

**Supplemental Table 3A:** List of ranked KEGG pathways as shown in the heatmap of GSE33315 data in Figure 1D. ONE CARBON POOL BY FOLATE, PURINE and PYRIMIDINE pathways are highlighted red.

Rank heatmap GSE33315	KEGG pathway
1	KEGG_GLYCOLYSIS_GLUONEOGENESIS
2	KEGG_PENTOSE_PHOSPHATE_PATHWAY
3	KEGG_FRUCTOSE_AND_MANNOSE_METABOLISM
4	KEGG_GALACTOSE_METABOLISM
5	KEGG_AMINO_SUGAR_AND_NUCLEOTIDE_SUGAR_METABOLISM
6	KEGG_ALANINE_ASPARTATE_AND_Glutamate_METABOLISM
7	KEGG_ARGININE_AND_PROLINE_METABOLISM
8	KEGG_Glutathione_METABOLISM
9	KEGG_FATTY_ACID_METABOLISM
10	KEGG_BUTANOATE_METABOLISM
11	KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_DEGRADATION
12	KEGG_PROPANOATE_METABOLISM
13	KEGG_LYSINE_DEGRADATION
14	KEGG_BETA_ALANINE_METABOLISM
15	KEGG_LIMONENE_AND_PINENE_DEGRADATION
16	KEGG_NICOTINATE_AND_NICOTINAMIDE_METABOLISM
17	KEGG_PANTOTHENATE_AND_COA_BIOSYNTHESIS
18	KEGG_STEROID_BIOSYNTHESIS
19	KEGG_TERPENOID_BACKBONE_BIOSYNTHESIS
20	KEGG_BIOSYNTHESIS_OF_UNSATURATED_FATTY_ACIDS
21	KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_BIOSYNTHESIS
22	KEGG_CITRATE_CYCLE_TCA_CYCLE
23	KEGG_PYRUVATE_METABOLISM
24	KEGG_CYSTEINE_AND_METHIONINE_METABOLISM
25	KEGG_GLYOXYLATE_AND_DICARBOXYLATE_METABOLISM
26	KEGG_ONE_CARBON_POOL_BY_FOLATE
27	KEGG_PURINE_METABOLISM
28	KEGG_PYRIMIDINE_METABOLISM
29	KEGG_RNA_POLYMERASE
30	KEGG_BASE_EXCISION_REPAIR
31	KEGG_HOMOLOGOUS_RECOMBINATION
32	KEGG_DNA_REPLICATION
33	KEGG_MISMATCH_REPAIR
34	KEGG_NUCLEOTIDE_EXCISION_REPAIR
35	KEGG_CELL_CYCLE
36	KEGG_NON_HOMOLOGOUS_END_JOINING
37	KEGG_GLYCOSYLPHOSPHATIDYLINOSITOL_GPI_ANCHOR_BIOSYNTHESIS
38	KEGG_SELENOAMINO_ACID_METABOLISM
39	KEGG_PEROXISOME
40	KEGG_BASAL_TRANSCRIPTION_FACTORS
41	KEGG_UBIQUITIN_MEDIATED_PROTEOLYSIS
42	KEGG_P53_SIGNALING_PATHWAY
43	KEGG_OOCYTE_MEIOSIS
44	KEGG_PROGESTERONE_MEDIATED_OOCYTE_MATURATION
45	KEGG_RIBOSOME
46	KEGG_SPLICEOSOME
47	KEGG_PROTEIN_EXPORT
48	KEGG_AMINOACYL_TRNA_BIOSYNTHESIS
49	KEGG_RNA_DEGRADATION
50	KEGG_PROTEASOME
51	KEGG_OXIDATIVE_PHOSPHORYLATION
52	KEGG_PARKINSONS_DISEASE
53	KEGG_HUNTINGTONS_DISEASE
54	KEGG_ALZHEIMERS_DISEASE
55	KEGG_CARDIAC_MUSCLE_CONTRACTION

