

Supplemental Methods and Data

1. Drosophila culture, stocks, demography

Culture

Flies were reared and aged at 25°C, 40% RH, 12L:12D on standard food media: cornmeal (5.2%), sugar (11.0%), autolyzed yeast (2.5%; SAF brand, Lesaffre Yeast Corp., Milwaukee, WI, USA.), agar (0.79%) (w/v in 100 mL water) with 0.2% Tegosep (methyl4-hydroxybenzoate, Sigma, St Louis, MO, USA).

Oviposition plates. 5 cm dishes with grape juice media and excess live yeast were affixed to the food tube port of demography cages. Plates were changed twice daily, with total eggs summed each day. Grape juice plate media: 25 g Bacto-Agar (BD cat # 214010), 250 ml grape juice (Welsh concentrate), 750 ml water and 15 ml 20% Tegosep.

Lifetable demography

Cages for lifetable demography were made from 1 L clear food service containers with a ventilated lid, a gasket covered aperture to provide access to remove dead flies and a port near the cage bottom that opened to a plastic tube affixed a standard glass media vial with 3 ml of standard *Drosophila* diet. Each two days, dead flies were removed by aspiration and counted, and fresh food vials were provided.

2. Ends out homologous recombination

Reagents

Genomic DNA extraction: Promega Wizard SV Genomic Purification System. Promega, cat # A2361
PCR: Phusion High-Fidelity PCR Master Mix with GC Buffer. New England Biolabs, cat # M0532
Cloning: Zero Blunt Topo PCR cloning kit, Invitrogen, cat # 45-0245
pW25.2 (<i>Drosophila</i> Genomics Resource Center)
Bacteria Transformation: One Shot Top10 electrocompetent cells (Invitrogen), cat # C404052
Plasmid DNA prep: QiaPrep Spin miniprep kit, Qiagen, cat # 27104
Gel purification: QIAquick Gel Extraction Kit. Qiagen, cat # 28740
Site-direct mutagenesis: GeneArt site direct mutagenesis system, Invitrogen, cat #A13282, using AccuPrime Pfx DNA polymerase, Invitrogen, cat #12344-024
Primer synthesis: Integrated DNA Technologies (IDT, IA, USA)
Sequencing: Genewiz (South Plainfield, NJ, USA)
Restriction Enzymes: New England Biolabs
Embryo Injection: Genetic Services, Inc. (Sudbury, MA)

Drosophila Stocks for homologous recombination

Genotype	Stock
$y^1 w^+; P\{ry^{+7.2} = 70FLP\}11 P\{v^{+1.8} = 70I-Scel\}2B\ nos^{Sco} / CyO, S^2$	BSC 6934
$y^{d2} w^{1118} P\{ry^{+7.2} = ey-FLP.N\}2$	BSC 5580
$y^1 w^{67c23}; sna^{Sco} / CyO, P\{w^{+mC} = Crew\}DH1$	BSC 1092
$wDahomey$	L. Partridge (UCL, UK)

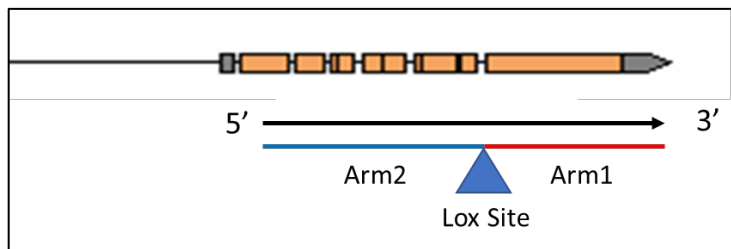
All lines backcrossed to w^{Dah} for six generations.

Targeting arms for homologous recombination

InR gene replacement to produce single nucleotide substitution followed Staber *et al* (Staber CJ, Gell S, Jepson JE, Reenan RA. 2011. Perturbing A-to-I RNA Editing Using Genetics and Homologous

Recombination. Methods Mol Bio 718: 41-73). *InR* genomic DNA from the Dahomey wildtype (*wDah*) was extracted, PCR amplified using *InR* Arm primers (**Methods Table A**) and subcloned into the pTopo vector to generate constructs pTopo-Arm1 (3' end of gene) and pTopo-Arm2 (5' end of the gene). The *w*⁺ marker was targeted into the 9th intron of *InR*, dividing this sequence into two segments: Arm1 with 2,686 bp and Arm2 with 3,614 bp. To subclone both arms into the pW25.2 transformation vector, Arm1 was flanked by restriction sites *AscI* and *BsiWI* and Arm2 by *NotI* and *Acc65I*. Since *wDah* contains an internal site of *Acc65I* in Arm2, this site was abolished by site directed mutagenesis without altering its coded amino acid (from GGTACC to GCTACC, at position 1194 of Arm2). All subsequent cloning was made using Arm2 with the abolished *Acc65I* site. Individual clones containing pTopo-Arm1 and pTopo-Arm2 were completely sequenced using primers listed in Table B. Complete sequence of *InR w*^{Dah} Arm1 and Arm2 in **Methods Fig A, B**.

Placement of homologous recombination targeting arms on *InR*.



***InR* single nucleotide mutations for homologous recombination**

The construct pTopo-Arm2 was used as a template for the site-direct mutagenesis to introduce the *InR*^{e19} mutation, a modification from T-A at position 1890 of Arm2. The construct pTopo-Arm1 was used as a template for the site-direct mutagenesis to introduce the following independent mutations: *InR*²⁴⁶, *InR*³⁵³, *InR*⁷⁴ and *InR*²¹¹. *InR*²⁴⁶ has a G-A modification at position 291, *InR*³⁵³ has a C-T modification at position 537, *InR*⁷⁴ has a A-T modification at position 768 and *InR*²¹¹ has a G-A modification at position 933 of Arm1. After mutagenesis, constructs were fully sequenced to confirm the single nucleotide mutation. Location of substituted nucleotides are underlined in **Methods Figures A and B**.

Arm 2 = 3614 bp

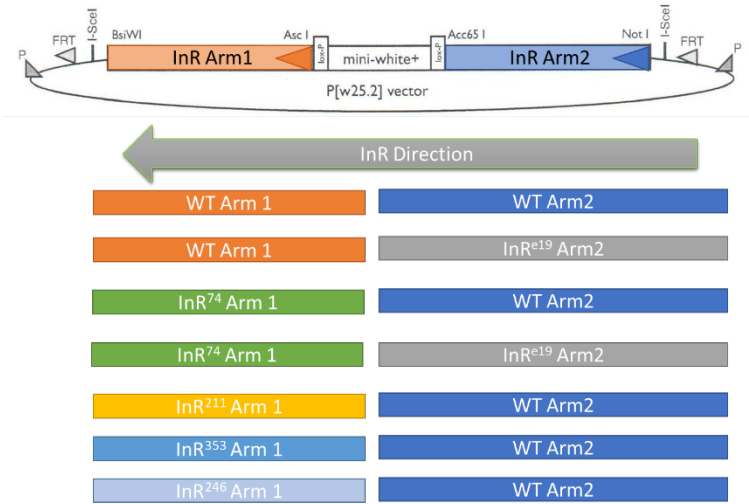
Mutation	Position in Arm 2	Nucleotide change	Aminoacid change
<i>InR</i> [e19]	1890	GTC/GAC	Val-Asp

Arm 1 = 2686 bp

Mutation	Position in Arm1	Nucleotide change	Aminoacid change
<i>InR</i> [246]	291	GTG/ATG	Val/Met
<i>InR</i> [353]	537	CGT/TGT	Arg/Cys
<i>InR</i> [74]	768	ATC/TTC	Ile/Phe
<i>InR</i> [211]	933	GGA/AGA	Gly/Arg

Cloning into transformation vector

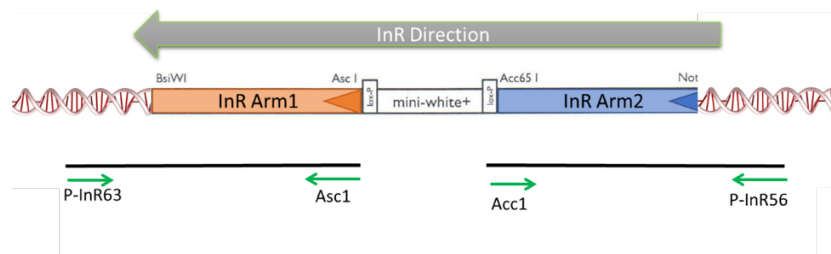
The wild type and the mutated *InR* were sequentially cloned into transformation vector pW25.2. Arm1 wild type or mutated was cloned into the restriction sites *AscI* and *BsiWI*. Arm2 wild type or mutated was inserted into restriction sites *Acc65I* and *NotI*. Seven different constructs were created, allowing for wild type, single mutants for each one of the five single nucleotide substitutions, as well as one double mutant, *InR*^{e19-74}. Constructs were then transformed into *Drosophila w*¹¹¹⁸ embryos by Genetic Services, Inc. (Sudbury, MA).



Flies carrying the *white*⁺ eye color marker mapped to the first or second chromosome were used to target homologous recombination by crossing with a line expressing flipase and the restriction enzyme I-SceI for excision and linearization of the transgenic construct. Potential lines were selected for *white*⁺ insertions on chromosome 3, and confirmed by PCR amplification and sequencing. Accession with successful gene replacement were then crossed to flies expressing *cre* recombinase for removal of the *white*⁺ eye color marker.

Confirmation of mutations

Final lines were sequenced to confirm fidelity and homologous recombination of the replacement allele. using primers internal of homologous recombination construct and primers upstream of Arm2 and downstream of Arm1 into the genomic region. PCR fragments were sequenced to completion (primers in **Methods Table B**). The wild type strain *wDah* was also sequence to completion, and the following primers were used for its amplification (Arm1: P-InR63 and P-InR60; Arm2: P-InR56 and InR61).



