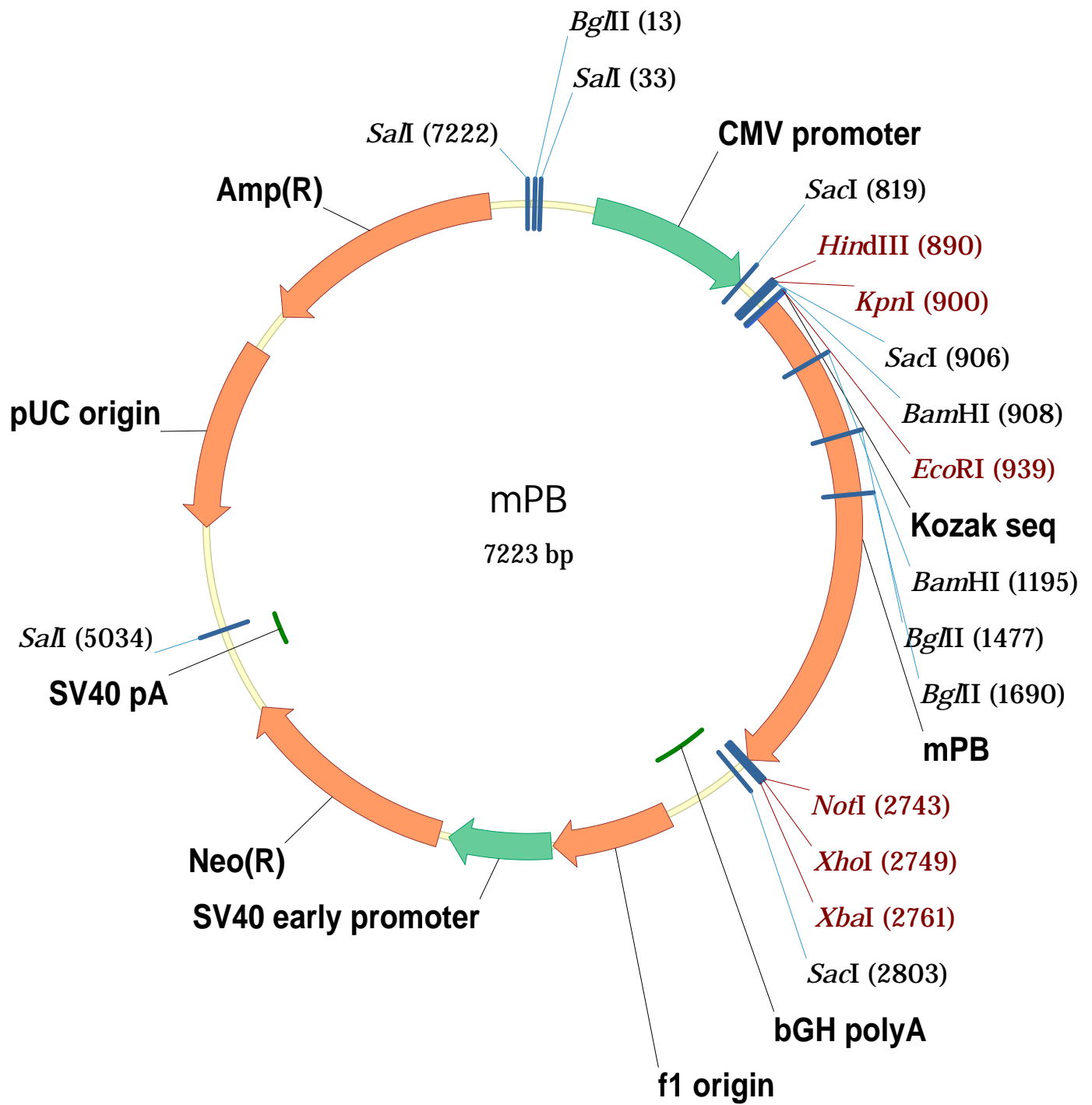


mPB



mPB

General Description

DNA 'mPB'
Expression vector containing the mPB transposase coding sequence in a pcDNA3 backbone
Local object
Created: 04/13/07 01:22PM
Last Modified: 04/13/07 01:23PM
length: 7223 bp
storage type: Basic
form: Circular

Standard Fields

Original Source Database: GenBank
Modification Date in the Original DB: 13-APR-2007

Comments

Annotations

Feature Map

CDS (3 total)

mPB

Start: 953 End: 2740
Mouse codon optimized piggyBac transposase CDS
Original Location Description:
953..2740

Neo(R)

Start: 3928 End: 4722
Original Location Description:
3928..4722

Amp(R)

Start: 6227 End: 7087 (Complementary)
Original Location Description:
complement(6227..7087)

Misc. Feature (1 total)

Kozak seq

Start: 944 End: 956
Original Location Description:
944..956

PolyA Signal (2 total)

bGH polyA

Start: 2795 End: 3026
Original Location Description:
2795..3026

SV40 pA

Start: 4896 End: 5026
Original Location Description:
4896..5026

Promoter Eukaryotic (2 total)

CMV promoter

Start: 232 End: 819

Original Location Description:
232..819**SV40 early promoter**

Start: 3523 End: 3892

Original Location Description:
3523..3892**Replication Origin (2 total)****f1 origin**

Start: 3089 End: 3517

Original Location Description:
3089..3517**pUC origin**

Start: 5409 End: 6082 (Complementary)

Original Location Description:
complement(5409..6082)**Restriction/Methylation Map****BamHI: 2 sites**

