTATAGCCAATGGCCTCTGTGGGTTCTGTGCCTGGAAATGGAGAGATCTGA
GTACAGCCTGCTTTGAATGGCCCTGTGAGGCAACCCCAAAGCAAGGGGGTCCAGGTAT
ACTATGGGCCCAGCACCTAAAGCCACCCTTGGGAGATGATACTCAGGTGGGAAATTCTG
TAGACTGGGGGACTGAACCAATCCCAAGATCTGGAAAAGTTTTGATGAAGACTTGAAA
AGCTCCTAGCTTCGGGGGTCTGGGAAGCATGAGCACTTACCAGGCCAAAAGCTCCGTGA
GCGTATCTGCTGTCCTTCTGCATGCCAGGTACCTCAGTTTTTTTCAACAGCAAGGAAA
CTAGGGCAATAAAGGGAACCAGCAGAGCTAGAGCCACCCACACATCCAGGGGGCACT
TGACTCTCCCTACTCCTCCTAGGAACCAAAAAGGACAAAGTCCATGTTGACAGCAGGGA
AGGAAAGGGGGATATAACCTTGACGCAAACCAACACTGGGGTGTTAGAATCTCCTCAT
TCACTCTGTCCTGGAGTTGGGTTCTGGCTCTCCTTCACACCTAGGACTCTGAAATGAGC
AAGCACTTCAGACAGTCAGGGTAGCAAGAGTCTAGCTGTCTGGTGGGCACCCAAAATG
ACCAGGGCTTAAGTCCCTTTCTTTGGTTTAAGCCCGTTATAATTAAATGGTACCAAAA
GCTTTAAAAA (SEQ ID NO:1)

Mouse PD-1 amino acid (Q02242)

MWVRQVPWSFTWAVLQLSWQSGWLLEVPNG(PWRSLTFYPAWLTVSEGANATFTCSL
SNWSEDLMLNWNRLSPSNQTEKQAAFCNGLSQPVQDARFQIIQLPNRHDFHNMILDT
RRNDSGIYLCGAISLHPKAKIEESPG)AELVTERILETSTRYPSPSPKPEGRFQGMVIGI
MSALVGIPVLLLLAWALAVFCSTSMSEARGAGSKDDLKEEPSAAPVPSVAYEELDFQGREKT
PELPTACVHTEYATIVFTEGLGASAMGRRGSADGLQGPRPPRHEDGHCSWPL (SEQ ID NO:2)

[illegible]

Figure 8, continued...

Human PD-1 amino acid (Q15116)

MQIPQAPWPVVWAVLQLGWRPGWFLDSPDRPWNP(PTFSPALLVVTEGDNATFTCSFS
NTSESFVLNWYRMSPSNQTDKLAAPEDRSQPGQDCRFRVTQLPNGRDFHMSVVRAR
RNDSTYLCAISLAPKAQIKESLRAELRVT)ERRAEVPTAHPSPSPRPAGQFQTLVVG
VVGGLLGSLLVLLVWVLAVICSRAARGTIGARRTGQPLKEDPSAVPVFSVDYGELDFQWREKTP
EPPVPCVPEQTEYATIVFPSGMGTSSPARRGSADGPRSAQPLRPEDGHCSWPL (SEQ ID NO:4)

