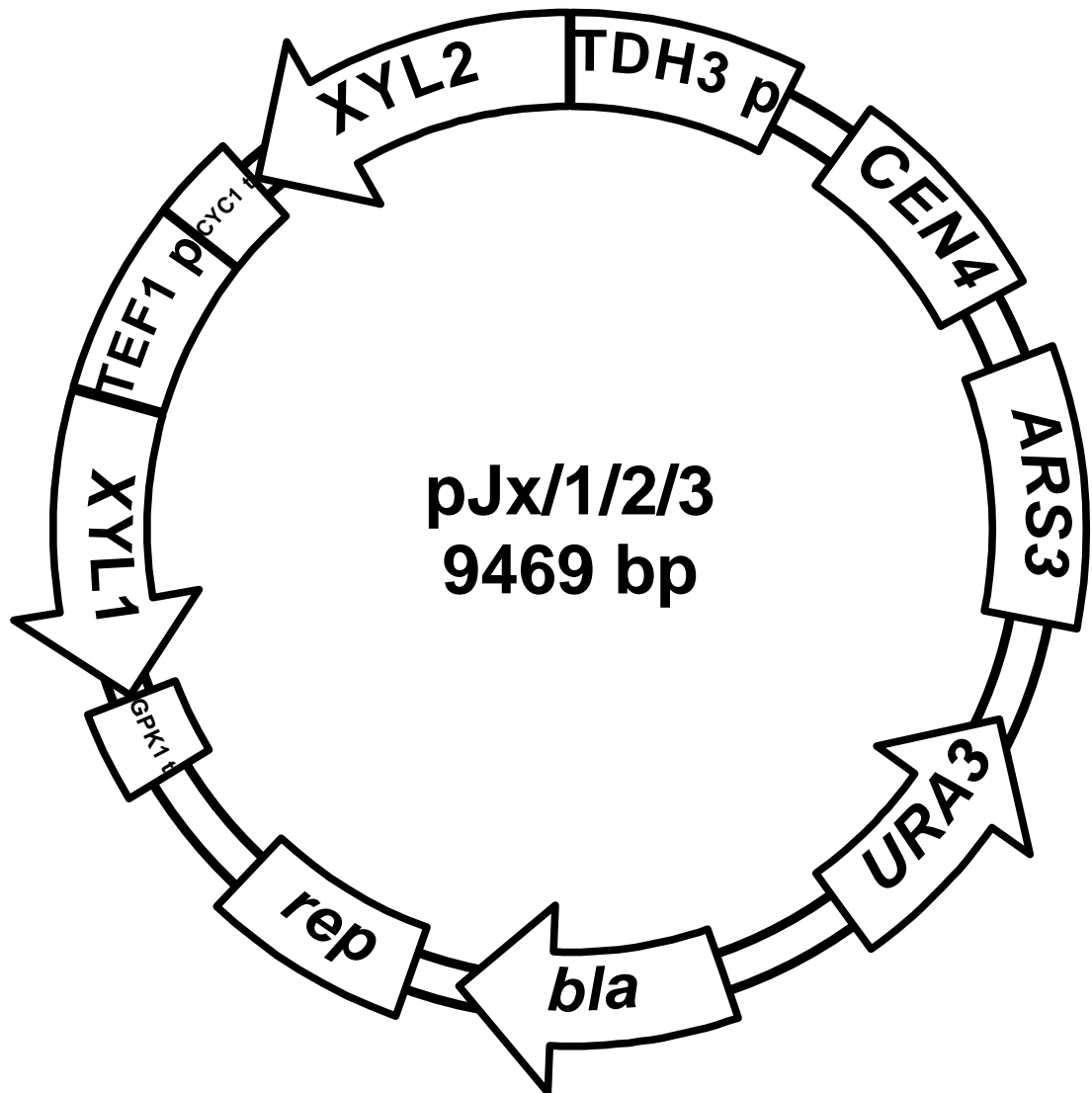


# INFORMATION of PLASMIDS pJX1 pJX2 pJX3 PjX5

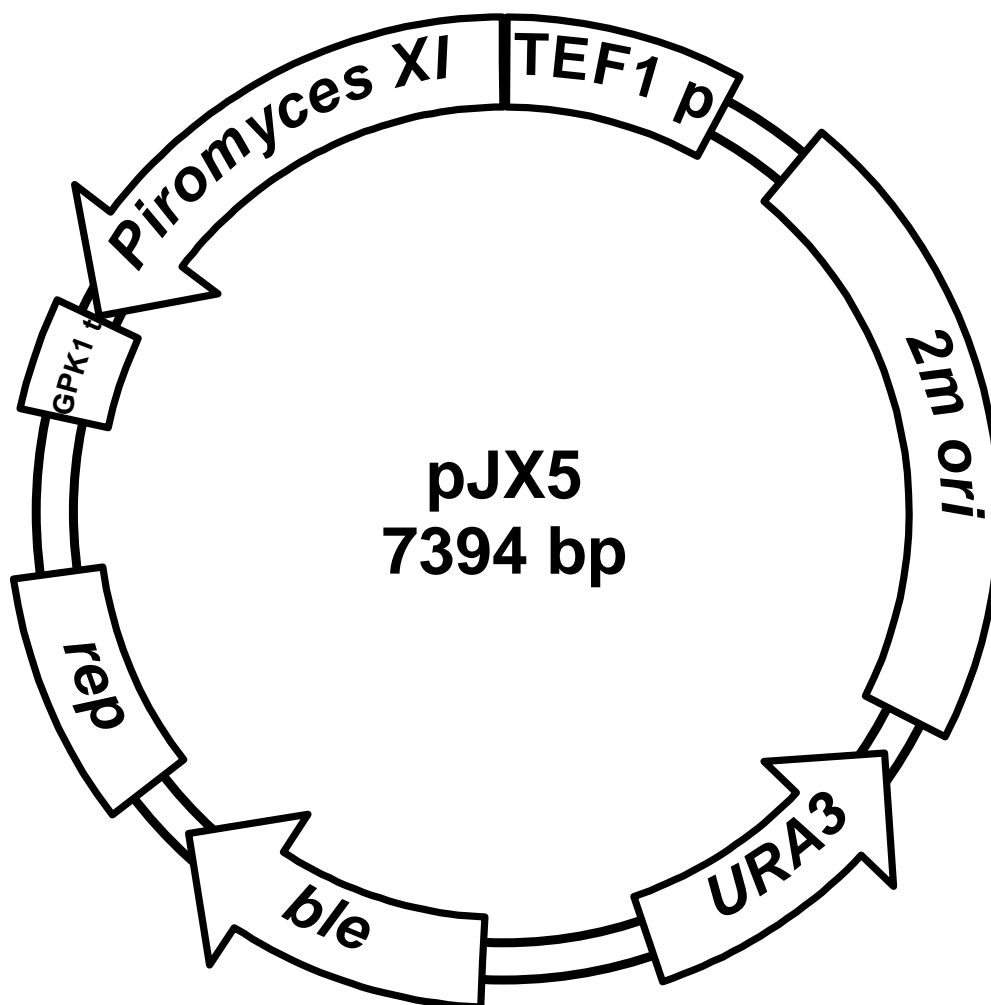
Constructor : 彭炳银



其中 pJX1 为 native XYL2

pJX2 为 XYL2 ARS

pJX3 为 XYL2 ARSdR



pJx/1/2/3

Element	CEN4	935	1612
Element	ARS3	1821	2659
Element	URA3	2993	3797
Element	bla	4233	5094
Element	rep	5253	5868
Element	GPK1 t	6275	6549
Element	TEF1 p	7524	8102
Element	CYC1 t	8108	8360
Element	TDH3 p	6	700
Element	XYL1	6557	7513
Element	XYL2	8374	9465

Sequence ..

```

1 CTAGATTTGT TTGTTTATGT GTGTTTATTC GAAACTAAGT TCTTGGTGTT
51 TTAATAACTAA AAAAAAGACT AACTATAAAA GTAGAATTTA AGAAGTTTAA
101 GAAATAGATT TACAGAATTA CAATCAATAC CTACCGTCTT TATATACTTA

```

151 TTAGTCAAGT AGGGGAATAA TTTCAGGGAA CTGGTTTCAA CCTTTTTTTT  
201 CAGCTTTTTC CAAATCAGAG AGAGCAGAAG GTAATAGAAG GTGTAAGAAA  
251 ATGAGATAGA TACATGCGTG GGTCAATTGC CTTGTGTCAT CATTACTCC  
301 AGGCAGGTTG CATCACTCCA TTGAGGTTGT GCCCGTTTTT TGCCTGTTTG  
351 TGCCCTGTT CTCTGTAGTT GCGCTAAGAG AATGGACCTA TGAAGTATG  
401 GTTGGTGAAG AAAACAATAT TTTGGTGCTG GGATTCTTTT TTTTCTGGA  
451 TGCCAGCTTA AAAAGCGGGC TCCATTATAT TTAGTGGATG CCAGGAATAA  
501 ACTGTTACC CAGACACCTA CGATGTTATA TATTCTGTGT AACCCGCCCC  
551 CTATTTTGGG CATGTACGGG TTACAGCAGA ATAAAAGGC TAATTTTTTG  
601 ACTAAATAAA GTTAGGAAAA TCACTACTAT TAATTATTTA CGTATTCTTT  
651 GAAATGGCAG TATTGATAAT GATAAACTCG AACTGAAAAA GCGTGTTTTT  
701 TATGGTACCG AGCTCGAATT CACTGGCCGT CGTTTTACAA CGTCGTGACT  
751 GGGAAAACCC TGGCGTTACC CAACTTAATC GCCTTGCAGC ACATCCCCCT  
801 TTCGCCAGCT GGCCTAATAG CGAAGAGGCC CGCACCGATC GCCCTTCCCA  
851 ACAGTTGCGC AGCCTGAATG GCGAATGGCG CCTGATGCGG TATTTTCTCC  
901 TTACGCATCT GTGCGGTATT TCACACCGCA TATATCGCTG GGCCATTCTC  
951 ATGAAGAATA TCTTGAATTT ATTGTCATAT TACTAGTTGG TGTGGAAGTC  
