

Library Number	RMK013
Library Name	Tricarboxylic Acid (TCA) Cycle Library
Old Document Name	1906028_TCA Library
Library Purpose	CRISPR/Cas9 Knockout of genes from TCA cycle genes in mouse T cells
Location (Oligos)	targeted metabolic pathway libraries box, -20 freezer in B3301
Designer Name	Ayaka Sugiura/Kate Beier
Designing Date	2019-06-28
Design Reference	ry (Brie) (Addgene#73632) (Doench et al., 2016)
Usage Reference	Ayaka Sugiura

Species	Mouse (Mus musculus)
Total Gene #	34
Total Target #	146
Gene Group	
1. Negative Controls	10 Non-targeting controls (NTCs)
2. Positive Controls	Tsc2
3. TCA genes	34
Target Number	
1. Negative Controls	10*1=10
2. Positive Controls	Tsc2
3. TCA genes	34*4=136

Note: Target selected from KEGG pathways

Number	Target.Gene.Symbol	sgRNA.Target.Sequence
1	4933405O20Rik	ATGCTCTCATGGCCATCCGT
2	4933405O20Rik	AGTCTTGAAATGGACGACAC
3	4933405O20Rik	AAAGCCAACATCATGAAACT
4	4933405O20Rik	CTTCGATACCAACTGCATTG
5	Acly	GAGAGAGATTGACCCCGACG
6	Acly	AGAGCGATTGAGATTACCA
7	Acly	TTGTCACCTGTACACGACGG
8	Acly	GGACGAAAAGCTGAATACCG
9	Aco1	CCACCGCCATTTAGGCCGCG
10	Aco1	CATATGCTATTACCAGAGGG
11	Aco1	TAGCCACCCACATCAAACCT
12	Aco1	GTGTAGCACCTCCGACAAGT
13	Aco2	AGATCCGTGCCACTATTGAG
14	Aco2	GCGTTTACGGCCCGACCGGG
15	Aco2	TGGGTGAGGTCCAACCAGAG
16	Aco2	GATTGAAATTAACCTCAATG
17	BRDN0000737434	AAACTCCCGTGTCAACCGAT
18	BRDN0000737467	AAACCTAGCGTAGATTGCGC
19	BRDN0000737505	AAAAAGTCCGCGATTACGTC
20	BRDN0000737609	AAACTCATACGTAGCGAATC
21	BRDN0000737637	AAAACGTAATTATACCGAGC
22	BRDN0000737693	AAAACGGCTCGATCGGTGAT
23	BRDN0000737801	AAACCCCGCGCGGAGCGTC
24	BRDN0000737848	AAACGAGGCTGTTCGTACAC
25	BRDN0000738185	AAAATTGCACCTTCCCGGCC
26	BRDN0000738254	AAAGACGTGCATTGAGCGAG
27	Cs	TCCTTCCTCAGATGTACGG
28	Cs	ACTGAGCAATCTGATACCTA
29	Cs	TGATTTGCTAGTCCATGTAG
30	Cs	TTCGCCCCGGGCATATGCAGA
31	Csl	TTTGCCCCGGGCATATGCACA
32	Csl	GCTGAGGAATCTGATACCCA
33	Csl	TGATTTGCTAGCCCATGGAG
34	Csl	GTCCGTGTAGCCTAACATGT
35	Dlat	ACTACCGCAACGGACCGCAG
36	Dlat	CAGGCTCTCAAACCCAACAG
37	Dlat	CGACAAGGCCACCATAGGTG
38	Dlat	TTCAGAACCACACCTACCGG
39	Dld	GGTGGAAACATGCTTGAACGT
40	Dld	GCAGTAAAAGCATTAAACAGG
41	Dld	AGAGAAGCTGGTTGTTATTG
42	Dld	CAAAAACATCCTTGTAGCTA
43	Dlst	GGTTCGCTTCTTCCAAACCA
44	Dlst	GCAGGGGTCTCCTTATGTCTG
45	Dlst	AATGCTGACGACTTTCAATG
46	Dlst	CTCCTGCAAGGCGAACGCCG