Methods Fig A: w^{Dah} Arm1 sequence cloned into pTOPO

w ^{Dah} Arm1 sequence cloned in pTOPO	
GAATGATCATTTTTAAATGAATTTTTTTTTTTCATTAAATTCAACAGCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGAATCGGCCTAGC	< 100
GTTCTGATCGTTTCCCTGTTCCGCTATGTCTGTTACCTGCACAAGAGGAAGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTAT	< 200
A GCGAGCATGCAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAATCATTCAGTTGGCTCCACTAGGCCAGGGATCCTTTGGCATG <u>g</u> GTATGAGG	< 300
GTATCTCTGAAGTCCTTTCCACCCAATGGCGTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACCATTTCCTGAG	< 400
CGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCTGAAGATTGCTCGGTGTTGTTCCAGGGGTCAGCCGGCTCTGGTGGTCATGGAGCTAATG	< 500
AAGAAGGGTGATCTTAAGTCCTATTTGCGTGCCCATC <u>g</u> GCTCCGAGGAGCGGGATGAGGCCATGATGACGTATCTTAATCGCATCGGAGTGACTGGTAATG	< 600
TGCAGCCTCCTACTTATGGAAGAATCTACCAGATGGCCATTGAGATTGCGGATGGCATATTTGGCCGCCAAGAAGTTCGTCCATCGTGATCTTGC	< 700
AGCTCGAAATTCATGGTTGCTGATGATTTGACGGTGAAAATTTGGTGACTTTTGAATGACCCGTGAC <u>a</u> TCTATGAGACGGATTACTATCGGAAGGGCACT	< 800
AAAGGGTGCTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCAGAGTGGTGTCTACTCTAGTGCCAGTGATGTATTACAGCTTTGGAGTGGTCTCTGGG	< 900
AAATGGCCACCTTAGCGGCTAGCCATACCA <u>g</u> GACTTTCCAACGAGCAAGTCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGGCCGAAAAATTG	< 1000
TCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCTTCGGCGAGACCCAGTTTCTGGATATCATTTGCGTATCTCGAACCACAATGC	< 1100
CCCAATTCACAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAGAGCGCAAGGAACGCAATCAGCTAGATGCATTCTG	< 1200
CGGCAGTCCCTTTGGATCAAGATCTGCAGGATCGGGAACAGCAGGAGGATGTACCACACCTTTACGAATGGGCGATTATCAGCAGAACTCCTCGTTGGA	< 1300
TCAACCGCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCACTTGCCATTAGCCTGCCATCCGGATTCAATTGCGAGCAGTACTCCTGATGGG	< 1400
CAGACTGTAATGGTACTGCTTTCCAGAAATATTCCAGCAGCGCAAGGTGATATTTCGGCGACTTACGTTGTGCTGATGCAGACGCTTTGGACGCGGACA	< 1500
GGGGATATGAGATCTACGATCCAGTCCGAAATGTGCAGAGCTGCCAGCAGCAGAAGTGGCAGTACTGGCGGTGAAAACTCAGCGGAGAAACAATTT	< 1600
GCTGCCAAGAAAGGTGCGCAGCCTACCATCATGAGCAGCTCGATGCCAGATGATGTATCGGTGGGTCTCACTGCAACCTCGACTGCGTCAGCAGCC	< 1700
AGTTCTAATGCCAGTTCGCACACAGGACGCCCAAGTCTGAAGAAAACAGTGGCGGATTGCGTTTCGCAATAAGGCAAACCTTCATTAATCGCCACCTATTTA	< 1800
ACCACAAGCGAAGCGGCAGCAATGCCAGCCACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCACCCAGTGGCTAT	< 1900
GGGCAATCTTGGAATATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGTTATACTGGAAACACCCCGCTTCTATACTCCATCAGCGACGCTTGAGGAGGC	< 2000
AGCGGTATGGCCATTAGCGACAATCCTAATACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCCACCATCCTAACGACTAGCAGCCCCAATCCCA	< 2100
ACTACGAGATGATGCATCCACCAACCAAGTCTGGTCAGTACCAATCCGAACTATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGTGTGACCATTAG	< 2200
CCATAATCCGAATTACCAGCCCATGCAGGCGCGTTGAATGCACGCCAAAGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGCAGATGAGGAT	< 2300
GAGGACGACGACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCAGGCAAAGAGCGTTGCCAGCAAGACGCGAGC	< 2400
CGCCTCGCAGTCGACGCGTCAGCCAAACGAGAAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAACCGATCCAACCTTGCTTAA	< 2500
AGAGAACTGGCTGCGACCGCGAGTACGCCAAGGCCTCCACCACCAATGGATTTCATCGGAAGGAGGCGTAATCGTTACGAACTGTAGTTCTGTAGAAA	< 2600
AACATGTAATAGATGAGGAGAAGCAGCATGGATATAGATAGAGTAGCAAGTCTTTGCCGCAAGCCAAGCTTCTTGAATTTGACT	< 2686

Methods Fig B: w^{Dah} Arm2 sequence cloned into pTOPO. The Acc65I restriction site in region was abolished by site-specific mutagenesis, at position 1194 (marked in red).

w ^{Dah} Arm2 sequence cloned in pTOPO	
ATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTGCGGGACGCAATCGCGATGGACAAGGAGCGAATCAAACCCAAACAATGCGACTGTCACAAAA	< 100
TGTAAACGtatgtattacctatgatctaccttgcaagttaaaggaacattccatttgcaagagactgacagataactaatagctttccattaacacct	< 200
tatagCTTGCAATCCATGGACATCAGGAACATGGTGTGCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTGATA	< 300
AACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACAGACCGAGGTCACAGATTATATCATAATCTACCGTGTGACTGGATTGCACGCTGTCAAAGA	< 400
TCTTTCCCAATCTGAGCGTCATTAGGGGAAACAAGCTGTTCGACGGATATGCGCTTGGTCTACTCGAATTTCCGACCTCATGGATTGGGACTTCACAA	< 500
GCTACGATCCATAACGAGGCGGTGTGCGGATTGAGAAGAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAATTTCTGGCGGAAACGAA	< 600
ACCCAACTGGTGGTGTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTGCCCGGGGAGATCAGAATTGAGGAGGGGCACGATACACGG	< 700
CTATTGAGGGAGAGCTTAATGCCAGTTGTGAGCTGCACAATAATAGCGCCTGTGCTGGAACAGCAAACTCTGCCAGACGAgtagttggcgggtgtaaa	< 800
gttatacggttttcttattaacatcttttcgctttttttcttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCGAC	< 900
CCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCTGTGCAATGTGTCTTTCAACAACATCTGTATGGACTCCTGT	< 1000
CCGAAAGGCTATTATCAGGtaactaatgattcacttttagtatacaacaagtagctaactttcaactcttttgtagTTCGACAGCCGCTGCGTAACGGC	< 1100
GAACGAGTGCATCAGCTGACAAAGTTTGAACGAACAGTGTGTTATCCGGTATTCCATACACGGAACAATGTATCACCACCTGTCCAACGGGCTACCAG	< 1200
AAGTCAGAGAACAGCGCATGTGCGAACCTTGTCCGGGCGCAAGTGTGACAAGGAGTGTCTCTCCGGTCTTATCGACAGTTTGGAGCGTGTCTGGGAGT	< 1300
TCCACGGCTGCACCATTTATAACCGGAACCGAGCCCCCTTACCATCAGCATTAACAGTGAAAGCGGCGtaagtgttttttgcgtctctaaataaagtata	< 1400
atctctatattaaaaactctttgtttcttcagTCACGTGATGGAATTAATAATAGGCTGGCTGCCGTCATAAAATTCAGTCGTCCTAATGGTTC	< 1500
ATTTGACCTACGGATTGAAGTCTTGAATTTCTTCAATCCCTAACTGAAATAGCGGCGATCCGCCGATGGACGCGGATAAATATGCTTTGTATGTGCT	< 1600
TGATAATCGCGATCTAGATGAGCTCTGGGACCCAAACAAACGGTGTTCATTAGGAAGGCGCGCTCTTCTTTCAATTTCAACCCAAAACATATGTGTGCC	< 1700
ACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCAAAGTTTTTTGAAAAGTCAGATGTGGGCGCAGACTCGAATGGAACCGCGGATCATGTAAGT	< 1800
AATCTTTAAACGAAGATTTTAGTAATAATTTAAACTTTGTGAGTACTAATCTAAATGAACATTTCCAGGTGGAACAGCCGTTCTCAATCTCACATTACAA	< 1900
TCAGTGGGAGCAAACTCCGCTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGTACAATTTGTTTAAAGGATCCGC	< 2000
GCGCCTTCATCGGTTTCGTGTTTTATCATATGATCGATCCGTACGGGAACCACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCTC	< 2100
TCCGAAAAGAGCGGGGTCATGGTATTAGCAATTTGATTCGTACACTAATCTACTCTACTACGTTCCGACCATGGCTATATCCTCGGAATTGACAAAC	< 2200
GCGGAGAGCGAGTGAAGAACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTTGAGATTGCAAAATTTGTAGTA	< 2300
TGAAATTTGCAATAGATTAGTTTAGGATTATAAATGATTACTAAATGTCAAGTAATTGTTCACTTTGACTGATCAACATTTATTGCCTTTTCAGAACGT	< 2400
AACATGGAGTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAGCCAACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTAC	< 2500
TGTACTGAACGTAAGCAACAACATAGCCAAATTGTATCCATAATTAATTAATTTAAATATTTTATCTGTGTAGCTCTCGTCAAGGCCATGGAAAATGACC	< 2600
TGCCAGCCCAACGCCCTACCAAGAAAATATCAGATCCTTTAGCAGGCGAGTGAAGTGTGCGTGGAGGGTTTCAAGAAGACTAGCAGTCAGGAATACGATGA	< 2700
TCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTCCAAACATTCGGAAGCAAGAATGGATCGTCTGACAAATCA	< 2800
GACGGAGCGGAAGGTGACGCTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAGACGTTGCGCTCGAGCCGAGC	< 2900
TCGACGATGTAGAGGCGAGTACTTCTACGCCATGTGCGCTCCATCACAGACGATACCGATGCATTTTTCGAAAAGGACGACGAAAATACCTATAAAGA	< 3000
CGAAGAAGACTTGTCTCCAACAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCACCAATCAAACACATTTTGTCTTTGAAAAACTGCGCCACTTC	< 3100
ACCCGCTACGCTATCTTCGTGGTAGCCTGTAGAGAAGAAATCCCAGCGAAAAATTAAGGGACACCAAGTTTAAAGAAGTCGCTCTGCAGCGATTATGACA	< 3200
CCGTTTTCCAACTACAAGAGAGAAAGTAGGTGGACTTGAGAGCGTGTCTTACTTTTACTTAAACGATTTGGTTTTACTTATAGAATTTGCCGACATAG	< 3300
TCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTTTCGCTGGACGCCACCAAGTAGATCCCAACGGAGAAATGTGAC	< 3400
CTATGAAGTGGCCTACAAGTTGCAAAAACCCGATCAAGTGAAGAAAAGAGTGCAATCCGGTGTGACTTCAACCAGACTGCCGGTTATTTAATAAAG	< 3500
CTCAACGAGGGCCTTACAGCTTCAGGGTGCAGCCAATTCAATAGCGGGATACGGCGATTTCACGGAAGTCGAACATATAAAAGTTGAGGTAGGTTGAA	< 3600
TAATTTTATCTGC	< 3614

Methods Table A: Primers for cloning InR Arm1 and Arm2, and for site-direct mutagenesis. Sequences 5'-3'.

InR primers – used for cloning and site-direct mutagenesis		
Primer Name	Primer Sequence	Use of primer
P- InR 13	TAATTAATTGGCGCGCCGAATGATCATTTTTAAATGAATTTTTTTTTTCATTAAATTCA	5' HR Region for InR Arm1; forward
P- InR 14	ATATCGTACGAGTCAAATTCGAAGAAGCTTGGCTTGGCGCAAAG	3' HR Region for InR Arm1; reverse
P- InR 15	TAATTAATTGCGGCCGCATATAGCCGATGGACTGGATAAACAGCGCTTTCGGTG	5' HR Region for InR Arm2; forward
P- InR 16	ATATGGTACCGCAGATAAAAATTATTCACCTACCTCAACTTTATATGTTTCGACTTCCG	3' HR Region for InR Arm2; reverse
P- InR 29	CCACTGTCCAACGGGcTACCAGAAGTCAGAG	Primer for Acc65I modification in Arm2; forward
P- InR 30	CTCTGACTTCTGGTAgCCCCTTGGACAGTGG	Primer for Acc65I modification in Arm2; reverse
P- InR 39	GGAACAGCCGTTCTCAATGaCACATTACAATCAGTGGGA	InR ^{e19} mutagenesis Arm2, forward
P- InR 40	TCCCACTGATTGTAATGTgtCATTGAGAACGGCTGTTCC	InR ^{e19} mutagenesis Arm2, reverse
P- InR 41	ACTTTGGAATGACCCGTGACtTCTATGAGACGGATTACTAT	InR ⁷⁴ mutagenesis Arm1, forward
P- InR 42	ATAGTAATCCGTCTCATAGAaGTCACGGGTCAATCCAAAGT	InR ⁷⁴ mutagenesis Arm1, reverse
P- InR 43	GGCTCAGCCATACCAGaGACTTTCCAACGAGCA	InR ²¹¹ mutagenesis Arm1, forward
P- InR 44	TGCTCGTTGGAAAGTctCTGGTATGGCTGAGCC	InR ²¹¹ mutagenesis Arm1, reverse
P- InR 45	TATTTGCGTGCCCATtGTCCCGAGGAGCGGG	InR ³⁵³ mutagenesis Arm1, forward
P- InR 46	CCCGCTCCTCGGGACaATGGGCACGCAAATA	InR ³⁵³ mutagenesis Arm1, reverse
P- InR 51	GCCAGGGATCCTTTGGCATGaTGTATGAGGGTATCCTGAAG	InR ²⁴⁶ mutagenesis Arm1, forward
P- InR 52	CTTCAGGATACCTCATACatCATGCCAAAGGATCCTGGC	InR ²⁴⁶ mutagenesis Arm1, reverse
P- InR 56	CGGCTGCAACAGAGTGTGAGAGCGGGACGA	Arm2 HR confirmation, forward
P- InR 60	TCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagc	w ^{Dah} Arm1, forward
P- InR 61	CTTTCCCGATGCTGCAGACCTGCCTCTGAGTGATAGAAGGATACTTCCTTAAATTGTGA	w ^{Dah} Arm2, Reverse
P- InR 63	CACTATCGTTTTCTGCTCTCGTTTTGTATTGCGTTAGAGGCTCTAGTGCATTA	Arm1 HR confirmation, reverse
P- AscI	GTATGCTATACGAAGTTATCTAGACTAGTCTAGGGCG	Arm1 HR confirmation, forward
P- AccI	CATTATACGAAGTTATCTAGACTAGTCTAGGGTAC	Arm2 HR confirmation, reverse
P- SP6	GATTTAGGTGACACTATAG	pTopo sequencing
P- T7	TAATACGACTCACTATAGGG	pTopo sequencing

Methods Table B: Primers for sequencing Arm1 and Arm2. All primers were used for sequencing confirmation of homologous recombination events. Primers used to sequence DNA cloned in pTopo are highlighted in the right column.

