

Supplementary Table 1. Ten most enriched mRNAs for dCas9 *IL1RN*-targeted RNA-seq experiments

dCas9^{VP64} + 4 IL1RN gRNAs compared to dCas9 + 4 IL1RN gRNAs								
	Refseq ID	Gene	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj
1	NM_173842	<i>IL1RN</i> (transcript variant 1)	14.764	0.529	0.152	3.48	0.000494857	0.99992134
2	NM_173843	<i>IL1RN</i> (transcript variant 4)	13.606	0.517	0.149	3.47	0.000530109	0.99992134
3	NR_073102	ZNF551	21.505	0.505	0.159	3.17	0.00152863	0.99992134
4	NM_000577	<i>IL1RN</i> (transcript variant 3)	14.890	0.497	0.152	3.28	0.001039353	0.99992134
5	NM_001077441	BCLAF1(transcript variant 3)	437.814	0.482	0.153	3.14	0.001665925	0.99992134
6	NM_173841	<i>IL1RN</i> (transcript variant 2)	13.711	0.448	0.15	3.00	0.002716294	0.99992134
7	NM_001268	<i>RCBTB2</i>	46.265	0.440	0.167	2.64	0.008335513	0.99992134
8	NM_000922	<i>PDE3B</i>	143.947	0.439	0.167	2.63	0.008471891	0.99992134
9	NM_001077440	<i>BCLAF1</i> (transcript variant 2)	463.743	0.439	0.156	2.82	0.004790762	0.99992134
10	NM_014739	<i>BCLAF1</i> (transcript variant 1)	474.598	0.432	0.158	2.74	0.006232218	0.99992134
dCas9^{p300 Core} + 4 IL1RN gRNAs compared to dCas9 + 4 IL1RN gRNAs								
	Refseq ID	Gene	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj
1	NM_173843	<i>IL1RN</i> (transcript variant 4)	45.517	1.548	0.171	9.04	1.52E-19	5.24E-15
2	NM_173841	<i>IL1RN</i> (transcript variant 2)	40.690	1.457	0.171	8.50	1.83E-17	3.16E-13
3	NM_173842	<i>IL1RN</i> (transcript variant 1)	39.568	1.448	0.171	8.45	2.88E-17	3.30E-13
4	NM_000577	<i>IL1RN</i> (transcript variant 3)	41.821	1.437	0.171	8.39	4.88E-17	4.20E-13
5	NM_001429	<i>p300</i>	928.435	0.955	0.171	5.57	2.50E-08	0.000171838
6	NM_002253	<i>KDR</i>	17.477	0.842	0.163	5.17	2.36E-07	0.00135472
7	NM_030797	<i>FAM49A</i>	21.286	0.736	0.166	4.44	8.91E-06	0.043823927
8	NM_012074	<i>DPF3</i>	17.111	0.609	0.164	3.72	0.000202676	0.871938986
9	NM_031476	<i>CRISPLD2</i>	25.148	0.569	0.167	3.41	0.000653132	0.999954424
10	NM_007365	<i>PADI2</i>	99.012	0.554	0.162	3.41	0.000641145	0.999954424
dCas9^{p300 Core (D1399Y)} + 4 IL1RN gRNAs compared to dCas9 + 4 IL1RN gRNAs								
	Refseq ID	Gene	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj
1	NM_001429	<i>p300</i>	935.659	1.234	0.198	6.24	4.36E-10	1.49E-05
2	NM_001270493	<i>SREK1</i> (transcript variant 4)	30.118	0.651	0.203	3.20	0.001388089	0.999938051
3	NM_001079802	<i>FKTN</i> (transcript variant 1)	148.558	0.546	0.203	2.69	0.007212168	0.999938051
4	NM_000922	<i>PDE3B</i>	140.122	0.535	0.201	2.66	0.007805491	0.999938051
5	NM_206937	<i>LIG4</i> (transcript variant 2)	30.589	0.521	0.203	2.56	0.010513626	0.999938051
6	NM_001136116	<i>ZNF879</i>	18.421	0.520	0.201	2.59	0.009600802	0.999938051
7	NM_018374	<i>TMEM106B</i> (transcript variant 1)	280.758	0.516	0.196	2.64	0.008329592	0.999938051
8	NM_019863	<i>F8</i> (transcript variant 2)	8.048	0.515	0.178	2.89	0.003827553	0.999938051
9	NM_001193349	<i>MEF2C</i> (transcript variant 5)	18.934	0.510	0.202	2.53	0.011492452	0.999938051
10	NM_183245	<i>INVS</i> (transcript variant 2)	38.545	0.497	0.203	2.45	0.014125973	0.999938051

Supplementary Table 2. *IL1RN* TAL effector information.

Name	Target Site	Location *	Reference
<i>IL1RN</i> TALE ^{VP64 A}	GGGCTCCTCCTTGACT	chr2:113875431-113875447	Perez-Pinera et al., Nat. Methods, 2013 ³
<i>IL1RN</i> TALE ^{VP64 B}	ACGCAGATAAGAACCAGT	chr2:113875291-113875308	Perez-Pinera et al., Nat. Methods, 2013 ³
<i>IL1RN</i> TALE ^{VP64 C}	GGCATCAAGTCAGCCAT	chr2:113875356-113875372	Perez-Pinera et al., Nat. Methods, 2013 ³
<i>IL1RN</i> TALE ^{VP64 D}	AGCCTGAGTCACCCTCCT	chr2:113875321-113875338	Perez-Pinera et al., Nat. Methods, 2013 ³
<i>IL1RN</i> TALE ^{p300 Core A}	GGGCTCCTCCTTGACT	chr2:113875431-113875447	This study
<i>IL1RN</i> TALE ^{p300 Core B}	ACGCAGATAAGAACCAGT	chr2:113875291-113875308	This study
<i>IL1RN</i> TALE ^{p300 Core C}	GGCATCAAGTCAGCCAT	chr2:113875356-113875372	This study
<i>IL1RN</i> TALE ^{p300 Core D}	AGCCTGAGTCACCCTCCT	chr2:113875321-113875338	This study

*GRCh37/hg19 assembly

Supplementary Table 3. Referenced plasmids in this study available at Addgene.

<u>Plasmid Name</u>	<u>Addgene Plasmid #</u>	<u>Reference</u>
pcDNA-dCas9 ^{VP64}	47107	Perez-Pinera et al., Nat. Methods, 2013 ⁴
pcDNA-dCas9-HA	61355	This study
pcDNA3.1-p300	23252	Chen et al., EMBO J., 2002 ⁵
pcDNA-dCas9 ^{FLp300}	61356	This study
pcDNA-dCas9 ^{p300 Core}	61357	This study
pcDNA-dCas9 ^{p300 Core (D1399Y)}	61358	This study
pcDNA-dCas9 ^{p300 Core (1645/1646 RR/EE)}	61359	This study
pcDNA-dCas9 ^{p300 Core (C1204R)}	61361	This study
pcDNA-dCas9 ^{p300 Core (Y1467F)}	61362	This study
pcDNA-dCas9 ^{p300 Core (1396/1397 SY/WW)}	61363	This study
pcDNA-dCas9 ^{p300 Core (H1415A/E1423A/Y1424A/L1428S/Y1430A/H1434A)}	61364	This study
pZdonor-pSPgRNA	47108	Perez-Pinera et al., Nat. Methods, 2013 ⁴
pcDNA3.1-300(HAT-)	23254	Chen et al., EMBO J., 2002 ⁵ ; Kraus et al., Mol. Cell Biol., 1999 ⁵
pcDNA3.3-Nm-dCas9 ^{VP64}	48676	Esvelt and Mali et al., Nat. Methods, 2013 ⁷
pcDNA3.3-Nm-dCas9 ^{p300 Core}	61365	This study
pZDonor-NmCas9-gRNA-hU6	61366	This study
PL-SIN-EF1 α -EGFP	21320	Hotta et al., Nat. Methods, 2009 ⁸

Supplementary Table 4. gRNA information.