56 KEGG\_PATHOGENIC\_ESCHERICHIA\_COLI\_INFECTION  
57 KEGG\_GLYCOSAMINOGLYCAN\_BIOSYNTHESIS\_CHONDROITIN\_SULFATE  
58 KEGG\_GLYCOSAMINOGLYCAN\_BIOSYNTHESIS\_HEPARAN\_SULFATE  
59 KEGG\_SULFUR\_METABOLISM  
60 KEGG\_PENTOSE\_AND\_GLUCCURONATE\_INTERCONVERSIONS  
61 KEGG\_ASCORBATE\_AND\_ALDARATE\_METABOLISM  
62 KEGG\_PORPHYRIN\_AND\_CHLOROPHYLL\_METABOLISM  
63 KEGG\_GLYCOSAMINOGLYCAN\_BIOSYNTHESIS\_KERATAN\_SULFATE  
64 KEGG\_O\_GLYCAN\_BIOSYNTHESIS  
65 KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_GLOBO\_SERIES  
66 KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_GANGLIO\_SERIES  
67 KEGG\_FOLATE\_BIOSYNTHESIS  
68 KEGG\_RIBOFLAVIN\_METABOLISM  
69 KEGG\_GLYCINE\_SERINE\_AND\_THREONINE\_METABOLISM  
70 KEGG\_TYROSINE\_METABOLISM  
71 KEGG\_PHENYLALANINE\_METABOLISM  
72 KEGG\_PRIMARY\_BILE\_ACID\_BIOSYNTHESIS  
73 KEGG\_HISTIDINE\_METABOLISM  
74 KEGG\_TRYPTOPHAN\_METABOLISM  
75 KEGG\_GLYCEROLIPID\_METABOLISM  
76 KEGG\_STARCH\_AND\_SUCROSE\_METABOLISM  
77 KEGG\_DRUG\_METABOLISM\_OTHER\_ENZYMES  
78 KEGG\_NITROGEN\_METABOLISM  
79 KEGG\_PROXIMAL\_TUBULE\_BICARBONATE\_RECLAMATION  
80 KEGG\_GLYCEROPHOSPHOLIPID\_METABOLISM  
81 KEGG\_ARACHIDONIC\_ACID\_METABOLISM  
82 KEGG\_LINOLEIC\_ACID\_METABOLISM  
83 KEGG\_ETHER\_LIPID\_METABOLISM  
84 KEGG\_ALPHA\_LINOLENIC\_ACID\_METABOLISM  
85 KEGG\_RENIN\_ANGIOTENSIN\_SYSTEM  
86 KEGG\_TAURINE\_AND\_HYPOTAURINE\_METABOLISM  
87 KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_LACTO\_AND\_NEOLACTO\_SERIES  
88 KEGG\_ABC\_TRANSPORTERS  
89 KEGG\_PPAR\_SIGNALING\_PATHWAY  
90 KEGG\_STEROID\_HORMONE\_BIOSYNTHESIS  
91 KEGG\_RETINOL\_METABOLISM  
92 KEGG\_METABOLISM\_OF\_XENOBIOTICS\_BY\_CYTOCHROME\_P450  
93 KEGG\_DRUG\_METABOLISM\_CYTOCHROME\_P450  
94 KEGG\_COMPLEMENT\_AND\_COAGULATION\_CASCADES  
95 KEGG\_CALCIIUM\_SIGNALING\_PATHWAY  
96 KEGG\_NEUROACTIVE\_LIGAND\_RECEPTOR\_INTERACTION  
97 KEGG\_OLFACTORY\_TRANSDUCTION  
98 KEGG\_CYTOKINE\_CYTOKINE\_RECEPTOR\_INTERACTION  
99 KEGG\_JAK\_STAT\_SIGNALING\_PATHWAY  
100 KEGG\_FOCAL\_ADHESION  
101 KEGG\_ECM\_RECEPTOR\_INTERACTION  