InR primers – used for sequencing			
Primer Name	Primer Sequence	Use of primer	pTopo
P- InR 02	GCACAATTACTCTTACTCGCTGG	Arm2; forward	
P- InR 06	TCAACGAGGGCCTTTACAGCTTCA	Arm2; forward	
P- InR 08	GTTACAATGGATTGCTAGCCAGTC	Arm1; reverse	
P- InR 17	CACAAGCTACGATCCATAACCAGAGG	Arm2; forward	✓
P- InR 18	TGTATGGACTCCTGTCCGAAAGGCTA	Arm2; forward	✓
P- InR 19	CAGTCGTCCCTAATGGTTCATTGAC	Arm2; forward	✓
P- InR 20	ATGATCGATCCGTACGGAACTCAAC	Arm2; forward	✓
P- InR 21	CCGGGATTACTGTACTGAACGTAAGC	Arm2; forward	✓
P- InR 22	GACGAAGAAGACTTGTCTCCAAC	Arm2; forward	✓
P- InR 23	TCTACAGGCTACCACGAAGATAGCGT	Arm2; reverse	
P- InR 24	CAGGTCATTTCCATGGCCTTGACGA	Arm2; reverse	
P- InR 25	AACCTTCCAGCGATCATCGCATGGAT	Arm2; reverse	✓
P- InR 26	GGACGGCAGCCAGGCCATATTTAAT	Arm2; reverse	✓
P- InR 27	GACACATTTGACAGGAGATGCAGCT	Arm2; reverse	✓
P- InR 28	GAGTGCAATCCAGTCACACGGTAGAT	Arm2; reverse	✓
P- InR 31	GGTGGTCATGGAGCTAATGAAGAAGG	Arm1; forward	✓
P- InR 32	GGCGAGACCCAGTTTTCTGGATATCA	Arm1; forward	✓
P- InR 33	GATCTACGATCCCAGTCCGAAATGTG	Arm1; forward	✓
P- InR 34	GACTACTAGACGAGTCAATAGCCAGC	Arm1; forward	✓
P- InR 35	GCCATCTGCACTGGAGTCTCATTCAT	Arm1; reverse	
P- InR 36	GACCCACCGATGACATCATCTGGCAT	Arm1; reverse	
P- InR 37	ACTGCCGCAATGCATCTAGCTGATT	Arm1; reverse	✓
P- InR 38	CACATTACCAGTCACTCCGATGCGAT	Arm1; reverse	✓
P- InR 64	ACAAAGCATATTTATCCGCGTCC	Arm2; reverse	
P- InR 65	CAACACCGAGTCCCGAGTACGG	Arm2; forward	
P- InR 66	CCGTACTGGGGACTCGGTGTTG	Arm2; forward	
P- InR 67	TATGTTGACTTCCGTGAAATCGC	Arm2; reverse	
P- InR 68	TTCAACAGCCTCCGCCGAGC	Arm1; forward	
P- InR 69	GCAAACACCGAGCAATCTTACG	Arm1; reverse	
P- InR 70	TGGCCGCAAGAAGTTCGTC	Arm1; forward	
P- InR 71	TGCTGGTACTCGGAGCATTG	Arm1; reverse	
P- InR 72	CACCAACTTGACAAGTCACCC	Arm1; forward	
P- InR 73	ATGAATGAGACTCCAGTGCAGATGGC	Arm1; forward	
P- InR 74	GCGTTAGAGGCTCTAGTGCAT	Arm1; reverse	
P- InR 75	TGTGACAGTCGATTGTTGGGT	Arm2; reverse	
P- InR 76	CATTGTGCAGCAGGTGCTGCTGA	Arm2; reverse	
P- InR 77	GCGGGACGAAAGATGATTACCTAG	Arm2; forward	

P- InR 78	ACGATATGGCAGCAGCAGCAAC	Arm2; forward	
P- InR 79	TGTTGCTTTTGTGCGGTGTGGC	Arm2; reverse	
P- InR 80	GAAGTTTTCGCGCTGTTGTCG	Arm2; reverse	

Figure S1. Partial sequence of *Drosophila* insulin-like receptor (dInR) aligned with human insulin receptor (hIR, HGVS annotation, with signal peptide) and insulin growth factor-1 receptor (hIGF1R). *Drosophila* sequence translation initiation site of wDah (parent wildtype allele of homologous recombination, GenBank accession MT_563159) and of Fernandez (NCBI Reference Sequence: NM_079712.6). **Red**: *Drosophila* InR homologous recombination substitutions corresponding to allele. **Blue**: substitution of the Exelisis dominant negative *InR* transgene P{UAS-InR.K1409A} (BDSC). **Gold**: hIGF1R polymorphisms of Suh {Suh, 2008 #5452} enriched in centenarians, and of the *C. elegans* longevity allele *daf-2(e1370)*. Domains: distal portion of L2, proximal portion of FnIII-1, Kinase insert domain (KID), Activation loop (A-Loop) with conserved autophosphorylation tyrosine (Y). The proposed SH2 binding motif of the *Drosophila* KID is highlighted, with Tyr1477.

dInR	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
wDah TIS	Reference TIS	
dInR	DSPASSEEEAYSSSSSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGGKRDVKCS	120
dInR	GHQCSNECDDGSTKNNRQRENFNIFSNCHNLRITLQSLLLMFNCGIFNKRRRRQHQQQ	180
dInR	HHHHYQHQQHHHQHLLQRQQANVSYSYTKFLLLLQTLAAATRLSLSPKNYKQQQQLQHNQQ	240
hIR	-----MAT	3
hIGF1R	-----MKS	3
dInR	LPRATPQQKQEKDRHKCFHYKHNYSYSPGISLLLFIILLANTLAIQAVVLPAAHQHLLHN	300
	: .	
hIR	GGRRGAAAAPLLVAVAAALLGAAGHLYP-----GEV-CPGMDIRNNLTRLHEL	50
hIGF1R	GSGGGSPT-S---LWGLLFLSAALS LWP-----TSGEICGPGIDIRNDYQQLKRL	49
dInR	DIADGLDK-----TALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQL	353
	. * * * * * : : : : : . : * * * * : : : *	
hIR	ENCSVIEGHLQILLMFKTRPEDFRDLSFPKLIMITDYLLFRVYGLLESKDLFPNLTIVIR	110
hIGF1R	ENCTVIEGYLHILLIS--KAEDYRSYRFPKLTVITEYLLFRVAGLESGLDLPNLTIVIR	107
dInR	ENCTVIEGFLIDLINDASP---LNRSPFKLTEVTDYIIYRVTLGLHLSKIFPNLSVIR	410
	:: * * * * ^ * * * * : * : * : * : * * * * : * * * * : * * *	
hIGF1R A67T		
hIR	YLKIRRSYALVSLSFRRKRLIRGETL-EIGNYSFYALDNQNLRLQLDWDSKHNLTITQGK	452
hIGF1R	YVKIRHSHALVSLSFLKNLRLILGEEQ-LEGNYSFYVLDNQLQQLWDWDHRLNLTIKAGK	445
dInR	SLMVHLTYGLKSLKFFQSLTEISGDPPMDADKYALYVLDNRDLDELWGPNQ-TVFIRKGG	759
	: : : * * * : : * * * : : * : * * : * * : * * : ^ : * *	
L2		
hIR	LFFHYNPVKLCLSEIHKMEEVSGTKG-RQERNIDIALKTNGDQASCENELLKFSYIRTSFDK	511
hIGF1R	MYFAFNPKLCVSEIYRMEEVTGTKG-RQSKGDINTRNNGERASCESDVLHFTSTTTSKNR	504
dInR	VFFHFNPKLCVSTINQLPLASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLSQSVGANS	819
	: * : * * * * : * : : : * * : * * : * * : * * : ^ : . . :	
FnIII-1		
hIR	ILLRWE-----PY-----WPPDFRDLLGFMFLYKEAPYQNVTEFDGQDACGSNSWT	557
hIGF1R	IITWH-----RY-----RPDPYRDLISFTVYKEAPFKNVTEYDGDQDACGSNSWN	550
dInR	AMLNVTTKVEIGEPQKPSNATIVFKDPRAFIGFVYHMDIPYGNSTKSS-DDPC-DDRWK	877
	: : * * : : * : : * : * : . : * * . ^ *	
hIGF1R N547H		
hIR	GMVYEGNARDIIGKEAETRAVAKTVNESASLRERIEFLNEASVMKGFTCHHVRLGLVVS	1094
hIGF1R	GMVYEGVAKGVVKDEPETRAVIAKTVNEAASMRERIEFLNEASVMKEFNCHHVRLGLVVS	1070
dInR	GMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLGLVCS	1441
	^ : . . * : * * * * * : * * * : * * * * * * : * * * * * *	
dInR ²⁴⁶ V1384M UAS-dInR-DN K1409A		
KID		
hIR	KGQPTLVVMEMLMAHGDLSYLRSLRPEAENNP-----GRPPPTLQEMIQMAAE	1142
hIGF1R	KGQPTLVIMELMTRGDLKSYLRSLRPEMENN-----VLAPPSLSKMIQMAE	1118
dInR	RGQPALVMEMLMKKGDLSYLRRAHREPERDEAMTYLNRIGVTGNVPPTYGRIYQMAIE	1501
	: * * : * * * * : * * * * * : ^ * * : : * * : . : * * *	
dInR ³⁵³ R1466C		
A-Loop		
hIR	IADGMAYLNAKKFVHRDLAARNCMVAHDFTVKIGDFGMTRDIYETDYRKGGKGLLPVRW	1202
hIGF1R	IADGMAYLNANKFVHRDLAARNCMVAEDFTVKIGDFGMTRDIYETDYRKGGKGLLPVRW	1178
dInR	IADGMAYLAARKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTGGLLPVRW	1561
	***** * : *	
dInR ⁷⁴ I1543F		
hIR	MAPESLKDGVFTTSSDMWSFGVVLWEITSLAEQPYQGLSNEQVLKFMVDGGYLDQPDNCP	1262
hIGF1R	MSPELKDGVFTTYSVDVWSFGVVLWEIATLAEQPYQGLSNEQVLRVMEGGLDKPDNCP	1238
dInR	MPPESLRDGVYSSASDVSFGVVLWEMATLAAQPYQGLSNEQVLRVIDGGVMERPEPNC	1621
	* * * * * : * * : : * * : * * * * * : * * * * * * * * * * : * : * * *	
daf2(e1370) P1465S dInR ²¹¹ G1598R		

Supplemental Figure S2. Distribution of eclosion time. Six genotypes, emerging males and females from from day of egg deposition (0). Sum of two replicate vials. F₁ eggs after 24 hours mating, from crosses of 4 males and 4 females: *InR*(mutant allele 1)/*TM6Sb* x *InR*(mutant allele 2)/*TM6Sb*. Emerging adults with marker *Sb* are *TM6* heterozygotes with either mutant *InR* allele. Flies without the marker are trans-heterozygote mutant *InR* genotypes.