1001 CATATATCGG TGATCAATAT AGTGGTTGAC ATGCTGGCTA GTCAACATTG  
1051 AGCCTTTTGA TCATGCAAAT ATATTACGGT ATTTTACAAT CAAATATCAA  
1101 ACTTAACTAT TGACTTTATA ACTTATTAG GTGGTAACAT TCTTATAAAA  
1151 AAGAAAAAAA TTACTGCAAA ACAGTACTAG CTTTAACTT GTATCCTAGG  
1201 TTATCTATGC TGTCTACCA TAGAGAATAT TACCTATTTC AGAATGTATG  
1251 TCCATGATTC GCCGGGTAAA TACATATAAT ACACAAATCT GGCTTAATAA  
1301 AGTCTATAAT ATATCTCATA AAGAAGTGCT AAATTGGCTA GTGCTATATA  
1351 TTTTAAAGAA AATTTCTTTT GACTAAGTCC ATATCGACTT TGTAAGTGT  
1401 CACTTTAGCA TACATATATT ACACGAGCCA GAAATTGTAA CTTTGCCTA  
1451 AAATCACAAA TTGCAAAATT TAATTGCTTG CAAAAGGTCA CATGCTTATA  
1501 ATCAACTTTT TAAAAAATTT AAAATACTTT TTTATTTTTT ATTTTAAAC  
1551 ATAAATGAAA TAATTTATTT ATTGTTTATG ATTACCGAAA CATAAACCT  
1601 GCTCAAGAAA AAGAACTGT TTTGTCTTG GAAAAAAGC ACTACCTAGG  
1651 AGCGGCCAAA ATGCCGAGGC TTTCATAGCT TAAACTCTTT ACAGAAAATA  
1701 GGCATTATAG ATCAGTTCGA GTTTTCTTAT TCTTCCTCC GGTTTTATCG  
1751 TCACAGTTTT ACAGTAAATA AGTATCACCT CTTAGAGTTC GATGATAAGC  
1801 TGTCAAACAT GAGAATTAAT TCCACATGTT AAAATAGTGA AGGAGCATGT  
1851 TCGGCACACA GTGGACCGAA CGTGGGGTAA GTGCACTAGG GTCCGGTTAA  
1901 ACGGATCTCG CATTGATGAG GCAACGCTAA TTATCAACAT ATAGATTGTT  
1951 ATCTATCTGC ATGAACACGA AATCTTACT TGACGACTTG AGGCTGATGG  
2001 TGTTTATGCA AAGAAACCAC TGTGTTAAT ATGTGTCACT GTTTGATATT  
2051 ACTGTCAGCG TAGAAGATAA TAGTAAAAGC GGTTAATAAG TGTATTTGAG  
2101 ATAAGTGTGA TAAAGTTTTT ACAGCGAAAA GACGATAAAT ACAAGAAAAT  
2151 GATTACGAGG ATACGGAGAG AGGTATGTAC ATGTGTATTT ATATACTAAG  
2201 CTGCCGCGG TTGTTTGCAA GACCGAGAAA AGGCTAGCAA GAATCGGGTC  
2251 ATTGTAGCGT ATGCGCCTGT GAACATTCTC TTCAACAAGT TTGATTCCAT  
2301 TGCCGTGAAA TGGTAAAAGT CAACCCCTG CGATGTATAT TTTCTGTAC