102 KEGG\_ARRHYTHMOGENIC\_RIGHT\_VENTRICULAR\_CARDIOMYOPATHY\_ARVC  
103 KEGG\_HYPERTROPHIC\_CARDIOMYOPATHY\_HCM  
104 KEGG\_DILATED\_CARDIOMYOPATHY  
105 KEGG\_MATURITY\_ONSET\_DIABETES\_OF\_THE\_YOUNG  
106 KEGG\_HEMATOPOIETIC\_CELL\_LINEAGE  
107 KEGG\_SPHINGOLIPID\_METABOLISM  
108 KEGG\_OTHER\_GLYCAN\_DEGRADATION  
109 KEGG\_LYSOSOME  
110 KEGG\_N\_GLYCAN\_BIOSYNTHESIS  
111 KEGG\_SNARE\_INTERACTIONS\_IN\_VESICULAR\_TRANSPORT  
112 KEGG\_VASOPRESSIN\_REGULATED\_WATER\_REABSORPTION  
113 KEGG\_VIBRIO\_CHOLERAЕ\_INFECTION  
114 KEGG\_GLYCOSAMINOGLYCAN\_DEGRADATION  
115 KEGG\_REGULATION\_OF\_AUTOPHAGY  
116 KEGG\_ADIPOCYTOKINE\_SIGNALING\_PATHWAY  
117 KEGG\_ENDOCYTOSIS

118 KEGG\_CHEMOKINE\_SIGNALING\_PATHWAY  
119 KEGG\_MAPK\_SIGNALING\_PATHWAY  
120 KEGG\_REGULATION\_OF\_ACTIN\_CYTOSKELETON  
121 KEGG\_AXON\_GUIDANCE  
122 KEGG\_VEGF\_SIGNALING\_PATHWAY  
123 KEGG\_FC\_EPSILON\_RI\_SIGNALING\_PATHWAY  
124 KEGG\_INSULIN\_SIGNALING\_PATHWAY  
125 KEGG\_TOLL\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY  
126 KEGG\_RIG\_I\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY  
127 KEGG\_CYTOSOLIC\_DNA\_SENSING\_PATHWAY  
128 KEGG\_CELL\_ADHESION\_MOLECULES\_CAMS  
129 KEGG\_LEUKOCYTE\_TRANSENDOTHELIAL\_MIGRATION  
130 KEGG\_NATURAL\_KILLER\_CELL\_MEDIATED\_CYTOTOXICITY  
131 KEGG\_NOD\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY  
132 KEGG\_EPITHELIAL\_CELL\_SIGNALING\_IN\_HELICOBACTER\_PYLORI\_INFECTION  
133 KEGG\_AMYOTROPHIC\_LATERAL\_SCLEROSIS\_ALS  
134 KEGG\_PRION\_DISEASES  
135 KEGG\_LEISHMANIA\_INFECTION  
136 KEGG\_INTESTINAL\_IMMUNE\_NETWORK\_FOR\_IGA\_PRODUCTION  
137 KEGG\_AUTOIMMUNE\_THYROID\_DISEASE  
138 KEGG\_ASTHMA  
139 KEGG\_ANTIGEN\_PROCESSING\_AND\_PRESENTATION  
140 KEGG\_TYPE\_I\_DIABETES\_MELLITUS  
141 KEGG\_ALLOGRAFT\_REJECTION  
142 KEGG\_GRAFT\_VERSUS\_HOST\_DISEASE  
143 KEGG\_VIRAL\_MYOCARDITIS  
144 KEGG\_SYSTEMIC\_LUPUS\_ERYTHEMATOSUS  
145 KEGG\_INOSITOL\_PHOSPHATE\_METABOLISM  
146 KEGG\_PHOSPHATIDYLINOSITOL\_SIGNALING\_SYSTEM  
147 KEGG\_NOTCH\_SIGNALING\_PATHWAY  
148 KEGG\_GAP\_JUNCTION  
149 KEGG\_VASCULAR\_SMOOTH\_MUSCLE\_CONTRACTION  