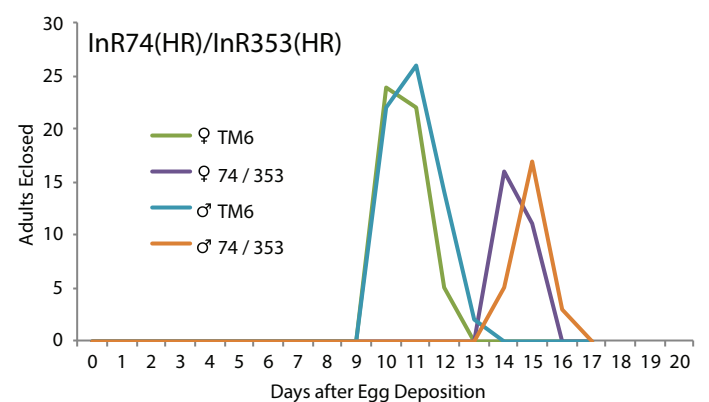
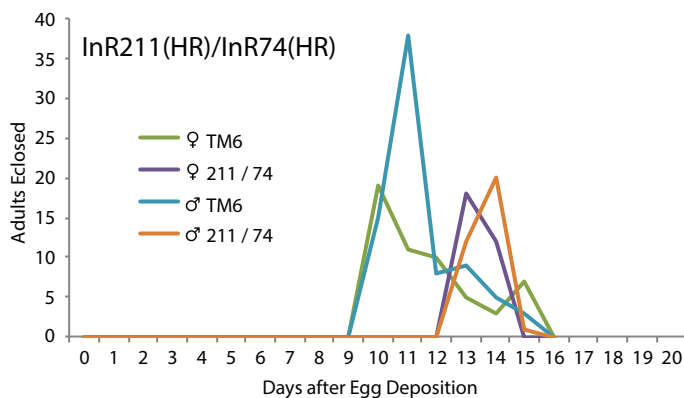
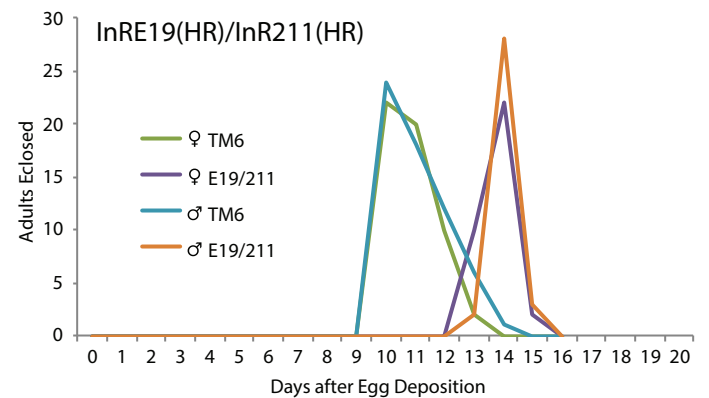
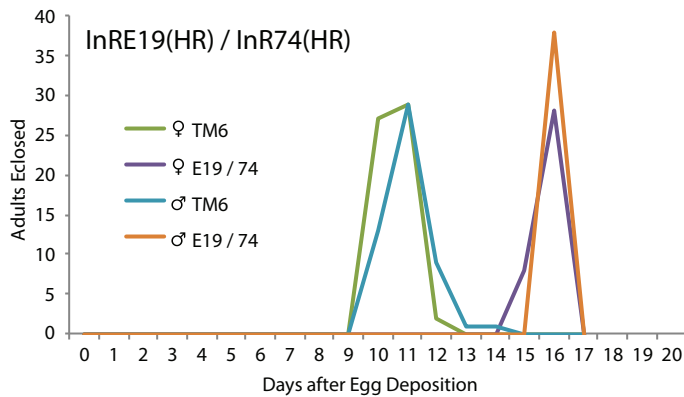
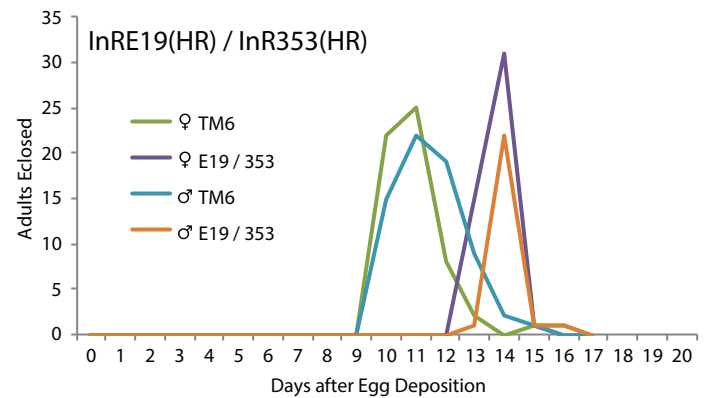
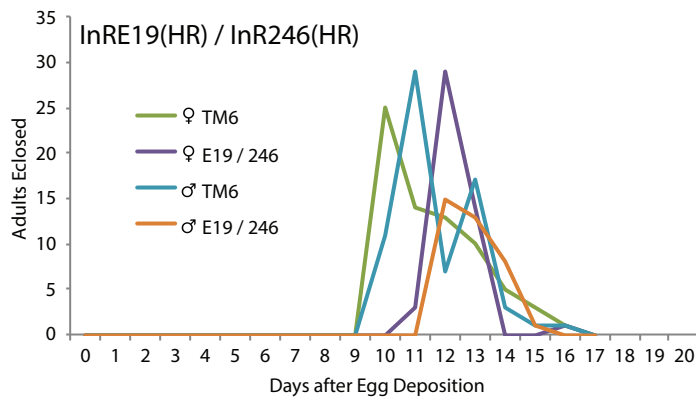


Fig S3. Master DNA alignment HR alleles with wildtypes wDAH and 29B(HR)

DAH	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
29B	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
e19	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
74e19	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
74	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
211	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
246	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	
353	agcgggacgaaagatgattacctagcgggggtgagagagacccaaaaagcgaaagcagaa	

DAH	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
29B	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
e19	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
74e19	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
74	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
211	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
246	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	
353	ctcgtggaaagctgaaaatttgaggaaacaatttcataatacgaatagaaacaccgcaat	

DAH	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
29B	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
e19	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
74e19	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
74	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
211	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
246	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60
353	ATGTTCAATATGCCACGGGGAGTGACAAAAAGTAAATCCAAGCGTGGGAAAATTAAGATG	60

DAH	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
29B	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
e19	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
74e19	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
74	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
211	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
246	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120
353	GAAAACGATATGGCAGCAGCAGCAACAACAACAGCCTGCACGCTTGGACACATTTGTGTT	120

DAH	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
29B	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
e19	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
74e19	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
74	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
211	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
246	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180
353	TTGTGCCGGCAAGAAATGTTGCTGGATACATGTTGCTGCCGGCAAGCAGTAGAAGCAGTT	180

DAH	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
29B	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
e19	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
74e19	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
74	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
211	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
246	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240
353	GACAGCCCCGCAAGCAGTGAAGAAGCGTATAGCAGTAGCAACAGCAGCAGCTGTCAAGCA	240

DAH	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
29B	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
e19	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
74e19	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
74	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
211	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
246	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300
353	AGCAGTGAAATCAGTGCGGAGGAGGTCTGGTTTCTCAGTCATGATGATATCGTACTGTGC	300

DAH	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
29B	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
e19	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
74e19	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
74	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
211	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
246	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360
353	CGCAGACCAAAATTTGACGAAGTGGAGACGACGGGTAAAAAGAGGGACGTTAAATGCAGC	360

DAH	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
29B	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
e19	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
74e19	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
74	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
211	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
246	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420
353	GGGCATCAGTGCAGCAATGAATGCGACGATGGCAGCACGAAAAACAATCGACAACAGCGC	420

DAH	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
29B	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
e19	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
74e19	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
74	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
211	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
246	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480
353	GAAAACTTCAATATCTTTAGCAACTGTCACAATATTTTGCGAACATTGCAATCGCTGCTG	480

DAH	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
29B	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
e19	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
74e19	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
74	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
211	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
246	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540
353	CTGCTCATGTTCAATTGCGGCATTTTCAACAAGCGACGCAGGCGGCAGCATCAGCAGCAG	540

DAH	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
29B	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
e19	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
74e19	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
74	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
211	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
246	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600
353	CATCATCATCATTATCAGCATCATCAGCATCATCATCAGCAGCATCTTCAGCGGCAGCAA	600

DAH	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
29B	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
e19	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
74e19	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
74	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
211	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
246	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660
353	GCCAATGTTAGTTACACAAAATTCTATTGCTGCTACAAACACTGGCAGCAGCAACCACA	660

DAH	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
29B	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
e19	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
74e19	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
74	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
211	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
246	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720
353	AGACTGAGTTTAAAGCCCTAAAAACTACAAACAACAACAACAACACTACAGCATAACCAACAG	720

DAH	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
29B	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
e19	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
74e19	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
74	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
211	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
246	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780
353	CTGCCACGTGCCACACCGCAACAAAAGCAACAAGAGAAAGATAGGCATAAGTGCTTTTCAC	780

DAH	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
29B	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
e19	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
74e19	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
74	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
211	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
246	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840
353	TACAAGCACAAATTACTCTTACTCGCCTGGCATTAGCCTTCTACTCTTTATCCTACTGGCC	840

DAH	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
29B	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
e19	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
74e19	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
74	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
211	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
246	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900
353	AACACATTGGCCATCCAAGCGGTCGTGTTGCCAGCACATCAGCAGCACCTGCTGCACAAT	900

DAH	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
29B	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
e19	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
74e19	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
74	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
211	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
246	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960
353	GATATAGCCGATGGACTGGATAAAACAGCGCTTTCGGTGTCTGGGGACGCAATCGCGATGG	960

DAH	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
29B	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
e19	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
74e19	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
74	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
211	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
246	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020
353	ACAAGGAGCGAATCAAACCCAACAATGCGACTGTACAAAATGTAAACGtatgtattac	1020

DAH	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
29B	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
e19	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
74e19	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
74	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
211	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
246	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080
353	ctatgatctaccttgcaagttaaaggaacattcccatttgcacgagactgacagatacta	1080

DAH	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
29B	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
e19	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
74e19	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
74	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
211	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
246	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140
353	atagcttttccattaacaccttatagCTTGCAAATCCATGGACATCAGGAACATGGTGTCT	1140

DAH	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
29B	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
e19	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
74e19	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
74	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
211	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
246	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200
353	GCACTTCAATCAGCTGGAGAACTGCACGGTCATCGAGGGCTTCCTGCTGATCGATTTGAT	1200

DAH	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
29B	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
e19	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
74e19	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
74	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
211	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
246	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260
353	AAACGACGCCAGCCCTCTGAACAGAAGCTTTCCAAAACCTGACCGAGGTACAGATTATAT	1260

DAH	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
29B	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
e19	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
74e19	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
74	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
211	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
246	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320
353	CATAATCTACCGTGTGACTGGATTGCACTCGCTGTCAAAGATCTTTCCCAATCTGAGCGT	1320

DAH	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
29B	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
e19	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
74e19	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
74	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
211	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
246	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380
353	CATTAGGGGAAACAAGCTGTTTCGACGGATATGCCTTGGTCGTCTACTCGAATTTTCGACCT	1380

DAH	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
29B	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
e19	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
74e19	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
74	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
211	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
246	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440
353	CATGGATTTGGGACTTCACAAGCTACGATCCATAACCAGAGGCGGTGTGCGGATTGAGAA	1440

DAH	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
29B	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
e19	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
74e19	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
74	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
211	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
246	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500
353	GAATCATAAGCTGTGCTATGATAGGACCATCGATTGGCTGGAAATTCTGGCGGAAAACGA	1500

DAH	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
29B	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
e19	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
74e19	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
74	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
211	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
246	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560
353	AACCCAACTGGTGGTGTGCTGACAGAGAACGGCAAGGAGAAGGAGTGCAGGCTTTCCAAGTG	1560

DAH	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
29B	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
e19	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
74e19	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
74	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
211	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
246	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620
353	CCCGGGGGAGATCAGAATTGAGGAGGGGCACGATACCACGGCTATTGAGGGAGAGCTTAA	1620

DAH	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
29B	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
e19	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
74e19	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
74	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
211	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
246	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680
353	TGCCAGTTGTCAGCTGCACAATAATAGGCGCCTGTGCTGGAACAGCAAACCTCTGCCAGAC	1680

DAH	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
29B	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
e19	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
74e19	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
74	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
211	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
246	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740
353	GAgtgagttggccggtgtaaagttataccgtttttcttattaacatttttcgcggttttttt	1740