Number	Target.Gene.Symbol	sgRNA.Target.Sequence
47	Fh1	AATTGGGCGAACTCACACGC
48	Fh1	CAGAGCTTCAAACCTTATTCG
49	Fh1	GCGACGTTCCGAGCACACCG
50	Fh1	CTCGTAGATTCTTGGCATGG
51	ldh1	CCCAGCCTGTCACTAGCCGG
52	ldh1	GGCTATAAAGAAATACAACG
53	ldh1	AATTCAAGTTGAAACAAATG
54	ldh1	TGGTACATGACTTTGAAGGT
55	ldh2	GGCCACCCAGAAGTACAGTG
56	ldh2	TCGAGCTGGCACGTTCAAGT
57	ldh2	TCACCGTCCATCTCCACTAC
58	ldh2	ACATCGGCTCATCGACGACA
59	ldh3a	GTTGTTCCGAGCGTACTCGA
60	ldh3a	CTTCAATTGAGACACATGGC
61	ldh3a	CTAAAGACCCCAATAGCCGC
62	ldh3a	AATACAGGAGGATGTCAGAT
63	ldh3b	TTCACCCTTATACTCCATTG
64	ldh3b	TCGGCACAACAATCTAGACC
65	ldh3b	ACAGGCACAAGATGTGAGGG
66	ldh3b	TAAGGAGCATCATCTGAGCG
67	ldh3g	GGCCATCCGCCGGAACCGTG
68	ldh3g	GAGTGGGCGTAAGAAAGTGA
69	ldh3g	ATTGTACGGGAAAACACAGA
70	ldh3g	ACTGAGGAAATGCTCCTTCG
71	Mdh1	GTCAGCGCCATCGATCCCCA
72	Mdh1	GTCCATAGATGTCATTGCAA
73	Mdh1	GACATTCTTTACATCATCAG
74	Mdh1	GTCTTTGGGAAAGACCAGGT
75	Mdh2	TCACGCACCTGAGAGATCAG
76	Mdh2	CGATATCGTAGAGGGTCAGG
77	Mdh2	GTTTCGCTCTGACGATGTCAA
78	Mdh2	GTTGGCAATGATGCAAACCA
79	Ogdh	TTGGCCCACTCATAGATACG
80	Ogdh	GACTAGTTCGAACTATGTGG
81	Ogdh	GTAAGTGGAAGACCTTGTC
82	Ogdh	AAAGCTGAACAGTTCTACTG
83	Ogdhl	CTAGACTGGTGCGCTCCATG
84	Ogdhl	GCTGGCTAACGTGATCCGCA
85	Ogdhl	GGCAGAGCAGTTCTACCGTG
86	Ogdhl	CTAGATCCGAGGCCACCATG
87	Pck1	ACTGACAGACTCGCCCTATG
88	Pck1	GTGGCCGAGACTAGCGATGG
89	Pck1	CCTTTGGAAGCGGATATGGT
90	Pck1	TCGCAGATGTGGATATACTC
91	Pck2	TGCGTATTATGACCCGCCTG
92	Pck2	TGATTGTAACCTCTTCGCAG