GATC
CCTAG

N1: 908

N2: 1195

BglII: 3 sites

AGATC
TCTAG

N1: 13

N2: 1477

N3: 1690

Clal: 0 sites

ATCGAT
TAGCTA

EcoRI: 1 site

GAATTC
CTTAAG

N1: 939

EcoRV: 0 sites

GATATC
CTATAG

HindIII: 1 site

AAGCTT
TTCGAA

N1: 890

KpnI: 1 site

GGTACC
CCATGG

N1: 900

NotI: 1 site

GCGGCCG
CGCCGCG

N1: 2743

SacI: 3 sites

GAGCTC
CTCGAG

N1: 819

N2: 906

N3: 2803

SacII: 0 sites

CCGG
GGCC

Sall: 3 sites

CTCGAC
CAGCTG

N1: 33

N2: 5034

mPB

N3: 7222

XbaI: 1 site

TCTAGA
AGATCT

N1: 2761

XhoI: 1 site

CTCGAG
GAGCTC











N1: 2749

Restriction Fragments

5419: mPB: NotI(2743) - EcoRI(939)

1804: mPB: EcoRI(939) - NotI(2743)

mPB

											
1	GACGGATCGG CTGCC TAGCC	GAGATCTCCC CTCTAGAGGG	GATCCCCTAT CTAGGGGATA	GGTCGACTCT CCAGCTGAGA	CAGTACAATC GTCATGTTAG	TGCTCTGATG ACGAGACTAC	CCGCATAGTT GGCGTATCAA	AAGCCAGTAT TTCGGTCATA	CTGCTCCCTG GACGAGGGAC	CTTGTGTGTT GAACACACAA	
101	GGAGGTCGCT CCTCCAGCGA	GAGTAGTGCG CTCATCACGC	CGAGCAAAAT GCTCGTTTTA	TTAAGCTACA AATTCGATGT	ACAAGGCAAG TGTTCCGTTT	GCTTGACCGA CGAACTGGCT	CAATTGCATG GTTAACGTAC	AAGAATCTGC TTCTTAGACG	TTAGGGTTAG AATCCCAATC	GCGTTTTGCG CGCAAAACGC	
201	CTGCTTCGCG GACGAAGCGC	ATGTACGGGC TACATGCCCC	CAGATATACG GTCTATATGC	CGTTGACATT GCAACTGTAA	GATTATTGAC CTAATAACTG	TAGTTATTAA ATCAATAATT	TAGTAATCAA ATCATTAGTT	TTACGGGGTC AATGCCCCAG	ATTAGTTCAT TAATCAAGTA	AGCCCATATA TCGGGTATAT	
301	TGGAGTTCCG ACCTCAAGGC	CGTTACATAA GCAATGTATT	CTTACGGTAA GAATGCCATT	ATGGCCCGCC TACCGGGCGG	TGGCTGACCG ACCGACTGGC	CCCAACGACC GGGTTGCTGG	CCCGCCCATT GGGCGGGTAA	GACGTCAATA CTGCAGTTAT	ATGACGTATG TACTGCATAC	TTCCCATAGT AAGGGTATCA	
401	AACGCCAATA TTGCGGTTAT	GGGACTTTCC CCCTGAAAGG	ATTGACGTCA TAACTGCAGT	ATGGGTGGAC TACCCACCTG	TATTTACGGT ATAAATGCCA	AAACTGCCCC TTTGACGGGT	CTTGGCAGTA GAACCGTCAT	CATCAAGTGT GTAGTTCACA	ATCATATGCC TAGTATACGG	AAGTACGCCC TTCATGCGGG	
501	CCTATTGACG GGATAACTGC	TCAATGACGG AGTTACTGCC	TAAATGGCCC ATTTACCGGG	GCCTGGCATT CGGACCGTAA	ATGCCCAGTA TACGGGTCAT	CATGACCTTA GTACTGGAAT	TGGGACTTTC ACCCTGAAAAG	CTACTTGGCA GATGAACCGT	GTACATCTAC CATGTAGATG	GTATTAGTCA CATAATCAGT	
601	TCGCTATTAC AGCGATAATG	CATGGTGATG GTACCACTAC	CGGTTTTGGC GCCAAAACCG	AGTACATCAA TCATGTAGTT	TGGGCGTGGA ACCCGCACCT	TAGCGGTTTG ATCGCCAAAC	ACTCACGGGG TGAGTGCCCC	ATTTCCAAGT TAAAGGTTCA	CTCCACCCCA GAGGTGGGGT	TTGACGTCAA AACTGCAGTT	
701	TGGGAGTTTG ACCTCAAAC	TTTTGGCACC AAAACCGTGG	AAAATCAACG TTTTAGTTGC	GGACTTTCCA CCTGAAAGGT	AAATGTCGTA TTTACAGCAT	ACAACTCCGC TGTTGAGGCG	CCCATTGACG GGGTAAC TGC	CAAATGGGCG GTTTACCCGC	GTAGGCGTGT CATCCGCACA	ACGGTGGGAG TGCCACCCCTC	
801											
		GTCTATATAA CAGATATATT	GCAGAGCTCT CGTCTCGAGA	CTGGCTAACT GACCGATTGA	AGAGAACCCA TCTCTTGGGT	CTGCTTACTG GACGAATGAC	GCTTATCGAA CGAATAGCTT	ATTAATACGA TAATTATGCT	CTCACTATAG GAGTGATATC	GGAGACCCAA CCTCTGGGTT	GCTTGGTACC CGAACCATGG
901											
	GAGCTCGGAT CTCGAGCCTA	CCACTAGTAA GGTGATCATT	CGGCCGCCAG GCCGGCGGTC	TGTGCTGGAA ACACGACCTT	TTCGCCGCCA AAGCGGCGGT	CCATGGGCAG GGTACCCGTC	CAGCCTGGAC GTCGGACCTG	GACGAGCACA CTGCTCGTGT	TCCTGAGCGC AGGACTCGCG	CCTGCTGCAG GGACGACGTC	
1001	AGCGACGACG TCGCTGCTGC	AGCTGGTCGG TCGACCAGCC	CGAGGACAGC GCTCCTGTGC	GACAGCGAGA CTGTGCTCTT	TCAGCGACCA AGTCGCTGGT	CGTGAGCGAG GCACTCGCTC	GACGACGTGC CTGCTGCACG	AGTCCGACAC TCAGGCTGTG	CGAGGAGGCC GCTCCTCCGG	TTCATCGACG AAGTAGCTGC	
1101											
	AGGTGCACGA TCCACGTGCT	GGTGCAGCCT CCACGTCGGA	ACCAGCAGCG TGGTCGTCGC	GCTCCGAGAT CGAGGCTCTA	CCTGGACGAG GGACCTGCTC	CAGAACGTGA GTCTTGCACT	TCGAGCAGCC AGCTCGTCGG	CGGCAGCTCC GCCGTCGAGG	CTGGCCAGCA GACCGGTCTG	ACAGGATCCT TGTCTTAGGA	