DAH	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
29B	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
e19	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
74e19	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
74	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
211	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
246	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800
353	cttctccagAATGCCCTGAAAAGTGCAGAAATAACTGCATCGATGAGCACACCTGCTGCA	1800

DAH	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
29B	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
e19	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
74e19	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
74	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
211	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
246	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860
353	GCCAGGATTGTTTGGGTGGATGCGTGATCGATAAGAATGGGAATGAGAGCTGCATCTCCT	1860

DAH	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
29B	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
e19	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
74e19	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
74	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
211	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
246	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920
353	GTCGAAATGTGTCTTTCAACAACATCTGTATGGACTCCTGTCCGAAAGGCTATTATCAGg	1920

DAH	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
29B	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
e19	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
74e19	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
74	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
211	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
246	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980
353	taactaatgattcacttttagtatacaacaagtagctaactttcaaactccttttgagTT	1980

DAH	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
29B	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
e19	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
74e19	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
74	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
211	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
246	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040
353	CGACAGCCGCTGCGTAACGGCGAACGAGTGCATCACACTGACAAAGTTTGAACGAACAG	2040

DAH	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
29B	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
e19	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
74e19	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
74	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
211	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
246	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100
353	TGTGTATTCCGGTATTCCATACAACGGACAATGTATCACCCACTGTCCAACGGGGTACCA	2100

DAH	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
29B	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
e19	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
74e19	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
74	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
211	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
246	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160
353	GAAGTCAGAGAACAAGCGCATGTGCGAACCTTGTCCGGGCGGCAAGTGTGACAAGGAGTG	2160

DAH	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
29B	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
e19	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
74e19	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
74	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
211	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
246	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220
353	CTCCTCCGGTCTTATCGACAGTTTGGAGCGTGCTCGGGAGTTCCACGGCTGCACCATTAT	2220

DAH	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
29B	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
e19	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
74e19	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
74	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
211	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
246	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280
353	AACCGGAACCGAGCCCCCTTACCATCAGCATTAAACGTGAAAGCGGCGgtaagtgtttttt	2280

DAH	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
29B	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
e19	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
74e19	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
74	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
211	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
246	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340
353	gctgctctaaattaaagtataatctctatatattaaaacttcttgtttcttcagCTCACGTC	2340

DAH	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
29B	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
e19	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
74e19	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
74	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
211	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
246	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400
353	ATGGATGAATTAAATATGGCCTGGCTGCCGTCCATAAAATTCAGTCGTCCCTAATGGTT	2400

DAH	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
29B	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
e19	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
74e19	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
74	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
211	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
246	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460
353	CATTTGACCTACGGATTGAAGTCCTTGAAATTCTTTCAATCCCTAACTGAAATTAGCGGC	2460

DAH	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
29B	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
e19	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
74e19	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
74	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
211	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
246	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520
353	GATCCGCCGATGGACGCGGATAAAATATGCTTTGTATGTGCTTGATAATCGCGATCTAGAT	2520

DAH	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
29B	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
e19	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
74e19	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
74	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
211	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
246	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580
353	GAGCTCTGGGGACCCAACCAAACGGTGTTTCATTAGGAAGGGCGGCGTCTTCTTTTCATTTT	2580

DAH	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
29B	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
e19	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
74e19	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
74	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
211	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
246	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640
353	AACCCAAAACCTATGTGTGTCCACCATTAAACAGTTGCTGCCCATGCTGGCCTCCAAGCCA	2640

DAH	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
29B	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
e19	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
74e19	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
74	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
211	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
246	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700
353	AAGTTTTTTTGAAGAGTCAGATGTGGGCGCAGACTCGAATGGAAACCGCGGATCATgtaag	2700

DAH	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
29B	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
e19	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
74e19	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
74	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
211	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
246	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa	2760
353	taatctttaacgaagatttttagtaaaattttaaaactttgtcagtactaacctaaatgaaa *****	2760
DAH	catttccagGTGGAACAGCCGTTCTCAATGTCACATTACAATCAGTGGGAGCAAACCTCCG	2820
29B	catttccagGTGGAACAGCCGTTCTCAATGTCACATTACAATCAGTGGGAGCAAACCTCCG	2820
e19	catttccagGTGGAACAGCCGTTCTCAATGACACATTACAATCAGTGGGAGCAAACCTCCG	2820
74e19	catttccagGTGGAACAGCCGTTCTCAATGACACATTACAATCAGTGGGAGCAAACCTCCG	2820
74	catttccagGTGGAACAGCCGTTCTCAATGTCACATTACAATCAGTGGGAGCAAACCTCCG	2820
211	catttccagGTGGAACAGCCGTTCTCAATGTCACATTACAATCAGTGGGAGCAAACCTCCG	2820
246	catttccagGTGGAACAGCCGTTCTCAATGTCACATTACAATCAGTGGGAGCAAACCTCCG	2820
353	catttccagGTGGAACAGCCGTTCTCAATGTCACATTACAATCAGTGGGAGCAAACCTCCG *****	2820
DAH	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
29B	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
e19	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
74e19	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
74	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
211	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
246	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA	2880
353	CTATGCTGAACGTCACGACAAAAGTTGAAATAGGAGAGCCCCAAAAGCCGAGCAATGCTA *****	2880
DAH	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
29B	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
e19	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
74e19	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
74	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
211	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
246	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC	2940
353	CAATTGTTTTTTAAGGATCCGCGCGCCTTCATCGGTTTTCGTGTTTTATCATATGATCGATC *****	2940
DAH	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
29B	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
e19	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
74e19	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
74	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
211	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
246	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT	3000
353	CGTACGGGAACCTCAACTAAAAGCAGTGACGATCCATGCGATGATCGCTGGAAGGTTAGCT *****	3000
DAH	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
29B	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
e19	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
74e19	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
74	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
211	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
246	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT	3060
353	CTCCGGAAGAGCGGGGTCATGGTATTAAGCAATTTGATTCCGTACACTAACTACTCCT *****	3060

DAH	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
29B	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
e19	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
74e19	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
74	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
211	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
246	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA	3120
353	ACTACGTTTCGGACCATGGCTATATCCTCGGAATTGACAAACGCGGAGAGCGACGTGAAGA *****	3120
DAH	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
29B	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
e19	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
74e19	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
74	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
211	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
246	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT	3180
353	ACTTTAGGACGAATCCCGGACGACCGTCAAAGGTTACGGAGGTGGTAGCAACCGCCATTT *****	3180
DAH	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
29B	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
e19	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
74e19	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
74	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
211	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
246	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat	3240
353	CAGATTCGAAAATTgtgagtatgaaattgtgcaatagattagtttaggattataaatgat *****	3240
DAH	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
29B	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
e19	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
74e19	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
74	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
211	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
246	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG	3300
353	tactaaatgtcaagtaattgttcacttttgactgatcaacattttattgcctttttcagAACG *****	3300
DAH	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
29B	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
e19	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
74e19	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
74	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
211	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
246	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA	3360
353	TAACATGGAGCTACCTAGATAAGCCTTATGGCGTGCTAACGCGCTATTTTATAAAAGCCA *****	3360
DAH	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
29B	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
e19	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
74e19	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
74	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
211	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
246	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac	3420
353	AACTTATAAATCGGCCTACTCGAAACAATAACCGGGATTACTGTACTGAACgtaagcaac *****	3420

DAH	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
29B	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
e19	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
74e19	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
74	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
211	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
246	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG	3480
353	aacatagccaaattgtatccataattaattaattttaaatatttcatctgtgtagCTCTCG *****	3480
DAH	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
29B	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
e19	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
74e19	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
74	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
211	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
246	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT	3540
353	TCAAGGCCATGGAAAATGACCTGCCAGCCACAACGCCTACCAAGAAAATATCAGATCCTT *****	3540
DAH	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
29B	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
e19	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
74e19	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
74	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
211	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
246	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG	3600
353	TAGCAGGCGACTGTAAGTGCCTGGAGGGTTTGAAGAAGACTAGCAGTCAGGAATACGATG *****	3600
DAH	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
29B	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
e19	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
74e19	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
74	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
211	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
246	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT	3660
353	ATCGTAAAGTTCAAGCGGGCATGGAGTTTGAGAACGCGTTGCAAACTTTATATTTGTTT *****	3660
DAH	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
29B	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
e19	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
74e19	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
74	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
211	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
246	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG	3720
353	CAAACATTTCGAAAAGCAAGAATGGATCGTCTGACAAATCAGACGGAGCGGAAGGTGCAG *****	3720
DAH	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
29B	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
e19	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
74e19	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
74	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
211	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
246	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG	3780
353	CTCTCGATTCTAATGCTATTCCAAATGGAGGAGCTACTAACCCTTCACGTAGAAGGAGAG *****	3780

DAH	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
29B	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
e19	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
74e19	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
74	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
211	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
246	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC	3840
353	ACGTTGCGCTCGAGCCAGAGCTCGACGATGTAGAGGGCAGTGTACTTCTACGCCATGTGC *****	3840
DAH	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
29B	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
e19	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
74e19	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
74	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
211	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
246	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG	3900
353	GCTCCATCACAGACGATACCGATGCATTTTTTCGAAAAGGACGACGAAAATACCTATAAAG *****	3900
DAH	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
29B	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
e19	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
74e19	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
74	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
211	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
246	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC	3960
353	ACGAAGAAGACTTGTCTCTCCAACAAACAATTCTATGAGGTGTTTGCCAAGGAATTGCCAC *****	3960
DAH	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
29B	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
e19	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
74e19	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
74	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
211	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
246	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG	4020
353	CAAATCAAACACATTTTGTCTTTGAAAACTGCGCCACTTCACCCGCTACGCTATCTTCG *****	4020
DAH	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
29B	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
e19	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
74e19	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
74	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
211	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
246	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT	4080
353	TGGTAGCCTGTAGAGAAGAAATCCCCAGCGAAAAATTAAGGGACACCAGTTTTTAAGAAGT *****	4080
DAH	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
29B	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
e19	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
74e19	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
74	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
211	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
246	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt	4140
353	CGCTCTGCAGCGATTATGACACCGTTTTTCCAAACTACAAAGAGAAAGAgtaggtggactt *****	4140

DAH	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
29B	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
e19	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
74e19	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
74	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
211	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
246	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA	4200
353	gagagcgtgtttacttttcattactaacgatttggttttactttatagAATTTGCCGACATA *****	4200
DAH	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
29B	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
e19	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
74e19	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
74	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
211	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
246	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT	4260
353	GTCATGGACCTAAAAGTAGATTTAGAACACGCCAACACACCGAGTCCCCAGTACGGGTT *****	4260
DAH	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
29B	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
e19	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
74e19	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
74	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
211	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
246	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG	4320
353	CGCTGGACGCCACCAGTAGATCCCAACGGAGAAATTGTCACCTATGAAGTGGCCTACAAG *****	4320
DAH	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
29B	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
e19	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
74e19	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
74	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
211	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
246	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG	4380
353	TTGCAAAAACCCGATCAAGTGGAAGAAAAGAAGTGCATTCCGGCTGCTGACTTCAACCAG *****	4380
DAH	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
29B	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
e19	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
74e19	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
74	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
211	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
246	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT	4440
353	ACTGCCGGTTATTTAATAAAGCTCAACGAGGGCCTTTACAGCTTCAGGGTGCGAGCCAAT *****	4440
DAH	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
29B	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
e19	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
74e19	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
74	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
211	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
246	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga	4500
353	TCAATAGCGGGATACGGCGATTTACGGAAGTCGAACATATAAAAGTTGAGgtaggttga *****	4500