Number	Target.Gene.Symbol	sgRNA.Target.Sequence
93	Pck2	AGGGTTTGGATGCTACGGCA
94	Pck2	ATGGAAGCACATACATAATG
95	Pcx	AGGCTGCCATCTCATAACG
96	Pcx	ACGAGCAGAGAGTCATAGTG
97	Pcx	GCGCATGGCAACGTCGAACG
98	Pcx	GACTGGGGCTCACATTGACA
99	Pdha1	AGAACAACCGCTATGGCATG
100	Pdha1	ATCACTGCCTATCGAGACA
101	Pdha1	GCGCCGGATGGAGCTAAAGG
102	Pdha1	TGTTTGACATTATACGGCGA
103	Pdha2	TTCTCACAGATGAAAACACA
104	Pdha2	CAAGTACTACCGGACCATGC
105	Pdha2	GGACGTGATGACGTGATCCG
106	Pdha2	TACGGCAAGAACTTCTACGG
107	Pdhb	TCTTAATTGTAGGTTAGCAG
108	Pdhb	GGGCACAGGCTGAAGGCCAG
109	Pdhb	TGAAGCTATTAATCAAGGTA
110	Pdhb	GCCATTCGTGATAATAACCC
111	Rheb	AACAACTGAATTGTCAATG
112	Rheb	CCATATCCAACAACCTGCCA
113	Rheb	TTCAGCTTGTAGACACAGCG
114	Rheb	TCATAGGATACCTATTATGT
115	Sdha	GTCAGTTACCTCAACCACAG
116	Sdha	TTCTACTCAATACCCAGTGG
117	Sdha	TGCACAGTGCAATGACACCA
118	Sdha	ACTGTGCATTACAACATGGG
119	Sdhb	TGCGCCATGAACATCAACGG
120	Sdhb	ACAGTATCTGCAGTCCATCG
121	Sdhb	ACCTCGAATGCAGACGTACG
122	Sdhb	TAGAAGTTACTCAAATCCTG
123	Sdhc	TACTTGTAGATAGTCAAATG
124	Sdhc	TCTGGAATAGCCTTGAGTGG
125	Sdhc	TTTGGGAACCACAGCTAAGG
126	Sdhc	CAGGAAGCAGCAGTGCCGAC
127	Sdhd	GCAGAGAGGACATACAGTGG
128	Sdhd	AGGACCAGCCTACCCAAGGA
129	Sdhd	TGCAGTGGCCAAGGAGCTCG
130	Sdhd	AGGGATTCAAGTACCCAGCA
131	Sucla2	CAGAGCGTAACATACTGTCA
132	Sucla2	TGTGCACTTCTATCAGTAC
133	Sucla2	GTAGAAGATTCTGACGAAA
134	Sucla2	TCAAGTATTCATGCAGCGAA
135	Suclg1	GAGTACGGCACCAAACCTCGT
136	Suclg1	AACAGAATGGGATACGACAC
137	Suclg1	TGACACGCCAGGGAACGACG
138	Suclg1	CATTAATGAAGCAATCGACG

<b>Number</b>	<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
139	Suc1g2	GAGGACTGCCCACTATCACA
140	Suc1g2	CCTCCTAGCCCTAAAGTAGT
141	Suc1g2	GGTGAAACTCCAGAAGGACA
142	Suc1g2	TGGGACCTGACCGCCAGGAG
143	Tsc2	TGAACCACATGGCTATGACG
144	Tsc2	CACAGGGTGATAATGAACAG
145	Tsc2	CAGCTCAAAGACCCTTGAG
146	Tsc2	CTGATCCTAGCACACATGTG

**Original Doc Name: 190628\_TCA Library (--**

**Target.Gene.Symbol    sgRNA.Target.Sequence**

4933405020Rik	ATGCTCTCATGGCCATCCGT
4933405020Rik	AGTCTTGAAATGGACGACAC
4933405020Rik	AAAGCCAACATCATGAAACT
4933405020Rik	CTTCGATACCAACTGCATTG
Acly	GAGAGAGATTGACCCCGACG
Acly	AGAGCGATTTCGAGATTACCA
Acly	TTGTCACCTGTACACGACGG
Acly	GGACGAAAAGCTGAATACCG
Aco1	CCACCGCCATTTAGGCCGCG
Aco1	CATATGCTATTACCAGAGGG
Aco1	TAGCCCACCACATCAAACCT
Aco1	GTGTAGCACCTCCGACAAGT
Aco2	AGATCCGTGCCACTATTGAG
Aco2	GCGTTTACGGCCCGACCGGG
Aco2	TGGGTGAGGTCCAACCAGAG
Aco2	GATTGAAATTAACCTCAATG
BRDN0000737434	AAACTCCCGTGTCAACCGAT
BRDN0000737467	AAACCTAGCGTAGATTCGGC
BRDN0000737505	AAAAAGTCCGCGATTACGTC
BRDN0000737609	AAACTCATACGTAGCGAATC
BRDN0000737637	AAAACGTAATTATACCGAGC
BRDN0000737693	AAAACGGCTCGATCGGTGAT