2351 AATCAATCAA AAAGCCAAAT GATTTAGCAT TATCTTTACA TCTTGTTATT  
2401 TTACAGATTT TATGTTTAGA TCTTTTATGC TTGCTTTTCA AAAGGCTTGC  
2451 AGGCAAGTGC ACAAACAATA CTAAATAAA TACTACTCAG TAATAACCTA  
2501 TTTCTTAGCA TTTTGTGACG AATTTGCTAT TTTGTTAGAG TCTTTTACAC  
2551 CATTGTCTC CACACCTCCG CTTACATCAA CACCAATAAC GCCATTTAAT  
2601 CTAAGCGCAT CACCAACATT TTCTGGCGTC AGTCCACCAG CTAACATAAA  
2651 ATGTAAGCTC TCGGGGCTCT CTTGCCTTCC AACCCAGTCA GAAATCGAGT  
2701 TCCAATCCAA AAGTTCACCT GTCCACCTG CTTCTGAATC AAACAAGGGA  
2751 ATAAACGAAT GAGGTTTCTG TGAAGCTGCA CTGAGTAGTA TGTTGCAGTC  
2801 TTTTGAAAT ACGAGTCTTT TAATAACTGG CAAACCGAGG AACTCTTGGT  
2851 ATTCTTGCCA CGACTCATCT CCATGCAGTT GGACGATCGA TGATAAGCTG  
2901 TCAAACATGA GAATTGGGTA ATAACTGATA TAATTAATTA GAAGCTCTAA  
2951 TTTGTGAGTT TAGTATACAT GCATTTACTT ATAATACAGT TTTTGTAGTT  
3001 TGCTGGCCG ATCTTCTCAA ATATGCTTCC CAGCCTGCTT TTCTGTAACG  
3051 TTCACCCTCT ACCTTAGCAT CCCTTCCCTT TGCAAATAGT CCTCTTCCAA  
3101 CAATAATAAT GTCAGATCCT GTAGAGACCA CATCATCCAC GGTCTATAC  
3151 TGTTGACCCA ATGCGTCTCC CTTGTCTCTT AAACCCACAC CGGGTGTCT  
3201 AATCAACCAA TCGTAACTT CATCTCTTCC ACCCATGTCT CTTGAGCAA  
3251 TAAAGCCGAT AACAAAATCT TTGTCGCTCT TCGCAATGTC AACAGTACCC  
3301 TTAGTATATT CTCCAGTAGA TAGGGAGCCC TTGCATGACA ATTCTGCTAA  
3351 CATCAAAAGG CCTCTAGGTT CCTTTGTAC TTCTTCTGCC GCCTGCTTCA  
3401 AACCGCTAAC AATACCTGGG CCCACCACAC CGTGTGCATT CGTAATGTCT  
3451 GCCATTCTG CTATTCTGTA TACACCCGCA GAGTACTGCA ATTTGACTGT  
3501 ATTACCAATG TCAGCAAATT TTCTGTCTTC GAAGAGTAAA AAATTGACT  
3551 TGGCGGATAA TGCCTTTAGC GGCTTAACTG TGCCCTCCAT GGAAAAATCA  
3601 GTCAGATAT CCACATGTGT TTTTAGTAAA CAAATTTTGG GACCTAATGC  
3651 TTCAACTAAC TCCAGTAATT CCTTGGTGGT ACGAACATCC AATGAAGCAC  
3701 ACAAGTTTGT TTGCTTTTTC TGCATGATAT TAAATAGCTT GGCAGCAACA  
3751 GGACTAGGAT GAGTAGCAGC ACGTTCCTTA TATGTAGCTT TCGACATGAT  
3801 TTATCTTCGT TTCCTGCATG TTTTGTCTT GTGCAGTTGG GTTAAGAATA  
3851 CTGGGCAATT TCATGTTTCT TCAACTACT ATATGCGTAT ATATACCAAT  
3901 CTAAGTCTGT GCTCCTCCT TCGTTCTTCC TTCTGTTCGG AGATTACCGA  
3951 ATCAAAAAAA TTTCAAAGAA ACCGAAATCA AAAAAAAGAA TAAAAAATAA  
4001 ATGATGAATT GAATTGAAAA GCTAATTCTT GAAGACGAAA GGCCTCGTG  
4051 ATACGCCAT TTTTATAGGT TAATGTCATG ATAATAATGG TTTCTTAGAC  
4101 GTCAGGTGGC ACTTTTCGGG GAAATGTGCG CGGAACCCCT ATTTGTTTAT  
4151 TTTTCTAAAT ACATTCAAAT ATGTATCCGC TCATGAGACA ATAACCCTGA  
4201 TAAATGCTTC AATAATATTG AAAAAGGAAG AGTATGAGTA TTCAACATTT  
4251 CCGTGTGCC CTTATTCCT TTTTGTGCGC ATTTTGCCTT CCTGTTTTTG  
4301 CTCACCCAGA AACGCTGGTG AAAGTAAAAG ATGCTGAAGA TCAGTTGGGT  
4351 GCACGAGTGG GTTACATCGA ACTGGATCTC AACAGCGGTA AGATCCTTGA  
4401 GAGTTTTTCG CCCGAAGAAC GTTTTCCAAT GATGAGCACT TTAAAGTTC  
4451 TGCTATGTGG CGCGGTATTA TCCCGTATTG ACGCCGGGCA AGAGCAACTC  
4501 GGTGCGCGCA TACACTATTC TCAGAATGAC TTGGTTGAGT ACTCACCAGT