Sp-dCas9			
<u>Target Location</u>	<u>Protospacer Sequence</u> <u>(5'- 3')</u>	<u>Genomic Location</u> <u>(GRCh37/hg19 Assembly)</u>	<u>Reference</u>
<i>IL1RN</i> Promoter A	TGTA CTCTCTGAGGTGCTC	chr2:113875442-113875460	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>IL1RN</i> Promoter B	ACGCAGATAAGAACCAGTT	chr2:113875291-113875309	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>IL1RN</i> Promoter C	CATCAAGTCAGCCATCAGC	chr2:113875358-113875376	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>IL1RN</i> Promoter D	GAGTCA CCTCTCTGGAAAC	chr2:113875326-113875344	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>MYOD</i> Promoter A	CCTGGGCTCCGGGGCGTTT	chr11:17741056-17741074	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>MYOD</i> Promoter B	GGCCCTGCGCCACCCCG	chr11:17740969-17740987	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>MYOD</i> Promoter C	CTCCCTCCCTGCCCGGTAG	chr11:17740897-17740915	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>MYOD</i> Promoter D	AGGTTTGAAAGGGCGTGC	chr11:17740837-17740855	Perez-Pinera et al., Nat. Methods, 2013 ⁴
<i>OCT4</i> Promoter A	ACTCCA CTGCACTCCAGTCT	chr6:31138711-31138730	Hu et al., Nucleic Acids Res., 2014 ⁹
<i>OCT4</i> Promoter B	TCTGTGGGGGACCTGCACTG	chr6:31138643-31138662	Hu et al., Nucleic Acids Res., 2014 ⁹
<i>OCT4</i> Promoter C	GGGGCGCCAGTTGTGTCTCC	chr6:31138613-31138632	Hu et al., Nucleic Acids Res., 2014 ⁹
<i>OCT4</i> Promoter D	ACACCATTGCCACCACCATT	chr6:31138574-31138593	Hu et al., Nucleic Acids Res., 2014 ⁹
<i>MYOD</i> DRR A	TGTTTT CAGCTTCCAACT	chr11:17736528-17736546	This Study
<i>MYOD</i> DRR B	CATGAAGACAGCAGAAGCC	chr11:17736311-17736329	This Study
<i>MYOD</i> DRR C	GGCCACATTCTTTCCAG	chr11:17736158-17736176	This Study
<i>MYOD</i> DRR D	GGCTGGATTGGGTTTCCAG	chr11:17736065-17736083	This Study
<i>MYOD</i> CE A	CAACTGAGTCCTGAGGTTT	chr11:17721347-17721365	This Study
<i>MYOD</i> CE B	CTCACAGCACAGCCAGTGT	chr11:17721257-17721275	This Study
<i>MYOD</i> CE C	CAGCAGCTGGTCACAAAGC	chr11:17721200-17721218	This Study
<i>MYOD</i> CE D	CTTCCTATAAACTTCTGAG	chr11:17721139-17721157	This Study
<i>OCT4</i> PE A	AGTGATAAGACACCCGCTTT	chr6:31139524-31139543	This Study
<i>OCT4</i> PE B	CAGACATCTAATACCACGGT	chr6:31139604-31139623	This Study
<i>OCT4</i> PE C	AGGGAGAACGGGGCCTACCG	chr6:31139620-31139639	This Study
<i>OCT4</i> PE D	ACTTCAGGTTCAAAGAAGCC	chr6:31139725-31139744	This Study
<i>OCT4</i> PE E	TTTTCCCCACCCAGGGCCTA	chr6:31139671-31139690	This Study
<i>OCT4</i> PE F	CCCTGGGTGGGGAAAACCAG	chr6:31139675-31139694	This Study
<i>OCT4</i> DE A	GGAGGAACATGCTTCGGAAC	chr6:31140809-31140828	This Study
<i>OCT4</i> DE B	GTGCCGTGATGGTTCTGTCC	chr6:31140864-31140883	This Study

OCT4 DE C	GGTCTGCCGGAAGGTCTACA	chr6:31140707-31140726	This Study
OCT4 DE D	TCGGCCTTTAACTGCCCAA	chr6:31140757-31140776	This Study
OCT4 DE E	GCATGACAAAGGTGCCGTGA	chr6:31140875-31140894	This Study
OCT4 DE F	CCTGCCTTTTGGGCAGTTAA	chr6:31140764-31140783	This Study
HS2 A	AATATGTCACATTCTGTCTC	chr11:5301800-5301819	This Study
HS2 B	GGAATATGTCACATTCTGTCTC	chr11:5302108-5302127	This Study
HS2 C	GAAGGTTACACAGAACCAGA	chr11:5302033-5302052	This Study
HS2 D	GCCCTGTAAGCATCCTGCTG	chr11:5301898-5301917	This Study

Nm-dCas9			
<u>Target Location</u>	<u>Protospacer Sequence (5' - 3')</u>	<u>Genomic Location (GRCh37/hq19 Assembly)</u>	<u>Reference</u>
HBG Promoter A	CCACTGCTAACTGAAAGAGA	chr11:5271570-5271589	This Study
HBG Promoter B	AGCCACAGTTTCAGCGCAGT	chr11:5271692-5271711	This Study
HBG Promoter C	CTGTTTCATCTTAGAAAAAT	chr11:5271793-5271812	This Study
HBG Promoter D	GAATGTTCTTTGGCAGGTAC	chr11:5271942-5271961	This Study
HBG Promoter E	CGCACATCTTATGTCTTAGA	chr11:5272021-5272040	This Study
HBE Promoter A	CTTAAGAGAGCTAGAACTGG	chr11:5291618-5291637	This Study
HBE Promoter B	TCCCAAAGTACAGTACCTTG	chr11:5291758-5291777	This Study
HBE Promoter C	TCCCTAGAGAGGACAGACAG	chr11:5291785-5291804	This Study
HBE Promoter D	TCATAGAGAAATGAAAAGAG	chr11:5291840-5291859	This Study
HBE Promoter E	ATAATATACCCTGACTCCTA	chr11:5292038-5292057	This Study
HS2 A	AGGCCACCTGCAAGATAAAT	chr11:5301662-5301681	This Study
HS2 B	TGTTGTTATCAATTGCCATA	chr11:5301708-5301727	This Study
HS2 C	ATCCCTTCCAGCATCCTCAT	chr11:5302187-5302206	This Study
HS2 D	GTGCTTCAAACCATTGCT	chr11:5302245-5302264	This Study
HS2 E	GATACATGTTTTATTCTTAT	chr11:5302306-5302325	This Study

Supplementary Table 5. Quantitative reverse transcription PCR and ChIP-qPCR primers and conditions.