mPB

1201	GACCCTGCCC	CAGAGGACCA	TCAGGGGCAA	GAACAAGCAC	TGCTGGTCCA	CCTCCAAGAG	CACCAGGCGG	AGCAGGGTGT	CCGCCCTGAA	CATCGTGAGA
	CTGGGACGGG	GTCTCCTGGT	AGTCCCCGTT	CTTGTTCTGT	ACGACCAGGT	GGAGGTTCTC	GTGGTCCGCC	TCGTCCCACA	GGCGGGACTT	GTAGACTCT
1301	AGCCAGAGGG	GCCCCACCAG	GATGTGCAGG	AACATCTACG	ACCCCTTGCT	GTGCTTCAAG	CTGTTCTTCA	CCGACGAGAT	CATCAGCGAG	ATCGTGAAGT
	TCGGTCTCCC	CGGGGTGGTC	CTACACGTCC	TTGTAGATGC	TGGGGGACGA	CACGAAGTTC	GACAAGAAGT	GGCTGCTCTA	GTAGTCGCTC	TAGCACTTCA
1401	GGACCAACGC	CGAGATCAGC	CTGAAGAGGC	GGGAGAGCAT	GACCGGCGCC	ACCTTCAGGG	ACACCAACGA	GGACGAGATC	TACGCCTTCT	TCGGCATCCT
	CCTGGTTGCG	GCTCTAGTCG	GACTTCTCCG	CCCTCTCGTA	CTGGCCGCGG	TGGAAGTCCC	TGTGGTTGCT	CCTGCTCTAG	ATGCGGAAGA	AGCCGTAGGA
1501	GGTGATGACC	GCCGTGAGGA	AGGACAACCA	CATGAGCACC	GACGACCTGT	TCGACAGATC	CCTGAGCATG	GTGTACGTGA	GCGTGATGAG	CAGGGACAGA
	CCACTACTGG	CGGCACTCCT	TCCTGTTGGT	GTACTCGTGG	CTGCTGGACA	AGCTGTCTAG	GGACTCGTAC	CACATGCACT	CGCACTACTC	GTCCCTGTCT
1601	TTCGACTTCC	TGATCAGATG	CCTGAGGATG	GACGACAAGA	GCATCAGGCC	CACCCTGCGG	GAGAACGACG	TGTTCACCCC	CGTGAGAAAG	ATCTGGGACC
	AAGCTGAAGG	ACTAGTCTAC	GGACTCCTAC	CTGCTGTTCT	CGTAGTCCGG	GTGGGACGCC	CTCTTGCTGC	ACAAGTGGGG	GCACTCTTTC	TAGACCCTGG
1701	TGTTTCATCCA	CCAGTGCAATC	CAGAACTACA	CCCCTGGCGC	CCACCTGACC	ATCGACGAGC	AGCTGCTGGG	CTTCAGGGGC	AGGTGCCCCCT	TCAGGATGTA
	ACAAGTAGGT	GGTCACGTAG	GTCTTGATGT	GGGGACCGCG	GGTGGACTGG	TAGCTGCTCG	TCGACGACCC	GAAGTCCCCG	TCCACGGGGA	AGTCCCTACAT
1801	TATCCCCAAC	AAGCCCAGCA	AGTACGGCAT	CAAGATCCTG	ATGATGTGCG	ACAGCGGCAC	CAAGTACATG	ATCAACGGCA	TGCCCTACCT	GGGCAGGGGC
	ATAGGGGTTG	TTCGGGTCGT	TCATGCCGTA	GTTCTAGGAC	TACTACACGC	TGTCGCCGTG	GTTTCATGTAC	TAGTTGCCGT	ACGGGATGGA	CCCGTCCCCG
1901	ACCCAGACCA	ACGGCGTGCC	CCTGGGCGAG	TACTACGTGA	AGGAGCTGTC	CAAGCCCGTC	CACGGCAGCT	GCAGAAACAT	CACCTGCGAC	AACTGGTTCA
	TGGGTCTGGT	TGCCGCACGG	GGACCCGCTC	ATGATGCACT	TCCTCGACAG	GTTCCGGCAG	GTGCCGTGCA	CGTCTTTGTA	GTGGACGCTG	TTGACCAAGT
2001	CCAGCATCCC	CCTGGCCAAG	AACCTGCTGC	AGGAGCCCTA	CAAGCTGACC	ATCGTGGGCA	CCGTGAGAAG	CAACAAGAGA	GAGATCCCCG	AGGTCCTGAA
	GGTCGTAGGG	GGACCGGTTT	TTGGACGACG	TCCTCGGGAT	GTTTCGACTGG	TAGCACCCGT	GGCACTCTTC	GTTGTTCTCT	CTCTAGGGGC	TCCAGGACTT
2101	GAACAGCAGG	TCCAGGCCCC	TGGGCACCAG	CATGTTCTGC	TTCGACGGCC	CCCTGACCCT	GGTGTCTTAC	AAGCCCAAGC	CCGCCAAGAT	GGTGTACCTG
	CTTGTCGTCC	AGGTCCGGGC	ACCCGTGGTC	GTACAAGACG	AAGCTGCCGG	GGGACTGGGA	CCACAGGATG	TTCGGGTTTC	GGCGGTTCTA	CCACATGGAC
2201	CTGTCCAGCT	GCGACGAGGA	CGCCAGCATC	AACGAGAGCA	CCGGCAAGCC	CCAGATGGTG	ATGTACTACA	ACCAGACCAA	GGCGGGCGTG	GACACCCTGG
	GACAGGTCGA	CGCTGCTCCT	GCGGTCGTAG	TTGCTCTCGT	GGCCGTTCCG	GGTCTACCAC	TACATGATGT	TGGTCTGGTT	CCCGCCGCAC	CTGTGGGACC
2301	ACCAGATGTG	CAGCGTGATG	ACCTGCAGCA	GAAAGACCAA	CAGGTGGCCC	ATGGCCCTGC	TGTACGGCAT	GATCAACATC	GCCTGCATCA	ACAGCTTCAT
	TGGTCTACAC	GTCGCACTAC	TGGACGTCGT	CTTTCTGGTT	GTCCACCGGG	TACCGGGACG	ACATGCCGTA	CTAGTTGTAG	CGGACGTAGT	TGTCGAAGTA
2401	CATCTACAGC	CACAACGTGA	GCAGCAAGGG	CGAGAAGGTG	CAGAGCCGGA	AAAAGTTCAT	GCGGAACCTG	TACATGAGCC	TGACCTCCAG	CTTCATGAGG
	GTAGATGTGC	GTGTTGCACT	CGTCGTTCCC	GCTCTTCCAC	GTCTCGGCCT	TTTTCAAGTA	CGCCTTGAGC	ATGTACTCGG	ACTGGAGGTC	GAAGTACTCC
2501	AAGAGGCTGG	AGGCCCCCAC	CCTGAAGAGA	TACCTGAGGG	ACAACATCAG	CAACATCCTG	CCCAACGAGG	TGCCCCGCAC	CAGCGACGAC	AGCACCGAGG
	TTCTCCGACC	TCCGGGGGTG	GGACTTCTCT	ATGGACTCCC	TGTTGTAGTC	GTTGTAGGAC	GGGTTGCTCC	ACGGGCCCGT	GTCGCTGCTG	TCGTGGCTCC