4551 CACAGAAAAG CATCTTACGG ATGGCATGAC AGTAAGAGAA TTATGCAGTG  
4601 CTGCCATAAC CATGAGTGAT AACACTGCGG CCAACTTACT TCTGACAACG  
4651 ATCGGAGGAC CGAAGGAGCT AACCGCTTTT TTGCACAACA TGGGGGATCA  
4701 TGTAACCTCG CTTGATCGTT GGAACCGGA GCTGAATGAA GCCATACCAA  
4751 ACGACGAGCG TGACACCACG ATGCCTGTAG CAATGGCAAC AACGTTGCGC  
4801 AAATATTAA CTGGCGAACT ACTTACTCTA GCTTCCCGC AACAATTAAT  
4851 AGACTGGATG GAGGCGGATA AAGTTGCAGG ACCACTTCTG CGCTCGGCC  
4901 TTCCGGCTGG CTGGTTTATT GCTGATAAAT CTGGAGCCGG TGAGCGTGGG  
4951 TCTCGCGTA TCATTGCAGC ACTGGGGCCA GATGGTAAGC CCTCCCGTAT  
5001 CGTAGTTATC TACACGACGG GGAGTCAGGC AACTATGGAT GAACGAAATA  
5051 GACAGATCGC TGAGATAGGT GCCTCACTGA TTAAGCATTG GTAAGTGTCA  
5101 GACCAAGTTT ACTCATATAT ACTTTAGATT GATTTAAAAC TTCATTTTTA  
5151 ATTTAAAAGG ATCTAGGTGA AGATCCTTTT TGATAATCTC ATGACCAAAA  
5201 TCCCTAACG TGAGTTTTCG TTCCACTGAG CGTCAGACCC CGTAGAAAAG  
5251 ATCAAAGGAT CTTCTTGAGA TCCTTTTTTT CTGCGCGTAA TCTGCTGCTT  
5301 GCAAAACAAA AAACCACCGC TACCAGCGGT GGTTTGTGTT CCGGATCAAG  
5351 AGCTACCAAC TCTTTTCCG AAGGTAAC TGCTTCAGCAG AGCGCAGATA  
5401 CCAAATACTG TCCTTCTAGT GTAGCCGTAG TTAGGCCACC ACTTCAAGAA  
5451 CTCTGTAGCA CCGCTACAT ACCTCGCTCT GCTAATCCTG TTACCAGTGG  
5501 CTGCTGCCAG TGGCGATAAG TCGTGTCTTA CCGGGTTGGA CTCAAGACGA  
5551 TAGTTACCG ATAAGGCGCA GCGGTCGGGC TGAACGGGGG GTTCGTGCAC  
5601 ACAGCCAGC TTGGAGCGAA CGACCTACAC CGAACTGAGA TACCTACAGC  
5651 GTGAGCTATG AGAAAGCGCC ACGTTCCTCG AAGGGAGAAA GCGGACAGG  
5701 TATCCGGTAA GCGGCAGGT CGGAACAGGA GAGCGCACGA GGGAGCTTCC  
5751 AGGGGAAAAC GCCTGGTATC TTTATAGTCC TGTCGGGTTT CGCCACCTCT  
5801 GACTTGAGCG TCGATTTTGG TGATGCTCGT CAGGGGGGCG GAGCCTATGG  
5851 AAAAAACCCA GCAACGCGC CTTTTACGG TTCTGGCCT TTTGCTGGCC  
5901 TTTTGCTCAC ATGTTCTTTC CTGCGTTATC CCCTGATTCT GTGGATAACC  
5951 GTATTACCG CTTTGAGTGA GCTGATACCG CTCGCCGAG CCGAACGACC  
6001 GAGCGCAGCG AGTCAGTGAG CGAGGAAGCG GAAGAGCGCC CAATACGCAA  
6051 ACCGCTCTC CCCGCGGTT GGCCGATTCA TTAATGCAGC TGGCAGACA  
6101 GGTTCCCGA CTGAAAGCG GGCAGTGAG GCAACGCAAT TAATGTGAGT  
6151 TAGCTCACT ATTAGGCACC CCAGGCTTTA CACTTTATGC TTCCGGCTCG  
6201 TATGTGTGT GGAATTGTGA GCGGATAACA ATTTACACA GAAAACAGCT  
6251 ATGACCATGA TTACGCCAAG CTTAACGAA CGCAGAATTT TCGAGTTATT  
6301 AAATTAATA TACGCTGAAC CCGAACATAG AAATATCGAA TGGGAAAAAA  
6351 AAATGCATA AAGGCATTAA AAGAGGAGCG AATTTTTTTT TAATAAAAAT  
6401 CTTAATAATC ATTAAGAGAT AAATAATAGT CTATATATAC GTATATAAAT  
6451 AAAAAATATT CAAAAAATA AATAAACTAT TATTTAGCG TAAAGGATGG  
6501 GAAAAGAGAA AAAAAAATA TTGATCTATC GATTTCAATT CAATTCAATC  
6551 CTGCAGTTAG ACGAAGATAG GAATCTTGTC CCAGTCCCAT GGGTCGTTGA  
6601 ATCTCAAGTT GATGTCCAAC TTGGCAATGT CAGCGAAATC TTGTTCGTCC  
6651 AAGTCGAAGC TGTTGACGTC CTTGTTTTCC AACAATCTTG GGACAGTGT  
6701 GGAATTTGGA ATGATGGCAA TGCCTTTTG GGAAGACCAT CTCAACAAGA

