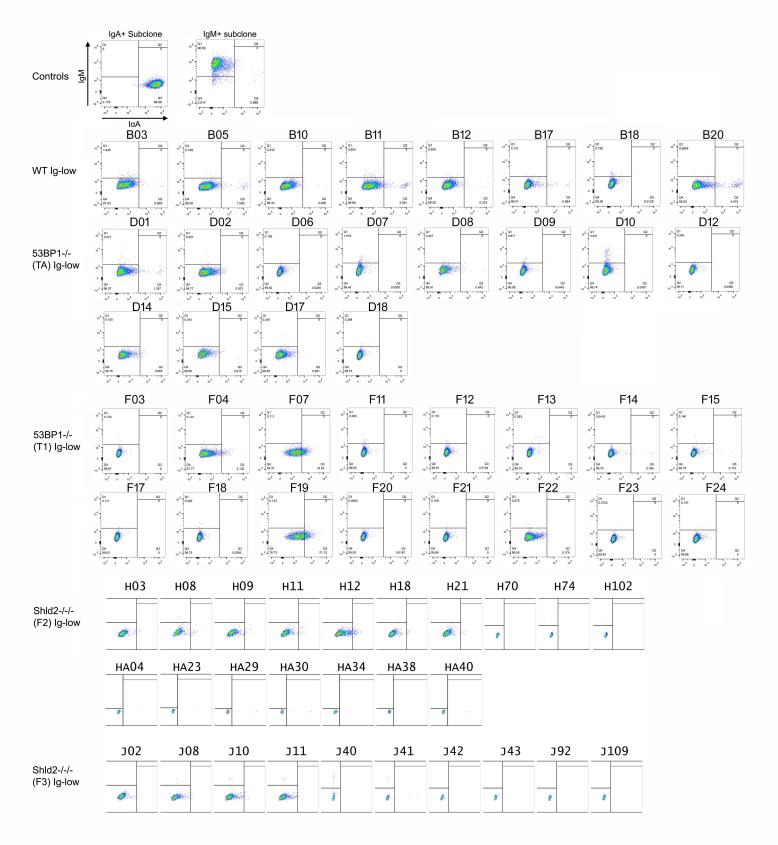
Appendix Figures

(Page 2) Appendix Figure S1. Genotypes of novel mutant CH12 cells generated for this study. WT CH12 cells were used to knockout the indicated genes through CRISPR/Cas9 using the gRNAs listed in Table EV2. Sequencing results for each of these mutants are shown.

(Page 3) Appendix Figure S2. Flow Cytometry analysis of Iglo WT, 53bp1^{-/-} and Shld2^{-/-/-} CH12 subclones. Ig-lo cells from WT, 53bp1^{-/-} and Shld2^{-/-/-} CH12 cells were sorted and subcloned and reanalyzed for expression of IgM and IgA by flow cytometry. As positive controls, expression of IgA and IgM are shown for two specific subclones that are IgA or IgM positive.