DAH	ataatTTTTatctgc-----	4515
29B	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata	4560
e19	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata	4560
74e19	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata	4560
74	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata	4560
211	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata	4560
246	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata	4560
353	ataatTTTTatctgcggtaccctagactagtctagataaacttcgtataatgtatgctata *****	4560
DAH	-----gaatgatcattttttaaatgaatttttttt	4544
29B	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt	4620
e19	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt	4620
74e19	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt	4620
74	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt	4620
211	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt	4620
246	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt	4620
353	cgaagtTtatctagactagtctagggcgcgccgaatgatcattttttaaatgaatttttttt *****	4620
DAH	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4604
29B	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4680
e19	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4680
74e19	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4680
74	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4680
211	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4680
246	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA	4680
353	tttcattaaattcaacagCCTCCGCCGAGCTATGCTAAGGTCTTTTTCTGGCTACTGGGA *****	4680
DAH	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4664
29B	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4740
e19	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4740
74e19	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4740
74	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4740
211	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4740
246	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG	4740
353	ATCGGCCTAGCGTTTCCTGATCGTTTTCCCTGTTTCGGCTATGTCTGTTACCTGCACAAGAGG *****	4740
DAH	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4724
29B	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4800
e19	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4800
74e19	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4800
74	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4800
211	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4800
246	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG	4800
353	AAGGTTCCCTCTAATGACCTCCATATGAACACAGAGGTGAATCCGTTCTATGCGAGCATG *****	4800
DAH	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4784
29B	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4860
e19	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4860
74e19	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4860
74	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4860
211	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4860
246	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA	4860
353	CAATACATCCCAGACGATTGGGAGGTGCTGCGAGAGAACATCATTAGTTGGCTCCACTA *****	4860

DAH	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4844
29B	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920
e19	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920
74e19	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920
74	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920
211	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920
246	GGCCAGGGATCCTTTGGCATGATGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920
353	GGCCAGGGATCCTTTGGCATGGTGTATGAGGGTATCCTGAAGTCCTTTCCACCCAATGGC	4920

DAH	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4904
29B	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980
e19	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980
74e19	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980
74	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980
211	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980
246	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980
353	GTGGATCGCGAGTGTGCCATTAAGACTGTCAACGAAAATGCTACGGATCGCGAGCGAACC	4980

DAH	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	4964
29B	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040
e19	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040
74e19	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040
74	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040
211	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040
246	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040
353	AATTTCTGAGCGAGGCGAGCGTCATGAAGGAGTTCGATACGTATCATGTCGTAAGATTG	5040

DAH	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5024
29B	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100
e19	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100
74e19	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100
74	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100
211	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100
246	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100
353	CTCGGTGTTTGTTCAGGGGTGAGCCGGCTCTGGTGGTCATGGAGCTAATGAAGAAGGGT	5100

DAH	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5084
29B	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160
e19	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160
74e19	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160
74	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160
211	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160
246	GATCTTAAGTCCTATTTGCGTGCCCATCGTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160
353	GATCTTAAGTCCTATTTGCGTGCCCATGTCTCCCGAGGAGCGGGATGAGGCCATGATGACG	5160

DAH	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5144
29B	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220
e19	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220
74e19	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220
74	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220
211	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220
246	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220
353	TATCTTAATCGCATCGGAGTGACTGGTAATGTGCAGCCTCCTACTTATGGAAGAATCTAC	5220

DAH	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5204
29B	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280
e19	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280
74e19	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280
74	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280
211	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280
246	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280
353	CAGATGGCCATTGAGATTGCGGATGGCATGGCATATTTGGCCGCCAAGAAGTTCGTCCAT	5280

DAH	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5264
29B	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340
e19	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340
74e19	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340
74	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340
211	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340
246	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340
353	CGTGATCTTGCAGCTCGAAATTGCATGGTTGCTGATGATTTGACGGTGAAAATTGGTGAC	5340

DAH	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5324
29B	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400
e19	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400
74e19	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400
74	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400
211	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400
246	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400
353	TTTGAATGACCCGTGACATCTATGAGACGGATTACTATCGGAAGGGCACTAAAGGGCTG	5400

DAH	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5384
29B	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460
e19	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460
74e19	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460
74	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460
211	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460
246	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460
353	CTGCCAGTTCGCTGGATGCCACCGGAGAGCTTGCGAGATGGTGTCTACTCTAGTGCCAGT	5460

DAH	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5444
29B	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520
e19	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520
74e19	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520
74	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520
211	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520
246	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520
353	GATGTATTACAGCTTTGGAGTGGTTCTCTGGGAAATGGCCACCTTAGCGGCTCAGCCATAC	5520

DAH	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5504
29B	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
e19	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
74e19	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
74	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
211	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
246	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
353	CAGGGACTTTCCAACGAGCAAGTCCTGCGTTACGTTATCGATGGCGGTGTTATGGAGAGG	5580
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DAH	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5564
29B	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640
e19	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640
74e19	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640
74	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640
211	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640
246	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640
353	CCGGAAAATTGTCCTGATTTTCTGCATAAACTAATGCAAAGGTGCTGGCATCATAGGTCT	5640

DAH	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5624
29B	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700
e19	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700
74e19	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700
74	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700
211	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700
246	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700
353	TCGGCGAGACCCAGTTTTCTGGATATCATTGCGTATCTCGAACCACAATGCCCCAATTCA	5700

DAH	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5684
29B	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760
e19	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760
74e19	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760
74	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760
211	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760
246	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760
353	CAATTTAAGGAAGTATCCTTCTATCACTCAGAGGCAGGTCTGCAGCATCGGGAAAAGGAG	5760

DAH	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5744
29B	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820
e19	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820
74e19	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820
74	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820
211	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820
246	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820
353	CGCAAGGAACGCAATCAGCTAGATGCATTGCGGGCAGTCCCCTTGATCAAGATCTGCAG	5820

DAH	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5804
29B	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880
e19	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880
74e19	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880
74	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880
211	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880
246	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880
353	GATCGGGAACAGCAGGAGGATGCTACCACACCTTTACGAATGGGCGATTATCAGCAGAAC	5880

DAH	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5864
29B	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940
e19	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940
74e19	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940
74	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940
211	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940
246	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940
353	TCCTCGTTGGATCAACCGCCCCGAAAGCCCCATCGCCATGGTTGATGATCAGGGTTCTCAC	5940

DAH	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	5924
29B	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000
e19	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000
74e19	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000
74	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000
211	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000
246	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000
353	TTGCCATTTAGCCTGCCATCCGGATTCATTGCGAGCAGTACTCCTGATGGGCAGACTGTA	6000

DAH	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	5984
29B	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060
e19	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060
74e19	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060
74	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060
211	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060
246	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060
353	ATGGCTACTGCTTTCCAGAATATTCCAGCAGCGCAAGGTGATATTTTCGGCGACTTACGTT	6060

DAH	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6044
29B	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120
e19	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120
74e19	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120
74	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120
211	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120
246	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120
353	GTGCCTGATGCAGACGCTTTGGACGGCGACAGGGGATATGAGATCTACGATCCCAGTCCG	6120

DAH	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6104
29B	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180
e19	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180
74e19	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180
74	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180
211	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180
246	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180
353	AAATGTGCAGAGCTGCCGACGAGCAGAAGTGGCAGTACTGGCGGTGGAAAACCTCAGCGGA	6180

DAH	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6164
29B	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240
e19	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240
74e19	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240
74	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240
211	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240
246	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240
353	GAACAACATTTGCTGCCAAGAAAGGGTCGCCAGCCTACCATCATGAGCAGCTCGATGCCA	6240

DAH	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6224
29B	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300
e19	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300
74e19	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300
74	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300
211	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300
246	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300
353	GATGATGTCATCGGTGGGTCTCTACTGCAACCCTCGACTGCGTCAGCAGCCAGTTCTAAT	6300

DAH	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6284
29B	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360
e19	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360
74e19	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360
74	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360
211	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360
246	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360
353	GCCAGTTCGCACACAGGACGCCCCAAGTCTGAAGAAAACAGTGGCGGATTTCGGTTCGCAAT	6360

DAH	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6344
29B	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420
e19	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420
74e19	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420
74	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420
211	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420
246	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420
353	AAGGCAAACCTTCATTAATCGCCACCTATTTAACCACAAGCGAACGGGCAGCAATGCCAGC	6420

DAH	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6404
29B	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480
e19	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480
74e19	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480
74	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480
211	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480
246	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480
353	CACAAGAGCAATGCCTCCAATGCTCCGAGTACCAGCAGTAACACCAACTTGACAAGTCAC	6480

DAH	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6464
29B	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540
e19	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540
74e19	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540
74	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540
211	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540
246	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540
353	CCAGTGGCTATGGGCAATCTTGGAAGTATCGAGAGTGGTGGCAGTGGTTCGGCTGGTAGT	6540

DAH	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6524
29B	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600
e19	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600
74e19	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600
74	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600
211	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600
246	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600
353	TATACTGGAACACCCCGCTTCTATACTCCATCAGCGACGCCTGGAGGAGGCAGCGGTATG	6600

DAH	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6584
29B	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660
e19	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660
74e19	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660
74	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660
211	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660
246	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660
353	GCCATTAGCGACAATCCTAACTACAGACTACTAGACGAGTCAATAGCCAGCGAACAGGCC	6660

DAH	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6644
29B	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720
e19	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720
74e19	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720
74	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720
211	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720
246	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720
353	ACCATCCTAACGACTAGCAGCCCCAATCCCAACTACGAGATGATGCATCCACCAACCAGT	6720

DAH	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6704
29B	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780
e19	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780
74e19	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780
74	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780
211	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780
246	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780
353	CTGGTCAGTACCAATCCGAACATATATGCCCATGAATGAGACTCCAGTGCAGATGGCGGGT	6780

DAH	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6764
29B	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840
e19	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840
74e19	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840
74	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840
211	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840
246	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840
353	GTGACCATTAGCCATAATCCGAATTACCAGCCCATGCAGGCGCCGTTGAATGCACGCCAA	6840

DAH	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6824
29B	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900
e19	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900
74e19	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900
74	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900
211	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900
246	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900
353	AGCCAAAGTAGCTCCGACGAGGACAACGAGCAGGAGGAGGACGATGAGGATGAGGACGAC	6900

DAH	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6884
29B	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960
e19	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960
74e19	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960
74	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960
211	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960
246	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960
353	GACGTGGACGATGAGCATGTGGAGCACATCAAGATGGAGCGCATGCCATTGAGTCGGCCC	6960

DAH	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	6944
29B	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020
e19	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020
74e19	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020
74	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020
211	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020
246	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020
353	AGGCAAAGAGCGTTGCCAGCAAGACGCAGCCGCCTCGCAGTCGCAGCGTCAGCCAAACG	7020

DAH	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7004
29B	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080
e19	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080
74e19	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080
74	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080
211	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080
246	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080
353	AGAAAATCTCCTACGAATCCCAACTCCGGAATCGGAGCGACAGGAGCCGGAAACCGATCC	7080

DAH	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7064
29B	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140
e19	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140
74e19	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140
74	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140
211	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140
246	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140
353	AACTTGCTTAAAGAGAAGTGGCTGCGACCGGCGAGTACGCCAAGGCCTCCACCACCCAAT	7140

DAH	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7124
29B	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200
e19	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200
74e19	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200
74	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200
211	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200
246	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200
353	GGATTCATCGGAAGGGAGGCGtaatcgttacgaactgtagttctgtagaaaaacatgtaa	7200

DAH	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7184
29B	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260
e19	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260
74e19	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260
74	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260
211	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260
246	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260
353	atagatgaggagaagcagcatggatatagatagagtagcaagtctttgccgcaagccaag	7260

DAH	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7244
29B	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320
e19	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320
74e19	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320
74	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320
211	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320
246	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320
353	cttcttggaatttgactcttctctatgcctgcaaattaggggtggaggagatgtaggtcca	7320

DAH	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7304
29B	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380
e19	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380
74e19	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380
74	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380
211	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380
246	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380
353	aagatatttgtatatattttcaatatgactggctagcaatccattgtaacatttctagcgat	7380

DAH	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7364
29B	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7440
e19	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7440
74e19	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7440
74	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7440
211	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7440
246	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc	7440
353	gaagcttcaaacaagaagttgattcttttagttaaaattttgcattaatagaaaattaagc *****	7440
DAH	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7424
29B	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7500
e19	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7500
74e19	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7500
74	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7500
211	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7500
246	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt	7500
353	acattgtgtcagtccttcgtaaaataaacacacctttccgtagatggatgacaccttttctt *****	7500
DAH	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7484
29B	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7560
e19	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7560
74e19	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7560
74	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7560
211	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7560
246	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa	7560
353	cttgggtgtcgaaccaaaattgtaaattttagattcatagagcctaattttcaattctcaa *****	7560
DAH	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7544
29B	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7620
e19	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7620
74e19	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7620
74	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7620
211	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7620
246	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata	7620
353	ttgttcgacgattaggcaaacgactatatggagtcgaagatatggaaacaaaggcctaata *****	7620
DAH	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7604
29B	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7680
e19	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7680
74e19	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7680
74	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7680
211	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7680
246	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc	7680
353	ttgctaagaacgagccaaaaagattgctaaccgccttcacgattctttgttcaagccatc *****	7680
DAH	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7664
29B	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7740
e19	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7740
74e19	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7740
74	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7740
211	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7740
246	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta	7740
353	gaaccaccctaaccgcgcatgtataataccaatagtttcgattaagcctatttatgttta *****	7740