Target	Forward Primer (5'-3')	Reverse Primer (5'-3')	Cycling Parameters
<i>GAPDH</i>	CAATGACCCCTTCATTGACC	TTGATTTTGGAGGGATCTCG	95°C 30 sec 95°C 5 sec 53°C 20 sec 45X
<i>IL1RN</i>	GGAATCCATGGAGGGAAGAT	TGTTCTCGCTCAGGTCAGTG	95°C 30 sec 95°C 5 sec 58°C 20 sec 45X
<i>MYOD</i>	TCCCTCTTTCACGGTCTCAC	AACACCCGACTGCTGTATCC	95°C 30 sec 95°C 5 sec 53°C 20 sec 45X
<i>OCT4</i>	CGAAAGAGAAAGCGAACCAGTATCGAGAAC	CGTTGTGCATAGTCGCTGCTTGATCGC	95°C 30 sec 95°C 5 sec 53°C 20 sec 45X
<i>HBB</i>	GCACGTGGATCCTGAGAACT	ATTGGACAGCAAGAAAGCGAG	95°C 30 sec 95°C 5 sec 58°C 20 sec 45X
<i>HBD</i>	GCACGTGGATCCTGAGAACT	CAGGAAACAGTCCAGGATCTCA	95°C 30 sec 95°C 5 sec 58°C 20 sec 45X
<i>HBG</i>	GCTGAGTGAAGTCACTGTGA	GAATTCCTTGGCGAAATGGA	95°C 30 sec 95°C 5 sec 58°C 20 sec 45X
<i>HBE</i>	TCACTAGCAAGCTCTCAGGC	AACAACGAGGAGTCTGCC	95°C 30 sec 95°C 5 sec 62°C 20 sec 45X
<i>ICAM1</i>	GCAGACAGTGACCATCTACAGCTT	CAATCCCTCTCGTCCAGTCG	95°C 30 sec 95°C 5 sec 58°C 20 sec 45X
HS2 ChIP Region 1	TGCTTGGACTATGGGAGGTC	GCAGGTGCTTCAAACCATT	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
HS2 ChIP Region 2	TCAGGTGGTCAGCTTCTCCT	AAGCAAACCTTCTGGCTCAA	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
HS2 ChIP Region 3	CCACACAGGTGAACCCTTTT	GGACACATGCTCACATACGG	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>HBE</i> ChIP Region 1	ATTCGATCCATGTGCCTGA	CAATGCTGGAATTTGTGGAA	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>HBE</i> ChIP Region 2	GGGGTGATTCCCTAGAGAGG	AAGCAGGACAGACAGGCAAG	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>HBE</i> ChIP Region 3	GAGGGTCAGCAGTGATGGAT	TGGAAAAGGAGAATGGGAGA	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>HBG1/2</i> ChIP Region 1	TGGTCAAGTTTGCCTTGCA	GGAATGACTGAATCGGAACAA	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>HBG1/2</i> ChIP Region 2	CCTCCAGCATCTCCACATT	GAAGCACCTTCAGCAGTTC	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>HBG1/2</i> ChIP Region 3	CCACAGTTTCAGCGCAGTAATA	ATCAGCCAGCACACACTT	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>IL1RN</i> ChIP Region 1	CCCTGTCAGGAGGGACAGAT	GGCTCACCGGAAGCATGAAT	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>IL1RN</i> ChIP Region 2	AAGCTACAAGCAGGTTGCT	AATAACAGGGTCCATCCCGC	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X
<i>IL1RN</i> ChIP Region 3	TGTTCCCTCCACCTGGAATA	GGGAAAATCCAAGCAGGAT	95°C 30 sec 95°C 5 sec 60°C 20 sec 45X

<i>IL1RN</i> ChIP Region 4	TCCTAGGTCCCTCAAAAGCA	GTCCCCAACGCTCTAACAAA	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 5	GTTAGAGCGTTGGGGACCTT	CACATGCAGAGAACTGAGCTG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 6	GTTGGGGTAAGCACGAAGG	TTCCAGGAGGGTGACTCAG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 7	TTCTCTGCATGTGACCTCCC	ACACACTCACAGAGGGTTGG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 8	TGAGTCACCCTCCTGGAAAC	CTCCTTCCAGAGCACCTCAG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 9	GCTGGGCTCCTCCTTGACT	GCTGCTGCCATAAAGTAGC	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 10	GGACTGTGGCCAGGTACT	GGCCTCATAGGACAGGAGGT	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 11	TTATGGGCAGCAGCTCAGTT	GACATTTTCCTGGACGCTTG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 12	CCCTCCCCATGGCTTTAGGT	AGCTCCATGCGCTTGACATT	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
<i>IL1RN</i> ChIP Region 13	AGCGTCCAGGAAAATGTCAA	ATGACCCTCACACTCCAAGG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X
Upstream β - <i>actin</i> ChIP NEG CTRL	GTTGGGTGCTCCAGCTTTTA	CCTCAAAACTCCTGGACTCG	95°C 30 sec 95°C 5 sec 60°C 20 sec	45X

Supplementary Note 1. Amino acid sequences of dCas9 constructs.

dCas9 HA:(Addgene plasmid 61355) amino acid sequence; **3X "Flag" Epitope**, **Nuclear Localization Sequence**, *Streptococcus pyogenes Cas9 (D10A, H840A)*, **"HA" Epitope**

M**DYKDHDGDYKDHDIDYKDDDDK**MAPKKRKVGRGMDKKYSIGLAIGTNSVGWAVITDEY
KVPSKFKFVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLSEESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADLRLIYLALAHMIKFRGHFLIEGDLNPDNSDVKLFIQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIALSLGLTPNFKSNFDLAEDAQLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEVVDKGGASQSFIERMTNFDKLNLPNE
KVLPHKSHLLYEYFTVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFQMQLIHDDSLTFKEDIQKAQVSGGGDSLHEHIANLAGSPAIAKKGILQTVKVVD
ELVKVMGRHKPENIVIAMARENQTTQKGQKNSRERMKRIEIEGKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGGLSELDKAGFIKRQLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKVRINNYHHAH
DAYLNAVVGTAIHKYKPKLESEFVYGDYKVDYRKMIAKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGSKKLKSVKELLG
ITIMERSSEKPNIDFLEAKGYKEVKKDLIIPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFYLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIIEQISEFSKRVLADA
NLDKVL SAYNKHDKPIREQAENIIHLFTLNLGAPAAFKYFDTTIDRKRYTSTKEVLDA
TLIHSITGLYETRIDLSQLGGDPIAGSKASPKKKRKVGRALINYPYDVPDYAS

dCas9^{VP64}: (Addgene Plasmid 47107)⁴ amino acid sequence; **3X "Flag" Epitope**, **Nuclear Localization Sequence**, *Streptococcus pyogenes Cas9 (D10A, H840A)*, **VP64 Effector**, **"HA" Epitope**

M**DYKDHDGDYKDHDIDYKDDDDK**MAPKKRKVGRGMDKKYSIGLAIGTNSVGWAVITDEY
KVPSKFKFVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLSEESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADLRLIYLALAHMIKFRGHFLIEGDLNPDNSDVKLFIQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIALSLGLTPNFKSNFDLAEDAQLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEVVDKGGASQSFIERMTNFDKLNLPNE
KVLPHKSHLLYEYFTVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFQMQLIHDDSLTFKEDIQKAQVSGGGDSLHEHIANLAGSPAIAKKGILQTVKVVD
ELVKVMGRHKPENIVIAMARENQTTQKGQKNSRERMKRIEIEGKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGGLSELDKAGFIKRQLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKVRINNYHHAH
DAYLNAVVGTAIHKYKPKLESEFVYGDYKVDYRKMIAKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGSKKLKSVKELLG
ITIMERSSEKPNIDFLEAKGYKEVKKDLIIPKYSLFELENGRKRMLASAGELQKGN

LALPSKYVNFYLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRVLADA
NLDKVL SAYNKHRDKPIREQAENIIHLFTLTNLGAPAAFKYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKR~~KVGRADALDDFDLDMLGSDALDDF~~
~~DLMLGSDALDDFDLDMLGSDALDDFDLDML~~INYPYDVPDYAS

dCas9^{FL p300}: (Addgene Plasmid 61356) amino acid sequence; 3X "Flag" Epitope, Nuclear Localization Sequence, *Streptococcus pyogenes* Cas9 (D10A, H840A), Human p300 aa 2-2414, L553M, "HA" Epitope

