

(b) 1600bp sequence of *H. japonicus* and 1200 bp sequence of *H. lupulus*

Best match:

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1 10 20 30 40 50 60 70 80 90 100 110 120 130
OP_J_09_Japonicus1600 TGAGCCTCACARAGGACGATATATCGAGGATGCCAAGCTCCAAAGCTGCTCCTAGGACAGCTACACTCTTGAGCTGAGATTGACGCCATGTTGGCGATGTCGAGCTTGTGAGGATCCARTCCCA
OP_J_09_Lupulus_1200 |
Consensus .....|
131 140 150 160 170 180 190 200 210 220 230 240 250 260
OP_J_09_Japonicus1600 GACRAGGAGACAGGTGGCTGTGCTCACCAGGAAACCATCCAGATCGTCCGGAGAGCGCTGCCGAGGTCGAGCCAAATGACTAGCCCCACCAGCCAAACCATGAGCCCTTATCTTTTATTGTAAAT
OP_J_09_Lupulus_1200 |
Consensus .....|
261 270 280 290 300 310 320 330 340 350 360 370 380 390
OP_J_09_Japonicus1600 ATTTGACTCAGGCCCTTGTGGTCAGACAGTATAGGTTTTTTGTAATATTTAGCTTCTCTTTACCGGACAAATGATTTATTACTCTATGACAGTTTAAACATTTTGTCTCCATATATA
OP_J_09_Lupulus_1200 |
Consensus .....|
391 400 410 420 430 440 450 460 470 480 490 500 510 520
OP_J_09_Japonicus1600 TTTTGCATATATATGTTTGAATATATTTGCTCAGTGCATGTTATATGTCATGCTCTTACATACCATGTACATCTCCTTAGAGATTTTATATGTCGTATGAGCGCGAGGGCGAGTTACTTA
OP_J_09_Lupulus_1200 |
Consensus .....|
521 530 540 550 560 570 580 590 600 610 620 630 640 650
OP_J_09_Japonicus1600 CATGCATTAAGTCTCAGTCTTCTCAGTCTTATTTGTTAGTTTTTCAGCGT-ATGCTAGCTCGTAACTGCTTCTTAAACAAATATTACAGCTGTTTATGATAAARAT
OP_J_09_Lupulus_1200 |
Consensus .....|
651 660 670 680 690 700 710 720 730 740 750 760 770 780
OP_J_09_Japonicus1600 T-GTGCATTTTAACTTGAACCTCTCATAGGTTTAAACATGTTGATTA-ATCAGGCTTTAAACAAATGAGCTGCTGTTGTTAACTCCAAACAGTTTACCTATTTCCATGGTGCATACCTAG
OP_J_09_Lupulus_1200 |
Consensus .....|
781 790 800 810 820 830 840 850 860 870 880 890 900 910
OP_J_09_Japonicus1600 TCACCTTAACTCAGAGTATACATCTGTCAGCTACCTAGCAGGCTTTGCGAGTTTAAACAAATGAGCTGCTGTTGTTAACTCCAAACAGTTTACCTATTTCCATGGTGCATACCTAG
OP_J_09_Lupulus_1200 |
Consensus .....|
911 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040
OP_J_09_Japonicus1600 ATTAGATAGGTTTAACTTGTGTTTAAAGCCGATGTTTGAAGTGCACAGGCTGCGGAGTACGTTAGGCTGATTTTTGCAATGATTTTACAGCTCAGGCTTATACAGG-CATTTGT
OP_J_09_Lupulus_1200 |
Consensus .....|
1041 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170
OP_J_09_Japonicus1600 ACTTAGGCTTTTCTAGCTGTGATACATTAACCCGCTTTGTCGATTTCTAGGCTTTTGCAGGTTTAAACAAATGAGCTGCTGTTGTTAACTCCAAACAGTTTATGAAATTTTAAARAAATCTATGGCTCGACGCC
OP_J_09_Lupulus_1200 |
Consensus .....|
1171 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300
OP_J_09_Japonicus1600 TGTCCGAGTTTTAACTCAGTGCAGTGTACAGGTTATATGTCGTTGAGTTTCGCTATGATTAATGATCTCAATGACAGTCCAGGTTATCAATCTCTGATCTAGCTAAT-TCATGGACATCTT
OP_J_09_Lupulus_1200 |
Consensus .....|
1301 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430