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2601	AGCCCGTGAT	GAAGAAGAGG	ACCTACTGCA	CCTACTGTCC	CAGCAAGATC	AGAAGAAAGG	CCAACGCCAG	CTGCAAGAAG	TGTAAGAAGG	TCATCTGCCG
	TCGGGCACTA	CTTCTTCTCC	TGGATGACGT	GGATGACAGG	GTCGTTCTAG	TCTTCTTTCC	GGTTGCGGTC	GACGTTCTTC	ACATTCTTCC	AGTAGACGGC
2701	GGAGCACAAC	ATCGACATGT	GCCAGAGCTG	TTTCTGATGA	 GCGGCCGCTC	 GAGCATGCAT	 CTAGAGGGCC	CTATTCTATA	GTGTCACCTA	 AATGCTAGAG
	CCTCGTGTTG	TAGCTGTACA	CGGTCTCGAC	AAAGACTACT	CGCCGGCGAG	CTCGTACGTA	GATCTCCCGG	GATAAGATAT	CACAGTGGAT	TTACGATCTC
2801	 CTCGCTGATC	AGCCTCGACT	GTGCCTTCTA	GTTGCCAGCC	ATCTGTTGTT	TGCCCCCTCCC	CCGTGCCTTC	CTTGACCCTG	GAAGGTGCCA	CTCCCACTGT
	GAGCGACTAG	TCGGAGCTGA	CACGGAAGAT	CAACGGTCGG	TAGACAACAA	ACGGGGAGGG	GGCACGGAAG	GAAGTGGGAC	CTTCCACGGT	GAGGGTGACA
2901	CCTTTCCTAA	TAAAAATGAGG	AAATTGCATC	GCATTGTCTG	AGTAGGTGTC	ATTCTATTCT	GGGGGGTG	GTGGGGCAGG	ACAGCAAGGG	GGAGGATTGG
	GGAAAGGATT	ATTTTACTCC	TTTAACGTAG	CGTAACAGAC	TCATCCACAG	TAAGATAAGA	CCCCCACCC	CACCCCGTCC	TGTCGTTCCC	CCTCCTAACC
3001	GAAGACAATA	GCAGGCATGC	TGGGGATGCG	GTGGGCTCTA	TGGCTTCTGA	GGCGGAAAGA	ACCAGCTGGG	GCTCTAGGGG	GTATCCCCAC	GCGCCCTGTA
	CTTCTGTTAT	CGTCCGTACG	ACCCCTACGC	CACCCGAGAT	ACCGAAGACT	CCGCCTTTCT	TGGTCGACCC	CGAGATCCCC	CATAGGGGTG	CGCGGGACAT
3101	GCGGCGCATT	AAGCGCGGCG	GGTGTGGTGG	TTACGCGCAG	CGTGACCGCT	ACACTTGCCA	GCGCCCTAGC	GCCCGCTCCT	TTCGCTTTCT	TCCCTTCCTT
	CGCCGCGTAA	TTCGCGCCGC	CCACACCACC	AATGCGCGTC	GCACTGGCGA	TGTGAACGGT	CGCGGGATCG	CGGGCGAGGA	AAGCGAAAGA	AGGGAAGGAA
3201	TCTCGCCACG	TTCGCCGGCT	TTCCCCGTCA	AGCTCTAAAT	CGGGGCATCC	CTTTAGGGTT	CCGATTTAGT	GCTTTACGGC	ACCTCGACCC	CAAAAACTT
	AGAGCGGTGC	AAGCGGCCGA	AAGGGGCAGT	TCGAGATTTA	GCCCCGTAGG	GAAATCCCAA	GGCTAAATCA	CGAAATGCCG	TGGAGCTGGG	GTTTTTTGAA
3301	GATTAGGGTG	ATGGTTCACG	TAGTGGGCCA	TCGCCCTGAT	AGACGGTTTT	TCGCCCTTTG	ACGTTGGAGT	CCACGTTCTT	TAATAGTGGA	CTCTTGTTCC
	CTAATCCCAC	TACCAAGTGC	ATCACCCGGT	AGCGGGACTA	TCTGCCAAAA	AGCGGGAAAC	TGCAACCTCA	GGTGCAAGAA	ATTATCACCT	GAGAACAAGG
3401	AAACTGGAAC	AACACTCAAC	CCTATCTCGG	TCTATTCTTT	TGATTTATAA	GGGATTTTGG	GGATTTCTGG	CTATTGGTTA	AAAAATGAGC	TGATTTAACA
	TTTGACCTTG	TTGTGAGTTG	GGATAGAGCC	AGATAAGAAA	ACTAAATATT	CCCTAAAACC	CCTAAAGCCG	GATAACCAAT	TTTTTACTCG	ACTAAATTGT
3501	AAAATTTAAC	GCGAATTAAT	TCTGTGGAAT	GTGTGTCAGT	TAGGGTGTGG	AAAGTCCCCA	GGCTCCCCAG	GCAGGCAGAA	GTATGCAAAAG	CATGCATCTC
	TTTTAAATTG	CGCTTAATTA	AGACACCTTA	CACACAGTCA	ATCCACACCC	TTTCAGGGGT	CCGAGGGGTC	CGTCCGTCTT	CATACGTTTC	GTACGTAGAG
3601	AATTAGTCAG	CAACCAGGTG	TGGAAAGTCC	CCAGGCTCCC	CAGCAGGCAG	AAGTATGCAA	AGCATGCATC	TCAATTAGTC	AGCAACCATA	GTCCCGCCCC
	TTAATCAGTC	GTTGGTCCAC	ACCTTTCAGG	GGTCCGAGGG	GTCGTCCGTC	TTCATACGTT	TCGTACGTAG	AGTTAATCAG	TCGTTGGTAT	CAGGGCGGGG
3701	TAACTCCGCC	CATCCCGCCC	CTAACTCCGC	CCAGTTCCTG	CCATTCTCCG	CCCCATGGCT	GACTAATTTT	TTTTATTAT	GCAGAGGCCG	AGGCCGCCTC
	ATTGAGGCGG	GTAGGGCGGG	GATTGAGGCG	GGTCAAGGCG	GGTAAGAGGC	GGGTACCGA	CTGATTAAAA	AAAATAAATA	CGTCTCCGGC	TCCGGCGGAG
3801	TGCCTCTGAG	CTATTCCAGA	AGTAGTGAGG	AGGCTTTTTT	GGAGGCCTAG	GCTTTTGCAA	AAAGCTCCCG	GGAGCTTGTA	TATCCATTTT	CGGATCTGAT
	ACGGAGACTC	GATAAGGTCT	TCATCACTCC	TCCGAAAAAA	CCTCCGGATC	CGAAAAACGTT	TTTCGAGGGC	CCTCGAACAT	ATAGGTAAAA	GCCTAGACTA
3901	CAAGAGACAG	GATGAGGATC	GTTTCGCATG	ATTGAACAAG	ATGGATTGCA	CGCAGGTTCT	CCGGCCGCTT	GGGTGGAGAG	GCTATTCGGC	TATGACTGGG
	GTTCTCTGTC	CTACTCCTAG	CAAAGCGTAC	TAACTTGTTT	TACCTAACGT	GCGTCCAAGA	GGCCGGCGAA	CCCACCTCTC	CGATAAGCCG	ATACTGACCC