MDYKDHDGDYKDHDIDYKDDDDKMAPKKR~~KVGRGMDKKYSIGLAIGTNSVGWAVITDEY~~
KVPSKKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLSEESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADRLIYLALAHMIKFRGHFLIEGDLNPDNSVDKLFQILVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIALSLGLTPNFKSNFDLAEDAQLQ
LSKDYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKLNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGLARGNSRFAMTRKSEETITPWNFEVVDKGSASQSFIERMTNFDKNLPNE
KVLPKHSLLYEYFTVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTRNKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDDLKIIKDKDFLDNEENEDILEDIVLTTL
FEDREMIERLKYAHLFDDKVMKQLKRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQKAQVSGQGDLSLHEHIANLAGSPAIKKGLQTVKVVD
ELVKVMGRHKPENIVIEMARENQTTQKGQKNSRERMKRIEIGIKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGGLSELDKAGFIKRLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKREINNYHHAH
DAYLNAVVGTAIHKYKPKLESEFVYGDYKVYDVRKMIKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKYGFDSPVAVSVLVAKVEKGSKKLKSVKELLG
ITIMERSSEFKNPIDFLEAKGYKEVKDLIILPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFYLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRVLADA
NLDKVL SAYNKHRDKPIREQAENIIHLFTLTNLGAPAAFKYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKR~~KVGRAAENVVEPGPPSAKRPKLSS~~
PALASASDGTDFGSLFDLEHDLPEDELINTELGLTNGGDINQLQTSLGMVQDAASKHKQ
LSELLRSGSSPNLNMGVGGPGQVMASQAQQSSPGLGLINSMVKSPMTQAGLTSPNMGMT
SGPNQGPQTSTGMMNSPVNQPAMGMNTGMNAGMNPGLAAGNGQGIMPNQVMNGSIGAGR
GRQNMQYPNPGMGSAGNLLTEPLQQGSPQMGGQTGLRGPQPLKMGMMNPNPYGSPYTQN
PGQQIGASGLGLIQTKTVLSNNLSPFAMDKKA VPGGGMPNMGQQPAPVQVQPGLVTPVA
QGMGSGAHTADPEKRKLIQQQLVLLLHAHKCQRREQANGEVRQCNLPHCRTMKNVLNHMT
HCQSGKSCQVAHCASSRQIISHWKNCTRHDPCVCLPLKNAGDKRNQQPILT GAPVGLGNP
SSLGVGQQSAPNLSTVSQIDPSSIERAYAALGLPYQVNQMPTQPQVQAKNQQNQQPGQSP
QGMRPMSNMSASPMGVNNGGVGVQTPSLLSDSMLHSAINSQNPMMSENASVPSMGPMP
QPSTTGIRKQWHEDITQDLRNHLVHKLVAIFPTPDPAAALKDRRMENLVAYARKVEGDMY
ESANNRAEYHYLLAEKIYKIQKELEEKRRTRLQKQNMPLPNAAGMVPVSMNPGPNMGQPQ
GMTSNGPLPDPSPMIRGSVPNQMMPRITPQSLNQFGQMSMAQPPVPRQTPPLQHHGQLA
QPGALNPPMGYGRMQPSNQGFPLPQTQFSPQGMNVTNIPLAPSSGQAPVSAQMSSSS
CPVNSPIMPPGSQSHIHCPQLPQPALHQNSPSPVPSRTPTPHHTPPSIGAQQPPATTIP
APVPTPPAMPPGQSQALHPPPRQTPTPTTQLPQQVQPSLPAAPSADQPQQQPRSQST
AASVPTPTAPLLPPQATPLSQPAVSIEGQVSNPPSTSSSTEVNSQAIAEKQPSQEVKMEA
KMEVDQPEPADTQPEDISESKVEDCKMESTETEERSTELKTEIKEEEDQPSTSATQSSPA
PGQSKKIKIFPEELRQALMPTLEALYRQDPESLPFRQPVPDQLL GIPDYFDIVKSPMDLS
TIKRKLDTGQYQEPWQYVDDIWL MFNNAWL YNRKTSRVYKYCSKLSEVFEQEIDPVMQSL
GYCCGRKLEFSPQTLCCYQKQLCTIPRDATYYSYQNRHYHFCEKCFNEIQGESVSLGDDPS
QPQTTINKEQFSKRKNDTLDPEL FVECTECGRKMHCIVLHHEIWPAGFVCDGCLKKA

RTRKENKFSAKRLPSTR LGTFLENRVNDFLRRQNHPESEGEVTVRVVHASDKTVEVKPGMK
ARFVDSGEMAESFPYRTKALFAFEEIDGVDLCFFGMHVQEYGSDCPPPQRRVYISYLD
VHFFRPKCLRTAVYHEILIGYLEYVKKLG YTTGHIWACPPSEGDDYIFHCHPPDQKIPK
KRLQEWYKMLDKAVSERIVHDYKDIFKQATEDRLTSAKELPYFEGDFWPNVLEESIKEL
EQEEEEERKREENTSNESTDVTKGDSKNAKKNNKTSKNKSSL SRGNKKKPGMPNVSNDL
SQKLYATMEKHKEVFFVIRLIAGPAANSLPPIVDPDPLIPCDLMDGRDAFLTLARDKHLE
FSSLRAQWSTMCMLVELHTQSQDRFVYTCNECKHHVETRWHCTVCEDYDLCITCYNTKN
HDHKMEKLG LGLDDESNNQAAATQSPGDSRRLSIQRCIQSLVHACQCRNANCSLPSCQK
MKRVVQHTKGCKRKTNGGCPICKQLIALCCYHAKHCQENKCPVPFCLNIKQKLRQQQLQH
RLQQAQMLRRRMASMQRTGVVGGQQGLPSPTPATPTTPTGQQPTTPTQPTSPQPPTPP
NSMPYYLPRTAAGPVSQGAAGQVTPPTPPQTAQPPLPGPPAAVEMAMQIQRAAETQR
QMAHVQIFQRPIQHMQPPMTPMAPMGMNPPMTRGPSGHLEPGMGPTGMQQQPWSQGG
PQPQLQSGMPRPAMMSVAQHGGQPLNMAPQPLGQVGISPLKPGTVSQQALQNLRLTRS
PSSPLQQQVLSILHANPQLLAAFIKQRAAKYANSNPQPIPGQPGMPQGGPGLQPPTMPG
QQGVHSNPAMQNMNPMQAGVQRAGLQQQQPQQQLQPPMGGMSPQAQQMNMNHNTMPSQFR
DILRRQMMQQQQQGAGPGIGPGMANHNQFQQQVGYPPQQQRMQHMMQQMGGNMG
QIGQLPQALGAEAGASLQAYQQRLLQQQMGSVPQPNPMSPQQHMLPNQAQSPHLQGGQIP
NSLSNQVRSPQVPSPRPQSQPPHSSPSRMQPQSPHHVSPQTSSPHGLVAAQANPME
QGHFASPQNSMLSQLASNPGMANLHGASATDLGLSTDNSDLNSNLSQSTLDIHYPYDVP
DYAS

dCas9^{p300 Core}: (Addgene Plasmid 61357) amino acid sequence; 3X "Flag" Epitope, Nuclear Localization Sequence, *Streptococcus pyogenes* Cas9 (D10A, H840A), p300 Core Effector, "HA" Epitope