DAH	cgtatt	7670
29B	cgtatt	7746
e19	cgtatt	7746
74e19	cgtatt	7746
74	cgtatt	7746
211	cgtatt	7746
246	cgtatt	7746
353	cgtatt	7746

Fig S4. Master PROT alignment HR alleles with Wildtypes wDAH and 29B(HR)

DAH	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
29B	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
e19	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
74e19	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
74	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
211	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
246	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60
353	MFNMPRGVTKSKSRGKIKMENDMAAAATTTACTLGHICVLCRQEMLLDTCCCRQAVEAV	60

DAH	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
29B	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
e19	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
74e19	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
74	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
211	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
246	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120
353	DSPASSEEAYSSSNSSSCQASSEISAEVWFLSHDDIVLCRRPKFDEVETTGKKRDVKCS	120

DAH	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
29B	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
e19	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
74e19	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
74	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
211	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
246	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180
353	GHQCSNECDDGSTKNNRQQRENFNIFSNCHNLRTLQSLLLMFNCGIFNKRRRRQHQQQ	180

DAH	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
29B	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
e19	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
74e19	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
74	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
211	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
246	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240
353	HHHHYQHHQHQQHLQRQQANVSYTKFLLLLQTLAAATTRLSLSPKNYKQQQQLQHNQQ	240

DAH	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
29B	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
e19	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
74e19	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
74	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
211	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
246	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300
353	LPRATPQQKQQEKDRHKCFHYKHNYSYSPGISLLLFI LLANTLAIQAVVLP AHQQHLLHN	300

DAH	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
29B	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
e19	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
74e19	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
74	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
211	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
246	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360
353	DIADGLDKTALSVSGTQSRWTRSESNTMRLSQNVKPKCSMDIRNMVSHFNQLENCTVIE	360

DAH	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
29B	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
e19	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
74e19	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
74	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
211	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
246	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420
353	GFLIDLINDASPLNRSFPKLTEVTDYIIIIYRVTGLHSLSKIFPNLSVIRGNKLFDFGYAL	420

DAH	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
29B	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
e19	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
74e19	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
74	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
211	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
246	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480
353	VVYSNFDLMDLGLHKLRSITRGGVRIEKNHKLCYDRTIDWLEILAENETQLVVL TENGKE	480

DAH	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
29B	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
e19	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
74e19	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
74	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
211	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
246	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540
353	KECRLSKCPGEIRIEEGHDTTAIEGELNASCQLHNNRRLCWN SKLCQTKCPEKCRNNCID	540

DAH	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
29B	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
e19	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
74e19	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
74	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
211	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
246	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600
353	EHTCCSQDCLGGCVIDKNGNESCI SCRNVSFNNICMDSCP KGYQFDSRCVTANECITLT	600

DAH	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
29B	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
e19	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
74e19	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
74	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
211	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
246	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660
353	KFETNSVYSGIPYNGQCITHCPTGYQKSENKRMCEPCPGGKCDKECSSGLIDSLERAREF	660

DAH	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
29B	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
e19	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
74e19	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
74	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
211	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
246	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720
353	HGCTIITGTEPLTISIKRESGAHVMDDELKYGLAAVHKIQSSLMVHLTYGLKSLKFFQSLT	720

DAH	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
29B	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
e19	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
74e19	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
74	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
211	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
246	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780
353	EISGDPPMDADKYALYVLDNRDLDELWGNQTVFIRKGGVFFHFNPCLCVSTINQLLPML	780

DAH	ASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLQSVGANSAMLNVTTKVEIGEPQKPSNAT	840
29B	ASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLQSVGANSAMLNVTTKVEIGEPQKPSNAT	840
e19	ASKPKFFEKSDVGADSNNGRGSCGTAVLN DTL QSVGANSAMLNVTTKVEIGEPQKPSNAT	840
74e19	ASKPKFFEKSDVGADSNNGRGSCGTAVLN DTL QSVGANSAMLNVTTKVEIGEPQKPSNAT	840
74	ASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLQSVGANSAMLNVTTKVEIGEPQKPSNAT	840
211	ASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLQSVGANSAMLNVTTKVEIGEPQKPSNAT	840
246	ASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLQSVGANSAMLNVTTKVEIGEPQKPSNAT	840
353	ASKPKFFEKSDVGADSNNGRGSCGTAVLNVTLQSVGANSAMLNVTTKVEIGEPQKPSNAT	840

DAH	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
29B	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
e19	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
74e19	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
74	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
211	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
246	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900
353	IVFKDPRAFIFGVFYHMDPYGNSTKSSDDPCDDRWKVSSPEKSGVMVLSNLIPTYNYSY	900

DAH	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
29B	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
e19	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
74e19	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
74	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
211	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
246	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960
353	YVRTMAISSELTNAESDVKNFRTNPGRPSKVTEVVATAISDSKINVTWSYLDKPYGVLTR	960

DAH	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
29B	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
e19	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
74e19	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
74	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
211	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
246	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020
353	YFIKAKLINRPTNRNNRDYCTEPLVKAMENDLPATTPTKKISDPLAGDCKCVEGSKKTSS	1020

DAH	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
29B	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
e19	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
74e19	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
74	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
211	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
246	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS	1080
353	QEYDDRKVQAGMEFENALQNFIFVPNIRKSKNGSSDKSDGAEGAALDSNAIPNGGATNPS *****	1080
DAH	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
29B	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
e19	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
74e19	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
74	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
211	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
246	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA	1140
353	RRRRDVALEPELDDVEGSVLLRHVRSITDDTDAFFEKDDENTYKDEEDLSSNKQFYEVFA *****	1140
DAH	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
29B	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
e19	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
74e19	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
74	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
211	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
246	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK	1200
353	KELPPNQTHFVFEKLRHFTRYAIFVVACREEIPSEKLRDTSFKKSLCSDYDTVFQTTKRK *****	1200
DAH	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
29B	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
e19	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
74e19	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
74	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
211	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
246	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA	1260
353	KFADIVMDLKVDLEHANNTESPVRVRWTPPVPDPNGEIVTYEVAYKLQKPDQVEEKKCIPA *****	1260
DAH	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
29B	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
e19	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
74e19	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
74	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
211	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
246	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA	1320
353	ADFNQTAGYLIKLNGLYSFRVRANSIAGYGDFTEVEHIKVEPPPSYAKVFFWLLGIGLA *****	1320
DAH	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
29B	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
e19	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
74e19	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
74	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
211	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
246	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS	1380
353	FLIVSLFGYVCYLHKRKVPSNDLHMNTEVNPFFYASMQYIPDDWEVLRENIIQLAPLGQGS *****	1380

DAH	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
29B	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
e19	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
74e19	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
74	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
211	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
246	FGM M YEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
353	FGMVYEGILKSFPNGVDRECAIKTVNENATDRERTNFLSEASVMKEFDYHVVRLLGVC	1440
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DAH	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
29B	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
e19	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
74e19	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
74	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
211	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
246	SRGQPALVVMELMKKGDLKSYLRAHRPEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500
353	SRGQPALVVMELMKKGDLKSYLRAH C PEERDEAMMTYLNRIQVTGNVQPPTYGRIYQMAI	1500

DAH	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTKGLLPVR	1560
29B	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTKGLLPVR	1560
e19	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTKGLLPVR	1560
74e19	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRD F YETDYRKGTKGLLPVR	1560
74	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRD F YETDYRKGTKGLLPVR	1560
211	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTKGLLPVR	1560
246	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTKGLLPVR	1560
353	EIADGMAYLAAKKFVHRDLAARNCMVADDLTVKIGDFGMTRDIYETDYRKGTKGLLPVR	1560
	*****.*****	
DAH	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620
29B	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620
e19	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620
74e19	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620
74	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620
211	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQ R LSNEQVRLRYVIDGGVMERPENC	1620
246	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620
353	WMPPESLRDGVYSSASDVFSFGVVLWEMATLAAQPYQGLSNEQVRLRYVIDGGVMERPENC	1620

DAH	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
29B	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
e19	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
74e19	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
74	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
211	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
246	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680
353	PDFLHKLMQRCWHRSSARPSFLDIIAYLEPQCPNSQFKEVSFYHSEAGLQHREKERKER	1680

DAH	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
29B	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
e19	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
74e19	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
74	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
211	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
246	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740
353	NQLDAFAAVPLDQDLQDREQQEDATTPLRMGDYQQNSSLDQPPESPIAMVDDQGSHLPFS	1740

DAH	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
29B	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
e19	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
74e19	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
74	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
211	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
246	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800
353	LPSGFIASSTPDGQTMATAFQNI	PAAQGD	SATYVVPDADALDGDRGYE	IYDPSPKCAE	1800

DAH	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
29B	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
e19	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
74e19	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
74	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
211	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSVQPSTASAASSNASSH			1860
246	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
353	LPTSRSGSTGGGKLSGEQHLLPRKGRQPT	IMSSMPDDVIGGSSLQPSTASAASSNASSH			1860
*****:*****					
DAH	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
29B	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
e19	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
74e19	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
74	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
211	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAV			1920
246	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
353	TGRPSLKKTIVADSVRNKANFINRH	LFNHKRTGSNASHKSNASNAPSTSSNTNLTSHPVAM			1920
*****:					
DAH	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
29B	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
e19	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
74e19	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
74	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
211	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
246	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980
353	GNLGTIESGGSGSAGSYTGTPRFYTPSAT	PGGGSGMAISDNPNYRLLDESIASEQATILT			1980

DAH	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
29B	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
e19	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
74e19	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
74	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
211	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
246	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040
353	TSSPNPNYEMMHPPTSLVSTNPNYMPMNET	PVQMAGVTISHNPNYQPMQAPLNARQSQSS			2040

DAH	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
29B	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
e19	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
74e19	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
74	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
211	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
246	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100
353	SDEDNEQEEDDEDEDDDDVDDEHVEHIKMER	MPLSRPRQRALPSKTQPPRSRVSQTRKSP			2100

DAH	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
29B	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
e19	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
74e19	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
74	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
211	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
246	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143
353	TNPNSGIGATGAGNRSNLLKENWLRPASTPRPPPPNGFIGREA	2143

Table S1. Survival statistics of alleles in Quantitative Complementation Test. Male and female cohorts. Wildtype test alleles are InR^+ on extracted third chromosomes (NC series) sampled from the Raleigh Farmer's Market by T.F. Mackay. Mutant InR test alleles are archival EMS-treated third chromosomes with lesions mapped over a deficiency, reported in Fernandez (59) provided by M. Frasc. $N(0)$: initial cohort size, InR^{allele}/InR^{E19} ($InR^{allele}/E19$) and $InR^{allele}/TM3$, $InR^+ Sb$ ($InR^{allele}/TM3$) combined. * : mutant InR alleles were tested in two independent blocks; data shows combined sample size and average (after block adjustment) survival parameter estimates.

Survival parameters are adjusted across blocks. In each of five periods used to construct life tables (blocks), the relative hazard coefficient β was estimated for a universal wildtype chromosome (NC442) as NC442/E19 relative to NC442/TM3 (Table S2). To adjust for period effects among blocks, the β_{NC442} expressed in the block was subtracted from each β estimated for wildtype and InR mutants tested within the corresponding block. Proportional Hazard is the ratio of estimated mortality among compared cohorts after adjusting for their common time dependent underlying hazard $h_0(t)$, estimated as $\exp(|\beta|)$; unity indicates no overall mortality difference. **Bold** values indicate test allele decreases mortality ($InR^{allele}/TM3$: $InR^{allele}/E19$). Normal values indicate test allele elevates mortality ($InR^{allele}/E19$: $InR^{allele}/TM3$). Estimates are used to visualize the distribution of allelic effects (fold-change) among naturally segregating polymorphisms of InR (Figure 2, main text). Life Expectancy is observed difference between the Kaplan-Meier estimated median life span of the $InR^{allele}/E19$ cohort and the $InR^{allele}/TM3$ cohort, adjusted by subtracting the difference in life expectancy between NC442/E19 relative to NC442/TM3 of the block.