<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
BRDN0000737801	AAACCCCCGCGCGGAGCGTC
BRDN0000737848	AAACGAGGCTGTTCTGTACAC
BRDN0000738185	AAAATTGCACCTCCCGGCC
BRDN0000738254	AAAGACGTGCATTCAGCGAG
Cs	TCCTTCCTTCAGATGTACGG
Cs	ACTGAGCAATCTGATACCTA
Cs	TGATTTGCTAGTCCATGTAG
Cs	TTCGCCCCGGGCATATGCAGA
Csl	TTTGCCCCGGGCATATGCGCA
Csl	GCTGAGGAATCTGATACCCA
Csl	TGATTTGCTAGCCCATGGAG
Csl	GTCCGTGTAGCCTAACATGT
Dlat	ACTACCGCAACGGACCGCAG
Dlat	CAGGCTCTCAAACCCAACAG
Dlat	CGACAAGGCCACCATAGGTG
Dlat	TTCAGAACCACACCTACCGG
Dld	GGTGGAACATGCTTGAACGT
Dld	GCAGTAAAAGCATTAAACAGG
Dld	AGAGAAGCTGGTTGTTATTG
Dld	CAAAAACATCCTTGTAGCTA
Dlst	GGTTCGCTTCTCCAAACCA
Dlst	GCAGGGGTCTCCTTATGTCTG
Dlst	AATGCTGACGACTTTCAATG

<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
Dlst	CTCCTGCAAGGCGAACGCCG
Fh1	AATTGGGCGAACTCACACGC
Fh1	CAGAGCTTCAAACCTATTCG
Fh1	GCGACGTTCCGAGCACACCG
Fh1	CTCGTAGATTCTTGGCATGG
ldh1	CCCAGCCTGTCACTAGCCGG
ldh1	GGCTATAAAGAAATACAACG
ldh1	AATTCAAGTTGAAACAAATG
ldh1	TGGTACATGACTTTGAAGGT
ldh2	GGCCACCCAGAAGTACAGTG
ldh2	TCGAGCTGGCACGTTCAAGT
ldh2	TCACCGTCCATCTCCACTAC
ldh2	ACATCGGCTCATCGACGACA
ldh3a	GTTGTTCCGAGCGTACTCGA
ldh3a	CTTCAATTGAGACACATGGC
ldh3a	CTAAAGACCCCAATAGCCGC
ldh3a	AATACAGGAGGATGTCAGAT
ldh3b	TTCACCCTTATACTCCATTG
ldh3b	TCGGCACAACAATCTAGACC
ldh3b	ACAGGCACAAGATGTGAGGG
ldh3b	TAAGGAGCATCATCTGAGCG
ldh3g	GGCCATCCGCCGGAACCGTG
ldh3g	GAGTGGGCGTAAGAAAGTGA



<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
ldh3g	ATTGTACGGGAAAACACAGA
ldh3g	ACTGAGGAAATGCTCCTTCG
Mdh1	GTCAGCGCCATCGATCCCCA
Mdh1	GTCCATAGATGTCATTGCAA
Mdh1	GACATTCTTTACATCATCAG
Mdh1	GTCTTTGGGAAAGACCAGGT
Mdh2	TCACGCACCTGAGAGATCAG
Mdh2	CGATATCGTAGAGGGTCAGG
Mdh2	GTTGCTCTGACGATGTCAA
Mdh2	GTTGGCAATGATGCAAACCA
Ogdh	TTGGCCCACTCATAGATACG
Ogdh	GACTAGTTCGAACTATGTGG
Ogdh	GTAAGTGGAAGACCTTGTC
Ogdh	AAAGCTGAACAGTTCTACTG
Ogdhl	CTAGACTGGTGCCTCCATG
Ogdhl	GCTGGCTAACGTGATCCGCA
Ogdhl	GGCAGAGCAGTTCTACCGTG
Ogdhl	CTAGATCCGAGGCCACCATG
Pck1	ACTGACAGACTCGCCCTATG
Pck1	GTGGCCGAGACTAGCGATGG
Pck1	CCTTTGGAAGCGGATATGGT
Pck1	TCGCAGATGTGGATATACTC
Pck2	TGCGTATTATGACCCGCCTG