MDYKDHDGDYKDHDIDYKDDDDKMAPKKRKRKVG RGM DKKYSIGLAIGTNSVGWAVITDEY
KVPSKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRL EESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADRLIYLALAHMIKFRGHFLIEGDLNPDNSDVKLFIQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIALSLGLTPNFKSNFDLAEDAKLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEEVVDK GASAQSFIERMTNFDKNLPNE
KVLPHSLLYEFYTVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQKAQVSGQGDSLHEHIANLAGSPAIKKILQTVKVVD
ELVKVMGRHKPENIVIEMARENQTTQKGQKNSRERMKRIE EGIKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGG LSELDKAGFIKRQLVETR
QITKHVAQILD SRMNTKYDENDKLIREVKVITLKS KLVSDFRKDFQFYKVINNYHHAH
DAYLNAVVG TALIKKYPKLESEFVYGDYKYVDVRKMIAKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGKSKKLSVKELLG
ITIMERSSEKPNIDFLEAGKYKEVKKDLI KLPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRVLADA
NLDKVL SAYNKHRDKPIREQAENIHLFTLNLGAPAAFYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKRKRKVGRAIFKPEELRQALMPTLEALY
RQDPESLPFRQPVPDQLL GIPDYFDIVKSPMDLSTIKRKLDTGQYQEPWQYVDDIWL MFN
NAWLYNRKTSRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCY GKQLCTIP
RDATYYSYQNR YHFCEKCFNEIQGESVSLGDDPSQPQTINKEQFSKRKNDTLDPELFVE
CTECGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFS AKRLPSTR LGTFLENRV
NDFLRRQNHPESEGEVTVRVVHASDKTVEVKPGMKARFVDSGEMAESFPYRTKALFAFEEI
DGV DLCFFGMHVQEYGSDCPPPQRRVYISYLD SVHFFRPKCLRTAVYHEILIGYLEYVK

KLGYTTGHIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWYKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELEQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKTSKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDLIPCDLMDGRDAFLTLARDKHLEFSSLRRAQWSTMCMMLVELHTQSQDYP
YDVDPDYAS

dCas9^{p300 Core (D1399Y)}: (Addgene Plasmid 61358) amino acid sequence; **3X "Flag" Epitope**, Nuclear
Localization Sequence, *Streptococcus pyogenes* Cas9 ([D10A](#), [H840A](#)), **p300 Core Effector**,
D1399Y, **"HA" Epitope**

M**DYKDHDGDYKDHDIDYKDDDDK**MAPKKKRKVG**R**MDKKYSIGL**A**IGTNSV**G**WAVITDEY
KVPSK**K**FKVLGNTDRHSIK**N**LIGALLFDSGETAEATRLKRTARRRYTRRKNR**I**CYLQEI
FSNEMAKVDD**S**FFHRLEESFLVEEDK**H**ERHPIFGNIVDEVAYHEKYPTI**Y**HRLR**K**LVDS
TDKADRL**L**IYLALAHMIKFRGHFLIEGDLNPDNSD**V**DKLFIQLVQTY**N**QLFEENPINAS**G**
VDAKAILSARLSK**S**RRLENLIAQLPGEK**K**NGLFGNLIALSLGLTPNFKSNFDLAEDAKLQ
LSKDTYDDDLN**L**LAQIGDQYADLFLAAK**N**LSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLV**K**LNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFY**P**FLKDNREKIEKILT
FRIPY**V**VGPLARGNSRF**A**WMTRKSEETITPNWFEEVVDKGAS**A**QSFIERMTNFDK**N**LPNE
KVL**P**KHSLLYEYFTVYNELTKVKYVTEGM**R**KPAFLSGEQKKAIVD**L**LFKTNRKVT**V**KQLK
EDYFKKIECFDSVEISGVEDRFNASLGT**Y**HDLLK**I**IKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERL**K**TYAHLFDDK**V**MKQLKRRRYTGWGRLSRK**L**INGIRDKQSGKTILD**F**LKS
DGFANR**N**F**M**QLIHDDSLTFKEDIQKAQVSGQ**G**DSLHEHIANLAGSPA**I**KKGILQTVK**V**VD
ELV**K**V**M**GRH**K**PENIV**I**EMARENQTTQKGQKNSRERMK**R**IEEGIKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELINRLSDYD**V**DA**I**VPQSFLKDDSIDNKVLTRSDK**N**RG
KSDNVPSEEV**V**K**M**KNYWRQLLNAKLITQRKFDNLT**K**AERGGLSELDKAGFIK**R**QLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITL**K**SKLVSDFRKDFQFYK**V**REINNYHHAH
DAYLNAVVG**T**ALIKKYPKLESEFVYGDYK**V**YDVRK**M**IAKSEQEIGKATAKYFFYS**N**IM**N**F
FKTEITLANGEIRK**R**PLIETNGETGEIVWDKGRDFATVR**K**VL**S**MPQVNIVK**K**TEVQ**T**GGF
SKESILPKRNSDKLIAR**K**KDWDPKKYGGFDSPTVAYS**V**LVVAKVEKGK**S**KKLKS**V**KELL**G**
ITIMERS**S**FEKNPIDFLEAKGYKEV**K**DLI**K**LPK**Y**SLFELENGRKRMLASAGELQ**K**GN**E**
LALPSKYV**N**FLYLASHYEKLKGSPEDNEQKQLFVEQ**H**KHYLDEIIEQISEFSK**R**VILADA
NLDK**V**LSAYNKHRDKPIREQAEN**I**HLFTLTLN**L**GAPAAFKYD**T**TTDRKRYT**S**TKEV**L**DA
TL**I**HQS**I**TGLYETR**I**DL**S**QLGGDPIAGSKAS**P**KK**K**RK**V**GRA**I**FKPEELRQAL**M**PTLEAL**Y**
RQDPESL**P**FRQPVD**P**QLL**G**IPDYFDIVKSPMDLSTIKR**K**LDTGQYQEPWQYVDD**I**W**L**MF**N**
NAWLYNRK**T**SRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCY**G**KQLCT**I**P
RDATYYSYQ**N**RYHFCEKCFNEIQGESVSLGDDPSQPQTTINKEQF**S**KR**K**NDTLDPELFVE
CTECGR**K**M**H**QICVLHHEI**W**PAGFVCDGCLKKSARTRKENKFS**A**KRLP**S**TRLGT**F**LEN**R**V
NDFLRRQ**N**HPESGEVTVRVVHASDKTVEVKPGMKARFVDSGEMAESFPYRT**K**ALFAFEE**I**
D**G**VDL**C**FFGMHVQEYGSDCPPPNQRRVYIS**L****Y**SVHFFRPKCLRTAVYHEILIGYLEY**V**K
KLGYTTGHIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWYKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELEQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKTSKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDLIPCDLMDGRDAFLTLARDKHLEFSSLRRAQWSTMCMMLVELHTQSQDYP
YDVDPDYAS

dCas9^{p300 Core (1645/1646 RR/EE)}: (Addgene Plasmid 61359) amino acid sequence; **3X "Flag" Epitope**, Nuclear
Localization Sequence, *Streptococcus pyogenes* Cas9 ([D10A](#), [H840A](#)), **p300 Core Effector**,
1645/1646 RR/EE, **"HA" Epitope**

