SUPPLEMENTARY MATERIALS AND METHODS

CONSTRUCTION OF EXPRESSION VECTOR AND TRANSFECTION

IGKV1-5*03/IGKJ3*01 full length sequence (with C region) with 10 mutations found in AML patients were cloned into the pcDNA3.1 myc-His (-) B vector (Invitrogen) using the primer sets BamHI- IGKV1-5*03 (5′-GGATCCATGGTGTTGCAGACCCAGGTCTT-3′) and IGKJ3*01-HindIII (5′-AAGCTTCCACACTCTCCCCTGTTGAAGCTC T-3′). For overexpression of IGK, the plasmid containing IGKV1-5*03/IGKJ3*01 sequence was transfected into HL-60 and NB4 cell lines by electroporation according to the manufacturer's instructions (Nucleofector 2b Device, Lonza, Switzerland).

KNOCKDOWN OF IGK EXPRESSION BY SIRNA

siRNAs that target IGK C region sequence and non-specific siRNA (siNC, used as a negative control) were synthesized by Shanghai GenePharma Company (Shanghai, China). The sequences were as follows: siRNA-1, 5′-UCACAGAGCAGGACAGCAA-3′; siRNA-2, 5′-AGGCCAAAGUACAGUGGAA-3′; and siNC, 5′-GUAUGACAACAGCCUCAAGTT-3′. For knockdown of IGK expression, siRNA or siNC was transfected into HL-60 and NB4 cell lines by electroporation according to the manufacturer's instructions (Nucleofector 2b Device).

A IGKV1-5*03/IGKJ3*01

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           <---FWR1--><CDR1><------FWR2-----><C><---------------FWR3---------------><-CDR3><---JK3---->
Germline   GDRVTITCRASQSISSWLAWYQQKPGKAPKLLIYKASSLESGVPSRFSGSGSGTEFTLTISSLQPDDFATYYCQQYNSWIFTFGPGTKVDIK
Patient 1  ..K.I.S........D.................M..V.T.Q.....................................ST..............
Patient 2  ..K.I.S........D.................M..V.T.Q.....................................ST..............
Patient 3  ..K.I.S........D.................M..V.T.Q.....................................ST..............
Patient 4  ..K.I.S........D.................M..V.T.Q.....................................ST..............
Patient 5  ..K.I.S........D.................M..V.T.Q.....................................ST..............
Patient 6  ..K.I.S........D.....L...........M..V.T.Q.....................................ST..............
Patient 7  ..K.I.S........D.................M..V.T.Q.....................................ST..............
Patient 8  ..R.I.SR.......D.................M..V.T.Q.....................................ST..............
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B IGKV1-NL1*01/IGKJ5*01

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           <---FWR1--><CDR1><------FWR2-----><C><---------------FWR3---------------><-CDR3><---JK5---->
Germline   GDRVTITCRASQGISNSLAWYQQKPGKAPKLLLYAASRLESGVPSRFSGSGSGTDYTLTISSLQPEDFATYYCQQYYSTPITFGQGTRLEIK
Patient 1  ............D..T.V....HR..........G.........N........A.......................H...............
Patient 2  ............D..T.V....HR..........G.........N........A.......................H...............
Patient 3  ............D..T.V....HR..........G.........N........A.......................H...............
HEL        ............D..T.V....HR..........G.........N........A.......................H...............
NB4        ............D..T.V....HR..........G.........N........A.......................H...............
KG-1       ............D..T.V....HR..........G.........N........A.......................H...............
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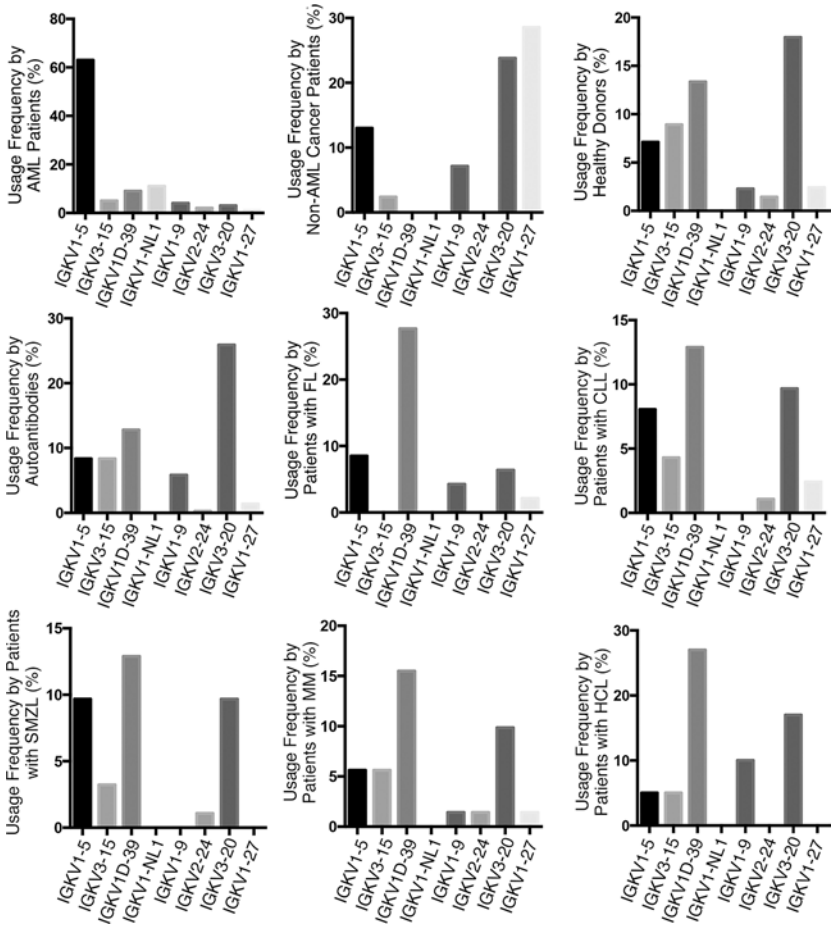
Supplementary Figure S1: Alignment of IGK sequences with IGKV1-5*03/IGKJ3*01 and IGKV1-NL1*01/IGKJ5*01 rearrangements from AML patients and AML cell lines and the germline sequence.



Supplementary Figure S2: Comparison of IGKV usage frequency among patients with acute myeloid leukemia (AML), non-hematopoietic neoplasms (non-AML), autoimmune disease, follicular lymphoma (FL), chronic lymphocytic leukemia (CLL), splenic marginal zone lymphoma (SMZL), multiple myeloma (MM), hairy cell leukemia (HCL), and healthy donors.