6751 CTTGAGCTGG AGACTTACCG TGCTTAGCAG CGATAGCCTT GATAGTTTCG  
6801 TTCTCGAACA ATGGAGAAGT GTTCAAAGCT CTACCTTGGT TCAATTCAAC  
6851 GAAAGATTGA GGACCGAACG AAGAGTAAGC GGTGACAGCA ATACCACGGG  
6901 ATTGAGCGAA TTGCATCAAT CTTGGTTGTT GCAAGTATGG GTGGTGTTC  
6951 ACTTGCAAGA CAGATGGCTT GATGGTAGCA CCTCTCAACA AGTCCAAGAG  
7001 CAAAGCACCT GGGAAGTTAG AAACACCGAT AGATCTGATC TTACCGGCCT  
7051 TGACCAACTT TTCAAGAGCC TTCCAGGTCT CTAAAATTGG AACATCTTCG  
7101 TAGTCGAAGT TGTCACCCTT ACCACAGTAG AATCCTGGTG GGTACTTTTC  
7151 TTCTAATGGA ACGAACTTGA AGGTGACTGG GAAGTGGATC AAGAACAAGT  
7201 CAACGTAGTC AACTTGCAAG TCAGAAAGGG TTCTGTTCAG GGCCTTTTCG  
7251 ACGTTGTCTG GGTGGTGGTA GTTGTCCAC AACTTGGAGG TAAGGAACAA  
7301 GTCTTCACGC TTGACGATAC CTTCGTCAAT GGCCTTCTTG ACACCGGCAC  
7351 CAACTAACTT TTCGTTGGCG TAATCTTCGG CACCGTCGAA CAATCTGTAA  
7401 CCGGTCTTGA TAGCACGGTA GATCTGTTC GAACAGGTGT CGACGTCGAC  
7451 TTTCCAACAG CCGAAACCGA CGGCTGGCAT GTCGTAACCA GAGTCAACT  
7501 TAATAGAAGG CATTTTTGTAT CCTTTGTAAT TAAAACCTAG ATTAGATTGC  
7551 TATGCTTTCT TTCTAATGAG CAAGAAGTAA AAAAAGTTGT AATAGAACAA  
7601 GAAAAATGAA ACTGAAACTT GAGAAATTGA AGACCGTTTA TTAACTTAAA  
7651 TATCAATGGG AGGTCATCGA AAGAGAAAAA AATCAAAAAA AAAAATTTTC  
7701 AAGAAAAAGA AACGTGATAA AAATTTTAT TGCCTTTTTC GACGAAGAAA  
7751 AAGAAACGAG GCGGTCTCTT TTTTCTTTTC CAAACCTTAA GTACGGGTAA  
7801 TTAACGACAC CCTAGAGGAA GAAAGAGGGG AAATTTAGTA TGCTGTGCTT  
7851 GGGTGTTTTG AAGTGGTACG GCGATGCGCG GAGTCCGAGA AAATCTGGAA  
7901 GAGTAAAAAA GGAGTAGAAA CATTTTGAAG CTATGGTGTG TGGGGGATCA  
7951 CTTGTGGGGG ATTGGGTGTG ATGTAAGGAT TCGCGTCCT CGAAAATTA  
8001 AAGTCCAACG CGCCTGTGTC TTCCTATGTG ATATGTATTA TATGTAATAT  
8051 GCATAAATAT ATCTACTGCA TTGTATTTG AACGTACAAA GTATGCATTG  
8101 TGGTACCGCG CGCAAATTA AGCCTTCGAG CGTCCAAAAA CCTTCTCAAG  
8151 CAAGGTTTTT AGTATAATGT TACATGCGTA CACGCGTCTG TACAGAAAAA  
8201 AAAGAAAAAT TTGAAATATA AATAACGTTC TTAATACTAA CATAACTATA  
8251 AAAAAATAAA TAGGGACCTA GACTTCAGGT TGTCTAACTC CTTCCTTTTC  
8301 GGTTAGAGCG GATGTGGGGG GAGGGCGTGA ATGTAAGCGT GACATAACTA  
8351 ATTACATGAC TCGAGGTGCA TGCTTACTCA GGGCCGTCAA TGAGACACTT  
8401 GACAGCACCC TTACCGGCTC TGACCAAGTC GTAGGCTTCA ATAGCGTCTT  
8451 TGAACCTGTA TCTGTGGGTG ATCAATTGTT CAAAGTCAAT TGGAGCATTT  
8501 TCTCTACCGT TTTGGTAGTT AGTGTCAAAG ATTCCAACAG CAGTCTTGTA  
8551 GTCGTGAAT CCGTATCTGA AAGAACCGAA CAAAGTCAAT TCCTTCATGG  
8601 CGAAAACGGT GATTGGGAAG CTGACTGGAC CAGCAGCGTT ACCAACTTGA  
8651 ACGAAACGAC CACCTGGGGC AATGGCGTCA ACACCAACT TGATACAAGG  
8701 TTCAGACCA GTACATTCCA AAACGACGTT TGGCACGTTA CCACCGAAAG  
8751 CCTTGATCAA TTCTTCAGAA CCACCGTCT TGGAGTTGAA GGTGTGAGTA  
8801 GCAGACCAA TGTCCTTGGC CATCTCAAC TTGTTGTCTG AAATGTCAAC  
8851 GACGATGACA CCCTTAGCAC CGAAGTCTT GGCGACAGCA GCAGCCAAAA  
8901 GACCAACAGG ACCAGACCA AAGACGGCAA CGTAGTCGCC GAAAGCAACG

8951 GAACCAACT TGGAGGCGTG GACACCAACA GACAATGGCT CAACAAGAGC  
 9001 ACCGAGTTCC AAGCTGACGT GGTCTGGCAA CTTGACCAAG AAGTCTTCTG  
 9051 GCGACTTGAA GTACTTACAT AAGGTACCTG GTGGGTTTGG TTCGCCTTCC  
 9101 TTGGAGTTAG GAGTAGCGGC GAAGGCCATG TGAGGACACA AGTTGTAGTG  
 9151 ACCGCTCTTG TATTCGTCGG AGAATCTGGA TGGAATACCT GGTTTCGATAG  
 9201 CGACGTTGTC ACCAACCTTA AGAGAGGTGA CACCCTTACC AACCTGGACA  
 9251 ACAGTACCGG CGGATTCGTG ACCCAAGACC ATTGGCTTGG TCAAAAACGAA  
 9301 GTTACCGATT CTACCATGGG CGTAGAAGTG GATGTCGGAA CCACAGATAC  
 9351 CGGTTTTCTT GACCTGGACG AGGACATCGG TAGGTTTACA GATTCTGGG  
 9401 GCATCGTAAG TTTCGAACGA AATGTCGTCG ATCTTGTTC AACCACGAAG  
 9451 AGGGTTAGCA GTCATTTTA

pJX5

Element	URA3	2513	3314
Element	ble	3753	4611
Element	rep	4772	5387
Element	2m ori	819	2402
Element	GPK1 t	5794	6068
Element	TEF1 p	7	585
Element	Piromyces XI	6077	7390

Sequence ..