M**DYKDHDGDYKDHDIDYKDDDDK**MAPKKKRKVG**R**MDKKYSIGL**A**IGTNSV**G**WAVITDEY

KVPSKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLVESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADRLIYLALAHMIKFRGHFLIEGDLNPDNSVDKLFQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIASLGLTPNFKSNFDLAEDAQLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKLNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEVVDKGGASAQSFIERMTNFDKLNPNP
KVLPHSLLYEFVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQKAQVSGQGDSLHEHIANLAGSPAIAKKGILQTVKVVD
ELVKVMGRHKPENIVIAMARENQTTQKGQKNSRERMKRIEIEGKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTAKAERGGLSELDKAGFIKRLVETR
QITKHVAQILDSRMMTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKREINNYHHAH
DAYLNAVGTALIKKYPKLESEFVYGDYKVDVRKMIKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTVEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGGKSKKLSVKELLG
ITIMERSSEKPNIDFLEAKGYKEVKKDLIKLPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRILADA
NLDKVL SAYNKHDKPIREQAENIHLFTLNLGAPAAFYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKRKGRAIFKPEELRQALMPTLEALY
RQDPESLPFRQPVPDQLLGIQDYFDIVKSPMDLSTIKRKLDTGQYQEPWQYVDDIWL
NAWLYNRKTSRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCYKQLCTIP
RDATYYSYQNRHYFCEKCFNEIQGESVSLGDDPSQPQTINKEQFSKRKNDTLDPELVE
CTECGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFSKRLPSTRLGTFLENRV
NDFLRRQNHPESEGEVTVRVVHASDKTVEVKPGMKARFVDSGEMAESFPYRTKALFAFEEI
DGVDLCCFFGMHVQEYGSDCPPPNQRRVYISYLDVHFFRPKCLRTAVYHEILIGYLEYVK
KLGYYTGHIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWYKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKTSKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDPLIPCDLMDGRDAFLTLARDKHLEFSSL **EE**AQWSTMCMLVELHTQSQD **YP**
YDVPDYAS

dCas9^{p300 Core (C1204R)}: (Addgene Plasmid 61361) amino acid sequence; **3X "Flag" Epitope**, **Nuclear Localization Sequence**, *Streptococcus pyogenes* Cas9 (**D10A**, **H840A**), **p300 Core Effector**, **C1204R**, **"HA" Epitope**

M**DYKDHDGDYKDHDIDYKDDDDK**MAPKKRKGVMGMDKKYSIGLAIGTNSVGWAVITDEY
KVPSKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLVESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADRLIYLALAHMIKFRGHFLIEGDLNPDNSVDKLFQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIASLGLTPNFKSNFDLAEDAQLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKLNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEVVDKGGASAQSFIERMTNFDKLNPNP
KVLPHSLLYEFVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQKAQVSGQGDSLHEHIANLAGSPAIAKKGILQTVKVVD
ELVKVMGRHKPENIVIAMARENQTTQKGQKNSRERMKRIEIEGKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG

KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGGLSELDKAGFIKRQLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKREINNYHHAH
DAYLNAVVGTAALIKKYPKLESEFVYGDYKVDVRKMIKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGGKSKKLKSVKELLG
ITIMERSSEFEKNPIDFLEAGYKEVKKDLIKLPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRVLADA
NLDKVL SAYNKHRDKPIREQAENIIHLFTLNLGAPAAFYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKRKGRAIFKPEELRQALMPTLEALY
RQDPESLPFRQPVPDQLL GIPDYFDIVKSPMDLSTIKRKLDTGQYQEPWQYVDDIWL MFN
NAWLYNRKTSRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCY GKQLCTIP
RDATYYSYQNR YHFCEKRFNEIQGESVSLGDDPSQPQTINKEQFSKRKNDTLDPELFVE
CTECGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFSAKRLPSTR LGTFLENRV
NDFLRRQNHPESEGEVTVRVHASDKTVEVKPGMKARFVDSGEMAESFPYRTKALFAFEEI
DGVDL CFFGMHVQYEGSDCPPPNQRRYISYLDVSVHFFRPKCLRTAVYHEILIGYLEYVK
KLYTTGHIWACPPSEGGDDYIFHCHPPDQYKPKPKRLQEWYKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKKT SKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDPLIPCDLMDGRDAFLTLARDKHLEFSSLRRAQWSTMCM LVELHTQSQDY P
YDVPDYAS

dCas9^{p300 Core (Y1467F)}: (Addgene Plasmid 61362) amino acid sequence; 3X "Flag" Epitope, Nuclear
Localization Sequence, *Streptococcus pyogenes* Cas9 (D10A, H840A), p300 Core Effector,
Y1467F, "HA" Epitope

MDYKDHDGDYKDHDIDYKDDDDKMAPKKRKGVRGMDKKYSIGLAIGTNSVGWAVITDEY
KVPSKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLEESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADRLIYLALAHMIKFRGHFLIEGDLNPDNSDVKLFIQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIALSLGLTPNFKSNFDLAEDAKLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKLNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAWMTRKSEETITPWNFEVVDK GASAQSFIERMTNFDKNLPNE
KVLPHKSHLLYEFVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQKAQVSGQGDSLHEHIANLAGSPAIKKILQTVKVVD
ELVKVMGRHKPENIVIEMARENQTTQKGQNSRERMKRIEIEGKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGGLSELDKAGFIKRQLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKREINNYHHAH
DAYLNAVVGTAALIKKYPKLESEFVYGDYKVDVRKMIKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGGKSKKLKSVKELLG
ITIMERSSEFEKNPIDFLEAGYKEVKKDLIKLPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRVLADA
NLDKVL SAYNKHRDKPIREQAENIIHLFTLNLGAPAAFYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKRKGRAIFKPEELRQALMPTLEALY
RQDPESLPFRQPVPDQLL GIPDYFDIVKSPMDLSTIKRKLDTGQYQEPWQYVDDIWL MFN
NAWLYNRKTSRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCY GKQLCTIP
RDATYYSYQNR YHFCEKCFNEIQGESVSLGDDPSQPQTINKEQFSKRKNDTLDPELFVE
CTECGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFSAKRLPSTR LGTFLENRV
NDFLRRQNHPESEGEVTVRVHASDKTVEVKPGMKARFVDSGEMAESFPYRTKALFAFEEI

DGVDLCFFGMHVQEYGSDCPPPNQRRVYISYLDVHFFRPKCLRTAVYHEILIGYLEYVK
KLGYYTGGHIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWFKKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELEQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKKTSKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDPLIPCDLMDGRDAFLTLARDKHLEFSSLRRAQWSTMCMMLVELHTQSQDYP
YDVDPDYAS

dCas9^{p300 Core}(1396/1397 SY/WW): (Addgene Plasmid 61363) amino acid sequence; 3X "Flag" Epitope, Nuclear Localization Sequence, *Streptococcus pyogenes* Cas9 (D10A, H840A), p300 Core Effector, 1396/1397 SY/WW, "HA" Epitope

MDYKDHDGDYKDHDIDYKDDDDKMAPKKKRKVGGRGMDKKYSIGLAIGTNSVGWAVITDEY
KVPSKFKVLTGDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLSEESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADLRILIYALAHMIKFRGHFLIEGDLNPDNSDVKLFIQLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIASLGLTPNFKSNFDLAEDAKLQ
LSKDYDDDLNLLAQIGDQYADFLAAKNLSDAILSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKLNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEVVDKGASAQSFIERMTNFDKNLPNE
KVLPKHSLLYEYFTVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHDLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQAQVSGQDSLHEHIANLAGSPAIKKILQTVKVVD
ELVKVMGRHKPENIVIAMARENQTTQKGQNSRERMKRIEIGIKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG
KSDNVPSEEVVKKMKNYWRQLLNAKLITQRKFDNLTKAERGGLSELDKAGFIKRQLVETR
QITKHVAQILDSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKREINNYHHAH
DAYLNAVVGTAIHKYKPLESEFVYGDYKVDYRKMIAKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKGFFSPTVAYSVLVAKVEKGSKKLKSVKELLG
ITIMERSSEFKNPIDFLEAKGYKEVKKDLIKLPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFYLYLASHYEKLGSPEDNEQKQLFVEQHKKHYLDEIIEQISEFSKRIVLADA
NLDKVL SAYNKHDRDKPIREQAENIHLFTLNLGAPAAFYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKRKGRAIFKPEELRQALMPTLEALY
RQDPESLPFRQPVPDQLL GIPDYFDIVKSPMDLSTIKRKLDTGQYQEPWQYVDDIWL MFN
NAWLYNRKTSRVYKCYCKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCYKGLCTIP
RDATYYSYQNRHYFCEKCFNEIQGESVSLGDDPSQPQTINKEQFSKRKNDTLDPELVE
CTECGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFSKRLPSTRLGTFLN RV
NDFLRRQNHPESGEVTVRVHASKTVEVKPGMKARFVDSGEMAESFPYR TKALFAFEEI
DGVDLCFFGMHVQEYGSDCPPPNQRRVYIWWLDSVHFFRPKCLRTAVYHEILIGYLEYVK
KLGYYTGGHIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWYKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELEQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKKTSKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDPLIPCDLMDGRDAFLTLARDKHLEFSSLRRAQWSTMCMMLVELHTQSQDYP
YDVDPDYAS

dCas9^{p300 Core}(H1415A E1423A Y1424A L1428S Y1430A H1434A): (Addgene Plasmid 61364) amino acid sequence; 3X "Flag" Epitope, Nuclear Localization Sequence, *Streptococcus pyogenes* Cas9 (D10A, H840A), p300 Core Effector, H1415A E1423A Y1424A L1428S Y1430A H1434A, "HA" Epitope