OP_J_09_Japonicus1600 ATTTTAAACTTTGGGTGTTCTCTCCAGAGGTGCTTGTGGTTCGTCGAGTTATGGTTTTCACCTCTCAGCCCTTTCAGAGTGTATACCCCTGTTGGTGGTCTGCTTATATAGCATGTTG
OP_J_09_Lupulus_1200 |
Consensus .....|
1431 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560
OP_J_09_Japonicus1600 GTAGTTGCCCCAGCTTATGCTGATTAARATCAATGGCACTTAGTAAAGGGCTTTGTGCAATCCAGAAATAGT--GAGTGAARATTAACTTTATCAATTAATCTTTGTTCAATGAACTAGT
OP_J_09_Lupulus_1200 |
Consensus .....|
1561 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690
OP_J_09_Japonicus1600 ACATCATGAAATGAAAGTTACATAACTGAAATGCTAACAAACTTAAAGTAACTATTGGTAAATTTCTTGAATGCTCAGCAATCCATGCTCGGGTACCATCTCCACCAGGCTGGCAGTTTGT
OP_J_09_Lupulus_1200 |
Consensus .....|
1691 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820
OP_J_09_Japonicus1600 ACCTCCAGGCTGATCCTGTTGCTGACTTCTGAGGCTCTCCAGTATGCTCCAGCCAGCAGCAGCGGTTAGGGTCTCGTGTGCGCGAATACCTTCGAGATACCAAGTCTACCACGAACTGCT
OP_J_09_Lupulus_1200 |
Consensus .....|
1821 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920
OP_J_09_Japonicus1600 TCCTCAGACCCCTTTGTTAAAGTACTGTGCTATTTCTGTTGGTACGTTGCTTTATCATCTGAGGCTCA
OP_J_09_Lupulus_1200 |
Consensus .....|
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After taking into account of primers location:

	1	10	20	30	40	50	60	70	80	90	100	110	120	130
OPJ_09_Japonicus1600	TGAGCCTCACAAAGGACGATTTATATCGAGGATGCCAACTCCAAAGCTGCTCTAGGGACAGTCAACTCTTGAGCTGAGATTGACGCCATGTGGCGATGTGCGAGCTGCTGAGGATCCATTCGCCA													
OPJ_09_Lupulus_1200	TGAGCCTCAC.....TTATATACAG.....CTATATATATAGGATAGGGACTACAACTAA--AAGCCTTAAATATACAGAGTACAACTCAGA--AACAAACC--ATCTATCTACTCA													
Consensus	TGAGCCTCAC.....TTATATAcacAG.....CTaaaAaacTAcagcTAGGGACaAcaAACTaa..AAGCcgaaAaTAcacAaaaGTacaaGaaGa..AaCaacC.....ATCcaAcTAcCa													
OPJ_09_Japonicus1600	GACAGAGAACAGGTGGCTGTGGCTCAC-CAGGAACCATCCAGATCCCTCGGGAGCGCTTGGCCAGGTGAGCCAAATGACTAGACCCACCGCAAAACCATGACCTTTATCTTTTATTTGTA													
OPJ_09_Lupulus_1200	-ACAGTAGAAGCT--CAGCAATTAACACAGGACTCTCTCTGTG-GTCTAGAAATATGTTAGGCATATAGAGGC--CTA-ACACCTTCTGACTCCACGTAGAAATGTGATTTCTTGAAAA													
Consensus	.ACGaaGAAAC.....CaGcaacTAcC.CAGGAACCaTcCagaT.GTCCaGaAGcGaTcCaAaaaTaGAGcC.....CTA.ACaCCacCcccAaaaCaAcGaAcaaaaTaTcTATTTacTTGaa													
OPJ_09_Japonicus1600	TATTGACTCAGCCCTTGGTGGTCAAGACAGTATAGTTTTTGTATATATTTTGTCTTCTTCTTACCGGACAGATGTTATATTTACTCTATGACAGTTTAAACATTTTTGTCTCCATATAT													
OPJ_09_Lupulus_1200	TATA--CAGGCCCA--CCTTAAAGAGAGGTGTTTCATACACTAGAAAARAAAATCCCTTCAAGTTG--GCATAGTTGCTTAGTATCCGACATAGAGCAGAGACI--CTCCAGATC-													
Consensus	TATA.....CAGGCCaCa.....CaagAaAGagAGGTGTTTCATAAcaAGaaaAaaaaaaTCccTcaacCaAGaca..GaaTaaTTacTaagTATcGACAGTagAAcAAgaacT..CTCCaaATA.													