1 GATCCTTTGT AATTAACACT TAGATTAGAT TGCTATGCTT TCTTTCTAAT  
 51 GAGCAAGAAG TAAAAAAGT TGTAATAGAA CAAGAAAAAT GAAACTGAAA  
 101 CTTGAGAAAT TGAAGACCGT TTATTAACCT AAATATCAAT GGGAGGTCAT  
 151 CGAAAGAGAA AAAAATCAAA AAAAAAATT TTCAAGAAAA AGAAACGTGA  
 201 TAAAAATTTT TATTGCCTTT TTCGACGAAG AAAAAGAAAC GAGGCGGTCT  
 251 CTTTTTTCTT TTCCAAACCT TTAGTACGGG TAATTAACGA CACCCTAGAG  
 301 GAAGAAAGAG GGGAAATTTA GTATGCTGTG CTTGGGTGTT TTGAAGTGGT  
 351 ACGGCGATGC GCGGAGTCCG AGAAAATCTG GAAGAGTAAA AAAGGAGTAG  
 401 AAACATTTTG AAGCTATGGT GTGTGGGGGA TCACTTGTGG GGGATTGGGT  
 451 GTGATGTAAG GATTTCGGGT CCTCGAAAA TAAAAGTCCA ACGCGCCTGT  
 501 TGCTTCCTAT GTGATATGTA TTATATGTAA TATGCATAAA TATATCTACT  
 551 GCATTGTATT TTGAACGTAC AAAGTATGCA TTGTGGTACC GAGCTCGAAT  
 601 TCACTGGCCG TCGTTTTACA ACGTCGTGAC TGGGAAAACC CTGGCGTTAC  
 651 CCAACTTAAT CGCCTTGACG CACATCCCCC TTTCGCCAGC TGGCGTAATA  
 701 GCGAAGAGGC CCGCACCGAT CGCCCTTCCC AACAGTTGCG CAGCCTGAAT  
 751 GCGAATGGC GCCTGATGCG GTATTTTCTC CTTACGCATC TGTGCGGTAT  
 801 TTCACACCGC ATATATCGGA TCGTACTTGT TACCCATCAT TGAATTTTGA  
 851 ACATCCGAAC CTGGGAGTTT TCCCTGAAAC AGATAGTATA TTTGAACCTG  
 901 TATAATAATA TATAGTCTAG CGCTTTACGG AAGACAATGT ATGTATTTCG  
 951 GTTCTGGAG AAATATTGCA ATCTATTGCA TAGGTAATCT TGCACGTCGC  
 1001 ATCCCGGTT CATTCTCTGC GTTTCCATCT TGCACTTCAA TAGCATATCT  
 1051 TTGTTAACGA AGCATCTGTG CTTTATTTTG TAGAACAAAA ATGCAACGCG  
 1101 AGAGCGCTAA TTTTCAAAC AAAGAATCTG AGCTGCATTT TTACAGAACA

1151 GAAATGCAAC GCGAAAGCGC TATTTTACCA ACGAAGAATC TGTGCTTCAT  
1201 TTTTGTA AAA CAAAAATGCA ACGCGAGAGC GCTAATTTTT CAAACAAAGA  
1251 ATCTGAGCTG CATTTTTACA GAACAGAAAT GCAACGCGAG AGCGCTATTT  
1301 TACCAACAAA GAATCTATAC TTCTTTTTTG TTCTACAAAA ATGCATCCCC  
1351 AGAGCGCTAT TTTTCTAACA AAGCATCTTA GATTACTTTT TTTCTCCTTT  
1401 GTGCGCTCTA TAATGCAGTC TCTTGATAAC TTTTGCAGT GTAGGTCCGT  
1451 TAAGGTTAGA AGAAGGCTAC TTTGGTGTCT ATTTTCTCTT CCATAAAAAA  
1501 AGCCTGACTC CACTTCCCGC GTTTACTGAT TACTAGCGAA GCTGCGGGTG  
1551 CATTTTTTCA AGATAAAGGC ATCCCCGATT ATATTCTATA CCGATGTGGA  
1601 TTGCGCATAC TTTGTGAACA GAAAGTGATA GCGTTGATGA TTCTTCATTG  
1651 GTCAGAAAAT TATGAACGGT TTCTTCTATT TTGTCTCTAT ATACTACGTA  
1701 TAGGAAATGT TTACATTTTC GTATTGTTTT CGATTCACTC TATGAATAGT  
1751 TCTTACTACA ATTTTTTTGT CTAAGAGTA ATACTAGAGA TAAACATAAA  
1801 AAATGTAGAG GTCGAGTTTA GATGCAAGTT CAAGGAGCGA AAGGTGGATG  
1851 GGTAGGTTAT ATAGGGATAT AGCACAGAGA TATATAGCAA AGAGATACTT  
1901 TTGAGCAATG TTTGTGGAAG CGGTATTCGC AATATTTTAG TAGCTCGTTA  
1951 CAGTCCGGTG CGTTTTTGGT TTTTGGAAAG TCGGTCTTCA GAGCGCTTTT  
2001 GGTTTTCAAA AGCGCTCTGA AGTTCCTATA CTTTCTAGCT AGAGAATAGG  
2051 AACTTCGGAA TAGGAACTTC AAAGCGTTTC CGAAAACGAG CGCTCCGAA  
2101 AATGCAACGC GAGCTGCGCA CATAACAGCTC ACTGTTCCAG TCGCACCTAT  
2151 ATCTGCGTGT TGCCTGTATA TATATATACA TGAGAAGAAC GGCATAGTGC  
2201 GTGTTTATGC TTAAATGCGT ACTTATATGC GTCTATTTAT GTAGGATGAA  
2251 AGGTAGTCTA GTACCTCCTG TGATATTATC CCATTCCATG CGGGGTATCG  
2301 TATGCTTCCT TCAGCACTAC CCTTTAGCTG TTCTATATGC TGCCACTCCT  
2351 CAATTGGATT AGTCTCATCC TTCAATGCTA TCATTTCCCTT TGATATTGGA  
2401 TCGATCCGAT GATAAGCTGT CAAACATGAG AATTGGGTAA TAACTGATAT  
2451 AATTAATAGT AAGCTCTAAT TTGTGAGTTT AGTATACATG CATTACTTA  
2501 TAATACAGTT TTTTAGTTTT GCTGGCCGCA TCTTCTCAA TATGCTTCCC  
2551 AGCCTGCTTT TCTGTAACGT TCACCCTCTA CCTTAGCATC CCTTCCCTTT  
2601 GCAAATAGTC CTCTTCCAAC AATAATAATG TCAGATCCTG TAGAGACCAC  
2651 ATCATCCACG GTTCTATACT GTTGACCCAA TGCGTCTCCC TTGTCATCTA  
2701 AACCCACACC GGGTGCATA ATCAACCAAT CGTAACCTTC ATCTCTTCCA  
2751 CCCATGTCTC TTTGAGCAAT AAAGCCGATA ACAAATCTT TGTCGCTCTT  
2801 CGCAATGTCA ACAGTACCCT TAGTATATTC TCCAGTAGAT AGGGAGCCCT  
2851 TGCATGACAA TTCTGCTAAC ATCAAAAGGC CTCTAGGTTC CTTTGTACT  
2901 TCTTCTGCCG CCTGCTTCAA ACCGCTAACA ATACCTGGGC CCACCACACC  
2951 GTGTGCATTC GTAATGTCTG CCCATTCTGC TATTCTGTAT ACACCCGAG  
3001 AGTACTGCAA TTTGACTGTA TTACCAATGT CAGCAAATTT TCTGTCTTCG  
3051 AAGAGTAAAA AATTGTACTT GGCGGATAAT GCCTTTAGCG GCTTAACTGT  
3101 GCCCTCCATG GAAAAATCAG TCAAGATATC CACATGTGTT TTTAGTAAAC  
3151 AAATTTTGGG ACCTAATGCT TCAACTAACT CCAGTAATTC CTTGGTGGTA  
3201 CGAACATCCA ATGAAGCACA CAAGTTTGTG TGCTTTTCGT GCATGATATT  
3251 AAATAGCTTG GCAGCAACAG GACTAGGATG AGTAGCAGCA CGTTCCTTAT  
3301 ATGTAGCTTT CGACATGATT TATCTTCGTT TCCTGCATGT TTTTGTCTG