150 KEGG\_GNRH\_SIGNALING\_PATHWAY  
151 KEGG\_LONG\_TERM\_DEPRESSION  
152 KEGG\_LONG\_TERM\_POTENTIATION  
153 KEGG\_ADHERENS\_JUNCTION  
154 KEGG\_TGF\_BETA\_SIGNALING\_PATHWAY  
155 KEGG\_TYPE\_II\_DIABETES\_MELLITUS  
156 KEGG\_TIGHT\_JUNCTION  
157 KEGG\_TASTE\_TRANSDUCTION  
158 KEGG\_HEDGEHOG\_SIGNALING\_PATHWAY  
159 KEGG\_MELANOGENESIS  
160 KEGG\_BASAL\_CELL\_CARCINOMA  
161 KEGG\_ALDOSTERONE\_REGULATED\_SODIUM\_REABSORPTION  
162 KEGG\_WNT\_SIGNALING\_PATHWAY  
163 KEGG\_SMALL\_CELL\_LUNG\_CANCER  
164 KEGG\_DORSO\_VENTRAL\_AXIS\_FORMATION  
165 KEGG\_THYROID\_CANCER  
166 KEGG\_MTOR\_SIGNALING\_PATHWAY  
167 KEGG\_ENDOMETRIAL\_CANCER  
168 KEGG\_ERBB\_SIGNALING\_PATHWAY  
169 KEGG\_GLIOMA  
170 KEGG\_NON\_SMALL\_CELL\_LUNG\_CANCER  
171 KEGG\_PATHWAYS\_IN\_CANCER  
172 KEGG\_MELANOMA  
173 KEGG\_PROSTATE\_CANCER  
174 KEGG\_BLADDER\_CANCER  
175 KEGG\_APOPTOSIS  
176 KEGG\_B\_CELL\_RECEPTOR\_SIGNALING\_PATHWAY  
177 KEGG\_FC\_GAMMA\_R\_MEDIATED\_PHAGOCYTOSIS  
178 KEGG\_NEUROTROPHIN\_SIGNALING\_PATHWAY  
179 KEGG\_RENAL\_CELL\_CARCINOMA

180	KEGG_PANCREATIC_CANCER
181	KEGG_CHRONIC_MYELOID_LEUKEMIA
182	KEGG_ACUTE_MYELOID_LEUKEMIA
183	KEGG_COLORECTAL_CANCER
184	KEGG_T_CELL_RECEPTOR_SIGNALING_PATHWAY
185	KEGG_PRIMARY_IMMUNODEFICIENCY
186	KEGG_CIRCADIEN_RHYTHM_MAMMAL

**Supplemental Table 3B:** List of ranked KEGG pathways as shown in the heatmap of GSE13351 data in Supplementary Figure 2A. ONE CARBON POOL BY FOLATE, PURINE and PYRIMIDINE pathways are

Rank heatmap GSE13351	KEGG pathway
1	KEGG_RIBOSOME
2	KEGG_TAURINE_AND_HYPOTAURINE_METABOLISM
3	KEGG_ETHER_LIPID_METABOLISM
4	KEGG_NITROGEN_METABOLISM
5	KEGG_MATURITY_ONSET_DIABETES_OF_THE_YOUNG
6	KEGG_RETINOL_METABOLISM
7	KEGG_LINOLEIC_ACID_METABOLISM
8	KEGG_SPLICEOSOME
9	KEGG_PROTEIN_EXPORT
10	KEGG_STEROID_BIOSYNTHESIS
11	KEGG_PROXIMAL_TUBULE_BICARBONATE_RECLAMATION
12	KEGG_GLYCINE_SERINE_AND_THREONINE_METABOLISM
13	KEGG_SULFUR_METABOLISM
14	KEGG_PPAR_SIGNALING_PATHWAY
15	KEGG_ALPHA_LINOLENIC_ACID_METABOLISM
16	KEGG_NICOTINATE_AND_NICOTINAMIDE_METABOLISM
17	KEGG_PRIMARY_BILE_ACID_BIOSYNTHESIS
18	KEGG_RIBOFLAVIN_METABOLISM
