

Table S1: Barcodes coordinates, Related to STAR Methods section

Library	Oligopaint library	Universal Primers	Read out	Start coordinate	End coordinate	Coverage (kb)	# of Oligos	Rows # in Table 5
1	2L_42_oligo	BB287-FWD / BB288-REV	RT1	15244500	15251200	6.7	75	1-75
2	2L_42_oligo	BB287-FWD / BB288-REV	RT2	15269900	15275500	5.6	75	76-150
3	2L_42_oligo	BB287-FWD / BB288-REV	RT3	15331200	15337700	6.5	75	151-225
4	2L_42_oligo	BB287-FWD / BB288-REV	RT22	15370000	15376400	6.4	75	226-300
5	2L_42_oligo	BB287-FWD / BB288-REV	RT23	15421000	15427000	6	75	301-375
6	2L_42_oligo	BB287-FWD / BB288-REV	RT24	15433900	15440000	6.1	75	376-450
7	2L_42_oligo	BB287-FWD / BB288-REV	RT7	15454200	15460000	5.8	75	451-525
8	2L_42_oligo	BB287-FWD / BB288-REV	RT8	15474000	15480300	6.3	75	526-600
9	2L_42_oligo	BB287-FWD / BB288-REV	RT9	15499000	15504500	5.5	75	601-675
10	2L_42_oligo	BB287-FWD / BB288-REV	RT10	15548000	15554800	6.8	75	676-750
11	2L_42_oligo	BB287-FWD / BB288-REV	RT11	15598000	15604300	6.3	75	751-825
12	2L_42_oligo	BB287-FWD / BB288-REV	RT12	15644000	15652000	8	75	826-900
13	2L_42_oligo	BB287-FWD / BB288-REV	RT13	15255000	15259000	4	60	901-960
14	2L_42_oligo	BB287-FWD / BB288-REV	RT14	15263000	15267000	4	56	961-1016
15	2L_42_oligo	BB287-FWD / BB288-REV	RT15	15295000	15300500	5.5	75	1017-1091
16	2L_42_oligo	BB287-FWD / BB288-REV	RT16	15320000	15325500	5.5	75	1092-1166
17	2L_42_oligo	BB287-FWD / BB288-REV	RT17	15352000	15358000	6	60	1167-1226
18	2L_42_oligo	BB287-FWD / BB288-REV	RT18	15395000	15401300	6.3	75	1227-1301
19	2L_42_oligo	BB287-FWD / BB288-REV	RT19	15486500	15491500	5	59	1302-1360
20	2L_42_oligo	BB287-FWD / BB288-REV	RT20	15523000	15529000	6	75	1361-1435
21	2L_42_oligo	BB287-FWD / BB288-REV	RT21	15574000	15580300	6.3	75	1436-1510
22	2L_42_oligo	BB287-FWD / BB288-REV	RT25	15627000	15633000	6	75	1511-1585

Table S2: Readout region sequences, Related to STAR Methods section

<b>Readout</b>	<b>Sequence</b>
RT1	CACACGCTCTTCCGTTCTATGCGACGTCGGTG
RT2	GACCAAGAGCGGACGTTGTGCCCAATGATCGC
RT3	GACACGTGATCCGCGATACGATGAAAGCGCGA
RT7	CGCAACGCTTGGGACGGTTCCAATCGGATC
RT8	CGAATGCTCTGGCCTCGAACGAACGATAGC
RT9	ACAAATCCGACCAGATCGGACGATCATGGG
RT10	CAAGTATGCAGCGCGATTGACCGTCTCGTT
RT11	AAGTCGTACGCCGATGCGCAGCAATTCCT
RT12	CGAAACATCGGCCACGGTCCCGTTGAACTT
RT13	ACGAATCCACCGTCCAGCGCGTCAAACAGA
RT14	CGCGAAATCCCCGTAACGAGCGTCCCTTGC
RT15	GCATGAGTTGCCTGGCGTTGCGACGACTAA
RT16	CCGTCGTCTCCGGTCCACCGTTGCGCTTAC
RT17	GGCCAATGGCCCAGGTCCGTACGCAATTT
RT18	TTGATCGAATCGGAGCGTAGCGGAATCTGC
RT19	CGCGCGGATCCGCTTGTCGGAACGGATAC
RT20	GCCTCGATTACGACGGATGTAATTCGGCCG
RT21	ACACCCTTGACGTCGTGGACCTCCTGCGCTA
RT22	AGAACGATCCAGCGAGATCAAGTGGAGCTGCG
RT23	CATTGCCGTATGGGCTAGGATGACCTGGCTCG
RT24	GCATTCACCCTTGACGATACCGAGCCACACC
RT25	GCCCGTATTCCCGCTTGCGAGTAGGGCAAT

Table S3: Fluorescent Readout probes, Related to STAR Methods section

<b>Readout</b>	<b>Sequence</b>
revRT1	CACCGACGTCGCATAGAACGGAAGAGCGTGTG/iThioMC6-D//3AlexF647N/
revRT2	GCGATCATTGGGCACAACGTCCGCTCTTGGTC/iThioMC6-D//3AlexF647N/
revRT3	TCGCGCTTTCATCGTATCGCGGATCACGTGTC/iThioMC6-D//3AlexF647N/
revRT7	GATCCGATTGGAACCGTCCCAAGCGTTGCG/iThioMC6-D//3AlexF647N/
revRT8	GCTATCGTTTCGTTTCGAGGCCAGAGCATTTCG/iThioMC6-D//3AlexF647N/
revRT9	CCCATGATCGTCCGATCTGGTTCGGATTTGT/iThioMC6-D//3AlexF647N/
revRT10	AACGAGACGGTCAATCGCGCTGCATACTTG/iThioMC6-D//3AlexF647N/
revRT11	AGTGAATTGCTGCGCATCGGCGTACGACTT/iThioMC6-D//3AlexF647N/
revRT12	AAGTTCAACGGGACCGTGGCCGATGTTTCG/iThioMC6-D//3AlexF647N/
revRT13	TCTGTTTGACGCGCTGGACGGTGGATTTCG/iThioMC6-D//3AlexF647N/
revRT14	GCAAGGGACGCTCGTTACGGGGATTTTCGCG/iThioMC6-D//3AlexF647N/
revRT15	TTAGTCGTCGCAACGCCAGGCAACTCATGC/iThioMC6-D//3AlexF647N/
revRT16	GTAAGCGCAACGGTGGACCGGAGACGACGG/iThioMC6-D//3AlexF647N/
revRT17	AAATTGCGTGACGGACCTGGGCCATTGGCC/iThioMC6-D//3AlexF647N/
revRT18	GCAGATTCCGCTACGCTCCGATTCGATCAA/iThioMC6-D//3AlexF647N/
revRT19	GTATCCGTTCCCGACAAGCGGATCCGCGCG/iThioMC6-D//3AlexF647N/
revRT20	CGGCCGAATTACATCCGTTCGTAATCGAGGC/iThioMC6-D//3AlexF647N/
revRT21	TAGCGCAGGAGGTCCACGACGTGCAAGGGTGT/iThioMC6-D//3AlexF647N/
revRT22	CGCAGCTCCACTTGATCTCGCTGGATCGTTCT/iThioMC6-D//3AlexF647N/
revRT23	CGAGCCAGGTCATCCTAGCCCATACGGCAATG/iThioMC6-D//3AlexF647N/
revRT24	GGTGTGGCTCGGTATCGTGCAAGGGTGAATGC/iThioMC6-D//3AlexF647N/
revRT25	ATTGCCCTACTCGCAAGCGGGAATACGGGC/iThioMC6-D//3AlexF647N/