<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
Pck2	TGATTGTAACCTTCGCAG
Pck2	AGGGTTTGGATGCTACGGCA
Pck2	ATGGAAGCACATACATAATG
Pcx	AGGCTGCCATCTCATACACG
Pcx	ACGAGCAGAGAGTCATAGTG
Pcx	GCGCATGGCAACGTCGAACG
Pcx	GACTGGGGCTCACATTGACA
Pdha1	AGAACAACCGCTATGGCATG
Pdha1	ATCACTGCCTATCGAGCACA
Pdha1	GCGCCGGATGGAGCTAAAGG
Pdha1	TGTTTGACATTATACGGCGA
Pdha2	TTCTCACAGATGAAAACACA
Pdha2	CAAGTACTACCGGACCATGC
Pdha2	GGACGTGATGACGTGATCCG
Pdha2	TACGGCAAGAACTTCTACGG
Pdhb	TCTTAATTGTAGGTTAGCAG
Pdhb	GGGCACAGGCTGAAGGCCAG
Pdhb	TGAAGCTATTAATCAAGGTA
Pdhb	GCCATTCGTGATAATAACCC
Rheb	AACAACTGAATTGTCAATG
Rheb	CCATATCCAACAACCTGCCA
Rheb	TTCAGCTTGTAGACACAGCG
Rheb	TCATAGGATACCTATTATGT

<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
Sdha	GTCAGTTACCTCAACCACAG
Sdha	TTCTACTCAATACCCAGTGG
Sdha	TGCACAGTGCAATGACACCA
Sdha	ACTGTGCATTACAACATGGG
Sdhb	TGCGCCATGAACATCAACGG
Sdhb	ACAGTATCTGCAGTCCATCG
Sdhb	ACCTCGAATGCAGACGTACG
Sdhb	TAGAAGTTACTCAAATCCTG
Sdhc	TACTTGTAGATAGTCAAATG
Sdhc	TCTGGAATAGCCTTGAGTGG
Sdhc	TTTGGGAACCACAGCTAAGG
Sdhc	CAGGAAGCAGCAGTGCCGAC
Sdhd	GCAGAGAGGACATACAGTGG
Sdhd	AGGACCAGCCTACCCAAGGA
Sdhd	TGCAGTGGCCAAGGAGCTCG
Sdhd	AGGGATTCAAGTACCCAGCA
Sucla2	CAGAGCGTAACATACTGTCA
Sucla2	TGTGCACTTCCTATCAGTAC
Sucla2	GTAGAAGATTCTGACGAAA
Sucla2	TCAAGTATTCATGCAGCGAA
Suclg1	GAGTACGGCACCAAACCTCGT
Suclg1	AACAGAATGGGATACGACAC
Suclg1	TGACACGCCAGGGAACGACG

<b>Target.Gene.Symbol</b>	<b>sgRNA.Target.Sequence</b>
Suc1g1	CATTAATGAAGCAATCGACG
Suc1g2	GAGGACTGCCCACTATCACA
Suc1g2	CCTCCTAGCCCTAAAGTAGT
Suc1g2	GGTGAAACTCCAGAAGGACA
Suc1g2	TGGGACCTGACCGCCAGGAG
Tsc2	TGAACCACATGGCTATGACG
Tsc2	CACAGGGTGATAATGAACAG
Tsc2	CAGCTCCAAAGACCCTTGAG
Tsc2	CTGATCCTAGCACACATGTG