19	KEGG_PANTOTHENATE_AND_COA_BIOSYNTHESIS
20	KEGG_SELENOAMINO_ACID_METABOLISM
21	KEGG_TERPENOID_BACKBONE_BIOSYNTHESIS
22	KEGG_ALANINE_ASPARTATE_AND_GLUTAMATE_METABOLISM
23	KEGG_STEROID_HORMONE_BIOSYNTHESIS
24	KEGG_GLYCOSYLPHOSPHATIDYLINOSITOL_GPI_ANCHOR_BIOSYNTHESIS
25	KEGG_TYROSINE_METABOLISM
26	KEGG_PHENYLALANINE_METABOLISM
27	KEGG_STARCH_AND_SUCROSE_METABOLISM
28	KEGG_PORPHYRIN_AND_CHLOROPHYLL_METABOLISM
29	KEGG_GLUTATHIONE_METABOLISM
30	KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_BIOSYNTHESIS
31	KEGG_CYSTEINE_AND_METHIONINE_METABOLISM
32	KEGG_PEROXISOME
33	KEGG_PENTOSE_AND_GLUCURONATE_INTERCONVERSIONS
34	KEGG_TRYPTOPHAN_METABOLISM
35	KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_DEGRADATION
36	KEGG_PYRUVATE_METABOLISM
37	KEGG_PROPANOATE_METABOLISM
38	KEGG_BETA_ALANINE_METABOLISM
39	KEGG_BUTANOATE_METABOLISM
40	KEGG_FATTY_ACID_METABOLISM
41	KEGG_PENTOSE_PHOSPHATE_PATHWAY
42	KEGG_GLYCOLYSIS_GLUCONEOGENESIS
43	KEGG_FRUCTOSE_AND_MANNOSE_METABOLISM
44	KEGG_AMINO_SUGAR_AND_NUCLEOTIDE_SUGAR_METABOLISM
45	KEGG_GALACTOSE_METABOLISM
46	KEGG_GLYOXYLATE_AND_DICARBOXYLATE_METABOLISM
47	KEGG_CITRATE_CYCLE_TCA_CYCLE
48	KEGG_LYSINE_DEGRADATION
49	KEGG_NON_HOMOLOGOUS_END_JOINING
50	KEGG_RNA_POLYMERASE
51	KEGG_RNA_DEGRADATION
52	KEGG_PYRIMIDINE_METABOLISM
53	KEGG_PURINE_METABOLISM
54	KEGG_NUCLEOTIDE_EXCISION_REPAIR
55	KEGG_MISMATCH_REPAIR
56	KEGG_DNA_REPLICATION
57	KEGG_BASE_EXCISION_REPAIR
58	KEGG_HOMOLOGOUS_RECOMBINATION
59	KEGG_CELL_CYCLE
60	KEGG_PROTEASOME
61	KEGG_PARKINSONS_DISEASE

62 KEGG\_OXIDATIVE\_PHOSPHORYLATION  
63 KEGG\_HUNTINGTONS\_DISEASE  
64 KEGG\_ALZHEIMERS\_DISEASE  
65 KEGG\_CARDIAC\_MUSCLE\_CONTRACTION  
66 KEGG\_HISTIDINE\_METABOLISM  
67 KEGG\_GLYCEROLIPID\_METABOLISM  
68 KEGG\_LIMONENE\_AND\_PINENE\_DEGRADATION  
69 KEGG\_ASCORBATE\_AND\_ALDARATE\_METABOLISM  
70 KEGG\_ONE\_CARBON\_POOL\_BY\_FOLATE  
71 KEGG\_AMINOACYL\_TRNA\_BIOSYNTHESIS  
72 KEGG\_DRUG\_METABOLISM\_OTHER\_ENZYMES  
73 KEGG\_METABOLISM\_OF\_XENOBIOTICS\_BY\_CYTOCHROME\_P450  
74 KEGG\_DRUG\_METABOLISM\_CYTOCHROME\_P450  
75 KEGG\_ARACHIDONIC\_ACID\_METABOLISM  