4001	CACAACAGAC GTGTTGTCTG	AATCGGCTGC TTAGCCGACG	TCTGATGCCG AGACTACGGC	CCGTGTTCCG GGCACAAGGC	GCTGTCAGCG CGACAGTCGC	CAGGGGCGCC GTCCCCGCGG	CGGTTCTTTT GCCAAGAAAA	TGTCAAGACC ACAGTTCTGG	GACCTGTCCG CTGGACAGGC	GTGCCCTGAA CACGGGACTT
4101	TGAACTGCAG ACTTGACGTC	GACGAGGCAG CTGCTCCGTC	CGCGGCTATC GCGCCGATAG	GTGGCTGGCC CACCGACCGG	ACGACGGGCG TGCTGCCCCG	TTCCTTGCGC AAGGAACGCG	AGCTGTGCTC TCGACACGAG	GACGTTGTCA CTGCAACAGT	CTGAAGCGGG GACTTCGCCC	AAGGGACTGG TTCCCTGACC
4201	CTGCTATTGG GACGATAAACC	GCGAAGTGCC CGCTTCACGG	GGGGCAGGAT CCCCGTCCTA	CTCCTGTCAT GAGGACAGTA	CTCACCTTGC GAGTGGAACG	TCCTGCCGAG AGGACGGCTC	AAAGTATCCA TTTCATAGGT	TCATGGCTGA AGTACCGACT	TGCAATGCGG ACGTTACGCC	CGGCTGCATA GCCGACGTAT
4301	CGCTTGATCC GCGAACTAGG	GGCTACCTGC CCGATGGACG	CCATTTCGACC GGTAAGCTGG	ACCAAGCGAA TGGTTCGCTT	ACATCGCATC TGTAGCGTAG	GAGCGAGCAC CTCGCTCGTG	GTACTCGGAT CATGAGCCTA	GGAAGCCGGT CCTTCGGCCA	CTTGTGCATC GAACAGCTAG	AGGATGATCT TCCTACTAGA
4401	GGACGAAGAG CCTGCTTCTC	CATCAGGGGC GTAGTCCCCG	TCGCGCCAGC AGCGCGGTCTG	CGAACTGTTT GCTTGACAAG	GCCAGGCTCA CGGTCCGAGT	AGGCGCGCAT TCCGCGCGTA	GCCCCGACGC CGGGCTGCCG	GAGGATCTCG CTCCTAGAGC	TCGTGACCCA AGCACTGGGT	TGGCGATGCC ACCGCTACGG
4501	TGCTTGCCGA ACGAACGGCT	ATATCATGGT TATAGTACCA	GGAAAAATGGC CCTTTTACCG	CGCTTTTCTG GCGAAAAAGAC	GATTCATCGA CTAAGTAGCT	CTGTGGCCGG GACACCGGCC	CTGGGTGTGG GACCCACACC	CGGACCGCTA GCCTGGCGAT	TCAGGACATA AGTCCTGTAT	GCGTTGGCTA CGCAACCGAT
4601	CCCGTGATAT GGGCACTATA	TGCTGAAGAG ACGACTTCTC	CTTGCGGCGC GAACCGCCGC	AATGGGCTGA TTACCCGACT	CCGCTTCCTC GGCGAAGGAG	GTGCTTTACG CACGAAATGC	GTATCGCCGC CATAGCGGCG	TCCCGATTCT AGGGCTAAGC	CAGCGCATCG GTCGCGTAGC	CCTTCTATCG GGAAGATAGC
4701	CCTTCTTGAC GGAAGAAGTG	GAGTTCTTCT CTCAAGAAGA	GAGCGGGACT CTCGCCCTGA	CTGGGGTTCT GACCCCAAGC	AAATGACCGA TTTACTGGCT	CCAAGCGACG GGTTCGCTGC	CCCAACCTGC GGGTTGGACG	CATCACGAGA GTAGTGCTCT	TTTCGATTCC AAAGCTAAGG	ACCGCCGCCT TGGCGGCGGA
4801	TCTATGAAAG AGATACTTTC	GTTGGGCTTC CAACCCGAAG	GGAATCGTTT CCTTAGCAAA	TCCGGGACGC AGGCCCTGCG	CGGCTGGATG GCCGACCTAC	ATCCTCCAGC TAGGAGGTCG	GCGGGGATCT CGCCCCTAGA	CATGCTGGAG GTACGACCTC	TTCTTCGCCC AAGAAGCGGG	ACCCCAACTT TGGGGTTGAA
4901	GTTTATTGCA CAAATAACGT	GCTTATAATG CGAATATTAC	GTTACAAATA CAATGTTTAT	AAGCAATAGC TTCGTTATCG	ATCACAAATT TAGTGTTTAA	TCACAAATAA AGTGTTTATT	AGCATTTTTT TCGTAAAAAA	TCACTGCATT AGTGACGTAA	CTAGTTGTGG GATCAACACC	TTTGTCCAAA AAACAGGTTT
5001	CTCATCAATG GAGTAGTTAC	TATCTTATCA ATAGAATAGT	TGTCTGTATA ACAGACATAT	CCGTCGACCT GGCAGCTGGA	CTAGCTAGAG GATCGATCTC	CTTGGCGTAA GAACCGCATT	TCATGGTCAT AGTACCAGTA	AGCTGTTTCC TCGACAAAGG	TGTGTGAAAT ACACACTTTA	TGTTATCCGC ACAATAGGCG
5101	TCACAATTCC AGTGTTAAGG	ACACAACATA TGTGTTGTAT	CGAGCCGGAA GCTCGGCCCT	GCATAAAGTG CGTATTTTAC	TAAAGCCTGG ATTTCGGACC	GGTGCCCTAAT CCACGGATTA	GAGTGAGCTA CTCACTCGAT	ACTCACATTA TGAGTGTAAT	ATTGCGTTGC TAACGCAACG	GCTCACTGCC CGAGTGACGG
5201	CGCTTTCCAG GCGAAAGGTC	TCGGGAAACC AGCCCTTTGG	TGTCGTGCCA ACAGCACGGT	GCTGCATTAA CGACGTAAAT	TGAATCGGCC ACTTAGCCGG	AACGCGCGGG TTGCGCGCCC	GAGAGGCGGT CTCTCCGCCA	TTGCGTATTG AACGCATAAC	GGCGCTCTTC CCGCGAGAAG	CGCTTCCTCG GCGAAGGAGC
5301	CTCACTGACT GAGTGACTGA	CGCTGCGCTC GCGACGCGAG	GGTCGTTTCG CCAGCAAGCC	CTGCGGCGAG GACGCCGCTC	CGGTATCAGC GCCATAGTCG	TCACTCAAAG AGTGAGTTTC	GCGGTAATAC CGCCATTATG	GGTTATCCAC CCAATAGGTG	AGAATCAGGG TCTTAGTCCC	GATAACGCAG CTATTGCGTC
5401	GAAAGAACAT CTTTCTTGTA	GTGAGCAAAA CACTCGTTTT	GGCCAGCAAA CCGGTCGTTT	AGGCCAGGAA TCCGGTCCTT	CCGTAAAAAG GGCATTTTTT	GCCGCGTTGC CGGCGCAACG	TGGCGTTTTT ACCGCAAAAA	CCATAGGCTC GGTATCCGAG	CGCCCCCTG GCGGGGGGAC	ACGAGCATCA TGCTCGTAGT