Humanized Pdcd1 mRNA

TGAGCAGCGGGGAGGAGGAAGAGGAGACTGCTACTGAAGGCGACACTGCCAGGGGCT
CTGGGCATGTGGGTCCGGCAGGTACCCTGGTCATTCACTTGGGCTGTGCTGCAGT
TGAGCTGGCAATCAGGGTGGCTTCTAG(ACTCCCCAGACAGGCCCTGGAACCCCC
CCACCTTCTCCCCAGCCCTGCTCGTGGTGACCGAAGGGGACAACGCCACCTTCAC
CTGCAGCTTCTCCAACACATCGGAGAGCTTCGTGCTAAACTGGTACCGCATGAGC
CCCAGCAACCAGACGGACAAGCTGGCCGCCTTCCCCGAGGACCGCAGCCAGCCC
GGCCAGGACTGCCGCTTCCGTGTACACAACCTGCCCAACGGGCGTGACTTCCACA
TGAGCGTGGTCAGGGCCCCGGCGCAATGACAGCGGCACCTACCTCTGTGGGGCCA
TCTCCCTGGCCCCCAAGGCGCAGATCAAAGAGAGCCTGCGGGGCAGAGCTCAGGG
TGACAGAGAGAAGGGCAGAAAGTGCCACAGCCCACCCCAGCCCCTCACCCAGGC
CAGCCGGCCAGTTCCAAACCCTG)GTCATTGGTATCATGAGTGCCCTAGTGGGTAT
CCCTGTATTGCTGCTGCTGGCCTGGGCCCCTAGCTGTCTTCTGCTCAACAAGTATG
TCAGAGGCCAGAGGAGCTGGAAGCAAGGACGACACTCTGAAGGAGGAGCCTTCA
GCAGCACCTGTCCCTAGTGTGGCCTATGAGGAGCTGGACTTCCAGGGACGAGAG
AAGACACCAGAGCTCCCTACCGCCTGTGTGCACACAGAATATGCCACCATTGTCT
TCACTGAAGGGCTGGGTGCCTCGGCCATGGGACGTAGGGGCTCAGCTGATGGCC
TGCAGGGTCTCTCGGCCTCCAAGACATGAGGATGGACATTGTTCTTGGCCTCTTTG
ACCAGATTCTTCAGCCATTAGCATGCTGCAGACCCTCCACAGAGAGCACCGGTCCGTCC
CTCAGTCAAGAGGAGCATGCAGGCTACAGTTCAGCCAAGGCTCCCAGGGTCTGAGCTA
GCTGGAGTGACAGCCCAGCGCCTGCACCAATTCCAGCACATGCACTGTTGAGTGAGAG
CTCACTTCAGGTTTACCACAAGCTGGGAGCAGCAGGCTTCCCGGTTTCCTATTGTCACA
AGGTGCAGAGCTGGGGCCTAAGCCTATGTCTCCTGAATCCTACTGTTGGGCACTTCTAG
GGACTTGAGACACTATAGCCAATGGCCTCTGTGGGTTCTGTGCCTGGAAATGGAGAGA
TCTGAGTACAGCCTGCTTTGAATGGCCCTGTGAGGCAACCCCAAAGCAAGGGGGTCCA
GGTATACTATGGGCCCAGCACCTAAAGCCACCCTTGGGAGATGATACTCAGGTGGGAA
ATTCGTAGACTGGGGGACTGAACCAATCCCAAGATCTGGAAAAGTTTTGATGAAGACT
TGAAAAGCTCCTAGCTTCGGGGGTCTGGGAAGCATGAGCACTTACCAGGCAAAAGCTC
CGTGAGCGTATCTGCTGTCCTTCTGCATGCCCAGGTACCTCAGTTTTTTTCAACAGCAA
GGAACTAGGGCAATAAAGGGAACCAGCAGAGCTAGAGCCACCCACACATCCAGGGG
GCACTTGACTCTCCCTACTCCTCCTAGGAACCAAAAAGGACAAAGTCCATGTTGACAGC
AGGGAAGGAAAGGGGGATATAACCTTGACGCAAACCAACACTGGGGTGTTAGAATCT
CCTCATTCACTCTGTCTTGGAGTTGGGTTCTGGCTCTCCTTACACCTAGGACTCTGAAA
TGAGCAAGCACTTCAGACAGTCAGGGTAGCAAGAGTCTAGCTGTCTGGTGGGCACCCA
AAATGACCAGGGCTTAAGTCCCTTTTCTTTGGTTTAAGCCCGTTATAATTAATGGTAC
CAAAAGCTTTAAAAA
 (SEQ ID NO:5)

Figure 8, continued...

Humanized PD-1 amino acid

MWVRQVPWSFTWAVLQLSWQSGWLLDSPDRPWNP(PTFSPALLVVTEGDNATFTCSFS
NTSESFVLNWYRMSPSNQTDKLAAFPEDRSQPGQDCRFRVTQLPNGRDFHMSVVRAR
RNDSGTYLCGAISLAPKAQIKESLRAELRVT)ERRAEVPTAHPSPSPRPAGQFQTLVIGI
 MSALVGIPVLLLLAWALAVFCSTSMSEARGAGSKDDTLKEEPSAAPVPSVAYEELDFQGREKT
 PELPTACVHTEYATIVFTEGLGASAMGRRGSADGLQGPRPPRHEDGHCSWPL (SEQ ID NO:6)

Human 883 bp DNA fragment

AAGAGGCTCTGCAGTGGAGGCCAGTGCCCATCCCCGGGTGGCAGAGGCCCCAGCAGA
 GACTTCTCAATGACATTCCAGCTGGGGTGGCCCTTCCAGAGCCCTTGCTGCCCCGAGGGA
 TGTGAGCAGGTGGCCGGGGAGGCTTTGTGGGGCCACCCAGCCCCTTCCTCACCTCTCTC
 CATCTCTCAGACTCCCCAGACAGGCCCTGGAACCCCCCACCTTCTCCCCAGCCCTGCT
 CGTGGTGACCGAAGGGGACAACGCCACCTTCACCTGCAGCTTCTCCAACACATCGGAG
 AGCTTCGTGCTAAACTGGTACCGCATGAGCCCCAGCAACCAGACGGACAAGCTGGCCG
 CCTCCCCGAGGACCGCAGCCAGCCCGGCCAGGACTGCCGCTTCCGTGTACACAACCT
 GCCAACGGGCGTGACTTCCACATGAGCGTGGTCAGGGCCCCGGCGCAATGACAGCGGC
 ACCTACCTCTGTGGGGCCATCTCCCTGGCCCCCAAGGCGCAGATCAAAGAGAGCCTGC
 GGGCAGAGCTCAGGGTGACAGGTGCGGCCTCGGAGGCCCCGGGGCAGGGGTGAGCTG
 AGCCGGTCCTGGGGTGGGTGTCCCCTCCTGCACAGGATCAGGAGCTCCAGGGTTCGTAG
 GGCAGGGACCCCCCAGCTCCAGTCCAGGGCTCTGTCCTGCACCTGGGGAATGGTGACC
 GGCATCTCTGTCTCTAGCTCTGGAAGCACCCCAGCCCCTCTAGTCTGCCCTCACCCCT
 GACCCTGACCCTCCACCCTGACCCCGTCCTAACCCCTGACCTTTGTGCCCTTCCAGAGA
 GAAGGGCAGAAGTGCCACAGCCCACCCCAGCCCCTCACCCAGGCCAGCCGGCCAGTT
 CCAAACCCTG (SEQ ID NO:23)