76 KEGG\_BIOSYNTHESIS\_OF\_UNSATURATED\_FATTY\_ACIDS  
77 KEGG\_P53\_SIGNALING\_PATHWAY  
78 KEGG\_SNARE\_INTERACTIONS\_IN\_VESICULAR\_TRANSPORT  
79 KEGG\_GLYCEROPHOSPHOLIPID\_METABOLISM  
80 KEGG\_N\_GLYCAN\_BIOSYNTHESIS  
81 KEGG\_VIBRIO\_CHOLERAE\_INFECTION  
82 KEGG\_AMYOTROPHIC\_LATERAL\_SCLEROSIS\_ALS  
83 KEGG\_PROGESTERONE\_MEDIATED\_OOCYTE\_MATURATION  
84 KEGG\_OOCYTE\_MEIOSIS  
85 KEGG\_BASAL\_TRANSCRIPTION\_FACTORS  
86 KEGG\_FOLATE\_BIOSYNTHESIS  
87 KEGG\_ARGININE\_AND\_PROLINE\_METABOLISM  
88 KEGG\_SYSTEMIC\_LUPUS\_ERYTHEMATOSUS  
89 KEGG\_OLFACTORY\_TRANSDUCTION  
90 KEGG\_NEUROACTIVE\_LIGAND\_RECEPTOR\_INTERACTION  
91 KEGG\_T\_CELL\_RECEPTOR\_SIGNALING\_PATHWAY  
92 KEGG\_PHOSPHATIDYLINOSITOL\_SIGNALING\_SYSTEM  
93 KEGG\_INOSITOL\_PHOSPHATE\_METABOLISM  
94 KEGG\_PRIMARY\_IMMUNODEFICIENCY  
95 KEGG\_ABC\_TRANSPORTERS  
96 KEGG\_RENIN\_ANGIOTENSIN\_SYSTEM  
97 KEGG\_HEMATOPOIETIC\_CELL\_LINEAGE  
98 KEGG\_COMPLEMENT\_AND\_COAGULATION\_CASCADES  
99 KEGG\_O\_GLYCAN\_BIOSYNTHESIS  
100 KEGG\_OTHER\_GLYCAN\_DEGRADATION  
101 KEGG\_LYSOSOME  
102 KEGG\_GLYCOSAMINOGLYCAN\_DEGRADATION  
103 KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_GLOBO\_SERIES  
104 KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_GANGLIO\_SERIES  
105 KEGG\_TASTE\_TRANSDUCTION  
106 KEGG\_HEDGEHOG\_SIGNALING\_PATHWAY  
107 KEGG\_BASAL\_CELL\_CARCINOMA  
108 KEGG\_REGULATION\_OF\_AUTOPHAGY  
109 KEGG\_THYROID\_CANCER  
110 KEGG\_VASOPRESSIN\_REGULATED\_WATER\_REABSORPTION  
111 KEGG\_UBIQUITIN\_MEDIATED\_PROTEOLYSIS  
112 KEGG\_TGF\_BETA\_SIGNALING\_PATHWAY  
113 KEGG\_TYPE\_II\_DIABETES\_MELLITUS  
114 KEGG\_AXON\_GUIDANCE  
115 KEGG\_ALDOSTERONE\_REGULATED\_SODIUM\_REABSORPTION  
116 KEGG\_NOTCH\_SIGNALING\_PATHWAY  
117 KEGG\_MELANOGENESIS  
118 KEGG\_LONG\_TERM\_POTENTIATION  
119 KEGG\_MAPK\_SIGNALING\_PATHWAY  
120 KEGG\_GNRH\_SIGNALING\_PATHWAY  
121 KEGG\_LONG\_TERM\_DEPRESSION  
122 KEGG\_GAP\_JUNCTION  
123 KEGG\_VASCULAR\_SMOOTH\_MUSCLE\_CONTRACTION  
124 KEGG\_MTOR\_SIGNALING\_PATHWAY  
125 KEGG\_LEUKOCYTE\_TRANSENDOTHELIAL\_MIGRATION  
126 KEGG\_VEGF\_SIGNALING\_PATHWAY  