OPJ_09_Japonicus1600	ATTTTGTCTCATATATATGTTGAAATATATATGCTCAATGCAATGTTATATGCTGCTCTTACATACCATGTACATCTCCCTAGAGATTTTAATAGTCGATGAGGCGAGGGCGAGTTTACTT													
OPJ_09_Lupulus_1200CACCAC.....CCCTTAAACCTAGCCATGCCCAAGCATCCCTTCGAGATCTTTG.....CAGTAGGCTT													
ConsensusCaacCA.....CcTTaaAcACaaGgaCATccCCaAaacATccTTaagAGTcaTg.													
OPJ_09_Japonicus1600	ACATGCAATACCTGCTCAGCTTTTCTCAGTATTTTGTAGTTTTCAGCGATGCTAGCTCGTARTACGCTTCTTAAACAAATATTCAGCTCGTTTARGACCTTTTTAGATAAAAAT													
OPJ_09_Lupulus_1200	-TGATATATTA--ATTGGAA--TGAATGGGATCTC--CAAAACTA--CAATTCAC--AAACAGTCTCTCCATATCAI--ATCCHATTAGAGTAAAAATA													
Consensus	..TGATATAcTa..ATTcGAAT.....TgaaTTaaGaTcTc.....CaaaAAcTA..CcaaTaaaAC.....AAACAAagTATcAgaTcaT...RaTcaATaTaaaAARAAATA													
OPJ_09_Japonicus1600	TGAGCAATTTTACATGTAACCTTCTATAGGTTTACATGTTGATGATAGGCTTTTAAACAAATGCTCGCTTGTAACTCACACAGTTTTTACTATTTCCATGGTGGTACCTCAGCT													
OPJ_09_Lupulus_1200	TATGACCAATAGAAATATG--CACCAC--GCGTAGCTTCTCTTC--TCTCCATGG-CGAGAG--TTCTCCATGG-CGAGAG--													
Consensus	TaTGACaAaaTaaAaaAGT.....ATaAGGGgT.....GCGcGacTGTaaCcTc.....aTcTcCATTGc.CGaAaa.													
OPJ_09_Japonicus1600	781 790 800 810 820 830 840 850 860 870 880 890 900 910													
OPJ_09_Lupulus_1200	CACCTTAATCAGGAGATTCAATCGTCCGAGACTAAGTGACAGGGTTTTCCAGGTTTTTAAACACTTAGGCCCTTATCACCTAATTTATAGACCTTTACCAATTTAGGTAGTGGCTTTTTAT													
ConsensusAGAaaAGcTGGT-CCGAAA.....GCCAGTTCCATTTGCT--GCTCTCTC--CTTCCGATTCAAGATCCGAGGGC--CTTCCAAATaAGaaGgC.....													