3351 TGCAGTTGGG TTAAGAATAC TGGGCAATTT CATGTTTCTT CAACACTACA  
3401 TATGCGTATA TATACCAATC TAAGTCTGTG CTCCTTCCTT CGTCTTCCT  
3451 TCTGTTCCGA GATTACCGAA TCAAAAAAAT TTCAAAGAAA CCGAAATCAA  
3501 AAAAAAGAAT AAAAAAAAAA TGATGAATTG AATTGAAAAG CTAATTCTTG  
3551 AAGACGAAAG GGCCTCGTGA TACGCCTATT TTTATAGGTT AATGTCATGA  
3601 TAATAATGGT TTCTTAGACG TCAGGTGGCA CTTTTCGGGG AAATGTGCGC  
3651 GGAACCCCTA TTTGTTTATT TTTCTAAATA CATTCAAATA TGTATCCGCT  
3701 CATGAGACAA TAACCCTGAT AAATGCTTCA ATAATATTGA AAAAGGAAGA  
3751 GTATGAGTAT TCAACATTTT CGTGTGCGCC TTATTCCCTT TTTTGC GGCA  
3801 TTTTGCCCTC CTGTTTTTGC TCACCCAGAA ACGCTGGTGA AAGTAAAAGA  
3851 TGCTGAAGAT CAGTTGGGTG CACGAGTGGG TTACATCGAA CTGGATCTCA  
3901 ACAGCGGTAA GATCCTTGAG AGTTTTCGCC CCGAAGAACG TTTTCCAATG  
3951 ATGAGCACTT TTAAAGTTCT GCTATGTGGC GCGGTATTAT CCCGTATTGA  
4001 CGCCGGGCAA GAGCAACTCG GTCGCCGCAT AACTATTCT CAGAATGACT  
4051 TGGTTGAGTA CTCACCAGTC ACAGAAAAGC ATCTTACGGA TGGCATGACA  
4101 GTAAGAGAAT TATGCAGTGC TGCCATAACC ATGAGTGATA AACTGCGGC  
4151 CAACTTACTT CTGACAACGA TCGGAGGACC GAAGGAGCTA ACCGCTTTTT  
4201 TGCACAACAT GGGGGATCAT GTAACCTGCC TTGATCGTTG GGAACCGGAG  
4251 CTGAATGAAG CCATACCAAA CGACGAGCGT GACACCACGA TGCCTGTAGC  
4301 AATGGCAACA ACGTTGCGCA AACTATTAAC TGGCGAACTA CTTACTCTAG  
4351 CTTCCCGGCA ACAATTAATA GACTGGATGG AGGCGGATAA AGTTGCAGGA  
4401 CCACTTCTGC GCTCGGCCCT TCCGGCTGGC TGGTTTATTG CTGATAAATC  
4451 TGGAGCCGGT GAGCGTGGGT CTCGCGGTAT CATTGCAGCA CTGGGGCCAG  
4501 ATGGTAAGCC CTCCCGTATC GTAGTTATCT ACACGACGGG GAGTCAGGCA  
4551 ACTATGGATG AACGAAATAG ACAGATCGCT GAGATAGGTG CCTCACTGAT  
4601 TAAGCATTGG TAACTGTCAG ACCAAGTTA CTCATATATA CTTTAGATTG  
4651 ATTTAAAAC TCAATTTTAA TTTAAAAGGA TCTAGGTGAA GATCCTTTTT  
4701 GATAATCTCA TGACCAAAAT CCCTAACGT GAGTTTTCGT TCCACTGAGC  
4751 GTCAGACCCC GTAGAAAAGA TCAAAGGATC TTCTTGAGAT CCTTTTTTTC  
4801 TGCGCGTAAT CTGCTGCTTG CAAACAAAAA AACCACCGCT ACCAGCGGTG  
4851 GTTTGTTTGC CGGATCAAGA GCTACCAACT CTTTTTCCGA AGGTAAGTGG  
4901 CTTCAGCAGA GCGCAGATAC CAAATACTGT CCTTCTAGTG TAGCCGTAGT  
4951 TAGGCCACCA CTTCAAGAAC TCTGTAGCAC CGCCTACATA CCTCGCTCTG  
5001 CTAATCCTGT TACCAGTGGC TGCTGCCAGT GGCATAAGT CGTGCTTAC  
5051 CGGGTTGGAC TCAAGACGAT AGTTACCGGA TAAGGCGCAG CGGTCGGGCT  
5101 GAACGGGGGG TTCGTGCACA CAGCCCAGCT TGGAGCGAAC GACCTACACC  
5151 GAACTGAGAT ACCTACAGCG TGAGCTATGA GAAAGCGCCA CGCTCCCGA  
5201 AGGGAGAAAG GCGGACAGGT ATCCGGTAAG CGGCAGGGTC GGAACAGGAG  
5251 AGCGCACGAG GGAGCTTCCA GGGGAAAACG CCTGGTATCT TTATAGTCTT  
5301 GTCGGGTTTC GCCACCTCTG ACTTGAGCGT CGATTTTTGT GATGCTCGTC  
5351 AGGGGGGCGG AGCCTATGGA AAAACGCCAG CAACGCGGCC TTTTTACGGT  
5401 TCCTGGCCTT TTGCTGCCTT TTTGCTCACA TGTCTTTCC TCGGTTATCC  
5451 CCTGATTCTG TGGATAACCG TATTACCGCC TTTGAGTGAG CTGATACCGC  
5501 TCGCCGACG CGAACGACCG AGCGCAGCGA GTCAGTGAGC GAGGAAGCGG