Sall
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|      |            |            |            |             |            |             |             |             |             |            |
|------|------------|------------|------------|-------------|------------|-------------|-------------|-------------|-------------|------------|
| 5501 | CAAAAATCGA | CGCTCAAGTC | AGAGGTGGCG | AAACCCGACA  | GGAATAATAA | GATACCAGGC  | GTTTCCCCCT  | GGAAGCTCCC  | TCGTGCGCTC  | TCCTGTTCCG |
|      | GTTTTTAGCT | GCGAGTTCAG | TCTCCACCGC | TTTGGGCTGT  | CCTGATATTT | CTATGGTCCG  | CAAAGGGGGA  | CCTTCGAGGG  | AGCACGCGAG  | AGGACAAGGC |
| 5601 | ACCCTGCCGC | TTACCGGATA | CCTGTCCGCC | TTTCTCCCTT  | CGGGAAGCGT | GGCGCTTTCT  | CAATGCTCAC  | GCTGTAGGTA  | TCTCAGTTTCG | GTGTAGGTGC |
|      | TGGGACGGCG | AATGGCCTAT | GGACAGGCGG | AAAGAGGGAA  | GCCCTTCGCA | CCGCGAAAGA  | GTTACGAGTG  | CGACATCCAT  | AGAGTCAAGC  | CACATCCAGC |
| 5701 | TTCGCTCCAA | GCTGGGCTGT | GTGCACGAAC | CCCCCGTTCA  | GCCCCAGCCG | TGCGCCTTAT  | CCGGTAACTA  | TCGTCTTGAG  | TCCAACCCGG  | TAAGACACGA |
|      | AAGCGAGGTT | CGACCCGACA | CACGTGCTTG | GGGGGCAAGT  | CGGGCTGGCG | ACGCGGAATA  | GGCCATTGAT  | AGCAGAACTC  | AGGTTGGGCC  | ATTCTGTGCT |
| 5801 | CTTATCGCCA | CTGGCAGCAG | CCACTGGTAA | CAGGATTAGC  | AGAGCGAGGT | ATGTAGGCGG  | TGCTACAGAG  | TTCTTGAAGT  | GGTGGCCTAA  | CTACGGCTAC |
|      | GAATAGCGGT | GACCGTCGTC | GGTGACCAT  | GTCCTAATCG  | TCTCGCTCCA | TACATCCGCC  | ACGATGTCTC  | AAGAACTTCA  | CCACCGGATT  | GATGCCGATG |
| 5901 | ACTAGAAGGA | CAGTATTTGG | TATCTGCGCT | CTGCTGAAGC  | CAGTTACCTT | CGGAAAAAGA  | GTTGGTAGCT  | CTTGATCCGG  | CAAACAAACC  | ACCCTGGGTA |
|      | TGATCTTCCT | GTCATAAACC | ATAGACGCGA | GACGACTTCG  | GTCAATGGAA | GCCTTTTCT   | CAACCATCGA  | GAAGTAGGCC  | GTTTGTTTGG  | TGGCGACCAT |
| 6001 | GCGGTGGTTT | TTTTGTTTGC | AAGCAGCAGA | TTACGCGCAG  | AAAAAAAGGA | TCTCAAGAAAG | ATCCTTTGAT  | CTTTTCTACG  | GGGTCTGACG  | CTCAGTGGA  |
|      | CGCCACCAAA | AAAACAAACG | TTCTGTCGCT | AATGCGCGTC  | TTTTTTTCCT | AGAGTTCTTC  | TAGGAAACTA  | GAAAAGATGC  | CCCAGACTGC  | GAGTCACCTT |
| 6101 | CGAAAACTCA | CGTTAAGGGA | TTTTGGTCAT | GAGATTATCA  | AAAAGGATCT | TCACCTAGAT  | CCTTTTAAAT  | TAAAAATGAA  | GTTTTAAATC  | AATCTAAAGT |
|      | GCTTTTGAGT | GCAATTCCCT | AAAACCAGTA | CTCTAATAGT  | TTTTCTTAGA | AGTGGATCTA  | GGAAAAATTA  | ATTTTACTT   | CAAAATTTAG  | TTAGATTTC  |