OPJ_09_Japonicus1600	911 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040													
OPJ_09_Lupulus_1200	TAGATGCTTACCTGCTTGTGTTAAGGCAGTGTGTTGAGTGTCCAGGAGTCCCAAGATAGCTAGTTAGCTAGTATTTTGCATGATTTTCAAGCTCGAGGCTTATACAGACATTTGACT													
Consensus	-GTTGAC--GATCTG--GAATCGGATGCTCCATGA-AGC--GGTCGAG--GAATGAT--AGCTGAT--GCATC-TCCT													
OPJ_09_Japonicus1600	1041 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170													
OPJ_09_Lupulus_1200	TAGCTCTTTCTAGCTGTGTAACTAACCCGGTGTGTCGATTTCTTAGGATCTTGTCCCAAGTTATATCAACCTTTTTATGAAAATTTAAAAAATTTCTATGGCTCTATACAGCTGT													
Consensus	cAGGGcaTTT.....GATG-CGAAT--GATCCAGAA--TGAAGAAAT--GGGGCATTCCAGCTCCG-													
OPJ_09_Japonicus1600	1171 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300													
OPJ_09_Lupulus_1200	CGCGAGTTAATCTCAGTCACTGACAGTATATGCTCAGTGAAGTTTCTCATGAGTATGATCTCAATGACAGTCAACAGTTATCAATCTCTGACTTATGCTAATTCATGGACATCTTATTT													
ConsensusATTCTCaggcaACTGaRaGaGa.....CTC..TGAGCT..GaaTGGaAAGT.....GAaaTAcAGATTacaAaccTCTGcGA.....RaCaAaAT													
OPJ_09_Japonicus1600	1301 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430													
OPJ_09_Lupulus_1200	ATCAAACTTTGGGTGTCATCTCCAGGCTGCTTGTGGGTTGCTGAGTTATGTTTCACTCAACCTTTGCAAGATGTTATACCTGTTGGTGTGCTTATATAGCATGTTGGTAG													
Consensus	GGCA--GAGTTCA-CCTC--AGGTACAT--CTCCTAT--TCTCCGCTTAG--CTTACTACTACTGA--													
OPJ_09_Japonicus1600	1431 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560													
OPJ_09_Lupulus_1200	TTGCCCCAGCTTAATGCTTGAATTAATCAAT-GGCATTAGTTAAGAGGGCTTTGTCGATCCGAATAGTGGAGTGAATTAATCAATCAATATTTCTCAATGACTGATGATATC													
Consensus	-CCTCTGTTTACAGATGGGAGAAATCGCTCAGATTGATGCTGAGAGGGT--GAATTAACAGCTGCGAATGGAGTCTCGATG--GTTGTATGG--GTTcaaaATGa.													
OPJ_09_Japonicus1600	1561 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690													
OPJ_09_Lupulus_1200	ATGATTTGAAAGTTACATTAACCTGAAATGCTAACAACTAAGATTAATGTTGATATTTCTGAGATGCTCAGCATCTGCTGGGTACCATCTCCACAGGCTGGC-CAGTTTGTACAC													
Consensus	-TGTGGGTTGTAACCCACCTTTGCTG--TGTAGGGTTTTGTIAG--CGATTTGGGGT--CATTTGGGAA--CATTTGGAAATGCTCAGATGCTCGA													
OPJ_09_Japonicus1600	1691 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820													
OPJ_09_Lupulus_1200	TCCAGGCTGATCACTGTTGCACTTCGTAAGGCTTCCAGTAAAGCTCCAGGACCAAGCGTAAAGGCTCTGCTGTTGCCGCAATACCTCTCGAGTACCAGGCTCTACCGAAGACTGCTCTCT													
Consensus	accAcGcCTG.....GTTACaaaaTCGtaAaGTcCTaccaaGaTaccTCCaaGcA.aCaAGcGTTaGaaTCTcGaaGT.....aRTaCaaTTcG.....aCaAaaAAC													
OPJ_09_Japonicus1600	1821 1830 1840 1850 1860 1870 1880 1888													
OPJ_09_Lupulus_1200	CAGACCTTTGTTAAGACTGTGTATTTCTGTGGTACCTGGCTTTATCATCTCAGAGGCTCA													
Consensus	CGGTCa...TTGI--GGAGCTTGGTCGA--CTGAT--TGGATGc.....GTAGGGCTCA													
OPJ_09_Japonicus1600	CaGaCa...TTGT..aaGaaCTggGTCAa...CTGaT..TAcGaTcGc.....GTAGGGCTCA													