Block adjusted β for each InR EMS allele is evaluated by z-test relative to the distribution of β among NC alleles where mean value is -0.15 (both sexes) and SD is 0.44 and 0.48 for males and females respectively. Adjusting for multiple comparisons with Bonferroni correction ($p < 0.0055$), the alleles InR^{74} and InR^{211} in both sexes decrease mortality more than expected; InR^{353} reduces mortality about 2.5-fold in females, but not significantly by our criteria; InR^{262} modestly decreases mortality in both sexes, but no more than many wildtype InR alleles; InR^{327} is strongly adult deleterious in both sexes.

Test Allele. Males		Survival Parameters (block adjusted)				
		Change Life Expectancy allele/E19-allele/TM3 (days)		Proportional Hazard (allele/E19:allele/TM3) (allele/TM3:allele/E19)		
Wiltype	N(0)		β			
NC434	424	13.8	-0.52		1.68	
NC469	371	3.6	-0.32		1.38	
NC361	429	0.1	0.04		1.04	
NC424	335	-1.9	0.10		1.11	
NC443	424	-3.7	0.14		1.15	
NC464	399	1.3	-0.25		1.29	
NC391	414	5.2	-0.71		2.03	
NC453	476	9.2	-0.95		2.58	
NC291	613	-2.1	0.32		1.37	
NC245	560	0.2	-0.35		1.42	
NC297	650	-9.9	0.47		1.60	
NC65	449	-5.7	0.13		1.14	
NC241	482	5.1	-0.74		2.10	
NC351	467	3.9	-0.09		1.09	
NC325	575	-8.4	0.50		1.65	
NC264	503	-0.2	-0.18		1.19	
NC96	640	-2.1	0.30		1.35	
NC99	488	5.0	-0.62		1.86	
		mean	0.74	-0.15		
		SD	5.94	0.44		
		z-test				
		z		Prob.		
Mutant						
InR74	606*	18.8	-1.48	4.39	-3.148	0.0016
InR76	429	-4.0	0.75	2.13	2.105	0.0353
InR211	665*	13.3	-0.96	2.62	-1.937	0.0528
InR246	381	0.4	-0.06	1.06	0.202	0.8402
InR262	417	7.3	-0.43	1.54	-0.683	0.4947
InR273	507	-7.7	0.66	1.93	1.879	0.0603
InR327	451	-22.1	1.64	5.13	4.179	< 0.0001
InR351	575	-0.9	0.03	1.03	0.390	0.6967
InR353	882*	5.7	-0.41	1.50	-0.624	0.5326

Test Allele. Females		Survival Parameters (block adjusted)				
Wiltype	N(0)	Life Expectancy	β	Proportional Hazard		
		allele/E19-allele/TM3 (days)		(allele/E19:allele/TM3) (allele/TM3:allele/E19)		
NC434	396	10.4	-0.75	2.11		
NC469	377	8.5	-0.32	1.38		
NC361	491	-11.3	0.93	2.54		
NC424	457	-0.6	-0.24	1.27		
NC443	409	-8.9	0.74	2.10		
NC464	451	-11.0	-0.28	1.32		
NC391	497	4.6	-0.75	2.11		
NC453	557	6.1	-0.67	1.95		
NC291	475	-1.8	0.28	1.32		
NC245	517	3.4	-0.21	1.24		
NC297	512	-1.4	0.00	1.00		
NC65	645	1.5	-0.30	1.34		
NC241	531	7.0	-0.63	1.88		
NC351	550	-0.6	0.44	1.55		
NC325	607	2.5	-0.22	1.24		
NC264	533	2.4	-0.16	1.18		
NC96	523	3.3	-0.18	1.20		
NC99	464	3.5	-0.35	1.42		
		mean	1.0	-0.15		
		SD	6.2	0.48		
Mutant		z-test				
				z	Prob.	
InR74	720*	25.1	-1.80	6.03	-3.462	0.0006
InR76	551	3.9	-0.49	1.63	-0.719	0.3788
InR211	954*	12.2	-1.65	5.21	-3.158	0.0020
InR246	438	-7.2	0.29	1.34	0.920	0.3520
InR262	403	8.2	-0.49	1.63	-0.710	0.5418
InR273	558	-1.1	0.13	1.14	0.590	0.4966
InR327	598	-24.3	1.51	4.52	3.478	< 0.0001
InR351	574	-0.6	0.00	1.00	0.313	0.7040
InR353	1075*	9.0	-0.90	2.45	-1.573	0.1156

Table S2. Block survival statistics of the universal wildtype test chromosome ($\ln R^+$) NC442 in Quantitative Complementation Test as NC442/E19 relative to NC442/TM3.

	Block	N(0)	β	s.e.	Life expectancy (difference, days) NC442/E19 – NC442/TM3
Males					
NC442	1	500	-0.258	0.091	4.9
NC442	2	395	-1.18	0.114	14
NC442	3	433	-0.504	0.099	5
NC442	4	665	-0.999	0.084	17.9
NC442	5	452	-0.825	0.101	8.1
Females					
NC442	1	463	-0.095	0.094	1.92
NC442	2	457	-1.279	0.102	16.5
NC442	3	571	-0.33	0.085	4.4
NC442	4	424	-0.973	0.106	14.49
NC442	5	445	-0.596	0.097	8.2

Table S3. Summary life table statistics for *InR* hemizygotes and *InR* wildtype homozygotes. Data of Figure 5A (Trial 1) and 5B (Trial 2) in main text, females. Wildtype *InR* included three independent accessions: *InR*^{+(HR)29B} (29+), *InR*^{+(HR)13A} (13+) and wDah. Null *InR* alleles were derived from the accessions used to produce wildtype *InR*^{+(HR)29B} (29+) and *InR*^{+(HR)13A} (13+). Trials were conducted in independent periods, with contemporary cohorts of indicated genotypes.

Genotype class	Genotype	N(0)	Median survival (d)	Median 95% c.i.	Mean survival (d)	Mean s.e.
Trial 1						
Wildtype homozygote						
	29+/29+	351	44	42-44	41.7	0.52
	wDah/29+	352	40	38-42	39.6	0.55
	29+/wDah	361	44	44-46	42.2	0.57
	wDah/wDah	348	48	46-48	45.9	0.62
Hemizygote						
	29+/29null	366	48	48-50	46.9	0.52
	wDah/29null	348	44	42-46	44.1	0.59
Trial 2						
Wildtype homozygote						
	13+/13+	443	34	36-36	33.7	0.51
	13+/29+	451	36	36-38	35.1	0.44
	29+/13+	342	38	38-40	37.99	0.42
	29+/29+	475	46	44-46	43.4	0.45
	wDah/13+	492	44	44-44	43.6	0.32
	wDah/29+	476	40	40-40	39.7	0.38
	wDah/wDah	461	42	42-42	41.2	0.37
Hemizygote						
	13+/13null	446	42	40-42	39.8	0.54
	29+/29null	484	50	48-50	48.8	0.41
	wDah/13null	465	44	44-46	44	0.38
	wDah/29null	467	42	40-44	42.3	0.47

Relative mRNA abundance of *InR* from whole body lysates of 20 females per biological replicate. Three biological replicates each genotype, each with three technical replicates. *InR* mRNA CT normalized to Rp49 of each sample, 2(-ddCT) estimation method. Means with s.e. and difference confidence interval, $t = 3.12$, $p = 0.036$.

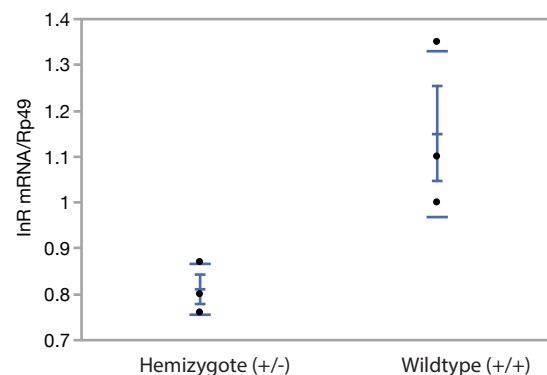


Table S4. Summary survival statistics of homologous recombination genotypes presented in main text figure 6. Subfigures with controls (+/+, +/-) in **blue** or **green** were contemporary cohorts. Proportional hazard analysis within each subfigure with relative mortality risk compared to wildtype or hemizygote, log-likelihood test. Accessions are independently generated stocks of indicated HR alleles.

FIG.	HR GENOTYPE & ACCESSION	N ₀	MEDIAN SURVIVAL (95% C.I.)	RISK RATIO TO WILDTYPE	P < χ^2	RISK RATIO TO HEMIZYGOTE	P < χ^2
6A	+/+	328	44 (42, 44)				
	+/ <i>InR</i> (E19)-2C	337	40 (40, 42)	0.828	0.0154		
	+/ <i>InR</i> (E19) -14B	331	42 (40, 44)	0.895	0.155		
	+/ <i>InR</i> (E19)-22A	351	48 (46, 52)	1.495	<0.0001		
6B	+/+	486	40 (38, 40)				
	+/ <i>InR</i> (74)	473	44 (44, 44)	0.523	<0.0001		
	+/ <i>InR</i> (211)	487	38 (38, 38)	1.06	0.34		
	+/ <i>InR</i> (74, E19)	468	40 (40, 40)	0.810	0.0012		
6C	+/+	334	48 (46, 48)			1.54	<0.0001
	+/- (hemizygote)	346	50 (50, 52)	0.648	<0.0001		
	+/ <i>InR</i> (74)	291	50 (48, 50)	0.660	<0.0001	1.02	0.816
	+/ <i>InR</i> (211)	347	44 (42, 44)	1.60	<0.0001	2.47	<0.0001
	+/ <i>InR</i> (246)	332	50 (48, 50)	0.743	<0.0001	1.15	0.076
	+/ <i>InR</i> (353)	347	60 (58, 62)	0.215	<0.0001	0.331	<0.0001
	+/ <i>InR</i> (74, E19)	343	48 (48, 50)	0.881	0.0996	1.36	<0.0001
6D	+/+	348	46 (44, 48)				
	+/ <i>InR</i> (353)-8.1	359	62 (62, 64)	0.247	<0.0001		
	+/ <i>InR</i> (353)-15.4	357	56 (54, 58)	0.261	<0.0001		
	+/ <i>InR</i> (353)-20.1	362	58 (56, 58)	0.275	<0.0001		
6E	+/+	486	40 (38, 40)				
	<i>InR</i> (E19)/ <i>InR</i> (74)	446	54 (52, 56)	0.179	<0.0001		
	<i>InR</i> (E19)/ <i>InR</i> (211)	471	52 (50, 52)	0.238	<0.0001		
	<i>InR</i> (211)/ <i>InR</i> (74, E19)	456	48 (46, 48)	0.350	<0.0001		
6F	+/+	334	48 (46, 48)				
	+/- (hemizygote)	346	50 (50, 52)				
	<i>InR</i> (E19)/ <i>InR</i> (74)	324	62 (62, 64)	0.138	<0.0001	0.215	<0.0001
	<i>InR</i> (E19)/ <i>InR</i> (211)	351	58 (56, 58)	0.259	<0.0001	0.405	<0.0001
6G	+/+	334	48 (46, 48)				
	+/- (hemizygote)	346	50 (50, 52)				
	<i>InR</i> (E19)/ <i>InR</i> (353)	330	62 (58, 66)	0.154	<0.0001	0.216	<0.0001
	<i>InR</i> (E19)/ <i>InR</i> (246)	320	46 (44, 48)	0.75	0.0004	1.05	0.529
6H	+/+	359	46 (44, 48)				
	<i>InR</i> (E19)/ <i>InR</i> (246)	347	48 (46, 50)	0.679	<0.0001		
	<i>InR</i> (E19)/ <i>InR</i> (353)	360	61 (60, 64)	0.213	<0.0001		
	<i>InR</i> (74)/ <i>InR</i> (353)	354	67 (66, 68)	0.189	<0.0001		