| 6201 | ATATATGAGT | AAACTTGGTC | TGACAGTTAC | CAATGCTTAA  | TCAGTGAGGC | ACCTATCTCA  | GCGATCTGTC  | TATTTCTGTT  | ATCCATAGTT  | GCCTGACTCC |
|      | TATATACTCA | TTTGAACCAG | ACTGTCAATG | GTTACGAATT  | AGTCACTCCG | TGGATAGAGT  | CGCTAGACAG  | ATAAAGCAAG  | TAGGTATCAA  | CGGACTGAGG |
| 6301 | CCGTCGTGTA | GATAACTACG | ATACGGGAGG | GCTTACCATC  | TGGCCCCAGT | GCTGCAATGA  | TACCGCGAGA  | CCCACGCTCA  | CCGGCTCCAG  | ATTTATCAGC |
|      | GGCAGCACAT | CTATTGATGC | TATGCCCTCC | CGAATGGTAG  | ACCGGGGTCA | CGACGTTACT  | ATGGCGCTCT  | GGGTGCGAGT  | GGCCGAGGTC  | TAAATAGTCG |
| 6401 | AATAAACCAG | CCAGCCGGAA | GGGCCGAGCG | CAGAAAGTGGT | CCTGCAACTT | TATCCGCCTC  | CATCCAGTCT  | ATTAATTGTT  | GCCGGGAAGC  | TAGAGTAAGT |
|      | TTATTTGGTC | GGTCGGCCTT | CCCGGCTCGC | GTCTTCACCA  | GGACGTTGAA | ATAGGCGGAG  | GTAGGTCAGA  | TAATTAACAA  | CGGCCCTTCG  | ATCTCATTCA |
| 6501 | AGTTCGCCAG | TTAATAGTTT | GCGCAACGTT | GTTGCCATTG  | CTACAGGCAT | CGTGGTGTC   | CGCTCGTCGT  | TTGGTATGGC  | TTCATTACAG  | TCCGGTTCCC |
|      | TCAAGCGGTC | AATTATCAAA | CGCGTTGCAA | CAACGGTAAC  | GATGTCCGTA | GCACCACAGT  | GCGAGCAGCA  | AACCATAACG  | AAGTAAGTCG  | AGGCCAAGGG |
| 6601 | AACGATCAAG | GCGAGTTACA | TGATCCCCCA | TGTTGTGCAA  | AAAAGCGGTT | AGCTCCTTCG  | GTCCTCCGAT  | CGTTGTCAGA  | AGTAAGTTGG  | CCGAGTGTT  |
|      | TTGCTAGTTC | CGCTCAATGT | ACTAGGGGGT | ACAACACGTT  | TTTTCGCCAA | TCGAGGAAGC  | CAGGAGGCTA  | GCAACAGTCT  | TCATTCAACC  | GGCGTCACAA |
| 6701 | ATCACTCATG | GTTATGGCAG | CACTGCATAA | TTCTCTTACT  | GTCATGCCAT | CCGTAAGATG  | CTTTTCTGTG  | ACTGGTGAGT  | ACTCAACCAA  | GTCATTCTGA |
|      | TAGTGAGTAC | CAATACCGTC | GTGACGTATT | AAGAGAATGA  | CAGTACGGTA | GGCATTCTAC  | GAAAAGACAC  | TGACCACTCA  | TGAGTTGGTT  | CAGTAAGACT |
| 6801 | GAATAGTGTA | TGCGGCGACC | GAGTTGCTCT | TGCCCCGGCGT | CAATACGGGA | TAATACCGCG  | CCACATAGCA  | GAACCTTTAA  | AGTGCTCATC  | ATTGGAACAA |
|      | CTTATCACAT | ACGCCGCTGG | CTCAACGAGA | ACGGGCCGCA  | GTTATGCCCT | ATTATGGCGC  | GGTGATATCGT | CTTGAAATTT  | TCACGAGTAG  | TAACCTTTTG |
| 6901 | GTTCTTCGGG | GCGAAAACTC | TCAAGGATCT | TACCGCTGTT  | GAGATCCAGT | TCGATGTAAC  | CCACTCGTGC  | ACCCAACCTGA | TCTTCAGCAT  | CTTTTACTTT |
|      | CAAGAAGCCC | CGCTTTTGAG | AGTTCCTAGA | ATGGCGACAA  | CTCTAGGTCA | AGCTACATTG  | GGTGAGCACG  | TGGGTTGACT  | AGAAGTCGTA  | GAAAATGAAA |

