

**Data S2, related to Figures 1-6.** Amino acid sequences of heavy chain, light chain and J-chain used in the recombinant KRAS<sup>G12D</sup>-specific IgA1/IgG4 and IDH1<sup>R132H</sup>-specific IgA1/IgG4 antibody production.

**$\alpha$ KRas<sup>G12D</sup> IgA1\_Heavy Amino acid sequence**

MGWSCILFLVATATGVHSEVQLVESGGGLVQPGGSLRLSCAASGFTFSSYAMSWVRQA  
PGKGLEWVSTISRSGHSTYYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCAK  
RFGSIVFDYWGQGLVTVSSASPTSPKVFPLSLCSTQPDGNVVIACL VQGFFPQEPLSVT  
WSESGQGV TARNFPPSQDASGDLYTTSSQLTLPATQCLAGKSVTCHVKHYTNPSQDVT  
VPCVPSTPPTPSPSTPPTPSPSCCHPRLSLHRPAEDLLL GSEANLTCTLTGLRDASGVTF  
TWTSSGKSAVQGP PERDLGCGYSVSSVLPGCAEPWNHGKTFTCTAAYPESKTPLTATL  
SKSGNTFRPEVHLLPPPSEELALNELVTLTCLARGFSPKDVLRWLQGSQELPREKYLT  
WASRQEPSQGTTF AVTSILRVAAEDWKKGDTFSCMVGHEALPLAFTQKTIDRLAGKPT  
HVNVSVMMAEVDGTCY-

**$\alpha$ KRas<sup>G12D</sup> IgG4\_Heavy Amino acid sequence**

MGWSCILFLVATATGVHSEVQLVESGGGLVQPGGSLRLSCAASGFTFSSYAMSWVRQ  
APGKGLEWVSTISRSGHSTYYADSVKGRFTISRDN SKNTLYLQMNSLRAEDTAVYYCA  
KRFGSIVFDYWGQGLVTVSSASTKGPSVFPLAPCSRSTSESTAALGCLVKDYFPEPVTV  
SWNSGALTS GVHTFPAVLQSSGLYSLSSVVTVPSSSLGTKTYTCNVDHKPSNTKVDKRV  
ESKYGPPCSPCAPEFLGGPSVFLFPPKPKDTLMISRTPEVTCVVDVDSQEDPEVQFNWY  
VDGVEVHNAKTKPREEQFNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKGLPSSIEKTI  
KAKGQPREPQVYTLPPSQEEMTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTTP  
VLDSGDSFFLYSRLTVDKSRWQEGNVFSCSV MHEALHNHYTQKSLSLSLGK-

**$\alpha$ KRas<sup>G12D</sup> Kappa\_Light Amino acid sequence**

MGWSCILFLVATATGVHSDLVMTQSPATLSLSPGERATLSCKSSQSLFNSRTRKNYLA  
WYQQKPGQAPRLLIYWASTRESGIPGRFSGSGSGTDFLTISSELPEDFAVYYCKQSYHYM  
YTFGQGTKVEIKRTVAAPSVFIFPPSDEQLKSGTASV VCLLNNFYFPREAKVQWKVDNAL  
QSGNSQESVTEQDSKDYSLSSLTLSKADYEEKHKVYACEVTHQGLSSPVTKSFNRGE  
C-

**J-chain Amino acid sequence**

MKNHLLFWGVLA VFIKAVHVKAQEDERIVLVDNKCKCARITSRIIRSSDPNEDIVERNI  
RIIVPLNNRENISDPTSPLRTRFVYHLSDLCKKCDPTEVELDNQIVTATQSNICDEDSATET  
CYTYDRNKCYTAVVPLVYGGGETK MVETALTPDACYPD-

**$\alpha$ IDH1<sup>R132H</sup> IgA1\_Heavy Amino acid sequence**

MGWSCILFLVATATGVHSQVVKLQQSGPELVKPGASVKISCKASGYAFSSSWMNWVK  
QRPKGLEWIGRIYPGDGDTNYNGKFKGKATLTADKSSSTANMQLSSLTSEDSAVYFC  
AREGSYYTYDVRAIYVVYGM DYWGQGT TVTVSSASPTSPKVFPLSLCSTQPDGNVVIAC  
LVQGFPPQEPLSVTWSESGQGV TARNFPPSQDASGDLYTTSSQLTLPATQCLAGKSVTC  
HVKHYTNPSQDVTVPCVPVSTPPTPSPSTPPTPSPSCCHPRLSLHRPALEDLLLGSEANLT  
CTLTGLRDASGVTFTWTPSSGKSAVQGP PERDLGCGCYSVSSVLPGCAEPWNHGKTFTCT  
AAYPEKTPLTATLSKSGNTRPEVHLLPPPSEELALNELVTLTCLARGFSPKDVLVRWL  
QGSQELPREKYLTWASRQEPSQGTTF AVTSILRVA AEDWKKGDTFSCMVGHEALPLA  
FTQKTIDRLAGKPTHVNVSVVMAEVDGTCY-

**$\alpha$ IDH1<sup>R132H</sup> IgG4\_Heavy Amino acid sequence**

MGWSCILFLVATATGVHSQVVKLQQSGPELVKPGASVKISCKASGYAFSSSWMNWVK  
QRPKGLEWIGRIYPGDGDTNYNGKFKGKATLTADKSSSTANMQLSSLTSEDSAVYFC  
AREGSYYTYDVRAIYVVYGM DYWGQGT TVTVSSASTKGPSVFPLAPCSRSTSESTAALG  
CLVKDYFPEPVTVSWNSGALTS GVHTFPAVLQSSGLYSLSSVTVPSSSLGTKTYTCNV  
DHKPSNTKVDKR VESKYGPPCPCPAPEFLGGPSVFLFPPKPKDTLMISRTPEVTCVVVD  
VSQEDPEVQFNWYVDGVEVHNAKTKPREEQFNSTYRVVSVLTVLHQDWLNGKEYKCK  
VSNKGLPSSIEKTISKAKGQPREPQVYTLPPSQEEMTKNQVSLTCLVKGFYPSDIAVEWE  
SNGQPENNYKTPPVLDSDGSFFLYSRLTVDKSRWQEGNVFSCSVMHEALHNHYTQKS  
LSLSLGK-

**$\alpha$ IDH1<sup>R132H</sup> Kappa\_Light Amino acid sequence**

MGWSCILFLVATATGVHSDIVMSQSPSSLAVSVGEEKVTMSCKSSQSLLYGSNQKNYVA  
WYQQTPGQSPKLLIYWASTRESGVPDRFTGSGSGTDFTLTISSVKAEDLAVYYCQQCYR  
YPLTFGAGTKLELKR TVAAPSVFIFPPSDEQLKSGTASVVCLLNRFYPREAKVQWKVDN  
ALQSGNSQESVTEQDSKDYSLSTLTLSKADYEEKHKVYACEVTHQGLSSPVTKSFNR  
GEC-

**J-chain Amino acid sequence**

MGWSCILFLVATATGVHSQEDERIVLVDNKCKCARITSRIIRSSDPNEDIVERNIRIIVPL  
NNRENISDPTSPLRTRFVYHLSDLCKKCDPTEVELDNQIVTATQSNICDEDSATETCYTY  
DRNKCYTAVVPLVYGGGETKMOVETALTPDACYPD-