MDYKDHDGDYKDHDIDYKDDDDKMAPKKKRKVGGRGMDKKYSIGLAIGTNSVGWAVITDEY

KVPSKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLKRTARRRYTRRKNRICYLQEI
FSNEMAKVDDSFHRLLEESFLVEEDKKHERHPIFGNIVDEVAYHEKYPTIYHLRKKLVDS
TDKADRLIYLALAHMIKFRGHFLIEGDLNPDNSVDKLFQVLVQTYNQLFEENPINASG
VDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIASLGLTPNFKSNFDLAEDAKLQ
LSKDTYDDDLNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRY
DEHHQDLTLLKALVRQQLPEKYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDG
TEELLVKNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYPLKDNREKIEKILT
FRIPYYVGPLARGNSRFAMTRKSEETITPWNFEEVVDKGASAQSFIERMTNFDKNLPNE
KVLPHSLLYEFVYNELTKVKYVTEGMRKPAFLSGEQKKAIVDLLFKTNRKVTVKQLK
EDYFKKIECFDSVEISGVEDRFNASLGTYHLLKIIKDKDFLDNEENEDILEDIVLTLTL
FEDREMIEERLKYAHLFDDKVMKQLKRRRYTGWGRLSRKLINGIRDKQSGKTILDFLKS
DGFANRNFMLIHDDSLTFKEDIQKAQVSGQGDSLHEHIANLAGSPAIKKILQTVKVVD
ELVKVMGRHKPENIVIEMARENQTTQKGQNSRERMKRIEIEGKELGSQILKEHPVENTQ
LQNEKLYLYLQNGRDMYVDQELDINRLSDYDVAIVPQSFLKDDSIDNKVLTRSDKNRG
KSDNVPSEEVVKMKNYWRQLLNAKLRLQRKFDNLTKAERGGSELDKAGFIKRIKLVETR
QITKHAQVSEVSRMNTKYDENDKLIREVKVITLKSCLVSDFRKDFQFYKREINNYHHAH
DAYLNAVVGTAIIKKYPKLESEFVYGDYKVDVRKMIKSEQEIGKATAKYFFYSNIMNF
FKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVL SMPQVNIVKKTEVQTGGF
SKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVVAKVEKGSKKLKSVKELLG
ITIMERSSEKPNIDFLEAKGYKEVKKDLIKLPKYSLFELENGRKRMLASAGELQKGN
LALPSKYVNFLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEIIEQISEFSKRILADA
NLDKVL SAYNKHDKPIREQAENIHLFTLNLGAPAAFYFDTTIDRKRYTSTKEVLDA
TLIHQSITGLYETRIDLSQLGGDPIAGSKASPKKKRKGRAIFKPEELRQALMPTLEALY
RQDPESLPFRQPVPDQLLGIPDYFDIVKSPMDLSTIKRKLDTGQYQEPWQYVDDIWL MFN
NAWLYNRKTSRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQTLCCYQKQLCTIP
RDATYYSYQNR YHFCEKCFNEIQGESVSLGDDPSQPQTINKEQFSKRKNDTLDPELFVE
CTECGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFSKRKLPSTR LGTFLENRV
NDFLRRQNHPESEVTVRVVHASDKTVEVKPGMKARFVDSGEMAESFPYRTKALFAFEEI
DGVDLCCFFGMHVQEYGSDCPPPNQRRVYISYLDVHFFRPKCLRTAVY AEILIGYLAAVK
KSGATTGAIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWYKMLDKAVSERIVHDYKDI
FKQATEDRLTSAKELPYFEGDFWPNVLEESIKELEQEEEEERKREENTSNESTDVTKGDSK
NAKKKNNKTSKNKSSLSRGNKKKPGMPNVSNDLSQKLYATMEKHKEVFFVIRLIAGPAA
NSLPPIVDPDPLIPCDLMDGRDAFLT LARDKHLEFSSLRRAQWSTMCMLVELHTQSQDY P
YDVPDYAS

Nm-dCas9^{VP64}: amino acid sequence (Addgene Plasmid #48676)⁷; *Neisseria meningitidis* Cas9 ([D16A](#), [D587A](#), [H588A](#), [N611A](#)), Nuclear Localization Sequence, [VP64 Effector](#)

MAAFKPNPINYILGLAIGIASVWAMVEIDEDENPICLIDLGVRVFERAEVPKTGDSLAMARRLARS
VRRLTRRAHRLLRARRLLKREGVLQAADFENGLIKSLPNTPWQLRAALDRKLTPLEW
SAVLLHLIKHRGYLSQRKNEGETADKELGALLKGVADNAHALQTGDFRTPAELALNKFEK
ESGHIRNQRGDYSHTFSRKDLQAE LILLFEKQKEFGNPHVSGGLKEGIETLLMTQRPALS
GDAVQKMLGHCTFEPAPKAAKNTYTAERFIWLT KLNNLRILEQGSERPLTDTERATLMD
EPYRKSCLTYAQARKLLGLEDTAFFKGLRYGKDNAAEASTLMEMKAYHAISRALEKEGLKD
KKSPNLNPELQDEIGTAFSLFKTDEDITGRLKDRIQPEILEALLKHISFDKQVQISLKA
LRRIVPLMEQGKRYDEACAEIYGDHYGKKNTEEKIYLPPIPADEIRNPVLRALSQARKV
INGVRRYRGSPARIHIETAREVGKSFKDRKEIEKRQEENRKDREKAAAKFREYFPNFVGE
PKSKDILKRLYEQQHGKCLYSGKEINLGRLEKGYVEIAAALPFSRTWDDSFNNKVLVL
GSEAQNKGNQTPYEYFNGKDNSREWQEFKARVETSRFPRSKKQRILLQKFDEDEGFKERNL
NDTRYVNRFLCQFVADRMRLTGKGGKRVFASNGQITNLLRGFWGLRKYRAENDRH HALDA
VVVACSTVAMQQKITRFVRYKEMNAFDGKTIDKETGEVLHQKTHFPQPWEFFAQEVMIRV
FGKPDGKPEFEEADTPEKLRLLAEKLSRPEAVHEYVTPLFVSRAPNRKMSGQGHMETV
KSAKRLDEGVSRLRVPLTQLKLDLEKMNVREREPKLYEALKARLEAHKDDPAKAFAPF
YKYDKAGNRTQQVKAVRVEQVQKTGVWVRNHNGIADNATMVRVDVFEKGDKYLLVPIYSW

QVAKGILPDRAVVQKDEEDWQLIDDSFNFKFSLHPNDLVEVITKKARMFYFASCHRG
GNINIRIHDLHKIGKNGILEGIGVKTALSFKYQIDELGKEIRPCRLKKRPPVRSRADP
KKKRKVEASGSGRADALDDFDLMDLGSALDDFDLMDLGSALDDFDLMDLGSALDDFD
LDMLINSR