5551 AAGAGCGCCC AATACGCAAA CCGCCTCTCC CCGCGCGTTG GCCGATTCAT  
5601 TAATGCAGCT GGCACGACAG GTTCCCGAC TGGAAAGCGG GCAGTGAGCG  
5651 CAACGCAATT AATGTGAGTT AGCTCACTCA TTAGGCACCC CAGGCTTTAC  
5701 ACTTTATGCT TCCGGCTCGT ATGTTGTGTG GAATTGTGAG CGGATAACAA  
5751 TTTCACACAG GAAACAGCTA TGACCATGAT TACGCCAAGC TTTAACGAAC  
5801 GCAGAATTTT CGAGTTATTA AACTTAAAAA ACGCTGAACC CGAACATAGA  
5851 AATATCGAAT GGGAAAAAAA AACTGCATAA AGGCATTAAT AGAGGAGCGA  
5901 ATTTTTTTTT AATAAAAAATC TTAATAATCA TTAAGATA AATAATAGTC  
5951 TATATATACG TATATAAATA AAAAAATTC AAAAAATAAA ATAACTATT  
6001 ATTTTAGCGT AAAGGATGGG GAAAGAGAAA AGAAAAAAT TGATCTATCG  
6051 ATTTCAATTC AATTCAATCC TGCAGTTTAT TGGTACATGG CAACAATAGC  
6101 TTCGTAGAGT TCTTGCTTAC CAGAAGTTG CTTTGGTTCA CCGTTCTTCT  
6151 TACCGTATTC GTAAACTTGT TCGAGGGTGA GCTTACCATC TTCAAAGTCC  
6201 TTACCAATAC CACTGTGCGAA GGAAGCGTAA CGTTCCTTCT TCATCTTGGT  
6251 GTATGGAGAT TCTTGAGGA GCTTGGCAGC GTTTTCAAGA GCACGAGCCA  
6301 TAGCATCCAT ACCAGAAACG TGGGCAATGA TGATGTCTTC GAGGTCAGTA  
6351 GAGTTACGAC GAGTCTTGGC ATCGAAGTTG GTACCACCAG TAACGAAACC  
6401 ACCACCACGG ATGATTCCA TCCAAGCTG GACGAGTTCG TATTGATCAA  
6451 TTGGGAATTG ATCAGTATCC CAACCGTTTT GGTAGTCACC ACGGTTAGCA  
6501 TCAATGGAAC CGAGCATACC AGCATCAACA GCACAGGCAA GTTCGTGTTT  
6551 GAAAGTGTGA CCAGCAAGAG TAGCGTGGTT AACTTCAATG TTGACCTTGA  
6601 AGTCCTTGTC TAAGTTGTGG GCCTTAAGGA AACCAATAGC GGTTTCAGTG  
6651 TCAACATCGT ATTGGTGCTT GGTGGTTCC ATTGGCTTTG GTTCAATGAG  
6701 GAAAGTACCC TTGAATCCCT TGGAACGAGC GTAGTCACGA GCCATGGTAA  
6751 GCATAGTGGC CATGTGTTCC TTTTCACGCT TTTGGTCAGT GTTAAGGAGA  
6801 CTCATGTAAC CTTACGACC ACCCCAGAAG ACGTAGTTTT CAGCACAAG  
6851 TTCAATACCG GCGTCTATGG CGTTCCTAAT TTGAACAATA GCACGGGCGA  
6901 CAACATCAAA GTCTGGGTTA GTGGAGGCAC CGTTCATGTA ACGCTTGTGA  
6951 CCGAAGACGT TAGCAGTACT CCAGAGAAGC TTAATACCGG TTTCTTTTG  
7001 CTTTTCTTG AGGTAAGCAA CGACAGCCTT AAGGTTGGAT TCGTATTCTT  
7051 CAATAGAGTT ACCTTCGAA ACAAGATCAA CATCGTGGAA ACAGTAGTAT  
7101 GGAATACCAA GCTTTTGCAT GATTTGAAA CCAGCATCAA CCTTTGCTT  
7151 GGCAATTTCA ATAGCATCAG TACCTTCGTT CCATGGGAAA GACTTTGTAC  
7201 CTCCACCGAA TTGGTCAGCA CCTTCGGCGC AAAGAGTGTG CCACCAGGCC  
7251 ATGGCGAAAC GTAACCAATC CTTCATTTTC TTACCCATGA CTTCTTTTC  
7301 AGCATCGTAG TAGTGGAAAG CTAATGGATT CTTAGAATCC TTACCTTCGA  
7351 ACTTAATCTT TTGAATTTGT GGGAAATATT CCTTAGCCAT TGTG