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|      |            |            |            |             |            |            |            |             |             |            |
|------|------------|------------|------------|-------------|------------|------------|------------|-------------|-------------|------------|
| 7001 | CACCAGCGTT | TCTGGGTGAG | CAAAAACAGG | AAGGC AAAAT | GCCGCAAAAA | AGGGAATAAG | GGCGACACGG | AAATGTTGAA  | TACTCATACT  | CTTCCTTTTT |
|      | GTGGTCGCAA | AGACCCACTC | GTTTTTGTCC | TTCCGTTTTA  | CGGCGTTTTT | TCCCTTATTC | CCGCTGTGCC | TTTACAACCTT | ATGAGTATGA  | GAAGGAAAAA |
| 7101 | CAATATTATT | GAAGCATTTA | TCAGGGTTAT | TGTCTCATGA  | GCGGATACAT | ATTTGAATGT | ATTTAGAAAA | ATAAACAAAT  | AGGGGTTCCTG | CGCACATTTT |
|      | GTTATAATAA | CTTCGTAAAT | AGTCCCAATA | ACAGAGTACT  | CGCCTATGTA | TAAACTTACA | TAAATCTTTT | TATTTGTTTA  | TCCCCAAGGC  | GCGTGTAAG  |
| 7201 | CCCGAAAAGT | GCCACCTGAC | GTC        |             |            |            |            |             |             |            |
|      | GGGCTTTTCA | CGGTGGACTG | CAG        |             |            |            |            |             |             |            |

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