Nm-dCas9^{p300 Core}: (Addgene Plasmid 61365) amino acid sequence; *Neisseria meningitidis* Cas9 (D16A, D587A, H588A, N611A), Nuclear Localization Sequence, p300 Core Effector, "HA" Epitope
MAAFKPNPINYILGLAIGIASVWAMVEIDEDENPICLIDLGVRVFERAEVPKTGDSLAMARRLARS
VRRLLTRRRRAHLLRARRLLKREGVLQAADFENGLIKSLPNTPWQLRAAALDRKLTPLEW
SAVLLHLIKHRGYLSQRKNEGETADKELGALLKGVADNAHALQTGDFRTPAELALNKFEK
ESGHIRNQRGDYSHTFSRKDLQAEILLFEKQKEFGNPHVSGGLKEGIETLLMTQRPALS
GDAVQKMLGHCTFEPAEPKAAKNTYTAERFIWLTCLNLRILEQGSERPLTDTERATLMD
EPYRKSCLTYAQARKLLGLEDTAFFKGLRYGKDNAEASTLMEMKAYHAISRALEKEGLKD
KKSPLNLSPELQDEIGTAFSLFKTDEDITGRLLKDRIQPEILEALLKHISFDKVFQISLKA
LRRIVPLMEQKRYDEACAEIYGDHYGKKNTEEKIYLPPIPADEIRNPVLRALSQARKV
INGVRRYRGSPARIHIETAREVGSFKDRKEIEKRQEENRKDREKAAAKFREYFPNFVGE
PKSKDILKRLYEQQHGKCLYSGKEINLGRLENEKGYVEIAAALPFSRTWDDSFNNKVLVL
GSEAQNKGNQTPYEYFNGKDNSREWQEFKARVETSRFPRSKKQRILLQKFDEDEGFKERNL
NDTRYVNRFLCQFVADRMRLTGKGGKRVFASNGQITNLLRGFWGLRKYRAENDRHHALDA
VVVACSTVAMQQKITRFVRYKEMNAFDGKTIDKETGEVLHQKTHFPQPWEFFAQEVMIRV
FGKPDGKPEFEEADTPEKLRLLAEKLSRPEAVHEYVTPFVSRAPNRKMSGQGHMETV
KSAKRLDEGVSRLRVPLTQLKLDLEKMNVREREPKLYEALKARLEAHKDDPAKAFAPF
YKYDKAGNRTQQVKAVRVEQVQKTGVWVRNHNGIADNATMVRVDVFEKGDKYYLVPIYSW
QVAKGILPDRAVVQKDEEDWQLIDDSFNFKFSLHPNDLVEVITKKARMFYFASCHRG
GNINIRIHDLHKIGKNGILEGIGVKTALSFKYQIDELGKEIRPCRLKKRPPVRSRADP
KKKRKVEASGRAIFKPEELRQALMPTLEALYRQDPESLPFRQPVDPQLLGIPDYFDIVKS
PMDLSTIKRKLDTGQYQEPWQYVDDIWLMFNNAWLYNRKTSRVYKYCSKLSEVFEQEIDP
VMQSLGYCCGRKLEFSPQTLCCYGKQLCTIPRDAYYSYQNRHYHFCEKCFNEIQGESVSL
GDDPSQPQTINKEQFSKRKNDTLDPEL FVECTECGRKMHQICVLHHEIWPAGFVCDGC
LKK SARTRKENKFSAKRLPSTR LGTFLENRVNDFLRRQNHPESEGEVTVRVVHASDKTVEV
KPGMKARFVDSGEMAESFPYRTKALFAFEEIDGVDLCFFGMHVQEYGSDCPPPNQRRVYI
SYLDSVHFFRPKCLRTAVYHEILIGYLEYVKKLGYTTGHIWACPPSEGDDYIFHCHPPDQ
KIPKPKRLQEWYKMLDKAVSERIVHDYKDFKQATEDRLTSAKELPYFEGDFWPNVLEE
SIKELEQEEEEERKREENTSNESTDVTKGDSKNAKKNNKTSKNKSSLSRGNKKKPGMPN
VSNDSLQKLYATMEKHKEVFFVIRLIAGPAANSLPPIVDPDPLIPCDLMDGRDAFLTLAR
DKHLEFSSLRRAQWSTMCMLVELHTQSQDYPPDYAS

Supplementary Note 2. Amino acid sequences of *ICAM1* Zinc Finger¹⁰ effectors.

ICAM1 ZF^{VP64} amino acid sequence; 3X "Flag" Epitope, Nuclear Localization Sequence, Zinc Finger Helix, VP64 Effector, "HA" Epitope

M **DYKDHDGDKDHDIDYKDDDDK**MAPKKRKVGRGMAQAALPGEKPYACPECGKSFS**DC**
RDLARHQRTHTGEKPYKCPECGKSFS**RSDDLVR**HQRTHTGEKPYKCPECGKSFS**QSSNLV**
RHQRTHTGEKPYACPECGKSFS**TSGELVR**HQRTHTGEKPYKCPECGKSFS**QRAHLER**HQR
THTGEKPYKCPECGKSFS**QAGHLAS**HQRTHTGKKTSGQAGQAS**PKKKRKVGRADALDDFD**
LDMLGSDALDDFDLMLGSDALDDFDLMLGSDALDDFDLMLINYPYDVPDYAS

ICAM1 ZF^{p300 Core} amino acid sequence; 3X "Flag" Epitope, Nuclear Localization Sequence, Zinc Finger Helix, p300 Core Effector, "HA" Epitope

M **DYKDHDGDKDHDIDYKDDDDK**MAPKKRKVGRGMAQAALPGEKPYACPECGKSFS**DC**
RDLARHQRTHTGEKPYKCPECGKSFS**RSDDLVR**HQRTHTGEKPYKCPECGKSFS**QSSNLV**
RHQRTHTGEKPYACPECGKSFS**TSGELVR**HQRTHTGEKPYKCPECGKSFS**QRAHLER**HQR
THTGEKPYKCPECGKSFS**QAGHLAS**HQRTHTGKKTSGQAGQAS**PKKKRKVGRADALDDFD**
RQALMPTLEALYRQDPESLPFRQPVDPQLLGIPDYFDIVKSPMDLSTIKRKLDTGQYQEP
WQYVDDIWLMFNNAWLYNRKTSRVYKYCSKLSEVFEQEIDPVMQSLGYCCGRKLEFSPQT
LCCYGKQLCTIPRDATYYSYQNRHYHFCEKCFNEIQGESVSLGDDPSQPQTINKEQFSKR
KNDLDPFLVECTEGRKMHQICVLHHEIWPAGFVCDGCLKKSARTRKENKFSAKRLP
STRLGTFLNRVNDFLRRQNHPESEVTVRVVHASDKTVEVKPGMKARFVDSGEMAESFP
YRTKALFAFEEIDGVDLCFFGMHVQEYSDCPPPNQRRVYISYLDVHFFRPKCLRTAVY
HEILIGYLEYVKKLGYTTGHIWACPPSEGDDYIFHCHPPDQKIPKPKRLQEWYKMLDKA
VSERIVHDYKDFKQATEDRLTSAKELPYFEGDFWPNVLEESIKELEQEEEEERKREENTS
NESTDVTKGDSKNAKKNNKTSKNKSSLRGNKKKPGMPNVSNDLSQKLYATMEKHKEV
FFVIRLIAGPAANSLPPIVDPDPLIPCDLMDGRDAFLTLARDKHLEFSSLRRAQWSTMCM
LVELHTQSQDYPYDVPDYAS

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