X1f #1 (58)	6/A05) 1 V S Q H L I H P L M G V S L A L Q S H V R E L A A L L R M K D L E I Q A Y Q E S G A GTCTCTCAGCATTGATTCATCCTCTCATGGGTGTGAGCCTGCACAGGAGTCATGTGAGGGCCTTAGGAGGAGTGGGGCT GTCTCTCAGCATTTGATTCATCCTCTCATGGGTGTGAGGCCTTGCAGGAGTCATGTGAGGGAGTTGGTTG
Allele 1	GTCTCTCAGCATCTGATTCATCCTTGGGTGTGAGCCTGCAGAGTCATGTGAGGGAGCTAGCAGCATTGCTTCGGATGAAGGACCTTGAGATCCAGGCCTACCAGGAGTGGGGCT
WT Allele 2	V S Q H L I H P L M G V S L A L Q S H V R E L A A L L R M K D L E I Q A Y Q E S G A GTCTCTCAGCATTGATTCATCCTCTGATGATGATGCTGTGAGCCTGCACAGAGATGCAGACTGAGACTAGGCCTTACCAGAGAGACTAGGGCT IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
X1f #2 (58)	<mark>6/B10)</mark> 1 VSQHLIHPLMGVSLALQSHVRELAALLRMKDLEIQAYQESGA
WT Allele 1	GTCTCTCAGCATTTGATTCATCCT CTGATGGGTGTGAGCCTGGC ACTGCAGAGTCATGTGGAGGGAGCTAGCAGCATTCCTTCGGATGAAGGACCTTGAGATCCAGGCCTACCAGGAGAGTGGGGCT
WT Allele 2	V S Q H L I H P L M G V S L A L Q S H V R E L A A L L R M K D L E I Q A Y Q E S G A GTCTCTCAGCATTGATTCATCCT CTG-ATGGGTGTGAGCCTGC CAGGAGTCATGTGAGGAGCATGCAGCATTGCTTCGGATGAAGGACCTTGAGATCCAGGCCTACCAGGAGAGTGGGGCT
Xrcc4 #1 (1
WT Allele 1	M E R K V S R I Y L A S E P N V P Y F L Q V S W E R T I G S G F V I T L T D G H S A W ATGGAAAGGAAACTAAGGAATCTATCTTGCTAACACCTAACCTTATCTGCAAGTCTTGCAAGTCATATGGAATCGAACTGCTTGTTATTATCACTTACTGACGGCCATTCAGCCTGG
WT Allele 2	MERKVSRIYLASEPNVPYFLQVSWERTIGSGFTVITLTDGHSAWATGGAAGGAACAAAAGAACAAAAGAAAGAAAGAAAAGA
Xrcc4 #2 (999/31) 1	
Xrcc4 #2 (1
Xrcc4 #2 (9	999/31) 1 MERKVSRIYLASEPNVPYFLQVSWERTIGSGFVITLTDGHSAW ATGGAAAGGAAGTAAGGAATCTATCTTGCTTCTGAACCCAACGTACCTTATTTCTGCAAGTGCTTGGGAGAGAACAATAGGATCCGGCTTTGTTATTACACTTACTACCAGCCCTGG
WT	1 MERKVSRIYLASEPNVPYFLQVSWERTIGSGFVITLTDGHSAW ATGGAAAGGAAGTAGCAGTTCTTGCTCTGAACCCAACGTACTTTTTCTGCAAGTGTCT TGGGAGAGAACATAGGATC CGGCTTTGTTATTACACTTACTGACGCCATCAGCCTGG
WT Allele 1 WT	MERKVSRIYLASEPNVPYFLQVSWERTIGSGGCTTGTTTTTTGCAGCCCAACGTACCTTATTTTCTGCAAGTGTCTTGGGAGAGAACAATAGGATCCGGCTTGTTATTACACTTACTGACGGCCATCAGCCTGGIIIIIIIIII
WT Allele 1 WT Allele 2	MERKVSRIYLASEPNVPYFLQVSWERTIGSGGCGCTTGTTATTACACTTACTGCAGCCCACGTACCTTATTTCTGCAAGTGTCTTGGGAGAACAATAGGATCCGGCTTGTTATTACACTTACTGACGCCATCAGCCTGGIIIIIIIIII
WT Allele 1 WT Allele 2 Paxx #1 (2'	MERKVSRIYLASEPNVPYFLQVSWERTIGSGFCGGGTTGTATTATACACTTACTGCAGGCCATCAGCCTGG MERKVSRIYLASEPNVPYFLQVSWERTIGSGFCGGTTGTATTATACACTTACTGCAGGCCATCAGCCTGG MERKVSRIYLASEPNVPYFLQVSWERTIGSGFCGGGAGAGAACAATAGGATCGGGCTTGTTATTACACTTACTGACGCCATCAGCCTGG MERKVSRIYLASEPNVPYFLQVSWERTIGSTCTTGAACCCAACGTACCTTTTTTTACTGGAAGTGTCATGACCGCTTGTTATTACACTTACTGACGGCCATTCAGCCTGG MERKVSRIYLASEPNVPYFLQVSWERTIGSTCTTGGACCCAACGTACCTTATTTTCTGCAAGTGTCTTGGGAGAGAACAATAGGATCGGCTTGTTATTACACTTACTGACGGCCATTCAGCCTGG MERKVSRIYLASEPNVPYFLQVSWERTIGSTCTTGGAACCCAACGTACCTTATTTTCTGCAAGTGTCTTGGGAGAGAACAATAGGATCGGCTTGTTATTACACTTACTGACGGCCATTCAGCCTGG MAFGAAAGGAAAGTAAGCAGAATCTATCTTGCTTCTGAACCCAACGTACCTGAAATTCTTCTAGTGTATTA
WT Allele 1 WT Allele 2 Paxx #1 (2' WT Allele 1	MERKVSRIYLASEPNVPYFLQVSWERTIGSGGGAGAGACATAGGATCGGCTTATTATACACTTACTACGACCAACGTACATTCATT
WT Allele 1 WT Allele 2 Paxx #1 (2' WT Allele 1 WT Allele 2	MERKVSRIYLASEPNVPYFLQVSWERTIGSGGTTGTTTTTTTTGCAGGTTGTTTTTTTTTTTTTTTTT

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