127 KEGG\_FC\_EPSILON\_R1\_SIGNALING\_PATHWAY  
128 KEGG\_REGULATION\_OF\_ACTIN\_CYTOSKELETON  
129 KEGG\_FOCAL\_ADHESION

130 KEGG\_FC\_GAMMA\_R\_MEDIATED\_PHAGOCYTOSIS  
131 KEGG\_CHEMOKINE\_SIGNALING\_PATHWAY  
132 KEGG\_B\_CELL\_RECEPTOR\_SIGNALING\_PATHWAY  
133 KEGG\_ENDOCYTOSIS  
134 KEGG\_WNT\_SIGNALING\_PATHWAY  
135 KEGG\_ADHERENS\_JUNCTION  
136 KEGG\_SMALL\_CELL\_LUNG\_CANCER  
137 KEGG\_PATHWAYS\_IN\_CANCER  
138 KEGG\_PANCREATIC\_CANCER  
139 KEGG\_NON\_SMALL\_CELL\_LUNG\_CANCER  
140 KEGG\_GLIOMA  
141 KEGG\_ENDOMETRIAL\_CANCER  
142 KEGG\_COLORECTAL\_CANCER  
143 KEGG\_PROSTATE\_CANCER  
144 KEGG\_RENAL\_CELL\_CARCINOMA  
145 KEGG\_NEUROTROPHIN\_SIGNALING\_PATHWAY  
146 KEGG\_CHRONIC\_MYELOID\_LEUKEMIA  
147 KEGG\_ACUTE\_MYELOID\_LEUKEMIA  
148 KEGG\_INSULIN\_SIGNALING\_PATHWAY  
149 KEGG\_ERBB\_SIGNALING\_PATHWAY  
150 KEGG\_MELANOMA  
151 KEGG\_BLADDER\_CANCER  
152 KEGG\_EPITHELIAL\_CELL\_SIGNALING\_IN\_HELICOBACTER\_PYLORI\_INFECTION  
153 KEGG\_PRION\_DISEASES  
154 KEGG\_SPHINGOLIPID\_METABOLISM  
155 KEGG\_RIG\_I\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY  
156 KEGG\_NOD\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY  
157 KEGG\_NATURAL\_KILLER\_CELL\_MEDIATED\_CYTOTOXICITY  
158 KEGG\_TOLL\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY  
159 KEGG\_APOPTOSIS  
160 KEGG\_JAK\_STAT\_SIGNALING\_PATHWAY  
161 KEGG\_CYTOKINE\_CYTOKINE\_RECEPTOR\_INTERACTION  
162 KEGG\_ADIPOCYTOKINE\_SIGNALING\_PATHWAY  
163 KEGG\_CYTOSOLIC\_DNA\_SENSING\_PATHWAY  
164 KEGG\_INTESTINAL\_IMMUNE\_NETWORK\_FOR\_IGA\_PRODUCTION  
165 KEGG\_LEISHMANIA\_INFECTION  
166 KEGG\_VIRAL\_MYOCARDITIS  
167 KEGG\_GRAFT\_VERSUS\_HOST\_DISEASE  
168 KEGG\_TYPE\_I\_DIABETES\_MELLITUS  
169 KEGG\_ALLOGRAFT\_REJECTION  
170 KEGG\_AUTOIMMUNE\_THYROID\_DISEASE  
171 KEGG\_ASTHMA  
172 KEGG\_ANTIGEN\_PROCESSING\_AND\_PRESENTATION  
173 KEGG\_CELL\_ADHESION\_MOLECULES\_CAMS  
174 KEGG\_TIGHT\_JUNCTION  
175 KEGG\_PATHOGENIC\_ESCHERICHIA\_COLI\_INFECTION  
176 KEGG\_ECM\_RECEPTOR\_INTERACTION  
177 KEGG\_HYPERTROPHIC\_CARDIOMYOPATHY\_HCM  
178 KEGG\_DILATED\_CARDIOMYOPATHY  
179 KEGG\_ARRHYTHMOGENIC\_RIGHT\_VENTRICULAR\_CARDIOMYOPATHY\_ARVC  
180 KEGG\_CALCIIUM\_SIGNALING\_PATHWAY  
181 KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_LACTO\_AND\_NEOLACTO\_SERIES  
182 KEGG\_GLYCOSAMINOGLYCAN\_BIOSYNTHESIS\_KERATAN\_SULFATE  
183 KEGG\_DORSO\_VENTRAL\_AXIS\_FORMATION  
184 KEGG\_CIRCADIAN\_RHYTHM\_MAMMAL  
185 KEGG\_GLYCOSAMINOGLYCAN\_BIOSYNTHESIS\_HEPARAN\_SULFATE  
186 KEGG\_GLYCOSAMINOGLYCAN\_BIOSYNTHESIS\_CHONDROITIN\_SULFATE

**Supplemental Table 3C:** List of ranked KEGG pathways as shown in the heatmap of TARGET T-ALL data in Figure 2A. ONE CARBON POOL BY FOLATE, PURINE and PYRIMIDINE pathways are highlighted red.

Rank heatmap TARGET T-ALL	KEGG pathway
1	KEGG_PENTOSE_PHOSPHATE_PATHWAY
2	KEGG_FRUCTOSE_AND_MANNOSE_METABOLISM
3	KEGG_GALACTOSE_METABOLISM
4	KEGG_AMINO_SUGAR_AND_NUCLEOTIDE_SUGAR_METABOLISM
5	KEGG_PORPHYRIN_AND_CHLOROPHYLL_METABOLISM
6	KEGG_DRUG_METABOLISM_OTHER_ENZYMES
7	KEGG_GLYCOSYLPHOSPHATIDYLINOSITOL_GPI_ANCHOR_BIOSYNTHESIS
8	KEGG_LYSINE_DEGRADATION
9	KEGG_CYSTEINE_AND_METHIONINE_METABOLISM
10	KEGG_SELENOAMINO_ACID_METABOLISM
11	KEGG_ALANINE_ASPARTATE_AND_GLUTAMATE_METABOLISM
12	KEGG_BETA_ALANINE_METABOLISM
13	KEGG_HISTIDINE_METABOLISM
14	KEGG_ARGININE_AND_PROLINE_METABOLISM
15	KEGG_GLUTATHIONE_METABOLISM
16	KEGG_GLYCOLYSIS_GLUONEOGENESIS
17	KEGG_PYRUVATE_METABOLISM
18	KEGG_TRYPTOPHAN_METABOLISM
19	KEGG_ASCORBATE_AND_ALDARATE_METABOLISM
20	KEGG_LIMONENE_AND_PINENE_DEGRADATION
21	KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_DEGRADATION
22	KEGG_PROPANOATE_METABOLISM
23	KEGG_BUTANOATE_METABOLISM
24	KEGG_FATTY_ACID_METABOLISM
25	KEGG_PEROXISOME
26	KEGG_VALINE_LEUCINE_AND_ISOLEUCINE_BIOSYNTHESIS
27	KEGG_AMINOACYL_TRNA_BIOSYNTHESIS
28	KEGG_PENTOSE_AND_GLUCURONATE_INTERCONVERSIONS
29	KEGG_ONE_CARBON_POOL_BY_FOLATE
30	KEGG_PYRIMIDINE_METABOLISM
31	KEGG_PURINE_METABOLISM
32	KEGG_RNA_POLYMERASE
33	KEGG_GLYOXYLATE_AND_DICARBOXYLATE_METABOLISM
34	KEGG_BASE_EXCISION_REPAIR
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44	KEGG_PROTEASOME
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